

MD1230B

Remote Control

Operation Manual

24th Edition

- This is an operation manual of MD1230B-01/02/03, MX123001A-07/09/10.
- For safety and warning information, please read this manual before attempting to use the equipment.
- Additional safety and warning information is provided within the MD1230B Data Quality Analyzer Operation Manual. Please also refer to this document before using the equipment.
- Keep this manual with the equipment.

ANRITSU CORPORATION

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.

MD1230B
Remote Control
Operation Manual

17 September 2001 (First Edition)
10 June 2013 (24th Edition)

Copyright © 2001-2013, ANRITSU CORPORATION.

All rights reserved. No part of this manual may be reproduced without the prior written permission of the publisher.

The contents of this manual may be changed without prior notice.

Printed in Japan

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.

Software End-User License Agreement (EULA)

Please read this Software End-User License Agreement (hereafter this EULA) carefully before using (includes executing, copying, registering, etc.) this software (includes programs, databases, scenarios, etc., used to operate, set, etc., Anritsu electronic equipment). By reading this EULA and using this software, you are agreeing to be bound by the terms of its contents and Anritsu Corporation (hereafter Anritsu) hereby grants you the right to use this Software with the Anritsu-specified equipment (hereafter Equipment) for the purposes set out in this EULA.

1. Grant of License and Limitations

1. Regardless of whether this Software was purchased from or provided free-of-charge by Anritsu, you agree not to rent, lease, lend, or otherwise distribute this Software to third parties and further agree not to disassemble, recompile, reverse engineer, modify, or create derivative works of this Software.
2. You may make one copy of this Software for backup purposes only.
3. You are not permitted to reverse engineer this software.
4. This EULA allows you to install one copy of this Software on one piece of Equipment.

2. Disclaimers

To the extent not prohibited by law, in no event shall Anritsu be liable for personal injury, or any incidental, special, indirect or consequential damages whatsoever, including, without limitation, damages for loss of profits, loss of data, business interruption or any other commercial damages or losses, arising out of or related to your use or inability to use this Software.

3. Limitation of Liability

- a. If a fault (bug) is discovered in this Software, preventing operation as described in the operation manual or specifications whether or not the customer uses this software as described in the manual, Anritsu shall at its own discretion, fix the bug, or exchange the software, or suggest a workaround, free-of-charge. However, notwithstanding the above, the following items shall be excluded from repair and warranty.
 - i) If this Software is deemed to be used for purposes not described in the operation manual or specifications.
 - ii) If this Software is used in conjunction with other non-Anritsu-approved software.
 - iii) Recovery of lost or damaged data.
 - iv) If this Software or the Equipment has been modified, repaired, or otherwise altered without Anritsu's prior approval.
 - v) For any other reasons out of Anritsu's direct control and responsibility, such as but not limited to, natural disasters, software virus infections, etc.
- b. Expenses incurred for transport, hotel, daily allowance, etc., for on-site repairs by Anritsu engineers necessitated by the above faults shall be borne by you.
- c. The warranty period for faults listed in article 3a above covered by this EULA shall be either 6 months from the date of purchase of this Software or 30 days after the date of repair, whichever is longer.

4. Export Restrictions

You may not use or otherwise export or re-export directly or indirectly this Software except as authorized by Japanese and United States law. In particular, this software may not be exported or re-exported (a) into any Japanese or US embargoed countries or (b) to anyone on the Japanese or US Treasury Department's list of Specially Designated Nationals or the US Department of Commerce Denied Persons List or Entity List. By using this Software, you warrant that you are not located in any such country or on any such list. You also agree that you will not use this Software for any purposes prohibited by Japanese and US law, including, without limitation, the development, design and manufacture or production of missiles or nuclear, chemical or biological weapons of mass destruction.

5. Termination

Anritsu shall deem this EULA terminated if you violate any conditions described herein. This EULA shall also be terminated if the conditions herein cannot be continued for any good reason, such as violation of copyrights, patents, or other laws and ordinances.

6. Reparations

If Anritsu suffers any loss, financial or otherwise, due to your violation of the terms of this EULA, Anritsu shall have the right to seek proportional damages from you.

7. Responsibility after Termination

Upon termination of this EULA in accordance with item 5, you shall cease all use of this Software immediately and shall as directed by Anritsu either destroy or return this Software and any backup copies, full or partial, to Anritsu.

8. Dispute Resolution

If matters of dispute or items not covered by this EULA arise, they shall be resolved by negotiations in good faith between you and Anritsu.

9. Court of Jurisdiction

This EULA shall be interpreted in accordance with Japanese law and any disputes that cannot be resolved by negotiation described in Article 8 shall be settled by the Japanese courts.

Cautions against computer virus infection

- Copying files and data
Only files that have been provided directly from Anritsu or generated using Anritsu equipment should be copied to the instrument.
All other required files should be transferred by means of USB or CompactFlash media after undergoing a thorough virus check.
- Adding software
Do not download or install software that has not been specifically recommended or licensed by Anritsu.
- Network connections
Ensure that the network has sufficient anti-virus security protection in place.

CE Conformity Marking

Anritsu affixes the CE Conformity marking on the following product(s) in accordance with the Council Directive 93/68/EEC to indicate that they conform to the EMC and LVD directive of the European Union (EU).

CE marking



1. Product Model

Options: MD1230B-01/MX123001A-07 RS-232C Control,
MD1230B-02/MX123001A-09 GPIB Control,
MD1230B-03/MX123001A-10 Ethernet Control

2. Applied Directive and Standards

When the above options are installed in the main frame shown below, the applied directive and standards of these options conform to those of the main frame.

Main frame: MD1230B Data Quality Analyzer

PS: About main frame

Please contact Anritsu for the latest information on the main frame types that the above options can be used with.

C-Tick Conformity Marking

Anritsu affixes the C-Tick marking on the following product(s) in accordance with the regulation to indicate that they conform to the EMC framework of Australia/New Zealand.

C-Tick marking



1. Product Model

Options: MD1230B-01/MX123001A-07 RS-232C Control,
MD1230B-02/MX123001A-09 GPIB Control,
MD1230B-03/MX123001A-10 Ethernet Control

2. Applied Directive and Standards

When the above options are installed in the main frame shown below, the applied directive and standards of these options conform to those of the main frame.

Main frame: MD1230B Data Quality Analyzer

PS: About main frame

Please contact Anritsu for the latest information on the main frame types that the above options can be used with.

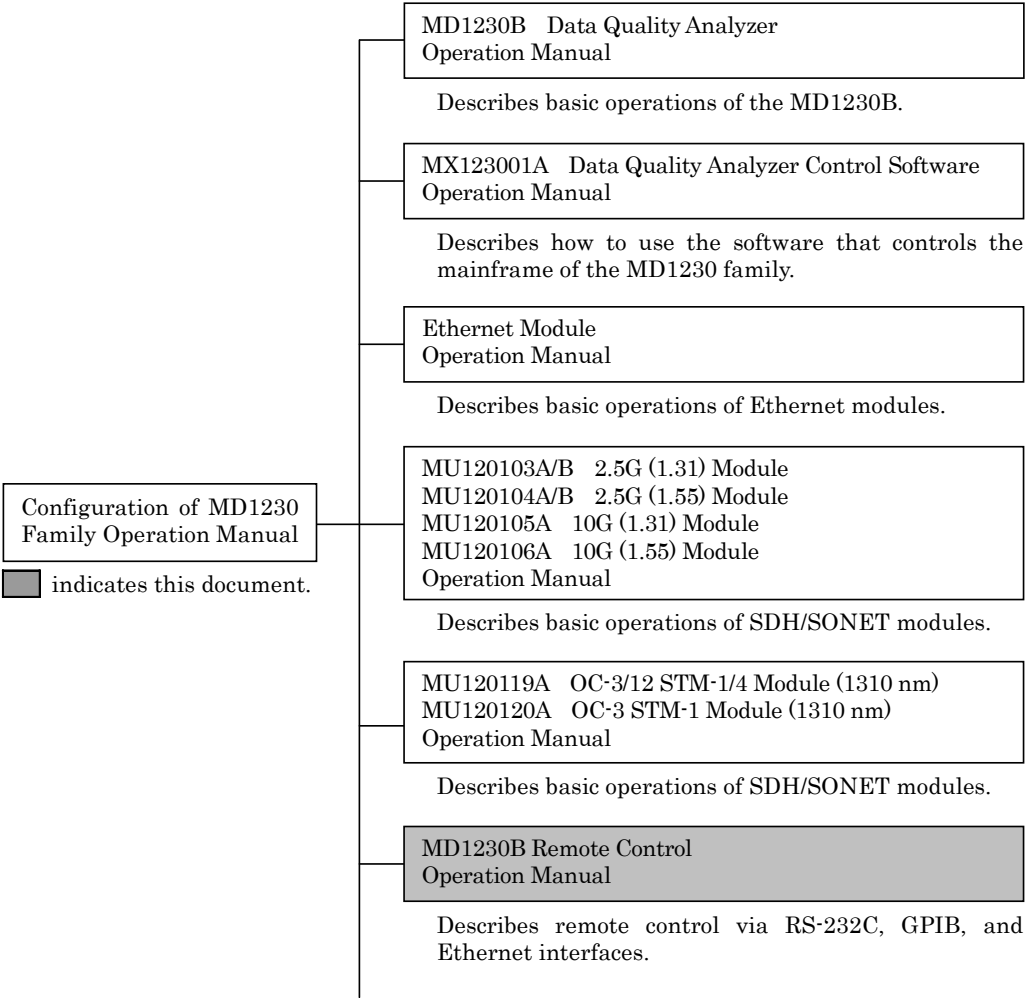
About This Manual

The MD1230 family operation manuals consist of separate documents for the main unit, control software, module(s), remote control operation, and options, as shown below.

Note:

MD1230 family is a general name for the MD1230A/B Data Quality Analyzer, the MD1231A/A1 IP Network Analyzer, and the MT7407A Multislot Chassis.

Note that the MD1230A, MD1231A/A1, and MT7407A are not supported in Ver. 7.0 and above.



	<div>Decode Module Operation Manual</div> <div>Describes basic operations of Decode modules.</div>
	<div>Tcl Interface Operation Manual</div> <div>Describes basic operations of Tcl Interface.</div>
	<div>Expert Analysis Module Operation Manual</div> <div>Describes basic operations of Expert Analysis modules.</div>
	<div>Application Traffic Monitor Operation Manual</div> <div>Describes how to operate the software for monitoring Ethernet traffic.</div>
	<div>MD1230B-26 PPPoE Operation Manual</div> <div>Describes how to operate the software for measuring traffic on PPPoE.</div>

This operation manual describes the functions of the following remote control Options:

Model number of remote control option	Name of remote control
MD1230B-01 MX123001A-07	RS-232C control
MD1230B-02 MX123001A-09	GPIB control
MD1230B-03 MX123001A-10	Ethernet control

Note:

Note that the MD1230A, MD1231A/A1 and MT7407A are not supported in Ver. 7.0 and above.

This manual describes the various option names above using the MD1230B as the representative.

Also this manual describes the remote functions (MP1590B-01/02/03, and MP159001B-01/02/03) related to the IP/EoS mode of the MP1590B.

This operation manual uses the following notations:

[1] Explanation on device messages

[a] A hexadecimal value is preceded by 0x.

[b] Elements making up a device message are represented with character strings each enclosed in < >.

Example:

<program-message>, <response-message>, etc.

[c] A character string enclosed in { } represents one or more parameters. “|” in { } means “or.”

Example:

{ON | ENABLE} means “ON or ENABLE.”

[d] A character string enclosed in [] is optional (may be omitted).

Example:

A[<space>]B means a space (<space>) may be or may not be inserted between A and B.

[e] “...” indicates that the preceding element is repeated.

Example:

AB... indicates that B appears repeatedly once or more (like ABBB).

[2] Sample commands

<<program-message>

><response-data>

A line starting with < is a program message (command character string sent by the remote controller). A line starting with > is response data for the program message.

Example:

< :PORT:IP:IADdress? ←

Program message sent by controller

> #H00000000 → Response data sent from MD1230B

This Operation Manual uses the notations described in the following standards:

IEEE488.2: IEEE Std 488.2-1992

SCPI: SCPI VERSION 1999.0 (SCPI Consortium)

Table of Contents

About This Manual.....	I
Section 1 Overview	1-1
1.1 Connection	1-2
1.2 Device Messages	1-4
Section 2 RS-232C Interface	2-1
2.1 Connecting Cable	2-2
2.2 Setting RS-232C.....	2-3
2.3 Initializing RS-232C System	2-4
Section 3 GPIB Interface	3-1
3.1 GPIB Interface Functions	3-2
3.2 Bus Commands	3-3
3.3 Connecting Cable	3-4
3.4 Setting GPIB	3-5
3.5 Initializing GPIB System	3-6
Section 4 Ethernet Interface	4-1
4.1 Connecting Cable	4-2
4.2 Setting Ethernet.....	4-3
4.3 Initializing Ethernet System	4-4
Section 5 Device Message Structure	5-1
5.1 Program Messages	5-2
5.2 Response Messages	5-12

1

2

3

4

5

6

7

Appendix

Section 6	Details of Device Messages	6-1
6.1	List of Device Messages	6-3
6.2	Details of Device Messages	6-125
6.3	Error Messages	6-900
Section 7	Status Report	7-1
7.1	MD1230B Status Register Configuration	7-2
7.2	IEEE488.2 Standard Status Registers	7-4
7.3	MD1230B-unique Status Registers	7-6
7.4	Reading, Writing, and Clearing Status Registers.....	7-22
Appendix A	ASCII Character Code List	A-1
Appendix B	Device Message Compatibility	B-1
Appendix C	Basic Operation of Device Messages	C-1
Appendix D	Basic Rules for Channel Expression in Virtual Concatenation.....	D-1
Appendix E	Path Monitor Item Correspondence Table	E-1
Appendix F	Counter IDs	F-1
Appendix G	Base Position	G-1

Section 1 Overview

This section describes the outline of the remote control functions of the MD1230B Data Quality Analyzer (hereafter MD1230B).

1.1	Connection	1-2
1.2	Device Messages	1-4

1.1 Connection

The MD1230B remote control functions support RS-232C, GPIB and Ethernet interfaces. (These interfaces are optionally available.)

Option model name	Function
MD1230B-01	RS-232C control
MD1230B-02	GPIB control
MD1230B-03	Ethernet control

Standards

The MD1230B GPIB interface conforms to IEEE (Institute of Electrical and Electronic Engineers) Standard 488.1-1987.

Software specifications are in conformity with IEEE488.2 and are partly based on, but do not conform to, SCPI (Standard Commands for Programmable Instruments).

Control from external controller

MD1230B becomes an automated measurement device when it is connected to an external controller.

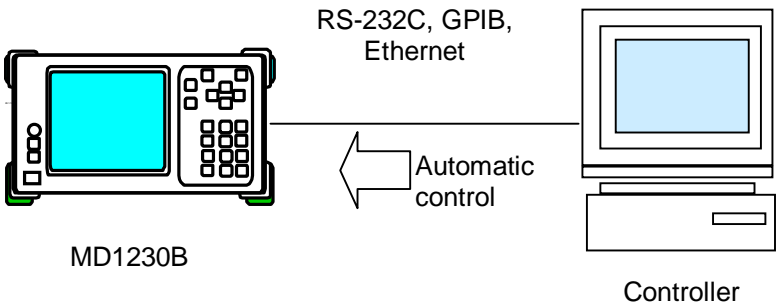


Figure 1.1-1 System setup example

- ☞ Refer to Section 2 “RS-232C Interface” for RS-232C.
- ☞ Refer to Section 3 “GPIB Interface” for GPIB interface.
- ☞ Refer to Section 4 “Ethernet Interface” for Ethernet.

Eight users at maximum can perform remote control in multi-session. When using the MX123001A-10 Ethernet control option, the MD1230B is controlled via the PCs with the MX123001A installed.

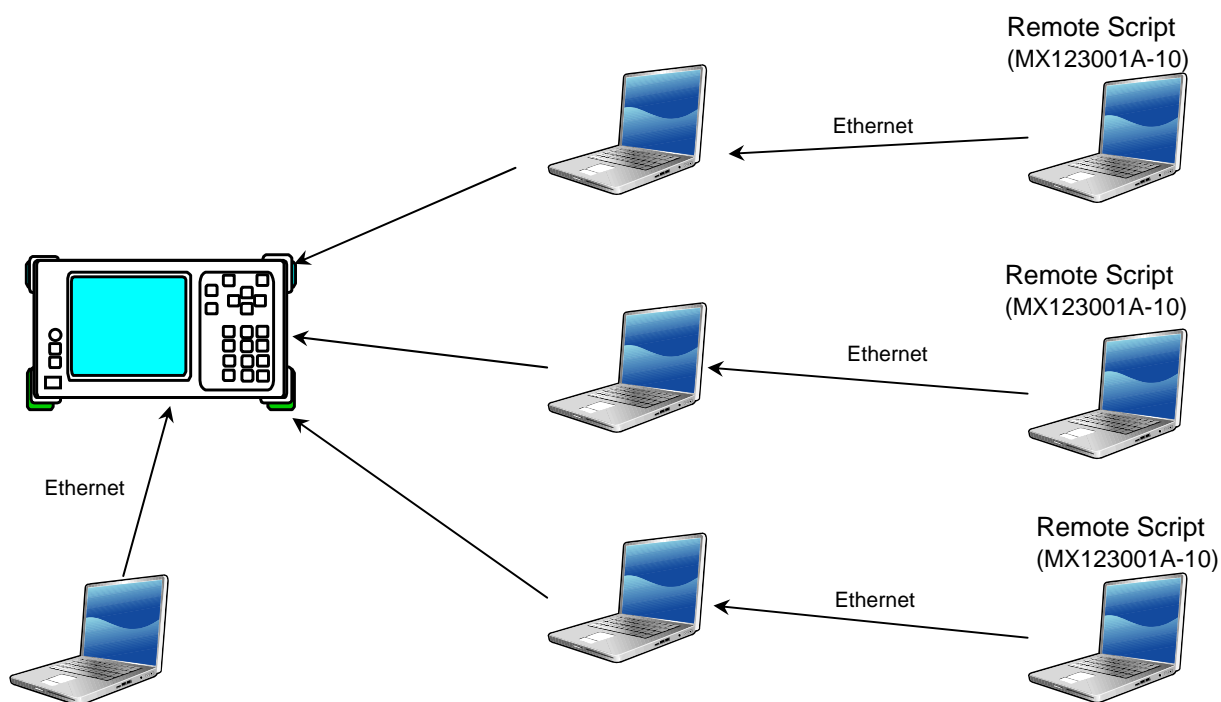


Figure 1.1-2 Example of Multi-session Connection

1.2 Device Messages

Device messages are data messages sent or received between the controller and devices. Messages sent from the controller to MD1230B are referred to as program messages, and those sent from MD1230B to the controller are referred to as response messages. Remote control of MD1230B is enabled by sending or receiving these device messages.

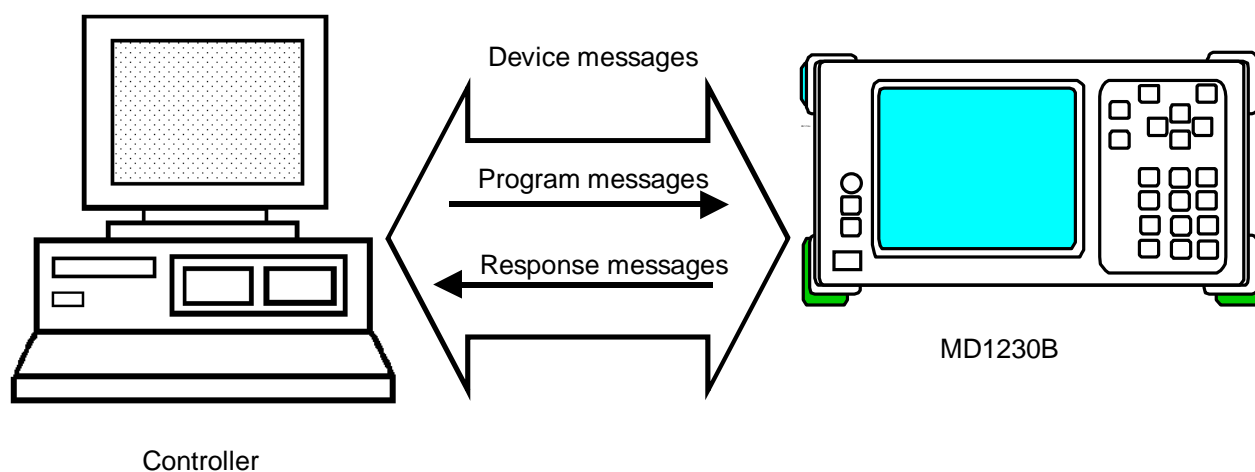


Figure 1.2-1 Sending and receiving messages

As described above, device messages are classified into two types: program messages and response messages. Figure 1.2-2 shows the message configurations.

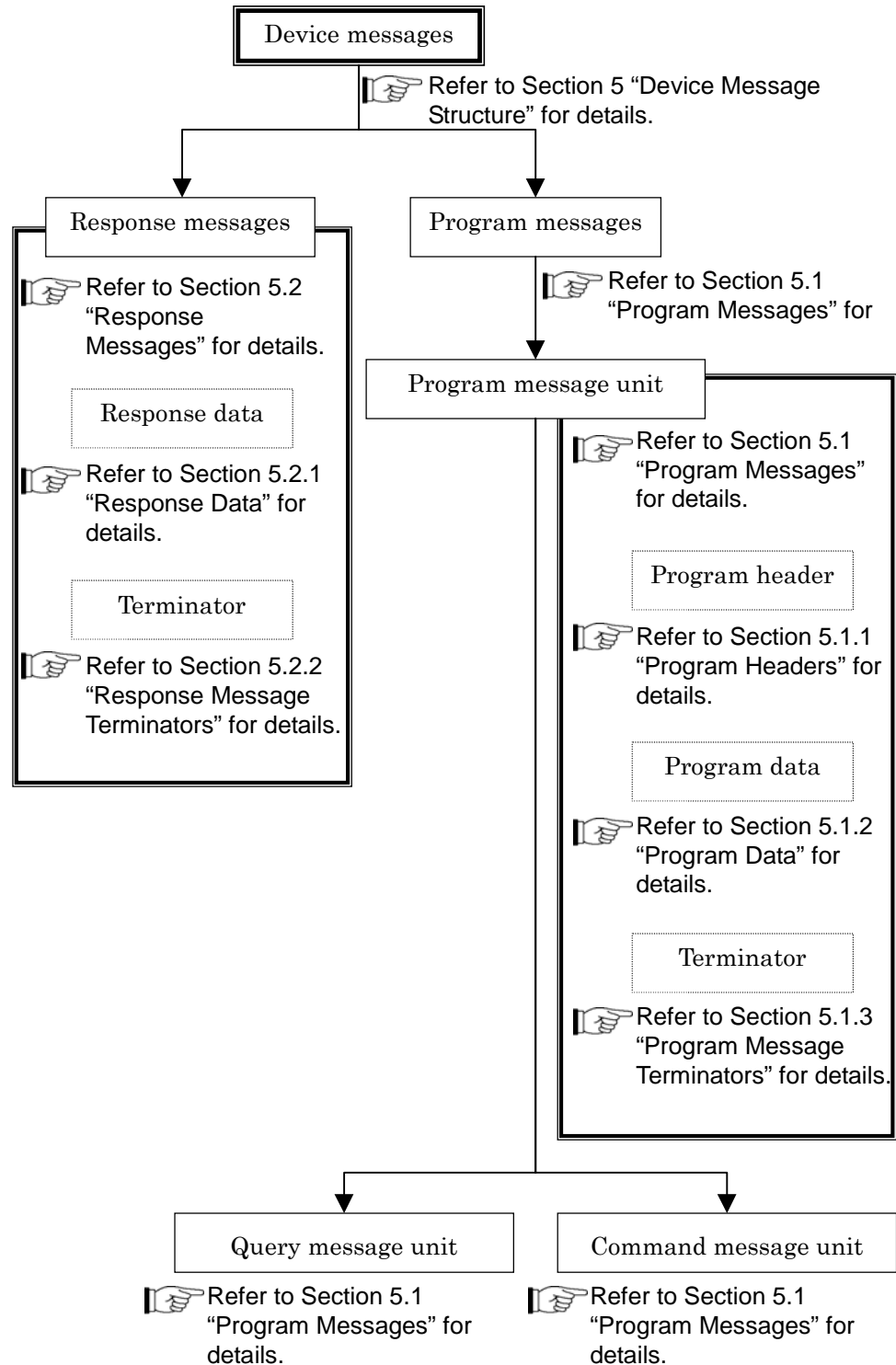


Figure 1.2-2 Device message configurations

Section 2 RS-232C Interface

This section explains how to set the RS-232C interface.

2.1	Connecting Cable.....	2-2
2.2	Setting RS-232C	2-3
2.3	Initializing RS-232C System.....	2-4
2.3.1	Initializing Device	2-4
2.3.2	Device Status at Power-On.....	2-4

2.1 Connecting Cable

When mounting an RS-232C remote control option for using the RS-232C interface, connect a cable to the RS-232C connector on the rear panel. Be sure to connect the cable before turning on the power.

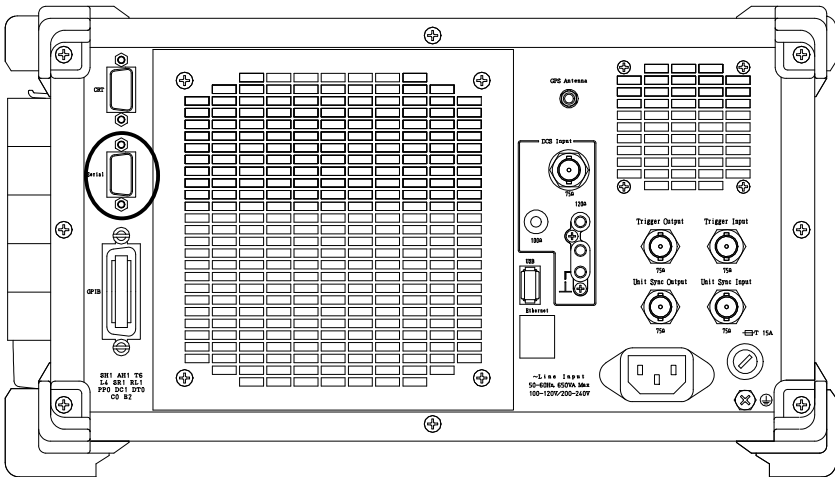



Figure 2.1-1 Connecting RS-232C cable

2.2 Setting RS-232C

When using RS-232C as a remote interface, setup the remote interface on the MD1230B Setup Utility screen as shown below.

 For the setup, refer to Section 4 “Using Setup Utility” in MD1230B Data Quality Analyzer Operation Manual for details.

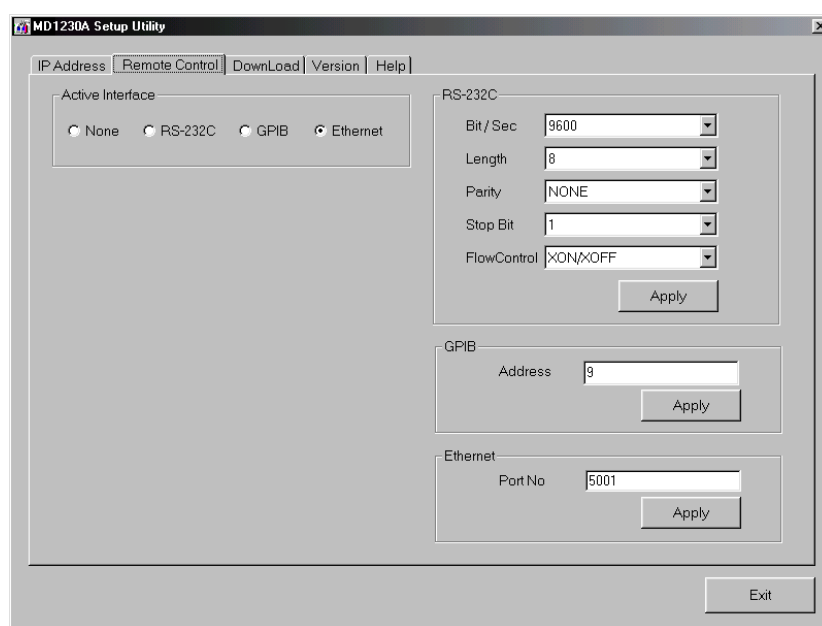


Figure 2.2-1 Setup Utility Remote Control screen

Setup items	Description	Allowable values or range
Bit/Sec	Code speed	115200, 57600, 38400, 19200, 9600, 4800, 2400, 1200
Length	Character length	8 or 7 bits
Parity	Parity	None: None Even: Even parity Odd: Odd parity
Stop Bit	Stop bit length	2, 1.5, or 1 bit
Flow Control	Flow control type	NONE RTS/CTS XON/XOFF

Procedures

- (1) Select **Remote Control** tab.
- (2) On **Active Interface** group, select **RS232C**.
- (3) Set the values used for remote control on **Bit/Sec**, **Length**, **Parity**, **Stop Bit** and **Flow Control** in **RS-232C** group.
- (4) Click **Apply** button on **RS-232C** group.

2.3 Initializing RS-232C System

MD1230B supports the *RST command as a device initialization command in using the RS-232C interface.

2.3.1 Initializing Device

- (1) *RST
Device initialization with *RST command.
- (2) Function
Resets MD1230B to the status at factory shipment.



Refer to Section 6 “Details of Device message” for details.

2.3.2 Device Status at Power-On

Turning the MD1230B Power switch On sets MD1230B to the following conditions:

- Clears the status register information.
- Clears the input buffer and output queue.
- Resets the syntax analyzer, execution controller and response generator.



Refer to Section 7 “Status Report” for details.

Section 3 GPIB Interface

This section describes the GPIB interface functions and how to setup the GPIB interface.

3.1	GPIB Interface Functions	3-2
3.2	Bus Commands.....	3-3
3.3	Connecting Cable.....	3-4
3.4	Setting GPIB.....	3-5
3.5	Initializing GPIB System.....	3-6
3.5.1	Initializing Bus	3-6
3.5.2	Initializing Message.....	3-7
3.5.3	Initializing Device	3-7
3.5.4	Device Status at Power-On.....	3-7

3.1 GPIB Interface Functions

The MD1230B GPIB interface offers the functions given in the table below.

Code	Description
SH1	All source handshake functions
AH1	All acceptor handshake functions
T6	Basic talker functions No expanded talker functions (secondary addresses unavailable)
L4	Basic listener functions No expanded listener functions (secondary addresses unavailable)
SR1	All service request functions
RL1	All remote and local functions
PP0	No parallel poll functions
DC1	All device clear functions
DT0	No device trigger functions
C0	No controller functions

3.2 Bus Commands

Bus commands are sent through interface communications when the bus is in command mode (ATN line is “L”).

Bus commands are listed in the table below.

Bus commands	Description
DCL (Device clear)	Initializes message exchange for all devices connected to the GPIB bus.
SDC (Selected Device Clear)	Initializes message exchange for the device set at the specified GPIB address. Operation is the same as DCL command.
IFC (Interface Clear)	Initializes the interface.

3.3 Connecting Cable

When mounting the GPIB remote control option for using the GPIB interface, connect a GPIB cable to the GPIB connector on the rear panel. Be sure to connect the cable before turning the power on.

Systems using GPIB have some restrictions. When connecting devices, observe the following conditions:

Conditions: Number of devices connected ≤ 15
Total cable length $\leq 2 \text{ m} \times \text{number of devices}$
(Maximum 20 m)

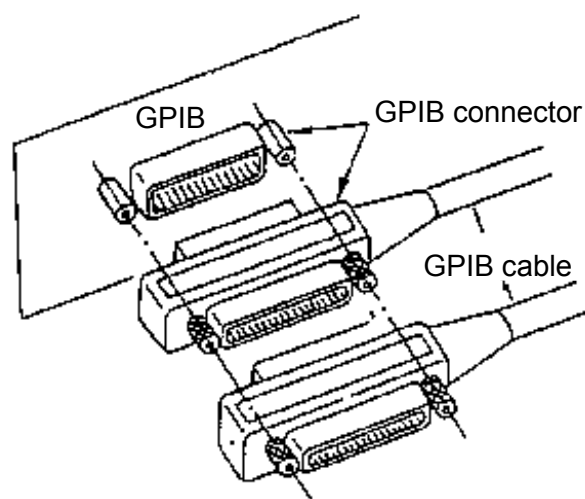
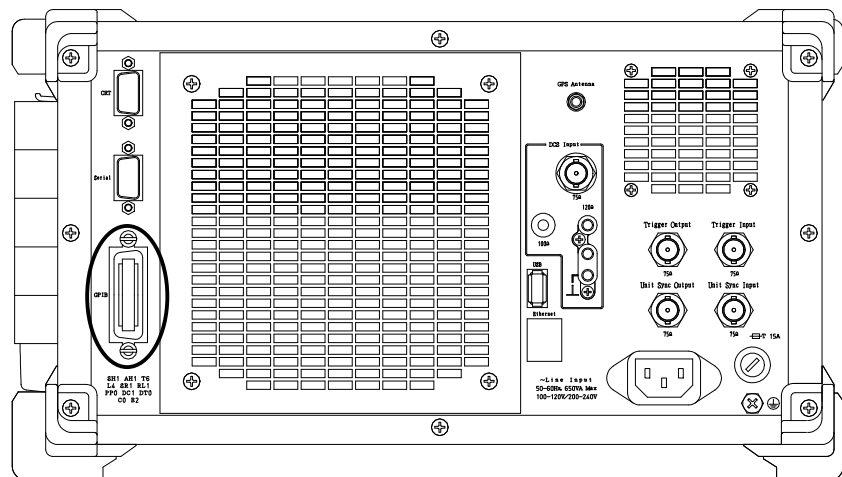



Figure 3.3-1 Connecting GPIB cable

3.4 Setting GPIB

When using GPIB as a remote interface, setup the GPIB remote interface on the MD1230B Setup Utility screen as listed in the table below.

 Refer to Section 4 “Using Setup Utility” in the MD1230B Data Quality Analyzer Operation Manual for details.

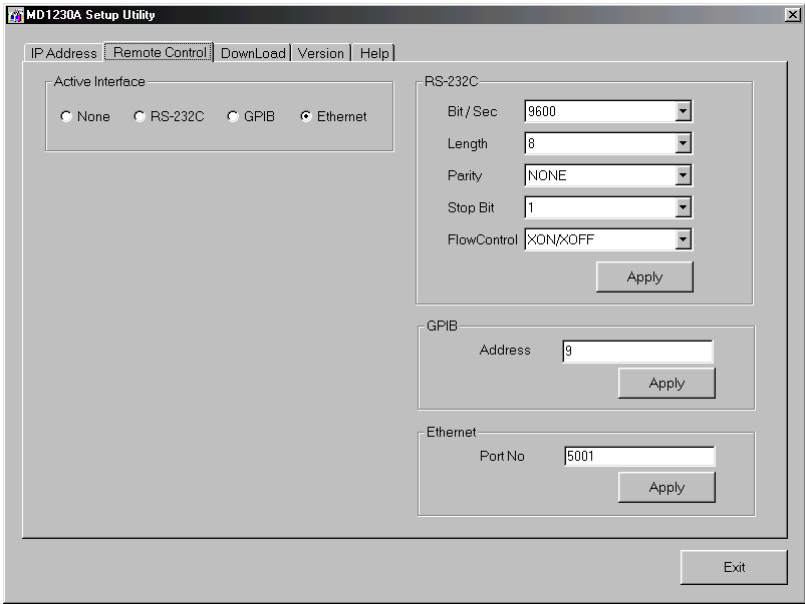


Figure 3.4-1 Setup Utility Remote Control screen

Setup items	Description	Allowable values or range
Address	Address	0 to 30

Procedures

- (1) Select **Remote Control** tab.
- (2) On **Active Interface** group, select **GPIB**.
- (3) In **Address** on **GPIB** group, enter the GPIB address used for remote control.
- (4) Click **Apply** button on **GPIB** group.

3.5 Initializing GPIB System

IEEE488.2 defines system initialization in three levels:

Level	Type of Initialization	Description	Remarks
1	Bus initialization	With an IFC message from the controller, initializes all interface functions connected to the bus.	This level is available in combination with other levels, but should be executed before Level 2.
2	Message initialization	Initializes message exchange for all devices on GPIB with DCL command, or for specified device with SDC command. And also disables the function that reports the end of operation to the controller.	This level is available in combination with other levels, but should be executed before Level 3.
3	Device initialization	With *RST command, resets MD1230B to the status at factory shipment.	This level is available in combination with other levels, but should be executed after Levels 1 or 2.

3.5.1 Initializing Bus

- (1) IFC
Bus initialization with IFC statement
- (2) Function
Holds the IFC line in an active state for approximately 100 μ s, and initializes the interface functions of all devices connected to the GPIB bus line.
IFC can be sent only by the system controller.

3.5.2 Initializing Message

- (1) DCL, SDC

Initializes message exchange with DCL or SDC bus command.

- (2) Function

Initializes message exchange for all devices on GPIB or only the specified device.

If a certain section related to message exchange inside the device is un-adequate to be controlled from the controller, initializes the message exchange. This will allow the controller to send a new command to the device.

- (a) DCL

Initializes message exchange for all devices on GPIB.

- (b) SDC

Initializes message exchange for the specified device.

3.5.3 Initializing Device

- (1) *RST

Device initialization with *RST command

- (2) Function

Resets MD1230B to the status at factory shipment.



Refer to Section 6 “Details of Device Message” for details.

3.5.4 Device Status at Power-On

Turning the MD1230B Power switch On sets MD1230B to the following conditions:

- Clears the status register information.
- Clears the input buffer and output queue.
- Resets the syntax analyzer, execution controller and response generator.



Refer to Section 7 “Status Report” for details.

Section 4 Ethernet Interface

This section explains how to set the Ethernet interface.

4.1	Connecting Cable.....	4-2
4.2	Setting Ethernet.....	4-3
4.3	Initializing Ethernet System.....	4-4
4.3.1	Initializing Device	4-4
4.3.2	Device Status at Power-On.....	4-4

4.1 Connecting Cable

When mounting the Ethernet remote control option for using the Ethernet interface, connect the Ethernet cable to the Ethernet connector on the rear panel. Be sure to connect the cable before turning the power On.

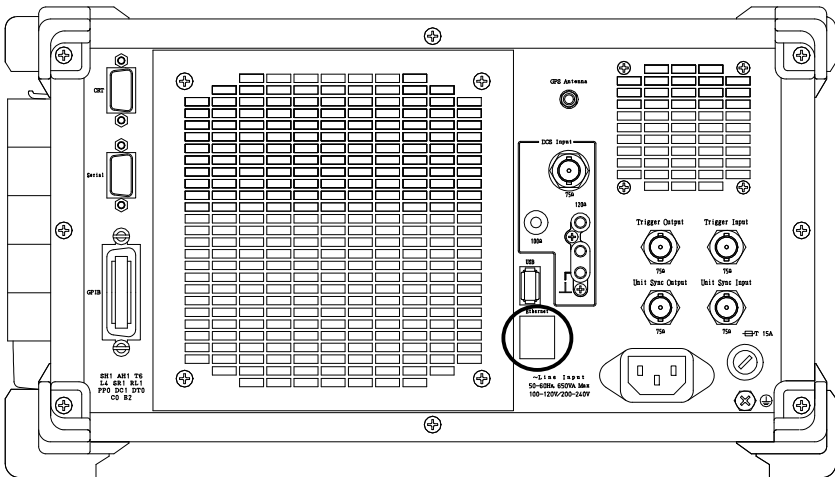



Figure 4.1-1 Connecting Ethernet cable

4.2 Setting Ethernet

When using Ethernet as a remote interface, setup the remote interface on the MD1230B Setup Utility screen as shown below.

 Refer to Section 4 “Using Setup Utility” in MD1230B Data Quality Analyzer Operation Manual for details.

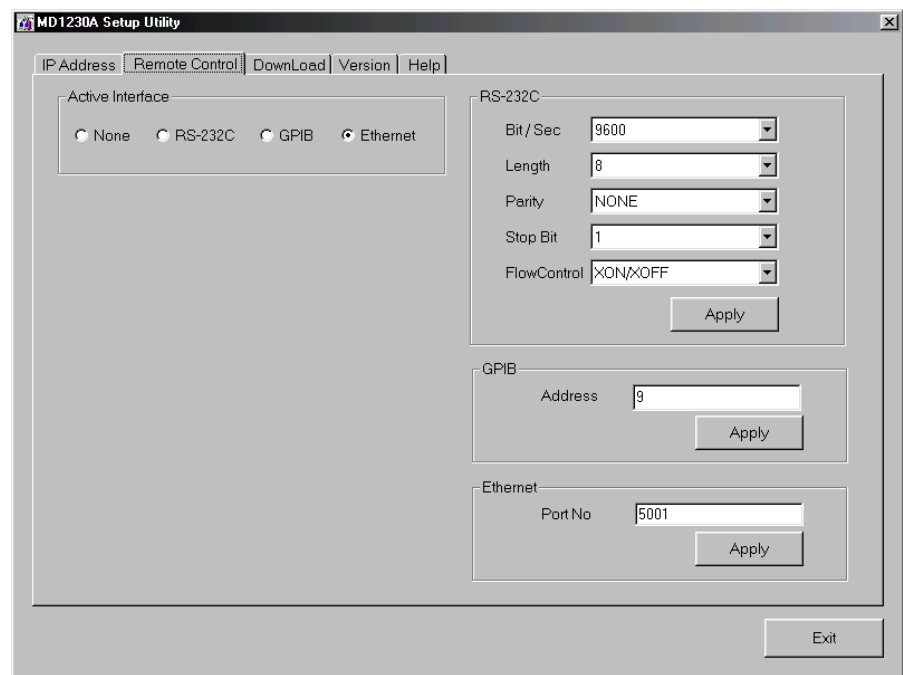


Figure 4.2-1 Setup Utility Remote Control screen

Setup items	Description	Allowable values or range
Port No.	TCP Port No.	1024 to 5001/Step1

Procedures

- (1) Select **Remote Control** tab.
- (2) On **Active Interface** group, select **Ethernet**.
- (3) In **Port No** on **Ethernet** group, enter the port No. used for remote control.
- (4) Click **Apply** button on **Ethernet** group.

4.3 Initializing Ethernet System

MD1230B supports the *RST command as a device initialization command in using the Ethernet interface.

4.3.1 Initializing Device

- (1) *RST
Device initialization with *RST command
- (2) Function
Resets MD1230B to the status at factory shipment.



Refer to Section 6 “Details of Device Message” for details.

4.3.2 Device Status at Power-On

Turning the MD1230B Power switch On sets MD1230B to the following conditions:

- Clears the status register information.
- Clears the input buffer and output queue.
- Resets the syntax analyzer, execution controller and response generator.



Refer to Section 7 “Status Report” for details.

Section 5 *Device Message Structure*

This section describes the outline and structure of device messages.

- 5.1 Program Messages 5-2
 - 5.1.1 Program headers 5-4
 - 5.1.2 Program data 5-8
 - 5.1.3 Program message terminators..... 5-11
 - 5.1.4 Buffer size 5-11
- 5.2 Response Messages..... 5-12
 - 5.2.1 Response data 5-13
 - 5.2.2 Response message terminators 5-17
 - 5.2.3 Buffer size 5-17

5.1 Program Messages

Program messages are the remote commands sent to MD1230B, as shown below.

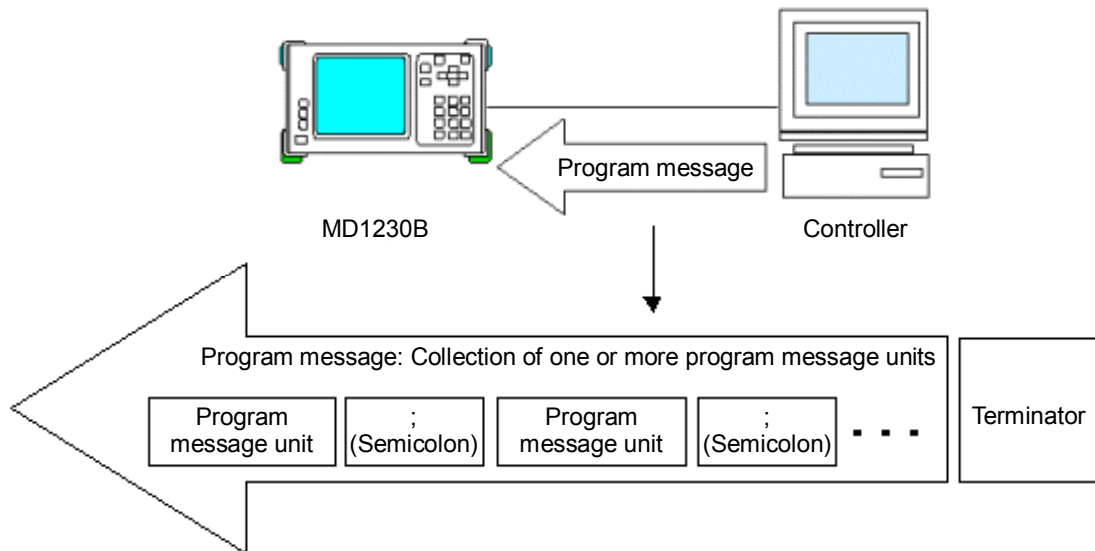




Figure 5.1-1 Program message structure

A program message consists of one or more program message units separated with a semicolon (;). (If a semicolon is preceded or succeeded by one or more spaces, the space has no meanings and ignored.)

 Refer to Section 5.1 (1) "Program Message Unit" for program message units.

When a program message is sent to MD1230B, a terminator is appended after it. MD1230B receives the program message by detecting the terminator at the end of it.

 Refer to Section 5.1.3 "Program message terminators" for terminators.

(1) Program message unit

A program message unit consists of a program header and program data, as shown below.

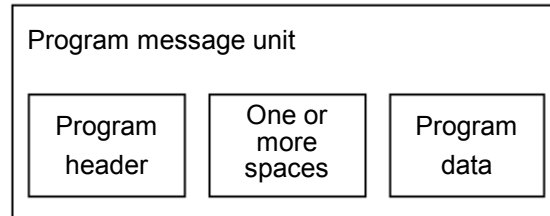




Figure 5.1-2 Program message unit

There must be one or more spaces between the program header and program data. MD1230B recognizes the program header and program data using the space(s). One or more spaces (before a program header) are meaningless and ignored.

-  Refer to Section 5.1.1 “Program headers” for program headers.
-  Refer to Section 5.1.2 “Program data” for program data.

5.1.1 Program headers

The program header specifies the function of the command message unit sent from the controller to MD1230B. This section describes the types and formats of program headers.

(1) Program header types

There are two types of program headers: program headers for command message units and those for query message units. A program header for a query message consists of a program header for a command message and an interrogation mark “?”.



Refer to Section 6 “Details of Device Message” for actual commands and query messages.

There are two major types of program header formats used by MD1230B: the common command format defined by IEEE488.2 and the MD1230B unique command format defined specially for controlling MD1230B.

The syntaxes and configurations of the common and MD1230B unique commands are described below.

(2) Common commands

Common commands are the commands whose formats and functions are defined by IEEE488.2 standard to allow operating units with the GPIB interface in the same way using the same commands (*I). The common command has a program header preceded by an asterisk “*”.



Refer to Section 6 “Details of Device Message” for available common commands.

*I:

MD1230B allows using the common commands not only for the GPIB interface, but also for the RS-232C and Ethernet interfaces.

(3) MD1230B unique commands

(a) MD1230B unique command format

The header (of MD1230B unique commands defined for controlling MD1230B) have the format that conforms to <compound command program header> of IEEE488.2 standard. The <compound command program header> is defined as follows:

```
[:]<program mnemonic>[:program mnemonic]>]...
```

Examples:

```
:COUNter:STARt
:PORT:IP:IADdress
```

Description

An MD1230B unique command has a program header consisting of two or more <program mnemonic>'s (hereinafter, referred to as “mnemonic”) separated with a colon (:).

The “mnemonic” is defined in IEEE488.2 as follows:

```
<upper/lower case alpha>[{<upper/lower case alpha>|_|<digit>}...]
<upper/lower case alpha>
```

One ASCII character that has a value in the range of 0x41 to 0x5A or 0x61 to 0x7A (65 to 90 or 97 to 122 in decimal), that is, a capital or small letter.

```
<digit>
```


One ASCII character that has a value in the range of 0x30 to 0x39 (48 to 57 in decimal), that is, a digit of numeric character 0 to 9.

Examples:

```
COUNter
DFIeld1
```

Description

A mnemonic is a character string consisting of alphanumeric characters and underscore “_” beginning with a letter. The mnemonic maximum length is defined as 12 letters.

 Refer to Section 5.1.1 (c) “About mnemonic” for details.

(b) Program header configuration of MD1230B unique command

An MD1230B unique command has a program header consisting of two or more mnemonics that are hierarchically formed in a tree form for each MD1230B function.

The mnemonic positioned on the left shows the major category of the function, and the mnemonic positioned on the right shows one setup item or operation in the major category.

For an example, a program message like the one shown below is defined for MD1230B.

:COUNTer:START

This is a program message that starts (START) the counter measurement function (COUNTER). COUNTER shows the function category “counter measurement function” and START specifies the operation for that category.

In addition, there are the following program messages:

```
:PORT:IP:IADdress<IP ADDRESS>
```

```
:PORT:IP:IADdress?
```

These program messages set and inquire the IP address (IAD-Dress) of the setup items related to the IP protocol (IP) for the measurement port (PORT).

These program messages related to the measurement port (PORT) are hierarchically formed as shown below.

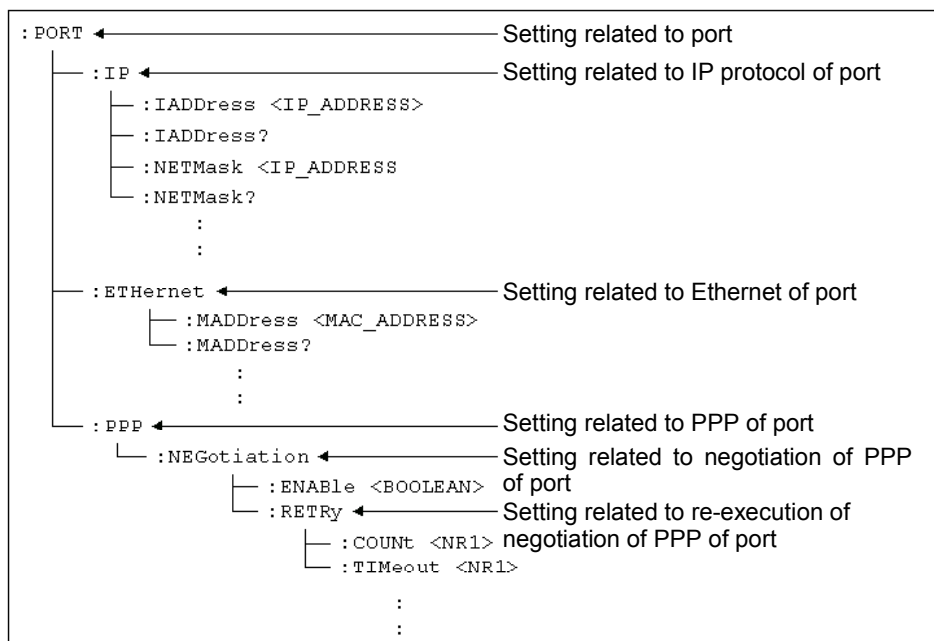


Figure 5.1-3 Program message tree

(c) About mnemonic

A mnemonic is a character string which consists a header.

For program message examples

```
:COUNter:START and
```

```
:PORT:IP:IADdress <IP_ADDRESS>,
```

“COUNter”, “START”, “PORT”, “IP”, and “IADdress” (*1) are mnemonics.

These mnemonics consist of capital and small letters. That means, they can be recognized as mnemonics even if only the capital letters are sent. For example, mnemonic COUNter is recognized as a normal mnemonic even when it is sent as COUN.

This notation includes a part of the SCPI Standard. For mnemonic “COUNter”, “COUNter” is referred to as a long form and “COUN” as a short form in SCPI (*2).

In this way, capital and small letters are used for recognizing long and short forms, but capital and small letters are actually not identified. COUNTER, counter, and Counter are assumed to be the same. Thus, all the program messages given below are recognized as normal program messages.

```
:COUNter:START
```

```
:COUN:STAR
```

```
:COUN:START
```

```
:CoUnTeR:sTaRt
```

*1:

Mnemonic “IADdress” is created from a term “ip address”. A mnemonic (like this created from more than one word) consists of the first letter (i) of the first word (ip) and all letters of the last word (address).


*2:

Care should be taken when sending the short form of a mnemonic that ends with a numeric (for example, “DFIeld1”). This mnemonic example means “first data field”.

When sending this mnemonic in the short form, put the numeric at the last of the mnemonic short form like DFI1.

5.1.2 Program data

Program data is sent following the program header as parameters specified in the command message unit. This operation manual uses the notations given below for indicating the program data format. These notations are used in Section 6 “Details of Device Message”. So, program data should be sent following the format given here.

<CHAR>	<p>Indicates two or more mnemonics for selections. The format conforms to <CHARACTER PROGRAM DATA> in IEEE488.2 standard.</p> <p> Refer to Section 6 “Details of Device Message” for actual mnemonic values.</p>
<BOOLEAN>	<p>Indicates On/Off, Enable/Disable, or Yes/No.</p> <p>To specify On/Enable state, set {ON|1} (ON or 1).</p> <p>To specify Off/Disable state, set {OFF|0} (OFF or 0).</p>
<NR1> <NR2> <NR3>	<p><NR1> indicates an integer value. <NR2> indicates a numeric value in fixed point format. <NR3> indicates a numeric value in floating point format.</p> <p>These formats conform to <DECIMAL NUMERIC PROGRAM DATA> of IEEE488.2 standard. <DECIMAL NUMERIC PROGRAM DATA> indicates a decimal numeric and defined as follows:</p> <p><mantissa>[<white space>][<exponent>]</p> <p><Mantissa> (mantissa part) is defined as follows: [{+|-}][<digit>...<digit>...<digit>...[.<digit>...]]</p> <p><Exponent> (exponent part) is defined as follows: {E|e}[<white space>][{+|-}]<digit>...</p> <p><White space> is one or more ASCII characters with a value in the range of 0x00 to 0x09 or 0x0B to 0x20 (0 to 9 or 11 to 32). These ranges includes ASCII control characters and space, but NL (newline).</p> <p><Digit> is one ASCII character with a value in the range of 0x30 to 0x39 (48 to 57 in decimal), that is, a numeric 0 to 9.</p> <p>Examples of <NR1>:</p> <p style="margin-left: 40px;">123 -500</p> <p>Examples of <NR2>:</p> <p style="margin-left: 40px;">12.345 -500.0</p> <p>Example of <NR3>:</p> <p style="margin-left: 40px;">1.2E-3</p> <p>[1] Zero (0) may be inserted in the beginning. → 005 (OK) [2] No spaces are allowed between a sign and a numeric. → +5 (OK), -Δ5 (No good) [3] Spaces may be Inserted at the end of a numeric. → +5ΔΔ (OK) [4] A plus sign (+) may or may not be omitted. → +5 (OK), 5 (OK) [5] Commas are not allowed for separating numeric. → 1,234 (No good)</p>

<HEX>	<p>Indicates a numeric in hexadecimal. The format conforms to <NON-DECIMAL NUMERIC PROGRAM DATA> of IEEE488.2 standard. <NON-DECIMAL NUMERIC PROGRAM DATA> defines the hexadecimal format as follows:</p> <p><code># {H|h} {A|a|B|b|C|c|D|d|E|e|F|f|<digit>} ...</code></p> <p><Digit> is one ASCII character with a value in the range of 0x30 to 0x39 (48 to 57 in decimal), that is, a numeric 0 to 9.</p> <p>Example:</p> <p>For setting value 0x0011EEFF, → #H0011EEFF</p>
<BINARY>	<p>Indicates a numeric in binary. The format conforms to <NON-DECIMAL NUMERIC PROGRAM DATA> of IEEE488.2 standard. <NON-DECIMAL NUMERIC PROGRAM DATA> defines the binary format as follows:</p> <p><code># {B|b} {0|1} ...</code></p> <p>Example:</p> <p>For setting binary numeric 00110101, → #B00110101</p>

<p>"<...>"</p>	<p>Indicates string data. The format conforms to <STRING PROGRAM DATA> of IEEE488.2 standard. <STRING PROGRAM DATA> is defined as follows:</p> <pre>'[{'<inserted'>|<nonsingle quote char>}...]'</pre> <p>or</p> <pre>"[{"<inserted">|<nondouble quote char>}...]"</pre> <p><inserted '> One ASCII character (') with value 0x27 (39 in decimal)</p> <p><nonsingle quote char> One ASCII character with value other than 0x27</p> <p><inserted "> One ASCII character with value 0x22 (22 in decimal)</p> <p><nondouble quote char> One ASCII character with value other than 0x22</p> <p>Description Enclose a character string in a pair of single quotation marks (') or double quotation marks ("). For a quotation mark ('or"), if any, included in a character string; write two successive quotation marks of the same type.</p> <p>Examples:</p> <p>For sending character string of calculate → "calculate" or 'calculate'</p> <p>For sending character string of It's a nice day → "It's a nice day" or 'It's a nice day'</p> <p>For sending character string "Jan.""Feb." → ""Jan.""Feb."" or '"Jan.""Feb."'</p>
----------------------	---

5.1.3 Program message terminators

A program message terminator (**1*) indicates the end of the program message. Upon reception of a terminator; MD1230B assumes that it has completed the receiving of the program message, and starts processing for the message. When sending a program message to MD1230B, add a terminator to the end of it.

For MD1230B, the program message terminator is defined differently depending on the remote control interfaces (GPIB, RS-232C, and Ethernet) as described below.

**1:*

A terminator is sometimes referred to as a delimiter.

- (1) For RS-232C and Ethernet interfaces
[<white space>]{NL} is assumed to be the terminator.
- (2) For GPIB interface

Upon reception of one of three character strings given below, the MD1230B GPIB interface assumes it as a terminator conforming to IEEE488.2 standard. In IEEE488.2, a terminator is referred to as <PROGRAM MESSAGE TERMINATOR>.

```
[<white space>]{^END}
[<white space>]{NL}{^END}
[<white space>]{NL}
```

<White space> is one or more ASCII characters with a value in the range of 0x00 to 0x09 or 0x0B to 0x20 (0 to 9 or 11 to 32 in decimal). These ranges include ASCII control characters and space, but NL (newline).

^END indicates generation of an EOI signal. Actually, an EOI signal can be generated by putting the EOI (End or Identify) line of the GPIB management bus to True (Low level).

NL (New Line) is one ASCII character with a value of 0x0A (10 in decimal). It is also referred to as LF (LineFeed).

About compatibility with conventional models:

Since <white space> includes CR (0x0D) (13 in decimal), {CR}{NL} is also assumed as a terminator by MD1230B.

5.1.4 Buffer size

For MD1230B, a 138 k-byte buffer is allocated for receiving program messages at once.

5.2 Response Messages

Response messages are messages sent from MD1230B to the controller in reply to inquiries with program messages.

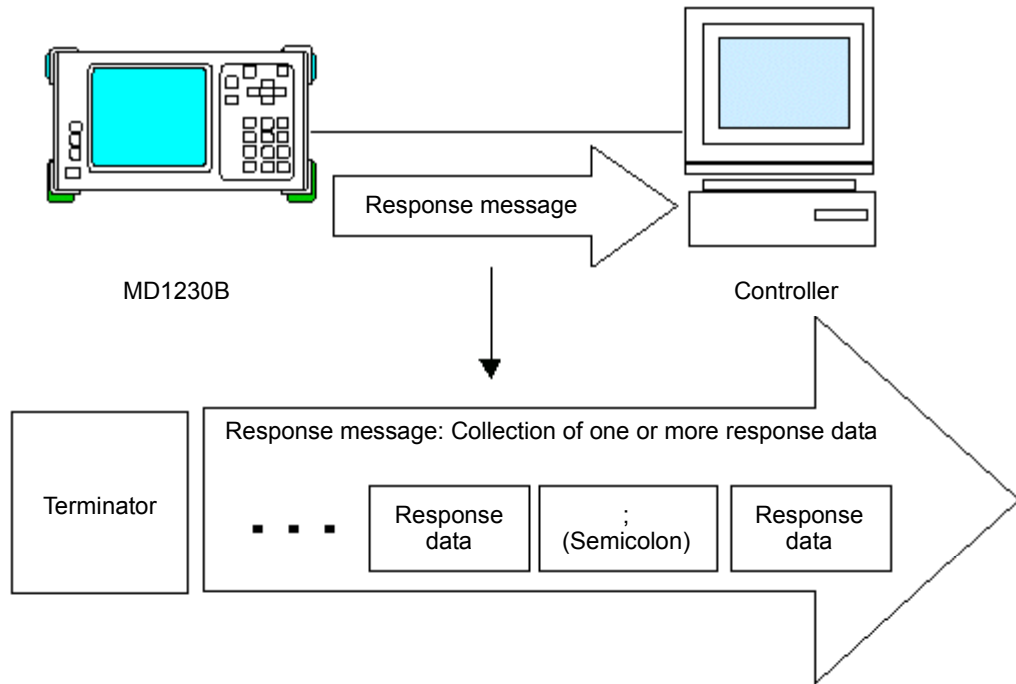



Figure 5.2-1 Response message structure

A response message consists of one or more response data separated with a semicolon (;).

 Refer to Section 5.2.1 “Response data” for response data.

When sending a response message, MD1230B appends a terminator to the end of it.


 Refer to Section 5.2.2 “Response message terminators” for terminators.

About compatibility with conventional models:

For MD1230B, no response headers (defined as <RESPONSE HEADER> by IEEE488.2 standard) are added to the beginning of a response data.

5.2.1 Response data

Response data is data returned by MD1230B in reply to a query message unit (inquiry) received from the controller. This operation manual uses the notations given below for indicating the response data format. These notations may be used in Section 6 “Details of Device message”. So, program data should be sent following the format given here.

<CHAR>	<p>Indicates two or more mnemonics for selection. The format conforms to <CHARACTER RESPONSE DATA> in IEEE488.2 standard.</p> <p> Refer to Section 6 “Details of Device message” for actual mnemonic values.</p>
<BOOLEAN>	<p>Indicates On/Off, Enable/Disable, or Yes/No.</p> <p>When “1” is returned, it indicates On/Enable/Yes.</p> <p>When “0” is returned, it indicates Off/Disable/No.</p>
<NR1>	<p>Indicates an integer value in decimal. The format conforms to <NR1 NUMERIC RESPONSE DATA> of IEEE488.2 standard. <NR1 NUMERIC RESPONSE DATA> is defined as follows:</p> <p>[{+|-}]<digit>...</p> <p><Digit> is an ASCII character with a value in the range of 0x30 to 0x39 (48 to 57 in decimal), that is, a numeric 0 to 9.</p> <p>Examples:</p> <p>123</p> <p>-500</p>
<NR2>	<p>Indicates a numeric value in fixed point format. The format conforms to <NR2 NUMERIC RESPONSE DATA> of IEEE488.2 standard. <NR2 NUMERIC RESPONSE DATA> is defined as follows:</p> <p>[{+|-}]<digit>...<digit>...</p> <p><Digit> is an ASCII character with a value in the range of 0x30 to 0x39 (48 to 57 in decimal), that is, a numeric 0 to 9.</p> <p>Examples:</p> <p>12.345</p> <p>-500.0</p>
<NR3>	<p>Indicates a numeric value in floating point format. The format conforms to <NR3 NUMERIC RESPONSE DATA> of IEEE488.2 standard. <NR3 NUMERIC RESPONSE DATA> is defined as follows:</p> <p>[{+|-}]<digit>...<digit>...E{+|-}<digit>...</p> <p><Digit> is an ASCII character with a value in the range of 0x30 to 0x39 (48 to 57 in decimal), that is, a numeric 0 to 9.</p> <p>Example:</p> <p>1.2E-3</p>

Section 5 Device Message Structure

<HEX>	<p>Indicates a numeric value in hexadecimal. The format conforms to <HEXADECIMAL NUMERIC RESPONSE DATA> of IEEE488.2 standard. <HEXADECIMAL NUMERIC RESPONSE DATA> is defined as follows:</p> <pre>#H{A|B|C|D|E|F|<digit>}...</pre> <p><Digit> is an ASCII character with a value in the range of 0x30 to 0x39 (48 to 57 in decimal), that is, a numeric 0 to 9.</p> <p>Example:</p> <pre>#H0011EEFF</pre>
<BINARY>	<p>Indicates a numeric value in binary. The format conforms to <BINARY NUMERIC RESPONSE DATA> of IEEE488.2 standard. <BINARY NUMERIC RESPONSE DATA> is defined as follows:</p> <pre>#B{0|1}...</pre> <p>Example:</p> <pre>#B0011010</pre>
"<...>"	<p>Indicates a character string data. The format conforms to <STRING RESPONSE DATA> of IEEE488.2 standard. <STRING RESPONSE DATA> is defined as follows:</p> <pre>"[{ "<inserted"> | <nondouble quote char> } ...]"</pre> <p>Description:</p> <p>Returns a character string enclosed in a pair of double quotation marks ("). For a double quotation mark ("), if any, included in the character string; two successive quotation marks are written.</p> <p>Examples:</p> <pre>"calculate" → Indicates character string of calculate. "It's a nice day" → Indicates character string of It's a nice day. ""Jan.""Feb."" → Indicates character string of "Jan.""Feb."</pre>
<COUNT>	<pre><count_current>, <count_accumulate></pre> <p>Returns the counted value by counter using above format, where</p> <pre><count_current></pre> <p>Counted value in the latest 1 second.</p> <pre><count_accumulate></pre> <p>Accumulated counted value from measurement start to current time.</p> <p>Each value format is <NR1> (64 bits). 9999999999999999 indicates counter overflow.</p> <p>“-” is returned for invalid values (which are displayed as “-” on the operation screen).</p>

<RATE>	<p><rate_current>,<rate_accumulate></p> <p>Returns the counter rate value using above format, where</p> <p><rate_current> Rate value in the latest 1 second.</p> <p><rate_accumulate> Rate value from measurement start to current time.</p> <p>Each value format is <NR3>, and returns a value from 0.0E-00 to 1.0E-00. When it is less than 1.0E-15, 0.0E-00 is returned. When it is more than 9.9E-01, 1.0E-00 is returned. -9.9E0 and 9.9E0 indicate underflow and overflow, respectively. “.” is returned for invalid values (which are displayed as “.” on the operation screen).</p>
<RATE_PCT>	<p><pct_current>,<pct_accumulate></p> <p>Returns the counter rate value (%) using above format, where</p> <p><pct_current> Rate value in the latest 1 second.</p> <p><pct_accumulate> Rate value from measurement start to current time.</p> <p>Each value format is <NR2>, the effective number of numeric characters is 15 digits, and the minimum resolution is 0.01. “.” is returned for invalid values (which are displayed as “.” on the operation screen).</p>
<RATE_BPS>	<p><bps_current>,<bps_accumulate></p> <p>Returns the counter bit rate value (bit/s) using above format, where</p> <p><bps_current> Bit rate value in the latest 1 second</p> <p><bps_accumulate> Bit rate value from measurement start to current time.</p> <p>Each value format is <NR1>, and the effective number of numeric characters is 15 digits. “.” is returned for invalid values (which are displayed as “.” on the operation screen).</p>
<RATE_FPS>	<p><fps_current>,<fps_accumulate></p> <p>Returns the counter frame rate value (fps: frames per second) using above format, where</p> <p><fps_current> Frame rate value in the latest 1 second</p> <p><fps_accumulate> Frame rate value from measurement start to current time.</p> <p>Each value format is <NR1>, and the effective number of numeric characters is 15 digits. “.” is returned for invalid values (which are displayed as “.” on the operation screen).</p>

Section 5 Device Message Structure

<RATE_PPS>	<p data-bbox="496 362 979 387"><pps_current>,<pps_accumulate></p> <p data-bbox="496 405 1442 465">Returns the counter packet rate value (pps: packet per second) using above format, where</p> <p data-bbox="496 483 703 508"><pps_current></p> <p data-bbox="496 515 983 539">Packet rate value in the latest 1 second</p> <p data-bbox="496 557 751 582"><pps_accumulate></p> <p data-bbox="496 589 1225 613">Packet rate value from measurement start to current time.</p> <p data-bbox="496 631 1442 692">Each value format is <NR1>, and the effective number of numeric characters is 15 digits.</p> <p data-bbox="496 710 1442 770">“-” is returned for invalid values (which are displayed as “-” on the operation screen).</p>
<SECOND>	<p data-bbox="496 781 1107 806"><seconds_current>,<seconds_accumulate></p> <p data-bbox="496 824 1442 884">Returns the alarm counter value of SDH/SONET using above format, where</p> <p data-bbox="496 902 767 927"><seconds_current></p> <p data-bbox="496 934 1278 958">Number of seconds when alarm occurred in the latest 1 second.</p> <p data-bbox="496 976 815 1001"><seconds_accumulate></p> <p data-bbox="496 1008 1442 1068">Number of seconds when alarm occurred from measurement start to current time.</p> <p data-bbox="496 1086 1442 1146">Each value format is <NR2>, the effective number of numeric characters is 15 digits, and minimum resolution is 0.000000001 s (1 ns).</p> <p data-bbox="496 1153 1082 1178">99999999999999.0 indicates counter overflow.</p> <p data-bbox="496 1196 1442 1256">“-” is returned for invalid values (which are displayed as “-” on the operation screen).</p>

5.2.2 Response message terminators

A response message terminator indicates the end of the response message. MD1230B appends the terminator to the end of a response message to indicate the end of the message.

The terminator (appended to a response message by MD1230B) varies depending on the remote control interfaces (GPIB, RS-232C, and Ethernet) as described below.

- (1) For RS-232C and Ethernet interfaces

{NL} is appended to the end of response data as a terminator.

- (2) For GPIB interface

Conforming to IEEE488.2 standard, {NL} {^END} is appended to the end of response data as a terminator. In IEEE488.2, a terminator is referred to as <RESPONSE MESSAGE TERMINATOR>.

NL (New Line):

One ASCII character with a value of 0x0A (10 in decimal). It is also referred to as LF (LineFeed).

^END:

Indicates generation of an EOI signal. Actually, an EOI signal can be generated by putting the EOI (End or Identify) line of the GPIB management bus to True (Low level).

5.2.3 Buffer size

The controller must prepare a buffer for receiving the response messages. Though the response message size varies depending on device messages, the maximum response message size for MD1230B is 138k bytes.

Section 6 Details of Device Messages

This section describes the list and contents of the device messages used for remote control.

6.1	List of Device Messages	6-3
	IEEE488.2 common commands and	
	interface setting commands	6-5
	System setting commands (SYSTem)	6-6
	Unit setting commands (UENTry)	6-7
	Module setting commands (MODule)	6-9
	Port setting commands (PORT)	6-10
	Filter pattern setting commands (FILTer)	6-21
	Port group setting commands (GENTry)	6-24
	ERRor insertion commands (ERRor)	6-25
	SDH/SONET commands ({SDH|SONet})	6-26
	Ethernet commands (ETHernet)	6-40
	GFP transmission commands (GFP)	6-41
	Counter measurement commands (COUNter)	6-43
	PING commands (PING)	6-58
	Stream transmission commands (TSTream)	6-59
	Capturing commands (CAPTure)	6-85
	Latency measurement commands (LATency)	6-88
	Variation measurement commands (ATIME)	6-89
	Protocol support commands (PROTocol)	6-90
	Automatic measurement commands (AUTomatic)	6-99
	RFC2889 test function commands (RFC2889)	6-105
	Auto Negotiation Analysis function commands	
	(ANEGotiation)	6-113
	Link Fault Signaling function commands (LFS)	6-115
	Physical interface function commands (PHYSical) ..	6-116
	LCAS function commands (LCAS)	6-117
	Impairment function Command (IMPairment)	6-121
6.2	Details of Device Messages	6-123
	IEEE488.2 common commands and interface setting	
	commands	6-125
	System setting commands (SYSTem)	6-127
	Unit setting commands (UENTry)	6-133
	Module setting commands (MODule)	6-143
	Port setting commands (PORT)	6-149
	Filter pattern setting commands (FILTer)	6-225
	Port group setting commands (GENTry)	6-239
	ERRor insertion commands (ERRor)	6-245
	SDH/SONET commands ({SDH | SONet})	6-249
	Ethernet commands (ETHernet)	6-382
	GFP transmission commands (GFP)	6-384
	Counter measurement commands (COUNter)	6-397

	PING commands (PING).....	6-481
	Stream transmission commands (TSTream)	6-484
	Capturing commands (CAPTure)	6-643
	Latency measurement commands (LATency).....	6-659
	Time Variation measurement commands (VARiation)	6-663
	Protocol support commands (PROTocol)	6-669
	Automatic measurement commands (AUTomatic)..	6-737
	RFC2889 test function commands (RFC2889)	6-783
	Auto Negotiation Analysis function commands (ANEGotiation).....	6-835
	Link Fault Signaling function commands (LFS).....	6-848
	Physical I/F commands (PHYSical)	6-858
	LCAS commands (LCAS).....	6-860
	Impairment function Command (IMPairment)	6-888
6.3	Error Messages	6-900

6.1 List of Device Messages

This section lists the device messages used on MD1230B.

The list provides the following contents.

Command, Query:

Describes the name and format of program message command message, query message).

Description:

Describes the contents of program message, simply.

MbE, GbE, 2.5G/10G:

Indicates the module to be used by the program message.

(√: Usable, –: Not usable)

[MbE], [GbE], [2.5G/10G] indicates the following modules.

MbE:

MU120101A/11A 10/100M Ethernet module

GbE:

MU120121A/31A 10/100/1000M Ethernet module

MU120102A/12A/22A/32A Gigabit Ethernet module

MU120118A/18B/18C/38A 10 Gigabit Ethernet module

2.5G/10G:

MU120103A/04A/03B/04B 2.5G (1.31/1.55) module,

MU120105A/06A 10G (1.31/1.55) module

MU120119A OC-3/12 STM-1/4 module (1310 nm)

MU120120A OC-3 STM-1 module (1310 nm)

MU150101A 2.5G/2.6G EoS Unit



Refer to the MP1590B Network Performance Tester Remote Control Operation Manual

Default:

Indicates the initial value (setting value at shipment) of the item set by the program message.

The program messages in the list are arranged to classify the messages in each function. In each function, the message is described in the order of operation (measurement start etc.) / setting / results or state-acquisition.

The following table shows the rules for describing messages.

Table 6.1-1 Rules for Describing Messages

Symbols	Usage
<>	Characters in angled bracket are parameter.
[]	Messages or parameters in square brackets can be omitted.
|	One of several choices can be chosen. For example, if A|B|C|D are choices, select one of them.
{ }	Group the choices. When A|B({C|D}) can be chosen, select one of them.

Notes:

- Latency measurement commands cannot be used with the MU150101A.
- BGP4 Protocol function commands cannot be used with the MU150101A.
- Automatic measurement commands cannot be used with the MU150101A.
- RFC2889 test function commands cannot be used with the MU150101A.
- Physical I/F function commands can be used only with the MU150101A.
- LCAS function commands can be used only with the MU150101A.
- SDH/SONET function commands can be used only with the MU150101A.

IEEE488.2 common commands and interface setting commands

Command	Query	Description	MbE	GbE	2.5G/10G	Default
-	*IDN?	The common command for IEEE488.2. This returns the maker's name (ANRITSU), the model, the serial number and the version number in the form of a string.	√	√	√	-
*RST	-	The common command for IEEE488.2. This initializes the whole system.	√	√	√	-
-	*TST?	The common command for IEEE488.2. This always returns 0 for MD1230B.	√	√	√	0
TRM <NR1>	TRM?	Sets the type of a terminator of a response data.	√	√	√	0

System setting commands (SYSTem)

Command	Query	Description	MbE	GbE	2.5G/10G	Default
-	:SYSTem:ERRor?	Queries an error message that exists in an error event queue.	√	√	√	0,"No error"
:SYSTem:{SDH | SONEt}:STANdard {SDH | SONEt}	:SYSTem:{SDH | SONEt}:STANdard?	Selects the terms for screen display from SDH standard and SONET standard.	√	√	√	SONET
:SYSTem:{SDH | SONEt}:STANdard:APS {G783 | G841}	:SYSTem:{SDH | SONEt}:STANdard:APS?	Selects the recommendation used for screen display of the APS measurement function (display of K1/K2 byte value setting).	√	√	√	G783
-	:SYSTem:OPTion? <type>	Queries whether a software option is installed or not.	√	√	√	-
:SYSTem:HISTory:RESet	-	Resets the history data of the history function.	√	√	√	-
:SYSTem:HISTory:ENABle <BOOLEAN>	:SYSTem:HISTory:ENABle?	Sets the history function to enable or disable.	√	√	√	0 (disable)
-	:SYSTem:HISTory:ALARm?	Queries whether an alarm has occurred.	√	√	√	-
-	:SYSTem:HISTory:ERRor?	Queries whether an error has occurred.	√	√	√	-
-	:SYSTem:HISTory:PFail?	Queries whether a power failure has occurred.	√	√	√	-
:SYSTem:MEMory:SAVE {"MEMORY<memory id>" | "<path>"},<datatype>	-	Saves the current settings to a file.	√	√	√	-
:SYSTem:MEMory:LOAD {"MEMORY<memory id>" | "<path>"},<datatype>	-	Loads the saved setting data.	√	√	√	-
-	:SYSTem:MEMory:FREE?	Queries the free space on the hard disk.	√	√	√	-

Unit setting commands (UENTry)

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:UENTry:ID <unit_number>	:UENTry:ID?	Specifies the number of a unit to be operated.	√	√	√	1
:UENTry:ADD <IP_ADDRESS>	-	Adds a new unit.	√	√	√	-
:UENTry:DELeTe <unit_number>	-	Deletes a unit.	√	√	√	-
-	:UENTry:NUNits?	Queries the number of connected units.	√	√	√	-
-	:UENTry:UNIT:NUSers?	Queries the number of users connecting to the unit.	√	√	√	-
-	:UENTry:UNIT:OPTion? <type>	Queries whether the specified unit option is installed or not.	√	√	√	-
-	:UENTry:UNIT:IVALid?	Queries whether the connection between the control software and the unit is valid.	√	√	√	-
:UENTry:UNIT:DCS <type>	:UENTry:UNIT:DCS?	Selects the type of DCS input.	√	√	√	LUNB_2MHz (Lock 2 MHz Unbalanced)
:UENTry:UNIT:DTIME " <DATETIME>"	:UENTry:UNIT:DTIME?	Sets/loads the current time of the specified unit.	√	√	√	-
-	:UENTry:UNIT:TYPE?	Queries a unit model.	√	√	√	-
-	:UENTry:UNIT:IADdresses?	Queries the IP address of a unit that are connected.	√	√	√	-
-	:UENTry:UNIT:TOUTput?	Queries the port of which a trigger is output when outputting a trigger of the unit.	√	√	√	-
-	:UENTry:UNIT:SYNc:MASTER?	Queries whether the unit is the master unit for time synchronization among units.	√	√	√	-
:UENTry:UNIT:OWNership:TAKE	-	Takes the ownership of the unit.	√	√	√	-
:UENTry:UNIT:OWNership:CLEar	-	Clears the ownership of the unit.	√	√	√	-
-	:UENTry:UNIT:OWNership:OWNer?	Queries the IP address of the control software that has the ownership of the unit.	√	√	√	-
-	:UENTry:UNIT:OWNership:CUSE?	Queries whether the ownership of the unit can be used.	√	√	√	-
-	:UENTry:UNIT:GPS:LEVel?	Queries the receive level of a satellite from which the GPS module receives data.	√	√	√	-
-	:UENTry:UNIT:GPS:NSATellites?	Queries the number of satellites from which the GPS module receives data.	√	√	√	-

Section 6 Details of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:UENTry:UNIT:GPS:ENABLE <BOOLEAN>	:UENTry:UNIT:GPS:ENABLE?	Sets whether the GPS unit is used for the time synchronization.	√	√	√	0 (disable)
-	:UENTry:UNIT:GPS:Status?	Queries the GPS module status.	√	√	√	-
-	:UENTry:UNIT:GPS:TIME?	Queries the time information that the GPS module holds.	√	√	√	"2000/01/01 00:00:00.000"
-	:UENTry:UNIT:VERSION:SOFTWARE?	Queries the unit software version.	√	√	√	-
-	:UENTry:UNIT:VERSION:FPGA?	Queries the FPGA version for the unit.	√	√	√	-

Module setting commands (MODule)

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:MODule:ID <module_number>	:MODule:ID?	Sets the number of a module (slot position) to be operated.	√	√	√	1
-	:MODule:TYPE?	Queries the module type (model).	√	√	√	-
-	:MODule:OPTion? <type>	Queries whether the specified module option is installed or not.	√	√	√	-
-	:MODule:FPGA:TYPE?	Obtains the FPGA condition of a module.	√	√	√	-
-	:MODule:VERSion:FPGA?	Queries the FPGA version of a module.	√	√	√	-
-	:MODule:VERSion:SOFTWARE?	Queries the software version of a module.	√	√	√	-

Port setting commands (PORT)

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:PORT:ID <port_number>	:PORT:ID?	Sets the number of a port (port position) to be operated.	√	√	√	-
:PORT:OWNership:CLEar	-	Clears the ownership of the port.	√	√	√	-
:PORT:OWNership:TAKe	-	Takes the ownership of the port.	√	√	√	-
-	:PORT:OPTical?	Queries the actual optical output status.	—	√	√	-
-	:PORT:LINK?	Queries the link status of the port.	√	√	√	-
:PORT:LINK:ENABLE {ON | OFF | FLAP}	:PORT:LINK:ENABLE?	Sets measurement port optical/electrical output On/Off and Flap operation	—	√	—	ON
:PORT:LINK:FLAP:INTERval:ON <NR1>	:PORT:LINK:FLAP:INTERval:ON?	Sets O/E output On time at Link Flap operation	—	√	—	10(s)
:PORT:LINK:FLAP:INTERval:OFF <NR1>	:PORT:LINK:FLAP:INTERval:OFF?	Sets O/E output Off time at Link Flap operation	—	√	—	1(s)
:PORT:LINK:FLAP:COUNT:ENABLE <BOOLEAN>	:PORT:LINK:FLAP:COUNT:ENABLE?	Sets whether or not to specify times for Link Flap operation	—	√	—	0 (OFF)
:PORT:LINK:FLAP:COUNT <NR1>	:PORT:LINK:FLAP:COUNT?	Sets Link Flap operation times	—	√	—	10
:PORT:LINK:FLAP:NOGO:ENABLE <BOOLEAN>	:PORT:LINK:FLAP:NOGO:ENABLE?	Sets whether or not to perform Link Flap No/Go Check	—	√	—	0 (OFF)
-	:PORT:LINK:FLAP:RESULT:NOGO?	Returns Link Flap No/Go Check result	—	√	—	OK
-	:PORT:LINK:FLAP:RESULT:COUNT?	Returns Link Flap operation count (On→Off times) This value is cleared at a restart.	—	√	—	0
:PORT:LINK:FLAP:START	-	Starts Link Flap operation	—	√	—	-
:PORT:LINK:FLAP:STOP	-	Stops Link Flap operation	—	√	—	-
-	:PORT:LINK:FLAP:STATUS?	Returns Link Flap operation status	—	√	—	0 (Stopped)
:PORT:PREAMble:ENABLE <BOOLEAN>	:PORT:PREAMble:ENABLE?	Sets whether or not to perform preamble analysis	—	√	—	0 (Stopped)

6.1 List of Device Mesages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:PORT:PREAmble:EPO N:ENABLE <BOOLEA N>	:PORT:PREAmble:EPO N:ENABLE?	Sets whether or not to perform E-PON (IEEE802.3ah) for preamble	—	√	—	0 (Stopped)
:PORT:TEST:PATtern: TYPE {SINGLE9 | C ROSS23 | CROSS31}	:PORT:TEST:PATtern: TYPE?	Selects type of test pattern used at Packet BER measurement	—	√	—	SINGLE9 (Single PRBS9)
-	:PORT:OWNership:CUS E?	Queries whether the port use right can be acquired.	√	√	√	-
-	:PORT:OWNership:OWN er?	Queries the IP address of the control soft- ware that has the ownership of the port.	√	√	√	#H00000000 (0.0.0.0: Vacant)
:PORT:CHANge:MODE {EOS | SDH | SONET }	:PORT:CHANge:MODE?	Sets the MU150101A module operation mode.	—	—	√	
:PORT:CLOCK:TYPE {I NTERNAL | RECEIVE | LOCK | LOCK_GPS }	:PORT:CLOCK:TYPE?	Selects the transmission clock type.	—	—	√	INTERNAL
:PORT:CLOCK:VARIABLE: VALue <NR1>	:PORT:CLOCK:VARIABLE: VALue?	Sets the transmission clock frequency vari- able.	—	√	√	-
:PORT:CLOCK:VARIABLE: VALue:CLOCK1 <NR 1>	:PORT:CLOCK:VARIABLE: VALue:CLOCK1?	Sets variation of send clock frequency for Clock1 side	—	√	—	0
:PORT:CLOCK:VARIABLE: VALue:CLOCK2 <NR 1>	:PORT:CLOCK:VARIABLE: VALue:CLOCK2?	Sets variation of send clock frequency for Clock2 side	—	√	—	0
:PORT:CLOCK:VARIABLE: SElect {1 | 2}	:PORT:CLOCK:VARIABLE: SElect?	Selects whether to use Clock1 or Clock2 as the send frequency clock	—	√	—	1
:PORT:TOUTput {OFF | CAPTURE}	:PORT:TOUTput?	Selects an item to be output to the external trigger.	√	√	√	OFF
:PORT:MODE {NORMA L | THROUGH | MO NITOR | SWAP | IMP AIRMENT }	:PORT:MODE?	Sets the transmission/reception mode (Normal/Through/Monitor/Address Swap/Impairment) for the port.	√	√	√	NORMAL

Section 6 Details of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:PORT:CONCate:TYPE { CONTIGUOUS | VIRTUAL}	:PORT:CONCate:TYPE?	Selects a concatenation type.	—	—	√	CONTIGUOUS
:PORT:CONCate:LCAS <BOOLEAN>	:PORT:CONCate:LCAS?	Sets whether to enable/disable the LCAS function.	—	—	√	1
:PORT:UNFRamed:LANE {ALL_OVER | INDIVIDUAL}	:PORT:UNFRamed:LANE?	Sets the test pattern transmission method when Unframe is set.	—	√	—	ALL_OVER
:PORT:UNFRamed:DField:TYPE <type>	:PORT:UNFRamed:DField:TYPE?	Sets the test pattern type when Unframe is set.	√	√	√	PRBS23 (ALL0 for Ethernet module)
:PORT:UNFRamed:DField:PATtern <HEX>	:PORT:UNFRamed:DField:PATtern?	Sets a 16-bit pattern when the test pattern type for Unframe is set to Word-16.	√	√	—	#H0000
:PORT:{SDH | SONet}:BRATe {B156M | B622M}	:PORT:{SDH | SONet}:BRATe?	Sets the line speed for the port.	—	—	√	B156M
:PORT:{SDH SONet}:MAPPING <type>	:PORT:{SDH SONet}:MAPPING?	Switches the mapping	—	—	√	PPP
:PORT {SDH | SONet}:LBACK:ENABLE <BOOLEAN>	:PORT:{SDH | SONet}:LBACK:ENABLE?	Sets whether to set the loop back mode.	—	—	√	0 (disable)
:PORT {SDH | SONet}:THROUGH:OOVwrite <BOOLEAN>	:PORT:{SDH | SONet}:THROUGH:OOVwrite?	Sets the OH overwrite to enable or disable when the through mode is On.	—	—	√	0 (disable)
:PORT:BULK:DField:TYPE <type>	:PORT:BULK:DField:TYPE?	Sets a pattern type of the data field.	—	—	√	ALL0 (All0)
:PORT:BULK:DField:PATtern <HEX>	:PORT:BULK:DField:PATtern?	Sets a 16-bit pattern when the data field type is Word-16.	—	—	√	#HAA55
:PORT:ETHernet:MAPPING {FRAMED | UNFRAMED}	:PORT:ETHernet:MAPPING?	Switches Framed/Unframe.	√	√	—	FRAMED
:PORT:ETHernet:MII:ANEGotiation:RESTart	-	Restarts Ethernet auto negotiation.	√	√	—	-
-	:PORT:ETHernet:LSPeed?	Queries the line speed of the port.	√	√	—	-
-	:PORT:ETHernet:DMODE?	Queries the duplex mode.	√	√	—	-

6.1 List of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:PORT:ETHernet:MADDress <MAC_ADDRESS>	:PORT:ETHernet:MADDress?	Sets the MAC address of the port.	√	√	√	#H00000000 0000 (00-00-00-00-00-00)
:PORT:ETHernet:MFSize <NR1>	:PORT:ETHernet:MFSize?	Sets the Maximum Frame Size for oversize frame judgment.	√	√	√	1518
:PORT:ETHernet:ARPELy:MODE {OFF | THIS_PORT | ALL}	:PORT:ETHernet:ARPELy:MODE?	Sets the reply mode to define whether to return a response for an ARP request (ARP reply) on the port.	√	√	√	OFF
:PORT:ETHernet:MII:VALue <NR1>,<HEX>	:PORT:ETHernet:MII:VALue? <NR1>	Sets a value of the MII register in 16-bit units.	√	√	—	-
:PORT:ETHernet:MII:AMDiX <BOOLEAN>	:PORT:ETHernet:MII:AMDiX?	Enables/disables Auto MDI/MDI-X function.	—	√	—	1 (enable)
:PORT:ETHernet:MII:ANEGotiation:LSpeed {S10M | S100M | S1000M}	:PORT:ETHernet:MII:ANEGotiation:LSpeed?	Specifies 10 Mbps, 100 Mbps, or 1000 Mbps when the auto negotiation is disabled.	√	√	—	S10M (10 Mbps)
:PORT:ETHernet:MII:ANEGotiation:DMODE {HALF | FULL}	:PORT:ETHernet:MII:ANEGotiation:DMODE?	Specifies the duplex mode when the auto negotiation is disabled.	√	—	—	HALF (Half duplex)
:PORT:ETHernet:MII:ANEGotiation:ENABLE <BOOLEAN>	:PORT:ETHernet:MII:ANEGotiation:ENABLE?	Sets the auto negotiation to enable or disable.	√	√	—	1 (enable)
:PORT:ETHernet:MII:ANEGotiation:LTIMER <on_off>,<timer_value>	:PORT:ETHernet:MII:ANEGotiation:LTIMER?	Sets the Link Timer for auto negotiation ON/OFF. At on, sets time.	—	√	—	<on_off>=0(OFF), <timer_value>=10
:PORT:ETHernet:MII:ANEGotiation:TIMEout:ENABLE <BOOLEAN>	:PORT:ETHernet:MII:ANEGotiation:TIMEout:ENABLE?	Enables/disables timeout processing of auto negotiation.	—	√	—	0 (disable)
:PORT:ETHernet:MII:ANEGotiation:TIMing {AUTO | MASTER | SLAVE }	:PORT:ETHernet:MII:ANEGotiation:TIMing?	Sets Master/Slave decision method at Auto Negotiation	—	√	—	-
:PORT:ETHernet:MII:ANEGotiation:ADVertise:1GFull <BOOLEAN>	:PORT:ETHernet:MII:ANEGotiation:ADVertise:1GFull?	Sets advertise to enable or disable in the 1000 Mbps/full duplex mode.	—	√	—	1 (enable)
:PORT:ETHernet:MII:ANEGotiation:ADVertise:1GHalf <BOOLEAN>	:PORT:ETHernet:MII:ANEGotiation:ADVertise:1GHalf?	Sets advertise to enable or disable in the 1000 Mbps/half duplex mode.	—	√	—	1 (enable)
:PORT:ETHernet:MII:ANEGotiation:ADVertise:100Full <BOOLEAN>	:PORT:ETHernet:MII:ANEGotiation:ADVertise:100Full?	Sets advertise to enable or disable in the 100 Mbps/full duplex mode.	√	—	—	1 (enable)

Section 6 Details of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:PORT:ETHernet:MII:ANEGotiation:ADVertise:100Half <BOOLEAN>	:PORT:ETHernet:MII:ANEGotiation:ADVertise:100Half?	Sets advertise to enable or disable in the 100 Mbps/half duplex mode.	√	—	—	1 (enable)
:PORT:ETHernet:MII:ANEGotiation:ADVertise:10Half <BOOLEAN>	:PORT:ETHernet:MII:ANEGotiation:ADVertise:10Half?	Sets advertise to enable or disable in the 10 Mbps/half duplex mode.	√	—	—	1 (enable)
:PORT:ETHernet:MII:ANEGotiation:ADVertise:10Full <BOOLEAN>	:PORT:ETHernet:MII:ANEGotiation:ADVertise:10Full?	Sets advertise to enable or disable in the 10 Mbps/full duplex mode.	√	—	—	1 (enable)
:PORT:ETHernet:MII:FCONTrol:DPControl:ADDRess <MAC_ADDRESSES>	:PORT:ETHernet:MII:FCONTrol:DPControl:ADDRess?	Sets the directed address for flow control.	√	√	—	This Port MAC Address
:PORT:ETHernet:MII:FCONTrol:DPControl:TYPE {THIS_PORT | STAT IC}	:PORT:ETHernet:MII:FCONTrol:DPControl:TYPE?	Selects the control type of the directed pause address.	√	√	—	THIS_PORT
:PORT:ETHernet:MII:FCONTrol:DPControl:ENABLE <BOOLEAN>	:PORT:ETHernet:MII:FCONTrol:DPControl:ENABLE?	Sets the flow control when receiving the directed pause frame to enable or disable.	√	√	—	0 (disable)
:PORT:ETHernet:MII:FCONTrol:MPControl:ENABLE <BOOLEAN>	:PORT:ETHernet:MII:FCONTrol:MPControl:ENABLE?	Sets the flow control when receiving the multicast pause frame to enable or disable.	√	√	—	0 (disable)
:PORT:ETHernet:MII:LBack:ENABLE <BOOLEAN>	:PORT:ETHernet:MII:LBack:ENABLE?	Sets the loop back mode to enable or disable.	√	√	—	0 (disable)
-	:PORT:ETHernet:MII:FCONTrol:MPControl:ADDRess?	Queries a value of the multicast pause address.	√	√	—	#H0180C200001 (01-80-C2-00-00-01)
:PORT:ETHernet:MDIO:TYPE {XENPAK | SERDES}	:PORT:ETHernet:MDIO:TYPE?	Selects the MDIO register type (XENPAK/SERDES) to be set/read.	—	√	—	XENPAK
:PORT:ETHernet:MDIO:VALue <position>,<value>	:PORT:ETHernet:MDIO:VALue? <position>	Sets the MDIO register value	—	√	—	-
:PORT:ETHernet:MDIO:ADDRess:PHY <HEX>	:PORT:ETHernet:MDIO:ADDRess:PHY?	Sets the PHY Address value.	—	√	—	#H00
-	:PORT:ETHernet:MDIO:{TTYpe | XENPak}?	Queries the type of installed XENPAK or SFP+.	—	√	—	-
:PORT:ETHernet:MDIO:PCS:TYPE {WAN | LAN}	:PORT:ETHernet:MDIO:PCS:TYPE?	Sets the XENPAK mode to LAN or WAN.	—	√	—	WAN

6 Details of Device Messages

6 Details of Device Messages

Section 6 Details of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:PORT:ETHernet:EOA M:CCM:PERiod <period>	:PORT:ETHernet:EOA M:CCM:PERiod?	Sets CCM send period	—	√	—	P1S
:PORT:ETHernet:EOA M:CCM:TLV <length of data>[,<HEX>]	:PORT:ETHernet:EOA M:CCM:TLV?	Sets TLV pattern in sent CCM	—	√	—	0
:PORT:ETHernet:EOA M:DUT:MEP:ID <NR1>	:PORT:ETHernet:EOA M:DUT:MEP:ID?	Sets pattern 1 mask	—	√	—	8191
:PORT:VLAN:ENABLE <BOOLEAN>	:PORT:VLAN:ENABLE?	Enables/disables the processing for VLAN tags, including counter processing, capture processing, and Ping/ARP processing.	—	√	—	0 (disable)
:PORT:VLAN:<number>[,<vlan tag>]...	:PORT:VLAN?	Sets the parameters related to the VLAN tag of the corresponding port.	—	√	—	1, #H81000001
:PORT:VLAN:OTFRames <BOOLEAN>	:PORT:VLAN:OTFRames?	Sets the Only VLAN-Tagged Frames function to ON or OFF.	—	√	—	0 (OFF)
:PORT:VLAN:AVID {THIS_PORT | ALL}	:PORT:VLAN:AVID?	Sets Acceptable VID (the range of VID to be received).	—	√	—	THIS_PORT
:PORT:PPP:NEGotiation :ABORT	-	Aborts the ongoing negotiation.	—	—	√	-
:PORT:PPP:NEGotiation :REStart	-	Restarts ppp negotiation.	—	—	√	-
:PORT:PPP:FLENgth {L1BYTE | L2BYTE}	:PORT:PPP:FLENgth?	Sets the minimum flag length (the minimum value of the flag length between frames).	—	—	√	L1BYTE (1-byte, Mapping: PPP)
:PORT:PPP:DESCramble :ENABLE <BOOLEAN>	:PORT:PPP:DESCramble: ENABLE?	Sets the ppp descramble (at the receiving end) to enable or disable.	—	—	√	1 (enable)
:PORT:PPP:SCRamble:ENABLE <BOOLEAN>	:PORT:PPP:SCRamble:ENABLE?	Sets the ppp scramble (at the sending end) to enable or disable.	—	—	√	1 (enable)
:PORT:PPP:NEGotiation :ENABLE <BOOLEAN>	:PORT:PPP:NEGotiation :ENABLE?	Sets the ppp negotiation to enable or disable.	—	—	√	1 (enable)
:PORT:PPP:NEGotiation :MRU:TX <NR1>	:PORT:PPP:NEGotiation :MRU:TX?	Sets MRU (the maximum frame size) at the sending end.	—	—	√	65535
:PORT:PPP:NEGotiation :RETRy:TIMEout <NR1>	:PORT:PPP:NEGotiation :RETRy:TIMEout?	Sets the retry timeout of configuration request/termination request.	—	—	√	3
:PORT:PPP:NEGotiation :RETRy:COUNt <NR1>	:PORT:PPP:NEGotiation :RETRy:COUNt?	Sets the retry count of configuration request/termination request.	—	—	√	3
-	:PORT:PPP:NEGotiation :MNUMber:TX?	Queries a value of the sent magic number (4 octets).	—	—	√	-
-	:PORT:PPP:NEGotiation :MNUMber:RX?	Queries a value of the received magic number (4 octets).	—	—	√	-

6.1 List of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
-	:PORT:PPP:NEGotiation:MRU:RX?	Queries MRU (the maximum frame size) on the transmitting direction after the negotiation.	—	—	√	-
-	:PORT:PPP:NEGotiation:STATe?	Queries the negotiation (LCP) status.	—	—	√	-
-	:PORT:PPP:IPCP:STATe?	Queries the IPCP status.	—	—	√	-
:PORT:PPP:IPCP:ENABLe <BOOLEAN>	:PORT:PPP:IPCP:ENABLe?	Enables/disables IPCP.	—	—	√	1 (enable)
:PORT:PPP:IPCP:ADDRess:SEND <BOOLEAN>	:PORT:PPP:IPCP:ADDRess:SEND?	Sets whether to transmit the IP address for This Port.	—	—	√	1 (enable)
:PORT:PPP:FCS {CRC16 | CRC32}	:PORT:PPP:FCS?	Sets CRC (16 /32 bits) in the FCS field.	—	—	√	CRC32 (32 bits)
:PORT:IP:GATeway <IP_ADDRESS>	:PORT:IP:GATeway?	Sets an IP address of a gateway that the port uses.	√	√	√	#H00000000 (0.0.0.0)
:PORT:IP:NETMask <IP_ADDRESS>	:PORT:IP:NETMask?	Sets a netmask value of the network that the port belongs to.	√	√	√	#H00000000 (0.0.0.0)
:PORT:IP:IADdress <IP_ADDRESS>	:PORT:IP:IADdress?	Sets an IP address of the port.	√	√	√	#H00000000 (0.0.0.0)
:PORT:IPV6:RS:SEND	-	Sends the RS (Router Solicitation) message.	√	√	√	-
:PORT:IPV6:RS:ABORt	-	Aborts RS sending/RA reception processing.	√	√	√	-
:PORT:IPV6:ADDRess <IPV6_ADDRESS>	:PORT:IPV6:ADDRess?	Sets the IPv6 address value of this port.	√	√	√	#H00000000 0000000000 0000000000 0000 (::)
:PORT:IPV6:ROUTer <IPV6_ADDRESS>	:PORT:IPV6:ROUTer?	Sets an IPv6 address for the default router that this port uses.	√	√	√	#H00000000 0000000000 0000000000 0000 (::)
-	:PORT:IPV6:RS:PREFix:LIST?	Acquires a prefix list.	√	√	√	-
-	:PORT:IPV6:RS:ROUTer:LIST?	Acquires a default router list.	√	√	√	-
:PORT:ICMP:EREPLY:MODE <BOOLEAN>	:PORT:ICMP:EREPLY:MODE?	Sets the reply mode to define whether to return a response for a ping command.	√	√	√	0 (disable)
:PORT:ICMPv6:ECHO:REPLY:MODE {OFF | THIS_PORT}	:PORT:ICMPv6:ECHO:REPLY:MODE?	Sets whether to reply to an Echo Request message received at this port.	√	√	√	OFF

Section 6 Details of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:PORT:ICMPv6:NS:REPLY:MODE {OFF | THIS_PORT | ALL}	:PORT:ICMPv6:NS:REPLY:MODE?	Sets whether to reply to an NS (Neighbor Solicitation) message received at this port.	√	√	√	OFF
:PORT:GFP:FCS <BOOLEAN>	:PORT:GFP:FCS?	Sets in advance whether an FCS exists in the receiving GFP frame when not testing GFP Payload Header	—	—	√	1 (enable)
:PORT:GFP:CHECK:HEADER <BOOLEAN>	:PORT:GFP:CHECK:HEADER?	Sets whether to check the GFP Payload Header (at the receiving side)	—	—	√	1 (enable)
:PORT:GFP:SCRAMBLE:ENABLE <BOOLEAN>	:PORT:GFP:SCRAMBLE:ENABLE?	Sets whether to enable/disable the GFP scrambling (at the receiving side)	—	—	√	1 (enable)
:PORT:GFP:HEADER:SCRAMBLE:ENABLE <BOOLEAN>	:PORT:GFP:HEADER:SCRAMBLE:ENABLE?	Sets whether to enable/disable the GFP Core Header scrambling (at the transmitting side).	—	—	√	1 (enable)
:PORT:GFP:PAYLOAD:SCRAMBLE:ENABLE <BOOLEAN>	:PORT:GFP:PAYLOAD:SCRAMBLE:ENABLE?	Sets whether to enable/disable the GFP Payload area scrambling (at the transmission side).	—	—	√	1 (enable)
:PORT:GFP:EXTLength <NR1>	:PORT:GFP:EXTLength?	Sets the GFP extension header length.	—	—	√	2
:PORT:GFP:DESCRAMBLE:ENABLE <BOOLEAN>	:PORT:GFP:DESCRAMBLE:ENABLE?	Sets whether to enable/disable the GFP scrambling (at the transmitting side)	—	—	√	1 (enable)
:PORT:GFP:HEADER:DESCRAMBLE:ENABLE <BOOLEAN>	:PORT:GFP:HEADER:DESCRAMBLE:ENABLE?	Sets whether to enable/disable the GFP Core Header scrambling (at the receiving side).	—	—	√	1 (enable)
:PORT:GFP:PAYLOAD:DESCRAMBLE:ENABLE <BOOLEAN>	:PORT:GFP:PAYLOAD:DESCRAMBLE:ENABLE?	Sets whether to enable/disable the GFP Payload area scrambling (at the receiving side).	—	—	√	1 (enable)
:PORT:GFP:CPTIME	:PORT:GFP:CPTIME?	Sets the degree of redundancy in a GFP frame synchronization process.	—	—	√	1
:PORT:GFP:CRTIME	:PORT:GFP:CRTIME?	Sets the condition parameter to return from Client Signal Fail	—	—	√	3
:PORT:LAPS:MFSIZE	:PORT:LAPS:MFSIZE?	Sets a value used for judging Oversize of the Ethernet accommodated in LAPS.	—	—	√	1500
:PORT:LAPS:FLENGTH {L1BYTE | L2BYTE}	:PORT:LAPS:FLENGTH?	Sets the minimum flag length (between frames) in LAPS.	—	—	√	L1BYTE
:PORT:LAPS:MRU:TX	:PORT:LAPS:MRU:TX?	Sets MRU (maximum frame size) at the sending side.	—	—	√	65535
:PORT:LAPS:RADAPTATION:ENABLE <BOOLEAN>	:PORT:LAPS:RADAPTATION:ENABLE?	Sets whether to enable/disable the Rate Adaptation function for LAPS at the sending side.	—	—	√	1 (enable)

6.1 List of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:PORT:LAPS:RADaptation:FByTe One of 4096, 8192, 16384, 32768, or 65536	:PORT:LAPS:RADaptation:FByTe?	Sets an interval for which an Adaptation byte is added.	—	—	√	4096
:PORT:LAPS:RADaptation:BYTE 16 to 1024 step 16	:PORT:LAPS:RADaptation:BYTE?	Sets the bytes to be added in transmission when Rate Adaptation function is enabled.	—	—	√	16
:PORT:LEX:NEGOtiation:REStart	-	Restarts LEX negotiation.	—	—	√	-
:PORT:LEX:NEGOtiation:ABORt	-	Aborts a LEX negotiation process currently being carried out	—	—	√	-
-	:PORT:LEX:NEGOtiation:STATe?	Queries the state of a link established by LCP or PPP-LEX.	—	—	√	OFF
:PORT:LEX:FLAGs <HEX>	:PORT:LEX:FLAGs?	Sets a Flag field of the LEX header.	—	—	√	#H20
:PORT:LEX:FLENgth {L1BYTE | L2BYTE}	:PORT:LEX:FLENgth?	Sets a minimum flag length (the shortest flag length between frames) for the LEX frame.	—	—	√	L1BYTE
:PORT:LEX:DESCramble:ENABle <BOOLEAN>	:PORT:LEX:DESCramble:ENABle?	Sets whether to enable/disable scrambling of LEX transmission.	—	—	√	1 (enable)
:PORT:LEX:SCramble:ENABle <BOOLEAN>	:PORT:LEX:SCramble:ENABle?	Sets whether to enable/disable scrambling of LEX reception	—	—	√	1 (enable)
:PORT:LEX:NEGOtiation:StARtup <BOOLEAN>	:PORT:LEX:NEGOtiation:StARtup?	Sets whether to report a MAC address of the local port in PPP-LEX.	—	—	√	1
:PORT:LEX:NEGOtiation:ENABle <BOOLEAN>	:PORT:LEX:NEGOtiation:ENABle?	Sets whether to enable/disable the LCP/PPP-LEX negotiation function.	—	—	√	1
:PORT:LEX:NEGOtiation:MRU:TX	:PORT:LEX:NEGOtiation:MRU:TX?	Sets MRU (the maximum frame size) at the MD1230B side.	—	—	√	1500
:PORT:LEX:NEGOtiation:RETRy:COUNT	:PORT:LEX:NEGOtiation:RETRy:COUNT?	Sets the number of times to retry a configuration request/termination request at LEX negotiation.	—	—	√	3
:PORT:LEX:NEGOtiation:RETRy:TIMEout	:PORT:LEX:NEGOtiation:RETRy:TIMEout?	Sets an interval to retry a configuration request/termination request at LEX negotiation.	—	—	√	3
-	:PORT:LEX:NEGOtiation:MNUMber:TX?	Queries a magic number value (4 octets) transmitted at the LCP negotiation.	—	—	√	1
-	:PORT:LEX:NEGOtiation:MNUMber:RX?	Queries a magic number value (4 octets) received at the LCP negotiation.	—	—	√	1
-	:PORT:LEX:NEGOtiation:MRU:RX?	Queries MRU (the maximum frame size) of the DUT side received at the LCP negotiation.	—	—	√	1500

Section 6 Details of Device Messages

Command	Query	Description	MBE	GbE	2.5G/10G	Default
:PORT:PROTocol:IGMP:ENABle <BOOLEAN>	:PORT:PROTocol:IGMP:ENABle?	Sets whether to enable/disable the IGMP protocol emulation function.	√	√	√	0 (disable)
:PORT:PROTocol:IGAP:ENABle <BOOLEAN>	:PORT:PROTocol:IGAP:ENABle?	Sets whether to enable/disable the IGAP protocol emulation function.	√	√	—	0 (disable)
:PORT:PROTocol:MLD:ENABle <BOOLEAN>	:PORT:PROTocol:MLD:ENABle?	Sets whether to enable/disable the MLD protocol emulation function.	√	√	—	0 (disable)
:PORT:PROTocol:MLDA:ENABle <BOOLEAN>	:PORT:PROTocol:MLDA:ENABle?	Sets whether to enable/disable the MLDA protocol emulation function.	√	√	—	0 (disable)
:PORT:PROTocol:PIM:ENABle <BOOLEAN>	:PORT:PROTocol:PIM:ENABle?	Sets whether to enable/disable the PIM-SMv2 protocol emulation function.	√	√	—	0 (disable)
:PORT:PROTocol:OSPF:ENABle <BOOLEAN>	:PORT:PROTocol:OSPF:ENABle?	Sets whether to enable/disable the OSPF protocol emulation function.	√	√	—	0 (disable)
:PORT:PROTocol:OSPF3:ENABle <BOOLEAN>	:PORT:PROTocol:OSPF3:ENABle?	Sets whether to enable/disable the OSPFv3 protocol emulation function.	√	√	—	0 (disable)
:PORT:PROTocol:BGP4:ENABle <BOOLEAN>	:PORT:PROTocol:BGP4:ENABle?	Sets whether to enable/disable the BGP4 protocol emulation function.	√	√	√	0 (disable)
:PORT:PROTocol:BGPPlus:ENABle <BOOLEAN>	:PORT:PROTocol:BGPPlus:ENABle?	Sets whether to enable/disable the BGP4+ protocol emulation function.	√	√	—	0 (disable)
:PORT:PROTocol:LDP:ENABle <BOOLEAN>	:PORT:PROTocol:LDP:ENABle?	Sets whether to enable/disable the MPLS (LDP/CR-LDP) protocol emulation function.	√	√	—	0 (disable)
:PORT:PROTocol:RSVP:ENABle <BOOLEAN>	:PORT:PROTocol:RSVP:ENABle?	Sets whether to enable/disable the MPLS (RSVP) protocol emulation function.	√	√	—	0 (disable)
:PORT:POE:ENABle <BOOLEAN>	:PORT:POE:ENABle?	Sets whether or not to perform PoE measurement	—	√	—	-
:PORT:POE:CLASs <NR1>	:PORT:POE:CLASs?	Selects Class to emulate at PoE measurement	—	√	—	-
-	:PORT:POE:LEVel?	Returns PoE measurement result (power supply status)	—	√	—	-

Filter pattern setting commands (FILTer)

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:FILTer:COMBination { AND | OR}	:FILTer:COMBination?	Sets AND/OR between filter parameters.	√	√	√	AND
:FILTer:ERRor:TYPE <e rrortype>	:FILTer:ERRor:TYPE?	Sets the type of error that is a target of fil- ter trigger.	√	√	√	GOOD (Good Frame)
:FILTer:ETHernet:DA:M ASK <MAC_ADDRESS >	:FILTer:ETHernet:DA:M ASK?	Sets a mask pattern of the destination MAC address.	√	√	√	#H00000000 0000 (00-00-00-00 -00-00)
:FILTer:ETHernet:DA:V ALue <MAC_ADDRESS >	:FILTer:ETHernet:DA:V ALue?	Sets a pattern of the destination MAC ad- dress.	√	√	√	#H00000000 0000 (00-00-00-00 -00-00)
:FILTer:ETHernet:SA:M ASK <MAC_ADDRESS >	:FILTer:ETHernet:SA:M ASK?	Sets a mask pattern of the source MAC ad- dress.	√	√	√	#H00000000 0000 (00-00-00-00 -00-00)
:FILTer:ETHernet:SA:VA Lue <MAC_ADDRESS>	:FILTer:ETHernet:SA:VA Lue?	Sets a pattern of the source MAC address.	√	√	√	#H00000000 0000 (00-00-00-00 -00-00)
:FILTer:IP:DA:VALue < HEX>	:FILTer:IP:DA:VALue?	Sets a pattern of the destination IP address.	—	—	√	#H00000000 (0.0.0.0), #H00000000 0000000000 0000000000 0000 (::)
:FILTer:IP:DA:MASK < HEX>	:FILTer:IP:DA:MASK?	Sets a mask pattern of the destination IP address.	—	—	√	#H00000000 (0.0.0.0), #H00000000 0000000000 0000000000 0000 (::)
:FILTer:IP:SA:VALue < HEX>	:FILTer:IP:SA:VALue?	Sets a pattern of the source IP address.	—	—	√	#H00000000 (0.0.0.0), #H00000000 0000000000 0000000000 0000 (::)

Section 6 Details of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:FILTer:IP:SA:MASK <HEX>	:FILTer:IP:SA:MASK?	Sets a mask pattern of the source IP address.	—	—	√	#H00000000 (0.0.0.0), #H00000000 0000000000 0000000000 0000 (:)
:FILTer:PATtern1:VALue <HEX>	:FILTer:PATtern1:VALue?	Sets a value of the user-defined pattern 1.	√	√	√	#H00000000 0000000000 0000000000 0000
:FILTer:PATtern1:OFFSet:BASE <position>	:FILTer:PATtern1:OFFSet:BASE?	Sets the reference position for offset of pattern 1.	√	√	√	FRAME
:FILTer:PATtern1:OFFSet <NR1>	:FILTer:PATtern1:OFFSet?	Sets an offset position of the user-defined pattern 1.	√	√	√	0
:FILTer:PATtern1:MASK <HEX>	:FILTer:PATtern1:MASK?	Sets a mask of the user-defined pattern 1.	√	√	√	#H00000000 0000000000 0000000000 0000
:FILTer:PATtern2:MASK <HEX>	:FILTer:PATtern2:MASK?	Sets a mask of the user-defined pattern 2.	√	√	√	#H00000000 0000000000 0000000000 0000
:FILTer:PATtern2:OFFSet:BASE <position>	:FILTer:PATtern2:OFFSet:BASE?	Sets the reference position for offset of pattern 2.	√	√	√	FRAME
:FILTer:PATtern2:OFFSet <NR1>	:FILTer:PATtern2:OFFSet?	Sets an offset position of the user-defined pattern 2.	√	√	√	0
:FILTer:PATtern2:VALue <HEX>	:FILTer:PATtern2:VALue?	Sets a value of the user-defined pattern 2.	√	√	√	#H00000000 0000000000 0000000000 0000
:FILTer:PATtern3:MASK <HEX>	:FILTer:PATtern3:MASK?	Sets a mask of the user-defined pattern 3.	—	√	—	#H00000000 0000000000 0000000000 0000
:FILTer:PATtern3:OFFSet <NR1>	:FILTer:PATtern3:OFFSet?	Sets an offset position of the user-defined pattern 3.	—	√	—	0
:FILTer:PATtern3:OFFSet:BASE <position>	:FILTer:PATtern3:OFFSet:BASE?	Sets the reference position for offset of pattern 3.	—	√	—	FRAME
:FILTer:PATtern3:VALue <HEX>	:FILTer:PATtern3:VALue?	Sets a value of the user-defined pattern 3.	—	√	—	#H00000000 0000000000 0000000000 0000

6.1 List of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:FILTer:PATtern4:MAS K <HEX>	:FILTer:PATtern4:MAS K?	Sets a mask of the user-defined pattern 4.	—	√	—	#H00000000 0000000000 0000000000 0000
:FILTer:PATtern4:OFFS et <NR1>	:FILTer:PATtern4:OFFS et?	Sets an offset position of the user-defined pattern 4.	—	√	—	0
:FILTer:PATtern4:OFFS et:BASE <position>	:FILTer:PATtern4:OFFS et:BASE?	Sets the reference position for offset of pat- tern 4.	—	√	—	FRAME
:FILTer:PATtern4:VALu e <HEX>	:FILTer:PATtern4:VALu e?	Sets a value of the user-defined pattern 4.	—	√	—	#H00000000 0000000000 0000000000 0000

Port group setting commands (GENTry)

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:GENTry:ADD	-	Adds a new port group.	√	√	√	-
:GENTry:DELeTe "GROUP <group id>"	-	Deletes a port group.	√	√	√	-
:GENTry:ID "GROUP <group id>"	:GENTry:ID?	Sets a port group to be operated.	√	√	√	""
-	:GENTry:NGRoups?	Queries the number of port groups that are registered.	√	√	√	0
:GENTry:GROup:PADD "<port>"	-	Adds a port to a port group.	√	√	√	-
:GENTry:GROup:PDELeTe "<port>"	-	Deletes a port in a port group.	√	√	√	-
:GENTry:GROup:CAPTure:START	-	Starts the capture on all the ports registered in the group.	√	√	√	-
:GENTry:GROup:CAPTure:STOP	-	Stops the capture on all the ports registered in the group.	√	√	√	-
:GENTry:GROup:COUNter:STOP	-	Stops a counter measurement on all the ports registered in the group.	√	√	√	-
:GENTry:GROup:LATency:START	-	Starts a latency measurement on all the ports registered in the group.	√	√	√	-
:GENTry:GROup:LATency:STOP	-	Stops a latency measurement on all the ports registered in the group.	√	√	√	-
:GENTry:GROup:TSTReam:START	-	Starts the stream transmission on all the ports registered in the group.	√	√	√	-
:GENTry:GROup:TSTReam:STOP	-	Stops the stream transmission on all the ports registered in the group.	√	√	√	-
:GENTry:GROup:COUNter:START	-	Starts a counter measurement on all the ports registered in the group.	√	√	√	-
:GENTry:TSTReam:START:SYNC	:GENTry:GROup:TSTReam:START:SYNC?	Specifies whether to synchronize the Tx start timing of multiple ports at hardware level.	√	√	√	
-	:GENTry:MEMBer?	Returns list of ports registered in group	√	√	√	-
-	:GENTry:GROup:COUNter:DATA? {CURRENT | ACCUMULATED},<n number of item>,<item>[,<item>]...	Fetches counter measurement data in group units as batch	√	√	√	-

ERRor insertion commands (ERRor)

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:ERRor:STOP	-	Stops error insertion.	√	√	√	-
:ERRor:START	-	Inserts error.	√	√	√	-
-	:ERRor:STATe?	Queries the error insertion status.	√	√	√	-
:ERRor:TYPE <type>	:ERRor:TYPE?	Sets type of error insertion.	√	√	√	BIT_ALL (Unframed) CODE (Framed, MU120122A (SFP)/32A) CROSS (Framed, MU120131A) XGMII (Framed, MU120138A)
:ERRor:TIMing {SINGLE | RATE}	:ERRor:TIMing?	Sets the error insertion timing.	√	√	√	SINGLE
:ERRor:TIMing:RATE <NR3>	:ERRor:TIMing:RATE?	Sets the rate of error insertion when the error insertion method is set to Rate.	√	√	√	1.0E-3

SDH/SONET commands ({SDH|SONet})

Command	Query	Description	MbE	GbE	2.5G/10G	Default
-	::{SDH | SONet}:PMETer:DATA?	Queries a value of the power meter.	—	—	√	-
::{SDH | SONet}:OVERhead:MONitor:POINter:GRAPh:RESolution {R1 SEC | R1MIN | R15MIN | R60MIN}	::{SDH | SONet}:OVERhead:MONitor:POINter:GRAPh:RESolution?	Specifies the resolution to display the graph of the pointer monitor.	—	—	√	-
-	::{SDH | SONet}:OVERhead:MONitor:C2?	Queries a value of C2 byte (bit 1 to 8).	—	—	√	-
	::{SDH | SONet}:OVERhead:MONitor:{VC3 | STS1}:C2?	Queries the C2 byte (bits 1 to 8) value of VC3 (STS1).	—	—	√	
	::{SDH | SONet}:OVERhead:MONitor:{VC1 | VT}:V5?	Queries the V5 byte (bits 5 to 7) value of VC1 (VT).	—	—	√	
	::{SDH | SONet}:OVERhead:MONitor:{VC1 | VT}:ESLabel?	Queries the K4/Z7 multiframe (bits 12 to 19) extended signal label value of VC1 (VT).	—	—	√	
-	::{SDH | SONet}:OVERhead:MONitor:K1?	Queries a monitor value of K1 byte.	—	—	√	-
-	::{SDH | SONet}:OVERhead:MONitor:POH?	Queries a monitor value of POH.	—	—	√	-
	::{SDH | SONet}:OVERhead:MONitor:{VC3 | STS1}:POH?	Queries the POH monitor value of VC3 (STS1).	—	—	√	-
	::{SDH | SONet}:OVERhead:MONitor:{VC1 | VT}:POH?	Queries the POH monitor value of VC2/1 (VT).	—	—	√	-
-	::{SDH | SONet}:OVERhead:MONitor:{SOH | TOH}? <channel>	Queries a monitor value of SOH/TOH.	—	—	√	-
-	::{SDH | SONet}:OVERhead:MONitor:K2?	Queries a monitor value of K2 byte.	—	—	√	-
-	::{SDH | SONet}:OVERhead:MONitor:S1?	Queries a value of S1 (bit 5 to 8).	—	—	√	-
-	::{SDH | SONet}:OVERhead:MONitor:POINter:SS?	Queries a pointer value (SS field, 2 bits).	—	—	√	-

6.1 List of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
-	::{SDH | SONet}:OVER head:MONitor:POINter:ID?	Queries AU/STS pointer value (ID).	—	—	√	-
-	::{SDH | SONet}:OVER head:MONitor:POINter:NDF?	Queries a pointer value (NDF field, 4 bits).	—	—	√	-
-	::{SDH | SONet}:OVER head:MONitor:POINter:GRAPH:DATA? {VALUE | INC | DEC}	Queries the graph data of the pointer monitor.	—	—	√	-
::{SDH | SONet}:OVER head:MONitor:POH:CH <ch1>[,<ch2>,<ch3>,<ch4>]	::{SDH | SONet}:OVER head:MONitor:POH:CH?	Sets the target member channel for the POH monitor query on the OH Monitor screen.	—	—	√	1
::{SDH | SONet}:OVER head:MONitor:POINter:CH <ch1>[,<ch2>]	::{SDH | SONet}:OVER head:MONitor:POINter:CH?	Specifies the monitor target channel of the AU/STS pointer.	—	—	√	1
::{SDH | SONet}:OVER head:MONitor:POINter:{ TU|VT}:CH <ch1>[,<ch2>,<ch3>,<ch4>]	::{SDH | SONet}:OVER head:MONitor:POINter:{ TU | VT}:CH?	Specifies the monitor target channel of the TU/VT pointer.	—	—	√	1
::{SDH | SONet}:OVER head:MONitor:POH:MEMBer <NR1>	::{SDH | SONet}:OVER head:MONitor:POH:MEMBer?	Sets a target member to query POH monitor and J1 path trace in the OH Monitor screen.	—	—	√	1
::{SDH | SONet}:OVER head:MONitor:POINter:MEMBer <NR1>	::{SDH | SONet}:OVER head:MONitor:POINter:MEMBer?	Sets a target member to query pointer monitor and graph data in the K1 and K2 Pointer Monitor screen.	—	—	√	1
::{SDH | SONet}:OVER head:PRESet:DEFAult:SONet	-	Resets a preset value to its default of the SONET standard.	—	—	√	-
::{SDH | SONet}:OVER head:PRESet:DEFAult:SDH	-	Resets a preset value to its default of the SDH standard.	—	—	√	-
::{SDH | SONet}:OVER head:PRESet:POINter:P PJC	-	Inserts +PJC one time.	—	—	√	-
::{SDH | SONet}:OVER head:PRESet:POINter:N PJC	-	Inserts -PJC one time.	—	—	√	-
::{SDH | SONet}:OVER head:PRESet:C2 <BINARY>	::{SDH | SONet}:OVER head:PRESet:C2?	Sets a value of C2 (bit 1 to 8).	—	—	√	#B00010110 (0x16, Mapping: PPP)

Section 6 Details of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
::{SDH | SONet}:OVER head:PRESet:{VC3 | ST S1}:C2 <BINARY>	::{SDH | SONet}:OVER head:PRESet:{VC3|STS 1}:C2?	Sets the C2 (bits 1 to 8) value of VC3/STS1.	—	—	√	-
::{SDH | SONet}:OVER head:PRESet:{VC1 | V T}:V5 <BINARY>	::{SDH | SONet}:OVER head:PRESet:{VC1 | V T}:V5?	Sets the V5 (bits 5 to 7) value of VC1/VT.	—	—	√	-
::{SDH | SONet}:OVER head:PRESet:S1 <BINA RY>	::{SDH | SONet}:OVER head:PRESet:S1?	Sets a value of S1 (bit 5 to 8)	—	—	√	#B0000
::{SDH | SONet}:OVER head:PRESet:POH <HE X>	::{SDH | SONet}:OVER head:PRESet:POH?	Sets the preset data of POH.	—	—	√	#H0000FE0 0000000000 0 (C2: 0xFE)
::{SDH | SONet}:OVER head:PRESet:{VC3 | ST S1}:POH <HEX>	::{SDH | SONet}:OVER head:PRESet:{VC3 | ST S1}:POH?	Sets the POH preset data for VC3/STS1.	—	—	√	-
::{SDH | SONet}:OVER head:PRESet:{VC1 | V T}:POH <HEX>	::{SDH | SONet}:OVER head:PRESet:{VC1|VT}: POH?	Sets the POH preset data for VC1/VT.	—	—	√	-
::{SDH | SONet}:OVER head:PRESet:{SOH | T OH} <channel>,<HEX>	::{SDH | SONet}:OVER head:PRESet:{SOH | T OH}? <channel>	Sets the preset data of SOH/TOH.	—	—	√	-
::{SDH | SONet}:OVER head:PRESet:H4:DATA <BINARY>,<BINARY>, ...	::{SDH | SONet}:OVER head:PRESet:H4:DATA?	Sets the Virtual Concatenation H4 Byte preset data.	—	—	√	#B0000
::{SDH | SONet}:OVER head:PRESet:{K4|Z7}:B 1:ESLabel <BINARY>	::{SDH | SONet}:OVER head:PRESet:{K4|Z7}:B 1:ESLabel?	Sets the Virtual Concatenation K4 b1 Ex- tended Signal Label values.	—	—	√	#B00000000
::{SDH | SONet}:OVER head:PRESet:{K4|Z7}:B 1:REServed <BINARY>	::{SDH | SONet}:OVER head:PRESet:{K4 | Z7}: B1:REServed?	Sets the Virtual Concatenation K4 b1 Re- served Bits values.	—	—	√	#B00000000 0000
::{SDH | SONet}:OVER head:PRESet:{K4 | Z7}: B2:REServed <BINARY >	::{SDH | SONet}:OVER head:PRESet:{K4 | Z7}: B2:REServed?	Sets the Virtual Concatenation K4 b2 Re- served Bits values.	—	—	√	#B00000000 0000000000 000
::{SDH | SONet}:OVER head:PRESet:{K4 | Z7}: B2:SPARe <BINARY>	::{SDH | SONet}:OVER head:PRESet:{K4 | Z7}: B2:SPARe?	Sets the Virtual Concatenation K4 b2 Spare values.	—	—	√	#B0000
::{SDH | SONet}:OVER head:PRESet:K1 <HEX >	::{SDH | SONet}:OVER head:PRESet:K1?	Sets a value of K1 byte.	—	—	√	#H00 (0x00)
::{SDH | SONet}:OVER head:PRESet:K2 <HEX >	::{SDH | SONet}:OVER head:PRESet:K2?	Sets a value of K2 byte.	—	—	√	#H00 (0x00)

6.1 List of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
::{SDH | SONet}:OVER head:PRESet:POINter:ID <NR1>	::{SDH | SONet}:OVER head:PRESet:POINter:ID?	Sets an AU/STS pointer value (ID field, 10 bits).	—	—	√	-
::{SDH | SONet}:OVER head:PRESet:POINter:SS <BINARY>	::{SDH | SONet}:OVER head:PRESet:POINter:SS?	Sets a pointer value (SS field, 2 bits).	—	—	√	SDH: #B10 (10), SONET: #B00 (00)
::{SDH | SONet}:OVER head:PRESet:POINter:NDF <BINARY>	::{SDH | SONet}:OVER head:PRESet:POINter:NDF?	Sets a pointer value (NDF field, 4 bits).	—	—	√	#B0110 (0110)
::{SDH | SONet}:OVER head:PRESet:POINter:DEFault	-	Aligns the pointers of all members to that of the head member.	—	—	√	-
::{SDH | SONet}:OVER head:PRESet:POH:MEMBer <NR1>	::{SDH | SONet}:OVER head:PRESet:POH:MEMBer?	Sets a target member of POH setting in the OH Preset screen.	—	—	√	1
::{SDH | SONet}:OVER head:PRESet:POINter:MEMBer <NR1>	::{SDH | SONet}:OVER head:PRESet:POINter:MEMBer?	Sets a target member of Pointer setting in the K1 and K2 Pointer setting screen.	—	—	√	1
::{SDH | SONet}:OVER head:PRESet:POINter:MEMBer:ENABle <BOOLEAN>	::{SDH | SONet}:OVER head:PRESet:POINter:MEMBer:ENABle?	Whether to enable/disable a function to have a target for inserting +/- PJC.	—	—	√	{ON|1}
::{SDH | SONet}:OVER head:PRESet:POINter:MEMBer:AENABle	-	For all AU/STS members, enables a function to have a target for inserting +/- PJC.	—	—	√	-
::{SDH | SONet}:OVER head:PRESet:POINter:MEMBer:ADISABle	-	For all AU/STS members, disables a function to have a target for inserting +/- PJC.	—	—	√	-
::{SDH | SONet}:OVER head:PRESet:POINter:{TU | VT}:MEMBer <ch1>[,<ch2>,<ch3>,<ch4>]	::{SDH | SONet}:OVER head:PRESet:POINter:{TU | VT}:MEMBer?	Sets a TU/VT Pointer setting target member in the K1, K2 Pointer setting screen.	—	—	√	1
::{SDH | SONet}:OVER head:PRESet:POINter:{TU | VT}:MEMBer:ENABle <BOOLEAN>	::{SDH | SONet}:OVER head:PRESet:POINter:{TU | VT}:MEMBer:ENABle?	Enables/disables a function to insert +/- PJC for each TU/VT member.	—	—	√	-
::{SDH | SONet}:OVER head:PRESet:POINter:{TU | VT}:NDF <BINARY>	::{SDH | SONet}:OVER head:PRESet:POINter:{TU | VT}:NDF?	Sets a TU/VT pointer value (NDF field, 4 bits).	—	—	√	#B0000
::{SDH | SONet}:OVER head:PRESet:POINter:{TU | VT}:SS <BINARY>	::{SDH | SONet}:OVER head:PRESet:POINter:{TU | VT}:SS?	Sets a TU/VT pointer value (SS field, 2 bits).	—	—	√	SDH: #B10 (10), SONET: #B00 (00)

Section 6 Details of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
::{SDH | SONet}:OVER head:PRESet:POINter:{ TU | VT}:ID <NR1>	::{SDH | SONet}:OVER head:PRESet:POINter:{ TU | VT}:ID?	Sets a TU/VT pointer value (ID field, 10 bits).	—	—	√	0
::{SDH | SONet}:OVER head:PRESet:POINter:{ TU | VT}:DEFault	-	Aligns the pointers of all TU/VT members to that of the head member.	—	—	√	-
::{SDH | SONet}:OVER head:PRESet:POINter:{ TU | VT}:MEMBer:AE Nable	-	Enables the function to insert +/- PJC for all TU/VT members.	—	—	√	-
::{SDH | SONet}:OVER head:PRESet:POINter:{ TU | VT}:MEMBer:ADI Sable	-	Disables the function to insert +/- PJC for all TU/VT members.	—	—	√	-
::{SDH | SONet}:ERRor: STOP	-	Stops to insert an error.	—	—	√	-
::{SDH | SONet}:ERRor: STARt	-	Inserts an error.	—	—	√	-
-	::{SDH | SONet}:ERRor: STATe?	Queries the status of error insertion.	—	—	√	-
::{SDH | SONet}:ERRor: TYPE <errortype>	::{SDH | SONet}:ERRor: TYPE?	Sets the type of errors added to SDH/SONET frame.	—	—	√	OFF
::{SDH | SONet}:ERRor: TIMing:ALTerate:NOR Mal <NR1>	::{SDH | SONet}:ERRor: TIMing:ALTerate:NOR Mal?	Sets the number of normal frames (Normal) in the alternate mode.	—	—	√	1
::{SDH | SONet}:ERRor: TIMing:ALTerate:ERRo r <NR1>	::{SDH | SONet}:ERRor: TIMing:ALTerate:ERRo r?	Sets the number of error frames (Errors) in the alternate mode.	—	—	√	0
::{SDH | SONet}:ERRor: TIMing:BURSt <NR1>	::{SDH | SONet}:ERRor: TIMing:BURSt?	Sets the number of bits for error insertion.	—	—	√	1
::{SDH | SONet}:ERRor: TIMing {SINGLE | BU RST | RATE | ALTER NATE | ALL}	::{SDH | SONet}:ERRor: TIMing?	Sets the timing of error insertion.	—	—	√	SINGLE (Single)
::{SDH | SONet}:ERRor: TIMing:RATE <NR3>	::{SDH | SONet}:ERRor: TIMing:RATE?	Sets the rate of error insertion.	—	—	√	1.0E-3
::{SDH | SONet}:ERRor: CHS "<CH>","<CH>",...	::{SDH | SONet}:ERRor: CHS?	Specifies two or more channels for which Error may be inserted.	—	—	√	All settable channels
::{SDH | SONet}:ERRor: SQValue <NR1>	::{SDH | SONet}:ERRor: SQValue?	Sets a value of SQ when SQ change is selected in SDH error.	—	—	√	-
::{SDH | SONet}:ALAR m:STOP	-	Stops to insert an alarm.	—	—	√	-

6.1 List of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
::{SDH | SONet}:ALARM:START	-	Inserts an alarm.	—	—	√	-
-	::{SDH | SONet}:ALARM:STATe?	Queries the status of alarm insertion.	—	—	√	-
::{SDH | SONet}:ALARM:TYPE <errortype>	::{SDH | SONet}:ALARM:TYPE?	Sets the type of alarms to be added to SDH/SONET frame.	—	—	√	OFF
::{SDH | SONet}:ALARM:TIMing:ALternate:ALARm <NR1>	::{SDH | SONet}:ALARM:TIMing:ALternate:ALARm?	Sets the number of alarm frames (Alarms) when the alarm insertion mode is Alternate.	—	—	√	0
::{SDH | SONet}:ALARM:TIMing:ALternate:Normal <NR1>	::{SDH | SONet}:ALARM:TIMing:ALternate:Normal?	Sets the number of normal frames (Normal) when the alarm insertion mode is Alternate.	—	—	√	1
::{SDH | SONet}:ALARM:TIMing:BURSt <NR1>	::{SDH | SONet}:ALARM:TIMing:BURSt?	Sets the rate of alarm insertion when the alarm insertion mode is Burst	—	—	√	1
::{SDH | SONet}:ALARM:TIMing {SINGLE | BURST | ALTERNATE | ALL}	::{SDH | SONet}:ALARM:TIMing?	Sets the alarm insertion mode.	—	—	√	ALL
::{SDH | SONet}:ALARM:CHS "<CH>","<CH>","...	::{SDH | SONet}:ALARM:CHS?	Specifies two or more channels for which Alarm may be inserted.	—	—	√	All settable channels
::{SDH | SONet}:PTRace:ENABle {J0 | J1},<BOOLEAN>	::{SDH | SONet}:PTRace:ENABle? {J0 | J1}	Sets the path trace function to enable or disable.	—	—	√	0 (disable)
::{SDH | SONet}:PTRace:PATtern {J0 | J1},"<pattern>"	::{SDH | SONet}:PTRace:PATtern? {J0 | J1}	Sets a transmission pattern of the path trace.	—	—	√	"TRACE PATTERN Anritsu MD1230B Data Quality Analyzer"
::{SDH | SONet}:PTRace:HEX:PATtern {J0 | J1 | J1L | J2},<HEX>	::{SDH | SONet}:PTRace:HEX:PATtern? {J0 | J1 | J1L | J2}	Sets a transmission pattern of the path trace in the <HEX> format.	—	—	√	Depends on the default value of the "::SDH|SONet}:PTRace:PATtern" command.
::{SDH | SONet}:PTRace:CRC7:ENABle {J0 | J1},<BOOLEAN>	::{SDH | SONet}:PTRace:CRC7:ENABle? {J0 | J1}	Sets CRC-7 of the path trace to enable or disable.	—	—	√	0 (disable)

Section 6 Details of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
::{SDH | SONet}:PTRace:RX:CRC7:ENABLE {J0 | J1 | J1L | J2},<BOLEAN>	::{SDH | SONet}:PTRace:RX:CRC7:ENABLE? {J0 | J1 | J1L | J2}	Sets CRC-7 of the receive path trace to enable or disable.	—	—	√	0 (disable)
::{SDH | SONet}:PTRace:RX:PATtern {J0 | J1 | J1L | J2},"<pattern>"	::{SDH | SONet}:PTRace:RX:PATtern? {J0 | J1 | J1L | J2}	Sets a reception pattern of the path trace.	—	—	√	"TRACE PATTERN Anritsu Corporation"
::{SDH | SONet}:PTRace:RX:HEX:PATtern {J0 | J1 | J1L | J2},<HEX>	::{SDH | SONet}:PTRace:RX:HEX:PATtern? {J0 | J1 | J1L | J2}	Sets a reception pattern of the path trace in the <HEX> format.	—	—	√	Depends on the default value of the "::{SDH|SONet}:PTRace:RX:PATtern" command.
-	::{SDH | SONet}:PTRace:PATtern? {J0 | J1}	Queries a receive pattern of path trace.	—	—	√	-
-	::{SDH | SONet}:PTRace:TIm? {J0 | J1}	Queries whether TIM error has occurred.	—	—	√	-
-	::{SDH | SONet}:PTRace:CError? {J0 | J1}	Queries whether CRC error has occurred.	—	—	√	-
-	::{SDH | SONet}:PERformance:TIME:START?	Queries the start time of a measurement.	—	—	√	-
-	::{SDH | SONet}:PERformance:TIME:ELAPsed?	Queries the elapsed time of a measurement.	—	—	√	0
-	::{SDH | SONet}:PERformance:TIME:STOP?	Queries the stop time of a measurement.	—	—	√	-
-	::{SDH | SONet}:PERformance:DATA? <error type>	Queries the result of a performance measurement through G. 826.	—	—	√	0,0,0,0.0E-00,0.0E-00,0.0E-00,0,0
::{SDH | SONet}:APS:SGENerator:STARt	-	Starts the transmission of a sequence.	—	—	√	-
::{SDH | SONet}:APS:SGENerator:STOP	-	Stops the transmission of a sequence.	—	—	√	-
-	::{SDH | SONet}:APS:SGENerator:STATe?	Queries the status of sequence data transmission.	—	—	√	-
-	::{SDH | SONet}:APS:SGENerator:TIME:ELAPsed?	Queries the elapsed time of transmission.	—	—	√	0

6.1 List of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
-	::{SDH | SONet}:APS:SEnErator:TIME:StArT?	Queries the start time of transmission.	-	-	√	-
-	::{SDH | SONet}:APS:SEnErator:TIME:StOP?	Queries the stop time of sequence transmission.	-	-	√	-
::{SDH | SONet}:APS:SEnErator:MODE {SINGLE | REPEAT}	::{SDH | SONet}:APS:SEnErator:MODE?	Switches the single/repeat mode of the sequence generator.	-	-	√	SINGLE
::{SDH | SONet}:APS:SEnErator:TABLE:ADD	-	Adds the new sequence data.	-	-	√	-
::{SDH | SONet}:APS:SEnErator:TABLE:ACLeAr	-	Clears contents of the sequence table.	-	-	√	-
::{SDH | SONet}:APS:SEnErator:TABLE:DELeTe <sequence_number>	-	Deletes the specified sequence data.	-	-	√	-
::{SDH | SONet}:APS:SEnErator:TABLE:PASTe <sequence_number>	-	Pastes the copied sequence data.	-	-	√	-
::{SDH | SONet}:APS:SEnErator:TABLE:CUT <sequence_number>	-	Cuts the sequence data with the specified number.	-	-	√	-
::{SDH | SONet}:APS:SEnErator:TABLE:COP Y <sequence_number>	-	Copies the specified sequence data.	-	-	√	-
::{SDH | SONet}:APS:SEnErator:TABLE:ID <sequence_number>	::{SDH | SONet}:APS:SEnErator:TABLE:ID?	Sets the number of a sequence to be edited.	-	-	√	1
-	::{SDH | SONet}:APS:SEnErator:TABLE:NITeMs?	Queries the number of pieces of preset sequence data.	-	-	√	0
::{SDH | SONet}:APS:SEnErator:TABLE:ITEM:COUnT <NR1>	::{SDH | SONet}:APS:SEnErator:TABLE:ITEM:COUnT?	Sets the number of frames where a pattern is repeatedly generated.	-	-	√	8000
::{SDH | SONet}:APS:SEnErator:TABLE:ITEM:K1 <HEX>	::{SDH | SONet}:APS:SEnErator:TABLE:ITEM:K1?	Sets a value of K1 byte.	-	-	√	#H00 (0x00)
::{SDH | SONet}:APS:SEnErator:TABLE:ITEM:K2 <HEX>	::{SDH | SONet}:APS:SEnErator:TABLE:ITEM:K2?	Sets a value of K2 byte.	-	-	√	#H00 (0x00)
::{SDH | SONet}:APS:SCAPture:StOP	-	Stops APS sequence capture.	-	-	√	-

Section 6 Details of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
::{SDH | SONet}:APS:SCAPture:START	-	Starts APS sequence capture.	—	—	√	-
-	::{SDH | SONet}:APS:SCAPture:STATe?	Queries the operation status of capture.	—	—	√	-
-	::{SDH | SONet}:APS:SCAPture:TIME:ELAPsed?	Queries the elapsed time since the start of the capture.	—	—	√	0
-	::{SDH | SONet}:APS:SCAPture:TIME:START?	Queries the start time of capture.	—	—	√	-
-	::{SDH | SONet}:APS:SCAPture:TIME:STOP?	Queries the stop time of capture.	—	—	√	-
::{SDH | SONet}:APS:SCAPture:TRIGger:POSit ion <NR1>	::{SDH | SONet}:APS:SCAPture:TRIGger:POSit ion?	Sets a trigger position in the capture data.	—	—	√	64
::{SDH | SONet}:APS:SCAPture:TRIGger:TYPE <errortype>	::{SDH | SONet}:APS:SCAPture:TRIGger:TYPE?	Sets a trigger item.	—	—	√	Error: B1 Alarm: LOF
-	::{SDH | SONet}:APS:SCAPture:DATA:NSEQue nce?	Queries the numbers of captured sequence data.	—	—	√	-
-	::{SDH | SONet}:APS:SCAPture:DATA:TRIGger?	Queries the trigger position in the captured sequence data.	—	—	√	-
-	::{SDH | SONet}:APS:SCAPture:DATA? <sequence_number>	Queries the captured sequence data.	—	—	√	#H00,#H00, 0
::{SDH | SONet}:APS:STIME:STOP	-	Stops a measurement	—	—	√	-
::{SDH | SONet}:APS:STIME:START	-	Starts a measurement.	—	—	√	-
-	::{SDH | SONet}:APS:STIME:STATe?	Queries the measurement status.	—	—	√	-
-	::{SDH | SONet}:APS:STIME:TIME:START?	Queries the start time of a measurement.	—	—	√	-
-	::{SDH | SONet}:APS:STIME:TIME:STOP?	Queries the stop time of a measurement.	—	—	√	-
-	::{SDH | SONet}:APS:STIME:TIME:ELAPsed?	Queries the elapsed time of a measurement.	—	—	√	0
::{SDH | SONet}:APS:STIME:THReshold {T1MS | T10MS | T100MS}	::{SDH | SONet}:APS:STIME:THReshold?	Sets the threshold time (wait time from detecting no error status to measurement completion).	—	—	√	T1MS (1 ms)

6.1 List of Device Mesages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
::{SDH | SONet}:APS:STIME:TRIGger:TYPE <errorrrortype>	::{SDH | SONet}:APS:STIME:TRIGger:TYPE?	Sets search condition (errors and alarms provided as a trigger to start a measurement of the switch time).	—	—	√	Error: B1 Alarm: LOF
-	::{SDH | SONet}:APS:STIME:DATA:AVERAge?	Quires an average of the APS Switching Time measurement results.	—	—	√	-
-	::{SDH | SONet}:APS:STIME:DATA:MAX?	Quires the maximum value of the APS Switching Time measurement results.	—	—	√	-
-	::{SDH | SONet}:APS:STIME:DATA:MIN?	Quires the minimum value of the APS Switching Time measurement results.	—	—	√	-
-	::{SDH | SONet}:APS:STIME:DATA:TOTAl:COU Nt:OK?	Quires the number of times passed in measurement times of the APS Switching Time measurement results.	—	—	√	-
-	::{SDH | SONet}:APS:STIME:DATA:TOTAl:COU Nt:NG?	Quires the number of times failed in measurement times of the APS Switching Time measurement results.	—	—	√	-
-	::{SDH | SONet}:APS:STIME:DATA:TOTAl:COU Nt:OVERflow?	Quires the number of Overflow times in measurement times of the APS Switching Time measurement results.	—	—	√	-
-	::{SDH | SONet}:APS:STIME:DATA:TOTAl:COU Nt?	Quires the number of measurement times of the APS Switching Time measurement results.	—	—	√	-
::{SDH | SONet}:APS:STIME:MMODE {SINGLE | REPEAT}	::{SDH | SONet}:APS:STIME:MMODE?	Sets whether to measure APS Switching Time only once or repeatedly.	—	—	√	SINGLE
-	::{SDH | SONet}:APS:STIME:NDAta? <sequence number>	Quires measurement result (switching time) at a specified time.	—	—	√	-
-	::{SDH | SONet}:APS:STIME:NDAta:JUDGe? <sequence number>	Queries whether the measurement result at a specified time is passed or failed.	—	—	√	-
-	::{SDH | SONet}:APS:STIME:NDAta:STARt? <sequence number>	Queries the start time of the measurement at a specified time.	—	—	√	-
-	::{SDH | SONet}:APS:STIME:DATA?	Queries the measured result (switch time).	—	—	√	-
::{SDH | SONet}:CONCate:MULTiplexing	::{SDH | SONet}:CONCate:MULTiplexing?	Selects Contiguous and Virtual Concatenation mappings (Multiplexing).	—	—	√	STS_48C
::{SDH | SONet}:CONCate:STARtch:TXCHannel <NR1>	::{SDH | SONet}:CONCate:STARtch:TXCHannel?	Sets the start channel from Rx channels.	—	—	√	-

Section 6 Details of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
::{SDH | SONet}:CONC ate:STARTch:RXChanne l <NR1>	::{SDH | SONet}:CONC ate:STARTch:RXChanne l?	Sets the start channel from Rx channels.	—	—	√	-
::{SDH | SONet}:CONC ate:TX:SIZE <NR1>	::{SDH | SONet}:CONC ate:TX:SIZE?	Sets the size of Tx mapping (Multiplexing) for contiguous and virtual concatenations.	—	—	√	-
::{SDH | SONet}:CONC ate:TX:ROUTe {STS3C | STS1 | AU4 | AU3}	::{SDH | SONet}:CONC ate:TX:ROUTe?	Selects a Tx mapping (Multiplexing) route for virtual concatenation	—	—	√	-
::{SDH | SONet}:CONC ate:TX:MEMBers "<me mber>["<member>","...]	::{SDH | SONet}:CONC ate:TX:MEMBers?	Sets the Tx member channel for virtual concatenation.	—	—	√	-
::{SDH | SONet}:CONC ate:TX:PMEMBers "<me mber>["<member>","...]	::{SDH | SONet}:CONC ate:TX:PMEMBers?	Sets the Tx provisioned member channel for Virtual Concatenation.	—	—	√	-
::{SDH | SONet}:CONC ate:TX:RESet:MEMBers		Resets the channels and SQ of Tx members.	—	—	√	-
::{SDH | SONet}:CONC ate:TX:PROVisioned <N R1>	::{SDH | SONet}:CONC ate:TX:PROVisioned?	Sets a size of Provision member of Tx map- ping.	—	—	√	-
-	::{SDH | SONet}:CONC ate:TX:CONDition?	Queries executed condition of ADD or RE- MOVE.	—	—	√	-
::{SDH | SONet}:CONC ate:TX:RXCopy	-	Copies virtual concatenation Rx settings to Tx settings.	—	—	√	-
::{SDH SONet}:CONC ate:RX:MULTiplexing <t ype>	::{SDH SONet}:CONC ate:RX:MULTiplexing?	Selects an Rx mapping (Multiplexing) for contiguous and virtual concatenations.	—	—	√	-
::{SDH | SONet}:CONC ate:RX:SIZE <NR1>	::{SDH | SONet}:CONC ate:RX:SIZE?	Sets the size of the Rx mapping (Multiplex- ing) for contiguous and virtual concatena- tions.	—	—	√	-
::{SDH | SONet}:CONC ate:RX:ROUTe {STS3C | STS1 | AU4 | AU3}	::{SDH | SONet}:CONC ate:RX:ROUTe?	Selects an Rx mapping (Multiplexing) route for virtual concatenation	—	—	√	-
::{SDH | SONet}:CONC ate:RX:MEMBers "<me mber>","<member>","...]	::{SDH | SONet}:CONC ate:RX:MEMBers?	Sets the Rx member channel for virtual concatenation.	—	—	√	-
::{SDH | SONet}:CONC ate:RX:RESet:MEMBers	-	Resets the channels and SQ of Rx members.	—	—	√	-
::{SDH | SONet}:CONC ate:RX:PROVisioned <N R1>	::{SDH | SONet}:CONC ate:RX:PROVisioned?	Sets a size of Provision member of Rx map- ping.	—	—	√	-

6.1 List of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
::{SDH | SONet}:CONC ate:RX:PMEMbers "<me mber>"["<member>","...]	::{SDH | SONet}:CONC ate:RX:PMEMbers?	Sets the Rx provisioned member channel for Virtual Concatenation.	—	—	√	-
-	::{SDH | SONet}:CONC ate:RX:CONDition?	Queries the state of VCAT Member when executing LCAS Negotiation.	—	—	√	-
-	::{SDH | SONet}:CONC ate:RX:DETECT:VCG:GR Oup?	Queries the number of VCAT groups within received signals.	—	—	√	-
-	::{SDH | SONet}:CONC ate:RX:DETECT:VCG:CO NDition? <NR1>	Queries the status of the specified VCAT group.	—	—	√	-
-	::{SDH | SONet}:CONC ate:RX:DETECT:VCG:ME MBers? <NR1>	Queries the member channel of the specified VCAT group.	—	—	√	-
-	::{SDH | SONet}:CONC ate:RX:DETECT:VCG:VC GMembers?	Queries VCG member CH of VCAT group.	—	—	√	-
::{SDH | SONet}:CONC ate:RX:DETECT:VCG:EX ECute <BOOLEAN>	::{SDH | SONet}:CONC ate:RX:DETECT:VCG:EX ECute?	Sets Start or Stop of the VCG Detect.	—	—	√	-
::{SDH | SONet}:CONC ate:RX:TXCopy	-	Copies virtual concatenation Tx settings to Rx settings.	—	—	√	-
::{SDH SONet}:DUMM y:SETTing <type>	::{SDH SONet}:DUMM y:SETTing?	Selects a pattern to be inserted to the pay- load of the DummyCH.	—	—	√	COPY
::{SDH | SONet}:DUMM y:C2 <BINARY>	::{SDH | SONet}:DUMM y:C2?	Sets POH C2 byte of the Concatenation DummyCH.	—	—	√	-
::{SDH | SONet}:DUMM y:{VC3 | STS1}:C2 <BI NARY>	::{SDH | SONet}:DUMM y:{VC3 | STS1}:C2?	Sets the value of VC3/STS1 POH of the concatenation dummy channel	—	—	√	-
::{SDH | SONet}:DUMM y:{VC1 | VT}:V5 <BIN ARY>	::{SDH | SONet}:DUMM y:{VC1 | VT}:V5?	Sets POH V5 byte of the Concatenation Dummy CH.	—	—	√	#110
::{SDH | SONet}:DUMM y:{VC1 | VT}:POH <H EX>	::{SDH | SONet}:DUMM y:{VC1 | VT}:POH?	Sets VC1/VT POH of the Concatenation Dummy CH.	—	—	√	#H0C00000 0
::{SDH | SONet}:DUMM y:PTRace:CRC7:ENABLE <BOOLEAN>	::{SDH | SONet}:DUMM y:PTRace:CRC7:ENABLE ?	Sets ON/Off of CRC7 in J1 trace of Concat- enation DummyCH.	—	—	√	0 (disable)
::{SDH | SONet}:DUMM y:PTRace:ENABLE <BO OLEAN>	::{SDH | SONet}:DUMM y:PTRace:ENABLE?	Sets On/Off of the transmission in J1 trace of Concatenation DummyCH.	—	—	√	0 (disable)

Section 6 Details of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
::{SDH | SONet}:DUMMY:PTRace:PTRace "<pattern>"	::{SDH | SONet}:DUMMY:PTRace:PTRace?	Sets J1 trace byte sequence of Concatenation DummyCH.	—	—	√	"TRACE PATTERN Anritsu MD1230B Data Quality Analyzer"
::{SDH | SONet}:DUMMY:PTRace:J1:HEX:PTRace <HEX>	::{SDH | SONet}:DUMMY:PTRace:J1:HEX:PTRace?	Sets with <HEX> trace byte of the J1-HP of Concatenation Dummy CH.	—	—	√	Depends on the default value of the "::{SDH|SONet}:DUMMY:PTRace:PTRace" command.
::{SDH | SONet}:DUMMY:POH <HEX>	::{SDH | SONet}:DUMMY:POH?	Sets POH of Concatenation DummyCH.	—	—	√	#H00001B0000000000 (C2: 0x1B)
::{SDH | SONet}:DUMMY:{VC3 | STS1}:POH <HEX>	::{SDH | SONet}:DUMMY:{VC3 | STS1}:POH?	Sets VC3/STS1 POH of Concatenation DummyCH.	—	—	√	-
::{SDH | SONet}:MEASch:RXChannel	::{SDH | SONet}:MEASch:RXChannel?	Selects which CH is a measurement target among the sending CHs divided by Concatenation.	—	—	√	1
::{SDH | SONet}:MEASch:TXChannel	::{SDH | SONet}:MEASch:TXChannel?	Selects which CH is a setting target among the sending CHs divided by Concatenation.	—	—	√	1
::{SDH | SONet}:DDELa y:TX:AU:PPJC	-	Insert +PJC one time in AU pointer.	—	—	√	-
::{SDH | SONet}:DDELa y:TX:AU:NPJC	-	Insert -PJC one time in AU pointer.	—	—	√	-
::{SDH | SONet}:DDELa y:TX:TU:PPJC	-	Insert +PJC one time in TU pointer.	—	—	√	-
::{SDH | SONet}:DDELa y:TX:TU:NPJC	-	Insert -PJC one time in TU pointer.	—	—	√	-
::{SDH | SONet}:DDELa y:TX:SWEep <BOOLEAN>	::{SDH | SONet}:DDELa y:TX:SWEep?	Sets Start or Stop of Differential delay sweep.	—	—	√	-
::{SDH | SONet}:DDELa y:TX:ORDeR {STEP | SIMultaneous}	::{SDH | SONet}:DDELa y:TX:ORDeR?	Select whether to generate Justification each CH or all CH.	—	—	√	STEP
::{SDH | SONet}:DDELa y:TX:SWEep:TRANSition {TOA | TOB | TOATob | TOAB}	::{SDH | SONet}:DDELa y:TX:SWEep:TRANSition?	Select the direction of pointer action.	—	—	√	TOA

6.1 List of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
::{SDH | SONet}:DDELa y:TX:SWEep:REPeat <N R1>	::{SDH | SONet}:DDELa y:TX:SWEep:REPeat?	Sets a Repeat time when the transition is selected ->A<->B.	—	—	√	1
::{SDH | SONet}:DDELa y:TX:SWEep:INTerval < NR1>	::{SDH | SONet}:DDELa y:TX:SWEep:INTerval?	Sets the interval of justification.	—	—	√	8
::{SDH | SONet}:DDELa y:TX:SWEep:PRIority {A U | TU}	::{SDH | SONet}:DDELa y:TX:SWEep:PRIority?	Select the pointer which act first.	—	—	√	TU
::{SDH | SONet}:DDELa y:TX:PRESent:CH <ch1 >[,<ch2>,<ch3>,<ch4>]	::{SDH | SONet}:DDELa y:TX:PRESent:CH?	Sets the CH of preset value of the Differen- tial Delay setting.	—	—	√	first CH
::{SDH | SONet}:DDELa y:TX:A:CH <ch1>[,<ch2 >,<ch3>,<ch4>]	::{SDH | SONet}:DDELa y:TX:A:CH?	Sets the CH of Target(A) value of the Dif- ferential Delay setting.	—	—	√	first CH
::{SDH | SONet}:DDELa y:TX:B:CH <ch1>[,<ch2 >,<ch3>,<ch4>]	::{SDH | SONet}:DDELa y:TX:B:CH?	Sets the CH of Target(B) value of the Dif- ferential Delay setting.	—	—	√	first CH
::{SDH | SONet}:DDELa y:TX:PRESent:SET <M F>,<AU Pointer>[,<TU Pointer>]	::{SDH | SONet}:DDELa y:TX:PRESent:SET?	Sets the delay to selected CH which are Preset value.	—	—	√	1,0
::{SDH | SONet}:DDELa y:TX:PRESent:ENABLE <BOOLEAN>	::{SDH | SONet}:DDELa y:TX:PRESent:ENABLE?	Set On/Off whether CH for which the Pre- sent side is specified is made a justification object	—	—	√	1
::{SDH | SONet}:DDELa y:TX:A:SET <MF>,<AU Pointer>[,<TU Pointer >]	::{SDH | SONet}:DDELa y:TX:A:SET?	Sets the delay to selected CH which are Target(A) value.	—	—	√	2048,782
::{SDH | SONet}:DDELa y:TX:B:SET <MF>,<AU Pointer>[,<TU Pointer >]	::{SDH | SONet}:DDELa y:TX:B:SET?	Sets the delay to selected CH which are Target(B) value.	—	—	√	0,0
-	::{SDH | SONet}:DDELa y:MONitor:DATA?	Queries all CH of the Differential delay monitor.	—	—	√	-
-	::{SDH | SONet}:PATH: MONitor:DATA?	Queries all CH of the Path monitor.	—	—	√	-
-	::{SDH | SONet}:PATH: MONitor:HISTory?	Queries history condition of all CH of the Path monitor.	—	—	√	-

Ethernet commands (ETHERnet)

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:ETHERnet:ERRor:COLL ision:ENABle <BOOLE AN>	:ETHERnet:ERRor:COLL ision:ENABle?	Sets a collision to enable or disable.	√	—	—	0 (disable)
:ETHERnet:ERRor:COLL ision:INTerval <NR1>	:ETHERnet:ERRor:COLL ision:INTerval?	Sets an interval that a collision is generat- ed.	√	—	—	1
:ETHERnet:ERRor:COLL ision:FRAMES <NR1>	:ETHERnet:ERRor:COLL ision:FRAMES?	Sets a maximum value of the number of col- lision frames to be generated in the preset interval.	√	—	—	1

GFP transmission commands (GFP)

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:GFP:HEADer:EXI	:GFP:HEADer:EXI?	Sets an EXI field the GFP header transmitted outside the stream.	—	—	√	#B0000
:GFP:HEADer:PFI	:GFP:HEADer:PFI?	Sets a PFI field of the GFP header transmitted outside the stream.	—	—	√	1
:GFP:HEADer:PTI	:GFP:HEADer:PTI?	Sets a PTI field of the GFP header transmitted outside the stream.	—	—	√	#B000
:GFP:HEADer:EXTension:PATtern <HEX>	:GFP:HEADer:EXTension:PATtern?	Sets the common setting of the GFP Client Frame header transmitted outside the stream.	—	—	√	#H00
:GFP:HEADer:EXTension:LENGth	:GFP:HEADer:EXTension:LENGth?	Sets the common setting of the GFP Client Frame header transmitted outside the stream.	—	—	√	2
:GFP:HEADer:EXTension:PATtern:TYPE {ALL0 | ALL1 | PROGRAM}	:GFP:HEADer:EXTension:PATtern:TYPE?	Sets the common setting of the GFP Client Frame header transmitted outside the stream.	—	—	√	ALL0
:GFP:HEADer:UPI <BINARY>	:GFP:HEADer:UPI?	Sets the common setting of the GFP Client Frame header transmitted outside the stream.	—	—	√	#B0000001
:GFP:MANagement:STARt	-	Starts transmission of the GFP Client Management Frame.	—	—	√	-
:GFP:MANagement:STOP	-	Stops transmission of the GFP Client Management Frame.	—	—	√	-
-	:GFP:MANagement:STARt?	Queries the transmission state of the GFP Management Frame.	—	—	√	-
:GFP:MANagement:HEADer:EXI <BINARY>	:GFP:MANagement:HEADer:EXI?	Sets an EXI field of the GFP Client Management Frame.	—	—	√	#B0000
:GFP:MANagement:HEADer:EXTension:PATtern <HEX>	:GFP:MANagement:HEADer:EXTension:PATtern?	Edits an Extension Header field pattern of the GFP Client Management Frame.	—	—	√	#H00
:GFP:MANagement:HEADer:EXTension:PATtern:TYPE {ALL0 | ALL1 | PROGRAM}	:GFP:MANagement:HEADer:EXTension:PATtern:TYPE?	Selects a pattern type of an Extension Header field of the GFP Client Management Frame.	—	—	√	ALL0
:GFP:MANagement:HEADer:EXTension:LENGth <NR1>	:GFP:MANagement:HEADer:EXTension:LENGth?	Sets the Extension Header length of the GFP Client Management Frame.	—	—	√	2
:GFP:MANagement:HEADer:PFI <NR1>	:GFP:MANagement:HEADer:PFI?	Sets a PFI field of the GFP Client Management Frame.	—	—	√	1

Section 6 Details of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:GFP:MANagement:HEADer:UPI <BINARY>	:GFP:MANagement:HEADer:UPI?	Sets a UPI field of the GFP Client Management Frame.	—	—	√	#B00000001
:GFP:MANagement:INTERim:TYPE {IDLE | CLIENT_DATA}	:GFP:MANagement:INTERim:TYPE?	Selects a frame type of the interim GFP Client Management Frames.	—	—	√	IDLE
:GFP:MANagement:MODE {SINGLE | REPEAT}	:GFP:MANagement:MODE?	Sets whether to insert the GFP Client Management Frame once or repeatedly.	—	—	√	SINGLE
:GFP:MANagement:PAYLoad:LENGTH <NR1>	:GFP:MANagement:PAYLoad:LENGTH?	Sets the Payload length of the GFP Client Management Frame.	—	—	√	-
:GFP:MANagement:PAYLoad:PATtern:TYPE {ALL0 | ALL1 | PROGRAM}	:GFP:MANagement:PAYLoad:PATtern:TYPE?	Selects a Payload pattern type of the GFP Client Management Frame.	—	—	√	ALL0
:GFP:MANagement:PAYLoad:PATtern <HEX>	:GFP:MANagement:PAYLoad:PATtern?	Edits a Payload pattern of the GFP Management Frame.	—	—	√	#H00
:GFP:MANagement:PERiod <NR1>	:GFP:MANagement:PERiod?	Sets an interval to insert the GFP Client Management Frame.	—	—	√	100
:GFP:MANagement:TYPE {LOSS_SIG | LOSS_SYNC | USER1 | USER2}	:GFP:MANagement:TYPE?	Selects a type of GFP Client Management Frame to insert.	—	—	√	LOSS_SIG

Counter measurement commands (COUNTER)

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:COUNTER:STOP	-	Stops a measurement.	√	√	√	-
:COUNTER:START	-	Starts a measurement.	√	√	√	-
:COUNTER:CLEAR	-	Clears the counter value.	√	√	√	-
-	:COUNTER:STATE?	Returns counter measurement state.	√	√	√	-
-	:COUNTER:TIME:START?	Queries the start time of a measurement.	√	√	√	-
-	:COUNTER:TIME:STOP?	Queries the stop time of a measurement.	√	√	√	-
-	:COUNTER:TIME:ELAPSED?	Queries the elapsed time of a measurement.	√	√	√	0
:COUNTER:QOS:TYPE {IP | VLAN}	:COUNTER:QOS:TYPE?	Sets the type of frame to be counted by the QoS counter.	√	√	√	IP
:COUNTER:LERROR:TYPE {CODE | RD | BOT | XGMII}	:COUNTER:LERROR:TYPE?	Sets the count condition for the Line Error counter.	—	√	—	-
:COUNTER:UDEFINED1:DATA {DONT_CARE | NOT_MATCH | MATCH}	:COUNTER:UDEFINED1:DATA?	Sets a filter to the preset destination address pattern (Don't care/Not match/Match).	√	√	√	DONT_CARE (Don't care)
:COUNTER:UDEFINED1:ENABLE <BOOLEAN>	:COUNTER:UDEFINED1:ENABLE?	Sets the user-defined counter 1 to enable or disable.	√	√	√	0 (disable)
:COUNTER:UDEFINED1:ERROR {DONT_CARE | NOT_MATCH | MATCH}	:COUNTER:UDEFINED1:ERROR?	Sets a filter to the preset error type (Don't care/Not match/Match).	√	√	√	DONT_CARE (Don't care)
:COUNTER:UDEFINED1:PATTERN1 {DONT_CARE | NOT_MATCH | MATCH}	:COUNTER:UDEFINED1:PATTERN1?	Sets a filter to the preset pattern 1 (Don't care/Not match/Match).	√	√	√	DONT_CARE (Don't care)
:COUNTER:UDEFINED1:PATTERN2 {DONT_CARE | NOT_MATCH | MATCH}	:COUNTER:UDEFINED1:PATTERN2?	Sets a filter to the preset pattern 2 (Don't care/Not match/Match).	√	√	√	DONT_CARE (Don't care)
:COUNTER:UDEFINED1:PATTERN3 {DONT_CARE | NOT_MATCH | MATCH}	:COUNTER:UDEFINED1:PATTERN3?	Sets a filter to the preset pattern 3 (Don't care/Not match/Match).	—	√	—	DONT_CARE (Don't care)
:COUNTER:UDEFINED1:PATTERN4 {DONT_CARE | NOT_MATCH | MATCH}	:COUNTER:UDEFINED1:PATTERN4?	Sets a filter to the preset pattern 4 (Don't care/Not match/Match).	—	√	—	DONT_CARE (Don't care)

Section 6 Details of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:COUNter:UDEFined1:SA {DONT_CARE | NOT_MATCH | MATCH}	:COUNter:UDEFined1:SA?	Sets a filter to the preset source address pattern (Don't care/Not match/Match).	√	√	√	DONT_CARE (Don't care)
:COUNter:UDEFined2:PATtern1 {DONT_CARE | NOT_MATCH | MATCH}	:COUNter:UDEFined2:PATtern1?	Sets a filter to the preset pattern 1 (Don't care/Not match/Match).	√	√	√	DONT_CARE (Don't care)
:COUNter:UDEFined2:PATtern2 {DONT_CARE | NOT_MATCH | MATCH}	:COUNter:UDEFined2:PATtern2?	Sets a filter to the preset pattern 2 (Don't care/Not match/Match).	√	√	√	DONT_CARE (Don't care)
:COUNter:UDEFined2:PATtern3 {DONT_CARE | NOT_MATCH | MATCH}	:COUNter:UDEFined2:PATtern3?	Sets a filter to the preset pattern 3 (Don't care/Not match/Match).	—	√	—	DONT_CARE (Don't care)
:COUNter:UDEFined2:PATtern4 {DONT_CARE | NOT_MATCH | MATCH}	:COUNter:UDEFined2:PATtern4?	Sets a filter to the preset pattern 4 (Don't care/Not match/Match).	—	√	—	DONT_CARE (Don't care)
:COUNter:UDEFined2:SA {DONT_CARE | NOT_MATCH | MATCH}	:COUNter:UDEFined2:SA?	Sets a filter to the preset source address pattern (Don't care/Not match/Match).	√	√	√	DONT_CARE (Don't care)
:COUNter:UDEFined2:ERRor {DONT_CARE | NOT_MATCH | MATCH}	:COUNter:UDEFined2:ERRor?	Sets a filter to the preset error type (Don't care/Not match/Match).	√	√	√	DONT_CARE (Don't care)
:COUNter:UDEFined2:ENABLE <BOOLEAN>	:COUNter:UDEFined2:ENABLE?	Sets the user-defined counter 2 to enable or disable.	√	√	√	0 (disable)
:COUNter:UDEFined2:DA {DONT_CARE | NOT_MATCH | MATCH}	:COUNter:UDEFined2:DA?	Sets a filter to the preset destination address pattern (Don't care/Not match/Match).	√	√	√	DONT_CARE (Don't care)

6.1 List of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
-	:COUNter:ERRor:FCS?	A count value of fcs errors (valid-size frames with FCS error) is returned.	√	√	√	-
-	:COUNter:ERRor:FRAGments?	Queries a count value of fragments.	√	√	√	-
-	:COUNter:ERRor:OAFer ror	Queries a count value of oversize and fcs error (frames which size is larger than specified and with FCS error).	√	√	√	-
-	:COUNter:ERRor:OVER size?	Queries a count value of oversize (frames with no FCS error but the size is larger than specified).	√	√	√	-
-	:COUNter:ERRor:UNDe rsize?	Queries a count value of undersize (frames with no FCS error but the size is smaller than specified).	√	√	√	-
-	:COUNter:ERRor:SEQue nce?	Queries the number of SN (Sequence Number) error detection in the test frame.	√	√	√	-
-	:COUNter:ERRor:PRBS: BIT?	Queries the number of error bits in the PRBS pattern of the received test frame and the error bit rate for the number of bits in the PRBS pattern of the received test frame.	√	√	√	-
-	:COUNter:ERRor:PRBS: FRAMES?	Queries the number of the received test frames with erroneous PRBS pattern and the frame rate with erroneous PRBS pattern for the number of received PRBS test frames.	√	√	√	-
-	:COUNter:QOS0?	Queries a count value of the QoS counter 0.	√	√	√	-
-	:COUNter:QOS1?	Queries a count value of the QoS counter 1.	√	√	√	-
-	:COUNter:QOS2?	Queries a count value of the QoS counter 2.	√	√	√	-
-	:COUNter:QOS3?	Queries a count value of the QoS counter 3.	√	√	√	-
-	:COUNter:QOS4?	Queries a count value of the QoS counter 4.	√	√	√	-
-	:COUNter:QOS5?	Queries a count value of the QoS counter 5.	√	√	√	-
-	:COUNter:QOS6?	Queries a count value of the QoS counter 6.	√	√	√	-
-	:COUNter:QOS7?	Queries a count value of the QoS counter 7.	√	√	√	-
-	:COUNter:QOS0:PPS?	Queries the packet rate value (pps) when the QoS counter is 0.	√	√	√	-
-	:COUNter:QOS1:PPS?	Queries the packet rate value (pps) when the QoS counter is 1.	√	√	√	-
-	:COUNter:QOS2:PPS?	Queries the packet rate value (pps) when the QoS counter is 2.	√	√	√	-

Section 6 Details of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
-	:COUNter:QOS3:PPS?	Queries the packet rate value (pps) when the QoS counter is 3.	√	√	√	-
-	:COUNter:QOS4:PPS?	Queries the packet rate value (pps) when the QoS counter is 4.	√	√	√	-
-	:COUNter:QOS5:PPS?	Queries the packet rate value (pps) when the QoS counter is 5.	√	√	√	-
-	:COUNter:QOS6:PPS?	Queries the packet rate value (pps) when the QoS counter is 6.	√	√	√	-
-	:COUNter:QOS7:PPS?	Queries the packet rate value (pps) when the QoS counter is 7.	√	√	√	-
-	:COUNter:RECEived:BP S?	Queries the received bit rate value (bit/s).	√	√	√	-
-	:COUNter:RECEived:BY Tes?	Queries a count value of received bytes (the number of received bytes).	√	√	√	-

6.1 List of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
-	:COUNter:RECEived:FRAMES?	Queries a count value of received frames (the number of normal-size frames with normal FCS).	√	√	√	-
-	:COUNter:RECEived:FRAMES:FPS?	Queries the frame rate value (fps) for received frames of normal size and FCS.	√	√	√	-
-	:COUNter:RECEived:PC T?	Queries the received bit rate value (%).	√	√	√	-
-	:COUNter:RECEived:PC T2?	Queries the received bit rate (a reception rate when that with the minimum gap is provided as 100%) value (%).	√	√	√	-
-	:COUNter:RECEived:TF Rames?	Queries the number of received test frames.	√	√	√	-
	:COUNter:RECEived:PR OTocol:FRAME?	Queries a value of Received Protocol Frame counter	—	√	—	
-	:COUNter:TRANsmitted :BPS?	Queries the transmitted bit rate value (bit/s).	√	√	√	-
-	:COUNter:TRANsmitted :FRAMES?	Queries a count value of transmitted frames (the number of normally transmitted frames).	√	√	√	-
-	:COUNter:TRANsmitted :FRAMES:FPS?	Queries the frame rate value (fps) for the transmitted frames.	√	√	√	-
-	:COUNter:TRANsmitted :BYTES?	Queries a count value of the transmitted bytes (the number of transmitted bytes).	√	√	√	-
-	:COUNter:TRANsmitted :PCT?	Queries the transmitted bit rate value (%).	√	√	√	-
-	:COUNter:TRANsmitted :PCT2?	Queries the transmitted data rate (a transmission rate when that with the minimum gap is provided as 100%) value (%).	√	√	√	-
-	:COUNter:TRANsmitted :TFRames?	Queries the number of transmitted test frames.	√	√	√	-
	:COUNter:TRANsmitted :PROTocol:FRAME?	Queries a value of Transmitted Protocol Frame counter.	—	√	—	
-	:COUNter:UDEfined1:RECEived?	Queries a value of the user defined 1 (user-defined counter 1).	√	√	√	-
-	:COUNter:UDEfined1:RECEived:PPS?	Queries the packet rate value (pps) for user defined1 (user-defined counter 1).	√	√	√	-
-	:COUNter:UDEfined2:RECEived?	Queries a value of the user defined 2 (user-defined counter 2).	√	√	√	-
-	:COUNter:UDEfined2:RECEived:PPS?	Queries the packet rate value (pps) for user defined2 (user-defined counter 2).	√	√	√	-

Section 6 Details of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
-	:COUNter:{SDH | SONet}:ALARm:OOF?	Queries a count value of OOF.	—	—	√	-
-	:COUNter:{SDH | SONet}:ALARm:LOS?	Queries a count value of LOS.	—	—	√	-
-	:COUNter:{SDH | SONet}:ALARm:{AULOP | LOPP}?	Queries a count value of AU-LOP/LOP-P frame.	—	—	√	-
-	:COUNter:{SDH | SONet}:ALARm:{HPUNEQ | UNEQP}?	Queries a count value of HP-UNEQ/UNEQ-P frame.	—	—	√	-
-	:COUNter:{SDH | SONet}:ALARm:{AUAIS | AISP}?	Queries a count value of AU-AIS/AIS-P frame.	—	—	√	-
-	:COUNter:{SDH | SONet}:ALARm:LOF?	Queries a count value of LOF.	—	—	√	-
-	:COUNter:{SDH | SONet}:ALARm:{HPRDI | RDIP}?	Queries a count value of HP-RDI/RDI-P frame.	—	—	√	-
-	:COUNter:{SDH | SONet}:ALARm:{MSAIS | AISL}?	Queries a count value of MS-AIS/AIS-L frame.	—	—	√	-
-	:COUNter:{SDH | SONet}:ALARm:{MSRDI | RDIL}?	Queries a count value of MS-RDI/RDI-L frame.	—	—	√	-
-	:COUNter:{SDH | SONet}:ALARm:{HPSLM | SLMP}?	Queries a count value of HP-SLM/SLM-P frame.	—	—	√	-
-	:COUNter:{SDH | SONet}:ALARm:{TAIS | AISV}?	Queries the TU-AIS/AIS-V frame count value.	—	—	√	-
-	:COUNter:{SDH | SONet}:ALARm:{TLOM | LOMV}?	Queries the TU-LOM/LOM-V frame count value.	—	—	√	-
-	:COUNter:{SDH | SONet}:ALARm:{TLOP | LOPV}?	Queries the TU-LOP/LOP-V frame count value.	—	—	√	-
-	:COUNter:{SDH | SONet}:ALARm:{LSLM | PLMV}?	Queries the LP-SLM/PLM-V frame count value.	—	—	√	-
-	:COUNter:{SDH | SONet}:ALARm:{LRDI | RDIV}?	Queries the LP-RDI/RDI-V frame count value.	—	—	√	-

6.1 List of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
-	:COUNTER:{SDH | SONET}:ALARM:{LUNEQ | UNEQV}?	Queries the LP-UNEQ/UNEQ-V frame count value.	—	—	√	-
-	:COUNTER:{SDH | SONET}:ALARM:SQError?	Queries a count value of SQ error.	—	—	√	-
-	:COUNTER:{SDH | SONET}:ALARM:OOALignment?	Queries a count value of the states where skews between the members exceeds 100 pointers.	—	—	√	-
-	:COUNTER:{SDH | SONET}:ALARM:OOM1?	Queries the OOM1 frame count value.	—	—	√	-
-	:COUNTER:{SDH | SONET}:ALARM:OOM2?	Queries the OOM2 frame count value.	—	—	√	-
-	:COUNTER:{SDH | SONET}:ALARM:OOM?	Queries the OOM frame count value.	—	—	√	-
-	:COUNTER:{SDH | SONET}:ALARM:VLom?	Queries the VCAT-LOM frame count value.	—	—	√	-
-	:COUNTER:{SDH | SONET}:ALARM:{LRFI | RFIV}?	Queries the LP-RFI frame count value.	—	—	√	-
-	:COUNTER:{SDH | SONET}:ALARM:{LOA | MND}?	Queries a count value of LOA frame.	—	—	√	-
-	:COUNTER:{SDH | SONET}:ALARM:PLCT?	Queries a count value of PLCT.	—	—	√	-
-	:COUNTER:{SDH | SONET}:ALARM:TLCT?	Queries a count value of TLCT.	—	—	√	-
-	:COUNTER:{SDH | SONET}:ALARM:PLCR?	Queries a count value of PLCR.	—	—	√	-
-	:COUNTER:{SDH | SONET}:ALARM:TLCR?	Queries a count value of TLCR.	—	—	√	-
-	:COUNTER:{SDH | SONET}:ALARM:UMST?	Queries a count value of UMST.	—	—	√	-
-	:COUNTER:{SDH | SONET}:ALARM:SQNC?	Queries a count value of SQNC.	—	—	√	-
-	:COUNTER:{SDH | SONET}:ERROR:{MSREI | REIL}?	Queries a count value of MS-REI/REI-L block error.	—	—	√	-
-	:COUNTER:{SDH | SONET}:ERROR:B3?	Queries a count value of B3 bit error.	—	—	√	-

Section 6 Details of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
-	:COUNter:{SDH | SONet}:ERRor:{HPREI | REIP}?	Queries a count value of HP-REI/REI-P block error.	—	—	√	-
-	:COUNter:{SDH | SONet}:ERRor:B1?	Queries a count value of B1 bit error.	—	—	√	-
-	:COUNter:{SDH | SONet}:ERRor:B2?	Queries a count value of B2 bit error.	—	—	√	-
-	:COUNter:{SDH | SONet}:ERRor:HPIEC?	Queries a count value of HP-IEC bit error.	—	—	√	-
-	:COUNter:{SDH | SONet}:ERRor:BIP2?	Queries the BIP2 error count value.	—	—	√	-
-	:COUNter:{SDH | SONet}:ERRor:{LREI | REIV}?	Queries the LP-REI/REI-V block error count value.	—	—	√	-
-	:COUNter:{SDH | SONet}:ERRor:GID?	Queries the GID error count value.	—	—	√	-
-	:COUNter:{SDH | SONet}:ERRor:CRC8?	Queries the CRC8 error count value.	—	—	√	-
-	:COUNter:{SDH | SONet}:ERRor:CRC3?	Queries the CRC3 error count value.	—	—	√	-
-	:COUNter:{SDH | SONet}:ERRor:SQM?	Queries the SQM count value.	—	—	√	-
	:COUNter:{SDH | SONet}:ERRor:LPB3?	Queries a count value of LP-B3 bit error.	—	—	√	-
-	:COUNter:{SDH | SONet}:JUSTificat:PPM?	Queries a count value of the amount of justification generated (unit: ppm).	—	—	√	0, 0
-	:COUNter:{SDH | SONet}:JUSTificat:CONSecutive?	Queries a count value of Consecutive generated.	—	—	√	-
-	:COUNter:{SDH | SONet}:JUSTificat:NPJC?	Queries a count value of -PJC generated.	—	—	√	-
-	:COUNter:{SDH | SONet}:JUSTificat:PPJC?	Queries a count value of +PJC generated.	—	—	√	-
-	:COUNter:{SDH | SONet}:JUSTificat:NDF?	Queries a count value of NDF.	—	—	√	-
-	:COUNter:{SDH | SONet}:JUSTificat:TUPPM?	Queries the TU/VT justification yield (units: ppm) count value.	—	—	√	0, 0
-	:COUNter:{SDH | SONet}:JUSTificat:TUCons?	Queries the TU/VT Consecutive generation count value.	—	—	√	-
-	:COUNter:{SDH | SONet}:JUSTificat:TUMPjc?	Queries the TU/VT -PJC generation count value.	—	—	√	-

6.1 List of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
-	:COUNter:{SDH | SONet}:JUSTificat:TUPPjc?	Queries the TU/VT +PJC generation count value.	—	—	√	-
-	:COUNter:{SDH | SONet}:JUSTificat:TUNdf?	Queries the TU/VT NDF count value.	—	—	√	-
-	:COUNter:GFP:ALARm:LOSignal:FRAMe?	Queries a count value of the received Client Management Frames that indicate Loss of Client Signal.	—	—	√	-
-	:COUNter:GFP:ALARm:LOSignal:INTerval?	Queries a count value of the interval between occurrences of Loss of Client Signal alarms (in a units of 1 ms).	—	—	√	-
-	:COUNter:GFP:ALARm:LOSynC:INTerval?	Queries a count value of the interval between occurrences of Loss of Character Synchronization alarms (in a units of 1 ms).	—	—	√	-
-	:COUNter:GFP:ALARm:SSFail:INTerval?	Queries a count value of the interval between occurrences of Server Signal Fail alarms (in a units of 1 ms).	—	—	√	-
-	:COUNter:GFP:ALARm:LOSynC:FRAMe?	Queries a count value of the received Client Management Frames that indicate Loss of Character Synchronization.	—	—	√	-
-	:COUNter:GFP:ERRor:tHEC?	Queries a count value of the GFP frames where a multiple-bit error is detected in tHEC.	—	—	√	-
-	:COUNter:GFP:ERRor:tHEC:CORReCted?	Queries a count value of the GFP frames where a single-bit error is detected in tHEC.	—	—	√	-
-	:COUNter:GFP:ERRor:cHEC:CORReCted?	Queries a count value of the GFP frames where a single-bit error is detected in cHEC.	—	—	√	-
-	:COUNter:GFP:ERRor:eHEC?	Queries a count value of the GFP frames where an error is detected in eHEC.	—	—	√	-
-	:COUNter:GFP:ERRor:FCS?	Queries a count value of the GFP frames where an FCS error is detected.	—	—	√	-
-	:COUNter:GFP:ERRor:cHEC?	Queries a count value of the GFP frames where a multiple-bit error is detected in cHEC.	—	—	√	-
-	:COUNter:LAPS:RECEived:BBEFore?	Queries a count value of Received Bytes Before Adaptation (the number of received bytes before processing Rate Adaptation).	—	—	√	-
-	:COUNter:LAPS:TRANsmitted:BAFTer?	Queries a count value of Transmitted Bytes After Adaptation (the number of transmitted bytes after processed Rate Adaptation).	—	—	√	-
-	:COUNter:ARP:RECEived:AREQuesT?	Queries a count value of received arp request.	√	√	—	-

Section 6 Details of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
-	:COUNter:ARP:RECeived:AREPly?	Queries a count value of received arp reply.	√	√	—	-
-	:COUNter:ARP:TRANsmitted:AREPly?	Queries a count value of transmitted arp reply.	√	√	—	-
-	:COUNter:ARP:TRANsmitted:AREQuest?	Queries a count value of transmitted arp request.	√	√	—	-
-	:COUNter:BULK:ALARm:PSLoss?	Queries a count value of Pattern Sync. Loss.	—	—	√	-
-	:COUNter:BULK:ERRor:BINFo?	Queries a count value of Bit Info. (the number of error bits in the Bulk pattern).	—	—	√	-
-	:COUNter:CAPture:RECeived:FILTered?	Queries a count value of the capture filter (frames that pass through the capture filter).	√	√	√	-
-	:COUNter:CAPture:RECeived:TRIGgered?	Queries a count value of the capture trigger (frames that pass through the capture trigger).	√	√	√	-
	:COUNter:ETHernet:MC ONtrol?	Queries a value of the Mac Control Frame counter.	√	√	—	
	:COUNter:ETHernet:LF Ailed?	Queries a value of the Link Failed counter.	—	√	—	
-	:COUNter:ETHernet:ER Ror:AERRors?	Queries a count value of alignment errors (alignment error frames).	√	—	—	-
-	:COUNter:ETHernet:ER Ror:LERRor?	Queries a count value of line errors .	√	√	—	-
-	:COUNter:ETHernet:ER Ror:COLLisions?	Queries a count value of collisions (collisions generated).	√	—	—	-
-	:COUNter:ETHernet:ER Ror:BAERRors?	Queries a count value of byte alignment errors.	—	√	—	-
-	:COUNter:ETHernet:ER Ror:DERRors?	Queries a count value of dribble errors (dribble error frames).	√	—	—	-
-	:COUNter:ERRor:ETHer net:FRAGments?	Queries a count value of fragments.	—	—	√	-
-	:COUNter:ERRor:ETHer net:OAFerror?	Queries a count value of oversize and fcs errors (a frame whose size is larger than the standard, with FCS error).	—	—	√	-
-	:COUNter:ERRor:ETHer net:OVERsize?	Queries a count value of oversize (a frame whose size is larger than the standard).	—	—	√	-
-	:COUNter:ERRor:ETHer net:UNDErsize?	Queries a count value of oversize (a frame whose size is smaller than the standard).	—	—	√	-
-	:COUNter:ETHernet:AL ARm:RECeived:LFS?	Queries the number of received Local Fault signals.	—	√	—	-

6.1 List of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
-	:COUNter:ETHernet:ALARm:RECeived:RFS?	Queries the number of received Remote Fault signals.	—	√	—	-
-	:COUNter:ETHernet:ALARm:TRANsmitted:LFS?	Queries the number of transmitted Local Fault signals.	—	√	—	-
-	:COUNter:ETHernet:ALARm:TRANsmitted:RFS?	Queries the number of transmitted Remote Fault signals.	—	√	—	-
-	:COUNter:ETHernet:RECeived:BYTeS?	Queries a count value of Received Ethernet Bytes (the number of bytes of the received Ethernet frames).	—	—	√	-
-	:COUNter:ETHernet:RECeived:FRAMe?	Queries a count value of the received Ethernet frames.	—	—	√	-
-	:COUNter:ETHernet:RECeived:FRAMe:FPS?	Queries a frame rate value (fps) of the received Ethernet frames.	—	—	√	-
-	:COUNter:ETHernet:RECeived:PCT?	Queries a value of the Received Ethernet Bit Rate (%) counter.	—	—	√	-
-	:COUNter:ETHernet:TRANsmitted:BYTeS?	Queries a count value of Transmitted Ethernet Bytes (the number of bytes of the received Ethernet frames).	—	—	√	-
-	:COUNter:ETHernet:TRANsmitted:FRAMe?	Queries a count value of the transmitted Ethernet frames.	—	—	√	-
-	:COUNter:ETHernet:TRANsmitted:FRAMe:FPS?	Queries a frame rate value (fps) of the transmitted Ethernet frames.	—	—	√	-
-	:COUNter:ETHernet:TRANsmitted:PCT?	Queries a value of the Transmitted Ethernet Bit Rate (%) counter.	—	—	√	-
-	:COUNter:ICMPv6:RECeived:NA?	Queries the number of received ICMPv6 (NA) packets.	√	√	√	-
-	:COUNter:ICMPv6:RECeived:EREQuest?	Queries the number of received ICMPv6 (Echo Request) packets.	√	√	√	-
-	:COUNter:ICMPv6:RECeived:EREPLy?	Queries the number of received ICMPv6 (Echo Reply) packets.	√	√	√	-
-	:COUNter:ICMPv6:RECeived:NS?	Queries the number of received ICMPv6 (NS) packets.	√	√	√	-
-	:COUNter:ICMPv6:TRANsmitted:NA?	Queries the number of transmitted ICMPv6 (NA) packets.	√	√	√	-
-	:COUNter:ICMPv6:TRANsmitted:NS?	Queries the number of transmitted ICMPv6 (NS) packets.	√	√	√	-
-	:COUNter:ICMPv6:TRANsmitted:EREPLy?	Queries the number of transmitted ICMPv6 (Echo Reply) packets.	√	√	√	-

Section 6 Details of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
	:COUNter:ICMPv6:TRANsmitted:EREQuest?	Queries the number of transmitted ICMPv6 (Echo Request) packets.	√	√	√	-
-	:COUNter:IP:ERRor:CHECksum?	Queries a count value of the ip checksum error.	√	√	√	-
-	:COUNter:IP:RECEived:PACKets?	Queries a count value of the received IP packets.	√	√	√	-
-	:COUNter:IP:RECEived:PACKets:PPS?	Queries the packet rate value (pps) for received IP packets.	√	√	√	-
-	:COUNter:IP:TRANsmitted:PACKets?	Queries a count value of the transmitted IP packets.	√	√	√	-
-	:COUNter:IP:TRANsmitted:PACKets:PPS?	Queries the packet rate value (pps) for transmitted IP packets.	√	√	√	-
-	:COUNter:IPV6:RECEived:PACKets:PPS?	Queries the number of transmitted IPv6 (pps) packets.	√	√	√	-
-	:COUNter:IPV6:RECEived:PACKets?	Queries the number of received IPv6 packets.	√	√	√	-
-	:COUNter:IPV6:TRANsmitted:PACKets?	Queries the number of transmitted IPv6 packets.	√	√	√	-
-	:COUNter:IPV6:TRANsmitted:PACKets:PPS?	Queries the number of transmitted IPv6 (pps) packets.	√	√	√	-
-	:COUNter:PING:RECEived:EREQuest?	Queries a count value of the Received Ping Request (received icmp echo request).	√	√	√	-
-	:COUNter:PING:RECEived:EREPLY?	Queries a count value of the Received Ping Reply (received icmp echo reply).	√	√	√	-
-	:COUNter:PING:TRANsmitted:EREPLY?	Queries a count value of the Transmitted Ping Reply (transmitted icmp echo reply).	√	√	√	-
-	:COUNter:PING:TRANsmitted:EREQuest?	Queries a count value of the Transmitted Ping Request (transmitted icmp echo request).	√	√	√	-
-	:COUNter:PPP:ERRor:ABORTed?	Queries a count value of the aborted frame.	—	—	√	-
-	:COUNter:PPP:RECEived:BBSTuffing?	Queries a count value of the received bytes before destuffing.	—	—	√	-
-	:COUNter:PPP:TRANsmitted:BASTuffing?	Queries a count value of the transmitted bytes after stuffing.	—	—	√	-
-	:COUNter:TCP:RECEived:PACKets?	Queries the number of received TCP packets.	√	√	√	-
-	:COUNter:TCP:RECEived:PACKets:PPS?	Queries the number of received TCP packets (pps).	√	√	√	-

6.1 List of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
-	:COUNter:TCP:ERRor:C HECKsum?	Queries a count value of the tcp checksum error.	√	√	√	-
-	:COUNter:UDP:RECeive d:PACKets?	Queries the number of received UDP pack- ets.	√	√	√	-
-	:COUNter:UDP:RECeive d:PACKets:PPS?	Queries the number of received UDP pack- ets (pps).	√	√	√	-
-	:COUNter:UDP:ERRor:C HECKsum?	Queries a count value of udp checksum er- rors.	√	√	√	-
-	:COUNter:UNFRame:AL ARm:PSLoss?	Queries the counter value and number of seconds for Unframe Pattern Sync. Loss status.	√	√	√	-
-	:COUNter:UNFRame:AL ARm:PSLoss:LANe0?	Queries the counter value and number of seconds for Unframe Pattern Sync. Loss status in Lane0.	—	√	—	-
-	:COUNter:UNFRame:AL ARm:PSLoss:LANe1?	Queries the counter value and number of seconds for Unframe Pattern Sync. Loss status in Lane1.	—	√	—	-
-	:COUNter:UNFRame:AL ARm:PSLoss:LANe2?	Queries the counter value and number of seconds for Unframe Pattern Sync. Loss status in Lane2.	—	√	—	-
-	:COUNter:UNFRame:AL ARm:PSLoss:LANe3?	Queries the counter value and number of seconds for Unframe Pattern Sync. Loss status in Lane3.	—	√	—	-
-	:COUNter:UNFRame:E RRor:BIT?	Queries the number of error bits and error bit rate received when Unframe is set.	√	√	√	-
-	:COUNter:UNFRame:E RRor:BIT:LANe0?	Queries the number of error bits and error bit rate received in Lane 0 when Unframe is set.	—	√	—	-
-	:COUNter:UNFRame:E RRor:BIT:LANe1?	Queries the number of error bits and error bit rate received in Lane 1 when Unframe is set.	—	√	—	-
-	:COUNter:UNFRame:E RRor:BIT:LANe2?	Queries the number of error bits and error bit rate received in Lane 2 when Unframe is set.	—	√	—	-
-	:COUNter:UNFRame:E RRor:BIT:LANe3?	Queries the number of error bits and error bit rate received in Lane 3 when Unframe is set.	—	√	—	-
-	:COUNter:WIS:ALARm?	Queries a count value of alarms in the WAN-PHY counter.	—	√	—	-
-	:COUNter:WIS:ERRor?	Queries a count value of errors in the WAN-PHY counter.	—	√	—	-

Section 6 Details of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
-	:COUNter:WIS:POINter?	Queries a value of STS pointers (H1,H2) and STS pointer (CD).	—	√	—	-
-	:COUNter:PREAmble?	Returns Preamble CRC Error counter value	—	√	—	-
-	:COUNter:DATA? {CURRENT | ACCUMULATED},<number of item>,<item>[,<item>]...	Fetches counter measurement data in port units as batch	√	√	√	-
-	:COUNter:POE:ALARm?	Returns PoE Alarm status time (PoE OFF/UNDER status continuous time)	—	√	—	-
-	:COUNter:FREQuency?	Returns send clock frequency (Hz)	—	√	—	-
-	:COUNter:FREQuency:DIFFerence:HZ?	Returns drift of send reference clock (Hz)	—	√	—	-
-	:COUNter:FREQuency:DIFFerence:PPM?	Returns drift of send reference clock (ppm)	—	√	—	-
:COUNter:GRAPh:RESolution {R1SEC | R1MIN | R15MIN | R60MIN}	:COUNter:GRAPh:RESolution?	Sets the resolution of the counter graph.	√	√	√	R1SEC (1 sec)
:COUNter:GRAPh:SELe ct <number>,<counter_id>[,<flow_id>]	:COUNter:GRAPh:SELe ct? <number>	Sets the counter type for graph display.	√	√	√	-
-	:COUNter:GRAPh:DATA? <counter_id>[,<flow_id>]	Queries the graph data of the counter.	√	√	√	-
-	:COUNter:VCAT:DATA:ALL?	Queries all CH of the VCAT counter.	—	—	√	
:COUNter:FLOW:FIELD <condition>	:COUNter:FLOW:FIELD?	Sets the target field (Tx/Rx, Type, Base position, Offset, Length) for the multiflow counter.	—	√	—	RX,USER_DEFINED,FRAME,0,16
:COUNter:FLOW:FILTer:ENABle <BOOLEAN>	:COUNter:FLOW:FILTer:ENABle?	Enables/disables the multiflow counter filter.	—	√	—	0 (disable)
:COUNter:FLOW:FILTer:PATtern1 {DONT_CARE | NOT_MATCH | MATCH}	:COUNter:FLOW:FILTer:PATtern1?	Sets a filter to the preset pattern 1 (Don't care/Not match/Match).	—	√	—	DONT_CARE (Don't care)
:COUNter:FLOW:FILTer:PATtern2 {DONT_CARE | NOT_MATCH | MATCH}	:COUNter:FLOW:FILTer:PATtern2?	Sets a filter to the preset pattern 2 (Don't care/Not match/Match).	—	√	—	DONT_CARE (Don't care)
:COUNter:FLOW:FILTer:PATtern3 {DONT_CARE | NOT_MATCH | MATCH}	:COUNter:FLOW:FILTer:PATtern3?	Sets a filter to the preset pattern 3 (Don't care/Not match/Match).	—	√	—	DONT_CARE (Don't care)

6.1 List of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:COUNter:FLOW:FILTer:PATtern4 {DONT_CARE | NOT_MATCH | MATCH}	:COUNter:FLOW:FILTer:PATtern4?	Sets a filter to the preset pattern 4 (Don't care/Not match/Match).	—	√	—	DONT_CARE (Don't care)
:COUNter:FLOW:FILTer:ERRor {DONT_CARE | NOT_MATCH | MATCH}	:COUNter:FLOW:FILTer:ERRor?	Sets a filter to the preset error type (Don't care/Not match/Match).	—	√	—	DONT_CARE (Don't care)
:COUNter:FLOW:FIEld:FID {MONITOR | RESULT},<number of flow id>[,<flow id>]...	:COUNter:FLOW:FIEld:FID?	Specifies the Flow ID while measuring Flow Counter.	—	√	—	-
-	:COUNter:FLOW:FIEld:Nfid?	Returns count (0 to 255) for currently set flow ID	—	√	—	-
-	:COUNter:FLOW:FIEld:REMAins?	Returns currently settable remaining block count (0 to 4) as distributing condition	—	√	—	-
-	:COUNter:FLOW:FIEld:NCONdition?	Returns currently set distributing condition count (0 to 4)	—	√	—	-
:COUNter:FLOW:MONitor:FID <number of flow id>[,<flow id>]...	:COUNter:FLOW:MONitor:FID?	Specifies the Flow ID of the counter to be monitored while measuring Multiflow Counter.	—	√	—	32,0,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30,31
-	:COUNter:FLOW:FIEld:Nfid?	Queries the currently set flow ID number (0 to 255).	—	√	—	-
-	:COUNter:FLOW:MONitor:DATA?	Queries the data of the counter (up to 32 counters) that can be loaded during Multiflow Counter measurement.	—	√	—	0,0
-	:COUNter:FLOW:RESult:DATA? <start flow id>,<number of data>	Queries the data of the counter (up to 65536 counters) that can be loaded when Multiflow Counter measurement is stopped.	—	√	—	-
-	:COUNter:FLOW:MONitor:DATA:GRAPh? <flow id number>	Queries the graph data of the counter that can be loaded during Multiflow Counter measurement.	—	√	—	-

PING commands (PING)

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:PING:STOP	-	Forcibly stops the ping function.	√	√	√	-
:PING:START	-	Starts a ping.	√	√	√	-
-	:PING:STATe?	Queries the operation state of the ping function.	√	√	√	-
:PING:TYPE {IPV4 | IPV6}	:PING:TYPE?	Selects one of IPv4 or IPv6.	√	√	√	IPV4
:PING:DESTination <HEX>	:PING:DESTination?	Sets the destination IP address.	√	√	√	#H00000000 (0.0.0.0), #H00000000 0000000000 0000000000 0000 (::)
-	:PING:DATA? <ping_number>	Queries the ping result.	√	√	√	-

Stream transmission commands (TSTReam)

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:TSTReam:STOP	-	Stops transmission of stream data.	√	√	√	-
:TSTReam:START	-	Starts transmission of stream data.	√	√	√	-
-	:TSTReam:STATe?	Queries the operation status of the stream transmission.	√	√	√	-
-	:TSTReam:TIME:START?	Queries the start time of stream transmission.	√	√	√	-
-	:TSTReam:TIME:ELAPed?	Queries the elapsed time after stream transmission is started.	√	√	√	0
-	:TSTReam:TIME:STOP?	Queries the stop time of stream transmission.	√	√	√	-
:TSTReam:TIMeStamp { LAST_BIT | FIRST_BIT}	:TSTReam:TIMeStamp?	Specifies the method to add a timestamp to a transmission stream.	√	√	√	LAST_BIT (For store and forward devices)
:TSTReam:TABLE:ENABle	-	Enables all set streams.	√	√	√	-
:TSTReam:TABLE:DISABle	-	Disables all set streams.	√	√	√	-
-	:TSTReam:TABLE:FAIL:ID?	Queries the erroneous stream ID.	√	√	√	-
:TSTReam:TABLE:COPIY <stream_number>	-	Copies the stream data.	√	√	√	-
:TSTReam:TABLE:WRITe	-	Writes the stream setting data of the ID that is been edited to the hardware.	√	√	√	-
:TSTReam:TABLE:PASTe <stream_number>	-	Pates the stream data.	√	√	√	-
:TSTReam:TABLE:ACLe ar	-	Clears all of the stream data.	√	√	√	-
:TSTReam:TABLE:ADD	-	Adds the new stream data.	√	√	√	-
:TSTReam:TABLE:CUT <stream_number>	-	Cuts the stream data with the specified number.	√	√	√	-
:TSTReam:TABLE:DELe te <stream_number>	-	Deletes the stream data.	√	√	√	-
-	:TSTReam:TABLE:NSTR eams?	Queries the number of pieces of preset stream data.	√	√	√	0
:TSTReam:TABLE:ID <s tream_number>	:TSTReam:TABLE:ID?	Sets the number of a stream to be edited.	√	√	√	-

Section 6 Details of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:TSTReam:TABLE:ITEM:ENABLE <BOOLEAN>	:TSTReam:TABLE:ITEM:ENABLE?	Enables/disables this stream.	√	√	√	1 (enable)
:TSTReam:TABLE:ITEM:CONTROL:DISTRibution <type>	:TSTReam:TABLE:ITEM:CONTROL:DISTRibution?	Sets the type of operating flow of a stream.	√	√	√	NEXT (Next stream)
:TSTReam:TABLE:ITEM:CONTROL:FPBurst <NR1>	:TSTReam:TABLE:ITEM:CONTROL:FPBurst?	Sets the number of frames in a burst.	√	√	√	1
:TSTReam:TABLE:ITEM:CONTROL:BPSTream <NR1>	:TSTReam:TABLE:ITEM:CONTROL:BPSTream?	Sets the number of bursts in a stream.	√	√	√	1
:TSTReam:TABLE:ITEM:CONTROL:JTID <stream_number>	:TSTReam:TABLE:ITEM:CONTROL:JTID?	Sets an ID of a stream that is the nest jump destination.	√	√	√	-
:TSTReam:TABLE:ITEM:CONTROL:COUNt <NR1>	:TSTReam:TABLE:ITEM:CONTROL:COUNt?	Sets the loop count when "jump to stream for count" is selected.	√	√	√	1
:TSTReam:TABLE:ITEM:CONTROL:GAP:IBG <NR1>	:TSTReam:TABLE:ITEM:CONTROL:GAP:IBG?	Sets a value of IBG.	√	√	√	-
:TSTReam:TABLE:ITEM:CONTROL:GAP:ISG <NR1>	:TSTReam:TABLE:ITEM:CONTROL:GAP:ISG?	Sets a value of ISG.	√	√	√	-
:TSTReam:TABLE:ITEM:CONTROL:GAP:IFG:TYPE {FIXED | RANDOM}	:TSTReam:TABLE:ITEM:CONTROL:GAP:IFG:TYPE?	Sets the type IFG generates.	√	√	√	FIXED
:TSTReam:TABLE:ITEM:CONTROL:GAP:IFG:Value <NR1>	:TSTReam:TABLE:ITEM:CONTROL:GAP:IFG:Value?	Sets a value of IFG.	√	√	√	-
:TSTReam:TABLE:ITEM:CONTROL:GAP:IFG:Minimum <NR1>	:TSTReam:TABLE:ITEM:CONTROL:GAP:IFG:Minimum?	Sets a minimum value of IFG.	√	√	√	-
:TSTReam:TABLE:ITEM:CONTROL:GAP:IFG:Maximum <NR1>	:TSTReam:TABLE:ITEM:CONTROL:GAP:IFG:Maximum?	Sets a maximum value of IFG.	√	√	√	-
:TSTReam:TABLE:ITEM:ERROR:GFP:TYPE {OFF | CHEC | CHEC_CORR | THEC | THEC_CORR | EHEC | EHEC_CORR | FSC}	:TSTReam:TABLE:ITEM:ERROR:GFP:TYPE?	Inserts an error at the GFP level.	—	—	√	OFF
:TSTReam:TABLE:ITEM:ERROR:LAPS:TYPE {OFF | FCS | ABORT}	:TSTReam:TABLE:ITEM:ERROR:LAPS:TYPE?	Inserts an error at the LAPS level.	—	—	√	OFF

6.1 List of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:TSTReam:TABLE:ITEM :ERRor:LEX:TYPE {OFF | FCS | FRAGMENT | UNDERSIZE | OVERSIZE | OVER_FCS | ABORT}	:TSTReam:TABLE:ITEM :ERRor:LEX:TYPE?	Inserts an error at the LEX level.	—	—	√	OFF
:TSTReam:TABLE:ITEM :ERRor:ETHernet:TYPE <errortype>	:TSTReam:TABLE:ITEM :ERRor:ETHernet:TYPE?	Sets the type of error added to the Ethernet frame.	√	√	—	OFF
:TSTReam:TABLE:ITEM :ERRor:IP:TYPE {OFF | CHECKSUM}	:TSTReam:TABLE:ITEM :ERRor:IP:TYPE?	Sets the type of error to be added to IP packets.	√	√	√	OFF
:TSTReam:TABLE:ITEM :ERRor:PPP:TYPE <errortype>	:TSTReam:TABLE:ITEM :ERRor:PPP:TYPE?	Sets the type of error to be added to PPP/Cisco HDLC frame.	—	—	√	OFF
:TSTReam:TABLE:ITEM :ERRor:TCP:TYPE {OFF | CHECKSUM}	:TSTReam:TABLE:ITEM :ERRor:TCP:TYPE?	Sets the type of error to be added to TCP/UDP packets.	√	√	√	OFF
:TSTReam:TABLE:ITEM :FRAME:BDATa {ALL0 | ALL1}	:TSTReam:TABLE:ITEM :FRAME:BDATa?	Sets a value for a section in the frame data, which has no particular specification.	√	√	√	ALL0 (All0)
:TSTReam:TABLE:ITEM :FSIZE:MAXimum <NR1>	:TSTReam:TABLE:ITEM :FSIZE:MAXimum?	Sets the maximum frame size.	√	√	√	1518
:TSTReam:TABLE:ITEM :FSIZE:MINimum <NR1>	:TSTReam:TABLE:ITEM :FSIZE:MINimum?	Sets the minimum value of the frame size.	√	√	√	64
:TSTReam:TABLE:ITEM :FSIZE:VALue <NR1>	:TSTReam:TABLE:ITEM :FSIZE:VALue?	Sets and loads the frame size when the frame size type is set to Fixed.	√	√	√	64
:TSTReam:TABLE:ITEM :FSIZE:TYPE {AUTO | FIXED | INCREMENT | RANDOM}	:TSTReam:TABLE:ITEM :FSIZE:TYPE?	Sets the setting type of frame size.	√	√	√	AUTO
:TSTReam:TABLE:ITEM :FRAME:PROGram:ENABle <BOOLEAN>	:TSTReam:TABLE:ITEM :FRAME:PROGram:ENABle?	Sets whether or not to insert programmable pattern between Ethernet Type field and Protocol header	—	√	—	-
:TSTReam:TABLE:ITEM :FRAME:PROGram:PATtern <length of data>[, <HEX>]	:TSTReam:TABLE:ITEM :FRAME:PROGram:PATtern?	Sets whether or not to insert Programmable Pattern between Ethernet Type field and Protocol header	—	√	—	-
:TSTReam:TABLE:ITEM :FRAME:DField:HEADer:DATA <length of data>[, <HEX>]	:TSTReam:TABLE:ITEM :FRAME:DField:HEADer:DATA?	Sets Programmable Header Pattern, which is a user-defined pattern between the header pattern selected by Protocol and the data pattern set by Data Field.	√	—	—	-

Section 6 Details of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:TSTReam:TABLE:ITEM :FRAME:DField:HEADer :SN:ENABle <BOOLEA N>	:TSTReam:TABLE:ITEM :FRAME:DField:HEADer :SN:ENABle?	Sets whether to add a 16-bit length se- quence number (SN) field to Programmable Header Pattern.	√	√	√	0 (disable)
:TSTReam:TABLE:ITEM :FRAME:DField:HEADer :SN:Offset <NR1>	:TSTReam:TABLE:ITEM :FRAME:DField:HEADer :SN:Offset?	Sets a position of the Sequence Number (SN) field.	√	√	—	0
:TSTReam:TABLE:ITEM :FRAME:DField:HEADer :SN:INITial <NR1>	:TSTReam:TABLE:ITEM :FRAME:DField:HEADer :SN:INITial?	Sets the initial value of the Sequence Num- ber field.	√	√	—	0
:TSTReam:TABLE:ITEM :FRAME:DField1:OFFSe t <NR1>	:TSTReam:TABLE:ITEM :FRAME:DField1:OFFSe t?	Sets a position of Datafield 1.	√	√	√	0
:TSTReam:TABLE:ITEM :FRAME:DField1:LENGt h <NR1>	:TSTReam:TABLE:ITEM :FRAME:DField1:LENGt h?	Sets the pattern length of Datafield 1.	√	√	√	1
:TSTReam:TABLE:ITEM :FRAME:DField1:TYPE <datafield>	:TSTReam:TABLE:ITEM :FRAME:DField1:TYPE?	Sets the pattern type of Datafield 1.	√	√	√	ALL0
:TSTReam:TABLE:ITEM :FRAME:DField1:ENABl e <BOOLEAN>	:TSTReam:TABLE:ITEM :FRAME:DField1:ENABl e?	Sets whether to add Datafield 1.	√	√	√	0 (disable)
:TSTReam:TABLE:ITEM :FRAME:DField1:PROGr am:PATtern <length of data>[,<HEX>]	:TSTReam:TABLE:ITEM :FRAME:DField1:PROGr am:PATtern?	Sets a pattern when the pattern type of Datafield 1 is Programmable.	√	√	√	2,#H00FF (00 FF)
:TSTReam:TABLE:ITEM :FRAME:DField1:SN:VA Lue <HEX>	:TSTReam:TABLE:ITEM :FRAME:DField1:SN:VA Lue?	Sets the initial value at the start of trans- mission when the pattern type of Datafiled1 is set to Sequence number.	√	√	√	#H0000 (00 00)
-	:TSTReam:TABLE:ITEM :FRAME:DField1:ITFRa me?	Queries whether Datafield1 is a test frame.	√	√	√	-
:TSTReam:TABLE:ITEM :FRAME:DField1:TFRam e:TYPE {PRBS | FLO W_ID}	:TSTReam:TABLE:ITEM :FRAME:DField1:TFRam e:TYPE?	Specifies the type of the contents (PRBS9 or Flow ID) to be set to the test frame.	—	√	—	PRBS
:TSTReam:TABLE:ITEM :FRAME:DField1:TFRam e:FID <flow id>	:TSTReam:TABLE:ITEM :FRAME:DField1:TFRam e:FID?	Sets the Flow ID of the test frame.	—	√	—	0
:TSTReam:TABLE:ITEM :FRAME:DField2:LENGt h <NR1>	:TSTReam:TABLE:ITEM :FRAME:DField2:LENGt h?	Sets the pattern length of Datafield 2.	√	√	√	1

6.1 List of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:TSTReam:TABLE:ITEM :FRAME:DFIeld2:TYPE <datafield>	:TSTReam:TABLE:ITEM :FRAME:DFIeld2:TYPE?	Sets the pattern type of Datafield 2.	√	√	√	ALL0
:TSTReam:TABLE:ITEM :FRAME:DFIeld2:OFFSet <NR1>	:TSTReam:TABLE:ITEM :FRAME:DFIeld2:OFFSet?	Sets a position of Datafield 2.	√	√	√	0
:TSTReam:TABLE:ITEM :FRAME:DFIeld2:ENABLE <BOOLEAN>	:TSTReam:TABLE:ITEM :FRAME:DFIeld2:ENABLE?	Sets whether to add Datafield 2.	√	√	√	0 (disable)
:TSTReam:TABLE:ITEM :FRAME:DFIeld3:OFFSet <NR1>	:TSTReam:TABLE:ITEM :FRAME:DFIeld3:OFFSet?	Sets a position of Datafield 3.	√	√	√	0
:TSTReam:TABLE:ITEM :FRAME:DFIeld3:LENGTH <NR1>	:TSTReam:TABLE:ITEM :FRAME:DFIeld3:LENGTH?	Sets the pattern length of Datafield 3.	√	√	√	1
:TSTReam:TABLE:ITEM :FRAME:DFIeld3:TYPE <datafield>	:TSTReam:TABLE:ITEM :FRAME:DFIeld3:TYPE?	Sets the pattern type of Datafield 3.	√	√	√	ALL0
:TSTReam:TABLE:ITEM :FRAME:DFIeld3:ENABLE <BOOLEAN>	:TSTReam:TABLE:ITEM :FRAME:DFIeld3:ENABLE?	Sets whether to add Datafield 3.	√	√	√	0 (disable)
:TSTReam:TABLE:ITEM :FRAME:DFIeld4:LENGTH <NR1>	:TSTReam:TABLE:ITEM :FRAME:DFIeld4:LENGTH?	Sets the pattern length of Datafield 4.	√	√	√	1
:TSTReam:TABLE:ITEM :FRAME:DFIeld4:TYPE <datafield>	:TSTReam:TABLE:ITEM :FRAME:DFIeld4:TYPE?	Sets the pattern type of Datafield 4.	√	√	√	ALL0
:TSTReam:TABLE:ITEM :FRAME:DFIeld4:ENABLE <BOOLEAN>	:TSTReam:TABLE:ITEM :FRAME:DFIeld4:ENABLE?	Sets whether to add Datafield 4 or not.	√	√	√	0 (disable)
:TSTReam:TABLE:ITEM :FRAME:DFIeld4:OFFSet <NR1>	:TSTReam:TABLE:ITEM :FRAME:DFIeld4:OFFSet?	Sets a position of Datafield 4.	√	√	√	0
:TSTReam:TABLE:ITEM :FRAME:ETHernet:SFD <BINARY>	:TSTReam:TABLE:ITEM :FRAME:ETHernet:SFD?	Sets a value of the SFD field (8 bits).	√	√	—	#B10101011 (1010 1011)
:TSTReam:TABLE:ITEM :FRAME:ETHernet:DA: MASK <MAC_ADDRESS>	:TSTReam:TABLE:ITEM :FRAME:ETHernet:DA: MASK?	Sets a mask pattern of the DA field (destination MAC address, 48 bits).	√	√	√	#HFFFFFF FFFFFF (FF-FF-FF- FF-FF-FF)
:TSTReam:TABLE:ITEM :FRAME:ETHernet:DA: VALue <MAC_ADDRESS>	:TSTReam:TABLE:ITEM :FRAME:ETHernet:DA: VALue?	Sets a value of the DA field (destination MAC address, 48 bits).	√	√	√	#H00000000 0000 (00-00-00-00- 00-00)

Section 6 Details of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:TSTReam:TABLE:ITEM :FRAME:ETHernet:DA:TYPE {GATEWAY | STATIC | INCREMENT | DECREMENT | RANDOM | PAUSE}	:TSTReam:TABLE:ITEM :FRAME:ETHernet:DA:TYPE?	Sets the type to generate DA (destination MAC address, 48 bits).	√	√	√	STATIC
:TSTReam:TABLE:ITEM :FRAME:ETHernet:PREamble:PATtern <BINARY>	:TSTReam:TABLE:ITEM :FRAME:ETHernet:PREamble:PATtern?	Sets a value of the preamble field pattern (8 bits).	√	√	—	#B10101010
:TSTReam:TABLE:ITEM :FRAME:ETHernet:PREamble:SIZE <NR1>	:TSTReam:TABLE:ITEM :FRAME:ETHernet:PREamble:SIZE?	Sets a size of the preamble field.	√	√	—	8
:TSTReam:TABLE:ITEM :FRAME:ETHernet:PREamble:PROgram <size>, <pattern>	:TSTReam:TABLE:ITEM :FRAME:ETHernet:PREamble:PROgram?	Sets the size and pattern of the preamble.	—	√	—	6,#HAAAAA AAAAAA
:TSTReam:TABLE:ITEM :FRAME:ETHernet:PROTocol:AUTO <BOOLEAN>	:TSTReam:TABLE:ITEM :FRAME:ETHernet:PROTocol:AUTO?	Sets the auto setting of a type field value to enable or disable.	√	√	√	1 (enable)
:TSTReam:TABLE:ITEM :FRAME:ETHernet:SA:MASK <MAC_ADDRESS>	:TSTReam:TABLE:ITEM :FRAME:ETHernet:SA:MASK?	Sets a mask value of the SA field (source MAC address, 48 bits).	√	√	√	#HFFFFFF FFFFFF (FF-FF-FF- FF-FF-FF)
:TSTReam:TABLE:ITEM :FRAME:ETHernet:SA:VALue <MAC_ADDRESS>	:TSTReam:TABLE:ITEM :FRAME:ETHernet:SA:VALue?	Sets a value of the SA field (source MAC address, 48 bits).	√	√	√	#H00000000 0000 (00-00-00-00- 00-00)
:TSTReam:TABLE:ITEM :FRAME:ETHernet:SA:TYPE {THIS_PORT | STATIC | INCREMENT | DECREMENT | RANDOM}	:TSTReam:TABLE:ITEM :FRAME:ETHernet:SA:TYPE?	Sets the type to generate SA (source MAC address, 48 bits).	√	√	√	STATIC
:TSTReam:TABLE:ITEM :FRAME:ETHernet:TYPE <HEX>	:TSTReam:TABLE:ITEM :FRAME:ETHernet:TYPE?	Sets a value of the type field (16 bits).	√	√	√	#H0800 (IP)
:TSTReam:TABLE:ITEM :FRAME:LLC:DATA <HEX>	:TSTReam:TABLE:ITEM :FRAME:LLC:DATA?	Sets/queries the value of the LLC field.	√	√	√	#HFEFE03
:TSTReam:TABLE:ITEM :FRAME:MAPos:ADDRes <HEX>	:TSTReam:TABLE:ITEM :FRAME:MAPos:ADDRes?	Sets the value for Address field (8 or 16 bits) in a MAPOS frame.	—	—	√	#H03 (Type: Ver- sion1)

6.1 List of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:TSTReam:TABLE:ITEM:FRAME:MAPos:CONTROL <HEX>	:TSTReam:TABLE:ITEM:FRAME:MAPos:CONTROL?	Sets the value for Control field (8 bits) in a MAPOS frame.	—	—	√	#H03
:TSTReam:TABLE:ITEM:FRAME:MAPos:PROTOCOL <HEX>	:TSTReam:TABLE:ITEM:FRAME:MAPos:PROTOCOL?	Sets the value for Protocol field (16 bits) in a MAPOS frame.	—	—	√	#H0021 (IPv4)
:TSTReam:TABLE:ITEM:FRAME:MAPos:PROTOCOL:AUTO <BOOLEAN>	:TSTReam:TABLE:ITEM:FRAME:MAPos:PROTOCOL:AUTO?	Selects whether to automatically set the Protocol field value in a MAPOS frame.	—	—	√	-
:TSTReam:TABLE:ITEM:FRAME:MPLS:TABLE:DELETE <mpls_label_number>	-	Deletes the MPLS label data.	√	√	√	-
:TSTReam:TABLE:ITEM:FRAME:MPLS:TABLE:ADD	-	Adds a new MPLS label.	√	√	√	-
:TSTReam:TABLE:ITEM:FRAME:MPLS:ENABLE <BOOLEAN>	:TSTReam:TABLE:ITEM:FRAME:MPLS:ENABLE?	Sets the MPLS label to enable or disable.	√	√	√	0 (disable)
:TSTReam:TABLE:ITEM:FRAME:MPLS:TYPE { UNICAST | MULTICAST }	:TSTReam:TABLE:ITEM:FRAME:MPLS:TYPE?	Sets the type of MPLS label.	√	√	√	UNICAST (MPLS unicast)
:TSTReam:TABLE:ITEM:FRAME:MPLS:TABLE:ID <mpls_label_number>	:TSTReam:TABLE:ITEM:FRAME:MPLS:TABLE:ID?	Specifies the MPLS label number to be edited.	√	√	√	-
:TSTReam:TABLE:ITEM:FRAME:MPLS:TABLE:ITEM:LABEL <NR1>	:TSTReam:TABLE:ITEM:FRAME:MPLS:TABLE:ITEM:LABEL?	Sets a value of the label field (20 bits).	√	√	√	0 (IPv4 Explicit NULL Label)
:TSTReam:TABLE:ITEM:FRAME:MPLS:TABLE:ITEM:TTL <NR1>	:TSTReam:TABLE:ITEM:FRAME:MPLS:TABLE:ITEM:TTL?	Sets a value of the Time to Live (TTL) field (8 bits).	√	√	√	0
:TSTReam:TABLE:ITEM:FRAME:MPLS:TABLE:ITEM:EXP <NR1>	:TSTReam:TABLE:ITEM:FRAME:MPLS:TABLE:ITEM:EXP?	Sets a value of the Experimental Use field (3 bits).	√	√	√	0
:TSTReam:TABLE:ITEM:FRAME:MPLS:TABLE:ITEM:BOSTack <NR1>	:TSTReam:TABLE:ITEM:FRAME:MPLS:TABLE:ITEM:BOSTack?	Sets a value of the Bottom of Stack (S) field (1 bit).	√	√	√	1 (the last entry in the label stack)
-	:TSTReam:TABLE:ITEM:FRAME:MPLS:TABLE:NItems?	Queries the numbers of preset MPLS labels.	√	√	√	0

Section 6 Details of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:TSTReam:TABLE:ITEM :FRAME:PPP:PROTOcol <HEX>	:TSTReam:TABLE:ITEM :FRAME:PPP:PROTOcol?	Sets a value of the protocol field (16 bits).	—	—	√	PPP: #H0021 (IPv4), Cisco HDLC: #H0800 (IPv4)
:TSTReam:TABLE:ITEM :FRAME:PPP:CONTROl < HEX>	:TSTReam:TABLE:ITEM :FRAME:PPP:CONTROl?	Sets a value of the control field (8 bits).	—	—	√	PPP: #H03, Cisco HDLC: #H00
:TSTReam:TABLE:ITEM :FRAME:PPP:ADDRess <HEX>	:TSTReam:TABLE:ITEM :FRAME:PPP:ADDRess?	Sets a value of the address field (8 bits).	—	—	√	PPP: #HFF, Cisco HDLC: #H0F
:TSTReam:TABLE:ITEM :FRAME:PPP:PROTOcol: AUTO <BOOLEAN>	:TSTReam:TABLE:ITEM :FRAME:PPP:PROTOcol: AUTO?	Sets the auto setting of a protocol field value to enable or disable.	—	—	√	-
:TSTReam:TABLE:ITEM :FRAME:VLAN:ENABLE <BOOLEAN>	:TSTReam:TABLE:ITEM :FRAME:VLAN:ENABLE?	Sets the 802.1q VLAN tag to enable or disable.	√	√	√	0 (disable)
:TSTReam:TABLE:ITEM :FRAME:VLAN:TPID < HEX>	:TSTReam:TABLE:ITEM :FRAME:VLAN:TPID?	Sets a value of the TPID field (2 bytes).	√	√	√	#H8100 (802.1Q Tag Type)
:TSTReam:TABLE:ITEM :FRAME:VLAN:CFI <NR1>	:TSTReam:TABLE:ITEM :FRAME:VLAN:CFI?	Sets a value of the cfi field (1 bit).	√	√	√	0 (reset)
:TSTReam:TABLE:ITEM :FRAME:VLAN:UPRiorit y <NR1>	:TSTReam:TABLE:ITEM :FRAME:VLAN:UPRiorit y?	Sets a value of the user priority field (3 bits).	√	√	√	-
:TSTReam:TABLE:ITEM :FRAME:VLAN:ID:VALu e <NR1>	:TSTReam:TABLE:ITEM :FRAME:VLAN:ID:VALu e?	Sets a value of the ID field (12 bits).	√	√	√	-
:TSTReam:TABLE:ITEM :FRAME:VLAN:ID:MOD E {STATIC | INCREM ENT | DECREMENT | RANDOM}	:TSTReam:TABLE:ITEM :FRAME:VLAN:ID:MOD E?	Sets the mode to generate VLAN ID.	√	√	√	STATIC (Static)
:TSTReam:TABLE:ITEM :FRAME:VLAN:ID:MAS K <BINARY>	:TSTReam:TABLE:ITEM :FRAME:VLAN:ID:MAS K?	Sets a mask pattern of the ID field (12 bits).	√	√	√	#B11111111111
:TSTReam:TABLE:ITEM :FRAME:VLAN:PATtern <number>[,<vlan tag> ...]	:TSTReam:TABLE:ITEM :FRAME:VLAN:PATtern ?	Sets the pattern of the VLAN tags at multiple stages.	—	√	—	1, #H81000001

6.1 List of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:TSTReam:TABLE:ITEM:FRAME:VLAN:ID:NUMBER <number>	:TSTReam:TABLE:ITEM:FRAME:VLAN:ID:NUMBER?	Specifies the number of stages of the VID that is generated in the Increment, Decrement, or Random mode.	—	√	—	1
:TSTReam:TABLE:ITEM:PROTocol:LACP:TYPE <Type>	:TSTReam:TABLE:ITEM:PROTocol:LACP:TYPE?	Sets a type of the Link Aggregation template.	√	√	—	LACPDU
:TSTReam:TABLE:ITEM:PROTocol:BPDU:TYPE <Type>	:TSTReam:TABLE:ITEM:PROTocol:BPDU:TYPE?	Sets a type of the BPDU template.	√	√	—	STP (STP Configuration BPDU)
:TSTReam:TABLE:ITEM:FRAME:PIM:REGISTER:HEADER:ENABLE <BOOLEAN>	:TSTReam:TABLE:ITEM:FRAME:PIM:REGISTER:HEADER:ENABLE?	Sets whether to insert a header for PIM Register Message.	√	√	—	0 (disable)
:TSTReam:TABLE:ITEM:FRAME:PIM:REGISTER:HEADER:DATA <HEX>	:TSTReam:TABLE:ITEM:FRAME:PIM:REGISTER:HEADER:DATA?	Sets the data of a header for PIM Register Message.	√	√	—	#H00
:TSTReam:TABLE:ITEM:PROTocol:TYPE <type>	:TSTReam:TABLE:ITEM:PROTocol:TYPE?	Specifies the upper protocol header.	√	√	√	IPV4
:TSTReam:TABLE:ITEM:PROTocol:DATA <HEX>	:TSTReam:TABLE:ITEM:PROTocol:DATA?	Sets the data pattern of the selected protocol.	√	√	—	#H00
:TSTReam:TABLE:ITEM:PROTocol:ARP:OPERATION <NR1>	:TSTReam:TABLE:ITEM:PROTocol:ARP:OPERATION?	Sets a value of the ar\$op (operation) field (16 bits).	√	√	√	1 (ARP Request)
:TSTReam:TABLE:ITEM:PROTocol:ARP:SIADDRESS <IP_ADDRESS>	:TSTReam:TABLE:ITEM:PROTocol:ARP:SIADDRESS?	Sets a value of the ar\$spa (sender ip address) field.	√	√	√	#H7F000001 (127.0.0.1)
:TSTReam:TABLE:ITEM:PROTocol:ARP:SMADDRESS <HEX>	:TSTReam:TABLE:ITEM:PROTocol:ARP:SMADDRESS?	Sets a value of the ar\$sha (sender hardware address) field.	√	√	√	#H00DEBB000000 (00-DE-BB-00-00-00), #H00000000 (MAPOS)
:TSTReam:TABLE:ITEM:PROTocol:ARP:TIADDRESS <IP_ADDRESS>	:TSTReam:TABLE:ITEM:PROTocol:ARP:TIADDRESS?	Sets a value of the ar\$tpa (target ip address) field.	√	√	√	#H7F000001 (127.0.0.1)
:TSTReam:TABLE:ITEM:PROTocol:ARP:TMADDRESS <HEX>	:TSTReam:TABLE:ITEM:PROTocol:ARP:TMADDRESS?	Sets a value of the ar\$tha (target hardware address) field.	√	√	√	#H00DEBB000000 (00-DE-BB-00-00-00), #H00000000 (MAPOS)

Section 6 Details of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:TSTReam:TABLE:ITEM :PROTocol:DHCP:SECS <NR1>	:TSTReam:TABLE:ITEM :PROTocol:DHCP:SECS?	Sets a value of secs field (16 bits).	√	√	√	0
:TSTReam:TABLE:ITEM :PROTocol:DHCP:HTYPE <NR1>	:TSTReam:TABLE:ITEM :PROTocol:DHCP:HTYPE?	Sets a value of the htype field (1 octet).	√	√	√	1 (Ethernet (10 Mb))
:TSTReam:TABLE:ITEM :PROTocol:DHCP:OP <NR1>	:TSTReam:TABLE:ITEM :PROTocol:DHCP:OP?	Sets a value of op field (1 octet).	√	√	√	1 (BOOTRE- QUEST)
:TSTReam:TABLE:ITEM :PROTocol:DHCP:SIADDR <IP_ADDRESS>	:TSTReam:TABLE:ITEM :PROTocol:DHCP:SIADDR?	Sets a value of the siaddr field.	√	√	√	#H00000000 (0.0.0.0)
:TSTReam:TABLE:ITEM :PROTocol:DHCP:HOPS <NR1>	:TSTReam:TABLE:ITEM :PROTocol:DHCP:HOPS?	Sets a value of the hops field (1 octet).	√	√	√	0
:TSTReam:TABLE:ITEM :PROTocol:DHCP:XID <NR1>	:TSTReam:TABLE:ITEM :PROTocol:DHCP:XID?	Sets a value of the xid field (4 octets).	√	√	√	0
:TSTReam:TABLE:ITEM :PROTocol:DHCP:CHADDR <HEX>	:TSTReam:TABLE:ITEM :PROTocol:DHCP:CHADDR?	Sets a value of the chaddr field (16 octets).	√	√	√	#H00000000 0000000000 0000000000 0000
:TSTReam:TABLE:ITEM :PROTocol:DHCP:GIADDR <IP_ADDRESS>	:TSTReam:TABLE:ITEM :PROTocol:DHCP:GIADDR?	Sets a value of the giaddr field.	√	√	√	#H00000000 (0.0.0.0)
:TSTReam:TABLE:ITEM :PROTocol:DHCP:FLAGS <HEX>	:TSTReam:TABLE:ITEM :PROTocol:DHCP:FLAGS?	Sets a value of the flags field (2 octets).	√	√	√	#H0000 (Do not broad- cast)
:TSTReam:TABLE:ITEM :PROTocol:DHCP:OPTIONS <length of data>[,< HEX>]	:TSTReam:TABLE:ITEM :PROTocol:DHCP:OPTIONS?	Sets a value of the options field.	√	√	√	0
:TSTReam:TABLE:ITEM :PROTocol:DHCP:CIADDR <IP_ADDRESS>	:TSTReam:TABLE:ITEM :PROTocol:DHCP:CIADDR?	Sets a value of the ciaddr field.	√	√	√	#H00000000 (0.0.0.0)
:TSTReam:TABLE:ITEM :PROTocol:DHCP:HLEN <NR1>	:TSTReam:TABLE:ITEM :PROTocol:DHCP:HLEN?	Sets a value of the hlen field (1 octet).	√	√	√	6 (for MAC address)
:TSTReam:TABLE:ITEM :PROTocol:DHCP:SNAME " <sname> "	:TSTReam:TABLE:ITEM :PROTocol:DHCP:SNAME?	Sets a value of the sname field (0 to 64 octets).	√	√	√	""
:TSTReam:TABLE:ITEM :PROTocol:DHCP:FILE " <file> "	:TSTReam:TABLE:ITEM :PROTocol:DHCP:FILE?	Sets a value of the file field (0 to 128 octets).	√	√	√	""

6.1 List of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:TSTReam:TABLE:ITEM :PROTocol:DHCP:YIADDR <IP_ADDRESS>	:TSTReam:TABLE:ITEM :PROTocol:DHCP:YIADDR?	Sets a value of the yiaddr field.	√	√	√	#H00000000 (0.0.0.0)
:TSTReam:TABLE:ITEM :PROTocol:ICMP:ID <NR1>	:TSTReam:TABLE:ITEM :PROTocol:ICMP:ID?	Sets a value of the id field (16 bits).	√	√	√	0
:TSTReam:TABLE:ITEM :PROTocol:ICMP:CODE <NR1>	:TSTReam:TABLE:ITEM :PROTocol:ICMP:CODE?	Sets a value of the code field (8 bits).	√	√	√	0
:TSTReam:TABLE:ITEM :PROTocol:ICMP:TYPE <NR1>	:TSTReam:TABLE:ITEM :PROTocol:ICMP:TYPE?	Sets a value of the type field (8 bits).	√	√	√	0 (Echo Reply)
:TSTReam:TABLE:ITEM :PROTocol:ICMP:SNUMBER <NR1>	:TSTReam:TABLE:ITEM :PROTocol:ICMP:SNUMBER?	Sets a value of the sequence number field (16 bits).	√	√	√	0
:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:TYPE <NR1>	:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:TYPE?	Sets a value of the Type field (8 bits) of the ICMPv6 message.	√	√	√	128 (Echo Request)
:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:CODE <NR1>	:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:CODE?	Sets a value of the Code field (8 bits) of the ICMPv6 message.	√	√	√	-
:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:ECHO:IDENTIFIER <NR1>	:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:ECHO:IDENTIFIER?	Sets a value of the Identifier field (16 bits) of the Echo Request/Echo Reply message.	√	√	√	-
:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:ECHO:SNUMBER <NR1>	:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:ECHO:SNUMBER?	Sets a value of the Sequence Number field (16 bits) of the Echo Request/Echo Reply message.	√	√	√	-
:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:MLD:MRDELAY <NR1>	:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:MLD:MRDELAY?	Sets a value of the Maximum Response Delay field (16 bits) of the MLD (Multicast Listener Query/Report/Done) message.	√	√	√	-
:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:MLD:MADDRESS <IPV6_ADDRESS>	:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:MLD:MADDRESS?	Sets a value of the Multicast Address field of the MLD (Multicast Listener Query/Report/Done) message.	√	√	√	#H00000000 0000000000 0000000000 0000 (::)
:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:MLD:A:DATA <HEX>	:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:MLD:A:DATA?	Sets the data pattern of the MLDA message (MLDA Query/MLDA ACK/MLDA Report).	√	√	—	#H27100000 0000000000 0000000000 0000000000 00027D0000 01020000
:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:NA:RBIT <NR1>	:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:NA:RBIT?	Sets a value of the R (Router flag) bit of the Neighbor Advertisement message.	√	√	√	-

Section 6 Details of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:NA:S BIT <NR1>	:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:NA:S BIT?	Sets a value of the S (Solicited flag) bit of the Neighbor Advertisement message.	√	√	√	-
:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:NA: OBit <NR1>	:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:NA: OBit?	Sets a value of the O (Override flag) bit of the Neighbor Advertisement message.	√	√	√	-
:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:NA:T ARGet <IPV6_ADDRES S>	:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:NA:T ARGet?	Sets a value of the Target Address field of the Neighbor Advertisement message.	√	√	√	#H00000000 0000000000 0000000000 0000 (::)
:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:NA:L ADdress:TARGet <HEX >	:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:NA:L ADdress:TARGet?	Sets a value of the Link-Layer Address field of the Neighbor Advertisement message.	√	√	√	#H00000000 0000
:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:NA:L ADdress:ENABle <BOO LEAN>	:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:NA:L ADdress:ENABle?	Selects to enable or disable the Target link-layer address Option setting for Neighbor Advertisement message.	√	√	√	0 (disable)
:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:NS:T ARGet <IPV6_ADDRES S>	:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:NS:T ARGet?	Sets a value of the Target Address field of the Neighbor Solicitation message.	√	√	√	#H00000000 0000000000 0000000000 0000 (::)
:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:NS:L ADdress:ENABle <BOO LEAN>	:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:NS:L ADdress:ENABle?	Selects to enable or disable the Source link-layer address Option setting for Neighbor Solicitation message.	√	√	√	0 (disable)
:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:NS:L ADdress:SOURce <HEX >	:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:NS:L ADdress:SOURce?	Sets a value of the Link-Layer Address field of the Neighbor Solicitation message.	√	√	√	#H00000000 0000
:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:PTBi g:MTU <NR1>	:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:PTBi g:MTU?	Sets a value of the MTU field (32 bits) of the Packet Too Big message.	√	√	√	-
:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:PPR oblem:POINter <NR1>	:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:PPR oblem:POINter?	Sets a value of the Pointer field (32 bits) of the Parameter Problem message.	√	√	√	-
:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:RA:R ETRans <NR1>	:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:RA:R ETRans?	Sets a value of the Retrans Timer field (32 bits) of the Router Advertisement message.	√	√	√	-
:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:RA:R EACHable <NR1>	:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:RA:R EACHable?	Sets a value of the Reachable Time field (32 bits) of the Router Advertisement message.	√	√	√	-

6.1 List of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:RA:R LIFetime <NR1>	:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:RA:R LIFetime?	Sets a value of the Router Lifetime field (16 bits) of the Router Advertisement message.	√	√	√	-
:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:RA:O BIT <NR1>	:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:RA:O BIT?	Sets a value of the O ("Other stateful configuration" flag) bit of the Router Advertisement message.	√	√	√	-
:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:RA: MBIT <NR1>	:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:RA: MBIT?	Sets a value of the M ("Managed address configuration" flag) bit of the Router Advertisement message.	√	√	√	-
:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:RA:C HLimit <NR1>	:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:RA:C HLimit?	Sets a value of the Cur Hop Limit field (8 bits) of the Router Advertisement message.	√	√	√	-
:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:RA:L Address:SOURce <HEX >	:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:RA:L Address:SOURce?	Sets a value of the Link-Layer Address field of the Router Advertisement message.	√	√	√	#H00000000 0000
:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:RA:L Address:ENABLE <BOO LEAN>	:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:RA:L Address:ENABLE?	Selects to enable or disable the Source link-layer address Option setting for Router Advertisement message.	√	√	√	0 (disable)
:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:RA: MTU:VALue <NR1>	:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:RA: MTU:VALue?	Sets a value of the MTU field (32 bits) of the Router Advertisement message.	√	√	√	-
:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:RA: MTU:ENABLE <BOOLE AN>	:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:RA: MTU:ENABLE?	Selects to enable or disable the MTU Option setting for Router Advertisement message.	√	√	√	0 (disable)
:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:RA:P REFix:VALue <IPV6_A DDRESS>	:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:RA:P REFix:VALue?	Sets a value of the Prefix field of the Router Advertisement message.	√	√	√	#H00000000 0000000000 0000000000 0000 (::)
:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:RA:P REFix:ABIT <NR1>	:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:RA:P REFix:ABIT?	Sets a value of the A (autonomous address-configuration flag) bit of the Router Advertisement message.	√	√	√	-
:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:RA:P REFix:LBIT <NR1>	:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:RA:P REFix:LBIT?	Sets a value of the L (on-link flag) bit of the Router Advertisement message.	√	√	√	-
:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:RA:P REFix:LENGth <NR1>	:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:RA:P REFix:LENGth?	Sets a value of the Prefix Length field (8 bits) of the Router Advertisement message.	√	√	√	-
:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:RA:P REFix:ENABLE <BOOL EAN>	:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:RA:P REFix:ENABLE?	Selects to enable or disable the Prefix Information Option setting for Router Advertisement message.	√	√	√	0 (disable)

Section 6 Details of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:RA:PREFix:VLIFetime <NR1>	:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:RA:PREFix:VLIFetime?	Sets a value of the Valid Lifetime field (32 bits) of the Router Advertisement message.	√	√	√	-
:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:RA:PREFix:PLIFetime <NR1>	:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:RA:PREFix:PLIFetime?	Sets a value of the Preferred Lifetime field (32 bits) of the Router Advertisement message.	√	√	√	-
:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:REDirect:DESTination <IPV6_ADDRESS>	:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:REDirect:DESTination?	Sets a value of the Destination Address field of the Redirect message.	√	√	√	#H00000000 0000000000 0000000000 0000 (::)
:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:REDirect:TARGet <IPV6_ADDRESS>	:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:REDirect:TARGet?	Sets a value of the Target Address field of the Redirect message.	√	√	√	#H00000000 0000000000 0000000000 0000 (::)
:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:REDirect:LADDRESS:ENABLE <BOOLEAN>	:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:REDirect:LADDRESS:ENABLE?	Selects to enable or disable the Target link-layer address Option setting for Redirect message.	√	√	√	0 (disable)
:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:REDirect:LADDRESS:TARGet <HEX>	:TSTReam:TABLE:ITEM :PROTocol:ICMPv6:REDirect:LADDRESS:TARGet?	Sets a value of the Link-Layer Address field of the Redirect message.	√	√	√	#H00000000 0000
:TSTReam:TABLE:ITEM :PROTocol:IGMP:GADDRESS <IP_ADDRESS>	:TSTReam:TABLE:ITEM :PROTocol:IGMP:GADDRESS?	Sets a value of the group address field.	√	√	√	#HE000000 0 (224.0.0.0)
:TSTReam:TABLE:ITEM :PROTocol:IGMP:TYPE <HEX>	:TSTReam:TABLE:ITEM :PROTocol:IGMP:TYPE?	Sets a value of the type field (8 bits).	√	√	√	#H16
:TSTReam:TABLE:ITEM :PROTocol:IGMP:MRTIME <NR1>	:TSTReam:TABLE:ITEM :PROTocol:IGMP:MRTIME?	Sets a value of the max response time field (8 bits).	√	√	√	0
:TSTReam:TABLE:ITEM :PROTocol:IP:OPTIONS <length of data>[,<HEX>]	:TSTReam:TABLE:ITEM :PROTocol:IP:OPTIONS?	Sets a value of the option field (0 to 40 octets).	√	√	√	0
:TSTReam:TABLE:ITEM :PROTocol:IP:FOFFset <NR1>	:TSTReam:TABLE:ITEM :PROTocol:IP:FOFFset?	Sets a value of the fragment offset field (13 bits).	√	√	√	0
:TSTReam:TABLE:ITEM :PROTocol:IP:TTLive <NR1>	:TSTReam:TABLE:ITEM :PROTocol:IP:TTLive?	Sets a value of the time to live field (8 bits).	√	√	√	64

6.1 List of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:TSTReam:TABLE:ITEM :PROTocol:IP:ID <NR1>	:TSTReam:TABLE:ITEM :PROTocol:IP:ID?	Sets a value of the identification field (16 bits).	√	√	√	0
:TSTReam:TABLE:ITEM :PROTocol:IP:DA:VALue <IP_ADDRESS>	:TSTReam:TABLE:ITEM :PROTocol:IP:DA:VALue ?	Sets a value of the destination address field.	√	√	√	#H7F00000 1
:TSTReam:TABLE:ITEM :PROTocol:IP:DA:TYPE {GATEWAY | STATIC | INCREMENT | DEC REMENT | RANDOM}	:TSTReam:TABLE:ITEM :PROTocol:IP:DA:TYPE?	Sets the type of the destination address generation.	√	√	√	STATIC (Static)
:TSTReam:TABLE:ITEM :PROTocol:IP:DA:MASK <IP_ADDRESS>	:TSTReam:TABLE:ITEM :PROTocol:IP:DA:MASK ?	Sets a mask value of the destination address field.	√	√	√	#HFFFFFFF FF(255.255. 255.255)
:TSTReam:TABLE:ITEM :PROTocol:IP:FLAG:BIT 2 <NR1>	:TSTReam:TABLE:ITEM :PROTocol:IP:FLAG:BIT 2?	Sets a value of flags (bit 2)(MF).	√	√	√	0 (Last Fragment)
:TSTReam:TABLE:ITEM :PROTocol:IP:FLAG:BIT 1 <NR1>	:TSTReam:TABLE:ITEM :PROTocol:IP:FLAG:BIT 1?	Sets a value of flags (bit 1) (DF).	√	√	√	1 (Don't Fragment)
:TSTReam:TABLE:ITEM :PROTocol:IP:FLAG:BIT 0 <NR1>	:TSTReam:TABLE:ITEM :PROTocol:IP:FLAG:BIT 0?	Sets a value of the flags (bit 0) (reserved).	√	√	√	0
:TSTReam:TABLE:ITEM :PROTocol:IP:PROTocol: AUTO <BOOLEAN>	:TSTReam:TABLE:ITEM :PROTocol:IP:PROTocol: AUTO?	Sets whether to enable the auto setting of a Protocol field value.	√	√	√	1 (enable)
:TSTReam:TABLE:ITEM :PROTocol:IP:PROTocol <NR1>	:TSTReam:TABLE:ITEM :PROTocol:IP:PROTocol?	Sets a value of the protocol field (8 bits).	√	√	√	0
:TSTReam:TABLE:ITEM :PROTocol:IP:SA:TYPE { THIS_PORT | STATIC | INCREMENT | DEC REMENT | RANDOM}	:TSTReam:TABLE:ITEM :PROTocol:IP:SA:TYPE?	Sets the type of the source address generation.	√	√	√	STATIC (Static)
:TSTReam:TABLE:ITEM :PROTocol:IP:SA:MASK <IP_ADDRESS>	:TSTReam:TABLE:ITEM :PROTocol:IP:SA:MASK?	Sets a mask value of the source address field.	√	√	√	#HFFFFFFF FF (255.255.25 5.255)
:TSTReam:TABLE:ITEM :PROTocol:IP:SA:VALue <IP_ADDRESS>	:TSTReam:TABLE:ITEM :PROTocol:IP:SA:VALue?	Sets a value of the source address field.	√	√	√	#H7F00000 1 (127.0.0.1)
:TSTReam:TABLE:ITEM :PROTocol:IP:TOS:PREC edence <BINARY>	:TSTReam:TABLE:ITEM :PROTocol:IP:TOS:PREC edence?	Sets a value of bit0 to bit2 (Precedence) in the Type of Service field.	√	√	√	#B000 (Routine)

Section 6 Details of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:TSTReam:TABLE:ITEM :PROTocol:IP:TOS:RESe rved <BINARY>	:TSTReam:TABLE:ITEM :PROTocol:IP:TOS:RESe rved?	Sets a value of bit6 and bit7 (Reserved for Future Use) in the Type of Service field.	√	√	√	#B00
:TSTReam:TABLE:ITEM :PROTocol:IP:TOS:RELi ability <NR1>	:TSTReam:TABLE:ITEM :PROTocol:IP:TOS:RELi ability?	Sets a value of bit5 in the Type of Service field.	√	√	√	0 (Normal Reliability)
:TSTReam:TABLE:ITEM :PROTocol:IP:TOS:DELa y <NR1>	:TSTReam:TABLE:ITEM :PROTocol:IP:TOS:DELa y?	Sets a value of bit3 in the Type of Service field.	√	√	√	0 (Normal Delay)
:TSTReam:TABLE:ITEM :PROTocol:IP:TOS:THRo ughput <NR1>	:TSTReam:TABLE:ITEM :PROTocol:IP:TOS:THRo ughput?	Sets a value of bit4 in the Type of Service field.	√	√	√	0 (Normal Through-put)
:TSTReam:TABLE:ITEM :PROTocol:IP:TLENgth <NR1>	:TSTReam:TABLE:ITEM :PROTocol:IP:TLENgth?	Sets the value for Total length field (16 bits).	√	√	√	-
:TSTReam:TABLE:ITEM :PROTocol:IP:TLENgth: AUTO <BOOLEAN>	:TSTReam:TABLE:ITEM :PROTocol:IP:TLENgth: AUTO?	Selects whether to automatically set the Total length field value.	√	√	√	1 (enable)
:TSTReam:TABLE:ITEM :PROTocol:IPV6:HLIMit <NR1>	:TSTReam:TABLE:ITEM :PROTocol:IPV6:HLIMit?	Sets a value of the hop limit field (8 bits).	√	√	√	255
:TSTReam:TABLE:ITEM :PROTocol:IPV6:NHEade r:AUTO <BOOLEAN>	:TSTReam:TABLE:ITEM :PROTocol:IPV6:NHEade r:AUTO?	Selects whether to enable/disable automatic setting of the next header field value.	√	√	√	1 (enable)
:TSTReam:TABLE:ITEM :PROTocol:IPV6:NHEade r <NR1>	:TSTReam:TABLE:ITEM :PROTocol:IPV6:NHEade r?	Sets a value of the next header field (8 bits).	√	√	√	59 (IPv6-NoNxt)
:TSTReam:TABLE:ITEM :PROTocol:IPV6:FLABel <NR1>	:TSTReam:TABLE:ITEM :PROTocol:IPV6:FLABel ?	Sets a value of the flow label field (20 bits).	√	√	√	0
:TSTReam:TABLE:ITEM :PROTocol:IPV6:TCLass <BINARY>	:TSTReam:TABLE:ITEM :PROTocol:IPV6:TCLass?	Sets a value of the traffic class field (8 bits).	√	√	√	#B00000000
:TSTReam:TABLE:ITEM :PROTocol:IPV6:DA:MA SK <IPV6_ADDRESS>	:TSTReam:TABLE:ITEM :PROTocol:IPV6:DA:MA SK?	Sets a mask value of the destination address field.	√	√	√	#HFFFFFFF FFFFFFFF FFFFFFFF FF (FFFF:FFF F:FFFF:FF FF:FFFF:F FFF:FFFF: FFFF)

6.1 List of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:TSTReam:TABLE:ITEM :PROTocol:IPV6:DA:TYPE {GATEWAY | STATIC | INCREMENT | DECREMENT | RANDOM}	:TSTReam:TABLE:ITEM :PROTocol:IPV6:DA:TYPE?	Sets the type of the destination address generation.	√	√	√	STATIC (Static)
:TSTReam:TABLE:ITEM :PROTocol:IPV6:DA:VALUE <IPV6_ADDRESS>	:TSTReam:TABLE:ITEM :PROTocol:IPV6:DA:VALUE?	Sets a value of the destination address field.	√	√	√	#H00000000 0000000000 0000000000 0000 (::)
:TSTReam:TABLE:ITEM :PROTocol:IPV6:SA:MASK <IPV6_ADDRESS>	:TSTReam:TABLE:ITEM :PROTocol:IPV6:SA:MASK?	Sets a mask value of the source address field.	√	√	√	#HFFFFFF FFFFFFFF FFFFFFFF FFFFFFFF FF (FFFF:FFF F:FFFF:FF FF:FFFF:F FFF:FFFF: FFFF)
:TSTReam:TABLE:ITEM :PROTocol:IPV6:SA:VALUE <IPV6_ADDRESS>	:TSTReam:TABLE:ITEM :PROTocol:IPV6:SA:VALUE?	Sets a value of the source address field.	√	√	√	#H00000000 0000000000 0000000000 0000 (::)
:TSTReam:TABLE:ITEM :PROTocol:IPV6:SA:TYPE {THIS_PORT | STATIC | INCREMENT | DECREMENT | RANDOM}	:TSTReam:TABLE:ITEM :PROTocol:IPV6:SA:TYPE?	Sets the type the source address generates.	√	√	√	STATIC (Static)
:TSTReam:TABLE:ITEM :PROTocol:IPV6:PLENgt h <NR1>	:TSTReam:TABLE:ITEM :PROTocol:IPV6:PLENgt h?	Sets the value for Payload length field (16 bits).	√	√	√	-
:TSTReam:TABLE:ITEM :PROTocol:IPV6:PLENgt h:AUTO <BOOLEAN>	:TSTReam:TABLE:ITEM :PROTocol:IPV6:PLENgt h:AUTO?	Selects whether to automatically set the Payload length field value.	√	√	√	1 (enable)
:TSTReam:TABLE:ITEM :PROTocol:IPV6:EXTension:DESTination:FIRSt:ENABLE <BOOLEAN>	:TSTReam:TABLE:ITEM :PROTocol:IPV6:EXTension:DESTination:FIRSt:ENABLE?	Selects whether to enable/disable the setting for the Destination Options extension header that appears at first.	√	√	√	0 (disable)
:TSTReam:TABLE:ITEM :PROTocol:IPV6:EXTension:DESTination:FIRSt:OPTions <HEX>	:TSTReam:TABLE:ITEM :PROTocol:IPV6:EXTension:DESTination:FIRSt:OPTions?	Sets the Option field value in the Destination Options extension header that appears at first.	√	√	√	#H00000000 0000

Section 6 Details of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:TSTReam:TABLE:ITEM :PROTOCOL:IPV6:EXTENSION:DESTINATION:SECOND :ENABLE <BOOLEAN>	:TSTReam:TABLE:ITEM :PROTOCOL:IPV6:EXTENSION:DESTINATION:SECOND :ENABLE?	Selects whether to enable/disable the setting for the Destination Options extension header that appears secondly.	√	√	√	0 (disable)
:TSTReam:TABLE:ITEM :PROTOCOL:IPV6:EXTENSION:DESTINATION:SECOND :OPTIONS <HEX>	:TSTReam:TABLE:ITEM :PROTOCOL:IPV6:EXTENSION:DESTINATION:SECOND :OPTIONS?	Sets the Option field value in the Destination Options extension header that appears secondly.	√	√	√	#H00000000 0000
:TSTReam:TABLE:ITEM :PROTOCOL:IPV6:EXTENSION:FRAGMENT:ID <NR1 >	:TSTReam:TABLE:ITEM :PROTOCOL:IPV6:EXTENSION:FRAGMENT:ID?	Sets the value for the Identification field in the Fragment extension header.	√	√	√	-
:TSTReam:TABLE:ITEM :PROTOCOL:IPV6:EXTENSION:FRAGMENT:ENABLE <BOOLEAN>	:TSTReam:TABLE:ITEM :PROTOCOL:IPV6:EXTENSION:FRAGMENT:ENABLE?	Selects whether to enable the Fragment extension header setting.	√	√	√	0 (disable)
:TSTReam:TABLE:ITEM :PROTOCOL:IPV6:EXTENSION:FRAGMENT:M <NR1 >	:TSTReam:TABLE:ITEM :PROTOCOL:IPV6:EXTENSION:FRAGMENT:M?	Sets the value of M flag for the Fragment extension header.	√	√	√	0 (last fragment)
:TSTReam:TABLE:ITEM :PROTOCOL:IPV6:EXTENSION:FRAGMENT:OFFSET < NR1>	:TSTReam:TABLE:ITEM :PROTOCOL:IPV6:EXTENSION:FRAGMENT:OFFSET?	Sets the value of Fragment Offset field in the Fragment extension header.	√	√	√	-
:TSTReam:TABLE:ITEM :PROTOCOL:IPV6:EXTENSION:HOP:ENABLE <BOO LEAN>	:TSTReam:TABLE:ITEM :PROTOCOL:IPV6:EXTENSION:HOP:ENABLE?	Selects whether to enable the Hop-by-Hop Options extension header setting.	√	√	√	0 (disable)
:TSTReam:TABLE:ITEM :PROTOCOL:IPV6:EXTENSION:HOP:OPTIONS <HEX >	:TSTReam:TABLE:ITEM :PROTOCOL:IPV6:EXTENSION:HOP:OPTIONS?	Sets the value of the Option field in the Hop-by-Hop Options extension header.	√	√	√	#H00000000 0000
:TSTReam:TABLE:ITEM :PROTOCOL:IPV6:EXTENSION:ROUTING:TYPE <NR 1>	:TSTReam:TABLE:ITEM :PROTOCOL:IPV6:EXTENSION:ROUTING:TYPE?	Sets the Routing Type field value in the Routing extension header.	√	√	√	0 (Source Route)
:TSTReam:TABLE:ITEM :PROTOCOL:IPV6:EXTENSION:ROUTING:SLEFT <N R1>	:TSTReam:TABLE:ITEM :PROTOCOL:IPV6:EXTENSION:ROUTING:SLEFT?	Sets the Segments Left field value in the Routing extension header.	√	√	√	-
:TSTReam:TABLE:ITEM :PROTOCOL:IPV6:EXTENSION:ROUTING:ADDRESS < number of address>[,<I PV6_ADDRESS>]...	:TSTReam:TABLE:ITEM :PROTOCOL:IPV6:EXTENSION:ROUTING:ADDRESS?	Sets the address field value in the Routing extension header.	√	√	√	-

6.1 List of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:TSTReam:TABLE:ITEM :PROTocol:IPV6:EXTensi on:ROUTing:ENABLe < BOOLEAN>	:TSTReam:TABLE:ITEM :PROTocol:IPV6:EXTensi on:ROUTing:ENABLe?	Selects whether to enable/disable the set- ting for the Routing extension header.	√	√	√	0 (disable)
:TSTReam:TABLE:ITEM :PROTocol:IPV6:EXTensi on:NHEader <NR1>	:TSTReam:TABLE:ITEM :PROTocol:IPV6:EXTensi on:NHEader?	Sets the value of the next header field (8 bits) in the last extension header.	√	√	√	59 (IPv6-NoNx t)
:TSTReam:TABLE:ITEM :PROTocol:IPV6:EXTensi on:NHEader:AUTO <B OOLEAN>	:TSTReam:TABLE:ITEM :PROTocol:IPV6:EXTensi on:NHEader:AUTO?	Selects whether to set the value of the next header field in the last extension header automatically.	√	√	√	1 (enable)
:TSTReam:TABLE:ITEM :PROTocol:IPX:PTYPe < NR1>	:TSTReam:TABLE:ITEM :PROTocol:IPX:PTYPe?	Sets a value of the packet type field (1 oc- tet).	√	√	√	0 (Unknown)
:TSTReam:TABLE:ITEM :PROTocol:IPX:TCONtro l <NR1>	:TSTReam:TABLE:ITEM :PROTocol:IPX:TCONtro l?	Sets a value of the transport control field (1 octet).	√	√	√	0
:TSTReam:TABLE:ITEM :PROTocol:IPX:SSOcket <HEX>	:TSTReam:TABLE:ITEM :PROTocol:IPX:SSOcket ?	Sets a value of the source socket field (2 oc- tets).	√	√	√	#H0000
:TSTReam:TABLE:ITEM :PROTocol:IPX:SNODE <HEX>	:TSTReam:TABLE:ITEM :PROTocol:IPX:SNODE?	Sets a value of the source node field (6 oc- tets).	√	√	√	#H00000000 0000
:TSTReam:TABLE:ITEM :PROTocol:IPX:SNETwor k <HEX>	:TSTReam:TABLE:ITEM :PROTocol:IPX:SNETwor k?	Sets a value of the source network field (4 octets).	√	√	√	#H00000000
:TSTReam:TABLE:ITEM :PROTocol:IPX:DSOcket <HEX>	:TSTReam:TABLE:ITEM :PROTocol:IPX:DSOcket ?	Sets a value of the destination socket field (2 octets).	√	√	√	#H0000
:TSTReam:TABLE:ITEM :PROTocol:IPX:DNETwo rk <HEX>	:TSTReam:TABLE:ITEM :PROTocol:IPX:DNETwo rk?	Sets a value of the destination network field (4 octets).	√	√	√	#H00000000
:TSTReam:TABLE:ITEM :PROTocol:IPX:DNODE <HEX>	:TSTReam:TABLE:ITEM :PROTocol:IPX:DNODE?	Sets a value of the destination node field (6 octets).	√	√	√	#H00000000 0000
:TSTReam:TABLE:ITEM :PROTocol:ISIS:MAADdr <NR1>	:TSTReam:TABLE:ITEM :PROTocol:ISIS:MAADdr ?	Sets a value of the Maximum Area Addr esses field (1 octet).	√	√	√	-
:TSTReam:TABLE:ITEM :PROTocol:ISIS:ILENgt h <NR1>	:TSTReam:TABLE:ITEM :PROTocol:ISIS:ILENgt h?	Sets a value of the ID Length field (1 oc- tet).	√	√	√	-

Section 6 Details of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:TSTReam:TABLE:ITEM :PROTocol:ISIS:VLFields <length of data>[,<HEX>]	:TSTReam:TABLE:ITEM :PROTocol:ISIS:VLFields?	Sets a value of the Variable Length field.	√	√	√	-
:TSTReam:TABLE:ITEM :PROTocol:ISIS:PTYPE <NR1>	:TSTReam:TABLE:ITEM :PROTocol:ISIS:PTYPE?	Sets a value of the PDU Type field (5 bits).	√	√	√	15 (Level 1 LAN IS to IS Hello PDU)
:TSTReam:TABLE:ITEM :PROTocol:ISIS:CSN:ELSP <HEX>	:TSTReam:TABLE:ITEM :PROTocol:ISIS:CSN:ELSP?	Sets a value of the End LSP ID field of Level 1/2 Complete Sequence Numbers PDU.	√	√	√	#H00000000 00000000
:TSTReam:TABLE:ITEM :PROTocol:ISIS:CSN:SLSP <HEX>	:TSTReam:TABLE:ITEM :PROTocol:ISIS:CSN:SLSP?	Sets a value of the Start LSP ID field of Level 1/2 Complete Sequence Numbers PDU.	√	√	√	#H00000000 00000000
:TSTReam:TABLE:ITEM :PROTocol:ISIS:CSN:SOURce <HEX>	:TSTReam:TABLE:ITEM :PROTocol:ISIS:CSN:SOURce?	Sets a value of the Source ID field of Level 1/2 Complete Sequence Numbers PDU.	√	√	√	#H00000000 000000
:TSTReam:TABLE:ITEM :PROTocol:ISIS:LHELlo:CTYPE <NR1>	:TSTReam:TABLE:ITEM :PROTocol:ISIS:LHELlo:CTYPE?	Sets a value of the Reserved/Circuit Type field (1 octet) of Level 1/2 LAN IS to IS Hello PDU.	√	√	√	-
:TSTReam:TABLE:ITEM :PROTocol:ISIS:LHELlo:SOURce <HEX>	:TSTReam:TABLE:ITEM :PROTocol:ISIS:LHELlo:SOURce?	Sets a value of the Source ID field of Level 1/2 LAN IS to IS Hello PDU.	√	√	√	#H00000000 0000
:TSTReam:TABLE:ITEM :PROTocol:ISIS:LHELlo:HTIME <NR1>	:TSTReam:TABLE:ITEM :PROTocol:ISIS:LHELlo:HTIME?	Sets a value of the Holding Time field (2 octets) of Level 1/2 LAN IS to IS Hello PDU.	√	√	√	-
:TSTReam:TABLE:ITEM :PROTocol:ISIS:LHELlo:PRIority <NR1>	:TSTReam:TABLE:ITEM :PROTocol:ISIS:LHELlo:PRIority?	Sets a value of the Priority field (7 bits) of Level 1/2 LAN IS to IS Hello PDU.	√	√	√	-
:TSTReam:TABLE:ITEM :PROTocol:ISIS:LHELlo:LAN <HEX>	:TSTReam:TABLE:ITEM :PROTocol:ISIS:LHELlo:LAN?	Sets a value of the LAN ID field of Level 1/2 LAN IS to IS Hello PDU.	√	√	√	#H00000000 000000
:TSTReam:TABLE:ITEM :PROTocol:ISIS:LState:LSP <HEX>	:TSTReam:TABLE:ITEM :PROTocol:ISIS:LState:LSP?	Sets a value of the LSP ID field of Level 1/2 Link State PDU.	√	√	√	#H00000000 00000000
:TSTReam:TABLE:ITEM :PROTocol:ISIS:LState:ITYPE <NR1>	:TSTReam:TABLE:ITEM :PROTocol:ISIS:LState:ITYPE?	Sets a value of the IS Type field (Bits 1, 2) of Level 1/2 Link State PDU.	√	√	√	-
:TSTReam:TABLE:ITEM :PROTocol:ISIS:LState:LSPDbol <NR1>	:TSTReam:TABLE:ITEM :PROTocol:ISIS:LState:LSPDbol?	Sets a value of the LSPDBOL bit (Bit 3, LSP Database Overload) of Level 1/2 Link State PDU.	√	√	√	-

6.1 List of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:TSTReam:TABLE:ITEM:PROTocol:ISIS:LSTate:SN <NR1>	:TSTReam:TABLE:ITEM:PROTocol:ISIS:LSTate:SN?	Sets a value of the Sequence Number field (4 octets) of Level 1/2 Link State PDU.	√	√	√	-
:TSTReam:TABLE:ITEM:PROTocol:ISIS:LSTate:RLifetime <NR1>	:TSTReam:TABLE:ITEM:PROTocol:ISIS:LSTate:RLifetime?	Sets a value of the Remaining Lifetime field (2 octets) of Level 1/2 Link State PDU.	√	√	√	-
:TSTReam:TABLE:ITEM:PROTocol:ISIS:LSTate:ATT <BINARY>	:TSTReam:TABLE:ITEM:PROTocol:ISIS:LSTate:ATT?	Sets a value of the ATT field (Bits 7 to 4) of Level 1/2 Link State PDU.	√	√	√	#B0000
:TSTReam:TABLE:ITEM:PROTocol:ISIS:LSTate:PBIT <NR1>	:TSTReam:TABLE:ITEM:PROTocol:ISIS:LSTate:PBIT?	Sets a value of the P bit (Bit 8, Repair Partition option) of Level 1/2 Link State PDU.	√	√	√	-
:TSTReam:TABLE:ITEM:PROTocol:ISIS:PSN:SOURce <HEX>	:TSTReam:TABLE:ITEM:PROTocol:ISIS:PSN:SOURce?	Sets a value of the Source ID field of Level 1/2 Partial Sequence Numbers PDU.	√	√	√	#H00000000000000
:TSTReam:TABLE:ITEM:PROTocol:ISIS:PHELlo:LCIRcuit <NR1>	:TSTReam:TABLE:ITEM:PROTocol:ISIS:PHELlo:LCIRcuit?	Sets a value of the Local Circuit ID field (1 octet) of Point-to-point IS to IS Hello PDU.	√	√	√	-
:TSTReam:TABLE:ITEM:PROTocol:ISIS:PHELlo:HTIME <NR1>	:TSTReam:TABLE:ITEM:PROTocol:ISIS:PHELlo:HTIME?	Sets a value of the Holding Time field (2 octets) of Point-to-point IS to IS Hello PDU.	√	√	√	-
:TSTReam:TABLE:ITEM:PROTocol:ISIS:PHELlo:SOURce <HEX>	:TSTReam:TABLE:ITEM:PROTocol:ISIS:PHELlo:SOURce?	Sets a value of the Source ID field of Point-to-point IS to IS Hello PDU.	√	√	√	#H000000000000
:TSTReam:TABLE:ITEM:PROTocol:ISIS:PHELlo:CTYPE <NR1>	:TSTReam:TABLE:ITEM:PROTocol:ISIS:PHELlo:CTYPE?	Sets a value of the Reserved/Circuit Type field (1 octet) of Point-to-point IS to IS Hello PDU.	√	√	√	-
:TSTReam:TABLE:ITEM:PROTocol:MCONtrol:QUANta <NR1>	:TSTReam:TABLE:ITEM:PROTocol:MCONtrol:QUANta?	Sets the Quanta Value of the pause function (the MAC CONTROL PARAMETERS field when MAC CONTROL OP CODE field is set to PAUSE).	√	√	√	-
:TSTReam:TABLE:ITEM:PROTocol:RIP:COMMan d <NR1>	:TSTReam:TABLE:ITEM:PROTocol:RIP:COMMan d?	Sets a value of the command field (8 bits).	√	√	√	1 (Request)
:TSTReam:TABLE:ITEM:PROTocol:RIP:VERSion <NR1>	:TSTReam:TABLE:ITEM:PROTocol:RIP:VERSion ?	Sets a value of the version field (8 bits).	√	√	√	2 (Version2)
:TSTReam:TABLE:ITEM:PROTocol:RIP:ENTRy:ID <NR1>	:TSTReam:TABLE:ITEM:PROTocol:RIP:ENTRy:ID?	Specified the RIP entry ID to be edited.	√	√	√	1
:TSTReam:TABLE:ITEM:PROTocol:RIP:ENTRy:ENABle <BOOLEAN>	:TSTReam:TABLE:ITEM:PROTocol:RIP:ENTRy:ENABle?	Sets whether to use the RIP entry setting for the specified ID.	√	√	√	0 (disable)

Section 6 Details of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:TSTReam:TABLE:ITEM :PROTocol:RIP:ENTRy:A FIDentifier <HEX>	:TSTReam:TABLE:ITEM :PROTocol:RIP:ENTRy:A FIDentifier?	Sets a value of the address family identifier field (16 bits).	√	√	√	#H0000
:TSTReam:TABLE:ITEM :PROTocol:RIP:ENTRy:A UTHenticat:TYPE <NR 1>	:TSTReam:TABLE:ITEM :PROTocol:RIP:ENTRy:A UTHenticat:TYPE?	Sets a value of the type field (16 bits).	√	√	√	2 (Password)
:TSTReam:TABLE:ITEM :PROTocol:RIP:ENTRy:A UTHenticat "<authentic ation>"	:TSTReam:TABLE:ITEM :PROTocol:RIP:ENTRy:A UTHenticat?	Sets a value of the authentication field (0 to 16 octets).	√	√	√	""
:TSTReam:TABLE:ITEM :PROTocol:RIP:ENTRy:R IP1:IADdress <IP_ADD RESS>	:TSTReam:TABLE:ITEM :PROTocol:RIP:ENTRy:R IP1:IADdress?	Sets a value of the ip address field.	√	√	√	#H00000000 (0.0.0.0)
:TSTReam:TABLE:ITEM :PROTocol:RIP:ENTRy:R IP1:METRic <NR1>	:TSTReam:TABLE:ITEM :PROTocol:RIP:ENTRy:R IP1:METRic?	Sets a value of the metric field (4 octets).	√	√	√	1
:TSTReam:TABLE:ITEM :PROTocol:RIP:ENTRy:R IP2:IADdress <IP_ADD RESS>	:TSTReam:TABLE:ITEM :PROTocol:RIP:ENTRy:R IP2:IADdress?	Sets a value of the ip address field.	√	√	√	#H00000000 (0.0.0.0)
:TSTReam:TABLE:ITEM :PROTocol:RIP:ENTRy:R IP2:NHOP <IP_ADDRE SS>	:TSTReam:TABLE:ITEM :PROTocol:RIP:ENTRy:R IP2:NHOP?	Sets a value of the next hop field.	√	√	√	#H00000000 (0.0.0.0)
:TSTReam:TABLE:ITEM :PROTocol:RIP:ENTRy:R IP2:RTAG <HEX>	:TSTReam:TABLE:ITEM :PROTocol:RIP:ENTRy:R IP2:RTAG?	Sets a value of the route tag field (16 bits).	√	√	√	#H0000
:TSTReam:TABLE:ITEM :PROTocol:RIP:ENTRy:R IP2:METRic <NR1>	:TSTReam:TABLE:ITEM :PROTocol:RIP:ENTRy:R IP2:METRic?	Sets a value of the metric field (4 octets).	√	√	√	1
:TSTReam:TABLE:ITEM :PROTocol:RIP:ENTRy:R IP2:SMASk <IP_ADDR ESS>	:TSTReam:TABLE:ITEM :PROTocol:RIP:ENTRy:R IP2:SMASk?	Sets a value of the subnet mask field.	√	√	√	#H00000000 (0.0.0.0)
:TSTReam:TABLE:ITEM :PROTocol:TCP:INCRem ent <field>	:TSTReam:TABLE:ITEM :PROTocol:TCP:INCRem ent?	Sets whether to increment the source/destination port field value.	√	√	√	OFF
:TSTReam:TABLE:ITEM :PROTocol:TCP:WINDow <NR1>	:TSTReam:TABLE:ITEM :PROTocol:TCP:WINDow ?	Sets a value of the window field (16 bits).	√	√	√	0

6.1 List of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:TSTReam:TABLE:ITEM :PROTocol:TCP:DPORT <NR1>	:TSTReam:TABLE:ITEM :PROTocol:TCP:DPORT?	Sets a value of destination port field (16 bits).	√	√	√	0
:TSTReam:TABLE:ITEM :PROTocol:TCP:UPOinte r <NR1>	:TSTReam:TABLE:ITEM :PROTocol:TCP:UPOinte r?	Sets a value of the urgent pointer field (16 bits).	√	√	√	0
:TSTReam:TABLE:ITEM :PROTocol:TCP:SNUMbe r <NR1>	:TSTReam:TABLE:ITEM :PROTocol:TCP:SNUMbe r?	Sets a value of the sequence number field (32 bits).	√	√	√	0
:TSTReam:TABLE:ITEM :PROTocol:TCP:OPTions <length of data>[,<HE X>]	:TSTReam:TABLE:ITEM :PROTocol:TCP:OPTions ?	Sets a value of the option field (0 to 40 oc- tets).	√	√	√	0
:TSTReam:TABLE:ITEM :PROTocol:TCP:REServe d <NR1>	:TSTReam:TABLE:ITEM :PROTocol:TCP:REServe d?	Sets a value of the reserved field (6 bits).	√	√	√	0
:TSTReam:TABLE:ITEM :PROTocol:TCP:ANUMB er <NR1>	:TSTReam:TABLE:ITEM :PROTocol:TCP:ANUMB er?	Sets a value of the acknowledgement num- ber field (32 bits).	√	√	√	0
:TSTReam:TABLE:ITEM :PROTocol:TCP:SPORT < NR1>	:TSTReam:TABLE:ITEM :PROTocol:TCP:SPORT?	Sets a value of the source port field (16 bits).	√	√	√	0
:TSTReam:TABLE:ITEM :PROTocol:TCP:CBITS:S YN <NR1>	:TSTReam:TABLE:ITEM :PROTocol:TCP:CBITS:S YN?	Sets a value of bit 4 in the control bits field (SYN: Synchronize sequence number).	√	√	√	0
:TSTReam:TABLE:ITEM :PROTocol:TCP:CBITS:R ST <NR1>	:TSTReam:TABLE:ITEM :PROTocol:TCP:CBITS:R ST?	Sets a value of bit 3 in the control bits field (RST: Reset the connection).	√	√	√	0
:TSTReam:TABLE:ITEM :PROTocol:TCP:CBITS:P SH <NR1>	:TSTReam:TABLE:ITEM :PROTocol:TCP:CBITS:P SH?	Sets a value of bit 2 in the control bits field (PSH: Push Function).	√	√	√	0
:TSTReam:TABLE:ITEM :PROTocol:TCP:CBITS:A CK <NR1>	:TSTReam:TABLE:ITEM :PROTocol:TCP:CBITS:A CK?	Sets a value of bit 1 in the control bits field (ACK: Acknowledgement field significant).	√	√	√	0
:TSTReam:TABLE:ITEM :PROTocol:TCP:CBITS:U RG <NR1>	:TSTReam:TABLE:ITEM :PROTocol:TCP:CBITS:U RG?	Sets a value of bit 0 in the control bits field (URG: Urgent Pointer field significant).	√	√	√	0
:TSTReam:TABLE:ITEM :PROTocol:TCP:CBITS:FI N <NR1>	:TSTReam:TABLE:ITEM :PROTocol:TCP:CBITS:FI N?	Sets a value of bit 5 in the control bits field (FIN: No more data from sender).	√	√	√	0
:TSTReam:TABLE:ITEM :PROTocol:UDP:INCRem ent <field>	:TSTReam:TABLE:ITEM :PROTocol:UDP:INCRem ent?	Sets whether to increment the source/destination port field value.	√	√	√	OFF

Section 6 Details of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:TSTReam:TABLE:ITEM :PROTocol:UDP:SPORt <NR1>	:TSTReam:TABLE:ITEM :PROTocol:UDP:SPORt?	Sets a value of the source port field (16 bits).	√	√	√	0
:TSTReam:TABLE:ITEM :PROTocol:UDP:DPOrt <NR1>	:TSTReam:TABLE:ITEM :PROTocol:UDP:DPOrt?	Sets a value of the destination port field (16 bits).	√	√	√	0
:TSTReam:TABLE:ITEM :PROTocol:UDP:LENGth :AUTO <BOOLEAN>	:TSTReam:TABLE:ITEM :PROTocol:UDP:LENGth :AUTO?	Selects whether to automatically set the Length field value.	√	√	√	1 (enable)
:TSTReam:TABLE:ITEM :PROTocol:UDP:LENGth <NR1>	:TSTReam:TABLE:ITEM :PROTocol:UDP:LENGth ?	Sets the value for Length field (16 bits).	√	√	√	-
:TSTReam:TABLE:ITEM :PROTocol:UDP:CHECKs um:AUTO <BOOLEAN>	:TSTReam:TABLE:ITEM :PROTocol:UDP:CHECKs um:AUTO?	Selects whether to set the checksum field value automatically.	√	√	√	1 (enable)
:TSTReam:TABLE:ITEM :PROTocol:UDP:CHECKs um <HEX>	:TSTReam:TABLE:ITEM :PROTocol:UDP:CHECKs um?	Sets the checksum field value (16 bits).	√	√	√	#H0000
:TSTReam:TABLE:ITEM :PROTocol:IGAP:TYPE <HEX>	:TSTReam:TABLE:ITEM :PROTocol:IGAP:TYPE?	Sets a value of the type field (8 bits).	√	√	—	#H40
:TSTReam:TABLE:ITEM :PROTocol:IGAP:MRTim e <NR1>	:TSTReam:TABLE:ITEM :PROTocol:IGAP:MRTim e?	Sets a value of the max response time field (8 bits).	√	√	—	100 (10 seconds)
:TSTReam:TABLE:ITEM :PROTocol:IGAP:GADDd ress <IP_ADDRESS>	:TSTReam:TABLE:ITEM :PROTocol:IGAP:GADDd ress?	Sets a value of the group address field.	√	√	—	#HE000000 0 (224.0.0.0)
:TSTReam:TABLE:ITEM :PROTocol:IGAP:RTYPE <HEX>	:TSTReam:TABLE:ITEM :PROTocol:IGAP:RTYPE?	Sets a value of the report type field (8 bits).	√	√	—	#H01
:TSTReam:TABLE:ITEM :PROTocol:IGAP:CID < HEX>	:TSTReam:TABLE:ITEM :PROTocol:IGAP:CID?	Sets a value of the CHAP ID field (8 bits).	√	√	—	#H00
:TSTReam:TABLE:ITEM :PROTocol:IGAP:UACCo unt:TYPE {ALL0 | AL L1 | PROG}	:TSTReam:TABLE:ITEM :PROTocol:IGAP:UACCo unt:TYPE?	Sets the user account mode.	√	√	—	ALL0
:TSTReam:TABLE:ITEM :PROTocol:IGAP:UACCo unt:VALue <HEX>	:TSTReam:TABLE:ITEM :PROTocol:IGAP:UACCo unt:VALue?	Sets a value of the user account (16 bytes).	√	√	—	#H00000000 0000000000 0000000000 0000

6.1 List of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:TSTReam:TABLE:ITEM :PROTOCOL:IGAP:MESSa ge {ALL0 | ALL1 | P ROG}	:TSTReam:TABLE:ITEM :PROTOCOL:IGAP:MESSa ge?	Sets the message mode.	√	√	—	ALL0
:TSTReam:TABLE:ITEM :PROTOCOL:IGAP:MESSa ge:VALue <HEX>	:TSTReam:TABLE:ITEM :PROTOCOL:IGAP:MESSa ge:VALue?	Sets a value of the message (64 bytes).	√	√	—	#H00000000 0000000000 00.....0000 (64 bytes)
:TSTReam:TABLE:ITEM :FRAME:GFP:HEADer:P FI <NR1>	:TSTReam:TABLE:ITEM :FRAME:GFP:HEADer:P FI?	Sets a PFI field of the GFP frame header.	—	—	√	1
:TSTReam:TABLE:ITEM :FRAME:GFP:HEADer:P TI <BYNARY>	:TSTReam:TABLE:ITEM :FRAME:GFP:HEADer:P TI?	Sets a PTI field of the GFP frame header.	—	—	√	#B000
:TSTReam:TABLE:ITEM :FRAME:GFP:HEADer:U PI <BYNARY>	:TSTReam:TABLE:ITEM :FRAME:GFP:HEADer:U PI?	Sets a UPI field of the GFP header.	—	—	√	#B00000001
:TSTReam:TABLE:ITEM :FRAME:GFP:HEADer:E XI <BYNARY>	:TSTReam:TABLE:ITEM :FRAME:GFP:HEADer:E XI?	Sets an EXI field of the GFP frame header.	—	—	√	#B0000
:TSTReam:TABLE:ITEM :FRAME:GFP:HEADer:E XTension:LENGth <NR 1>	:TSTReam:TABLE:ITEM :FRAME:GFP:HEADer:E XTension:LENGth?	Sets an extension header size of the GFP frame header.	—	—	√	2
:TSTReam:TABLE:ITEM :FRAME:GFP:HEADer:E XTention:TYPE {ALL0| ALL1|PROGRAM}	:TSTReam:TABLE:ITEM :FRAME:GFP:HEADer:E XTention:TYPE?	Sets an extension header type of the GFP frame header.	—	—	√	ALL0
:TSTReam:TABLE:ITEM :FRAME:GFP:HEADer:E XTension:PATtern <HE X>	:TSTReam:TABLE:ITEM :FRAME:GFP:HEADer:E XTension:PATtern?	Edits an area in the Extension Header of the GFP header, excluding eHEC.	—	—	√	#H00
:TSTReam:TABLE:ITEM :FRAME:LX86:ADDRess <HEX>	:TSTReam:TABLE:ITEM :FRAME:LX86:ADDRess ?	Sets a value of the address field (8 bits).	—	—	√	#H04
:TSTReam:TABLE:ITEM :FRAME:LX86:PROTOCOL: AUTO <BOOLEAN>	:TSTReam:TABLE:ITEM :FRAME:LX86:PROTOCOL: AUTO?	Selects whether to enable/disable the auto setting of a protocol field value.	—	—	√	-
:TSTReam:TABLE:ITEM :FRAME:LX86:CONTRol <HEX>	:TSTReam:TABLE:ITEM :FRAME:LX86:CONTRol?	Sets a value of the control field (8 bits).	—	—	√	#H03
:TSTReam:TABLE:ITEM :FRAME:LX86:PROTOCOL <HEX>	:TSTReam:TABLE:ITEM :FRAME:LX86:PROTOCOL ?	Sets a value of the protocol field (16 bits).	—	—	√	#H0021

Section 6 Details of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:TSTReam:TABLE:ITEM :FRAME:LEX:ADDRess <HEX>	:TSTReam:TABLE:ITEM :FRAME:LEX:ADDRess?	Sets a value of the address field (8 bits).	—	—	√	#HFF
:TSTReam:TABLE:ITEM :FRAME:LEX:CONTRol <HEX>	:TSTReam:TABLE:ITEM :FRAME:LEX:CONTRol?	Sets a value of the control field (8 bits).	—	—	√	#H03
:TSTReam:TABLE:ITEM :FRAME:LEX:FLAGs < HEX>	:TSTReam:TABLE:ITEM :FRAME:LEX:FLAGs?	Sets a value of the Flags field + Pad (8 bits).	—	—	√	#H20
:TSTReam:TABLE:ITEM :FRAME:LEX:PROTocol <HEX>	:TSTReam:TABLE:ITEM :FRAME:LEX:PROTocol?	Sets a value of the protocol field (16 bits).	—	—	√	#H0041
:TSTReam:TABLE:ITEM :FRAME:LEX:PROTocol: AUTO <BOOLEAN>	:TSTReam:TABLE:ITEM :FRAME:LEX:PROTocol: AUTO?	Selects whether to enable/disable the auto setting of a protocol field value.	—	—	√	1 (enable)
:TSTReam:TABLE:ITEM :FRAME:LEX:MTYPE < HEX>	:TSTReam:TABLE:ITEM :FRAME:LEX:MTYPE?	Sets a value of the MAC type field (8 bits).	—	—	√	#H01
:TSTReam:TABLE:ITEM :FRAME:LCONTRol:IDE Ntifier <HEX>	:TSTReam:TABLE:ITEM :FRAME:LCONTRol:IDE Ntifier?	Sets a value of the Identifier field (8 bits).	—	—	√	#H00
:TSTReam:TABLE:ITEM :FRAME:LCONTRol:ADD Ress <HEX>	:TSTReam:TABLE:ITEM :FRAME:LCONTRol:ADD Ress?	Sets a value of the address field (8 bits).	—	—	√	#HFF
:TSTReam:TABLE:ITEM :FRAME:LCONTRol:OPTi ons <HEX>	:TSTReam:TABLE:ITEM :FRAME:LCONTRol:OPTi ons?	Edits and sets an option part of the LEX Control Packet with a header and option data mixed.	—	—	√	-
:TSTReam:TABLE:ITEM :FRAME:LCONTRol:COD E <HEX>	:TSTReam:TABLE:ITEM :FRAME:LCONTRol:COD E?	Sets a value of the code field (8 bits).	—	—	√	#H40
:TSTReam:TABLE:ITEM :FRAME:LCONTRol:CON Trol <HEX>	:TSTReam:TABLE:ITEM :FRAME:LCONTRol:CON Trol?	Sets a value of the control field (8 bits).	—	—	√	#H03

Capturing commands (CAPTure)

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:CAPTure:START	-	Starts capture.	√	√	√	-
:CAPTure:TRIGger	-	Generates a manual trigger.	√	√	√	-
:CAPTure:STOP	-	Stops capture.	√	√	√	-
-	:CAPTure:STATe?	Queries the operation state of capture.	√	√	√	-
-	:CAPTure:TIME:START?	Queries the start time of capture.	√	√	√	-
-	:CAPTure:TIME:ELAPse d?	Queries the elapsed time since the start of capture.	√	√	√	0
-	:CAPTure:TIME:STOP?	Queries the stop time of capture.	√	√	√	-
-	:CAPTure:BUFFer:TRIG ger?	Queries a trigger position.	√	√	√	-
-	:CAPTure:BUFFer:NFRa mes?	Queries the total number of frames in the capture memory.	√	√	√	-
-	:CAPTure:BUFFer:FRA Me:DATA? <capture_fra me_number>	Queries the contents of frame data.	√	√	√	-
-	:CAPTure:BUFFer:FRA Me:LENGth? <capture_f rame_number>	Queries the frame size of the frame data.	√	√	√	-
-	:CAPTure:BUFFer:FRA Me:TIMestamp? <captur e_frame_number>	Queries a timestamp value of the frame data.	√	√	√	-
:CAPTure:FILTer:ENABl e <BOOLEAN>	:CAPTure:FILTer:ENABl e?	Sets the capture filter to enable or disable.	√	√	√	0 (disable)
:CAPTure:FILTer:ERRor {DONT_CARE | NOT_ MATCH | MATCH}	:CAPTure:FILTer:ERRor ?	Sets a filter to the preset error type (Don't care/Not Match/Match).	√	√	√	DONT_CAR E (Don't care)
:CAPTure:FILTer:PATTe rn1 {DONT_CARE | N OT_MATCH | MATCH}	:CAPTure:FILTer:PATTe rn1?	Sets a filter to the preset pattern 1 (Don't care/Not Match/Match).	√	√	√	DONT_CAR E (Don't care)
:CAPTure:FILTer:PATTe rn2 {DONT_CARE | N OT_MATCH | MATCH}	:CAPTure:FILTer:PATTe rn2?	Sets a filter to the preset pattern 2 (Don't care/Not Match/Match).	√	√	√	DONT_CAR E (Don't care)
:CAPTure:FILTer:PATTe rn3 {DONT_CARE | N OT_MATCH | MATCH}	:CAPTure:FILTer:PATTe rn3?	Sets a filter to the preset pattern 3 (Don't care/Not Match/Match).	—	√	—	DONT_CAR E (Don't care)
:CAPTure:FILTer:PATTe rn4 {DONT_CARE | N OT_MATCH | MATCH}	:CAPTure:FILTer:PATTe rn4?	Sets a filter to the preset pattern 4 (Don't care/Not Match/Match).	—	√	—	DONT_CAR E (Don't care)

Section 6 Details of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:CAPTure:FILTer:SA {DONT_CARE | NOT_MATCH | MATCH}	:CAPTure:FILTer:SA?	Sets a filter to the preset source address pattern (Don't care/Not Match/Match).	√	√	√	DONT_CARE (Don't care)
:CAPTure:FILTer:DA {DONT_CARE | NOT_MATCH | MATCH}	:CAPTure:FILTer:DA?	Sets a filter to the destination address pattern (Don't care/Not match/Match).	√	√	√	DONT_CARE (Don't care)
:CAPTure:TRIGger:DA {DONT_CARE | NOT_MATCH | MATCH}	:CAPTure:TRIGger:DA?	Sets a trigger for the preset destination address pattern (Don't care/Not Match/Match).	√	√	√	DONT_CARE (Don't care)
:CAPTure:TRIGger:PATtern1 {DONT_CARE | NOT_MATCH | MATCH}	:CAPTure:TRIGger:PATtern1?	Sets a trigger for the preset pattern 1 (Don't care/Not Match/Match).	√	√	√	DONT_CARE (Don't care)
:CAPTure:TRIGger:PATtern2 {DONT_CARE | NOT_MATCH | MATCH}	:CAPTure:TRIGger:PATtern2?	Sets a trigger for the preset pattern 2 (Don't care/Not Match/Match).	√	√	√	DONT_CARE (Don't care)
:CAPTure:TRIGger:PATtern3 {DONT_CARE | NOT_MATCH | MATCH}	:CAPTure:TRIGger:PATtern3?	Sets a trigger for the preset pattern 3 (Don't care/Not Match/Match).	—	√	—	DONT_CARE (Don't care)
:CAPTure:TRIGger:PATtern4 {DONT_CARE | NOT_MATCH | MATCH}	:CAPTure:TRIGger:PATtern4?	Sets a trigger for the preset pattern 4 (Don't care/Not Match/Match).	—	√	—	DONT_CARE (Don't care)
:CAPTure:TRIGger:POSition {TOP | MIDDLE | BOTTOM}	:CAPTure:TRIGger:POSition?	Sets a trigger frame position in the capture memory.	√	√	√	TOP
:CAPTure:TRIGger:SA {DONT_CARE | NOT_MATCH | MATCH}	:CAPTure:TRIGger:SA?	Sets a trigger for the preset source address pattern (Don't care/Not Match/Match).	√	√	√	DONT_CARE (Don't care)
:CAPTure:TRIGger:ERROR {DONT_CARE | NOT_MATCH | MATCH}	:CAPTure:TRIGger:ERROR?	Sets a trigger for the preset error type (Don't care/Not Match/Match).	√	√	√	DONT_CARE (Don't care)
:CAPTure:TRIGger:ENABLE <BOOLEAN>	:CAPTure:TRIGger:ENABLE?	Sets the capture trigger to enable or disable.	√	√	√	0 (disable)
:CAPTure:TRIGger:EXTERNAL:ENABLE <BOOLEAN>	:CAPTure:TRIGger:EXTERNAL:ENABLE?	Sets an entry from an external trigger to enable or disable as a trigger item.	√	√	√	0 (disable)
:CAPTure:TRIGger:LATency:ENABLE <BOOLEAN>	:CAPTure:TRIGger:LATency:ENABLE?	Sets a trigger when the latency of the received frame exceeds the set value to enable or disable.	√	√	√	0 (disable)

6.1 List of Device Mesages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:CAPTure:TRIGger:LATency:THReshold <NR1>	:CAPTure:TRIGger:LATency:THReshold?	Sets a threshold of a trigger by latency.	√	√	√	100000000 (100 ms)
:CAPTure:TRIGger:TRAFFic:ENABle <BOOLEAN>	:CAPTure:TRIGger:TRAFFic:ENABle?	Sets a trigger when a traffic value exceeds the specified value to enable or disable.	√	√	√	0 (disable)
:CAPTure:TRIGger:TRAFFic:THReshold <NR1>	:CAPTure:TRIGger:TRAFFic:THReshold?	Sets a threshold of a trigger by traffic.	√	√	√	90

Latency measurement commands (LATency)

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:LATency:STOP	-	Stops a latency measurement.	√	√	√	-
:LATency:START	-	Starts a latency measurement.	√	√	√	-
-	:LATency:STATe?	Queries the measurement status.	√	√	√	-
-	:LATency:TIME:START?	Queries the start time of a measurement.	√	√	√	-
-	:LATency:TIME:ELAPsed?	Queries the elapsed time of a measurement.	√	√	√	0
-	:LATency:TIME:STOP?	Queries the stop time of a measurement.	√	√	√	-
-	:LATency:CURREnt?	Queries the result of a latency measurement (current latency value).	√	√	√	-
-	:LATency:AVERAge?	Queries the result of a latency measurement (average value).	√	√	√	-
-	:LATency:MAX?	Queries the result (maximum value) of the latency measurement.	√	√	√	-
-	:LATency:FRAMes?	Queries the number of received frames.	√	√	√	-
-	:LATency:MIN?	Queries the result (minimum value) of the latency measurement.	√	√	√	-

Variation measurement commands (ATIME)

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:VARIationSTART	-	Starts a measurement.	√	√	√	-
:VARIationSTOP	-	Stops a measurement.	√	√	√	-
-	:VARIationSTATE?	Queries the measurement status.	√	√	√	-
-	:VARIationTIME:ELAPsed?	Queries the elapsed time of a measurement.	√	√	√	0
-	:VARIationTIME:START?	Queries the start time of a measurement.	√	√	√	-
-	:VARIationTIME:STOP?	Queries the stop time of a measurement.	√	√	√	-
:VARIationRESolution <resolution>	:VARIationRESolution?	Sets the resolution of the x-axis (time) on a histogram.	√	√	√	R1MS (1 ms)
-	:VARIationDATA?	Queries the measured result.	√	√	√	-
VARIation:OFFSet:NUMBer <NR1>	:VARIation:OFFSet:NUMBer?	Sets graph display offset	√	√	√	-
:VARIation:TYPE {LATENCY | ARRIVALTIME}	:VARIation:TYPE?	Sets Variation measurement item (Arrival Time or Latency)	√	√	√	-
:VARIation:FILTer:ENABle <BOOLEAN>	:VARIation:FILTer:ENABle?	Sets whether or not to use filter at Variation measurement	—	√	—	-
:VARIation:FILTer:PATTerN1 {DONT_CARE | NOT_MATCH | MATCH}	:VARIation:FILTer:PATTerN1?	Specifies filter conditions (Match/Not Match/Don't Care) used for Pattern 1	—	√	—	-
:VARIation:FILTer:PATTerN2 {DONT_CARE | NOT_MATCH | MATCH}	:VARIation:FILTer:PATTerN2?	Specifies filter conditions (Match/Not Match/Don't Care) used for Pattern 2	—	√	—	-
:VARIation:FILTer:PATTerN3 {DONT_CARE | NOT_MATCH | MATCH}	:VARIation:FILTer:PATTerN3?	Specifies filter conditions (Match/Not Match/Don't Care) used for Pattern 3	—	√	—	-
:VARIation:FILTer:PATTerN4 {DONT_CARE | NOT_MATCH | MATCH}	:VARIation:FILTer:PATTerN4?	Specifies filter conditions (Match/Not Match/Don't Care) used for Pattern 4	—	√	—	-
:VARIation:FILTer:ERRor {DONT_CARE | NOT_MATCH | MATCH}	:VARIation:FILTer:ERRor?	Specifies filter conditions (Match/Not Match/Don't Care) used for error type	—	√	—	-

Protocol support commands (PROTOcol)

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:PROTOcol:LDP:ENABLE <BOOLEAN>	:PROTOcol:LDP:ENABLE?	Sets the LDP/CR-LDP protocol function to enable or disable.	√	√	—	0 (disable)
:PROTOcol:LDP:OPTion <option>	:PROTOcol:LDP:OPTion?	Sets the option information of the LDP protocol function.	√	√	—	-
:PROTOcol:LDP:NODE:ADD <parent_node_id>,<node_id>,<node_information>	-	Adds a node.	√	√	—	-
:PROTOcol:LDP:NODE:DELETE <node_id>	-	Deletes the specified node.	√	√	—	-
:PROTOcol:LDP:NODE:DELETE:ALL	-	Deletes all nodes.	√	√	—	-
:PROTOcol:LDP:NODE:FEC:DELETE:ALL <node_id>	-	Deletes all FEC information on the specified node.	√	√	—	-
:PROTOcol:LDP:NODE:FEC:ADD <node_id>,<fec_id>,<fec_information>	-	Adds FEC information to the specified node.	√	√	—	-
:PROTOcol:LDP:NODE:FEC:DELETE <node_id>,<fec_id>	-	Deletes the specified FEC information.	√	√	—	-
:PROTOcol:LDP:NODE:ROUTE:DELETE:ALL <node_id>	-	Deletes all explicit route information on the specified node.	√	√	—	-
:PROTOcol:LDP:NODE:ROUTE:DELETE <node_id>,<route_id>	-	Deletes the specified explicit route information.	√	√	—	-
:PROTOcol:LDP:NODE:ROUTE:ADD <node_id>,<route_id>,<explicit_route_information>	-	Adds the explicit route information to the specified node.	√	√	—	-
:PROTOcol:LDP:NODE <node_id>,<node_information>	:PROTOcol:LDP:NODE? <node_id>	Edits information on the specified node.	√	√	—	-
:PROTOcol:LDP:NODE:FEC <node_id>,<fec_id>,<fec_information>	:PROTOcol:LDP:NODE:FEC? <node_id>,<fec_id>	Edits the specified FEC information.	√	√	—	-
:PROTOcol:LDP:NODE:ROUTE <node_id>,<route_id>,<explicit_route_information>	:PROTOcol:LDP:NODE:ROUTE? <node_id>,<route_id>	Edits the specified explicit route information.	√	√	—	-

6.1 List of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:PROTocol:RSVP:ENABl e <BOOLEAN>	:PROTocol:RSVP:ENABl e?	Sets the RSVP protocol function to enable or disable.	√	√	—	0 (disable)
:PROTocol:RSVP:OPTion <option>	:PROTocol:RSVP:OPTion ?	Sets the option information for the RSVP protocol function.	√	√	—	-
:PROTocol:RSVP:NODE: ADD <parent_node_id>, <node_id>, <node_inform ation>	-	Adds/sets a node.	√	√	—	-
:PROTocol:RSVP:NODE: DELeTe <node_id>	-	Deletes the specified node.	√	√	—	-
:PROTocol:RSVP:NODE: DELeTe:ALL	-	Deletes all nodes.	√	√	—	-
:PROTocol:RSVP:NODE: EDGE:PATH:DELeTe:AL L <node_id>	-	Deletes all path information on the specified node.	√	√	—	-
:PROTocol:RSVP:NODE: EDGE:PATH:DELeTe <n ode_id>, <tunnel_id>	-	Deletes the path information on the speci- fied node.	√	√	—	-
:PROTocol:RSVP:NODE: EDGE:PATH:ADD <nod e_id>, <tunnel_id>, <path _information>	-	Adds/sets path information to the specified node.	√	√	—	-
:PROTocol:RSVP:NODE <node_id>, <node_inform ation>	:PROTocol:RSVP:NODE? <node_id>	Edits the specified node information.	√	√	—	-
:PROTocol:RSVP:NODE: EDGE <node_id>, <edge _information>	:PROTocol:RSVP:NODE: EDGE? <node_id>	Sets/queries information on the specified node when it is an edge router.	√	√	—	-
:PROTocol:RSVP:NODE: EDGE:PATH <node_id>, <tunnel_id>, <path_infor mation>	:PROTocol:RSVP:NODE: EDGE:PATH? <node_id >, <tunnel_id>	Edits the path information for the specified node.	√	√	—	-
:PROTocol:IGMP:ENABl e <BOOLEAN>	:PROTocol:IGMP:ENABl e?	Sets the report transmission function of IGMP to enable or disable.	√	√	√	0 (disable)
:PROTocol:IGMP:VERSi on {VER1 | VER2}	:PROTocol:IGMP:VERSi on?	Sets the IGMP version.	√	√	√	VER1 (Version1)
:PROTocol:IGMP:MGAD dress:COUNT <NR1>	:PROTocol:IGMP:MGAD dress:COUNT?	Sets a group address count.	√	√	√	1

Section 6 Details of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:PROTOcol:IGMP:MGADdress:FROM <IP_ADDR ESS>	:PROTOcol:IGMP:MGADdress:FROM?	Sets the first group address in a group address range.	√	√	√	#H00000000 (0.0.0.0)
:PROTOcol:IGMP:REPort:MODE {ONE_QUERIED | ALL_QUERIED | ALL}	:PROTOcol:IGMP:REPort:MODE?	Sets the report transmission mode.	√	√	√	ONE_QUERIED (Report To One When Queried)
:PROTOcol:IGMP:REPort:FREQuency <NR1>	:PROTOcol:IGMP:REPort:FREQuency?	Sets a report frequency.	√	√	√	10
:PROTOcol:IGMP:RALert:ENABLE <BOOLEAN>	:PROTOcol:IGMP:RALert:ENABLE?	Sets a router alert to enable or disable (whether to add the IP Router Alert Option to the IP header or not).	√	√	√	0 (disable)
:PROTOcol:IGMP:UADDRess:COUNT <NR1>	:PROTOcol:IGMP:UADDRess:COUNT?	Sets a client address count.	√	√	√	1
:PROTOcol:IGMP:UADDRess:FROM <IP_ADDRESS>	:PROTOcol:IGMP:UADDRess:FROM?	Sets the first virtual host address in a virtual host address range.	√	√	√	#H00000000 (0.0.0.0)
-	:PROTOcol:IGMP:MGADdress:TO?	Queries the last group address in a group address range.	√	√	√	-
-	:PROTOcol:IGMP:UADDRess:TO?	Queries the last virtual host address in a virtual host address range.	√	√	√	-
:PROTOcol:MLD:ENABLE <BOOLEAN>	:PROTOcol:MLD:ENABLE?	Sets the MLD protocol function to enable or disable.	√	√	—	0 (disable)
:PROTOcol:OSPF:UPDATE	-	Updates the changes of setting information.	√	√	—	-
:PROTOcol:OSPF:ENABLE <BOOLEAN>	:PROTOcol:OSPF:ENABLE?	Sets the OSPF protocol to enable or disable.	√	√	—	0 (disable)
-	:PROTOcol:OSPF:STATE?	Queries virtual router state.	√	√	—	-
:PROTOcol:OSPF:TABLE:ENABLE <BOOLEAN>[, <BOOLEAN>]...	:PROTOcol:OSPF:TABLE:ENABLE?	Sets virtual router settings to enable or disable.	√	√	—	-
:PROTOcol:OSPF:TABLE:ITEM:INTERFACE <entry_id>,<Interface Setting>	:PROTOcol:OSPF:TABLE:ITEM:INTERFACE? <entry_id>	Sets the interface information for the selected virtual router.	√	√	—	-
:PROTOcol:OSPF:TABLE:ITEM:LSA <entry_id>,<lsa_id>,<LS Type>,<LSA Setting>	:PROTOcol:OSPF:TABLE:ITEM:LSA? <entry_id>,<lsa_id>	Sets and reads the LSA information of the selected virtual router.	√	√	—	-
:PROTOcol:OSPF:TABLE:ITEM:LSA:ADD <entry_id>,<LS Type>,<LSA Setting>	-	Adds LSA information to the selected virtual router.	√	√	—	-

6.1 List of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:PROTOcol:OSPF:TABLE:ITEM:LSA:DELeTe <entry_id>,<lsa_id>	-	Deletes LSA information for the selected virtual router.	√	√	—	-
:PROTOcol:OSPF:TABLE:ITEM:LSA:DELeTe:ALL <entry_id>	-	Deletes all LSA information for the selected virtual router.	√	√	—	-
:PROTOcol:BGP4:ENABLe <BOOLEAN>	:PROTOcol:BGP4:ENABLe?	Sets the BGP4 service to enable or disable.	√	√	√	0 (disable)
:PROTOcol:BGP4:OPEN:RINTeRval <NR1>	:PROTOcol:BGP4:OPEN:RINTeRval?	Sets a retry interval (second) for establishing a BGP-4 session.	√	√	√	10
:PROTOcol:BGP4:OPEN:RETRies <NR1>	:PROTOcol:BGP4:OPEN:RETRies?	Sets the number of retries to establish a BGP-4 session.	√	√	√	0
:PROTOcol:BGP4:TABLE:ID <bgp4_entry_number>	:PROTOcol:BGP4:TABLE:ID?	Sets the number of an entry to be edited.	√	√	√	-
:PROTOcol:BGP4:TABLE:ITEM:ENABLe <BOOLEAN>	:PROTOcol:BGP4:TABLE:ITEM:ENABLe?	Sets the selected entry to enable or disable.	√	√	√	-
:PROTOcol:BGP4:TABLE:ITEM:CONFIg:ANUMbeR <NR1>	:PROTOcol:BGP4:TABLE:ITEM:CONFIg:ANUMbeR?	Sets the AS number of a virtual router.	√	√	√	0
:PROTOcol:BGP4:TABLE:ITEM:CONFIg:DIADdreSS <IP_ADDRESS>	:PROTOcol:BGP4:TABLE:ITEM:CONFIg:DIADdreSS?	Sets an IP address of the target router.	√	√	√	#H00000000 (0.0.0.0)
:PROTOcol:BGP4:TABLE:ITEM:CONFIg:KFRequeNcy <NR1>	:PROTOcol:BGP4:TABLE:ITEM:CONFIg:KFRequeNcy?	Sets KEEPALIVE retransmission frequency (second).	√	√	√	0
:PROTOcol:BGP4:TABLE:ITEM:CONFIg:UFRequeNcy <NR1>	:PROTOcol:BGP4:TABLE:ITEM:CONFIg:UFRequeNcy?	Sets UPDATE retransmission frequency (second).	√	√	√	0
:PROTOcol:BGP4:TABLE:ITEM:CONFIg:IADdress <IP_ADDRESS>	:PROTOcol:BGP4:TABLE:ITEM:CONFIg:IADdress?	Sets an IP address of the virtual router.	√	√	√	#H00000000 (0.0.0.0)
:PROTOcol:BGP4:TABLE:ITEM:CONFIg:LFLap:DTIME <NR1>	:PROTOcol:BGP4:TABLE:ITEM:CONFIg:LFLap:DTIME?	Sets the drop time of a link flap (second).	√	√	√	10
:PROTOcol:BGP4:TABLE:ITEM:CONFIg:LFLap:ENABLe <BOOLEAN>	:PROTOcol:BGP4:TABLE:ITEM:CONFIg:LFLap:ENABLe?	Sets a link flap to enable or disable.	√	√	√	0 (disable)
:PROTOcol:BGP4:TABLE:ITEM:CONFIg:LFLap:FTDRop <NR1>	:PROTOcol:BGP4:TABLE:ITEM:CONFIg:LFLap:FTDRop?	Sets the time to establish a link flap (second).	√	√	√	10

Section 6 Details of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:PROTOCOL:BGP4:TABLE:ITEM:RATTRIBUTES:AGGREGATOR:ANUMBER <NR 1>	:PROTOCOL:BGP4:TABLE:ITEM:RATTRIBUTES:AGGREGATOR:ANUMBER?	Sets the a AS number of AGGREGATOR.	√	√	√	0
:PROTOCOL:BGP4:TABLE:ITEM:RATTRIBUTES:AGGREGATOR:IADDRESS <IP_ADDRESS>	:PROTOCOL:BGP4:TABLE:ITEM:RATTRIBUTES:AGGREGATOR:IADDRESS?	Sets an IP address of AGGREGATOR.	√	√	√	#H00000000 (0.0.0.0)
:PROTOCOL:BGP4:TABLE:ITEM:RATTRIBUTES:AGGREGATOR:ENABLE <BOOLEAN>	:PROTOCOL:BGP4:TABLE:ITEM:RATTRIBUTES:AGGREGATOR:ENABLE?	Sets AGGREGATOR to enable or disable.	√	√	√	0 (disable)
:PROTOCOL:BGP4:TABLE:ITEM:RATTRIBUTES:APATH:ACONFED:SEQUENCE:ENABLE <BOOLEAN>	:PROTOCOL:BGP4:TABLE:ITEM:RATTRIBUTES:APATH:ACONFED:SEQUENCE:ENABLE?	Sets AS_CONFED_SEQUENCE to enable or disable.	√	√	√	0 (disable)
:PROTOCOL:BGP4:TABLE:ITEM:RATTRIBUTES:APATH:ACONFED:SEQUENCE:ANUMBER <number of data>[,<as_number>]...	:PROTOCOL:BGP4:TABLE:ITEM:RATTRIBUTES:APATH:ACONFED:SEQUENCE:ANUMBER?	Sets the AS number of AS_CONFED_SEQUENCE.	√	√	√	0
:PROTOCOL:BGP4:TABLE:ITEM:RATTRIBUTES:APATH:ACONFED:SET:ENABLE <BOOLEAN>	:PROTOCOL:BGP4:TABLE:ITEM:RATTRIBUTES:APATH:ACONFED:SET:ENABLE?	Sets AS_CONFED_SET to enable or disable.	√	√	√	0 (disable)
:PROTOCOL:BGP4:TABLE:ITEM:RATTRIBUTES:APATH:ACONFED:SET:ANUMBER <number of data>[,<as_number>]...	:PROTOCOL:BGP4:TABLE:ITEM:RATTRIBUTES:APATH:ACONFED:SET:ANUMBER?	Sets the AS number of AS_CONFED_SET.	√	√	√	0
:PROTOCOL:BGP4:TABLE:ITEM:RATTRIBUTES:APATH:ASEQUENCE:ENABLE <BOOLEAN>	:PROTOCOL:BGP4:TABLE:ITEM:RATTRIBUTES:APATH:ASEQUENCE:ENABLE?	Sets AS_SEQUENCE to enable or disable.	√	√	√	0 (disable)
:PROTOCOL:BGP4:TABLE:ITEM:RATTRIBUTES:APATH:ASEQUENCE:ANUMBER <number of data>[,<as_number>]...	:PROTOCOL:BGP4:TABLE:ITEM:RATTRIBUTES:APATH:ASEQUENCE:ANUMBER?	Sets the AS number of AS_SEQUENCE.	√	√	√	0
:PROTOCOL:BGP4:TABLE:ITEM:RATTRIBUTES:APATH:ASET:ENABLE <BOOLEAN>	:PROTOCOL:BGP4:TABLE:ITEM:RATTRIBUTES:APATH:ASET:ENABLE?	Sets AS_SET to enable or disable.	√	√	√	0 (disable)

6.1 List of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:PROTOCOL:BGP4:TABLE:ITEM:RATTRIBUTES:APATH:ASET:ANUMBER <number of data>[,<as_number>]·...	:PROTOCOL:BGP4:TABLE:ITEM:RATTRIBUTES:APATH:ASET:ANUMBER?	Sets the AS number of AS_SET.	√	√	√	0
:PROTOCOL:BGP4:TABLE:ITEM:RATTRIBUTES:AAGGREGATE:ENABLE <BOOLEAN>	:PROTOCOL:BGP4:TABLE:ITEM:RATTRIBUTES:AAGGREGATE:ENABLE?	Sets ATOMIC_AGGREGATE to enable or disable.	√	√	√	0 (disable)
:PROTOCOL:BGP4:TABLE:ITEM:RATTRIBUTES:CLIST:VALUE <number of data>[,<cluster_list>]·...	:PROTOCOL:BGP4:TABLE:ITEM:RATTRIBUTES:CLIST:VALUE?	Sets an attribute value of CLUSTER_LIST.	√	√	√	0
:PROTOCOL:BGP4:TABLE:ITEM:RATTRIBUTES:CLIST:ENABLE <BOOLEAN>	:PROTOCOL:BGP4:TABLE:ITEM:RATTRIBUTES:CLIST:ENABLE?	Sets CLUSTER_LIST to enable or disable.	√	√	√	0 (disable)
:PROTOCOL:BGP4:TABLE:ITEM:RATTRIBUTES:COMMUNITIES:ENABLE <BOOLEAN>	:PROTOCOL:BGP4:TABLE:ITEM:RATTRIBUTES:COMMUNITIES:ENABLE?	Sets COMMUNITIES to enable or disable.	√	√	√	0 (disable)
:PROTOCOL:BGP4:TABLE:ITEM:RATTRIBUTES:COMMUNITIES:VALUE <number of data>[,<communities>]·...	:PROTOCOL:BGP4:TABLE:ITEM:RATTRIBUTES:COMMUNITIES:VALUE?	Sets an attribute value of COMMUNITIES.	√	√	√	0
:PROTOCOL:BGP4:TABLE:ITEM:RATTRIBUTES:LPRF:VALUE <NR1>	:PROTOCOL:BGP4:TABLE:ITEM:RATTRIBUTES:LPRF:VALUE?	Sets an attribute value of LOCAL_PREF.	√	√	√	0
:PROTOCOL:BGP4:TABLE:ITEM:RATTRIBUTES:LPRF:ENABLE <BOOLEAN>	:PROTOCOL:BGP4:TABLE:ITEM:RATTRIBUTES:LPRF:ENABLE?	Sets LOCAL_PREF to enable or disable.	√	√	√	0 (disable)
:PROTOCOL:BGP4:TABLE:ITEM:RATTRIBUTES:MEDISC:ENABLE <BOOLEAN>	:PROTOCOL:BGP4:TABLE:ITEM:RATTRIBUTES:MEDISC:ENABLE?	Sets MULTI_EXIT_DISK to enable or disable.	√	√	√	0 (disable)
:PROTOCOL:BGP4:TABLE:ITEM:RATTRIBUTES:MEDISC:VALUE <NR1>	:PROTOCOL:BGP4:TABLE:ITEM:RATTRIBUTES:MEDISC:VALUE?	Sets an attribute value of MULTI_EXIT_DISC.	√	√	√	0
:PROTOCOL:BGP4:TABLE:ITEM:RATTRIBUTES:NHOP:ENABLE <BOOLEAN>	:PROTOCOL:BGP4:TABLE:ITEM:RATTRIBUTES:NHOP:ENABLE?	Sets NEXT_HOP to enable or disable.	√	√	√	0 (disable)

Section 6 Details of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:PROTOCOL:BGP4:TABLE:ITEM:RATTRIBUTES:NHOP:IADDRESS <IP_ADDRESS>	:PROTOCOL:BGP4:TABLE:ITEM:RATTRIBUTES:NHOP:IADDRESS?	Sets an IP address of the NEXT_HOP router.	√	√	√	#H00000000 (0.0.0.0)
:PROTOCOL:BGP4:TABLE:ITEM:RATTRIBUTES:ORIGIN:VALUE {IGP|EGP|INCOMPLETE}	:PROTOCOL:BGP4:TABLE:ITEM:RATTRIBUTES:ORIGIN:VALUE?	Sets an attribute value of ORIGIN.	√	√	√	IGP
:PROTOCOL:BGP4:TABLE:ITEM:RATTRIBUTES:ORIGIN:ENABLE <BOOLEAN>	:PROTOCOL:BGP4:TABLE:ITEM:RATTRIBUTES:ORIGIN:ENABLE?	Sets ORIGIN to enable or disable.	√	√	√	0 (disable)
:PROTOCOL:BGP4:TABLE:ITEM:RATTRIBUTES:OID:ENABLE <BOOLEAN>	:PROTOCOL:BGP4:TABLE:ITEM:RATTRIBUTES:OID:ENABLE?	Sets ORIGINATOR_ID to enable or disable.	√	√	√	0 (disable)
:PROTOCOL:BGP4:TABLE:ITEM:RATTRIBUTES:OID:IADDRESS <IP_ADDRESS>	:PROTOCOL:BGP4:TABLE:ITEM:RATTRIBUTES:OID:IADDRESS?	Sets an IP address of ORIGINATOR_ID.	√	√	√	#H00000000 (0.0.0.0)
:PROTOCOL:BGP4:TABLE:ITEM:RCONFIG:NROUTES <NR1>	:PROTOCOL:BGP4:TABLE:ITEM:RCONFIG:NROUTES?	Sets the number of IP prefixes to be generated.	√	√	√	0
:PROTOCOL:BGP4:TABLE:ITEM:RCONFIG:PTO <NR1>	:PROTOCOL:BGP4:TABLE:ITEM:RCONFIG:PTO?	Sets an end bit mask that specifies the range of IP prefixes to be generated.	√	√	√	24
:PROTOCOL:BGP4:TABLE:ITEM:RCONFIG:PFRom <NR1>	:PROTOCOL:BGP4:TABLE:ITEM:RCONFIG:PFRom?	Sets a start bit mask that specifies the range of IP prefixes to be generated.	√	√	√	16
:PROTOCOL:BGP4:TABLE:ITEM:RCONFIG:NNUMBER <IP_ADDRESS>	:PROTOCOL:BGP4:TABLE:ITEM:RCONFIG:NNUMBER?	Sets the reference IP address for a virtual IP prefix.	√	√	√	#H00000000 (0.0.0.0)
:PROTOCOL:BGP4:TABLE:ITEM:RCONFIG:PPPACKET <NR1>	:PROTOCOL:BGP4:TABLE:ITEM:RCONFIG:PPPACKET?	Sets the number of prefixes that can be contained in a packet.	√	√	√	0
:PROTOCOL:BGP4:TABLE:ITEM:RCONFIG:RFLAP:DTIME <NR1>	:PROTOCOL:BGP4:TABLE:ITEM:RCONFIG:RFLAP:DTIME?	Route flap setting. Sets the drop time until the canceled route is sent as NLRI.	√	√	√	10
:PROTOCOL:BGP4:TABLE:ITEM:RCONFIG:RFLAP:FTDRop <NR1>	:PROTOCOL:BGP4:TABLE:ITEM:RCONFIG:RFLAP:FTDRop?	Route flap setting. Sets the drop time until the route sent as NLRI is canceled.	√	√	√	10
:PROTOCOL:BGP4:TABLE:ITEM:RCONFIG:RFLAP:ENABLE <BOOLEAN>	:PROTOCOL:BGP4:TABLE:ITEM:RCONFIG:RFLAP:ENABLE?	Sets a route flap to enable or disable.	√	√	√	0 (disable)

6.1 List of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:PROToCol:IGAP:ENABLe <BOOLEAN>	:PROToCol:IGAP:ENABLe?	Sets the report transmission of IGAP to enable or disable.	√	√	—	0 (disable)
:PROToCol:IGAP:REPort:TYPE {PAP}	:PROToCol:IGAP:REPort:TYPE?	Sets the report type.	√	√	—	PAP
:PROToCol:IGAP:RALert:ENABLE <BOOLEAN>	:PROToCol:IGAP:RALert:ENABLE?	Sets a router alert to enable or disable (whether to add the IP Router Alert Option to the IP header or not).	√	√	—	0 (disable)
:PROToCol:IGAP:MGADdress:COUnT <NR1>	:PROToCol:IGAP:MGADdress:COUnT?	Sets a multicast group address count.	√	√	—	1
:PROToCol:IGAP:MGADdress:FROM <IP_ADDRESS>	:PROToCol:IGAP:MGADdress:FROM?	Sets the first group address in a group address range.	√	√	—	#HE00000000 (224.0.0.0)
-	:PROToCol:IGAP:MGADdress:TO?	Queries the last group address in a group address range.	√	√	—	-
:PROToCol:IGAP:UADDr ess:COUnT <NR1>	:PROToCol:IGAP:UADDr ess:COUnT?	Sets a client address count.	√	√	—	1
:PROToCol:IGAP:UADDr ess:FROM <IP_ADDRESS>	:PROToCol:IGAP:UADDr ess:FROM?	Sets the first virtual host address in a virtual host address range.	√	√	—	#H000000000 (0.0.0.0)
-	:PROToCol:IGAP:UADDr ess:TO?	Queries the last virtual host address in a virtual host address range.	√	√	—	-
:PROToCol:IGAP:TAUTh <NR1>	:PROToCol:IGAP:TAUTh?	Sets a T_auth value (10 to 100 seconds).	√	√	—	10
:PROToCol:IGAP:RVARia ble <NR1>	:PROToCol:IGAP:RVARia ble?	Sets a Robustness (1 to 10 times).	√	√	—	2
:PROToCol:IGAP:PAP:UACCount:TYPE {ALL0 | ALL1 | PROG}	:PROToCol:IGAP:PAP:UACCount:TYPE?	Sets the User account type for PAP.	√	√	—	ALL0
:PROToCol:IGAP:PAP:UACCount:VALue <HEX>	:PROToCol:IGAP:PAP:UACCount:VALue?	Sets a value of the user account (16 bytes).	√	√	—	#H0000000000000000000000000000 (16 bytes)
:PROToCol:IGAP:PAP:MESSAge:TYPE {ALL0 | ALL1 | PROG}	:PROToCol:IGAP:PAP:MESSAge:TYPE?	Sets the Message type for PAP.	√	√	—	ALL0
:PROToCol:IGAP:PAP:MESSAge:VALue <NR1>,<HEX>	:PROToCol:IGAP:PAP:MESSAge:VALue? <NR1>	Message (64 bytes) field is set up.	√	√	—	#0=H00000000000000000000....0000 (64 bytes)

Section 6 Details of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:PROTocol:IGAP:REPort:MODE {ALL_QUIERIED | ALL | NONE}	:PROTocol:IGAP:REPort:MODE?	Sets the report transmission mode.	√	√	—	ALL_QUIERIED
:PROTocol:IGAP:REPort:FREQuency <NR1>	:PROTocol:IGAP:REPort:FREQuency?	Sets the report frequency.	√	√	—	10
:PROTocol:IGAP:LEAVE:MODE {NONE | INTERVAL}	:PROTocol:IGAP:LEAVE:MODE?	Sets the leave method mode.	√	√	—	NONE
:PROTocol:IGAP:LEAVE:INTERval <NR1>	:PROTocol:IGAP:LEAVE:INTERval?	Sets the transmit leave with interval.	√	√	—	60
:PROTocol:IGAP:PAP:UACCount:INCRement <BOOLEAN>	:PROTocol:IGAP:PAP:UACCount:INCRement?	User Account's increment mode setup data is set up.	√	√	—	0 (disable)
:PROTocol:IGAP:LEAVE:RESumption <NR1>	:PROTocol:IGAP:LEAVE:RESumption?	The re-opening time until the next Report is sent out after Leave sending out is set up.	√	√	—	1
:PROTocol:IGAP:LEAVE:TRIALs <NR1>	:PROTocol:IGAP:LEAVE:TRIALs?	The number of trials of the Leave sending out emulation is set up.	√	√	—	0
:PROTocol:MLDA:ENABle <BOOLEAN>	:PROTocol:MLDA:ENABle?	Sets the MLDA protocol function to enable or disable.	√	√	—	0 (disable)
:PROTocol:PIM:ENABle <BOOLEAN>	:PROTocol:PIM:ENABle?	Sets the PIM-SMv2 protocol function to enable or disable.	√	√	—	0 (disable)
:PROTocol:BGPPplus:ENABle <BOOLEAN>	:PROTocol:BGPPplus:ENABle?	Sets the BGP4+ protocol function to enable or disable.	√	√	—	0 (disable)
:PROTocol:OSPF3:ENABle <BOOLEAN>	:PROTocol:OSPF3:ENABle?	Sets the OSPFv3 protocol function to enable or disable.	√	√	—	0 (disable)

Automatic measurement commands (AUTomatic)

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:AUTomatic:START	-	Starts the automatic test.	√	√	√	-
:AUTomatic:STOP	-	Stops the ongoing auto measurement.	√	√	√	-
-	:AUTomatic:STate?	Queries an item of the ongoing automatic test.	√	√	√	-
:AUTomatic:PROTOCOL {MAC | IP}	:AUTomatic:PROTOCOL?	Sets the protocol (MAC/IP) for Automatic test.	√	√	√	IP
:AUTomatic:PROTOCOL:IP {IPV4 | IPV6}	:AUTomatic:PROTOCOL:IP?	Selects between IPv4/IPv6.	√	√	√	IPV4
:AUTomatic:ORIENTATION {UNI | BI}	:AUTomatic:ORIENTATION?	Sets Traffic Orientation for Automatic measurement.	√	√	√	UNI
:AUTomatic:DISTRIBUTION:MTYPE {PEAKLOADING | ROUNDROBIN}	:AUTomatic:DISTRIBUTION:MTYPE?	Sets frame transmission method during Automatic measurement.	√	√	√	PEAK-LOADING
:AUTomatic:DISTRIBUTION {NON_MESHERD | PARTIALLY | FULLY}	:AUTomatic:DISTRIBUTION?	Sets Traffic Distribution for Automatic measurement.	√	√	√	NON_MESHERD
:AUTomatic:PGROUP:ADD:A <port>[,<port>]...	-	Adds a port to Port Group (A) used for Automatic measurement.	√	√	√	-
:AUTomatic:PGROUP:ADD:B <port>[,<port>]...	-	Adds a port to Port Group (B) used for Automatic measurement.	√	√	√	-
:AUTomatic:PGROUP:DELETE:A {<port>[,<port>]... | ALL}	-	Deletes a port from Port Group (A) used for Automatic measurement.	√	√	√	-
:AUTomatic:PGROUP:DELETE:B {<port>[,<port>]... | ALL}	-	Deletes a port from Port Group (B) used for Automatic measurement.	√	√	√	-
-	:AUTomatic:PGROUP:B?	Queries a port registered to Port Group (B) used for Automatic measurement.	√	√	√	""
-	:AUTomatic:PGROUP:A?	Queries a port registered to Port Group (A) used for Automatic measurement.	√	√	√	""
:AUTomatic:TIMESTAMP {LAST_BIT | FIRST_BIT}	:AUTomatic:TIMESTAMP?	Specifies timestamp addition method for adding timestamp to transmission stream.	√	√	√	LAST_BIT (for store and forward devices)
:AUTomatic:FSIZE:TYPE {DEFAULT | CUSTOM | STEP}	:AUTomatic:FSIZE:TYPE?	Selects the setting type of frame size to be measured.	√	√	√	DEFAULT
:AUTomatic:FSIZE:CUSTOM:VALUE <frame_size>[,<frame_size>]...	:AUTomatic:FSIZE:CUSTOM:VALUE?	Sets a user-defined frame size.	√	√	√	-

Section 6 Details of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:AUTomatic:FSIZE:STEP:MINimum <NR1>	:AUTomatic:FSIZE:STEP:MINimum?	Sets a minimum value when the setting type of frame size is Step.	√	√	√	64
:AUTomatic:FSIZE:STEP:STEP <NR1>	:AUTomatic:FSIZE:STEP:STEP?	Sets an increment when the setting type of frame size is Step.	√	√	√	1
:AUTomatic:FSIZE:STEP:COUNT <NR1>	:AUTomatic:FSIZE:STEP:COUNT?	Sets the number of frame sizes when the setting type of frame size is Step.	√	√	√	1
-	:AUTomatic:FSIZE:CUSTOM:NFSize?	Queries the number of user-defined frame sizes.	√	√	√	1
:AUTomatic:LEARNING:TYPE {NEVER | ONCE | EVERY}	:AUTomatic:LEARNING:TYPE?	Sets the address learning mode.	√	√	√	ONCE
:AUTomatic:LEARNING:RETRIES <NR1>	:AUTomatic:LEARNING:RETRIES?	Sets the number of retries of a learning frame.	√	√	√	1
:AUTomatic:PPAIRS:ADD "<source_port>",<destination_port>"	-	This command becomes unusable. Refer to Appendix B for the details.	√	√	√	-
:AUTomatic:PPAIRS:DELETE "<source_port>",<destination_port>"	-	This command becomes unusable. Refer to Appendix B for the details.	√	√	√	-
-	:AUTomatic:PPAIRS:CURRENT?	This command becomes unusable. Refer to Appendix B for the details.	√	√	√	-
-	:AUTomatic:PPAIRS:NPPAIR?	This command becomes unusable. Refer to Appendix B for the details.	√	√	√	-
-	:AUTomatic:PPAIRS:ITEM? <port_pair_number>	This command becomes unusable. Refer to Appendix B for the details.	√	√	√	-
:AUTomatic:TFRAME:IP<BOOLEAN>	:AUTomatic:TFRAME:IP?	This command becomes unusable. Refer to Appendix B for the details.	√	√	√	1 (enable)
:AUTomatic:TFRAME:PAATTern {ALL0 | ALL1}	:AUTomatic:TFRAME:PAATTern?	This command becomes unusable. Refer to Appendix B for the details.	√	√	√	ALL0
-	:AUTomatic:THROUGHPUT:TIME:START?	Queries the start time of the throughput measurement.	√	√	√	-
-	:AUTomatic:THROUGHPUT:TIME:STOP?	Queries the stop time of the throughput measurement.	√	√	√	-
:AUTomatic:THROUGHPUT:DURATION <NR1>	:AUTomatic:THROUGHPUT:DURATION?	Sets a duration of the throughput measurement (second).	√	√	√	10
:AUTomatic:THROUGHPUT:ENABLE <BOOLEAN>	:AUTomatic:THROUGHPUT:ENABLE?	Sets the throughput test to enable or disable.	√	√	√	0 (disable)
:AUTomatic:THROUGHPUT:NTRIALS <NR1>	:AUTomatic:THROUGHPUT:NTRIALS?	Sets the number of trials of the throughput test.	√	√	√	1

6.1 List of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:AUTomatic:THRoughput:RATE:MIN <NR2>	:AUTomatic:THRoughput:RATE:MIN?	Sets the minimum rate used in the throughput test.	√	√	√	0.10
:AUTomatic:THRoughput:RATE:MAX <NR2>	:AUTomatic:THRoughput:RATE:MAX?	Sets the maximum rate used in the throughput test.	√	√	√	100.00
:AUTomatic:THRoughput:RATE:INITial <NR2>	:AUTomatic:THRoughput:RATE:INITial?	Sets the initial rate used in the throughput test.	√	√	√	100.00
:AUTomatic:THRoughput:RATE:RESolution <NR2>	:AUTomatic:THRoughput:RATE:RESolution?	Sets the required resolution for the result of the throughput test.	√	√	√	0.50
:AUTomatic:THRoughput:LTOlerance <NR2>	:AUTomatic:THRoughput:LTOlerance?	Sets the Loss Tolerance value for Throughput measurement.	√	√	√	0.0000
:AUTomatic:THRoughput:BSIZE <NR1>	:AUTomatic:THRoughput:BSIZE?	Sets the Burst Size value for Throughput measurement.	√	√	√	1
-	:AUTomatic:THRoughput:DATA? <test_number>,<unit>	Queries the result of the throughput measurement.	√	√	√	-
-	:AUTomatic:LATency:TImE:STOP?	Queries the stop time of the latency measurement.	√	√	√	-
-	:AUTomatic:LATency:TImE:START?	Queries the start time of the latency measurement.	√	√	√	-
:AUTomatic:LATency:DUration <NR1>	:AUTomatic:LATency:DUration?	Sets a duration of the latency test (second).	√	√	√	120
:AUTomatic:LATency:NTrials <NR1>	:AUTomatic:LATency:NTrials?	Sets the number of trials of the latency test.	√	√	√	1
:AUTomatic:LATency:ENABle <BOOLEAN>	:AUTomatic:LATency:ENABle?	Sets the latency test to enable or disable.	√	√	√	0 (disable)
:AUTomatic:LATency:RATE:STEP <NR2>	:AUTomatic:LATency:RATE:STEP?	Sets an increment of a transmission frame rate for the latency test.	√	√	√	10.00
:AUTomatic:LATency:RATE:COUNt <NR1>	:AUTomatic:LATency:RATE:COUNt?	Sets the number of transmission frame rates (step counts from the initial rate) used in the latency test.	√	√	√	6
:AUTomatic:LATency:RATE:THRoughput <BOOLEAN>	:AUTomatic:LATency:RATE:THRoughput?	Sets the result of Throughput to enable or disable in the latency test.	√	√	√	1 (enable)
:AUTomatic:LATency:RATE:INITial <NR2>	:AUTomatic:LATency:RATE:INITial?	Sets the initial value of a transmission frame rate for the latency test.	√	√	√	50.00
:AUTomatic:LATency:BSIZE <NR1>	:AUTomatic:LATency:BSIZE?	Sets the Burst Size value for Latency measurement.	√	√	√	1
-	:AUTomatic:LATency:DATA? <test_number>	Queries the result of the latency measurement.	√	√	√	-

Section 6 Details of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
-	:AUTomatic:FLRate:TIME:START?	Queries the start time of the frame loss rate measurement.	√	√	√	-
-	:AUTomatic:FLRate:TIME:STOP?	Queries the stop time of the frame loss rate measurement.	√	√	√	-
:AUTomatic:FLRate:ENABLE <BOOLEAN>	:AUTomatic:FLRate:ENABLE?	Sets the frame loss rate test to enable or disable.	√	√	√	0 (disable)
:AUTomatic:FLRate:DURATION <NR1>	:AUTomatic:FLRate:DURATION?	Sets a duration of the frame loss rate test.	√	√	√	10
:AUTomatic:FLRate:NTRIALS <NR1>	:AUTomatic:FLRate:NTRIALS?	Sets the number of trials of the frame loss rate test.	√	√	√	1
:AUTomatic:FLRate:RATE:COUNT <NR1>	:AUTomatic:FLRate:RATE:COUNT?	This command becomes unusable. Refer to Appendix B for the details.	√	√	√	6
:AUTomatic:FLRate:RATE:STEP <NR1>	:AUTomatic:FLRate:RATE:STEP?	Sets an increment of a transmission frame rate for the frame loss rate test.	√	√	√	10
:AUTomatic:FLRate:RATE:INITIAL <NR1>	:AUTomatic:FLRate:RATE:INITIAL?	Sets the initial value of a transmission frame rate for the frame loss rate test.	√	√	√	100
:AUTomatic:FLRate:BSIZE <NR1>	:AUTomatic:FLRate:BSIZE?	Sets the Burst Size value for Frame loss rate measurement.	√	√	√	1
-	:AUTomatic:FLRate:DATA? <test_number>	Queries the result of the frame loss rate measurement.	√	√	√	-
-	:AUTomatic:BTBFrames:TIME:START?	Queries the start time of the back-to-back frames measurement.	√	√	√	-
-	:AUTomatic:BTBFrames:TIME:STOP?	Queries the stop time of the back-to-back frames measurement.	√	√	√	-
:AUTomatic:BTBFrames:NTRIALS <NR1>	:AUTomatic:BTBFrames:NTRIALS?	Sets the number of trials of the back-to-back frames test.	√	√	√	50
:AUTomatic:BTBFrames:ENABLE <BOOLEAN>	:AUTomatic:BTBFrames:ENABLE?	Sets the back-to-back frames test to enable or disable.	√	√	√	0 (disable)
:AUTomatic:BTBFrames:DURATION <NR1>	:AUTomatic:BTBFrames:DURATION?	Sets a duration of the back-to-back frames test.	√	√	√	2
:AUTomatic:BTBFrames:RATE:TYPE {NORMAL | PROGRAM}	:AUTomatic:BTBFrames:RATE:TYPE?	Sets the type to specify a transmission rate in the back-to-back frames measurement.	√	√	√	NORMAL
:AUTomatic:BTBFrames:RATE:STEP <NR2>	:AUTomatic:BTBFrames:RATE:STEP?	Sets an increment of a transmission frame rate for the back-to-back frames test.	√	√	√	10.00
:AUTomatic:BTBFrames:RATE:COUNT <NR1>	:AUTomatic:BTBFrames:RATE:COUNT?	Sets the number of transmission frame rates (step counts from the initial rate) used in the back-to-back frames test.	√	√	√	1
:AUTomatic:BTBFrames:RATE:INITIAL <NR2>	:AUTomatic:BTBFrames:RATE:INITIAL?	Sets the initial value of a transmission frame rate for the back-to-back frames test.	√	√	√	100.00

6.1 List of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:AUTomatic:BTBFrames:BSIZE <NR1>	:AUTomatic:BTBFrames:BSIZE?	Sets the Burst Size value for Back-to-back frames measurement.	√	√	√	1
:AUTomatic:BTBFrames:LTOLerance <NR2>	:AUTomatic:BTBFrames:LTOLerance?	Sets the Loss Tolerance value for Back-to-back frames measurement.	√	√	√	0.0000
-	:AUTomatic:BTBFrames:DATA?<test_number>	Queries the result of the back-to-back measurement (the number of frames).	√	√	√	-
-	:AUTomatic:SRECovery:TIME:STOP?	Queries the stop time of the system recovery measurement.	√	√	√	-
-	:AUTomatic:SRECovery:TIME:START?	Queries the start time of the system recovery measurement.	√	√	√	-
:AUTomatic:SRECovery:NTRials <NR1>	:AUTomatic:SRECovery:NTRials?	Sets the number of trials of the system recovery test.	√	√	√	1
:AUTomatic:SRECovery:DURation <NR1>	:AUTomatic:SRECovery:DURation?	Sets a duration of the system recovery test.	√	√	√	10
:AUTomatic:SRECovery:TTIME <NR1>	:AUTomatic:SRECovery:TTIME?	Sets a value of the threshold time in the system recovery measurement.	√	√	√	1
:AUTomatic:SRECovery:ENABle <BOOLEAN>	:AUTomatic:SRECovery:ENABle?	Sets the system recovery test to enable or disable.	√	√	√	0 (disable)
:AUTomatic:SRECovery:RATE:MODerate:VALue <NR2>	:AUTomatic:SRECovery:RATE:MODerate:VALue ?	Sets the ratio of a moderate load rate to an overload rate.	√	√	√	50.0
:AUTomatic:SRECovery:RATE:OVERload:TYPE {NORMAL | PROGRAM}	:AUTomatic:SRECovery:RATE:OVERload:TYPE?	Sets the type to specify an overload rate of the system recovery measurement.	√	√	√	NORMAL
:AUTomatic:SRECovery:RATE:OVERload:VALue <NR2>	:AUTomatic:SRECovery:RATE:OVERload:VALue ?	Sets a value of an overload rate in the system recovery test.	√	√	√	100.00
:AUTomatic:SRECovery:BSIZE <NR1>	:AUTomatic:SRECovery:BSIZE?	Sets the Burst Size value for System recovery measurement.	√	√	√	1
-	:AUTomatic:SRECovery:DATA?<test_number>	Queries the result of the system recovery measurement.	√	√	√	-
-	:AUTomatic:RESet:TIME:STOP?	Queries the stop time of the reset measurement.	√	√	√	-
-	:AUTomatic:RESet:TIME:START?	Queries the start time of the reset measurement.	√	√	√	-
:AUTomatic:RESet:ENABle <BOOLEAN>	:AUTomatic:RESet:ENABle?	Sets the reset test to enable or disable.	√	√	√	0 (disable)
:AUTomatic:RESet:PPAIR "<source_port>",<destination_port>"	:AUTomatic:RESet:PPAIR?	Sets a port pair for which the reset measurement is performed.	√	√	√	"" , ""

Section 6 Details of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:AUTomatic:RESet:RATE <NR2>	:AUTomatic:RESet:RATE?	Sets a transmission frame rate for the reset test.	√	√	√	100.00
:AUTomatic:RESet:BSIZE <NR1>	:AUTomatic:RESet:BSIZE?	Sets the Burst Size value for Reset measurement.	√	√	√	1
-	:AUTomatic:RESet:DATA? <test_number>	Queries the result of the reset measurement.	√	√	√	-
:AUTomatic:VLAN:PGROUP:A <BOOLEAN>	:AUTomatic:VLAN:PGROUP:A?	Sets whether or not to attach VLAN tag to Frame sent from A-group port	√	√	—	-
:AUTomatic:VLAN:PGROUP:B <BOOLEAN>	:AUTomatic:VLAN:PGROUP:B?	Sets whether or not to attach VLAN tag to Frame sent from A-group port	√	√	—	-
:AUTomatic:VLAN:VID <NR1>	:AUTomatic:VLAN:VID?	Specifies VLAN ID set at VLAN tag	√	√	—	-

RFC2889 test function commands (RFC2889)

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:RFC2889:START	-	Starts measurement.	√	√	—	-
:RFC2889:STOP	-	Stops measurement.	√	√	—	-
-	:RFC2889:STATe?	Queries the measurement status.	√	√	—	-
:RFC2889:FSIZe <frame size>[,<frame size>]...	:RFC2889:FSIZe?	Sets the frame size to be used for measurement.	√	√	—	64,128,256,512,1024,1280,1518
:RFC2889:TYPE <test>	:RFC2889:TYPE?	Selects the RFC2889 test type.	√	√	—	FULL (Fully meshed throughput, frame loss and forwarding rates)
:RFC2889:FMEShed:TDuration <NR1>	:RFC2889:FMEShed:TDuration?	Sets the Trial Duration value for the Fully Meshed Throughput, Frame Loss and Forwarding Rates tests.	√	√	—	30
:RFC2889:FMEShed:APPort <NR1>	:RFC2889:FMEShed:APPort?	Sets the Addresses per port value for Fully Meshed Throughput, Frame Loss and Forwarding Rates tests.	√	√	—	1
:RFC2889:FMEShed:BSIZe <NR1>	:RFC2889:FMEShed:BSIZe?	Sets the Burst Size for Fully Meshed Throughput, Frame Loss and Forwarding Rates tests.	√	√	—	1
:RFC2889:FMEShed:IFG <NR1>	:RFC2889:FMEShed:IFG?	Sets the IFG value for Fully Meshed Throughput, Frame Loss and Forwarding Rates tests.	√	√	—	12
:RFC2889:FMEShed:ILoad <NR2>	:RFC2889:FMEShed:ILoad?	Sets the Iload value for Fully Meshed Throughput, Frame Loss and Forwarding Rates tests.	√	√	—	100.00
:RFC2889:FMEShed:TPORT {"" | <port>[,<port>]...}	:RFC2889:FMEShed:TPORT?	Set the port to be used for Fully Meshed Throughput, Frame Loss and Forwarding Rates tests.	√	√	—	""
-	:RFC2889:FMEShed:RESULT? <type>,<unit>	Queries the result of the Fully Meshed Throughput, Frame Loss and Forwarding Rates tests.	√	√	—	-
:RFC2889:OTMany:TDuration <NR1>	:RFC2889:OTMany:TDuration?	Sets the Trial Duration value for Partially Meshed One-to-Many/Many-to-One test.	√	√	—	30
:RFC2889:OTMany:TDIR <direction>	:RFC2889:OTMany:TDIR?	Sets the traffic direction (One-to-Many, Many-to-One or Bi-directional) for Partially Meshed One-to-Many/Many-to-One test.	√	√	—	ONE_TO_MANY
:RFC2889:OTMany:IFG <NR1>	:RFC2889:OTMany:IFG?	Sets the IFG value for Partially Meshed One-to-Many/Many-to-One test.	√	√	—	12

Section 6 Details of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:RFC2889:OTMany:ILOad <NR2>	:RFC2889:OTMany:ILOad?	Sets the Iload value for Partially Meshed One-to-Many/Many-to-One test.	√	√	—	100.00
:RFC2889:OTMany:BSIZE <NR1>	:RFC2889:OTMany:BSIZE?	Sets the Burst Size for Partially Meshed One-to-Many/Many-to-One test.	√	√	—	1
:RFC2889:OTMany:APPort <NR1>	:RFC2889:OTMany:APPort?	Sets the Addresses per port value for Partially Meshed One-to-Many/Many-to-One test.	√	√	—	1
:RFC2889:OTMany:TPO Rt:ONE {"" | <port>}	:RFC2889:OTMany:TPO Rt:ONE?	Specifies single port on the One side for Partially Meshed One-to-Many/Many-to-One test.	√	√	—	""
:RFC2889:OTMany:TPO Rt:MANY {"" | <port>[, <port>]...}	:RFC2889:OTMany:TPO Rt:MANY?	Specifies multiple ports on the Many side for Partially Meshed One-to-Many/Many-to-One test.	√	√	—	""
-	:RFC2889:OTMany:RESULT? <type>,<unit>	Queries the result of the Partially Meshed One-to-Many/Many-to-One test.	√	√	—	-
:RFC2889:MULTiple:IFG <NR1>	:RFC2889:MULTiple:IFG?	Sets the IFG value for Partially meshed multiple devices test.	√	√	—	12
:RFC2889:MULTiple:ILOad <NR2>	:RFC2889:MULTiple:ILOad?	Sets the Iload value for Partially meshed multiple devices test.	√	√	—	100.00
:RFC2889:MULTiple:BSIZE <NR1>	:RFC2889:MULTiple:BSIZE?	Sets the Burst Size for Partially meshed multiple devices test.	√	√	—	1
:RFC2889:MULTiple:APPort <NR1>	:RFC2889:MULTiple:APPort?	Sets the Addresses per port value for Partially meshed multiple devices test.	√	√	—	1
:RFC2889:MULTiple:TDURATION <NR1>	:RFC2889:MULTiple:TDURATION?	Sets the Trial Duration value for Partially meshed multiple devices test.	√	√	—	30
:RFC2889:MULTiple:LT Traffic <BOOLEAN>	:RFC2889:MULTiple:LT Traffic?	Sets whether to generate Local Traffic during Partially meshed multiple devices test.	√	√	—	0 (disable)
:RFC2889:MULTiple:TPORT:FIRST {"" | <port>[, <port>]...}	:RFC2889:MULTiple:TPORT:FIRST?	Specifies (multiple) transmission/reception port 1 for Partially meshed multiple devices test.	√	√	—	""
:RFC2889:MULTiple:TPORT:SECond {"" | <port>[, <port>]...}	:RFC2889:MULTiple:TPORT:SECond?	Specifies (multiple) transmission/reception port 2 for Partially meshed multiple devices test.	√	√	—	""
-	:RFC2889:MULTiple:RESULT? <type>,<unit>	Queries the result of the Partially meshed multiple devices test.	√	√	—	-
:RFC2889:UTRAffic:BSIZE <NR1>	:RFC2889:UTRAffic:BSIZE?	Sets the Burst Size for Partially meshed unidirectional traffic test.	√	√	—	1
:RFC2889:UTRAffic:APPort <NR1>	:RFC2889:UTRAffic:APPort?	Sets the Addresses per port value for Partially meshed unidirectional traffic test.	√	√	—	1

6.1 List of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:RFC2889:UTRAffic:ILoad <NR2>	:RFC2889:UTRAffic:ILoad?	Sets the ILoad value for Partially meshed unidirectional traffic test.	√	√	—	100.00
:RFC2889:UTRAffic:IFG <NR1>	:RFC2889:UTRAffic:IFG?	Sets the IFG value for Partially meshed unidirectional traffic test.	√	√	—	12
:RFC2889:UTRAffic:TDuration <NR1>	:RFC2889:UTRAffic:TDuration?	Sets the Trial Duration value for Partially meshed unidirectional traffic test.	√	√	—	30
:RFC2889:UTRAffic:TPort:REceive {"" | <port> [>,<port>]...}	:RFC2889:UTRAffic:TPort:REceive?	Specifies (multiple) reception ports for Partially meshed unidirectional traffic test.	√	√	—	""
:RFC2889:UTRAffic:TPort:SOURce {"" | <port> [>,<port>]...}	:RFC2889:UTRAffic:TPort:SOURce?	Specifies (multiple) transmission ports for Partially meshed unidirectional traffic test.	√	√	—	""
-	:RFC2889:UTRAffic:RESULT? <type>,<unit>	Queries the result of the Partially meshed unidirectional traffic test.	√	√	—	-
:RFC2889:CCONtrol:IFG <NR1>	:RFC2889:CCONtrol:IFG?	Sets the IFG value for Congestion Control test.	√	√	—	12
:RFC2889:CCONtrol:TDuration <NR1>	:RFC2889:CCONtrol:TDuration?	Sets the Trial Duration for Congestion Control test.	√	√	—	30
:RFC2889:CCONtrol:APPort <NR1>	:RFC2889:CCONtrol:APPort?	Sets the Addresses per port value for Congestion Control test.	√	√	—	1
:RFC2889:CCONtrol:BSIZE <NR1>	:RFC2889:CCONtrol:BSIZE?	Sets the Burst Size for Congestion Control test.	√	√	—	1
:RFC2889:CCONtrol:TPort:REceive:CONGested {"" | <port>}	:RFC2889:CCONtrol:TPort:REceive:CONGested?	Specifies the congested receive port for Congestion Control test.	√	√	—	""
:RFC2889:CCONtrol:TPort:SOURce:FIRST {"" | <port>}	:RFC2889:CCONtrol:TPort:SOURce:FIRST?	Specifies transmission port 1 (transmits to two reception ports) for Congestion Control test.	√	√	—	""
:RFC2889:CCONtrol:TPort:SOURce:SECONd {" | <port>}	:RFC2889:CCONtrol:TPort:SOURce:SECONd?	Sets transmission port 2 (transmits to the congested receive port) for Congestion Control test.	√	√	—	""
:RFC2889:CCONtrol:TPort:REceive:UNCongested {"" | <port>}	:RFC2889:CCONtrol:TPort:REceive:UNCongested?	Specifies the uncongested receive port for Congestion Control test.	√	√	—	""
-	:RFC2889:CCONtrol:RESULT?	Queries the result of the Congestion Control test.	√	√	—	-
:RFC2889:FPressure:SSIZE <NR1>	:RFC2889:FPressure:SSIZE?	Sets the Step Size (the minimum resolution for incrementing Iload) for Forward Pressure and Maximum Forwarding Rate test.	√	√	—	-

Section 6 Details of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:RFC2889:FPressure:TDURation <NR1>	:RFC2889:FPressure:TDURation?	Sets the Trial Duration value for Forward Pressure and Maximum Forwarding Rate test.	√	√	—	30
:RFC2889:FPressure:TPORT:FIRSt {"" | <port>}	:RFC2889:FPressure:TPORT:FIRSt?	Specifies the port that transmits test frames (port 1) during Forward Pressure and Maximum Forwarding Rate test.	√	√	—	""
:RFC2889:FPressure:TPORT:SECond {"" | <port>}	:RFC2889:FPressure:TPORT:SECond?	Specifies the port that receives test frames (port 2) during Forward Pressure and Maximum Forwarding Rate test.	√	√	—	""
-	:RFC2889:FPressure:RESult? <type>	Queries the result of the Forward Pressure and Maximum Forwarding Rate test.	√	√	—	-
:RFC2889:ACACHing:ADDResses:INITial <NR1>	:RFC2889:ACACHing:ADDResses:INITial?	Sets the Initial Addresses (number of addresses at the beginning of a test) for Address Caching Capacity test.	√	√	—	-
:RFC2889:ACACHing:ALRate <NR1>	:RFC2889:ACACHing:ALRate?	Sets the Addresses Learning Rate (transmission rate for the learning frame) for Address Caching Capacity test.	√	√	—	50
:RFC2889:ACACHing:ATIME <NR1>	:RFC2889:ACACHing:ATIME?	Sets the Age Time for Address Caching Capacity test.	√	√	—	300
:RFC2889:ACACHing:TPORT:MPORT {"" | <port>}	:RFC2889:ACACHing:TPORT:MPORT?	Specifies the Monitoring port (Mport) to detect Flood or Mis-forward frames during Address Caching Capacity test.	√	√	—	""
:RFC2889:ACACHing:TPORT:TPORT {"" | <port>}	:RFC2889:ACACHing:TPORT:TPORT?	Specifies the Test port (Tport) that receives learning frames during Address Caching Capacity test.	√	√	—	""
:RFC2889:ACACHing:TPORT:LPORT {"" | <port>}	:RFC2889:ACACHing:TPORT:LPORT?	Specifies the Learning port (Lport) that transmits learning frames during Address Caching Capacity test.	√	√	—	""
-	:RFC2889:ACACHing:RESult?	Queries the result of the Address Caching Capacity test.	√	√	—	-
:RFC2889:ALEarning:NADDresses <NR1>	:RFC2889:ALEarning:NADDresses?	Sets the Number of Addresses (number of addresses that the DUT/SUT can learn) for Address Learning Rate test.	√	√	—	-
:RFC2889:ALEarning:RATE:INITial <NR1>	:RFC2889:ALEarning:RATE:INITial?	Sets the Initial Addresses Learning Rate (transmission rate of learning frames at the beginning of a test) for Address Learning Rate test.	√	√	—	50
:RFC2889:ALEarning:ATIME <NR1>	:RFC2889:ALEarning:ATIME?	Sets the Age Time for Address Learning Rate test.	√	√	—	300
:RFC2889:ALEarning:TPORT:TPORT {"" | <port>}	:RFC2889:ALEarning:TPORT:TPORT?	Specifies the Test port (Tport) that receives learning frames during Address Learning Rate test.	√	√	—	""

6.1 List of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:RFC2889:ALearning:TPORT:MPORT {"" | <port>}	:RFC2889:ALearning:TPORT:MPORT?	Specifies the Monitoring port (Mport) to detect Flood or Mis-forward frames during Address Learning Rate test.	√	√	—	""
:RFC2889:ALearning:TPORT:LPORT {"" | <port>}	:RFC2889:ALearning:TPORT:LPORT?	Specifies the Learning port (Lport) that transmits learning frames during Address Learning Rate test.	√	√	—	""
-	:RFC2889:ALearning:RESult?	Queries the result of the Address Learning Rate test.	√	√	—	-
:RFC2889:EFRames:TDURation <NR1>	:RFC2889:EFRames:TDURation?	Sets the trial time (Trial Duration) value for Errored frames filtering test.	√	√	—	30
:RFC2889:EFRames:ILOad <NR2>	:RFC2889:EFRames:ILOad?	Sets the Iload value for Errored frames filtering test.	√	√	—	100.00
:RFC2889:EFRames:TPORT:SECond {"" | <port>}	:RFC2889:EFRames:TPORT:SECond?	Specifies the reception port for Errored frames filtering test.	√	√	—	""
:RFC2889:EFRames:TPORT:FIRSt {"" | <port>}	:RFC2889:EFRames:TPORT:FIRSt?	Specifies the transmission port for Errored frames filtering test.	√	√	—	""
-	:RFC2889:EFRames:RESult? <type>	Queries the result for the Errored frames filtering test.	√	√	—	-
:RFC2889:BROadcast:ILOad <NR2>	:RFC2889:BROadcast:ILOad?	Sets the ILoad value for Broadcast frame Forwarding and Latency test.	√	√	—	100.00
:RFC2889:BROadcast:TDURation <NR1>	:RFC2889:BROadcast:TDURation?	Sets the trial time (Trial Duration) value for Broadcast frame Forwarding and Latency test.	√	√	—	30
:RFC2889:BROadcast:APPort <NR1>	:RFC2889:BROadcast:APPort?	Sets the Addresses per port value for Broadcast frame Forwarding and Latency test.	√	√	—	1
:RFC2889:BROadcast:TPORT:SOURce {"" | <port>}	:RFC2889:BROadcast:TPORT:SOURce?	Specifies the transmission port for Broadcast frame Forwarding and Latency test.	√	√	—	""
:RFC2889:BROadcast:TPORT:RECeive {"" | <port>[,<port>]...}	:RFC2889:BROadcast:TPORT:RECeive?	Specifies (multiple) reception ports for Broadcast frame Forwarding and Latency test.	√	√	—	""
-	:RFC2889:BROadcast:RESult? <type>[,<unit>]	Queries the result of the Broadcast frame Forwarding and Latency test.	√	√	—	-
:RFC2889:FMEShed:VLAN:TPORT <BOOLEAN>	:RFC2889:FMEShed:VLAN:TPORT?	Sets whether or not to attach VLAN tag to Frame sent from Test Port	√	√	—	-
:RFC2889:FMEShed:VLAN:VID <NR1>	:RFC2889:FMEShed:VLAN:VID?	Specifies VLAN ID (0 to 4095) set at VLAN tag	√	√	—	-

Section 6 Details of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:RFC2889:OTMany:VLAN:TPORT:ONE <BOOLEAN>	:RFC2889:OTMany:VLAN:TPORT:ONE?	Sets whether or not to attach VLAN tag to Frame sent from One port	√	√	—	-
:RFC2889:OTMany:VLAN:TPORT:MANY <BOOLEAN>	:RFC2889:OTMany:VLAN:TPORT:MANY?	Sets whether or not to attach VLAN tag to Frame sent from Many port	√	√	—	-
:RFC2889:OTMany:VLAN:VID <NR1>	:RFC2889:OTMany:VLAN:VID?	Specifies VLAN ID (0 to 4095) set at VLAN tag	√	√	—	-
:RFC2889:MULTiple:VLAN:TPORT:FIRSt <BOOLEAN>	:RFC2889:MULTiple:VLAN:TPORT:FIRSt?	Sets whether or not to attach VAN tag to Frame sent from First port	√	√	—	-
:RFC2889:MULTiple:VLAN:TPORT:SECOnd <BOOLEAN>	:RFC2889:MULTiple:VLAN:TPORT:SECOnd?	Sets whether or not to attach VLAN tag to Frame sent from Second port	√	√	—	-
:RFC2889:MULTiple:VLAN:VID <NR1>	:RFC2889:MULTiple:VLAN:VID?	Specifies VLAN ID (0 to 4095) set at VLAN tag	√	√	—	-
:RFC2889:UTRAffic:VLAN:TPORT:SOURce <BOOLEAN>	:RFC2889:UTRAffic:VLAN:TPORT:SOURce?	Sets whether or not to attach VLAN tag to Frame sent from Source port	√	√	—	-
:RFC2889:UTRAffic:VLAN:TPORT:RECeive <BOOLEAN>	:RFC2889:UTRAffic:VLAN:TPORT:RECeive?	Sets whether or not to attach VLAN tag to Receive port	√	√	—	-
:RFC2889:UTRAffic:VLAN:VID <NR1>	:RFC2889:UTRAffic:VLAN:VID?	Specifies VLAN ID (0 to 4095) set at VLAN tag	√	√	—	-
:RFC2889:CCONtrol:VLAN:TPORT:SOURce:FIRSt <BOOLEAN>	:RFC2889:CCONtrol:VLAN:TPORT:SOURce:FIRSt?	Sets whether or not to attach VLAN tag to Frame set from First port	√	√	—	-
:RFC2889:CCONtrol:VLAN:TPORT:SOURce:SECOnd <BOOLEAN>	:RFC2889:CCONtrol:VLAN:TPORT:SOURce:SECOnd?	Sets whether or not to attach VLAN tag to Frame sent from Second port	√	√	—	-
:RFC2889:CCONtrol:VLAN:TPORT:RECeive:UNCongested <BOOLEAN>	:RFC2889:CCONtrol:VLAN:TPORT:RECeive:UNCongested?	Sets whether or not to attach VLAN tag to Frame from Uncongested port	√	√	—	-
:RFC2889:CCONtrol:VLAN:TPORT:RECeive:CONGested <BOOLEAN>	:RFC2889:CCONtrol:VLAN:TPORT:RECeive:CONGested?	Sets whether or not to attach VLAN tag to Frame sent from Congested port	√	√	—	-
:RFC2889:CCONtrol:VLAN:VID <NR1>	:RFC2889:CCONtrol:VLAN:VID?	Specifies VLAN ID (0 to 4095) set at VLAN tag	√	√	—	-
:RFC2889:FPressure:VLAN:TPORT:FIRSt <BOOLEAN>	:RFC2889:FPressure:VLAN:TPORT:FIRSt?	Sets whether or not to attach VLAN tag to Frame sent from First port	√	√	—	-

6.1 List of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:RFC2889:FPressure:VL AN:TPORT:SECond <BO OLEAN>	:RFC2889:FPressure:VL AN:TPORT:SECond?	Sets whether or not to attach VLAN tag to Frame sent from Second port	√	√	—	-
:RFC2889:FPressure:VL AN:VID <NR1>	:RFC2889:FPressure:VL AN:VID?	Specifies VLAN ID set at VLAN tag	√	√	—	-
:RFC2889:ACACHing:VL AN:TPORT:TPort <BO OLEAN>	:RFC2889:ACACHing:VL AN:TPORT:TPort?	Sets whether or not to attach VLAN tag to Frame sent from Tport	√	√	—	-
:RFC2889:ACACHing:VL AN:TPORT:LPort <BO OLEAN>	:RFC2889:ACACHing:VL AN:TPORT:LPort?	Sets whether or not to attach VLAN tag to Frame sent from Lport	√	√	—	-
:RFC2889:ACACHing:VL AN:TPORT:MPort <BO OLEAN>	:RFC2889:ACACHing:VL AN:TPORT:MPort?	Sets whether or not to attach VLAN tag to Frame sent from Mport	√	√	—	-
:RFC2889:ACACHing:VL AN:VID <NR1>	:RFC2889:ACACHing:VL AN:VID?	Specifies VLAN ID (0 to 4095) set at VL AN tag	√	√	—	-
:RFC2889:ALearning:V LAN:TPORT:TPort <B OOLEAN>	:RFC2889:ALearning:V LAN:TPORT:TPort?	Sets whether or not to attach VLAN tag to Frame sent from Tport	√	√	—	-
:RFC2889:ALearning:V LAN:TPORT:LPort <B OOLEAN>	:RFC2889:ALearning:V LAN:TPORT:LPort?	Sets whether or not to attach VLAN tag to Frame sent from Lport	√	√	—	-
:RFC2889:ALearning:V LAN:TPORT:MPort <B OOLEAN>	:RFC2889:ALearning:V LAN:TPORT:MPort?	Sets whether or not to attach VLAN tag to Frame sent from Mport	√	√	—	-
:RFC2889:ALearning:V LAN:VID <NR1>	:RFC2889:ALearning:V LAN:VID?	Specifies VLAN ID (0 to 4095) set at VL AN tag	√	√	—	-
:RFC2889:EFRames:VL AN:TPORT:FIRSt <BOO LEAN>	:RFC2889:EFRames:VL AN:TPORT:FIRSt?	Sets whether or not to attach VLAN tag to Frame sent from First port	√	√	—	-
:RFC2889:EFRames:VL AN:TPORT:SECond <BO OLEAN>	:RFC2889:EFRames:VL AN:TPORT:SECond?	Sets whether or not to attach VLAN tag to Frame sent from Second port	√	√	—	-
:RFC2889:EFRames:VL AN:VID <NR1>	:RFC2889:EFRames:VL AN:VID?	Specifies VLAN ID (0 to 4095) set at VL AN tag	√	√	—	-
:RFC2889:BROadcast:V LAN:TPORT:SOURce < BOOLEAN>	:RFC2889:BROadcast:V LAN:TPORT:SOURce?	Sets whether or not to attach VLAN tag to Frame sent from Source port	√	√	—	-
:RFC2889:BROadcast:V LAN:TPORT:RECeive < BOOLEAN>	:RFC2889:BROadcast:V LAN:TPORT:RECeive?	Sets whether or not to attach VLAN tag to Frame sent from Receive port	√	√	—	-

Section 6 Details of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:RFC2889:BROadcast:VLAN:VID <NR1>	:RFC2889:BROadcast:VLAN:VID?	Specifies VLAN ID (0 to 4095) set at VLAN tag	√	√	—	·

Auto Negotiation Analysis function commands (ANEGotiation)

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:ANEGotiation:CAPTure:STOP	-	Stops capturing of physical data.	—	√	—	-
:ANEGotiation:CAPTure:START [<NR1>]	-	Starts capturing of physical data.	—	√	—	-
-	:ANEGotiation:CAPTure:STATe? [<port_no>]	Queries the operation status of physical data capture.	—	√	—	-
-	:ANEGotiation:CAPTure:TIME:START?	Queries the start time of physical data capture.	—	√	—	-
-	:ANEGotiation:CAPTure:TIME:ELAPsed?	Queries the elapsed time since the start of the physical data capture.	—	√	—	-
-	:ANEGotiation:CAPTure:TIME:STOP?	Queries the stop time of physical data capture.	—	√	—	-
:ANEGotiation:CAPTure:TRIGger:PATtern <control_bit>,<HEX>	:ANEGotiation:CAPTure:TRIGger:PATtern?	Sets the trigger pattern of physical data capture in a fixed 2-byte length.	—	√	—	<control_bit>=00, <HEX>=#H0000
:ANEGotiation:CAPTure:TRIGger:ENABLE <BOLEAN>	:ANEGotiation:CAPTure:TRIGger:ENABLE?	Sets the physical data capture trigger to enable or disable.	—	√	—	0 (disable)
-	:ANEGotiation:CAPTure:BUFFer:NDATA?	Queries the total number of data in the physical data capture memory.	—	√	—	-
-	:ANEGotiation:CAPTure:BUFFer:DATA? <port_no>,<capture_start_frame_number>,<capture_stop_frame_number>	Queries the contents of the captured physical data for the specified range of the specified port.	—	√	—	-
:ANEGotiation:TRANsmit:STOP	-	Stops transmission of physical data.	—	√	—	-
:ANEGotiation:TRANsmit:START	-	Starts transmission of physical data.	—	√	—	-
:ANEGotiation:TRANsmit:TABLE:AClear	-	Clears all the registered transmission data.	—	√	—	-
-	:ANEGotiation:TRANsmit:STATe?	Queries the operation status of the physical data transmission.	—	√	—	-
-	:ANEGotiation:TRANsmit:TIME:STOP?	Queries the stop time of physical data transmission.	—	√	—	-
-	:ANEGotiation:TRANsmit:TIME:START?	Queries the start time of physical data transmission.	—	√	—	-

Section 6 Details of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
-	:ANEGotiation:TRANsmit:TIME:ELAPsed?	Queries the elapsed time since the start of the physical data transmission.	—	√	—	-
:ANEGotiation:TRANsmit:TABLE:DATA:ENABLE <data_number>,<enable>	:ANEGotiation:TRANsmit:TABLE:DATA:ENABLE?	Enables/disables the data of the specified data number for transmission.	—	√	—	<data_number>= Each data number, <enable>=1
:ANEGotiation:TRANsmit:TABLE:DATA <data_number>,<control_bit>,<HEX>,<type>,<jump_id>,<snd_time>	:ANEGotiation:TRANsmit:TABLE:DATA?	Sets the transmission data of the specified number.	—	√	—	1,1,#H11,NEXT,(<data_number>= Each data number, <control_bit>=0, <HEX>= #H00, <type>= NEXT, <jump_id>= 1, <snd_time>=1)
-	:ANEGotiation:TRANsmit:TABLE:NDAa?	Queries the number of the transmission data set as enable.	—	√	—	-

Link Fault Signaling function commands (LFS)

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:LFS:CAPTure:STOP	-	Stops capturing of physical data.	—	√	—	-
:LFS:CAPTure:STARt <NR1>	-	Starts capturing of physical data.	—	√	—	-
-	:LFS:CAPTure:STATe? [<port_no>]	Queries the operation status of physical data capture.	—	√	—	-
-	:LFS:CAPTure:BUFFer:NDATA?	Queries the total number of data in the physical data capture memory.	—	√	—	-
-	:LFS:CAPTure:TIME:STARt?	Queries the start time of physical data capture.	—	√	—	-
-	:LFS:CAPTure:TIME:STOP?	Queries the stop time of physical data capture.	—	√	—	-
:LFS:CAPTure:TRIGger:ENABLE <BOOLEAN>	:LFS:CAPTure:TRIGger:ENABLE?	Sets the physical data capture trigger to enable or disable.	—	√	—	0 (disable)
:LFS:CAPTure:TRIGger:PATtern <txc>,<txd>	:LFS:CAPTure:TRIGger:PATtern?	Sets the pattern for the physical data capture trigger pattern Lane0 through Lane3.	—	√	—	<txc>=#B0000, <txd>=#H00000000
-	:LFS:CAPTure:BUFFer:DATA? <capture_start_frame_number>,<capture_stop_frame_number>	Queries the contents of the physical data.	—	√	—	-
:LFS:TRANsmit:STOP	-	Stops transmission of physical data.	—	√	—	-
:LFS:TRANsmit:STARt	-	Starts transmission of physical data.	—	√	—	-
-	:LFS:TRANsmit:STATe?	Queries the operation status of the physical data transmission.	—	√	—	-
-	:LFS:TRANsmit:TIME:STOP?	Queries the stop time of physical data transmission.	—	√	—	-
-	:LFS:TRANsmit:TIME:STARt?	Queries the start time of physical data transmission.	—	√	—	-
:LFS:TRANsmit:DATA <type>,<txc>,<txd>	:LFS:TRANsmit:DATA?	Sets the data to be transmitted.	—	√	—	1,#B000, #H0000000

Physical interface function commands (PHYSical)

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:PHYSical:IF:INTerface {OPT1|OPT2}	:PHYSical:IF:INTerface ?	Selects an interface wavelength of the output signal.	—	—	√	OPT1
:PHYSical:IF:ATTenuation <NR2>	:PHYSical:IF:ATTenuation?	Sets an attenuation value of the output signal.	—	—	√	10.0
:PHYSical:IF:WAVelength <wavelength>	:PHYSical:IF:WAVelength?	Selects a wavelength of the input signal.	—	—	√	C
-	:PHYSical:IF:FREQuency?	Queries the frequency of input signal.	—	—	√	-

LCAS function commands (LCAS)

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:LCAS:NEGotiation <BOOLEAN>	:LCAS:NEGotiation?	Enables/disables the negotiation function or Auto function for CTRL, MST, and RS-Ack of the received signal.	—	—	√	0 (disable)
:LCAS:SCOPE <type>	:LCAS:SCOPE?	Sets measurement target.	—	—	√	Provision
:LCAS:PLCT <NR1>	:LCAS:PLCT?	Sets the alarm detection condition of PLCT.	—	—	√	1
:LCAS:PLCR <NR1>	:LCAS:PLCR?	Sets the alarm detection condition of PLCR.	—	—	√	1
:LCAS:MST:SETTing:MST:TYPE {ADJUST|PRESET}	:LCAS:MST:SETTing:MST:TYPE?	Selects whether to set the MST value of a transmitted signal to values conforming to received signal settings or values set by MST Preset.	—	—	√	ADJUST
:LCAS:MST:SETTing:MST:DATA {OK|FAIL},{OK|FAIL},.....	:LCAS:MST:SETTing:MST:DATA?	Sets the MST value of a transmitted signal.	—	—	√	FAIL
:LCAS:RESPonse:WTIMer:MULTiframe <NR1>	:LCAS:RESPonse:WTIMer:MULTiframe?	Sets the response time of the measuring instrument to received signal data changes (SQ, CTRL, MST) in multiframe unit.	—	—	√	0
-	:LCAS:RESPonse:WTIMer:TIME?	Queries the response time of the measuring instrument to received signal data changes (SQ, CTRL, MST).	—	—	√	-
:LCAS:RESPonse:TX:CTRL:SETTing <type>	:LCAS:RESPonse:TX:CTRL:SETTing?	Sets the Tx CTRL value when MST Fail is received.	—	—	√	NOCHANGE
:LCAS:RESPonse:RXCH:SETTing "<member>";"<member>";...	:LCAS:RESPonse:RXCH:SETTing?	Sets a specified Rx CH to a valid VCAT member.	—	—	√	-
-	:LCAS:SUMMARY:SOURce:ALL?	Queries a monitor data of the Source side of LCAS Summary.	—	—	√	-
-	:LCAS:SUMMARY:SINK:ALL?	Queries a monitor data of the Sink side of LCAS Summary.	—	—	√	-
:LCAS:SUMMARY:SOURce:RSACK:RESet	-	Sets 0, after reset Rs-Ack Rx.	—	—	√	-
:LCAS:SUMMARY:SINK:RSACK:RESet	-	Sets 0, after reset Rs-Ack Tx.	—	—	√	-
:LCAS:GENerator:STOP	-	Stops transmission of the set LCAS sequence.	—	—	√	-
:LCAS:GENerator:START	-	Starts transmission of the set LCAS sequence.	—	—	√	-

Section 6 Details of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
-	:LCAS:GENerator:STATe?	Queries the operating status of the LCAS sequence transmission function.	—	—	√	-
-	:LCAS:GENerator:TIME:ELAPsed?	Queries the elapsed time after the start of LCAS sequence transmission.	—	—	√	-
-	:LCAS:GENerator:TIME:START?	Queries the LCAS sequence transmission start time.	—	—	√	-
-	:LCAS:GENerator:TIME:STOP?	Queries the LCAS sequence transmission stop time.	—	—	√	-
:LCAS:GENerator:TOU T:MULTiframe <NR1>	:LCAS:GENerator:TOU T:MULTiframe?	Sets the wait time from when a command is transmitted to when a response is returned from Sink in multiframe unit.	—	—	√	8000
-	:LCAS:GENerator:TOU T:TIME?	Queries the wait time from when a command is transmitted to when a response is returned from Sink.	—	—	√	-
:LCAS:GENerator:TAB Le:ADD	-	Adds new sequence data.	—	—	√	-
:LCAS:GENerator:TAB Le:DELeTe <sequence_id>	-	Delete sequence data.	—	—	√	-
:LCAS:GENerator:TAB Le:COPY <sequence_id>	-	Copies sequence data.	—	—	√	-
:LCAS:GENerator:TAB Le:CUT <sequence_id>	-	Cuts specified number sequence data.	—	—	√	-
:LCAS:GENerator:TAB Le:PASTe <sequence_id>	-	Pastes sequence data.	—	—	√	-
:LCAS:GENerator:TAB Le:ACLeAr	-	Clears all sequence data.	—	—	√	-
:LCAS:GENerator:TAB Le:AENable	-	Enables all set sequences.	—	—	√	-
:LCAS:GENerator:TAB Le:ADISable	-	Disables all set sequences.	—	—	√	-
-	:LCAS:GENerator:TAB Le:NSEQuences?	Queries set sequence data.	—	—	√	-
-	:LCAS:GENerator:TAB Le:RESult:DATA?	Queries results for transmitted commands.	—	—	√	-
:LCAS:GENerator:TAB Le:ID <id>	:LCAS:GENerator:TAB Le:ID?	Sets sequence numbers to be edited.	—	—	√	-

6.1 List of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:LCAS:GENerator:TAB Le:ITEM:ENABLe <BO OLEAN>	:LCAS:GENerator:TAB Le:ITEM:ENABLe?	Enables/disables the current sequence.	—	—	√	1 (enable)
:LCAS:GENerator:TAB Le:ITEM:CONTRol:CO MMand <command>	:LCAS:GENerator:TAB Le:ITEM:CONTRol:CO MMand?	Sets the LCAS sequence command type.	—	—	√	ADD
:LCAS:GENerator:TAB Le:ITEM:CONTRol:GAP <NR1>	:LCAS:GENerator:TAB Le:ITEM:CONTRol:GAP ?	Sets the command interval up to the next LCAS sequence.	—	—	√	0
:LCAS:GENerator:TAB Le:ITEM:CONTRol:SEN D:TIME <NR1>	:LCAS:GENerator:TAB Le:ITEM:CONTRol:SEN D:TIME?	Sets the device response time for com- mands transmitted when the command type is other than USER with the number of multiframes.	—	—	√	1
:LCAS:GENerator:TAB Le:ITEM:CONTRol:TAR Get:CH <ch1>[,<ch2>,< ch3>]	:LCAS:GENerator:TAB Le:ITEM:CONTRol:TAR Get:CH?	This command was obsolete.	—	—	√	-
:LCAS:GENerator:TAB Le:ITEM:CONTRol:TAR Get:CHS "<CH>,"<CH >",...	:LCAS:GENerator:TAB Le:ITEM:CONTRol:TAR Get:CHS?	Selects multi CH positions where add LCAS sequence command.	—	—	√	First CH within the range that can be set.
:LCAS:GENerator:TAB Le:ITEM:CONTRol:USE R:RSACK:ENABLe <BO OLEAN>	:LCAS:GENerator:TAB Le:ITEM:CONTRol:USE R:RSACK:ENABLe?	Sets whether to invert RS-Ack values.	—	—	√	0 (disable)
:LCAS:GENerator:TAB Le:ITEM:CONTRol:USE R:MST:ENABLe <BOO LEAN>	:LCAS:GENerator:TAB Le:ITEM:CONTRol:USE R:MST:ENABLe?	Sets whether to change to values set to MST.	—	—	√	1 (enable)
:LCAS:GENerator:TAB Le:ITEM:CONTRol:USE R:MST:DATA {OK | F AIL},{OK | FAIL},.....	:LCAS:GENerator:TAB Le:ITEM:CONTRol:USE R:MST:DATA?	Sets MST values.	—	—	√	-
:LCAS:GENerator:TAB Le:ITEM:CONTRol:USE R:MST:ALL:OK	-	Sets all MST setting values to OK.	—	—	√	-
:LCAS:GENerator:TAB Le:ITEM:CONTRol:USE R:MST:ALL:FAIL	-	Sets all MST setting values to FAIL.	—	—	√	-
-	:LCAS:MONitor:DATA? <NR1>	Queries LCAS monitor data of the speci- fied number.	—	—	√	-

Section 6 Details of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
-	:LCAS:MONitor:ADATa?	Queries all LCAS monitor data.	—	—	√	-
:LCAS:MONitor:MST:CH <ch1>[,<ch2>,<ch3>,<ch4>]	:LCAS:MONitor:MST:CH?	Sets measurement CH of MST monitor.	—	—	√	First CH within the range that can be set.
-	:LCAS:MONitor:MST?<NR1>	Queries MST monitor data of SQ0 member.	—	—	√	-
-	:LCAS:MONitor:AMST?	Queries all MST monitor data.	—	—	√	-
:LCAS:CAPTure:STARt	-	Starts LCAS capture.	—	—	√	-
:LCAS:CAPTure:STOP	-	Stops LCAS capture.	—	—	√	-
-	:LCAS:CAPTure:STATe?	Queries capture operating status.	—	—	√	-
:LCAS:CAPTure:CH <ch1>[,<ch2>,<ch3>,<ch4>]	:LCAS:CAPTure:CH?	Sets channels to capture.	—	—	√	-
:LCAS:CAPTure:TRIGger:TARGeT <type>	:LCAS:CAPTure:TRIGger:TARGeT?	Sets whether to set trigger target to received signal change or to set to external output (External Trigger).	—	—	√	CHANGE
:LCAS:CAPTure:TRIGger:CHANge <type>	:LCAS:CAPTure:TRIGger:CHANge?	Select triggers type when received signal changes are set to trigger.	—	—	√	CTRL
:LCAS:CAPTure:TRIGger:CH <ch1>[,<ch2>,<ch3>,<ch4>]	:LCAS:CAPTure:TRIGger:CH?	Sets the channel number to be set to trigger.	—	—	√	-
:LCAS:CAPTure:TRIGger:POSition <NR1>	:LCAS:CAPTure:TRIGger:POSition?	Sets the trigger position in capture data.	—	—	√	1
-	:LCAS:CAPTure:DATA:TRIGger?	Queries trigger position of captured sequence data.	—	—	√	-
-	:LCAS:CAPTure:DATA:NSEquence?	Queries the number of captured sequence data.	—	—	√	-
-	:LCAS:CAPTure:DATA?<number>	Queries captured sequence data.	—	—	√	-

Impairment function Command (IMPairment)

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:IMPairment:DElay:DI STribution {<uniform> | <normal> | <expon ential> | <user_define d>}	:IMPairment:DElay:DI STribution?	Sets Delay block delay distribution pa- rameters	—	√	—	UNI- FORM,0 .01,0.01
:IMPairment:DElay:FI Xed <NR2>	:IMPairment:DElay:FI Xed?	Sets Delay block fixed delay amount	—	√	—	0.01
:IMPairment:DElay:M ODE {FIXED | VARIA TION}	:IMPairment:DElay:M ODE?	Sets Delay block operation mode (Fixed Delay/Delay Variation)	—	√	—	FIXED
:IMPairment:DElay:R ANGE {RANGE_500MS | RANGE_5S | RAN GE_50S}	:IMPairment:DElay:R ANGE?	Switches fixed delay range for Delay block	—	√	—	RANGE _500MS
:IMPairment:ENABLE <BOOLEAN>	:IMPairment:ENABLE?	Starts/stops IMPAIRMENT function	—	√	—	0 (Off)
:IMPairment:ENABLE:D ELay <BOOLEAN>	:IMPairment:ENABLE:D ELay?	Enables/disables Delay block	—	√	—	0 (Off)
:IMPairment:ENABLE:F ILTer <BOOLEAN>	:IMPairment:ENABLE:F ILTer?	Enable/disables filter block	—	√	—	0 (Off)
:IMPairment:ENABLE:L ERRor <BOOLEAN>	:IMPairment:ENABLE:L ERRor?	Enables/disables Line Error block	—	√	—	0 (Off)
:IMPairment:ENABLE:L OSS <BOOLEAN>	:IMPairment:ENABLE:L OSS?	Enable/disables Frame Loss block	—	√	—	0 (Off)
:IMPairment:ENABLE:O VERwrite <BOOLEAN >	:IMPairment:ENABLE:O VERwrite?	Enables/disables Overwrite/Error block	—	√	—	0 (Off)
:IMPairment:ENABLE:S INGle	-	Starts Single generation operation	—	√	—	-
:IMPairment:FILTer:C ONDition <patt1>,<pat t2>,<patt3>,<patt4>,<e rror>,<testframe>,{DIS CARD MIX}	:IMPairment:FILTer:C ONDition?	Sets Filter block	—	√	—	DONT_ CARE,D ONT_C ARE,DO NT_CA RE,DO NT_CA RE,DO NT_CA RE,DO NT_CA RE,DIS CARD

Section 6 Details of Device Messages

Command	Query	Description	MbE	GbE	2.5G/10G	Default
:IMPairment:LERRor:TYPe {CODE | RD | BOTH}	:IMPairment:LERRor:TYPe?	Sets type of Line Error inserted into Line Error block	—	√	—	CODE
:IMPairment:LOSS:TIMing {ALL | SINGLE, <burst> | PERIODIC, <period>, <burst> | RATE, <rate> | POLICING, <policing rate>}	:IMPairment:LOSS:TIMing?	Sets Frame Loss generation timing for Frame Loss block	—	√	—	RATE, 0.0000
:IMPairment:OVERwrite:ETYPe {FCS | IP_CHECKSUM | TCP_CHECKSUM | UDP_CHECKSUM}	:IMPairment:OVERwrite:ETYPe?	Sets type of errors inserted at Overwrite/Error	—	√	—	FCS
:IMPairment:OVERwrite:FIELD {CLEAR | <user defined condition>[, <user defined condition>]...}	:IMPairment:OVERwrite:FIELD?	Sets overwrite operation for Overwrite/Error block (specifies overwrite field)	—	√	—	NONE
:IMPairment:OVERwrite:MODE {OVERWRITE | ERROR}	:IMPairment:OVERwrite:MODE?	Sets operation mode (Overwrite/Error Insertion) for Overwrite/Error block	—	√	—	OVERWRITE
:IMPairment:OVERwrite:TIMing {ALL | SINGLE, <burst> | PERIODIC, <period>, <burst> | RATE, <rate>}	:IMPairment:OVERwrite:TIMing?	Sets timing for Overwrite / Error insertion for Overwrite/error block	—	√	—	RATE, 0.0000

6.2 Details of Device Messages

This section describes the device messages used on MD1230B, one by one. The following contents are provided.

Command, Query, Response:

Describes the names and formats of program message (command message, query message) and response message (to query message).

Description:

Describes the contents of program message, simply.

Module:

Indicates the module to be used by the program message unique to a module (✓: Usable, –: Not usable).

[MbE] [GbE] [2.5G/10G] indicates the following modules.

MbE:	MU120101A/11A	10M/100M Ethernet module
GbE:	NY120102A/12A	Giga-bit Ethernet module
	MU120118A/18B/18C	10 Giga-bit Ethernet module
	MU120121A/31A	10/100/1000M Ethernet module
	MU120122A/32A	Giga-bit Ethernet module

2.5G/10G:	MU120103A/MU12104A	2.5G (1.31/1.55) module
	MU120105A/MU12106A	10G (1.31/1.55) module
	MU120119A OC-3/12	STM-1/4 module (1310 nm)
	MU120120A OC-3	STM-1 module (1310 nm)
	MU120103B/MU12104B	2.5G (1.31/1.55) module
	MU150101A	2.5G/2.6G EoS unit

Note:

Refer to the MP1590B Network Performance Tester Remote Control Operation Manual for details on the commands unique to the SDH (SONET)/OTN/Jitter mode.

Parameter:

Describes the format details of program data and response data, and the contents.

Default:

Indicates the initial value (setting value at shipment) of the item set by the program message.

The program messages are arranged to classify the messages in each function.

In each function, the message is described in the order of operation (measurement start etc.)/setting/results or state-acquisition.

IEEE488.2 common commands and interface setting commands

The IEEE488.2 common commands and interface setting commands are explained below.

Query	*IDN?
Response	"ANRITSU,<model>,<serial_number>,<version>"
Description	The common command for IEEE488.2. This returns the maker's name (ANRITSU), model, serial number of the main unit and software version number in the form of a string.
Parameter	<p><model></p> <p>The connecting model (MD1230B, MD1231A, MD1230B, MP1590B, MX123001A or MX159001B).</p> <p><serial number></p> <p>The serial number of the MD1230B main unit. It is 10-digit alphanumeric.</p> <p><version></p> <p>The version number of software.</p>

Command	*RST
Description	<p>The common command for IEEE488.2. This initializes the whole system. The settings at factory shipment can be restored by using the following procedure. This is the same operation as when Internal Memory - No.0 (Initialize All) is selected on the file loading screen.</p> <ol style="list-style-type: none"> 1. Transmit the initialization command :UENTry:UNIT:{RESet | DEfault} to all connected units.*1, 4 2. Initialize the main application.*2 3. Re-establish the connection with units connected using a serial cable.*3 <p>*1 The measurement conditions stored in the backup RAM are cleared. Note that the IP address, serial number, and time information for the units are not cleared.</p> <p>*2: Settings related to the screen display such as GUI Setting and Counter Display Option are cleared. Note that remote control settings, such as the IP address and GPIB address, and the time information are not cleared.</p> <p>*3: Only incorporated units and units connected using a serial cable are reconnected. The entries for other units are deleted.</p>

Section 6 Details of Device Messages

- *4: For the software earlier than Ver. 3.1, only incorporated units and units connected using a serial cable are initialized.

Query	*TST?
Description	The common command for IEEE488.2. This always returns 0 for MD1230B. The self-check function for MD1230B is executed in the self-test application.

Command	TRM <NR1>
Query	TRM?
Response	<NR1>
Description	Sets the type of a terminator of a response data.
Parameter	<NR1> Select the type of a terminator of a response data for a query command from the followings: 0: NL+^END 1: CR+NL+^END

System setting commands (SYSTem)

The commands related to the following functions are explained below.

- Error information query
- Control software setting
- Version information check
- Alarm/error/history/power fail functions
- File/print functions

Query	:SYSTem:ERRor?
Response	<Error/event_number>,"<Error/event_description>"
Description	<p>Queries an error message that exists in an error event queue.</p> <p>The error event queue contains description of an error or an event, expressed by a value and a string.</p>
Parameter	<p><Error/event_number></p> <p>A unique integer value ranging from -32768 to 32767. The value of 0 indicates that there is no error or event occurred. A negative number indicates that a standard error that is reserved by SCPI has occurred. A positive number indicates that an error that is defined by MD1230B.</p> <p><Error/event_description></p> <p>An error message that is in a one-to-one correspondence with individual <Error/event_number>. The maximum length of this string is 255 characters.</p>
Default	0, "No error"

Command	:SYSTem:{SDH | SONet}:STANdard {SDH | SONET}
Query	:SYSTem:{SDH | SONet}:STANdard?
Response	{SDH | SONET}
Description	Selects the terms for screen display from SDH standard and SONET standard.
Parameter	<p>{SDH | SONET}</p> <p>Select either of the following:</p> <p>SDH SDH terms are used for the display.</p> <p>SONET SONET terms are used for the display.</p>
Default	SONET

Section 6 Details of Device Messagess

Command	:SYSTem:{SDH | SONet}:STANdard:APS {G783 | G841}
Query	:SYSTem:{SDH | SONet}:STANdard:APS?
Response	{G783 | G841}
Description	Selects the recommendation used for screen display of the APS measurement function (display of K1/K2 byte value setting).
Parameter	{G783 | G841} Select either of the following: G783 G.783 terms are used for the display. G841 G.841 terms are used for the display.
Default	G783

Query	:SYSTem:OPTion? <type>
Response	<BOOLEAN>
Description	Queries whether a software option is installed or not.
Parameter	<type> Specify the type of software option.

<type>	Option Name	Model
RS232C	RS-232C Control	MX123001A-07
GPIB	GPIB Control	MX123001A-09
ETHER	Ethernet Control	MX123001A-10
DECODE	DECODE MODULE	MX123001A-01
EXPERT	EXPERT ANALYSIS MODULE	MX123003A
TCL	TCL Interface	MX123001A-06

<BOOLEAN>

When the specified option is installed, 1 is returned. Otherwise, 0 is returned.

Command	:SYSTem:HISTory:RESet
Description	Resets the history data of the history function.

Command	:SYSTem:HISTory:ENABle <BOOLEAN>
Query	:SYSTem:HISTory:ENABle?
Response	<BOOLEAN>
Description	Sets the history function to enable or disable.
Parameter	<BOOLEAN>
	To enable the history function, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	0 (disable)

Query	:SYSTem:HISTory:ALARm?
Response	<BOOLEAN>
Description	Queries whether an alarm has occurred.
Parameter	<BOOLEAN>
	When the alarm has occurred, 1 is returned. Otherwise, 0 is returned.

Query	:SYSTem:HISTory:ERRor?
Response	<BOOLEAN>
Description	Queries whether an error has occurred.
Parameter	<BOOLEAN>
	When the error has occurred, 1 is returned. Otherwise, 0 is returned.

Query	:SYSTem:HISTory:PFAl?
Response	<BOOLEAN>
Description	Queries whether a power failure has occurred.
Parameter	<BOOLEAN>
	When the power failure has occurred, 1 is returned. Otherwise, 0 is returned.

Section 6 Details of Device Messagess

Command	:SYSTem:MEMory:SAVE {"MEMORY<memory id>" | "<path>"},<datatype>
Description	<p>Saves the current settings to a file.</p> <p>The saving destination can be specified in two ways: by specifying an internal memory ID or by specifying a directory on the hard disk.</p> <ul style="list-style-type: none">* Do not execute this command during Tx Stream transmission, counter measurement, or capturing.
Parameter	<p>Specify the data location by using <memory id> or <path>, and the data type by using <datatype>.</p> <p><memory id></p> <p>Used to save data into the internal memory. Specify a location in the internal memory from MEMORY0 to MEMORY9.</p> <ul style="list-style-type: none">* Saved data is automatically named, and this name cannot be specified by the user.* The internal memory location number (0 to 9) specified by this remote command differs from that displayed on the actual screen. Subtract 1 from the displayed number to specify the location by using this command. <p>Example:</p> <p>To save the data in the first internal memory, specify as follows (set the ID to 0):</p> <p>"MEMORY0"</p> <p><path></p> <p>Used to save data anywhere on the hard disk. Specify the folder in which to save the setting data as an absolute path. The double quotation marks are needed at the beginning and end of the data.</p> <ul style="list-style-type: none">* The setting data, which is made up of multiple files and subfolders, is stored in the folder "Setting". This folder will be stored in the folder specified by <path>.* If the folder specified when saving does not exist, it is automatically created.* The path specification, file name length restriction, and usable characters are determined by the Windows98 specifications. <p>Example: To save the setting data into the "data" folder on the C drive or to read the data from this folder, specify the following:</p> <p>"C:¥data"</p> <p><datatype></p> <p>The type of the data to be loaded. Set values include:</p> <p>---Setting data---</p>

SET_ALL	All of the settings (All Settings of All Unites)
SET_UNIT	Settings of a unit (All Settings of *) *1
SET_MODULE	Settings of a module (All Settings of *:*) *1
SET_PORT	Settings for all ports (All Settings of *:*)*1
SET_PORTSET	Settings of PortSettings *1
SET_STREAM	Settings of TxStream Settings*1
{SET_SDH | SET_SONET}	Settings related to SDH/SONET *1 *2
SET_OH	Settings of OH for SDH/SONET *1 *2
SET_APS	Settings of APS for SDH/SONET *1 *2
SET_GFP	Settings of GFP Tx *2
SET_CONCATE	Settings of Concatenation *2
SET_CAPT	Settings of the capture function *1
SET_COUNT	Settings of the counter function *1
SET_PING	Settings of the ping function *1
SET_ARRIVAL	Settings of the frame arrival time variation measurement function *1
SET_PROT	Settings of the protocols function *1
SET_COLL	Settings of the collision function *1 *3
SET_AUTO	Settings of the automatic measurement
SET_2889	RFC 2889 measurement settings *4
*1:	
The setting data of the currently selected unit, module and port is saved to a file.	
*2:	
2.5/10G module only	
*3:	
10/100M Ethernet module only	
*4:	
Enabled when the RFC2889 option is installed.	

Section 6 Details of Device Messages

Command	:SYSTem:MEMory:LOAD {"MEMORY<memory id>" | "<path>"},<datatype>
Description	<p>Loads the saved setting data.</p> <p>There are two ways to specify the load destination: the internal memory ID and the directory on the hard disk.</p> <p>* During Tx Stream transmission, Counter measurement and Capture operation, don't use this command.</p>
Parameter	Specify the data saving location with <memory id> or <path>, and specify the data type with <datatype>. For details about the settings, refer to the description of the :SYSTem:MEMory:SAVE command.

Query	:SYSTem:MEMory:FREE?
Response	<NR1>
Description	Queries the free space on the hard disk.
Parameter	<NR1>

A value ranging from 0 to 65535 (Mbytes) is returned.

Unit setting commands (UENTry)

The commands related to the following functions are explained below.

- Unit registration
- Unit setting
- GPS function

Command :UENTry:ID <unit_number>

Query :UENTry:ID?

Response <unit_number>

Description Specifies the number of a unit to be operated.

Parameter <unit_number>

An extension of the unit to be operated (1 to 8). This is a value of the order in which the application connects to the unit.

Default 1

Command :UENTry:ADD <IP_ADDRESS>

Description Adds a new unit.

Parameter <IP_ADDRESS>

Specify the IP address of the unit to be added in the 4-octet <HEX> format.

Example: 192.168.1.3 is expressed as #HC0A80103.

Command :UENTry:DELeTe <unit_number>

Description Deletes a unit.

Parameter <unit_number>

An extension of the unit to be operated. This is a value of the order in which the application connects to the unit.

Query :UENTry:NUNits?

Response <NR1>

Description Queries the number of connected units.

Parameter <NR1>

A value ranging from 0 to 8 is returned.

Section 6 Details of Device Messages

Query	:UENTry:UNIT:NUSers?
Response	<number_of_user>
Description	Queries the number of users connecting to the unit.
Parameter	<number_of_user> Queries the number of users (including the operator) connecting to the unit (<NR1>).

Query :UENTry:UNIT:OPTion? <type>

Response <BOOLEAN>

Description Queries whether the specified unit option is installed or not.

* If the wrong unit model option is specified, the error code 2010 (Access to Invalid Unit/Module/Port) is returned.

Parameter <type>

Specifies the type of unit option.

<type>	Option Name	Model
RS232C	RS-232C Control	Option-01
GPIB	GPIB Control	Option-02
ETHER	Ethernet Control	Option-03
DECODE	Decode Module	Option-04
EXPERT	MD1230B Expert Analysis Module	MX123002A
GPS	GPS Module	Option-05
TCL	TCL Interface	Option-06
OSPF	OSPF Protocol	Option-07
LDP	MPLS (LDP/CR-LDP) Protocol	Option-08
RSVP	MPLS (RSVP) Protocol	Option-09
RFC2889	RFC2889 Benchmarking Test	Option-10
PBERT	Packet BER Test	Option-11
IPV6	IPV6 Expansion	Option-12
XENPAK	XENPAK Test	Option-13
IGAP	IGAP Protocol	Option-14
AUTONEGO	Auto Negotiation Analysis	Option-15
LFS	Link Fault Signaling ^{*1}	Option-16
IMPAIRMENT	Traffic Impairment Emulator	Option-17
OSPFv3	OSPFv3 Protocol	Option-18
BGP4+	BGP4+ Protocol	Option-19
ATMON	Application Traffic Monitor	Option-20
PIM	PIM-SMv2 Protocol	Option-21
MLDA	MLDA Protocol	Option-22
STP	Spanning Tree/Link Aggregation	Option-23
PPOE	PPPoE	Option-26
EOAM	Ethernet OAM	Option-28
FAN	MD1230A Retrofit for Fan	Option-47
10GEA	10GbE Slot Expansion for Bank A	Option-50/52
10GEB	10GbE Slot Expansion for Bank B	Option-51/53

*1: This is a main unit option for the MU120118A/B/C, and is a module option for the MU120138A. Which module options are installed can be checked by executing the :MODULE:OPTion? command.

Section 6 Details of Device Messagess

<BOOLEAN>

When the specified option is installed, 1 is returned. Otherwise, 0 is returned.

Default 0

Query :UENTry:UNIT:IVALid?

Response <BOOLEAN>

Description Queries whether the connection between the control software and the unit is valid.

Parameter <BOOLEAN>

When the connection between the control software and the unit is valid, 1 is returned. Otherwise, 0 is returned.

Command :UENTry:UNIT:DCS <type>

Query :UENTry:UNIT:DCS?

Response <type>

Description Selects the type of DCS input.

Parameter <type>

Select one from the followings:

LUNB_2MHZ	Lock 2 MHz Unbalanced
LBAL_2MHZ	Lock 2 MHz Balanced
LUNB_2MBPS	Lock 2 Mbit/s Unbalanced
LBAL_2MBPS	Lock 2 Mbit/s Balanced
LBAL_1_5MHZ	Lock 1.5 MHz Balanced
LBAL_1_5MBPS	Lock 1.5 Mbit/s Balanced
LBAL_64K	Lock 64 k+8 kH

Default LUNB_2MHZ (Lock 2 MHz Unbalanced)

Command	:UENTry:UNIT:DTIME "<DATETIME>"
Query	:UENTry:UNIT:DTIME?
Response	"<DATETIME>"
Description	Sets/loads the current time of the specified unit.
Parameter	<p><DATETIME></p> <p>A string that indicates the date and the time. This is expressed in the following format:</p> <p><date><space><time></p> <p><date></p> <p>The format is yyyy/mm/dd. These refer to "year", "month", and "date", respectively. The value ranges from 2000/01/01 to 2098/12/31.</p> <p><time></p> <p>The format is hh:mm:ss.sss. These refer to "hours", "minutes" and "seconds", respectively. This is expressed on a 24-hour basis.</p> <p>The value ranges from 00:00:00.000 to 23:59:59.999.</p> <p>Example: "2003/08/15 13:22:51.01"</p>

Query	:UENTry:UNIT:TYPE?										
Response	<type>										
Description	Queries a unit model.										
Parameter	<p><type></p> <p>One of the following is returned:</p> <table> <tr> <td>MD1230A</td><td>MD1230A, MD1231A, MD1231A1</td></tr> <tr> <td>MD1230B</td><td>MD1230B</td></tr> <tr> <td>MT7407A</td><td>MT7407A (MU740701A)</td></tr> <tr> <td>MP1590B</td><td>MP1590B</td></tr> <tr> <td>MP1591A</td><td>MP1591A (MU159101A)</td></tr> </table>	MD1230A	MD1230A, MD1231A, MD1231A1	MD1230B	MD1230B	MT7407A	MT7407A (MU740701A)	MP1590B	MP1590B	MP1591A	MP1591A (MU159101A)
MD1230A	MD1230A, MD1231A, MD1231A1										
MD1230B	MD1230B										
MT7407A	MT7407A (MU740701A)										
MP1590B	MP1590B										
MP1591A	MP1591A (MU159101A)										

Section 6 Details of Device Messagess

Query :UENTry:UNIT:IADdress?

Response <IP_ADDRESS>

Description Queries the IP address of a unit that is connected.

Parameter <IP_ADDRESS>

The IP address value is returned in the following 4-octet <HEX> format:

Example: 192.168.1.3 is expressed as #HC0A80103.

Query :UENTry:UNIT:TOUTput?

Response {NONE | <module_number><port_number>}

Description Queries the port of which a trigger is output when outputting a trigger of the unit.
To set the trigger output, use the command with :PORT:TOUTput.

* The trigger output can be enabled only for one port of a single unit.

Parameter {NONE | <module_number><port_number>}

When a trigger output port does not exists, NONE is returned.

Otherwise, <module_number><port_number> is returned.

<module_number>

The location number to identify a module on a unit. This number is marked on a slot of the main unit, into which a module is inserted.

<port_number>

The location number to identify a port on a module. This number is marked on a port position of individual modules.

Example:

When the trigger output port has the module location number 1 and the port location number 2, the response is 12.

Query :UENTry:UNIT:SYNC:MASTer?

Response <BOOLEAN>

Description Queries whether the unit is the master unit for time synchronization among units.

Parameter <BOOLEAN>

When the unit is the master unit, 1 is returned. Otherwise, 0 is returned.

Command	:UENTry:UNIT:OWNership:TAKE
Description	Takes the ownership of the unit. To make any setting for the unit, it is needed to use this command to obtain the unit ownership.

Command	:UENTry:UNIT:OWNership:CLEar
Description	Clears the ownership of the unit.

Query	:UENTry:UNIT:OWNership:OWNer?
Response	<IP_ADDRESS>
Description	Queries the IP address of the control software that has the ownership of the unit.
Parameter	<IP_ADDRESS>

A value of the IP address is returned in the following 4-octet <HEX> format.

Example: 192.168.1.3 is expressed as #HC0A80103.

Note:

#H00000000 is returned if there is no control software having unit setting privilege.

Query	:UENTry:UNIT:OWNership:CUSE?
Response	<BOOLEAN>
Description	Queries whether the ownership of the unit can be used.
Parameter	<BOOLEAN>

When the unit ownership is available, 1 is returned. Otherwise, 0 is returned.

Section 6 Details of Device Messagess

Query	:UENTry:UNIT:GPS:LEVel?
Response	<number of Satellites>[,<Satellite number>,<Signal Level>]...
Description	Queries the receive level of a satellite from which the GPS module receives data.
Parameter	<number of Satellites> The number of pieces of receive data from a satellite (0 to 8). [,<Satellite number>,<Signal Level>]... Values in number of<number of Satellites> are returned. <Satellite number> The ID number of a satellite from which the module has received data (0 to 255). <Signal Level> The receive level data of the satellite (unit: dBHz). A value from 0 to 99 is returned (<NR1> format).
Query	:UENTry:UNIT:GPS:NSATellites?
Response	<NR1>
Description	Queries the number of satellites from which the GPS module receives data.
Parameter	<NR1> The number of satellites (0 to 8).
Command	:UENTry:UNIT:GPS:ENABle <BOOLEAN>
Query	:UENTry:UNIT:GPS:ENABle?
Response	<BOOLEAN>
Description	Sets whether the GPS unit is used for the time synchronization. *This cannot be set when the GPS options is not installed. In this case, 0 is returned for the query.
Parameter	<BOOLEAN> To use the GPS unit for the time synchronization, set {ON | 1} (ON or 1). Otherwise, set {OFF | 1} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	0 (disable)

Query	:UENTry:UNIT:GPS:STATe?								
Response	<gps_status>								
Description	Queries the GPS module status.								
Parameter	<p><gps_status></p> <p>One of the following is returned:</p> <table><tr><td>NO_GPS</td><td>The GPS option is not installed to the unit.</td></tr><tr><td>NOT_USED</td><td>The GPS is not set to be available.</td></tr><tr><td>DISABLED</td><td>The GPS is active and disabled (without time information).</td></tr><tr><td>ENABLED</td><td>The GPS is active and enabled (with time information).</td></tr></table>	NO_GPS	The GPS option is not installed to the unit.	NOT_USED	The GPS is not set to be available.	DISABLED	The GPS is active and disabled (without time information).	ENABLED	The GPS is active and enabled (with time information).
NO_GPS	The GPS option is not installed to the unit.								
NOT_USED	The GPS is not set to be available.								
DISABLED	The GPS is active and disabled (without time information).								
ENABLED	The GPS is active and enabled (with time information).								
Query	:UENTry:UNIT:GPS:TIME?								
Response	"<DATETIME>"								
Description	Queries the time information that the GPS module holds.								
Parameter	<p><DATETIME></p> <p>A string that indicates the date and the time. This is expressed in the following format:</p> <p><date><space><time></p> <p><date></p> <p>The format is yyyy/mm/dd. These refer to "year", "month", and "date" respectively. The value ranges from 2000/01/01 to 2098/12/31.</p> <p><time></p> <p>The format is hh:mm:ss.sss. These refer to "hours", "minutes", and "seconds", respectively. This is expressed on a 24-hour basis.</p> <p>The value ranges from 00:00:00.000 to 23:59:59.999.</p> <p>Example: "2003/08/15 13:22:51.01"</p>								
Default	"2000/01/01 00:00:00.000"								

Section 6 Details of Device Messages

Query	:UENTry:UNIT:VERSion:SOFTware?
Response	"<version>","<version>"
Description	Queries the unit software version.
Parameter	<version> Returns each version information below in X.XX.XX format. 1. Main program version 2. Boot program version

Query	:UENTry:UNIT:VERSion:FPGA?
Response	"<version>"
Description	Queries the FPGA version for the unit.
Parameter	<version> Returns version information in X.XX.XX format.

Module setting commands (MODule)

The commands related to module setting are explained below.

Command	:MODule:ID <module_number>
Query	:MODule:ID?
Response	<module_number>
Description	<p>Sets the number of a module (slot position) to be operated.</p> <p>* For 10GbE module with 2 slots used, the smaller slot number is used. For an example, when a 10GbE module is inserted in slots 2 and 3, the module number becomes 2. If "3" is specified, an error occurs.</p>
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p><module_number></p> <p>An extension of the module to be operated. This number (1 to 7) is given to a slot into which a module is inserted.</p>
Default	1

Section 6 Details of Device Messagess

Query	:MODule:TYPE?
Response	<moduletype>
Description	Queries the module type (model).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<moduletype> The module model is returned: MU120101A 10M/100M Ethernet module MU120102A Gigabit Ethernet module MU120103A 2.5 G (1.31) module MU120104A 2.5 G (1.55) module MU120105A 10 G (1.31) module MU120106A 10 G (1.55) module MU120103B 2.5G (1.31) module MU120104B 2.5G (1.55) module MU120111A 10/100M Ethernet module MU120112A Gigabit Ethernet module MU120118A 10-giga-bit Ethernet module MU120118B 10-giga-bit Ethernet module MU120118C 10-giga-bit Ethernet module MU120119A OC-3/12 STM-1/4 module (1310 nm) MU120120A OC-3/STM-1 module (1310 nm) MU120121A 10/100/1000M Ethernet Module MU120122A Gigabit Ethernet Module MU120131A 10/100/1000M Ethernet Module MU120132A Gigabit Ethernet Module MU120131A 10/100/1000M Ethernet Module MU120132A Gigabit Ethernet Module MU120138A 10 Gigabit Ethernet Module

Query :MODule:OPTion? <type>

Response <BOOLEAN>

Description Queries whether the specified module option is installed or not.

* If the wrong module model option is specified, the error code 2010 (Access to Invalid Unit/Module/Port) is returned.

Module √ MbE √ GbE √ 2.5G/10G

Parameter <type>

Specify the type of module option.

<type>	Option Name
PMETER	OPTICAL POWER METER
CLOCK	Clock Measurement
POE	PoE
EOS	EOS MAPPING
VC	VIRTUAL CONCATENATION
WANPHY	WAN-PHY
WLEN1	Wavelength 1.31 um
WLEN2	Wavelength 1.55 um
WLEN3	Wavelength 1.31/1.55 um
ADJUSTABLE	Optical Output power Adjustable
OTU1_2	OUT1/OUT2
MINUS_G10	10/10.7G MINUS OPTION
G10_3	10.3G
INS_EXT	Insert/Extract
OTU2	OTU2
WMEAS	Wander Measurement
OTU1	OTU1
GFPF_LEX_LAPS	GFP-F/LEX/LAPS
POS	POS
HVC	HO Virtual Concatenation
LVC	LO Vurtual Concatenation
LCAS	LCAS
DDELAY	Differential Delay
CLOCK	Clock Measurement
POE	PoE
LFS	Link Fault Signaling ^{*1}

*1: This is a main unit option for the MU120118A/B/C, and is a module option for the MU120138A. Which main unit options are installed can be checked by executing the :UENTry:UNIT:OPTion? command.

<BOOLEAN>

When the specified option is installed, 1 is returned. Otherwise, 0 is returned.

Query	:MODule:FPGA:TYPE?
Response	{DEFAULT | GFP | PPP | AUTONEG}
Description	Obtains the FPGA condition of a module. *: There is no remote command that switches the FPGA firmware. Refer to the MD1230B Operation Manual for how to switch the FPGA.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	{DEFAULT | GFP | PPP | AUTONEG} One of the following is returned: DEFAULT Normal status GFP The condition possible to select Frame-mapped GFP for Mapping with the MU120103B/04B module. PPP The condition possible to select PPP/Cisco HDLC/MAPOS/LAPS/LEX for Mapping with the MU120103B/04B module. AUTONEG The condition possible to use the Auto Negotiation Analysis Option with the MU120112A.

Query	:MODule:VERSion:FPGA?
Response	"<version>"["<version>"] ...
Description	Queries the FPGA version of a module.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<version>

Each version information shown below is returned in the X.XX.XX format.

The number of version information varies depending on the module.

When the module model is MU120101A/02A/11A/19A/20A/21A/22A/31A/32A/38A:

1. FPGA version

When the module model is MU120112A:

1. FPGA version (basic functions)
2. FPGA version (Auto Negotiation function)

When the module model is MU120118A/18B/18C:

1. FPGA version (Tx)
2. FPGA version (Rx)

When the module model is MU120103A/04A/05A/06A:

1. FPGA version (TxSDH)
2. FPGA version (TxPPP)
3. FPGA version (RxSDH)
4. FPGA version (RxPPP)

When the module model is MU120103B/04B:

1. FPGA version (TxSDH: GFP)
 2. FPGA version (TxPPP: GFP)
 3. FPGA version (RxSDH: GFP)
 4. FPGA version (RxPPP: GFP)
 5. FPGA version (TxSDH: PPP/LAPS/LEX)
 6. FPGA version (TxPPP: PPP/LAPS/LEX)
 7. FPGA version (RxSDH: PPP/LAPS/LEX)
 8. FPGA version (RxPPP: PPP/LAPS/LEX)
-

Query	:MODule:VERsion:SOFTware?
Response	"<version>"["<version>"]
Description	Queries the software version of a module.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<version> Each version information shown below is returned in the X.XX.XX format. The number of version information varies depending on the module. When the module model is MU120101A/02A/03A/04A/03B/04B/05A/06A: 1. Main program version When the module model is MU120111A/12A/18A/18B/18C/19A/20A/21A/22A/ 31A/32A/38A: 1. Main program version 2. Boot program version

Port setting commands (PORT)

The commands related to port setting are explained below.

Command	:PORT:ID <port_number>
Query	:PORT:ID?
Response	<port_number>
Description	Sets the number of a port (port position) to be operated.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<port_number> An extension of the port to be operated. This is a physical location number of a port located on a module.
Command	:PORT:OWNership:CLear
Description	Clears the ownership of the port.
Module	√ MbE √ GbE √ 2.5G/10G
Command	:PORT:OWNership:TAKE
Description	Takes the ownership of the port.
Module	√ MbE √ GbE √ 2.5G/10G
Query	:PORT:OPTical?
Response	<BOOLEAN>
Description	Queries the actual optical output status. * For settings of whether to perform optical output, executes it using :PORT:LINK:ENABLE command.
Module	– MbE √ GbE √ 2.5G/10G
Parameter	<BOOLEAN> 1 is returned when the LED is On and 0 when it is Off. * This command cannot be executed with the MU150101A module.

Section 6 Details of Device Messagess

Query :PORT:LINK?

Response <state>

Description Queries the link status of the port.

Module √ MbE √ GbE √ 2.5G/10G

Parameter <state>

One of the following is returned:

For 2.5G/10G Module:

LOS	Loss Of Signal status
LOF	Loss Of Frame status
OOF	Out Of Frame state
OOM	Out Of Multiframe status (When LO VCAT)
OOM1	Out Of Multiframe status 1 (When HO VCAT)
OOM2	Out Of Multiframe status 2 (When HO VCAT)
{MS_AIS | AIS_L}	MS-AIS/AIS-L state (AIS:Alarm Indication Signal)
{AU_AIS | AIS_P}	AU-AIS/AIS-P state (AIS:Alarm Indication Signal)
{AU_LOP | LOP_P}	AU-LOP/LOP-P state
{TU_AIS | AIS_V}	TU-AIS/AIS-V (AIS: Alarm Indication Signal) status
{TU_LOP | LOP_V}	TU-LOP/LOP-V status
{TU_LOM | LOM_V}	TU-LOM/LOM-V status
VCAT_LOM	VCAT-LOM status
PPP_DOWN	Negotiation has failed with PPP in use.(*)
LEX_DOWN	Negotiation has failed with LEX in use.(*)
PPP_RESTART	Negotiation is being processed with PPP in use.
LEX_RESTART	Negotiation is being processed with LEX in use.
LINK_UP	A link is established. (*)

*: When using PPP, LINK_UP is returned when LCP and IPCP are in UP or OFF status. When using LEX, LINK_UP is returned when LCP and PPP-LEX are in UP or OFF status. If any of those is in DOWN status, PPP_DOWN or LEX_DOWN is returned.

For Ethernet Module:

LINK_DOWN	A link is not established.
LINK_UP	A link is established.
LOOPBACK	The loop back mode is enabled.

Query	:PORT:OWNership:CUSE?
Response	<BOOLEAN>
Description	Queries whether the port use right can be acquired.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<BOOLEAN> When the port Ownership state is Vacant, 1 (use right available) is returned. When the port Ownership state is Owner/Occupied, 0 (use right not available) is returned.
Command	:PORT:LINK:ENABLE {ON | OFF | FLAP}
Query	:PORT:LINK:ENABle?
Response	{ON | OFF | FLAP}
Description	Sets measurement port optical/electrical output On/Off and Flap operation *: This command changes when linked with the setting value of the :PORT:OPTical:ENABLE command.
Module	– MbE √ GbE – 2.5G/10G
Parameter	{ON | OFF | FLAP} ON: O/E Output On (Link Up status) OFF: O/E Output Off (Link Down status) FLAP: Link Flap operation (repeats On/Off status)* *: Cannot be selected with MU120102A/12A/18A/18B/18C/21A/22A
Default	ON

Section 6 Details of Device Messages

Command	:PORT:LINK:FLAP:INTerval:ON <NR1>
Query	:PORT:LINK:FLAP:INTerval:ON?
Response	<NR1>
Description	Sets O/E output On time at Flap operation *: This command is enabled when FLAP is specified by the :PORT:LINK:ENABLE command.
Module	– MbE √ GbE – 2.5G/10G
Parameter	<NR1> Specify the On time in the range from 10 to 3600 (s).
Default	ON

Command	:PORT:LINK:FLAP:INTerval:OFF <NR1>
Query	:PORT:LINK:FLAP:INTerval:OFF?
Response	<NR1>
Description	Sets O/E output Off time at Flap operation *: This command is enabled when FLAP is specified by the :PORT:LINK:ENABLE command.
Module	– MbE √ GbE – 2.5G/10G
Parameter	<NR1> Specify the Off time in the range from 1 to 3600 (s).
Default	1 (s)

Command	:PORT:LINK:FLAP:COUNt:ENABle <BOOLEAN>
Query	:PORT:LINK:FLAP:COUNt:ENABle?
Response	<BOOLEAN>
Description	<p>Sets whether or not to specify times for Link Flap operation</p> <p>*: This command is enabled when FLAP is specified by the :PORT:LINK:ENABle command.</p>
Module	– MbE √ GbE – 2.5G/10G
Parameter	<p><BOOLEAN></p> <p>At On or 1, Flap operation is performed for the number of times specified by the :PORT:LINK:FLAP:COUNt command and then stops automatically.</p> <p>At Off or 0, Flap Operation is repeated endlessly until it is stopped.</p> <p>1 or 0 is returned as the query response.</p>
Default	0 (OFF)

Command	:PORT:LINK:FLAP:COUNt <NR1>
Query	:PORT:LINK:FLAP:COUNt?
Response	<NR1>
Description	<p>Sets Link Flap operation times</p> <p>*: This command is enabled when On is specified by the PORT :LINK:FLAP:COUNt:ENABle command.</p>
Module	– MbE √ GbE – 2.5G/10G
Parameter	<p><NR1></p> <p>Set the Link Flap operation times (On-Off times) in the range of 1 to 65535.</p>
Default	10

Section 6 Details of Device Messagess

Command	:PORT:LINK:FLAP:NOGO:ENABle <BOOLEAN>
Query	:PORT:LINK:FLAP:NOGO:ENABle?
Response	<BOOLEAN>
Description	<p>Sets whether or not to perform Link Flap No/Go Check</p> <p>*: This command is enabled when FLAP is specified by the :PORT:LINK:ENABle command.</p> <p>*: The MU120138A does not have the No/Go Check function.</p>
Module	– MbE √ GbE – 2.5G/10G
Parameter	<p><BOOLEAN></p> <p>This command is enabled when FLAP is specified by the :PORT:LINK:ENABle command.</p> <p>At Off or 0, the Link Flap operation continues without performing the No/Go Check.</p> <p>1 or 0 is returned as the query response.</p>
Default	0 (OFF)

Query	:PORT:LINK:FLAP:RESult:NOGO?
Response	{OK | NG}
Description	<p>Returns Link Flap No/Go Check result</p> <p>*: The MU120138A does not have the No/Go Check function.</p>
Module	– MbE √ GbE – 2.5G/10G
Parameter	{OK | NG}
Default	OK

Query	:PORT:LINK:FLAP:RESult:COUNT?
Response	<NR1>
Description	Returns Link Flap operation count (On?Off times) This value is cleared at a restart.
Module	– MbE √ GbE – 2.5G/10G
Parameter	<NR1>
Default	0

Command	:PORT:LINK:FLAP:START
Description	Starts Link Flap operation *: This command is enabled when FLAP is specified by the :PORT:LINK:ENABLE command.
Module	– MbE √ GbE – 2.5G/10G

Command	:PORT:LINK:FLAP:STOP
Description	Stops Link Flap operation *: This command is enabled when FLAP is specified by the :PORT:LINK:ENABLE command.
Module	– MbE √ GbE – 2.5G/10G

Query	:PORT:LINK:FLAP:STATe?
Response	{0 | 1}
Description	Returns Link Flap operation status *: This command is enabled when FLAP is specified by the :PORT:LINK:ENABLE command.
Module	– MbE √ GbE – 2.5G/10G
Parameter	{0 | 1} 0: Stopped 1: Started
Default	0 (Stopped)

Section 6 Details of Device Messagess

Command	:PORT:PREamble:ENABle <BOOLEAN>
Query	:PORT:PREamble:ENABle?
Response	<BOOLEAN>
Description	Sets whether or not to perform preamble analysis
Module	– MbE √ GbE – 2.5G/10G
Parameter	<BOOLEAN> At On or 1, includes preamble in captured data and displays preamble at Tx Stream and capture decode display.
Default	0 (Stopped)

Command	:PORT:PREamble:EPON:ENABle <BOOLEAN>
Query	:PORT:PREamble:EPON:ENABle?
Response	<BOOLEAN>
Description	Sets whether or not to perform E-PON (IEEE802/3ah) for preamble *: This command is available for the MU120132A. Enabled when PORT:PREamble:ENABle is On.
Module	– MbE √ GbE – 2.5G/10G
Parameter	<BOOLEAN> At On or 1, displays CRC error counter and E-PON preamble decode (Tx Stream and Capture)
Default	0 (Stopped)

Command	:PORT:TEST:PATtern:TYPE {SINGLE9 | CROSS23 | CROSS31}
Query	:PORT:TEST:PATtern:TYPE?
Response	{SINGLE9 | CROSS23 | CROSS31}
Description	Selects type of test pattern used at Packet BER measurement *: The pattern selected by this command is used when Test Frame PRBS is selected as the send pattern for the send stream. In addition, BER measurement (Packet BER measurement) is performed for the pattern type selected by this command.
Module	– MbE √ GbE – 2.5G/10G
Parameter	{SINGLE9 | CROSS23 | CROSS31} SINGLE9: Single PRBS9

	CROSS23: Cross PRBS23
	CROSS31: Cross PRBS31
Default	SINGLE9 (Single PRBS9)
Query	:PORT:OWNership:OWNer?
Response	<IP_ADDRESS>
Description	Queries the IP address of the control software that has the ownership of the port.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<IP_ADDRESS>
	<p>The IP address is returned in the following 4-octet <HEX> format: Example: 192.168.1.3 is expressed as #HC0A80103.</p> <p>When the owner of the port is not declared (Ownership state is Vacant), #H00000000 (0.0.0.0) is returned.</p>
Default	#H00000000(0.0.0.0: Vacant)
Command	:PORT:CHANge:MODE {EOS | SDH | SONET}
Query	:PORT:CHANge:MODE?
Response	{EOS | SDH | SONET}
Description	Sets and reads out the MU150101A operations mode.
Module	– MbE – GbE √ 2.5G/10G
	*: Valid only for MU150101A module.
Parameter	{EOS | SDH | SONET}
	<p>Sets and reads out MU150101A operations mode.</p> <p>EOS EoS mode {SDH | SONET} SDH/OTN mode, SONET/OTN mode</p>

Section 6 Details of Device Messages

Command	:PORT:CLOCK:TYPE {INTERNAL | RECEIVE | LOCK | LOCK_GPS}
Query	:PORT:CLOCK:TYPE?
Response	{INTERNAL | RECEIVE | LOCK | LOCK_GPS}
Description	Selects the transmission clock type. * In the through mode, it is fixed to the internal clock.
Module	– MbE – GbE $\sqrt{2.5G/10G}$
Parameter	{INTERNAL | RECEIVE | LOCK | LOCK_GPS} Select one from the followings: INTERNAL Internal clock RECEIVE Receive clock LOCK Lock(1.5M/2M/64k+8k) (*1) LOCK_GPS Lock 10M(GPS) (*2) *1: This varies with the setting of DCS. *2: This is valid when the GPS module is enabled.
Default	INTERNAL

Command	:PORT:CLOCK:VARiable:VALue <NR1>
Query	:PORT:CLOCK:VARiable:VALue?
Response	<NR1>
Description	<p>Sets the transmission clock frequency variable.</p> <p>* The MU120131A/32A/38A cannot be set using this command. Use the :PORT:CLOCK:VARiable:VALue:CLOCK1 and :PORT:CLOCK:VARiable:VALue:CLOCK2 command.</p> <p>*: For the MU120118A/B/C, this command is available only if the XENPAK measurement option is installed.</p>
Module	– MbE ✓ GbE ✓ 2.5G/10G
Parameter	<p><NR1></p> <p>Set a value from –100 to +100 (ppm)</p>
Default	0

Command	:PORT:CLOCK:VARiable:VALue:CLOCK1 <NR1>
Query	:PORT:CLOCK:VARiable:VALue:CLOCK1?
Response	<NR1>
Description	<p>Sets variation of send clock frequency for Clock1 side</p> <p>* To execute this command, the clock measurement option must be provided.</p> <p>* This setting is shared by all ports of the installed modules. To make this setting, all ports must be reserved.</p> <p>* Do not use this command for modules other than the MU120131A/32A/38A; use the :PORT:CLOCK:VARiable:VALue command instead.</p>
Module	– MbE ✓ GbE – 2.5G/10G
Parameter	<p><NR1></p> <p>The clock frequency variation can be set in the range from -100 to 100 (ppm).</p>
Default	0

Section 6 Details of Device Messagess

Command	:PORT:CLOCK:VARIABLE:VALUE:CLOCK2 <NR1>
Query	:PORT:CLOCK:VARIABLE:VALUE:CLOCK2?
Response	<NR1>
Description	<p>Sets variation of send clock frequency for Clock2 side</p> <ul style="list-style-type: none">* To execute this command, the clock measurement option must be provided.* This setting is shared by all ports of the installed modules. To make this setting, all ports must be reserved.* Do not use this command for modules other than the MU120131A/32A/38A; use the :PORT:CLOCK:VARIABLE:VALUE command instead.
Module	– MbE √ GbE – 2.5G/10G
Parameter	<NR1>
	The clock frequency variation can be set in the range from -100 to 100 (ppm).
Default	0

Command	:PORT:CLOCK:VARIABLE:SELECT {1 | 2}
Query	:PORT:CLOCK:VARIABLE:SELECT?
Response	{1 | 2}
Description	<p>Selects whether to use Clock1 or Clock2 as the send frequency clock</p> <ul style="list-style-type: none">* To execute this command, the clock measurement option must be provided.* With the MU120131A, this setting is shared by Port1-4/5-8/9-12. To make this setting, all shared ports (4-port units) must be reserved. (There are no limits like this for the MU120132A/38A.)* Do not use this command for modules other than the MU120131A/32A/38A; use the :PORT:CLOCK:VARIABLE:ENABLE command instead.
Module	– MbE √ GbE – 2.5G/10G
Parameter	{1 | 2}
	1: Specify when selecting Clock1. 2: Specify when selecting Clock2.
Default	0

Command	:PORT:TOUTput {OFF | CAPTURE}
Query	:PORT:TOUTput?
Response	{OFF | CAPTURE}
Description	<p>Selects an item to be output to the external trigger.</p> <ul style="list-style-type: none"> * The external trigger output can be enabled only for one port of a single unit. * If you try to enable the trigger output with this command when it has been already enabled for any other port, an error is returned to the error event queue (:SYSTEM:ERRor?). * When the trigger output is set for any other port, use the command with :UENTry:UNIT:TOUTput? to find the port for which the trigger output is enabled * Use the :SYSTem:TRIGgerout command in the SDH(SONET)/OTN/Jitter mode. Refer to the MP1590B/MP1591A Network Performance Tester Remote Control Operation Manual.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	{OFF | CAPTURE} <p>Select either of the following:</p> <p>OFF External trigger output is not performed.</p> <p>CAPTURE The capture trigger is output as the external trigger.</p>
Default	OFF

Section 6 Details of Device Messagess

Command	:PORT:MODE {NORMAL THROUGH MONITOR SWAP IMPAIRMENT }										
Query	:PORT:MODE?										
Response	{NORMAL THROUGH MONITOR SWAP IMPAIRMENT }										
Description	<p>Sets the transmission/reception mode (Normal/Through/Monitor/Address Swap) for the port.</p> <ul style="list-style-type: none">* For MU120101A/11A, the THROUGH mode can be set only on Port1/2 and 5/6.* For Ethernet Module, switching one port through mode On/Off automatically changes through mode setting for the corresponding port. For example, when through mode for Port1 of the 10M/100M Ethernet Module is set to On, through mode for Port2 is automatically changed to On.* The Address Swap mode can be specified only for the MU120111A/12A/21A/22A/31A/32A/38A. For the MU120111A, only Port1 and Port5 can be specified.* In Through/Monitor/Address-Swap modes, Transmission/Protocol functions are not available.										
Module	√ MbE √ GbE √ 2.5G/10G										
Parameter	<p>{NORMAL THROUGH MONITOR SWAP}</p> <p>When any of following selected However, ports in the Impairment mode are fixed and cannot be changed.</p> <table><tr><td>NORMAL</td><td>Normal mode</td></tr><tr><td>THROUGH</td><td>Through mode</td></tr><tr><td>MONITOR</td><td>Monitor mode</td></tr><tr><td>SWAP</td><td>Address Swap mode</td></tr><tr><td>IMPAIRMENT</td><td>Inmpairment mode</td></tr></table>	NORMAL	Normal mode	THROUGH	Through mode	MONITOR	Monitor mode	SWAP	Address Swap mode	IMPAIRMENT	Inmpairment mode
NORMAL	Normal mode										
THROUGH	Through mode										
MONITOR	Monitor mode										
SWAP	Address Swap mode										
IMPAIRMENT	Inmpairment mode										
Default	NORMAL										

Command	:PORT:CONCate:TYPE {CONTIGUOUS | VIRTUAL}
Query	:PORT:CONCate:TYPE?
Response	{CONTIGUOUS | VIRTUAL}
Description	<p>Selects a concatenation type.</p> <p>Not possible to set when both the VC and EOS options are not equipped.</p> <p>Not possible to select Virtual when the VC option is not equipped.</p>
Module	– MbE – GbE √ 2.5G/10G
Parameter	<p>{CONTIGUOUS | VIRTUAL}</p> <p>Select either of the following:</p> <p>CONTIGUOUS Contiguous Concatenation (*1)</p> <p>VIRTUAL Virtual Concatenation (*2)</p> <p>*1: Requires either of the GFP or VC option.</p> <p>*2: Requires the VC option.</p>
Default	CONTIGUOUS

Command	:PORT:CONCate:LCAS <BOOLEAN>
Query	:PORT:CONCate:LCAS?
Response	<BOOLEAN>
Description	<p>Enables/disables the LCAS function.</p> <p>* When the LCAS function setting is changed from OFF (disable) to ON (enable), VCG Size becomes in the maximum value and VCG Member becomes Provisioned Member.</p> <p>* Valid only for MU150101A module.</p>
Module	– MbE – GbE √ 2.5G/10G
Parameter	<p><BOOLEAN></p> <p>Set {ON | 1} (ON or 1) when LCAS functions are enabled at Virtual Concatenation type. Set {OFF | 0} (OFF) or 0 when not enabled. 1 or 0 is returned as query response data.</p> <p>Concatenation type should be Virtual to make the LCAS function effective.</p>
Default	{ON | 1}

Section 6 Details of Device Messages

Command	:PORT:UNFRamed:LANE {ALL_OVER | INDIVIDUAL}
Query	:PORT:UNFRamed:LANE?
Response	{ALL_OVER | INDIVIDUAL}
Description	Sets the test pattern transmission method when Unframe is set. * For MU120118A/B/C, this command is enabled when the option of XENPAK measurement is installed.
Module	– MbE √ GbE – 2.5G/10G
Parameter	{ALL_OVER | INDIVIDUAL} Select either of the following: ALL_OVER Transmits test patterns over all lanes. INDIVIDUAL Transmits test patterns for each lane.
Default	ALL_OVER

Command	:PORT:UNFRamed:DField:TYPE <type>
Query	:PORT:UNFRamed:DField:TYPE?
Response	<type>
Description	<p>Sets the test pattern type when Unframe is set.</p> <ul style="list-style-type: none"> * For MU120101A, this command is disabled. * For 10GbE module, this command is enabled when the MD1230B-13 option is installed.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p><type></p> <p>Select one of the following:</p> <p>ALL0(*4)</p> <p>ALL1(*4)</p> <p>WORD16(*4)</p> <p>PRBS11(*2*5)</p> <p>PRBS15(*2*5)</p> <p>PRBS20(*2)</p> <p>PRBS23</p> <p>PRBS31</p> <p>CJPAT (*1)(*3)</p> <p>CRPAT (*1)(*3)</p> <p>*1: Can be selected only for the MU120102A/12A/18A/18B/18C/22A (SFP port)/32A/38A.</p> <p>*2: Can be selected only for the MU120119A/20A.</p> <p>*3: The TxStream setting is cleared when CJPAT/CRPAT is set.</p> <p>*4: This command is not available for the MU120103A/04A/05A/06A/19A/20A/ and MU150101A.</p> <p>*5: Can be selected only for the MU150101A.</p>
Default	PRBS23 (ALL0 for Ethernet module)

Section 6 Details of Device Messagess

Command	:PORT:UNFRamed:DField:PATtern <HEX>
Query	:PORT:UNFRamed:DField:PATtern?
Response	<HEX>
Description	Sets a 16-bit pattern when the test pattern type for Unframe is set to Word-16. <ul style="list-style-type: none">* For MU120101A and MU120103A/04A/05A/06A/19A/20A, this command is disabled.* For 10GbE module, this command is enabled when the MD1230B-13 option is installed.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<HEX> Set a value of a 16-bit pattern in the 2-octet <HEX> format.
Default	#H0000

Command	:PORT:{SDH | SONet}:BRATe {B156M | B622M}
Query	:PORT:{SDH | SONet}:BRATe?
Response	{B156M | B622M}
Description	Sets the line speed for the port. <ul style="list-style-type: none">* This command is available only for the 156M/622M POS modules.* The setting cannot be changed during measurement or transmission.
Module	– MbE – GbE √ 2.5G/10G
Parameter	{B156M | B622M} Select either of the following: B156M 155.52Mbit/s B622M 622.08Mbit/s
Default	B156M

Command	:PORT:{SDH SONet}:MAPPING <type>																		
Query	:PORT:{SDH SONet}:MAPPING?																		
Response	<type>																		
Description	Switches the mapping.																		
Module	– MbE – GbE √ 2.5G/10G																		
Parameter	<type> Select one of the following: <table> <tr><td>PPP</td><td>PPP</td></tr> <tr><td>CISCO</td><td>CiscoHDLC</td></tr> <tr><td>MAPOS_V1</td><td>MAPOS Version 1</td></tr> <tr><td>MAPOS_16</td><td>MAPOS 16</td></tr> <tr><td>BULK</td><td>Bulk</td></tr> <tr><td>UNFRAMED</td><td>Unframed</td></tr> <tr><td>MAPPED_GFP</td><td>Frame-mapped GFP (*)</td></tr> <tr><td>LAPX86</td><td>LAPS (ITU-T X.86) (*)</td></tr> <tr><td>LEX</td><td>LEX (*)</td></tr> </table> * Valid only when equipped the EOS option in MU120103B/04B and MU150101A-06.	PPP	PPP	CISCO	CiscoHDLC	MAPOS_V1	MAPOS Version 1	MAPOS_16	MAPOS 16	BULK	Bulk	UNFRAMED	Unframed	MAPPED_GFP	Frame-mapped GFP (*)	LAPX86	LAPS (ITU-T X.86) (*)	LEX	LEX (*)
PPP	PPP																		
CISCO	CiscoHDLC																		
MAPOS_V1	MAPOS Version 1																		
MAPOS_16	MAPOS 16																		
BULK	Bulk																		
UNFRAMED	Unframed																		
MAPPED_GFP	Frame-mapped GFP (*)																		
LAPX86	LAPS (ITU-T X.86) (*)																		
LEX	LEX (*)																		
Default	PPP, GFP, BULK * The default value varies depending on the Module or Options.																		

Command	:PORT:{SDH | SONet}:LBACK:ENABLE <BOOLEAN>
Query	:PORT:{SDH | SONet}:LBACK:ENABLE?
Response	<BOOLEAN>
Description	Sets whether to set the loop back mode. * This command is available only for the 156M/622M POS modules.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<BOOLEAN> To enable the loop back mode, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	0 (disable)

Section 6 Details of Device Messagess

Command	:PORT:{SDH | SONet}:THRough:OOVerwrite <BOOLEAN>
Query	:PORT:{SDH | SONet}:THRough:OOVerwrite?
Response	<BOOLEAN>
Description	Sets the OH overwrite to enable or disable when the through mode is On.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<BOOLEAN> To set the OH overwrite to enable when the through mode is On, specify {ON | 1} (ON or 1). Otherwise, specify {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	0 (disable)

Command	:PORT:BULK:DField:TYPE <type>
Query	:PORT:BULK:DField:TYPE?
Response	<type>
Description	Sets a pattern type of the data field.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<type> Select one of the following: ALL0 All0 ALL1 All1 WORD16 Word-16 PRBS11 PRBS11 (*) PRBS15 PRBS15 (*) PRBS20 PRBS20 (*) PRBS23 PRBS23 PRBS31 PRBS31 *: Can be selected only for the 156M/622M POS module.
Default	ALL0 (All0)

Command	:PORT:BULK:DField:PATtern <HEX>
Query	:PORT:BULK:DField:PATtern?
Response	<HEX>
Description	Sets a 16-bit pattern when the data field type is Word-16.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<HEX> Set a value of a 16-bit pattern in the 2-octet <HEX> format.
Default	#HAA55

Command	:PORT:ETHernet:MAPPing {FRAMED | UNFRAMED}
Query	:PORT:ETHernet:MAPPing?
Response	{FRAMED | UNFRAMED}
Description	Switches Framed/Unframe. <ul style="list-style-type: none"> * For MU120101A, this command is disabled. * For MU120118A/B/C, this command is enabled when the option of XENPAK measurement is installed. (This option is not required for the MU120138A.)
Module	√ MbE √ GbE – 2.5G/10G
Parameter	{FRAMED | UNFRAMED} Select either of the following: FRAMED Transmits/receives Ethernet frames. UNFRAMED Performs BER measurement, etc. (*) *: For the MU120111A, only Port1 and Port5 can be set.
Default	FRAMED

Command	:PORT:ETHernet:MII:ANEGotiation:REStart
Description	Restarts Ethernet auto negotiation.
Module	√ MbE √ GbE – 2.5G/10G

Section 6 Details of Device Messages

Query	:PORT:ETHernet:LSpeed?
Response	{S10M | S100M | S1000M | S10G}
Description	Queries the line speed of the port.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	{S10M | S100M | 1000M | S10G}
	Either of the following is returned:
	S10M 10 Mbps
	S100M 100 Mbps
	S1000M 1000 Mbps
	S10G 10 Gbps
	* S1000M is always returned for the MU120102A/12A/22A (SFP).
	* S10G is always returned for the MU120118A/18B/18C/38A.

Query	:PORT:ETHernet:DMODE?
Response	{HALF | FULL}
Description	Queries the duplex mode. * FULL is always returned for Gigabit Ethernet and 10 Gigabit Ethernet.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	{HALF | FULL}
	Either of the following is returned:
	HALF Half Duplex
	FULL Full Duplex

Command	:PORT:ETHernet:MADdress <MAC_ADDRESS>
Query	:PORT:ETHernet:MADdress?
Response	<MAC_ADDRESS>
Description	<p>Sets the MAC address of the port.</p> <p>In 2.5G/10G module, it is valid only when Mapping is GFP, LAPS, or LEX, which sets how to act as a virtual port that emulates.</p>
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p><MAC_ADDRESS></p> <p>Set the MAC address value of the port in the following 6-octet <HEX> format:</p> <p>Example: 01-02-03-04-05-06 is expressed as #H010203040506.</p>
Default	#H000000000000 (00-00-00-00-00-00)

Section 6 Details of Device Messagess

Command	:PORT:ETHernet:MFSsize <NR1>
Query	:PORT:ETHernet:MFSsize?
Response	<NR1>
Description	<p>Sets the Maximum Frame Size for oversize frame judgment. Sets the oversize judgment threshold for the following counters:</p> <p><Ethernet/GbE module></p> <p>Received Frame</p> <p>FCS Error</p> <p>Oversize</p> <p>Oversize & FCS Error</p> <p><2.5G/10G module></p> <p>Ethernet Received Frame</p> <p>Ethernet FCS Error</p> <p>Ethernet Oversize</p> <p>Ethernet Oversize & FCS Error</p>
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p><NR1></p> <p>The minimum value is 64 bytes. The maximum value differs depending on the module as follows.</p> <p>MU120101A/11A/21A/22A/31A/32A/38A: 10000 byte</p> <p>MU120102A/12A/18A/18B/18C: 65280 byte</p>
Default	1518

Command	:PORT:ETHernet:ARP:REPLy:MODE {OFF THIS_PORT ALL}						
Query	:PORT:ETHernet:ARP:REPLy:MODE?						
Response	{OFF THIS_PORT ALL}						
Description	<p>Sets the reply mode to define whether or not to return a response for an ARP request (ARP reply) on the port.</p> <p>In 2.5G/10G module, it is valid only when Mapping is one of GFP, LAPS or LEX, which sets how to act as a virtual port that MD1230B emulates.</p>						
Module	√ MbE √ GbE √ 2.5G/10G						
Parameter	{OFF THIS_PORT ALL} <p>Select one of the following:</p> <table> <tr> <td>OFF</td><td>ARP reply is not returned.</td></tr> <tr> <td>THIS_PORT</td><td>Reply to this port ARP request</td></tr> <tr> <td>ALL*</td><td>Reply to all ARP request</td></tr> </table> <p>*:When ARP Reply is set to "Reply to all ARP Request", there may be an adverse impact on the network to be connected.</p>	OFF	ARP reply is not returned.	THIS_PORT	Reply to this port ARP request	ALL*	Reply to all ARP request
OFF	ARP reply is not returned.						
THIS_PORT	Reply to this port ARP request						
ALL*	Reply to all ARP request						
Default	OFF						

Command	:PORT:ETHernet:MII:VALue <NR1>,<HEX>
Query	:PORT:ETHernet:MII:VALue? <NR1>
Response	<HEX>
Description	<p>Sets a value of the MII register in 16-bit units.</p> <p>* Don't care any bit unavailable to write.</p>
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<NR1> <p>Specifies the location of the MII register.</p> <HEX> <p>Specify a value of the MII register to be set in the 2-octet <HEX> format.</p>

Section 6 Details of Device Messagess

Command	:PORT:ETHernet:MII:AMDix <BOOLEAN>
Query	:PORT:ETHernet:MII:AMDix?
Response	<BOOLEAN>
Description	Sets whether to enable/disable the Auto MDI/MDI-X. * This command is available for only the RJ-45 port of the MU120121A/22A and MU120131A.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<BOOLEAN> When auto MDI/MDI-X is On, ON | 1}(ON or 1) is set, When optical output is off, {OFF | 0}(OFF or 0) is set. 1 or 0 is returned as the response data for the query.
Default	1 (enable)

Command	:PORT:ETHernet:MII:ANEGotiation:LSpeed {S10M | S100M | S1000M}
Query	:PORT:ETHernet:MII:ANEGotiation:LSpeed?
Response	{S10M | S100M | S1000M}
Description	Specifies 10 Mbps, 100 Mbps, or 100 Mbps when auto negotiation is disabled. * For the SFP port of the MU120122A, it is not available.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	{S10M | S100M | S1000M} Select one of the following: S10M 10 Mbps S100M 100 Mbps S1000M 1000 Mbps
Default	S10M (10 Mbps)

Command	:PORT:ETHernet:MII:ANEGotiation:DMODE {HALF | FULL}
Query	:PORT:ETHernet:MII:ANEGotiation:DMODE?
Response	{HALF | FULL}
Description	Specifies the duplex mode when auto negotiation is disabled. * For the SFP port of the MU120122A, it is not available.
Module	√ MbE – GbE – 2.5G/10G
Parameter	{HALF | FULL} Select either of the following: HALF Half duplex FULL Full duplex *The Half duplex mode is not supported when :PORT:MODE is IMPAIRMENT.
Default	HALF (Half duplex)

Command	:PORT:ETHernet:MII:ANEGotiation:ENABLE <BOOLEAN>
Query	:PORT:ETHernet:MII:ANEGotiation:ENABLE?
Response	<BOOLEAN>
Description	Sets auto negotiation to enable or disable.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<BOOLEAN> To enable auto negotiation, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	1 (enable)

Section 6 Details of Device Messagess

Command	:PORT:ETHernet:MII:ANEGotiation:LTIMer <on_off>,<timer_value>
Query	:PORT:ETHernet:MII:ANEGotiation:LTIMer?
Response	<on_off>,<timer_value>
Description	<p>Sets the Link Timer for auto negotiation ON/OFF. When ON is set, also specifies the time.</p> <ul style="list-style-type: none">* This command is available only if the Auto Negotiation option is installed.* This command is valid ports in which auto negotiation is enabled.
Module	– MbE √ GbE – 2.5G/10G
Parameter	<p><on_off></p> <p>0: Does not change the Link Timer value (default: 10 ms). 1: Changes the Link Timer value to the value specified by <timer_value>.</p> <p><timer_value></p> <p>When sending this command with <on_off> set at 1, specify the Link Timer value in integers. A value within the following range can be set: 0 to 100 (unit: ms) When <on_off> is set to 0, this parameter does not need to be set.</p> <p>For the query, the integer value described above is returned as a response data. When <on_off> is set to 1 (change of Link Timer value: ON), 1 is returned. Otherwise, 0 is returned.</p>
Default	<on_off>=0(OFF),<timer_value>=10

Command	:PORT:ETHernet:MII:ANEGotiation:TIMEout:ENABle <BOOLEAN>
Query	:PORT:ETHernet:MII:ANEGotiation:TIMEout:ENABle?
Response	<BOOLEAN>
Description	Enables/disables timeout processing of auto negotiation. * This command is enabled for Giga-bit Ethernet Module optical port.
Module	– MbE √ GbE – 2.5G/10G
Parameter	<BOOLEAN> To enable timeout processing, specify {ON | 1} (ON or 1). Otherwise, specify {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	0 (disable)

Command	:PORT:ETHernet:MII:ANEGotiation:TIMing {AUTO | MASTER | SLAVE }
Query	:PORT:ETHernet:MII:ANEGotiation:TIMing?
Response	{AUTO | MASTER | SLAVE }
Description	Sets Master/Slave decision method at Auto Negotiation * This setting is enabled when the Link speed is 1000 Mbps. It is disabled in the Through Mode, Address Swap Mode and Monitor Mode.
Module	– MbE √ GbE – 2.5G/10G
Parameter	{AUTO | MASTER | SLAVE } Select any of the following: AUTO: Decides using Master/Slave Negotiation MASTER: Fixed to Master SLAVE: Fixed to Slave

Section 6 Details of Device Messages

Command	:PORT:ETHernet:MII:ANEGotiation:ADVertise:1GFull <BOOLEAN>
Query	:PORT:ETHernet:MII:ANEGotiation:ADVertise:1GFull?
Response	<BOOLEAN>
Description	Sets advertise to enable or disable in the 1000Mbps/full duplex mode. * For the SFP port of the MU120122A, it is not available.
Module	– MbE √ GbE – 2.5G/10G
Parameter	<BOOLEAN> To advertise in the 1000 Mbps/full duplex mode, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	1 (enable)

Command	:PORT:ETHernet:MII:ANEGotiation:ADVertise:1GHalf <BOOLEAN>
Query	:PORT:ETHernet:MII:ANEGotiation:ADVertise:1GHalf?
Response	<BOOLEAN>
Description	Sets advertise to enable or disable in the 1000 Mbps/half duplex mode. * For the SFP port of the MU120122A, it is not available.
Module	– MbE √ GbE – 2.5G/10G
Parameter	<BOOLEAN> To advertise in the 1000 Mbps/half duplex mode, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	1 (enable)

Command	:PORT:ETHernet:MII:ANEGotiation:ADVertise:100Full <BOOLEAN>
Query	:PORT:ETHernet:MII:ANEGotiation:ADVertise:100Full?
Response	<BOOLEAN>
Description	Sets advertise to enable or disable in the 100Mbps/full duplex mode. * For the SFP port of the MU120122A, it is not available.
Module	√ MbE – GbE – 2.5G/10G
Parameter	<BOOLEAN> To advertise in the 100 Mbps/full duplex mode, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	1 (enable)
Command	:PORT:ETHernet:MII:ANEGotiation:ADVertise:100Half <BOOLEAN>
Query	:PORT:ETHernet:MII:ANEGotiation:ADVertise:100Half?
Response	<BOOLEAN>
Description	Sets advertise to enable or disable in the 100 Mbps/half duplex mode. * For the SFP port of the MU120122A, it is not available. * The Half duplex mode is not supported when :PORT:MODE is IMPAIRMENT.
Module	√ MbE – GbE – 2.5G/10G
Parameter	<BOOLEAN> To advertise in the 100 Mbps/half duplex mode, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	1 (enable)

Section 6 Details of Device Messagess

Command	:PORT:ETHernet:MII:ANEGotiation:ADVertise:10Half <BOOLEAN>
Query	:PORT:ETHernet:MII:ANEGotiation:ADVertise:10Half?
Response	<BOOLEAN>
Description	Sets advertise to enable or disable in the 10Mbps/half duplex mode. * For the SFP port of the MU120122A, it is not available. * The Half duplex mode is not supported when :PORT:MODE is IMPAIRMENT.
Module	√ MbE – GbE – 2.5G/10G
Parameter	<BOOLEAN> To advertise in the 10 Mbps/half duplex mode, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	1 (enable)

Command	:PORT:ETHernet:MII:ANEGotiation:ADVertise:10Full <BOOLEAN>
Query	:PORT:ETHernet:MII:ANEGotiation:ADVertise:10Full?
Response	<BOOLEAN>
Description	Sets advertise to enable or disable in the 10 Mbps/full duplex mode. * For the SFP port of the MU120122A, it is not available.
Module	√ MbE – GbE – 2.5G/10G
Parameter	<BOOLEAN> To advertise in the 10 Mbps/full duplex mode, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	1 (enable)

Command	:PORT:ETHernet:MII:FCONtrol:DPControl:ADDRes <MAC_ADDRESS>
Query	:PORT:ETHernet:MII:FCONtrol:DPControl:ADDRes?
Response	<MAC_ADDRESS>
Description	Sets the directed address for flow control. * When STATIC is set with PORT:ETHernet:MII:FCONtrol:DPControl:TYPE command, it is valid.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<MAC_ADDRESS> Set a value of the directed address in the following 6-octet <HEX> format: Example: 01-02-03-04-05-06 is expressed as #H010203040506.
Default	#H000000000000 (00-00-00-00-00-00)

Command	:PORT:ETHernet:MII:FCONtrol:DPControl:TYPE {THIS_PORT | STATIC}
Query	:PORT:ETHernet:MII:FCONtrol:DPControl:TYPE?
Response	{THIS_PORT | STATIC}
Description	Selects the control type of the directed pause address.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	{THIS_PORT | STATIC} Select either of the following: THIS_PORT The MAC address set for the port is used. STATIC User-defined value is used.
Default	THIS_PORT

Section 6 Details of Device Messagess

Command	:PORT:ETHernet:MII:FCONtrol:DPControl:ENABle <BOOLEAN>
Query	:PORT:ETHernet:MII:FCONtrol:DPControl:ENABle?
Response	<BOOLEAN>
Description	Sets the flow control when receiving the directed pause frame to enable or disable.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<BOOLEAN> To enable flow control when receiving a directed pause frame, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	0 (disable)

Command	:PORT:ETHernet:MII:FCONtrol:MPControl:ENABle <BOOLEAN>
Query	:PORT:ETHernet:MII:FCONtrol:MPControl:ENABle?
Response	<BOOLEAN>
Description	Sets the flow control when receiving the multicast pause frame to enable or disable.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<BOOLEAN> To perform the flow control when receiving the multicast pause frame, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	0 (disable)

Command	:PORT:ETHernet:MII:LBACK:ENABle <BOOLEAN>
Query	:PORT:ETHernet:MII:LBACK:ENABle?
Response	<BOOLEAN>
Description	Sets the loop back mode to enable or disable.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<BOOLEAN> To enable the loop back mode, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	0 (disable)

Query	:PORT:ETHernet:MII:FCONtrol:MPControl:ADDRes?
Response	<MAC_ADDRESS>
Description	Queries a value of the multicast pause address.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<MAC_ADDRESS>
	Returns the multicast pause address (01-80-C2-00-00-01) in the <HEX> format (#H0180C2000001).
Default	#H0180C2000001 (01-80-C2-00-00-01)

Command	:PORT:ETHernet:MDIO:TYPE {XENPAK SERDES}				
Query	:PORT:ETHernet:MDIO:TYPE?				
Response	{XENPAK SERDES}				
Description	<p>Selects the MDIO register type (XENPAK/SERDES) to be set/read.</p> <p>* This command is available for the MU120118A/B/C if the XENPAK measurement option is installed.</p> <p>* This command is not available for the MU120138A. Use the :PORT:ETHernet:MDIO:VALue command instead.</p>				
Module	– MbE √ GbE – 2.5G/10G				
Parameter	{XENPAK SERDES}				
	Specify either of the following.				
	<table> <tr> <td>XENPAK</td><td>XENPAK</td></tr> <tr> <td>SERDES</td><td>SerDes</td></tr> </table>	XENPAK	XENPAK	SERDES	SerDes
XENPAK	XENPAK				
SERDES	SerDes				
Default	XENPAK				

Section 6 Details of Device Messagess

Command	:PORT:ETHernet:MDIO:VALue <position>,<value>																
Query	:PORT:ETHernet:MDIO:VALue? <position>																
Response	<value>																
Description	<p>Sets the MDIO register value.</p> <p>For the MU120118A/B/C, specify a value in 16-bit units. For the MU120138A, set a value by specifying the type, address, and data length of the register.</p> <ul style="list-style-type: none">* This command can be used even if the transmission/reception function is executed.* For the MU120118A/B/C, this command is available only if the XENPAK measurement option is installed. The value writing destination must be set in advance by using the :PORT:ETHernet:MDIO:TYPE and :PORT:ETHernet:MDIO:ADDRESS:PHY commands.																
Module	× MbE ○ GbE × 2.5G/10G																
Parameter	<p><position></p> <p>The format differs depending on the module used.</p> <p>For MU120118A/B/C:</p> <p><device type>, <register address></p> <p>Specify the device type (device address) from 0 to 31 and the register address from 0 to 65,535, in the <NR1> format.</p> <p>For MU120138A:</p> <p><type>, <offset>, <length></p> <p>Specify the reading/writing location by using <type> (register type), <offset> (offset from the head of the register), and <length> (byte length). <type> must be specified in the <CHAR> format, and <offset> and <length> must be specified in the <NR1> format. The selectable register types and the setting ranges for the offset and the byte length are as follows.</p> <table><tr><th></th><th><type></th><th><offset></th><th><length></th></tr><tr><td>SFP+</td><td>SFP_PLUS</td><td>0 - 65535 byte</td><td>1 - 256 byte</td></tr><tr><td>SerDes</td><td>SERDES</td><td>0 - 65535 byte</td><td>1 - 256 byte</td></tr><tr><td>PCS</td><td>PCS</td><td>0 - 65535 byte</td><td>1 - 256 byte</td></tr></table> <p><value></p> <p>Specify the value of the MDIO register to be set in the <HEX> format.</p> <p>The data length differs depending on the module used.</p> <p>MU120118A/B/C: Fixed to 2 bytes</p> <p>MU120138A: Length specified by <length> parameter</p> <ul style="list-style-type: none">* Write-protected bits are Don't Care (the setting is not applied).* If an undefined area is specified, or if neither XENPAK nor SFP+ is installed,		<type>	<offset>	<length>	SFP+	SFP_PLUS	0 - 65535 byte	1 - 256 byte	SerDes	SERDES	0 - 65535 byte	1 - 256 byte	PCS	PCS	0 - 65535 byte	1 - 256 byte
	<type>	<offset>	<length>														
SFP+	SFP_PLUS	0 - 65535 byte	1 - 256 byte														
SerDes	SERDES	0 - 65535 byte	1 - 256 byte														
PCS	PCS	0 - 65535 byte	1 - 256 byte														

all 0 data is returned as the register value.

Command	:PORT:ETHernet:MDIO:REGister:ADDRes:PHY <HEX>
Query	:PORT:ETHernet:MDIO:REGister:ADDRes:PHY?
Response	<HEX>
Description	<p>Sets the PHY Address value.</p> <ul style="list-style-type: none">* This command is available for the MU120118A/B/C if the XENPAK measurement option is installed.* This command is not available for the MU120138A. Use the :PORT:ETHernet:MDIO:VALue command instead.
Module	– MbE √ GbE – 2.5G/10G
Parameter	<p><HEX></p> <p>Specify a 5-bit value (00 to 1F) in the <HEX> format.</p>
Default	#H00

Section 6 Details of Device Messagess

Query	:PORT:ETHernet:MDIO:{TTYPE | XENPak}?
Response	<type>
Description	Queries the type of installed XENPAK or SFP+.
Module	× MbE ○ GbE × 2.5G/10G
Parameter	<type> Returns any of the following. NONE XENPAK is not installed. SR 10GBASE-SR(850 nm) LR 10GBASE-LR(1310 nm) ER 10GBASE-ER(1550 nm) SW 10GBASE-SW(850 nm) LW 10GBASE-LW(1310 nm) EW 10GBASE-EW(1550 nm) LX4 10GBASE-LX4(1310 nm) OPTION Option must be installed for this XENPAK operation.

Command	:PORT:ETHernet:MDIO:PCS:TYPE {WAN | LAN}
Query	:PORT:ETHernet:MDIO:PCS:TYPE?
Response	{WAN | LAN}
Description	Sets the XENPAK mode to LAN or WAN. * This command is available only if the WAN-PHY option is installed and a WAN-PHY supported XENPAK is inserted.
Module	– MbE √ GbE – 2.5G/10G
Parameter	{WAN | LAN} Sets the XENPAK mode (PCS type). XENPAK is worked by 10GBASE-W when sets to WAN, worked by 10GBASE-R when sets to LAN.
Default	WAN

Command	:PORT:ETHernet:MDIO:PCS:WAN:LOP <BOOLEAN>
Query	:PORT:ETHernet:MDIO:PCS:WAN:LOP?
Response	<BOOLEAN>
Description	<p>Sets LOP-P detection to enable or disable.</p> <p>* This command is available only if the WAN-PHY option is installed and a WAN-PHY supported XENPAK is inserted.</p> <p>* This command is enabled when PCS type (:PORT:ETHernet:MDIO:PCS) is WAN.</p>
Module	– MbE √ GbE – 2.5G/10G
Parameter	<p><BOOLEAN></p> <p>To count LOP-P up normally, set {ON | 1}(ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.</p>
Default	1 (enable)

Section 6 Details of Device Messagess

Command	:PORT:ETHernet:MDIO:LFS:REPLy <on_off>,<type>,<txc>,<txd>
Query	:PORT:ETHernet:MDIO:LFS:REPLy?
Response	<on_off>,<type>,<txc>,<txd>
Description	<p>Specifies whether to reply to the LFS signal when it is received at the specified port.</p> <p>When replying to the LFS signal, set the reply signal to be output.</p> <p>* This command is available only if the LFS option is installed.</p>
Module	– MbE √ GbE – 2.5G/10G
Parameter	<p><on_off></p> <p>Set whether to reply to the LFS signal (<BOOLEAN>).</p> <p>0: Does not reply to the LFS signal</p> <p>1: Replies to the LFS signal</p> <p>The following parameters must be specified if <on_off> is set to 1. (These parameter settings are not applied if <on_off> is set to 0.)</p> <p><type></p> <p>Specify the signal to be output when replying to the LFS signal with 1 or 2.</p> <p>1: Remote Fault Signal: TXC[0-3] = 1000 bin, TXD[0-3] = 9c000002 hex</p> <p>2: Edit Signal: Outputs the value set by the <txc> and <txd> parameters shown below.</p> <p>The following parameters must be specified if <type> is set to 2. (These parameter settings are not applied if <type> is set to 1.)</p> <p><txc></p> <p>When setting <on_off> to 1, specify the 3-bit TXC[1-3] of the output signal in binary. TXC[0] bit is fixed to 1.</p> <p>When setting <on_off> to 0, do not specify any value to this field.</p> <p>Example: #B000</p> <p><txd></p> <p>When setting <on_off> to 1, specify the 3-byte TXD[1-3] of the output signal in hexadecimal. TXD[0] data is fixed to 9c.</p> <p>Example: #H000002</p>
Default	0,1,#B000,#H000002(Off)

Command	:PORT:ETHernet:EOAM:ENABle <BOOLEAN>
Query	:PORT:ETHernet:EOAM:ENABle?
Response	<BOOLEAN>
Description	<p>Enables/disables Ethernet OAM function.</p> <p>The following functions are enabled/disabled:</p> <ul style="list-style-type: none"> • Ethernet OAM Emulation function (CCM fixed period Tx, LBM/LTM response). • Alarm counter (LOC/AIS/RD). <p>* Can be used when Ethernet OAM options installed.</p>
Module	– MbE √ GbE – 2.5G/10G
Default	0 (Off)

Command	:PORT:ETHernet:EOAM:STANdard {ITU | IEEE}
Query	:PORT:ETHernet:EOAM:STANdard?
Response	{ITU | IEEE}
Description	<p>Switches Ethernet OAM standard (ITU/IEEE).</p> <p>The Ethernet OAM-related language displays and operation are switched by this setting.</p> <p>* Can be used when Ethernet OAM options installed.</p>
Module	– MbE √ GbE – 2.5G/10G
Default	ITU

Command	:PORT:ETHernet:EOAM:LB:REPLy <BOOLEAN>
Query	:PORT:ETHernet:EOAM:LB:REPLy?
Response	<BOOLEAN>
Description	<p>Sets reply (send LBR) to LBM addressed to this port.</p> <p>* Can be used when Ethernet OAM options installed.</p>
Module	– MbE √ GbE – 2.5G/10G
Default	1 (On)

Section 6 Details of Device Messagess

Command	:PORT:ETHernet:EOAM:LT:REPLy <BOOLEAN>
Query	:PORT:ETHernet:EOAM:LT:REPLy?
Response	<BOOLEAN>
Description	Sets reply (send LTR) to LTM address to this port. * Can be used when Ethernet OAM options installed.
Module	– MbE √ GbE – 2.5G/10G
Default	1 (On)

Command	:PORT:ETHernet:EOAM:LT:REPLy:TLV <length of data>[,<HEX>]
Query	:PORT:ETHernet:EOAM:LT:REPLy:TLV?
Response	<length of data>[,<HEX>]
Description	Sets TLV pattern for LTR response. * Can be used when Ethernet OAM options installed. * End TLV is appended automatically. It is not necessary to set this command.
Module	– MbE √ GbE – 2.5G/10G
Parameter	<length of data>[,<HEX>] Sets pattern length <length of data> and 0 to 120 byte hexadecimal pattern (<HEX>). When the pattern length is 0, it is not necessary to set the hexadecimal pattern.
Default	10,#H05000701000000000000 (Reply Ingress TLV)

Command	:PORT:ETHernet:EOAM:CCM <BOOLEAN>
Query	:PORT:ETHernet:EOAM:CCM?
Response	<BOOLEAN>
Description	Specifies whether or not to send CCM periodically * Can be used when Ethernet OAM options installed.
Module	– MbE √ GbE – 2.5G/10G
Default	0 (Off)

Command :PORT:ETHernet:EOAM:CCM:RDI <BOOLEAN>

Query :PORT:ETHernet:EOAM:CCM:RDI?

Response <BOOLEAN>

Description Sets whether or not to append RDI to sent CCM
 * Can be used when Ethernet OAM options installed.

Module – MbE √ GbE – 2.5G/10G

Default 0 (Off)

Command :PORT:ETHernet:EOAM:{MEG | MD}:LEVel <NR1>

Query :PORT:ETHernet:EOAM:{MEG | MD}:LEVel?

Response <NR1>

Description Specifies MEG Level/MD Level (0 to 7, 3 bits) for emulated Ethernet OAM equipment.
 * Can be used when Ethernet OAM options installed.

Module – MbE √ GbE – 2.5G/10G

Default 0

Command :PORT:ETHernet:EOAM:MEP:ID <NR1>

Query :PORT:ETHernet:EOAM:MEP:ID?

Response <NR1>

Description Specifies MEP ID (0 to 8191, 13 bits) for emulated Ethernet OAM equipment.
 * Can be used when Ethernet OAM options installed.

Module – MbE √ GbE – 2.5G/10G

Default 8191

Section 6 Details of Device Messagess

Command	:PORT:ETHernet:EOAM:{MEG | MA}:ID <HEX>
Query	:PORT:ETHernet:EOAM:{MEG | MA}:ID?
Response	<HEX>
Description	Specifies MEG ID/MAID for emulated Ethernet OAM equipment. *Can be used when Ethernet OAM options installed.
Module	– MbE √ GbE – 2.5G/10G
Parameter	<HEX> Sets 48 byte hexadecimal value
Default	#H01200D49434326554D4300 000000000000000000000000000000 (Short MA Name: ICC&UMC)
<hr/>	
Command	:PORT:ETHernet:EOAM:CCM:PERiod <period>
Query	:PORT:ETHernet:EOAM:CCM:PERiod?
Response	<period>
Description	Sets CCM send period. * Can be used when Ethernet OAM options installed. * The 3.33, 10, or 100-ms period cannot be specified.
Module	– MbE √ GbE – 2.5G/10G
Parameter	<period> Specify any of the following (CHAR). P1S 1 s P10S 10 s P1MIN 1 min P10MIN 10 min
Default	P1S

Command	:PORT:ETHernet:EOAM:CCM:TLV <length of data>[,<HEX>]
Query	:PORT:ETHernet:EOAM:CCM:TLV?
Response	<length of data>[,<HEX>]
Description	<p>Sets TLV pattern in sent CCM</p> <p>* Can be used when Ethernet OAM options installed.</p> <p>* End TLV is appended automatically. It is not necessary to set this command.</p>
Module	– MbE √ GbE – 2.5G/10G
Parameter	<p><length of data>[,<HEX>]</p> <p>Sets pattern length <length of data> and 0 to 120-byte hexadecimal pattern (<HEX>). When the pattern length is 0, it is not necessary to set the hexadecimal pattern.</p>
Default	0

Command	:PORT:ETHernet:EOAM:DUT:MEP:ID <NR1>
Query	:PORT:ETHernet:EOAM:DUT:MEP:ID?
Response	<NR1>
Description	<p>Specifies DUT MEP ID (0 to 8191, 13 bits).</p> <p>This setting is used to detect LOC of the LOC counter.</p> <p>* Can be used when Ethernet OAM options installed.</p>
Module	– MbE √ GbE – 2.5G/10G
Default	8191

Section 6 Details of Device Messagess

Command	:PORT:VLAN:ENABLE <BOOLEAN>
Query	:PORT:VLAN:ENABLE?
Response	<BOOLEAN>
Description	Enables/disables the processing for VLAN tags, including counter processing, capture processing, and Ping/ARP processing.
Module	– MbE √ GbE – 2.5G/10G
Parameter	<BOOLEAN>
To enable the processing for VLAN tags, specify {ON | 1} (ON or 1). Otherwise, specify {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.	
Default	0 (disable)

Command	:PORT:VLAN <number>[,<vlan tag>]...
Query	:PORT:VLAN?
Response	<number>[,<vlan tag>]...
Description	Sets the parameters related to the VLAN tag of the corresponding port. Parameters for up to 10 stages can be set.
Module	– MbE √ GbE – 2.5G/10G
Parameter	<number> Specify the number of stages for the VLAN tag to be set from 1 to 10 (<NR1>). <vlan tag> Set the TPID, Priority, and VID encode value of the VLAN tag (*1) in the <HEX> format, for the number of VLAN stages specified by <number> above. *1: This is a 32-bit value consisting of TPID (16 bits (*2)), Priority (3 bits of 0 thru 7), CFI (1 bit, fixed to 0), and VID (12 bits of 1 thru 4094), in descending order. *2: Note that 0x0800 (IP), 0x0806 (ARP), and 0x86dd (IPv6) cannot be set.
Default	1,#H81000001

Command	:PORT:VLAN:OTFRames <BOOLEAN>
Query	:PORT:VLAN:OTFRames?
Response	<BOOLEAN>
Description	Sets the Only VLAN-Tagged Frames function to ON or OFF. When it is set to ON, only VLAN-tagged frames are received and replied during Ping/ARP processing.
Module	– MbE √ GbE – 2.5G/10G
Parameter	<BOOLEAN> To receive and reply to VLAN-tagged frames only, specify {ON | 1} (ON or 1). Otherwise (to receive and reply to frames regardless of whether they are VLAN-tagged or not), specify {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	0 (OFF)

Command	:PORT:VLAN:AVID {THIS_PORT | ALL}
Query	:PORT:VLAN:AVID?
Response	{THIS_PORT | ALL}
Description	Sets Acceptable VID (the range of VID to be received).
Module	– MbE √ GbE – 2.5G/10G
Parameter	{THIS_PORT | ALL} Select either of the following: THIS_PORT This Port VID. Receives and replies to the VIDs set for this port only. ALL All VID. Receives and replies to all VIDs.
Default	THIS_PORT

Command	:PORT:PPP:NEGotiation:ABORt
Description	Aborts the ongoing negotiation.
Module	– MbE – GbE √ 2.5G/10G

Section 6 Details of Device Messagess

Command	:PORT:PPP:NEGoTiation:REStart
Description	Restarts ppp negotiation.
Module	– MbE – GbE √ 2.5G/10G

Command	:PORT:PPP:FLENgth {L1BYTE | L2BYTE}
Query	:PORT:PPP:FLENgth?
Response	{L1BYTE | L2BYTE}
Description	Sets the minimum flag length (the minimum value of the flag length between frames).
Module	– MbE – GbE √ 2.5G/10G
Parameter	{L1BYTE | L2BYTE}
	Select either of the following: L1BYTE 1 byte L2BYTE 2 bytes
Default	L1BYTE (1 byte), Mapping: PPP

Command	:PORT:PPP:DESCramble:ENABle <BOOLEAN>
Query	:PORT:PPP:DESCramble:ENABle?
Response	<BOOLEAN>
Description	Sets the ppp descramble (at the receiving end) to enable or disable.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<BOOLEAN>
	To enable the ppp descramble, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	1 (enable)

Command	:PORT:PPP:SCRamble:ENABle <BOOLEAN>
Query	:PORT:PPP:SCRamble:ENABle?
Response	<BOOLEAN>
Description	Sets the ppp scramble (at the sending end) to enable or disable.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<BOOLEAN> To enable the ppp scramble, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	1 (enable)
Command	:PORT:PPP:NEGotiation:ENABle <BOOLEAN>
Query	:PORT:PPP:NEGotiation:ENABle?
Response	<BOOLEAN>
Description	Sets the ppp negotiation to enable or disable.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<BOOLEAN> To enable the negotiation, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	1 (enable)
Command	:PORT:PPP:NEGotiation:MRU:TX <NR1>
Query	:PORT:PPP:NEGotiation:MRU:TX?
Response	<NR1>
Description	Sets MRU (the maximum frame size) at the sending end.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 12 to 65535 (byte).
Default	65535

Section 6 Details of Device Messages

Command	:PORT:PPP:NEGotiation:RETRy:TIMEout <NR1>
Query	:PORT:PPP:NEGotiation:RETRy:TIMEout?
Response	<NR1>
Description	Sets the retry timeout of configuration request/termination request.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 1 to 180 (s).
Default	3

Command	:PORT:PPP:NEGotiation:RETRy:COUNt <NR1>
Query	:PORT:PPP:NEGotiation:RETRy:COUNt?
Response	<NR1>
Description	Sets the retry count of configuration request/termination request.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 1 to 10 (number of times).
Default	3

Query	:PORT:PPP:NEGotiation:MNUMber:TX?
Response	<NR1>
Description	Queries a value of the sent magic number (4 octets).
Module	– MbE – GbE √ 2.5G/10G

Query	:PORT:PPP:NEGotiation:MNUMber:RX?
Response	<NR1>
Description	Queries a value of the received magic number (4 octets).
Module	– MbE – GbE √ 2.5G/10G

Query	:PORT:PPP:NEGotation:MRU:RX?
Response	<NR1>
Description	Queries MRU (the maximum frame size) on the transmitting direction after the negotiation.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<NR1> When no error exists, –9999 is returned.

Query	:PORT:PPP:NEGotation:STAtE?
Response	<state>
Description	Queries the negotiation (LCP) status.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<state> One of the following is returned: OFF Negotiation (LCP) is disabled. DOWN Negotiation has failed. UP Negotiation has been successfully done. RESTART Negotiation is being processed. FAIL Connection establishment error (*) * Retry is completed, or establishment is aborted for any reasons. When Restart/Abort is executed by screen operation or an establishment request is received from the DUT, the RESTART state is set.

Section 6 Details of Device Messagess

Query	:PORT:PPP:IPCP:STATE?
Response	<state>
Description	Queries the IPCP status.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<state> One of the following is returned: OFF IPCP is disabled. DOWN Negotiation has failed. UP Negotiation has been successfully done. RESTART Negotiation is being processed. FAIL Connection establishment error (*) * Retry is completed, or establishment is aborted for any reasons. When Restart/Abort is executed by screen operation or an establishment request is received from the DUT, the RESTART state is set.

Command	:PORT:PPP:IPCP:ENABLE <BOOLEAN>
Query	:PORT:PPP:IPCP:ENABLE?
Response	<BOOLEAN>
Description	Enables/disables IPCP.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<BOOLEAN> To enable IPCP, specify {ON | 1} (ON or 1). Otherwise, specify {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	1 (enable)

Command	:PORT:PPP:IPCP:ADDReSS:SEND <BOOLEAN>
Query	:PORT:PPP:IPCP:ADDReSS:SEND?
Response	<BOOLEAN>
Description	Sets whether to transmit the IP address for This Port.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<BOOLEAN> To transmit the IP address for This Port, specify {ON | 1} (ON or 1). Otherwise, specify {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	1 (enable)

Command	:PORT:PPP:FCS {CRC16 | CRC32}
Query	:PORT:PPP:FCS?
Response	{CRC16 | CRC32}
Description	Sets CRC (16/32 bits) in the FCS field.
Module	– MbE – GbE √ 2.5G/10G
Parameter	{CRC16 | CRC32} Select either of the following: CRC16: 16 bits CRC32: 32 bits
Default	CRC32 (32 bits)

Command	:PORT:IP:GATeway <IP_ADDRESS>
Query	:PORT:IP:GATeway?
Response	<IP_ADDRESS>
Description	Sets an IP address of a gateway that the port uses.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<IP_ADDRESS> Set an IP address value of a gateway in the following 4-octet <HEX> format: Example: 192.168.1.3 is expressed as #HC0A80103.
Default	#H00000000 (0.0.0.0)

Section 6 Details of Device Messagess

Command	:PORT:IP:NETMask <IP_ADDRESS>
Query	:PORT:IP:NETMask?
Response	<IP_ADDRESS>
Description	Sets a netmask value of the network that the port belongs to.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<IP_ADDRESS> Set a netmask value in the following 4-octet <HEX> format: Example: 192.168.1.3 is expressed as #HC0A80103.
Default	#H00000000 (0.0.0.0)

Command	:PORT:IP:IADdress <IP_ADDRESS>
Query	:PORT:IP:IADdress?
Response	<IP_ADDRESS>
Description	Sets an IP address of the port.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<IP_ADDRESS> Set an IP address value of the port in the following 4-octet <HEX> format: Example: 192.168.1.3 is expressed as #HC0A80103.
Default	#H00000000 (0.0.0.0)

Command	:PORT:IPV6:RS:SEND
Description	Sends the RS (Router Solicitation) message.
Module	√ MbE √ GbE √ 2.5G/10G

Command	:PORT:IPV6:RS:ABORt
Description	Aborts RS sending/RA reception processing.
Module	√ MbE √ GbE √ 2.5G/10G

Command	:PORT:IPV6:ADDReSS <IPV6_ADDRESS>
Query	:PORT:IPV6:ADDReSS?
Response	<IPV6_ADDRESS>
Description	Sets the IPv6 address value of this port.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<IPV6_ADDRESS> Set the IPv6 address value in the following 128-bit <HEX> format. Example: 1:2:3:4:5:6:7:8 is expressed as #H00010002000300040005000600070008.
Default	#H00000000000000000000000000000000 (::)

Command	:PORT:IPV6:ROUteR <IPV6_ADDRESS>
Query	:PORT:IPV6:ROUteR?
Response	<IPV6_ADDRESS>
Description	Sets an IPv6 address for the default router that this port uses.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<IPV6_ADDRESS> Set the IPv6 address value in the following 128-bit <HEX> format. Example: 1:2:3:4:5:6:7:8 is expressed as #H00010002000300040005000600070008.
Default	#H00000000000000000000000000000000 (::)

Query	:PORT:IPV6:RS:PREFix:LIST?
Response	<number of prefix>[,<IPV6_ADDRESS>,<prefix>]...
Description	Acquires a prefix list.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<number of prefix> Number of prefixes. <IPV6_ADDRESS>,<prefix> Set the prefix in the following 128-bit <HEX> format and a value from 0 to 128. Example: 1:2:3::/64 is expressed as #H00010002000300000000000000000000,64.

Section 6 Details of Device Messagess

Query	:PORT:IPV6:RS:ROUTer:LIST?
Response	<number of address>[,<IPV6_ADDRESS>]...
Description	Acquires a default router list.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<number of address> Number of IPv6 addresses. <IPV6_ADDRESS> Set the IPv6 address value in the following 128-bit <HEX> format. Example: 1:2:3:4:5:6:7:8 is expressed as #H00010002000300040005000600070008.

Command	:PORT:ICMP:EREPLY:MODE <BOOLEAN>
Query	:PORT:ICMP:EREPLY:MODE?
Response	<BOOLEAN>
Description	Sets the reply mode to define whether to return a response for a ping command.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<BOOLEAN> To set to return a response for a ping, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	0 (disable)

Command	:PORT:ICMPv6:ECHO:REPLY:MODE {OFF | THIS_PORT}
Query	:PORT:ICMPv6:ECHO:REPLY:MODE?
Response	{OFF | THIS_PORT}
Description	Sets whether to reply to an Echo Request message received at this port.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	{OFF | THIS_PORT} Select either of the following: OFF Not send THIS_PORT Reply to this port Echo Request
Default	OFF

Command	:PORT:ICMPv6:NS:REPLY:MODE {OFF | THIS_PORT | ALL}
Query	:PORT:ICMPv6:NS:REPLY:MODE?
Response	{OFF | THIS_PORT | ALL}
Description	Sets whether to reply to an NS (Neighbor Solicitation) message received at this port.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	{OFF | THIS_PORT | ALL} <p>Select one of the following:</p> <p>OFF Not send</p> <p>THIS_PORT Reply to This Port IPv6 addresses</p> <p>ALL* Reply to all IPv6 addresses</p> <p>*:When Neighbor Solicitation Reply is set to "Reply to all IPv6 Addresses", there may be an adverse impact on the network to be connected.</p>
Default	OFF

Command	:PORT:GFP:FCS <BOOLEAN>
Query	:PORT:GFP:FCS?
Response	<BOOLEAN>
Description	Sets in advance whether an FCS exists in the receiving GFP frame when not testing GFP Payload Header.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<BOOLEAN> <p>With a precondition that Payload FCS of the GFP frame is added, set {ON | 1} (ON or 1) when receives. Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.</p>
Default	1 (enable)

Section 6 Details of Device Messagess

Command	:PORT:GFP:CHECK:HEADer <BOOLEAN>
Query	:PORT:GFP:CHECK:HEADer?
Response	<BOOLEAN>
Description	<p>Sets whether to check the GFP Payload Header (at the receiving side).</p> <p>When not checking the payload header, tHEC and eHEC are not evaluated at reception. Therefore, a transmitted frame where the payload header is recognized as the payload information can be evaluated. In this event, it is necessary to set whether to add the payload FCS manually, since the PFI field is also ignored.</p>
Module	– MbE – GbE √ 2.5G/10G
Parameter	<p><BOOLEAN></p> <p>When ignoring a GFP Payload Header at receiving, set {OFF | 0} (OFF or 0). Otherwise, set {ON | 1} (ON or 1). 1 or 0 is returned as the response data for the query.</p>
Default	1 (enable)

Command	:PORT:GFP:SCRamble:ENABle <BOOLEAN>
Query	:PORT:GFP:SCRamble:ENABle?
Response	<BOOLEAN>
Description	Sets whether to enable/disable the GFP scrambling (at the receiving side).
Module	– MbE – GbE √ 2.5G/10G
Parameter	<p><BOOLEAN></p> <p>Set {ON | 1} (ON or 1) to enable GFP scrambling. Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.</p>
Default	1 (enable)

Command	:PORT:GFP:HEADer:SCRamble:ENABle <BOOLEAN>
Query	:PORT:GFP:HEADer:SCRamble:ENABle?
Response	<BOOLEAN>
Description	Sets whether to enable/disable the GFP Core Header scrambling (at the transmitting side). * Valid only for MU150101A module.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<BOOLEAN> Set {ON | 1} (ON or 1) to enable GFP Core Header scrambling. Set {OFF | 0} (OFF or 0) to disable GFP Core Header scrambling. 1 or 0 is returned as the response data for the query.
Default	1 (enable)

Command	:PORT:GFP:PAYLoad:SCRamble:ENABle <BOOLEAN>
Query	:PORT:GFP:PAYLoad:SCRamble:ENABle?
Response	<BOOLEAN>
Description	Sets whether to enable/disable the GFP Payload area scrambling (at the transmitting side). * Valid only for MU150101A module.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<BOOLEAN> Set {ON | 1} (ON or 1) to enable GFP payload area scrambling. Set {OFF | 0} (OFF or 0) to disable GFP payload area scrambling. 1 or 0 is returned as the response data for the query.
Default	1 (enable)

Section 6 Details of Device Messages

Command	:PORT:GFP:EXTLength <NR1>
Query	:PORT:GFP:EXTLength?
Response	<NR1>
Description	Sets the GFP extension header length. This command is necessary when the GFP extension header is other than NULL or Linear and the receiving side cannot recognize the header length.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<NR1> Set the GFP Extension Header length in byte units. The available setting range is between 2 and 58 bytes, since eHEC size is not included.
Default	2

Command	:PORT:GFP:DESCramble:ENABle <BOOLEAN>
Query	:PORT:GFP:DESCramble:ENABle?
Response	<BOOLEAN>
Description	Sets whether to enable/disable the GFP scrambling (at the transmitting side).
Module	– MbE – GbE √ 2.5G/10G
Parameter	<BOOLEAN> Set {ON | 1} (ON or 1) to enable GFP descrambling. Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	1 (enable)

Command	:PORT:GFP:HEADer:DESCramble:ENABle <BOOLEAN>
Query	:PORT:GFP:HEADer:DESCramble:ENABle?
Response	<BOOLEAN>
Description	Sets whether to enable/disable the GFP Core Header descrambling (at the receiving side). * Valid only for MU150101A module.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<BOOLEAN> Set {ON | 1} (ON or 1) to enable GFP Core Header descrambling. Set {OFF | 0} (OFF or 0) to disable GFP Core Header descrambling. 1 or 0 is returned as the response data for the query.
Default	1 (enable)

Command	:PORT:GFP:PAYLoad:DESCramble:ENABle <BOOLEAN>
Query	:PORT:GFP:PAYLoad:DESCramble:ENABle?
Response	<BOOLEAN>
Description	Sets whether to enable/disable the GFP Payload area descrambling (at the receiving side). * Valid only for MU150101A module.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<BOOLEAN> Set {ON | 1} (ON or 1) to enable GFP Payload area descrambling. Set {OFF | 0} (OFF or 0) to disable GFP Payload area descrambling. 1 or 0 is returned as the response data for the query.
Default	1 (enable)

Section 6 Details of Device Messagess

Command	:PORT:GFP:CPTime
Query	:PORT:GFP:CPTime?
Description	Sets the degree of redundancy in a GFP frame synchronization process. Sets the number of cHEC synchronization times required for the transition from PRESYNC condition to SYNC condition in GFP frame delineation algorithm (ITU-T G.7041 6.3.1).
Module	– MbE – GbE √ 2.5G/10G
Parameter	<NR1> Select from one to 16 inclusive.
Default	1

Command	:PORT:GFP:CRTime
Query	:PORT:GFP:CRTime?
Description	Sets the condition parameter to return from Client Signal Fail. With N as a set value, it regards as recovered by receiving CMF (Client Management Frame) to describe Client Signal Fail less than N factorial in N x 1000ms.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<NR1> Select from one to 16.
Default	3

Command	:PORT:LAPS:MFSsize
Query	:PORT:LAPS:MFSsize?
Description	Sets a value used for judging Oversize of the Ethernet accommodated in LAPS.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<NR1> Sets a value from 64 to 65280 (byte).
Default	1500

Command	:PORT:LAPS:FLENgth {L1BYTE | L2BYTE}
Query	:PORT:LAPS:FLENgth?
Response	{L1BYTE | L2BYTE}
Description	Sets the minimum flag length (between frames) in LAPS.
Module	– MbE – GbE √ 2.5G/10G
Parameter	{L1BYTE | L2BYTE}
	Select either of the following: L1BYTE 1 byte L2BYTE 2 bytes
Default	L1BYTE

Command	:PORT:LAPS:MRU:TX
Query	:PORT:LAPS:MRU:TX?
Response	<NR1>
Description	Sets MRU (maximum frame size) at the sending side.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<NR1>
	Sets a value from 12 to 65535 (byte).
Default	65535

Section 6 Details of Device Messagess

Command	:PORT:LAPS:RADaptation:ENABLE <BOOLEAN>
Query	:PORT:LAPS:RADaptation:ENABLE?
Response	<BOOLEAN>
Description	Sets whether to enable/disable the Rate Adaptation function for LAPS at the sending side.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<BOOLEAN> Set {ON | 1} (ON or 1) to enable the Rate Adaptation function for sending LAPS. Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	1 (enable)

Command	:PORT:LAPS:RADaptation:FByTe One of 4096, 8192, 16384, 32768, or 65536
Query	:PORT:LAPS:RADaptation:FByTe?
Response	One of 4096, 8192, 16384, 32768 or 65536.
Description	Sets an interval for which an Adaptation byte is added. The Adaptation byte will be added in every transmission of LAPS frame for the specified bytes, while the Rate Adaptation function is enabled.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<NR1> Set to create timing to add Rate Adaptation in every what-byte of the LAPS frames to send. 4096, 8192, 16384, 32768 and 65536 are valid set values.
Default	4096

Command	:PORT:LAPS:RADaptation:BYTE 16 to 1024 step 16
Query	:PORT:LAPS:RADaptation:BYTE?
Response	16 to 1024 step 16
Description	Sets the bytes to be added in transmission when Rate Adaptation function is enabled.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<NR1> Set the escape bytes (0x0ddd) to be inserted in each Rate Adaptation addition.
Default	16

Command	:PORT:LEX:NEGotiation:REStart
Description	Restarts LEX negotiation.
Module	– MbE – GbE √ 2.5G/10G

Command	:PORT:LEX:NEGotiation:ABORt
Description	Aborts a LEX negotiation process currently being carried out.
Module	– MbE – GbE √ 2.5G/10G

Query	:PORT:LEX:NEGotiation:STATe?
Response	{OFF | DOWN | UP | RESTART}
Description	Queries the state of a link established by LCP or PPP-LEX.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<state> One of the following conditions is returned: LOS Loss Of Signal condition LOF Loss Of Frame condition AIS Alarm Indication Signal condition LEX_DOWN Negotiation failed in LEX (*) LEX_RESTART Negotiation being processed in LEX. LINK_UP A link is set up (*) *: For LEX, when the condition of LCP and PPP-LEX is either UP or OFF, it becomes LINK_UP. When either condition is DOWN, it becomes LEX_DOWN.
Default	OFF

Section 6 Details of Device Messagess

Command	:PORT:LEX:FLAGs <HEX>
Query	:PORT:LEX:FLAGs?
Response	<HEX>
Description	Sets a Flag field of the LEX header. This setting is applied to the LEX frame that MD1230B actively sends by a Protocol support function.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<HEX> Set a Flag field value in the 1 byte <HEX> format. Only either value of #H20 or #H00 is valid.
Default	#H20

Command	:PORT:LEX:FLENgth {L1BYTE | L2BYTE}
Query	:PORT:LEX:FLENgth?
Response	{L1BYTE | L2BYTE}
Description	Sets a minimum flag length (the shortest flag length between frames) for the LEX frame.
Module	– MbE – GbE √ 2.5G/10G
Parameter	{L1BYTE | L2BYTE} Select either of the following: L1BYTE 1 byte L2BYTE 2 bytes
Default	L1BYTE

Command	:PORT:LEX:DESCramble:ENABle <BOOLEAN>
Query	:PORT:LEX:DESCramble:ENABle?
Response	<BOOLEAN>
Description	Sets whether to enable/disable scrambling of LEX transmission.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<BOOLEAN> Set {ON | 1} (ON or 1) to enable the descrambling. Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	1

Command	:PORT:LEX:SCRamble:ENABle <BOOLEAN>
Query	:PORT:LEX:SCRamble:ENABle?
Response	<BOOLEAN>
Description	Sets whether to enable/disable scrambling of LEX reception.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<BOOLEAN> Set {ON | 1} (ON or 1) to enable the scrambling. Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	1

Command	:PORT:LEX:NEGotiation:STARtup <BOOLEAN>
Query	:PORT:LEX:NEGotiation:STARtup?
Response	<BOOLEAN>
Description	Sets whether to report a MAC address of the local port in PPP-LEX.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<BOOLEAN> When the MD1230B reports a MAC address as a LAN Extension Interface at the PPP-LEX negotiation, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	1

Section 6 Details of Device Messagess

Command	:PORT:LEX:NEGotiation:ENABle <BOOLEAN>
Query	:PORT:LEX:NEGotiation:ENABle?
Response	<BOOLEAN>
Description	Sets whether to enable/disable the LCP/PPP-LEX negotiation function.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<BOOLEAN> Set {ON | 1} (ON or 1) to enable the LCP/PPP-LEX negotiation. Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	1

Command	:PORT:LEX:NEGotiation:MRU:TX
Query	:PORT:LEX:NEGotiation:MRU:TX?
Description	Sets MRU (the maximum frame size) at the MD1230B side.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 12 to 65535 (byte).
Default	1500

Command	:PORT:LEX:NEGotiation:RETRy:COUNT
Query	:PORT:LEX:NEGotiation:RETRy:COUNT?
Description	Sets the number of times to retry a configuration request/termination request at LEX negotiation.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<NR1> Set a value from one to ten (times).
Default	3

Command	:PORT:LEX:NEGotiation:RETRy:TIMEout
Query	:PORT:LEX:NEGotiation:RETRy:TIMEout?
Description	Sets an interval to retry a configuration request/termination request at LEX negotiation.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<NR1> Set a value from one to 180 (s).
Default	3
Query	:PORT:LEX:NEGotiation:MNUMber:TX?
Response	<NR1>
Description	Queries a magic number value (4 octets) transmitted at the LCP negotiation.
Module	– MbE – GbE √ 2.5G/10G
Default	1
Query	:PORT:LEX:NEGotiation:MNUMber:RX?
Response	<NR1>
Description	Queries a magic number value (4 octets) received at the LCP negotiation.
Module	– MbE – GbE √ 2.5G/10G
Default	1
Query	:PORT:LEX:NEGotiation:MRU:RX?
Description	Queries MRU (the maximum frame size) of the DUT side received at the LCP negotiation.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<NR1> Returns –9999 when no data exists.
Default	1500

Section 6 Details of Device Messagess

Command	:PORT:PROTOcol:IGMP:ENABLE <BOOLEAN>
Query	:PORT:PROTOcol:IGMP:ENABLE?
Response	<BOOLEAN>
Description	<p>Sets whether to enable/disable the IGMP protocol emulation function.</p> <p>This command sets whether to enable/disable the IGMP function. Use another command (:PROTOcol:IGMP:ENABLE) to actually execute the IGMP function.</p>
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p><BOOLEAN></p> <p>Set {ON | 1} (ON or 1) to enable the IGMP function. Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.</p>
Default	0 (disable)

Command	:PORT:PROTOcol:IGAP:ENABLE <BOOLEAN>
Query	:PORT:PROTOcol:IGAP:ENABLE?
Response	<BOOLEAN>
Description	<p>Sets whether to enable/disable the IGAP protocol emulation function.</p> <p>This command sets whether to enable/disable the IGAP function. Use another command (:PROTOcol:IGAP:ENABLE) to actually execute the IGAP function.</p> <p>* The IGAP option is required to use the IGAP function.</p>
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<p><BOOLEAN></p> <p>Set {ON | 1} (ON or 1) to enable the IGAP function. Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.</p>
Default	0 (disable)

Command	:PORT:PROTOCOL:MLD:ENABLE <BOOLEAN>
Query	:PORT:PROTOCOL:MLD:ENABLE?
Response	<BOOLEAN>
Description	<p>Sets whether to enable/disable the MLD protocol emulation function.</p> <p>This command sets whether to enable/disable the MLD function. Use another command (:PROTOCOL:MLD:ENABLE) to actually execute the MLD function.</p> <p>* The IPv6 option is required to use the MLD function.</p>
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<p><BOOLEAN></p> <p>Set {ON | 1} (ON or 1) to enable the MLD function. Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.</p>
Default	0 (disable)

Command	:PORT:PROTOCOL:MLDA:ENABLE <BOOLEAN>
Query	:PORT:PROTOCOL:MLDA:ENABLE?
Response	<BOOLEAN>
Description	<p>Sets whether to enable/disable the MLDA protocol emulation function.</p> <p>This command sets whether to enable/disable the MLDA function. Use another command (:PROTOCOL:MLDA:ENABLE) to actually execute the MLDA function.</p> <p>* The IPv6 option and MLDA option are required to use the MLDA function.</p>
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<p><BOOLEAN></p> <p>Set {ON | 1} (ON or 1) to enable the MLDA function. Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.</p>
Default	0 (disable)

Section 6 Details of Device Messagess

Command	:PORT:PROTOcol:PIM:ENABLE <BOOLEAN>
Query	:PORT:PROTOcol:PIM:ENABLE?
Response	<BOOLEAN>
Description	<p>Sets whether to enable/disable the PIM-SMv2 protocol emulation function.</p> <p>This command sets whether to enable/disable the PIM-SMv2 function. Use another command (:PROTOcol:PIM:ENABLE) to actually execute the PIM-SMv2 function.</p> <p>* The PIM-SMv2 option is required to use the PIM-SMv2 function.</p>
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<p><BOOLEAN></p> <p>Set {ON | 1} (ON or 1) to enable the PIM-SMv2 function. Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.</p>
Default	0 (disable)

Command	:PORT:PROTOcol:OSPF:ENABLE <BOOLEAN>
Query	:PORT:PROTOcol:OSPF:ENABLE?
Response	<BOOLEAN>
Description	<p>Sets whether to enable/disable the OSPF protocol emulation function.</p> <p>This command sets whether to enable/disable the OSPF function. Use another command (:PROTOcol:OSPF:ENABLE) to actually execute the OSPF function.</p> <p>* The OSPF option is required to use the OSPF function.</p>
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<p><BOOLEAN></p> <p>Set {ON | 1} (ON or 1) to enable the OSPF function. Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.</p>
Default	0 (disable)

Command	:PORT:PROTOCOL:OSPF3:ENABLE <BOOLEAN>
Query	:PORT:PROTOCOL:OSPF3:ENABLE?
Response	<BOOLEAN>
Description	<p>Sets whether to enable/disable the OSPFv3 protocol emulation function.</p> <p>This command sets whether to enable/disable the OSPFv3 function. Use another command (:PROTOCOL:OSPF3:ENABLE) to actually execute the OSPFv3 function.</p> <p>* The IPv6 option and OSPFv3 option are required to use the OSPFv3 function.</p>
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<p><BOOLEAN></p> <p>Set {ON | 1} (ON or 1) to enable the OSPFv3 function. Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.</p>
Default	0 (disable)

Command	:PORT:PROTOCOL:BGP4:ENABLE <BOOLEAN>
Query	:PORT:PROTOCOL:BGP4:ENABLE?
Response	<BOOLEAN>
Description	<p>Sets whether to enable/disable the BGP4 protocol emulation function.</p> <p>This command sets whether to enable/disable the BGP4 function. Use another command (:PROTOCOL:BGP4:ENABLE) to actually execute the BGP4 function.</p>
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p><BOOLEAN></p> <p>Set {ON | 1} (ON or 1) to enable the BGP4 function. Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.</p>
Default	0 (disable)

Section 6 Details of Device Messagess

Command	:PORT:PROTOCOL:BGPPlus:ENABLE <BOOLEAN>
Query	:PORT:PROTOCOL:BGPPlus:ENABLE?
Response	<BOOLEAN>
Description	<p>Sets whether to enable/disable the BGP4+ protocol emulation function.</p> <p>This command sets whether to enable/disable the BGP4+ function. Use another command (:PROTOCOL:BGPPlus:ENABLE) to actually execute the BGP4+ function.</p> <p>* The IPv6 option and BGP4+ option are required to use the BGP4+ function.</p>
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<p><BOOLEAN></p> <p>Set {ON | 1} (ON or 1) to enable the BGP4+ function. Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.</p>
Default	0 (disable)

Command	:PORT:PROTOCOL:LDP:ENABLE <BOOLEAN>
Query	:PORT:PROTOCOL:LDP:ENABLE?
Response	<BOOLEAN>
Description	<p>Sets whether to enable/disable the MPLS (LDP/CR-LDP) protocol emulation function.</p> <p>This command sets whether to enable/disable the MPLS (LDP/CR-LDP) function. Use another command (:PROTOCOL:LDP:ENABLE) to actually execute the MPLS (LDP/CR-LDP) function.</p> <p>* The MPLS (LDP/CR-LDP) option is required to use the MPLS (LDP/CR-LDP) function.</p>
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<p><BOOLEAN></p> <p>Set {ON | 1} (ON or 1) to enable the MPLS (LDP/CR-LDP) function. Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.</p>
Default	0 (disable)

Command	:PORT:PROTOCOL:RSVP:ENABLE <BOOLEAN>
Query	:PORT:PROTOCOL:RSVP:ENABLE?
Response	<BOOLEAN>
Description	<p>Sets whether to enable/disable the MPLS (RSVP) protocol emulation function.</p> <p>This command sets whether to enable/disable the MPLS (RSVP) function. Use another command (:PROTOCOL:RSVP:ENABLE) to actually execute the MPLS (RSVP) function.</p> <p>* The MPLS (RSVP) option is required to use the MPLS (RSVP) function.</p>
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<p><BOOLEAN></p> <p>Set {ON | 1} (ON or 1) to enable the MPLS (RSVP) function. Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.</p>
Default	0 (disable)
Command	:PORT:POE:ENABLE <BOOLEAN>
Query	:PORT:POE:ENABLE?
Response	<BOOLEAN>
Description	Sets whether or not to perform PoE measurement
Module	– MbE √ GbE – 2.5G/10G
Parameter	<p><BOOLEAN></p> <p>Performs PoE measurement at On or 1; does not perform PoE measurement at Off or 0</p>
Command	:PORT:POE:CLASS <NR1>
Query	:PORT:POE:CLASS?
Response	<NR1>
Description	Selects Class to emulate at PoE measurement
Module	– MbE √ GbE – 2.5G/10G
Parameter	<p><NR1></p> <p>Specifies Class value (0 to 4)</p>

Section 6 Details of Device Messagess

Query	:PORT:POE:LEVel?
Response	{DISABLED | OFF | UNDER | NORMAL}
Description	Returns PoE measurement result (power supply status)
Module	– MbE √ GbE – 2.5G/10G
Parameter	{DISABLED | OFF | UNDER | NORMAL}
	OFF: 0-30V
	UNDER: 30-42V
	NORMAL: 42V-
	DISABLED: Measurement result disabled

Filter pattern setting commands (FILTer)

The commands related to pattern settings used by the following functions are explained below.

- Capture filter
- Capture trigger
- User-defined counter

Command	:FILTer:COMBination {AND | OR}
Query	:FILTer:COMBination?
Response	{AND | OR}
Description	Sets AND/OR between filter parameters. This setting is shared among the capture filter, the capture trigger and the user-defined counter.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	{AND | OR} Select either of the following: AND Filters data on the AND condition. OR Filters data on the OR condition.
Default	AND

Command	:FILTer:ERRor:TYPE <errortype>														
Query	:FILTer:ERRor:TYPE?														
Response	<errortype>														
Description	Sets the type of error that is a target of filter trigger. This setting is shared among the capture filter, the capture trigger and the user-defined counter.														
Module	√ MbE √ GbE √ 2.5G/10G														
Parameter	<errortype> Select the error type from the followings: <table> <tr> <td>GOOD</td><td>Good Frame</td></tr> <tr> <td>FCS</td><td>FCS Error</td></tr> <tr> <td>UNDERSIZE</td><td>Undersize</td></tr> <tr> <td>FRAGMENTS</td><td>Fragments</td></tr> <tr> <td>OVERSIZE</td><td>Oversize</td></tr> <tr> <td>OVER_FCS</td><td>Oversize and FCS Error</td></tr> <tr> <td>DRIBBLE</td><td>Dribble Error(*4)</td></tr> </table>	GOOD	Good Frame	FCS	FCS Error	UNDERSIZE	Undersize	FRAGMENTS	Fragments	OVERSIZE	Oversize	OVER_FCS	Oversize and FCS Error	DRIBBLE	Dribble Error(*4)
GOOD	Good Frame														
FCS	FCS Error														
UNDERSIZE	Undersize														
FRAGMENTS	Fragments														
OVERSIZE	Oversize														
OVER_FCS	Oversize and FCS Error														
DRIBBLE	Dribble Error(*4)														

Section 6 Details of Device Messagess

ALIGNMENT	Alignment Error(*4)
CHEC_CORR	Correcatble cHEC Error (*1)
THEC	Uncorrectable tHEC Error (*1)
THEC_CORR	Correctable tHEC Error (*1)
EHEC	eHEC Error (*1)
ETH_FCS	Ethernet FCS Error (*1) (*2)
ETH_FRAG	Ethernet Fragment (*1) (*2)
ETH_UNDER	Ethernet Undersize (*1) (*2)
ETH_OVER	Ethernet Oversize (*1) (*2)
ETH_OVER_FCS	Ethernet Oversize and FCS error (*1) (*2)
IP_CHECKSUM	IP header checksum error
TCP_CHECKSUM	TCP checksum error
UDP_CHECKSUM	UDP checksum error
SEQUENCE	Sequence Error (*3)
PRBS	PRBS Frame Error (*3)

*1: Available only in 2.5G/10G module and the MU120103B/04B-01/MU150101A-01 option is required.

*2: Indicates an error event to the Ethernet frame accommodated in GFP/LAPS/LEX.

*3: For MU120101A, this command is disabled. For 10GbE module, the MD1230B-11, MP1590B-11 option of Packet BER measurement is required.

*4: This error type is available for the MU120101A/11A/21A/22A (RJ-45)/31A.

Default GOOD (Good Frame)

Command	:FILTer:ETHernet:DA:MASK <MAC_ADDRESS>
Query	:FILTer:ETHernet:DA:MASK?
Response	<MAC_ADDRESS>
Description	<p>Sets a mask pattern of the destination MAC address.</p> <p>This setting is shared among the capture filter, the capture trigger and the user-defined counter.</p> <p>In 2.5G/10G module, it is valid only when Mapping is one of GFP, LEX or LAPS.</p> <p>* In case of MU120121A/22A module, uses :FILTer:PATtern*:*** commnad. Because :FILTer:ETHernet:DA:MASK command is left only to keep the version compatibility. (Since version 5.0)</p>
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p><MAC_ADDRESS></p> <p>Set a mask pattern value of the destination MAC address in the following 6-octet <HEX> format.</p> <p>Example: 00-00-00-00-FF-00 is expressed as #H00000000FF00.</p>
Default	#H000000000000 (00-00-00-00-00-00)
Command	:FILTer:ETHernet:DA:VALue <MAC_ADDRESS>
Query	:FILTer:ETHernet:DA:VALue?
Response	<MAC_ADDRESS>
Description	<p>Sets a pattern of the destination MAC address.</p> <p>This setting is shared among the capture filter, the capture trigger and the user-defined counter.</p> <p>In 2.5G/10G module, it is valid only when Mapping is one of GFP, LEX or LAPS.</p> <p>* In case of MU120121A/22A module, uses :FILTer:PATtern*:*** commnad. Because :FILTer:ETHernet:DA:VALue command is left only to keep the version compatibility. (Since version 5.0)</p>
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p><MAC_ADDRESS></p> <p>Set a pattern value of the destination MAC address in the following 6-octet <HEX> format.</p> <p>Example: 01-02-03-04-05-06 is expressed as #H010203040506.</p>
Default	#H000000000000 (00-00-00-00-00-00)

Section 6 Details of Device Messagess

Command	:FILTer:ETHernet:SA:MASK <MAC_ADDRESS>
Query	:FILTer:ETHernet:SA:MASK?
Response	<MAC_ADDRESS>
Description	<p>Sets a mask pattern of the source MAC address.</p> <p>This setting is shared among the capture filter, the capture trigger and the user-defined counter.</p> <p>In 2.5G/10G module, it is valid only when Mapping is one of GFP, LEX or LAPS.</p> <p>* In case of MU120121A/22A module, uses :FILTer:PATtern*:*** commnad. Because :FILTer:ETHernet:SA:MASK command is left only to keep the version compatibility. (Since version 5.0)</p>
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p><MAC_ADDRESS></p> <p>Set a mask pattern value of the source MAC address in the following 6-octet <HEX> format.</p> <p>Example: 00-00-00-00-FF-00 is expressed as #H00000000FF00.</p>
Default	#H000000000000 (00-00-00-00-00-00)

Command	:FILTer:ETHernet:SA:VALue <MAC_ADDRESS>
Query	:FILTer:ETHernet:SA:VALue?
Response	<MAC_ADDRESS>
Description	<p>Sets a pattern of the source MAC address.</p> <p>This setting is shared among the capture filter, the capture trigger and the user-defined counter.</p> <p>In 2.5G/10G module, it is valid only when Mapping is one of GFP, LEX or LAPS.</p> <p>* In case of MU120121A/22A module, uses :FILTer:PATtern*:*** commnad. Because : :FILTer:ETHernet:SA:VALue command is left only to keep the version compatibility. (Since version 5.0)</p>
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p><MAC_ADDRESS></p> <p>Set a pattern value of the source MAC address in the following 6-octet <HEX> format.</p> <p>Example: 01-02-03-04-05-06 is expressed as #H010203040506.</p>
Default	#H000000000000 (00-00-00-00-00-00)

Command	:FILTer:IP:DA:VALue <HEX>
Query	:FILTer:IP:DA:VALue?
Response	<HEX>
Description	<p>Sets a pattern of the destination IP address.</p> <p>Set an IPv4 or IPv6 address. The IP address version is set by the IP address type setting command. Also, this setting is common to capture filter, capture trigger and user-defined counter.</p> <p>Valid only when Mapping is one of PPC, Cisco HDLC or MAPOS.</p>
Module	– MbE – GbE √ 2.5G/10G
Parameter	<p><HEX></p> <p>Set the IPv4 address value in the following 4-octet <HEX> format.</p> <p>Example: 192.168.1.3 is expressed as #HC0A80103.</p> <p>Set the IPv6 address value in the following 16-octet <HEX> format.</p> <p>Example: 1:2:3:4:5:6:7:8 is expressed as #H00010002000300040005000600070008.</p>
Default	#H00000000 (0.0.0.0), #H00000000000000000000000000000000 (::)

Section 6 Details of Device Messagess

Command	:FILTer:IP:DA:MASK <HEX>
Query	:FILTer:IP:DA:MASK?
Response	<HEX>
Description	<p>Sets a mask pattern of the destination IP address.</p> <p>The IP address version is set by the IP address type setting command. Also, this setting is common to capture filter, capture trigger and user-defined counter.</p> <p>Valid only when Mapping is one of PPC, Cisco HDLC or MAPOS.</p>
Module	– MbE – GbE √ 2.5G/10G
Parameter	<p><HEX></p> <p>Set the IPv4 address value in the following 4-octet <HEX> format.</p> <p>Example: 0.0.255.0 is expressed as #0000FF00.</p> <p>Set the IPv6 address value in the following 16-octet <HEX> format.</p> <p>Example: ::FFFF:0 is expressed as #H000000000000000000000000FFFF0000.</p>
Default	#H00000000 (0.0.0.0), #H00000000000000000000000000000000 (::)

Command	:FILTer:IP:SA:VALue <HEX>
Query	:FILTer:IP:SA:VALue?
Response	<HEX>
Description	<p>Sets a pattern of the source IP address.</p> <p>Set an IPv4 or IPv6 address. The IP address version is set by the IP address type setting command. Also, this setting is common to capture filter, capture trigger and user-defined counter.</p> <p>Valid only when Mapping is one of PPC, Cisco HDLC or MAPOS.</p>
Module	– MbE – GbE √ 2.5G/10G
Parameter	<p><HEX></p> <p>Set the IPv4 address value in the following 4-octet <HEX> format.</p> <p>Example: 192.168.1.3 is expressed as #HC0A80103.</p> <p>Set the IPv6 address value in the following 16-octet <HEX> format.</p> <p>Example: 1:2:3:4:5:6:7:8 is expressed as #H00010002000300040005000600070008.</p>
Default	#H00000000 (0.0.0.0), #H00000000000000000000000000000000 (::)

Command	:FILTer:IP:SA:MASK <HEX>
Query	:FILTer:IP:SA:MASK?
Response	<HEX>
Description	<p>Sets a mask pattern of the source IP address.</p> <p>The IP address version is set by the IP address type setting command. Also, this setting is common to capture filter, capture trigger and user-defined counter.</p> <p>Valid only when Mapping is one of PPC, Cisco HDLC or MAPOS.</p>
Module	– MbE – GbE √ 2.5G/10G
Parameter	<p><HEX></p> <p>Set the IPv4 address value in the following 4-octet <HEX> format.</p> <p>Example: 0.0.255.0 is expressed as #H0000FF00.</p> <p>Set the IPv6 address value in the following 16-octet <HEX> format.</p> <p>Example: ::FFFF:0 is expressed as #H000000000000000000000000FFFF0000.</p>
Default	#H00000000 (0.0.0.0), #H00000000000000000000000000000000 (::)

Command	:FILTer:PATtern1:BITMask <BOOLEAN>
Query	:FILTer:PATtern1:BITMask?
Response	<BOOLEAN>
Description	<p>Specifies whether or not to set pattern 1 as bit mask.</p> <p>This setting is shared among the capture filter, the capture trigger and the user-defined counter.</p> <p>* This function is only used by the MU120121A/22A/31A/32A.</p> <p>* When this setting is changed, the pattern and mask settings are initialized.</p>
Module	– MbE √ GbE – 2.5G/10G
Parameter	When specifying the filter pattern as a bit mask, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the query response.
Default	0 (Off)

Section 6 Details of Device Messagess

Command	:FILTer:PATTerN1:MASK <HEX>
Query	:FILTer:PATTerN1:MASK?
Response	<HEX>
Description	<p>Sets pattern 1 mask.</p> <p>This setting is shared among the capture filter, the capture trigger and the user-defined counter.</p>
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p><HEX></p> <p>Sets mask pattern. Parts where the mask pattern is 1 are treated as Don't Care and are evaluation targets.</p> <p>When :FILTer:PATTerN1:BITMask is OFF, mask setting is in byte units. Set as a 16 byte* 00 or FF value in HEX format.</p> <p>* The pattern is set as 4 bytes not 16 bytes for the MU120101A/02A/03A/03B/04A/04B/05A/06A/19A/20A.</p> <p>Example:</p> <p>NG #H12345678000000000000000000000000</p> <p>NG #H0F00000000000000000000000000000</p> <p>OK #H00FFFF00000000000000000000000000</p> <p>When :FILTer:PATTerN1:BITMask is ON, the 16-bit mask pattern is set in bit units.</p> <p>Example:</p> <p>#H13FF (0001 0011 1111 1111)</p> <p>* This setting is initialized when the FILTer:PATTerN1:BITMask setting is changed.</p>
Default	#H00000000000000000000000000000000

Command	:FILTer:PATTErn1:OFFSet:BASE <position>
Query	:FILTer:PATTErn1:OFFSet:BASE?
Response	<position>
Description	Sets the reference position of offset for pattern 1. This setting is common to capture filter, capture trigger and user-defined counter.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<position> For the keywords that can be specified as Base Position, see Appendix G Base Position.
Default	FRAME

Command	:FILTer:PATTErn1:OFFSet <NR1>
Query	:FILTer:PATTErn1:OFFSet?
Response	<NR1>
Description	Sets an offset position of the user-defined pattern 1. This setting is shared among the capture filter, the capture trigger and the user-defined counter.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 65535 (byte).
Default	0

Section 6 Details of Device Messagess

Command	:FILTer:PATTerN1:VALue <HEX>
Query	:FILTer:PATTerN1:VALue?
Response	<HEX>
Description	Sets pattern 1 value. This setting is shared among the capture filter, the capture trigger and the user-defined counter.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<HEX> When :FILTer:PATTerN1:BITMask is OFF, the 16-byte (*) pattern is set in <HEX> format; when it is ON, the 2-byte pattern (16 bits) is set in <HEX> format. * The pattern is set as 4 bytes not 16 bytes for the MU120101A/02A/03A/03B/04A/04B/05A/06A/19A/20A. * This setting is initialized when the FILTer:PATTerN1:BITMask setting is changed.
Default	#H00000000000000000000000000000000

Command	:FILTer:PATTerN2:BITMask <BOOLEAN>
Query	:FILTer:PATTerN2:BITMask?
Response	<BOOLEAN>
Description	Specifies whether or not to set pattern 2 as bit mask. For details, refer to :FILTer:PATTerN1:OFFSet:BASE.

Command	:FILTer:PATTerN2:MASK <HEX>
Query	:FILTer:PATTerN2:MASK?
Response	<HEX>
Description	Sets a mask of the user-defined pattern 2. For details, refer to :FILTer:PATTerN1:MASK.

Command	:FILTer:PATTErn2:OFFSet:BASE <position>
Query	:FILTer:PATTErn2:OFFSet:BASE?
Response	<position>
Description	<p>Sets the reference position of offset for pattern 2.</p> <p>This setting is common to capture filter, capture trigger and user-defined counter. For details, refer to :FILTer:PATTErn1:OFFSet:BASE.</p>
Command	:FILTer:PATTErn2:OFFSet <NR1>
Query	:FILTer:PATTErn2:OFFSet?
Response	<NR1>
Description	<p>Sets an offset position of the user-defined pattern 2.</p> <p>This setting is shared among the capture filter, the capture trigger and the user-defined counter.</p>
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p><NR1></p> <p>Set a value from 0 to 65535 (byte).</p>
Default	0
Command	:FILTer:PATTErn2:VALue <HEX>
Query	:FILTer:PATTErn2:VALue?
Response	<HEX>
Description	<p>Sets a value of the user-defined pattern 2.</p> <p>For details, refer to :FILTer:PATTErn1:VALue.</p>

Section 6 Details of Device Messages

Command	:FILTer:PATTerN3:BITMask <BOOLEAN>
Query	:FILTer:PATTerN3:BITMask?
Response	<BOOLEAN>
Description	Specifies whether or not to set pattern 3 as bit mask. For details, refer to :FILTer:PATTerN1:BITMask.

Command	:FILTer:PATTerN3:MASK <HEX>
Query	:FILTer:PATTerN3:MASK?
Response	<HEX>
Description	Sets a mask of the user-defined pattern 3. For details, refer to :FILTer:PATTerN1:MASK.

Command	:FILTer:PATTerN3:OFFSet <NR1>
Query	:FILTer:PATTerN3:OFFSet?
Response	<NR1>
Description	Sets an offset position of the user-defined pattern 3. This setting is shared among the capture filter, the capture trigger and the user-defined counter. * This command is available for only the MU120121A/22A module.
Module	– MbE √ GbE – 2.5G/10G
Parameter	<NR1> Set a value from 0 to 65535 (byte).
Default	0

Command	:FILTer:PATTerN3:OFFSet:BASE <position>
Query	:FILTer:PATTerN3:OFFSet:BASE?
Response	<position>
Description	Sets the reference position of offset for pattern 3. For details, refer to :FILTer:PATTerN1:OFFSet:BASE.

Command	:FILTer:PATTErn3:VALue <HEX>
Query	:FILTer:PATTErn3:VALue?
Response	<HEX>
Description	Sets a value of the user-defined pattern 3. For details, refer to :FILTer:PATTErn1:VALue.
Command	:FILTer:PATTErn4:BITMask <BOOLEAN>
Query	:FILTer:PATTErn4:BITMask?
Response	<BOOLEAN>
Description	Specifies whether or not to set pattern 4 as bit mask. For details, refer to :FILTer:PATTErn1:BITMask.
Command	:FILTer:PATTErn4:MASK <HEX>
Query	:FILTer:PATTErn4:MASK?
Response	<HEX>
Description	Sets a mask of the user-defined pattern 4. For details, refer to :FILTer:PATTErn1:MASK. This setting is shared among the capture filter, the capture trigger and the user-defined counter.
Command	:FILTer:PATTErn4:OFFSet <NR1>
Query	:FILTer:PATTErn4:OFFSet?
Response	<NR1>
Description	Sets an offset position of the user-defined pattern 4. This setting is shared among the capture filter, the capture trigger and the user-defined counter.
Module	– MbE √ GbE – 2.5G/10G
Parameter	<NR1> Set a value from 0 to 65535 (byte).
Default	0

Section 6 Details of Device Messages

Command	:FILTer:PATTErn4:OFFSet:BASE <position>
Query	:FILTer:PATTErn4:OFFSet:BASE?
Response	<position>
Description	Sets the reference position of offset for pattern 4. For details, refer to :FILTer:PATTErn1:OFFSet:BASE.

Command	:FILTer:PATTErn4:VALue <HEX>
Query	:FILTer:PATTErn4:VALue?
Response	<HEX>
Description	Sets a value of the user-defined pattern 4. For details, refer to :FILTer:PATTErn1:VALue.

Port group setting commands (GENTry)

The commands related to the port group function are explained below.

Command	:GENTry:ADD
Description	Adds a new port group.
Module	√ MbE √ GbE √ 2.5G/10G

Command	:GENTry:DELEte "GROUP<group id>"
Description	Deletes a port group.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<group id> The number for the port group to be deleted. Example: "GROUP1"

Command	:GENTry:ID "GROUP<group id>"
Query	:GENTry:ID?
Response	"GROUP<group id>"
Description	Sets a port group to be operated.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<group id> The number for the port group to be operated. Example: "GROUP1"
Default	""

Query	:GENTry:NGRoups?
Response	<NR1>
Description	Queries the number of port groups that are registered.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> A value ranging from 0 to 8 is returned.

Section 6 Details of Device Messagess

Command	:GENTry:GROup:PADD "<port>"
Description	Adds a port to a port group.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p><port></p> <p>Specify the location of the port to be added in the following format:</p> <p>"UNIT<unit id>:<module id>:<port id>"</p> <p><unit id></p> <p>A value of the order in which the application connects to the unit, which specifies the unit that the port belongs to.</p> <p><module id></p> <p>The number of a slot into which the module is inserted, which specifies the module that the port belongs to.</p> <p><port id></p> <p>The physical location number of the port located on the module, which specifies the port location.</p> <p>Example: "UNIT1:1:1"</p>

Command	:GENTry:GROup:PDElete "<port>"
Description	Deletes a port in a port group.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p><port></p> <p>Specify the location of the port to be deleted in the following format:</p> <p>"UNIT<unit id>:<module id>:<port id>"</p> <p><unit id></p> <p>A value of the order in which the application connects to the unit, which specifies the unit that the port belongs to.</p> <p><module id></p> <p>The number of a slot into which the module is inserted, which specifies the module that the port belongs to.</p> <p><port id></p> <p>The physical location number of the port located on the module, which specifies the port location.</p> <p>Example:"UNIT1:1:1"</p>

Command	:GENTry:GROup:CAPTure:STARt
Description	Starts the capture on all the ports registered in the group.
Module	√ MbE √ GbE √ 2.5G/10G
Command	:GENTry:GROup:CAPTure:STOP
Description	Stops the capture on all the ports registered in the group.
Module	√ MbE √ GbE √ 2.5G/10G
Command	:GENTry:GROup:COUNter:STOP
Description	Stops a counter measurement on all the ports registered in the group.
Module	√ MbE √ GbE √ 2.5G/10G
Command	:GENTry:GROup:LATency:STARt
Description	Starts a latency measurement on all the ports registered in the group.
Module	√MbE √ GbE √ 2.5G/10G
Command	:GENTry:GROup:LATency:STOP
Description	Stops a latency measurement on all the ports registered in the group.
Module	√ MbE √ GbE √ 2.5G/10G
Command	:GENTry:GROup:TSTReam:STARt
Description	Starts the stream transmission on all the ports registered in the group.
Module	√ MbE √ GbE √ 2.5G/10G
Command	:GENTry:GROup:TSTReam:STOP
Description	Stops the stream transmission on all the ports registered in the group.
Module	√ MbE √ GbE √ 2.5G/10G

Section 6 Details of Device Messagess

Command	:GENTry:GROup:COUNter:STARt
Description	Starts a counter measurement on all the ports registered in the group.
Module	√ MbE √ GbE √ 2.5G/10G

Query	:GENTry:MEMBer?
Response	<number of port>[,<port>]...
Description	Returns list of ports registered in group
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<number of port>[,<port>]... <number of port> is the number of ports registered in group. <port> Specify the location of the port to be added in the following format: "UNIT<unit id>:<module id>:<port id>" <unit id> A value of the order in which the application connects to the unit, which specifies the unit that the port belongs to. <module id> The number of a slot into which the module is inserted, which specifies the module that the port belongs to. <port id> The physical location number of the port located on the module, which specifies the port location. * When there is no relevant port, such as when no port is registered in group, <number of port> is 0.

Query	:GENTry:GROup:COUNter:DATA? {CURRENT | ACCUMULATED},<number of item>,<item>[,<item>]...
Response	<elapsed time>,<number of data>[,<data>]...
Description	Obtains the measurement data of counters in port units.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p>{CURRENT | ACCUMULATED},<number of item>,<item>[,<item>]...</p> <p>Specify CURRENT when the current value of the counter is obtained and ACCUMULATED when the accumulated value is obtained.</p> <p>Specify the value for the type of counter to be obtained at <number of item> in the range of 1 to 100.</p> <p>Specify the ID of the counter to be obtained in <item>. Refer to the "Counter IDs" for number assignment.</p> <p><elapsed time>,<number of data>[,<data>]...</p> <p><elapsed time></p> <p>Returns elapsed time of counter measurement. A value from 0 to 315,360,000 (seconds) is returned in the <NR1> format.</p> <p>* If multiple ports are registered in a group, the elapsed time for the port that has the smallest port ID is returned.</p> <p><number of data></p> <p>Then returns value of continuous counter data</p> <p><data></p> <p>Value of counter specified by command argument <item>. Returns sequence for specified item. For a normal counter, returns one value for the specified item, but when flow counter is specified in <item>, returns value of <item>×<number of flow id>. If counter value corresponds to specified series of <item>, returns value counter for next port registered in group. Return repeated only for number of ports in group. Output port sequence confirmed by :GENTry:MEMBer command.</p> <p>Value of format values with counter type. If the specified counter does not have data, "-" is returned.</p> <p>* The error "-225, Out of memory" occurs if the number of responding counter data exceeds 3,600 according to the number and type of the specified counters.</p>

Section 6 Details of Device Messagess

Command	:GENTry:TSTReam:START:SYNC <BOOLEAN>
Query	:GENTry:TSTReam:START:SYNC?
Response	< BOOLEAN >
Description	Specifies whether to synchronize the Tx start timing of multiple ports at hardware level.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	< BOOLEAN > For synchronization at hardware level, set {ON | 1} (ON or 1). Otherwise, set {OFF | 1} (OFF or 0). 1 or 0 is returned as the response data for the query. When you set synchronization at hardware level to On, the transmission of multiple ports starts at the same timing. It takes some time for preparation from Tx start instructed to actual Tx transmitted. When you set synchronization at hardware level to Off, transmission of multiple ports starts at different timings. It takes shorter time to complete the transmission than when the synchronization set to ON.
Default	{ON | 1} * Behaviors of this command are also affected by the operation screen, but you cannot change the behaviors on the operation screen. * Setting of this command affects behaviors of all groups. * Exit the application to initialize the setting. The setting is not backed up.

ERRor insertion commands (ERRor)

The commands related to the following functions that are available when Mapping of Port setting is set to Unframed are explained below.

- Error insertion function

Command	:ERRor:STOP
Description	Stops error insertion. * For MU120101A, this command is disabled. * For MU120118A/B/C, this command is enabled when the option of XEMPAK measurement is installed.
Module	√ MbE √ GbE √ 2.5G/10G

Command	:ERRor:START
Description	Inserts error. * For MU120101A, this command is disabled. * For MU120118A/B/C, this command is enabled when the option of XEMPAK measurement is installed.
Module	√ MbE √ GbE √ 2.5G/10G

Query	:ERRor:STATe?
Response	{0 | 1 | 2}
Description	Queries the error insertion status. * For MU120101A, this command is disabled. * For MU120118A/B/C, this command is enabled when the option of XEMPAK measurement is installed.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	{0 | 1 | 2}

The code number is returned as the processing status. Meanings of the numbers are shown below:

- 0 Error insertion is stopped.
 - 1 Error insertion is underway.
 - 2 Starting/Halting alarm insertion.
-

Section 6 Details of Device Messagess

Command	:ERRor:TYPE <type>
Query	:ERRor:TYPE?
Response	<type>
Description	<p>Sets type of error insertion.</p> <ul style="list-style-type: none"> * When Unframed/Framed is switched at the port setting, the setting is initialized. * For MU120101A, this command is disabled. * For modules other than the MU120122A (SFP)/31A/32A/38A, this command is not available if "Framed" is specified. * For MU120118A/B/C, this command is enabled when the option of XEMPAK measurement is installed. * For the MU120122A (SFP), the setting value of the :COUNter:LERRor:TYPE command changes in accordance with that of the :ERRor:TYPE command, and vice versa.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p><type></p> <p>Select the type of errors to be inserted from the followings:</p> <p>Selectable items at Framed:</p> <p>CROSS Bit error in Test Frame Cross PRBS pattern(*3)</p> <p>BOTH: Line Error (RD&CODE Error) (*2)</p> <p>RD: Line Error (RD Error) (*2)</p> <p>CODE: Line Error (8B/10B CODE Error) (*2)</p> <p>XGMII: Line Error(XGMII)(*4)</p> <p>Selectable items at Unframed:</p> <p>BIT_ALL: Unframed bit error</p> <p>LANE0: Unframed bit error (Lane 0) (*1)</p> <p>LANE1: Unframed bit error (Lane 1) (*1)</p> <p>LANE2: Unframed bit error (Lane 2) (*1)</p> <p>LANE3: Unframed bit error (Lane 3) (*1)</p> <p>*1: Selectable for MU120118A/B/C</p> <p>*2: Selectable for MU120122(SFP)/32A</p> <p>*3: Selectable for MU120131A/32A/38A if CROSS23 or CROSS31 is set by :PORT:TEST:PATtern:TYPE</p> <p>*4 Selectable for MU120138A</p>
Default	<p>BIT_ALL (Unframed)</p> <p>CODE (Framed, MU120122A(SFP)/32A)</p> <p>CROSS (Framed, MU120131A)</p>

XGMII (Framed, MU120138A)

Command	:ERRor:TIMing {SINGLE | RATE}
Query	:ERRor:TIMing?
Response	{SINGLE | RATE}
Description	<p>Sets the error insertion timing to Unframe test pattern.</p> <ul style="list-style-type: none"> * For MU120101A, this command is disabled. * For MU120118A/B/C, this command is enabled when the option of XEMPAK measurement is installed.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p>{SINGLE | RATE}</p> <p>Select error insertion timing from the followings:</p> <p>SINGLE: Inserts an error at the start once.</p> <p>RATE: Inserts an error at the rate specified by :ERRor:TIMing:RATE.*</p>
Default	SINGLE

Section 6 Details of Device Messagess

Command	:ERRor:TIMing:RATE <NR3>
Query	:ERRor:TIMing:RATE?
Response	<NR3>
Description	<p>Sets the rate of error insertion when the error insertion method is set to Rate.</p> <ul style="list-style-type: none">* The error insertion rate set by this command is valid if RATE is set by :ERRor:TIMing.* For MU120101A, this command is disabled.* For MU120118A/B/C, this command is enabled when the option of XEMPAK measurement is installed.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p><NR3></p> <p>Set the error insertion ratio. The setting ranges are as follows:</p> <p>Except MU120118A/18B/18C: 1.0E-10 to 9.9E-3</p> <p>MU120118A/18B/18C: 1.0E-10 to 2.0E-3</p> <p>* The setting range when BIT_ALL is set by :ERRor:TYPE is the same as that when CROSS is set.</p>
Default	1.0E-3

SDH/SONET commands ({SDH | SONet})

The commands related to the following SDH/SONET functions are explained below.

- Power meter function
- Overwrite/monitor functions for overhead information
- Error/alarm insertion functions
- Path trace function
- Performance measurement function(*)
- APS Sequence Generator function(*)
- APS Sequence Capture function(*)
- APS Switch Time measurement function(*)
- Concatenation function

*: This function cannot be used for the MU150101A.

Query :{SDH | SONet}:PMETer:DATA?

Response <NR2>

Description Queries a value of the power meter.

Module – MbE – GbE √ 2.5G/10G

Parameter <NR2>

A value of the power meter is returned. The ranges of measured values on individual modules are shown below.

If the measured value falls below this range, –99.9 is returned. If it is beyond this range, 99.9 is returned.

MU120103A/B 2.5G (1.31): –25.0 to +1.0 (dBm)

MU120104A/B 2.5G (1.55): –35.0 to –9.0 (dBm)

MU120105A 10G (1.31): –12.0 to 0.0 (dBm)

MU120106A 10G (1.55): –14.0 to 0.0 (dBm)

MU120119A/MU120120A: –40.0 to +5.0 (dBm)

MU150101A: –40.0 to –7.0 (dBm)

Section 6 Details of Device Messages

Command	:{SDH | SONet}:OVERhead:MONitor:POINter:GRAPh:RESolution {R1SEC | R1MIN | R15MIN | R60MIN}	
Query	:{SDH | SONet}:OVERhead:MONitor:POINter:GRAPh:RESolution?	
Response	{R1SEC | R1MIN | R15MIN | R60MIN}	
Description	Specifies the resolution to display the graph of the pointer monitor.	
Module	– MbE – GbE $\sqrt{2.5G/10G}$	
Parameter	{R1SEC | R1MIN | R15MIN | R60MIN}	
	Select the resolution of graph display from the followings:	
	R1SEC	1 sec
	R1MIN	1 min
	R15MIN	15 min
	R60MIN	60 min

Query	:{SDH | SONet}:OVERhead:MONitor:C2?
Response	<BINARY>
Description	<p>Queries a value of C2 byte (bits 1 to 8).</p> <p>During virtual concatenation, a member specified by the {SDH | SONet}:OVERhead: MONitor:POH:MEMBer command is the target.</p>
Module	– MbE – GbE √ 2.5G/10G
Parameter	<BINARY>

A value of C2 byte (bits 1 to 8) is returned in the 8-bit <BINARY> format. Descriptions for values of the response data are shown below:

(SDH)

1234 5678	Hex	Description
-----	---	-----
0000 0000	00	Unequipped
0000 0001	01	Equipped-non-specific
0000 0010	02	TUG structure
0000 0011	03	Locked TU-n
0000 0100	04	Async. 34 M or 45 M (C-3)
0000 0101	05	Mapping under development
0001 0010	12	Async. 139 M (C-4)
0001 0011	13	ATM mapping
0001 0100	14	MAN (DQDB) mapping
0001 0101	15	FDDI mapping
0001 0110	16	Mapping of HDLC/PPP framed signals
0001 0111	17	Mapping of Simple Data Link (SDL) with SDH self synchronizing scrambler
0001 1000	18	Mapping of HDLC/LAPS framed signals
0001 1001	19	Mapping of Simple Data Link (SDL) with set-reset scrambler
0001 1010	1A	Mapping of 10 Gbit/s Ethernet frames
0001 1011	1B	GFP Mapping
1000 0000	80	MAPOS 8 without scrambling (CRC16)
1000 0001	81	MAPOS 16 without scrambling (CRC16)
1000 1000	88	MAPOS 8 with scrambling (CRC16)
1000 1001	89	MAPOS 16 with scrambling (CRC16)
1000 1100	8C	MAPOS 8 with scrambling (CRC32)
1000 1101	8D	MAPOS 16 with scrambling (CRC32)
1000 1110	8E	MAPOS Reserved
1000 1111	8F	MAPOS Reserved
1100 1111	CF	PPP without scrambling
1111 1110	FE	O.181 mapping
1111 1111	FF	VC-AIS

(Others)		Unused	
(SONET)			
1234 5678	Hex	Description	
-----	---	-----	
0000 0000	00	Unequipped	
0000 0001	01	Equipped-non-specific	
0000 0010	02	VT-Structured STS-1 SPE	
0000 0011	03	Locked VT Mode	
0000 0100	04	Async. Mapping DS3	
0001 0010	12	Async. Mapping DS4NA	
0001 0011	13	Mapping for ATM	
0001 0100	14	Mapping for DQDB	
0001 0101	15	Async. Mapping FDDI	
0001 0110	16	HDLC-Over-SONET Mapping	
1000 0000	80	MAPOS 8 without scrambling (CRC16)	
1000 0001	81	MAPOS 16 without scrambling (CRC16)	
1000 1000	88	MAPOS 8 with scrambling (CRC16)	
1000 1001	89	MAPOS 16 with scrambling (CRC16)	
1000 1100	8C	MAPOS 8 with scrambling (CRC32)	
1000 1101	8D	MAPOS 16 with scrambling (CRC32)	
1000 1110	8E	MAPOS Reserved	
1000 1111	8F	MAPOS Reserved	
1100 1111	CF	PPP without scrambling	
1110 0001	E1	VT-Structured STS-1 SPE with 1 VTx Payload Defect (STS-1 w/1 VTx PD)	
1110 0010	E2	STS-1 w/2 VTx PDs	
1110 0011	E3	STS-1 w/3 VTx PDs	
1110 0100	E4	STS-1 w/4 VTx PDs	
1110 0101	E5	STS-1 w/5 VTx PDs	
1110 0110	E6	STS-1 w/6 VTx PDs	
1110 0111	E7	STS-1 w/7 VTx PDs	
1110 1000	E8	STS-1 w/8 VTx PDs	
1110 1001	E9	STS-1 w/9 VTx PDs	
1110 1010	EA	STS-1 w/10 VTx PDs	
1110 1011	EB	STS-1 w/11 VTx PDs	
1110 1100	EC	STS-1 w/12 VTx PDs	
1110 1101	ED	STS-1 w/13 VTx PDs	
1110 1110	EE	STS-1 w/14 VTx PDs	
1110 1111	EF	STS-1 w/15 VTx PDs	
1111 0000	F0	STS-1 w/16 VTx PDs	
1111 0001	F1	STS-1 w/17 VTx PDs	

1111 0010	F2	STS-1 w/18 VTx PDs
1111 0011	F3	STS-1 w/19 VTx PDs
1111 0100	F4	STS-1 w/20 VTx PDs
1111 0101	F5	STS-1 w/21 VTx PDs
1111 0110	F6	STS-1 w/22 VTx PDs
1111 0111	F7	STS-1 w/23 VTx PDs
1111 1000	F8	STS-1 w/24 VTx PDs
1111 1001	F9	STS-1 w/25 VTx PDs
1111 1010	FA	STS-1 w/26 VTx PDs
1111 1011	FB	STS-1 w/27 VTx PDs
1111 1100	FC	VT-structured STS-1 SPE with 28 VT1.5 Payload Defects, or a non-VT-structured STS-1 or STS-Nc SPE with a Payload Defect
1111 1110	FE	O.181 Test Signal (TSS1 to TSS3) Mapping
1111 1111	FF	AIS-P
(Others)		Unused

Section 6 Details of Device Messagess

Query	::{SDH | SONet}:OVERhead:MONitor::{VC3 | STS1}:C2?
Response	<BINARY>
Description	<p>Queries the C2 byte (bits 1 to 8) value of VC3 (STS1).</p> <p>During the virtual concatenation, the channel specified by the ::{SDH | SONet}:OVERhead:MONitor:POH:CH command is the target.</p> <p>* Valid only for MU150101A module.</p>

Module – MbE – GbE √ 2.5G/10G

Parameter	<BINARY>
	<p>The C2 byte value is returned in the 8-bit <BINARY> format.</p> <p>Descriptions for values of the response data are shown below:</p>

(SDH)

1234 5678	Hex	Description
-----	---	-----
0000 0000	00	Unequipped
0000 0001	01	Reserved
0000 0010	02	TUG structure
0000 0011	03	Locked TU-n
0000 0100	04	Async. 34 M or 45 M (C-3)
0000 0101	05	Experimental mapping
0001 0010	12	Async. 139M(C-4)
0001 0011	13	ATM mapping
0001 0100	14	MAN (DQDB) mapping
0001 0101	15	FDDI mapping
0001 0110	16	Mapping of HDLC/PPP framed signals
0001 0111	17	Reserved for proprietary use
0001 1000	18	HDLC/LAPS framed signals
0001 1001	19	Reserved for proprietary use
0001 1010	1A	Mapping of 10 Gbit/s Ethernet frames
0001 1011	1B	GFP Mapping
0001 1100	1C	10 G Fibre Channel frames
0010 0000	20	Async. ODUk into VC-4-Xv
1000 0000	80	MAPOS 8 without scrambling (CRC16)
1000 0001	81	MAPOS 16 without scrambling (CRC16)
1000 1000	88	MAPOS 8 with scrambling (CRC16)
1000 1001	89	MAPOS 16 with scrambling (CRC16)
1000 1100	8C	MAPOS 8 with scrambling (CRC32)
1000 1101	8D	MAPOS 16 with scrambling (CRC32)
1000 1110	8E	MAPOS Reserved
1000 1111	8F	MAPOS Reserved

1100 1111	CF	Reserved
1101 0000	D0	Reserved for proprietary use
.....		
1101 1111	DF	Reserved for proprietary use
1110 0001	E1	Reserved for national use
1111 1011	FB	Reserved for national use
1111 1100	FC	Reserved for national use (Except LEX) RFC 1841 LEX mapping (LEX)
1111 1110	FE	O.181 mapping
1111 1111	FF	VC-AIS
(Others)		Unused
(SONET)		
1234 5678	Hex	Description
-----	---	-----
0000 0000	00	Unequipped
0000 0001	01	Equipped-Nonspecific
0000 0010	02	Floating VT Mode
0000 0011	03	Locked VT Mode
0000 0100	04	Async. Mapping DS3
0000 0100	05	Mapping under development
0001 0010	12	Async. Mapping 139M
0001 0011	13	Mapping for ATM
0001 0100	14	Mapping for DQDB
0001 0101	15	Async. Mapping FDDI
0001 0110	16	Mapping HDLC Over SONET
1000 0000	80	MAPOS 8 without scrambling (CRC16)
1000 0001	81	MAPOS 16 without scrambling (CRC16)
1000 1000	88	MAPOS 8 with scrambling (CRC16)
1000 1001	89	MAPOS 16 with scrambling (CRC16)
1000 1100	8C	MAPOS 8 with scrambling (CRC32)
1000 1101	8D	MAPOS 16 with scrambling (CRC32)
1000 1110	8E	MAPOS Reserved
1000 1111	8F	MAPOS Reserved
1100 1111	CF	Reserved
1110 0001	E1	VT-Structured STS-1 SPE with 1 VTx Payload Defect (STS-1 w/1 VTx PD)
1110 0010	E2	STS-1 w/2 VTx PDs
1110 0011	E3	STS-1 w/3 VTx PDs
1110 0100	E4	STS-1 w/4 VTx PDs
1110 0101	E5	STS-1 w/5 VTx PDs

Section 6 Details of Device Messages

1110 0110	E6	STS-1 w/6 VTx PDs
1110 0111	E7	STS-1 w/7 VTx PDs
1110 1000	E8	STS-1 w/8 VTx PDs
1110 1001	E9	STS-1 w/9 VTx PDs
1110 1010	EA	STS-1 w/10 VTx PDs
1110 1011	EB	STS-1 w/11 VTx PDs
1110 1100	EC	STS-1 w/12 VTx PDs
1110 1101	ED	STS-1 w/13 VTx PDs
1110 1110	EE	STS-1 w/14 VTx PDs
1110 1111	EF	STS-1 w/15 VTx PDs
1111 0000	F0	STS-1 w/16 VTx PDs
1111 0001	F1	STS-1 w/17 VTx PDs
1111 0010	F2	STS-1 w/18 VTx PDs
1111 0011	F3	STS-1 w/19 VTx PDs
1111 0100	F4	STS-1 w/20 VTx PDs
1111 0101	F5	STS-1 w/21 VTx PDs
1111 0110	F6	STS-1 w/22 VTx PDs
1111 0111	F7	STS-1 w/23 VTx PDs
1111 1000	F8	STS-1 w/24 VTx PDs
1111 1001	F9	STS-1 w/25 VTx PDs
1111 1010	FA	STS-1 w/26 VTx PDs
1111 1011	FB	STS-1 w/27 VTx PDs
1111 1100	FC	VT-structured STS-1 SPE (Except LEX) RFC 1841 LEX mapping (LEX)
1111 1110	FE	O.181 Test Signal Mapping
1111 1111	FF	AIS-P
(Others)		Unused

Query	:{SDH SONet}:OVERhead:MONitor:{VC1 VT}:V5?																																								
Response	<BINARY>																																								
Description	<p>Queries the V5 byte (bits 5 to 7) value of VC1 (VT).</p> <p>During the virtual concatenation, the channel specified by the :{SDH SONet}:OVERhead:MONitor:POH:CH command is the target.</p> <p>* Valid only for MU150101A module.</p>																																								
Module	– MbE – GbE √ 2.5G/10G																																								
Parameter	<p><BINARY></p> <p>The V5 byte value is returned in the 3-bit <BINARY> format. Descriptions for values of the response data are shown below:</p> <p>(SDH)</p> <table> <tr> <td>567</td><td>Description</td></tr> <tr> <td>---</td><td>-----</td></tr> <tr> <td>000</td><td>Unequipped</td></tr> <tr> <td>001</td><td>Reserved</td></tr> <tr> <td>010</td><td>Asynchronous</td></tr> <tr> <td>011</td><td>Bit synchronous</td></tr> <tr> <td>100</td><td>Byte synchronous</td></tr> <tr> <td>101</td><td>Extended signal label</td></tr> <tr> <td>110</td><td>O.181 mapping</td></tr> <tr> <td>111</td><td>VC-AIS</td></tr> </table> <p>(SONET)</p> <table> <tr> <td>567</td><td>Description</td></tr> <tr> <td>---</td><td>-----</td></tr> <tr> <td>000</td><td>Unequipped</td></tr> <tr> <td>001</td><td>Reserved</td></tr> <tr> <td>010</td><td>Asynchronous</td></tr> <tr> <td>011</td><td>Bit synchronous</td></tr> <tr> <td>100</td><td>Byte synchronous</td></tr> <tr> <td>101</td><td>Extended signal label</td></tr> <tr> <td>110</td><td>O.181 mapping</td></tr> <tr> <td>111</td><td>AIS-V</td></tr> </table>	567	Description	---	-----	000	Unequipped	001	Reserved	010	Asynchronous	011	Bit synchronous	100	Byte synchronous	101	Extended signal label	110	O.181 mapping	111	VC-AIS	567	Description	---	-----	000	Unequipped	001	Reserved	010	Asynchronous	011	Bit synchronous	100	Byte synchronous	101	Extended signal label	110	O.181 mapping	111	AIS-V
567	Description																																								
---	-----																																								
000	Unequipped																																								
001	Reserved																																								
010	Asynchronous																																								
011	Bit synchronous																																								
100	Byte synchronous																																								
101	Extended signal label																																								
110	O.181 mapping																																								
111	VC-AIS																																								
567	Description																																								
---	-----																																								
000	Unequipped																																								
001	Reserved																																								
010	Asynchronous																																								
011	Bit synchronous																																								
100	Byte synchronous																																								
101	Extended signal label																																								
110	O.181 mapping																																								
111	AIS-V																																								

Query	:{SDH | SONet}:OVERhead:MONitor:{VC1 | VT}:ESLabel?
Response	<BINARY>
Description	Queries the K4/Z7 multiframe (bits 12 to 19) extended signal label value of VC1 (VT). * Valid only for MU150101A module.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<BINARY>

The K4/Z7 extended signal label value is returned in the 8-bit <BINARY> format.

Note:

When the V5 byte of VC1 (VT) (bits 5 to 7) is set to other than extended signal label ("101"), the value is fixed to "#B00000000."

BINARY	Description
-----	-----
00000000	Reserved
...	
00000111	Reserved
00001000	Mapping under development
00001001	ATM mapping
00001010	Mapping of HDLC/PPP framed signal
00001011	Mapping of HDLC/LAPS framed signal
00001100	Virtual concatenated test signal, O.181 specific mapping
00001101	GFP mapping
00001110	Reserved for proprietary use
...	
11111110	Reserved for proprietary use
11111111	Reserved
(Others)	Unused

Query :{SDH | SONet}:OVERhead:MONitor:K1?

Response <HEX>

Description Queries a monitor value of K1 byte.

Module – MbE – GbE √ 2.5G/10G

Parameter <HEX>

A value of K1 byte is returned in the 1-octet <HEX> format.

Query :{SDH | SONet}:OVERhead:MONitor:POH?

Response <HEX>

Description Queries a monitor value of POH.

During virtual concatenation, a member specified by the {SDH | SONet}:OVERhead: MONitor:POH:MEMBer command is the target.

Module – MbE – GbE √ 2.5G/10G

Parameter <HEX>

The monitor value of POH is returned as the 9-byte data arranged in the following order:

SDH: J1 B3 C2 G1 F2 H4 F3 K3 N1

SONET: J1 B3 C2 G1 F2 H4 Z3 Z4 Z5

* During virtual concatenation, the POH of the head member is always returned by executing this command. Use the :{SDH | SONet}:OVERhead:MONitor:MEMBer:POH?<member> command.

Section 6 Details of Device Messagess

Query	:{SDH | SONet}:OVERhead:MONitor:{VC3 | STS1}:POH?
Response	<HEX>
Description	<p>Queries the POH monitor value of VC3 (STS1).</p> <p>During virtual concatenation, the channel specified by the :{SDH | SONet}:OVERhead:MONitor:POH:CH command is the target.</p> <p>* Valid only for MU150101A module.</p>
Module	– MbE – GbE √ 2.5G/10G
Parameter	<p><HEX></p> <p>The POH monitor value is returned as 9-byte data in the following order:</p> <p>SDH : J1 B3 C2 G1 F2 H4 F3 K3 N1</p> <p>SONET: J1 B3 C2 G1 F2 H4 Z3 Z4 Z5</p>

Query	:{SDH | SONet}:OVERhead:MONitor:{VC1 | VT}:POH?
Response	<HEX>
Description	<p>Queries the POH monitor value of VC2/1(VT).</p> <p>During virtual concatenation, the channel specified by the :{SDH | SONet}:OVERhead:MONitor:POH:CH command is the target.</p> <p>* Valid only for MU150101A module.</p>
Module	– MbE – GbE √ 2.5G/10G
Parameter	<p><HEX></p> <p>The POH monitor value is returned as 4-byte data in the following order:</p> <p>SDH : V5 J2 N2 K4</p> <p>SONET: V5 J2 N2 Z7</p>

Query	:{SDH | SONet}:OVERhead:MONitor:{SOH | TOH}? <channel>
Response	<HEX>
Description	Queries a monitor value of SOH/TOH.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<channel> The channel number of SDH/SONET. <HEX> The monitor value of SOH/TOH is returned as the 81-byte data arranged in the order of x11, x12, ... x98, x99 as shown in the table below that indicates byte locations of SOH/TOH. X11 X12 X13 X14 X15 X16 X17 X18 X19 X21 X22 X23 X24 X25 X26 X27 X28 X29 X31 X32 X33 X34 X35 X36 X37 X38 X39 X41 X42 X43 X44 X45 X46 X47 X48 X49 X51 X52 X53 X54 X55 X56 X57 X58 X59 X61 X62 X63 X64 X65 X66 X67 X68 X69 X71 X72 X73 X74 X75 X76 X77 X78 X79 X81 X82 X83 X84 X85 X86 X87 X88 X89 X91 X92 X93 X94 X95 X96 X97 X98 X99

Query	:{SDH | SONet}:OVERhead:MONitor:K2?
Response	<HEX>
Description	Queries a monitor value of K2 byte.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<HEX> A value of K2 byte is returned in the 1-octet <HEX> format.

Section 6 Details of Device Messagess

Query :{SDH | SONet}:OVERhead:MONitor:S1?

Response <BINARY>

Description Queries a value of S1 (bit 5 to 8).

Module – MbE – GbE √ 2.5G/10G

Parameter <BINARY>

A value of S1 byte (bits 5 to 8) is returned in the 4-bit <BINARY> format. Descriptions for values of the response data are shown below:

(SDH)

5678	Description
-----	-----
0000	Quality Unknown (Existing Synchronization Network)
0010	Rec. G.811
0100	SSU-A
1000	SSU-B
1011	Rec. G.813 Option I (SEC)
1111	Do not use for synchronization
Others	Reserved

(SONET)

5678	Description
-----	-----
0000	Synchronized Traceability Unknown
0001	Stratum 1 Traceable
0100	Transit Node Clock Traceable
0111	Stratum 2 Traceable
1010	Stratum 3 Traceable
1100	SONET Minimum Clock Traceable
1101	Stratum 3E Traceable
1110	Reserved
1111	DON'T USE for Synchronization
Others	Unused

Query	:{SDH | SONet}:OVERhead:MONitor:POINter:SS?
Response	<BINARY>
Description	<p>Queries a pointer value (SS field, 2 bits).</p> <p>During virtual concatenation, a member specified by the {SDH | SONet}:OVERhead:MONitor:POH:MEMBer command is the target.</p> <p>For the MU150101A, the member specified by the :{SDH | SONet}:OVERhead:MONitor:POINter:CH or :{SDH | SONet}:OVERhead:MONitor:POINter:{TU | VT}:CH command is the target during virtual concatenation.</p>
Module	– MbE – GbE √ 2.5G/10G
Parameter	<p><BINARY></p> <p>A pointer value (SS field) is returned in the 2-bit <BINARY> format.</p>

Query	:{SDH | SONet}:OVERhead:MONitor:POINter:ID?
Response	<NR1>
Description	<p>Queries AU/STS pointer value (ID).</p> <p>During virtual concatenation, a member specified by the {SDH | SONet}:OVERhead:MONitor:POH:MEMBer command is the target.</p> <p>For the MU150101A, the member specified by the :{SDH | SONet}:OVERhead:MONitor:POINter:CH or :{SDH | SONet}:OVERhead:MONitor:POINter:{TU | VT}:CH command is the target during virtual concatenation.</p>
Module	– MbE – GbE √ 2.5G/10G
Parameter	<p><NR1></p> <p>A value from 0 to 1023 is returned.</p>

Section 6 Details of Device Messagess

Query	:{SDH | SONet}:OVERhead:MONitor:POINter:NDF?
Response	<BINARY>
Description	<p>Queries a pointer value (NDF field, 4 bits).</p> <p>During virtual concatenation, a member specified by the {SDH | SONet}:OVERhead:MONitor:POH:MEMBer command is the target.</p> <p>For the MU150101A, the member specified by the {SDH | SONet}:OVERhead:MONitor:POINter:CH or {SDH | SONet}:OVERhead:MONitor:POINter:{TU | VT}:CH command is the target during virtual concatenation.</p>
Module	– MbE – GbE √ 2.5G/10G
Parameter	<p><BINARY></p> <p>A pointer value (NDF field, 4 bits) is returned in the 4-bit <BINARY> format.</p>

Query	:{SDH | SONet}:OVERhead:MONitor:POINter:GRAPh:DATA? {VALUE | INC | DEC}
Response	<DATE_TIME>[,<count>][,<count>]...
Description	<p>Queries the graph data of the pointer monitor.</p> <p>During virtual concatenation, a member specified by the {SDH | SONet}:OVERhead: MONitor:POH:MEMBer command is the target.</p> <p>For the MU150101A, the member specified by the :{SDH | SONet}:OVERhead:MONitor:POINter:CH or :{SDH | SONet}:OVERhead:MONitor:POINter:{TU | VT}:CH command is the target during virtual concatenation.</p>
Module	– MbE – GbE √ 2.5G/10G
Parameter	<p>{VALUE | INC | DEC}</p> <p>The type of graph data of the pointer monitor.</p> <p>VALUE Graph data of Pointer values</p> <p>INC Graph data of Pointer Inc values (+PJC)</p> <p>DEC Graph data of Pointer Dec values (–PJC)</p> <p><DATE_TIME>[,<count>][,<count>]...</p> <p>The graph data of the pointer monitor. Values counted for a second in numbers of a maximum of 60 (those for 60 seconds) are returned from latest to oldest.</p> <p><DATE_TIME></p> <p>The time when the latest counter value is obtained. (*1)</p> <p><count></p> <p>A value counted for a second.</p> <p>*1:</p> <p>If there is no<count>, a value of<DATE_TIME> becomes the current time.</p>

Section 6 Details of Device Messagess

Command	:{SDH | SONet}:OVERhead:MONitor:POH:CH <ch1>[,<ch2>,<ch3>,<ch4>]
Query	:{SDH | SONet}:OVERhead:MONitor:POH:CH?
Response	<ch1>[,<ch2>,<ch3>,<ch4>]
Description	Sets the target member channel for the POH monitor query on the OH Monitor screen. * Valid only for MU150101A module.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<ch1>[,<ch2>,<ch3>,<ch4>] Set the target member channel for the POH monitor query. The mode of expression of the CH hierarchy follows Appendix D “Basic Rules for Channel Expression in Virtual Concatenation.”
Default	1

Command	:{SDH | SONet}:OVERhead:MONitor:POINter:CH <ch1>[,<ch2>]
Query	:{SDH | SONet}:OVERhead:MONitor:POINter:CH?
Response	<ch1>[,<ch2>]
Description	Specifies the monitor target channel of the AU/STS pointer. * Valid only for MU150101A module.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<ch1>[,<ch2>] Specify the target channel to be monitored. The channel to be set differs depending on the Rx Multiplexing setting as follows: <ch1> Specify a channel of AUG/STS3c(*1). <ch2> Via AU3/STS1, Specify a channel of AU3/STS1(1 to 3). *1 Varies according to the bit rate. 1 to 16 at 2488 Mbps 1 to 4 at 622 Mbps 1 at 156 Mbps
Default	ALL 1

Command	:{SDH | SONet}:OVERhead:MONitor:POINter:{TU | VT}:CH <ch1>[,<ch2>,<ch3>,<ch4>]		
Query	:{SDH | SONet}:OVERhead:MONitor:POINter:{TU | VT}:CH?		
Response	<ch1>[,<ch2>,<ch3>,<ch4>]		
Description	Specifies the monitor target channel of the TU/VT pointer. * Valid only for MU150101A module.		
Module	– MbE – GbE √ 2.5G/10G		
Parameter	<ch1>[,<ch2>,<ch3>,<ch4>] Specify the target channel to be monitored. The channel to be set differs depending on the Rx Multiplexing setting as follows: <ch1> Specify a channel of AUG/STS3c(*1). <ch2> Specify a channel of AU3/STS1(1 to 3) or TUG3(1 to 3). <ch3> Specify a channel of TUG2/VTG(1 to 7). <ch4> Specify a channel of TU12/VT2(1 to 3) or TU11/VT1.5(1 to 4). *1 Varies according to the bit rate. 1 to 16 at 2488 Mbps 1 to 4 at 622 Mbps 1 at 156 Mbps		
Default	ALL 1		

Command	:{SDH | SONet}:OVERhead:MONitor:POH:MEMBer <NR1>		
Query	:{SDH | SONet}:OVERhead:MONitor:POH:MEMBer?		
Response	<NR1>		
Description	Sets a target member to query POH monitor and J1 path trace in the OH Monitor screen.		
Module	– MbE – GbE √ 2.5G/10G		
Parameter	<NR1> Set a value from 0 to 24. The setting range depends on the current Multiplexing setting.		
Default	1		

Section 6 Details of Device Messagess

Command	:{SDH | SONet}:OVERhead:MONitor:POINter:MEMBer <NR1>
Query	:{SDH | SONet}:OVERhead:MONitor:POINter:MEMBer?
Response	<NR1>
Description	Sets a target member to query pointer monitor and graph data in the K1 and K2 Pointer Monitor screen.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 24 inclusive. The setting range depends on the current Multiplexing setting.
Default	1

Command	:{SDH | SONet}:OVERhead:PRESet:DEFault:SONet
Description	Resets a preset value to its default of the SONET standard. * A value of SS for pointer setup is also initialized.
Module	– MbE – GbE √ 2.5G/10G

Command	:{SDH | SONet}:OVERhead:PRESet:DEFault:SDH
Description	Resets a preset value to its default of the SDH standard. * A value of SS for pointer setup is also initialized.
Module	– MbE – GbE √ 2.5G/10G

Command	:{SDH | SONet}:OVERhead:PRESet:POINter:PPJC
Description	Inserts +PJC one time.
Module	– MbE – GbE √ 2.5G/10G

Command	:{SDH | SONet}:OVERhead:PRESet:POINter:NPJC
Description	Inserts –PJC one time.
Module	– MbE – GbE √ 2.5G/10G

Command	{SDH SONet}:OVERhead:PRESet:C2 <BINARY>																																																																																						
Query	{SDH SONet}:OVERhead:PRESet:C2?																																																																																						
Response	<BINARY>																																																																																						
Description	<p>Sets a value of C2 (bit 1 to 8).</p> <p>During virtual concatenation, a member specified by the {SDH SONet}:OVERhead:MONitor:POH:MEMBer command is the target.</p>																																																																																						
Module	– MbE – GbE √ 2.5G/10G																																																																																						
Parameter	<p><BINARY></p> <p>Set a value of C2 byte in the 8-bit <BINARY> format. Descriptions for values are shown below:</p> <p>(SDH)</p> <table><tr><th>1234 5678</th><th>Hex</th><th>Description</th></tr><tr><td>-----</td><td>---</td><td>-----</td></tr><tr><td>0000 0000</td><td>00</td><td>Unequipped</td></tr><tr><td>0000 0001</td><td>01</td><td>Equipped-non-specific</td></tr><tr><td>0000 0010</td><td>02</td><td>TUG structure</td></tr><tr><td>0000 0011</td><td>03</td><td>Locked TU-n</td></tr><tr><td>0000 0100</td><td>04</td><td>Async. 34 M or 45 M (C-3)</td></tr><tr><td>0000 0101</td><td>05</td><td>Mapping under development</td></tr><tr><td>0001 0010</td><td>12</td><td>Async. 139 M (C-4)</td></tr><tr><td>0001 0011</td><td>13</td><td>ATM mapping</td></tr><tr><td>0001 0100</td><td>14</td><td>MAN (DQDB) mapping</td></tr><tr><td>0001 0101</td><td>15</td><td>FDDI mapping</td></tr><tr><td>0001 0110</td><td>16</td><td>Mapping of HDLC/PPP framed signals</td></tr><tr><td>0001 0111</td><td>17</td><td>Mapping of Simple Data Link (SDL) with SDH self synchronizing scrambler</td></tr><tr><td>0001 1000</td><td>18</td><td>Mapping of HDLC/LAPS framed signals</td></tr><tr><td>0001 1001</td><td>19</td><td>Mapping of Simple Data Link (SDL) with set-reset scrambler</td></tr><tr><td>0001 1010</td><td>1A</td><td>Mapping of 10 Gbit/s Ethernet frames</td></tr><tr><td>0001 1011</td><td>1B</td><td>GFP Mapping</td></tr><tr><td>1000 0000</td><td>80</td><td>MAPOS 8 without scrambling (CRC16)</td></tr><tr><td>1000 0001</td><td>81</td><td>MAPOS 16 without scrambling (CRC16)</td></tr><tr><td>1000 1000</td><td>88</td><td>MAPOS 8 with scrambling (CRC16)</td></tr><tr><td>1000 1001</td><td>89</td><td>MAPOS 16 with scrambling (CRC16)</td></tr><tr><td>1000 1100</td><td>8C</td><td>MAPOS 8 with scrambling (CRC32)</td></tr><tr><td>1000 1101</td><td>8D</td><td>MAPOS 16 with scrambling (CRC32)</td></tr><tr><td>1000 1110</td><td>8E</td><td>MAPOS Reserved</td></tr><tr><td>1000 1111</td><td>8F</td><td>MAPOS Reserved</td></tr><tr><td>1100 1111</td><td>CF</td><td>PPP without scrambling</td></tr><tr><td>1111 1110</td><td>FE</td><td>O.181 mapping</td></tr></table>			1234 5678	Hex	Description	-----	---	-----	0000 0000	00	Unequipped	0000 0001	01	Equipped-non-specific	0000 0010	02	TUG structure	0000 0011	03	Locked TU-n	0000 0100	04	Async. 34 M or 45 M (C-3)	0000 0101	05	Mapping under development	0001 0010	12	Async. 139 M (C-4)	0001 0011	13	ATM mapping	0001 0100	14	MAN (DQDB) mapping	0001 0101	15	FDDI mapping	0001 0110	16	Mapping of HDLC/PPP framed signals	0001 0111	17	Mapping of Simple Data Link (SDL) with SDH self synchronizing scrambler	0001 1000	18	Mapping of HDLC/LAPS framed signals	0001 1001	19	Mapping of Simple Data Link (SDL) with set-reset scrambler	0001 1010	1A	Mapping of 10 Gbit/s Ethernet frames	0001 1011	1B	GFP Mapping	1000 0000	80	MAPOS 8 without scrambling (CRC16)	1000 0001	81	MAPOS 16 without scrambling (CRC16)	1000 1000	88	MAPOS 8 with scrambling (CRC16)	1000 1001	89	MAPOS 16 with scrambling (CRC16)	1000 1100	8C	MAPOS 8 with scrambling (CRC32)	1000 1101	8D	MAPOS 16 with scrambling (CRC32)	1000 1110	8E	MAPOS Reserved	1000 1111	8F	MAPOS Reserved	1100 1111	CF	PPP without scrambling	1111 1110	FE	O.181 mapping
1234 5678	Hex	Description																																																																																					
-----	---	-----																																																																																					
0000 0000	00	Unequipped																																																																																					
0000 0001	01	Equipped-non-specific																																																																																					
0000 0010	02	TUG structure																																																																																					
0000 0011	03	Locked TU-n																																																																																					
0000 0100	04	Async. 34 M or 45 M (C-3)																																																																																					
0000 0101	05	Mapping under development																																																																																					
0001 0010	12	Async. 139 M (C-4)																																																																																					
0001 0011	13	ATM mapping																																																																																					
0001 0100	14	MAN (DQDB) mapping																																																																																					
0001 0101	15	FDDI mapping																																																																																					
0001 0110	16	Mapping of HDLC/PPP framed signals																																																																																					
0001 0111	17	Mapping of Simple Data Link (SDL) with SDH self synchronizing scrambler																																																																																					
0001 1000	18	Mapping of HDLC/LAPS framed signals																																																																																					
0001 1001	19	Mapping of Simple Data Link (SDL) with set-reset scrambler																																																																																					
0001 1010	1A	Mapping of 10 Gbit/s Ethernet frames																																																																																					
0001 1011	1B	GFP Mapping																																																																																					
1000 0000	80	MAPOS 8 without scrambling (CRC16)																																																																																					
1000 0001	81	MAPOS 16 without scrambling (CRC16)																																																																																					
1000 1000	88	MAPOS 8 with scrambling (CRC16)																																																																																					
1000 1001	89	MAPOS 16 with scrambling (CRC16)																																																																																					
1000 1100	8C	MAPOS 8 with scrambling (CRC32)																																																																																					
1000 1101	8D	MAPOS 16 with scrambling (CRC32)																																																																																					
1000 1110	8E	MAPOS Reserved																																																																																					
1000 1111	8F	MAPOS Reserved																																																																																					
1100 1111	CF	PPP without scrambling																																																																																					
1111 1110	FE	O.181 mapping																																																																																					

Section 6 Details of Device Messagess

1111 1111 (Others)	FF	VC-AIS Unused
(SONET)		
1234 5678 -----	Hex	Description -----
0000 0000	00	Unequipped
0000 0001	01	Equipped-non-specific
0000 0010	02	VT-Structured STS-1 SPE
0000 0011	03	Locked VT Mode
0000 0100	04	Async. Mapping DS3
0001 0010	12	Async. Mapping DS4NA
0001 0011	13	Mapping for ATM
0001 0100	14	Mapping for DQDB
0001 0101	15	Async. Mapping FDDI
0001 0110	16	HDLC-Over-SONET Mapping
1000 0000	80	MAPOS 8 without scrambling (CRC16)
1000 0001	81	MAPOS 16 without scrambling (CRC16)
1000 1000	88	MAPOS 8 with scrambling (CRC16)
1000 1001	89	MAPOS 16 with scrambling (CRC16)
1000 1100	8C	MAPOS 8 with scrambling (CRC32)
1000 1101	8D	MAPOS 16 with scrambling (CRC32)
1000 1110	8E	MAPOS Reserved
1000 1111	8F	MAPOS Reserved
1100 1111	CF	PPP without scrambling
1110 0001	E1	VT-Structured STS-1 SPE with 1 VTx Payload Defect (STS-1 w/1 VTx PD)
1110 0010	E2	STS-1 w/2 VTx PDs
1110 0011	E3	STS-1 w/3 VTx PDs
1110 0100	E4	STS-1 w/4 VTx PDs
1110 0101	E5	STS-1 w/5 VTx PDs
1110 0110	E6	STS-1 w/6 VTx PDs
1110 0111	E7	STS-1 w/7 VTx PDs
1110 1000	E8	STS-1 w/8 VTx PDs
1110 1001	E9	STS-1 w/9 VTx PDs
1110 1010	EA	STS-1 w/10 VTx PDs
1110 1011	EB	STS-1 w/11 VTx PDs
1110 1100	EC	STS-1 w/12 VTx PDs
1110 1101	ED	STS-1 w/13 VTx PDs
1110 1110	EE	STS-1 w/14 VTx PDs
1110 1111	EF	STS-1 w/15 VTx PDs
1111 0000	F0	STS-1 w/16 VTx PDs
1111 0001	F1	STS-1 w/17 VTx PDs
1111 0010	F2	STS-1 w/18 VTx PDs

1111 0011	F3	STS-1 w/19 VTx PDs
1111 0100	F4	STS-1 w/20 VTx PDs
1111 0101	F5	STS-1 w/21 VTx PDs
1111 0110	F6	STS-1 w/22 VTx PDs
1111 0111	F7	STS-1 w/23 VTx PDs
1111 1000	F8	STS-1 w/24 VTx PDs
1111 1001	F9	STS-1 w/25 VTx PDs
1111 1010	FA	STS-1 w/26 VTx PDs
1111 1011	FB	STS-1 w/27 VTx PDs
1111 1100	FC	VT-structured STS-1 SPE with 28 VT1.5 Payload Defects, or a non-VT-structured STS-1 or STS-Nc SPE with a Payload Defect
1111 1110	FE	O.181 Test Signal (TSS1 to TSS3) Mapping
1111 1111	FF	AIS-P
(Others)		Unused

Default #B00010110 (0x16, Mapping: PPP)

Section 6 Details of Device Messagess

Command	:{SDH | SONet}:OVERhead:PRESet:{VC3 | STS1}:C2 <BINARY>
Query	:{SDH | SONet}:OVERhead:PRESet:{VC3 | STS1}:C2?
Response	<BINARY>
Description	Specifies VC3/STS1 C2 (bit 1-8) values. * Valid only for MU150101A module.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<BINARY>

Set the C2 byte value in the 8-bit <BINARY> format.
Descriptions for values of the response data are shown below.

(SDH)

1234 5678	Hex	Description
-----	---	-----
0000 0000	00	Unequipped
0000 0001	01	Reserved
0000 0010	02	TUG structure
0000 0011	03	Locked TU-n
0000 0100	04	Async. 34 M or 45 M (C-3)
0000 0101	05	Experimental mapping
0001 0010	12	Async. 139M(C-4)
0001 0011	13	ATM mapping
0001 0100	14	MAN (DQDB) mapping
0001 0101	15	FDDI mapping
0001 0110	16	Mapping of HDLC/PPP framed signals
0001 0111	17	Reserved for proprietary use
0001 1000	18	HDLC/LAPS framed signals
0001 1001	19	Reserved for proprietary use
0001 1010	1A	Mapping of 10 Gbit/s Ethernet frames
0001 1011	1B	GFP Mapping
0001 1100	1C	10 G Fibre Channel frames
0010 0000	20	Async. ODUk into VC-4-Xv
1000 0000	80	MAPOS 8 without scrambling (CRC16)
1000 0001	81	MAPOS 16 without scrambling (CRC16)
1000 1000	88	MAPOS 8 with scrambling (CRC16)
1000 1001	89	MAPOS 16 with scrambling (CRC16)
1000 1100	8C	MAPOS 8 with scrambling (CRC32)
1000 1101	8D	MAPOS 16 with scrambling (CRC32)
1000 1110	8E	MAPOS Reserved
1000 1111	8F	MAPOS Reserved

1100 1111	CF	Reserved
1101 0000	D0	Reserved for proprietary use
.....		
1101 1111	DF	Reserved for proprietary use
1110 0001	E1	Reserved for national use
1111 1011	FB	Reserved for national use
1111 1100	FC	Reserved for national use (Except LEX) RFC 1841 LEX mapping (LEX)
1111 1110	FE	O.181 mapping
1111 1111	FF	VC-AIS
(Others)		Unused

(SONET)

1234 5678	Hex	Description
-----	---	-----
0000 0000	00	Unequipped
0000 0001	01	Equipped-Nonspecific
0000 0010	02	Floating VT Mode
0000 0011	03	Locked VT Mode
0000 0100	04	Async. Mapping DS3
0000 0100	05	Mapping under development
0001 0010	12	Async. Mapping 139M
0001 0011	13	Mapping for ATM
0001 0100	14	Mapping for DQDB
0001 0101	15	Async. Mapping FDDI
0001 0110	16	Mapping HDLC Over SONET
1000 0000	80	MAPOS 8 without scrambling (CRC16)
1000 0001	81	MAPOS 16 without scrambling (CRC16)
1000 1000	88	MAPOS 8 with scrambling (CRC16)
1000 1001	89	MAPOS 16 with scrambling (CRC16)
1000 1100	8C	MAPOS 8 with scrambling (CRC32)
1000 1101	8D	MAPOS 16 with scrambling (CRC32)
1000 1110	8E	MAPOS Reserved
1000 1111	8F	MAPOS Reserved
1100 1111	CF	Reserved
1110 0001	E1	VT-Structured STS-1 SPE with 1 VTx Payload Defect (STS-1 w/1 VTx PD)
1110 0010	E2	STS-1 w/2 VTx PDs
1110 0011	E3	STS-1 w/3 VTx PDs
1110 0100	E4	STS-1 w/4 VTx PDs
1110 0101	E5	STS-1 w/5 VTx PDs

Section 6 Details of Device Messages

1110 0110	E6	STS-1 w/6 VTx PDs
1110 0111	E7	STS-1 w/7 VTx PDs
1110 1000	E8	STS-1 w/8 VTx PDs
1110 1001	E9	STS-1 w/9 VTx PDs
1110 1010	EA	STS-1 w/10 VTx PDs
1110 1011	EB	STS-1 w/11 VTx PDs
1110 1100	EC	STS-1 w/12 VTx PDs
1110 1101	ED	STS-1 w/13 VTx PDs
1110 1110	EE	STS-1 w/14 VTx PDs
1110 1111	EF	STS-1 w/15 VTx PDs
1111 0000	F0	STS-1 w/16 VTx PDs
1111 0001	F1	STS-1 w/17 VTx PDs
1111 0010	F2	STS-1 w/18 VTx PDs
1111 0011	F3	STS-1 w/19 VTx PDs
1111 0100	F4	STS-1 w/20 VTx PDs
1111 0101	F5	STS-1 w/21 VTx PDs
1111 0110	F6	STS-1 w/22 VTx PDs
1111 0111	F7	STS-1 w/23 VTx PDs
1111 1000	F8	STS-1 w/24 VTx PDs
1111 1001	F9	STS-1 w/25 VTx PDs
1111 1010	FA	STS-1 w/26 VTx PDs
1111 1011	FB	STS-1 w/27 VTx PDs
1111 1100	FC	VT-structured STS-1 SPE (Except LEX) RFC 1841 LEX mapping (LEX)
1111 1110	FE	O.181 Test Signal Mapping
1111 1111	FF	AIS-P
(Others)		Unused

Command	:{SDH | SONet}:OVERhead:PRESet::{VC1 | VT}:V5 <BINARY>
Query	:{SDH | SONet}:OVERhead:PRESet::{VC1 | VT}:V5?
Response	<BINARY>
Description	Sets the V5 byte (bits 5 to 7) of VC1/VT. * Valid only for MU150101A module.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<BINARY>

Set the V5 byte values in the 3-bit <BINARY> format.
Descriptions for values of the response data are shown below.

(SDH)

567	Description
---	-----
000	Unequipped
001	Reserved
010	Asynchronous
011	Bit synchronous
100	Byte synchronous
101	Extended signal label
110	O.181 mapping
111	VC-AIS

(SONET)

567	Description
---	-----
000	Unequipped
001	Reserved
010	Asynchronous
011	Bit synchronous
100	Byte synchronous
101	Extended signal label
110	O.181 mapping
111	AIS-V

Section 6 Details of Device Messagess

Command	:{SDH | SONet}:OVERhead:PRESet:S1 <BINARY>	
Query	:{SDH | SONet}:OVERhead:PRESet:S1?	
Response	<BINARY>	
Description	Sets a value of S1 (bit 5 to 8)	
Module	– MbE – GbE √ 2.5G/10G	
Parameter	<BINARY>	
	Set a value of S1 byte (bits 5 to 8) in the 4-bit <BINARY> format. Descriptions of values are shown below:	
	(SDH)	
	5678	Description
	-----	-----
	0000	Quality Unknown (Existing Synchronization Network)
	0010	Rec. G.811
	0100	SSU-A
	1000	SSU-B
	1011	Rec. G.813 Option I (SEC)
	1111	Do not use for synchronization
	Others	Reserved
	(SONET)	
	5678	Description
	----	-----
	0000	Synchronized Traceability Unknown
	0001	Stratum 1 Traceable
	0100	Transit Node Clock Traceable
	0111	Stratum 2 Traceable
	1010	Stratum 3 Traceable
	1100	SONET Minimum Clock Traceable
	1101	Stratum 3E Traceable
	1110	Reserved
	1111	DON'T USE for Synchronization
	Others	Unused
Default	#B0000	

Command	:{SDH | SONet}:OVERhead:PRESet:POH <HEX>
Query	:{SDH | SONet}:OVERhead:PRESet:POH?
Response	<HEX>
Description	Sets the preset data of POH. During virtual concatenation, a member specified by the {SDH | SONet}:OVERhead:MONitor:POH:MEMBer command is the target.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<HEX> Set the preset value of POH with the 9-byte data arranged in the following order: SDH: J1 B3 C2 G1 F2 H4 F3 K3 N1 SONET: J1 B3 C2 G1 F2 H4 Z3 Z4 Z5
Default	#H0000FE00000000000000 (C2: 0xFE)

Command	:{SDH | SONet}:OVERhead:PRESet:{VC3 | STS1}:POH <HEX>
Query	:{SDH | SONet}:OVERhead:PRESet:{VC3 | STS1}:POH?
Response	<HEX>
Description	Sets the POH preset data for VC3, STS1. * 9-byte data is acquired and set in batch. * Valid only for MU150101A module.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<HEX> Set the POH preset value with 9-byte data in the following order: SDH: J1 B3 C2 G1 F2 H4 F3 K3 N1 SONET: J1 B3 C2 G1 F2 H4 Z3 Z4 Z5

Section 6 Details of Device Messages

Command	:{SDH | SONet}:OVERhead:PRESet:{VC1 | VT}:POH <HEX>
Query	:{SDH | SONet}:OVERhead:PRESet:{VC1 | VT}:POH?
Response	<HEX>
Description	Sets the POH preset data for VC1, VT. * 4-byte data is acquired and set in batch. * Valid only for MU150101A module.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<HEX> Set the POH preset value with 4-byte data in the following order: SDH: V5 J2 N2 K4 SONET: V5 J2 N2 Z7
Default	#H0C000000

Command	:{SDH SONet}:OVERhead:PRESet:{SOH TOH} <channel>,<HEX>																																																																																			
Query	:{SDH SONet}:OVERhead:PRESet:{SOH TOH}? <channel>																																																																																			
Response	<HEX>																																																																																			
Description	Sets the preset data of SOH/TOH. * This command cannot set H1/H2/H3, B1/B2, and K1/K2 bytes.																																																																																			
Module	– MbE – GbE √ 2.5G/10G																																																																																			
Parameter	<channel> The channel number of SDH/SONET. <HEX> Specify the SOH/TOH data (81 bytes) of the specified channel with a piece of data in a<HEX> format. The order in which the data is specified should be x11, x12, ... x98, x99, as shown in the table below that indicates the byte locations of SOH/TOH. However, values of bytes representing locations of H1/H2/H3, B1/B2 and K1/K2 cannot be set with this command. Don't care values of these byte locations.																																																																																			
	<table><tr><td>X11</td><td>X12</td><td>X13</td><td>X14</td><td>X15</td><td>X16</td><td>X17</td><td>X18</td><td>X19</td></tr><tr><td>X21</td><td>X22</td><td>X23</td><td>X24</td><td>X25</td><td>X26</td><td>X27</td><td>X28</td><td>X29</td></tr><tr><td>X31</td><td>X32</td><td>X33</td><td>X34</td><td>X35</td><td>X36</td><td>X37</td><td>X38</td><td>X39</td></tr><tr><td>X41</td><td>X42</td><td>X43</td><td>X44</td><td>X45</td><td>X46</td><td>X47</td><td>X48</td><td>X49</td></tr><tr><td>X51</td><td>X52</td><td>X53</td><td>X54</td><td>X55</td><td>X56</td><td>X57</td><td>X58</td><td>X59</td></tr><tr><td>X61</td><td>X62</td><td>X63</td><td>X64</td><td>X65</td><td>X66</td><td>X67</td><td>X68</td><td>X69</td></tr><tr><td>X71</td><td>X72</td><td>X73</td><td>X74</td><td>X75</td><td>X76</td><td>X77</td><td>X78</td><td>X79</td></tr><tr><td>X81</td><td>X82</td><td>X83</td><td>X84</td><td>X85</td><td>X86</td><td>X87</td><td>X88</td><td>X89</td></tr><tr><td>X91</td><td>X92</td><td>X93</td><td>X94</td><td>X95</td><td>X96</td><td>X97</td><td>X98</td><td>X99</td></tr></table>			X11	X12	X13	X14	X15	X16	X17	X18	X19	X21	X22	X23	X24	X25	X26	X27	X28	X29	X31	X32	X33	X34	X35	X36	X37	X38	X39	X41	X42	X43	X44	X45	X46	X47	X48	X49	X51	X52	X53	X54	X55	X56	X57	X58	X59	X61	X62	X63	X64	X65	X66	X67	X68	X69	X71	X72	X73	X74	X75	X76	X77	X78	X79	X81	X82	X83	X84	X85	X86	X87	X88	X89	X91	X92	X93	X94	X95	X96	X97	X98	X99
X11	X12	X13	X14	X15	X16	X17	X18	X19																																																																												
X21	X22	X23	X24	X25	X26	X27	X28	X29																																																																												
X31	X32	X33	X34	X35	X36	X37	X38	X39																																																																												
X41	X42	X43	X44	X45	X46	X47	X48	X49																																																																												
X51	X52	X53	X54	X55	X56	X57	X58	X59																																																																												
X61	X62	X63	X64	X65	X66	X67	X68	X69																																																																												
X71	X72	X73	X74	X75	X76	X77	X78	X79																																																																												
X81	X82	X83	X84	X85	X86	X87	X88	X89																																																																												
X91	X92	X93	X94	X95	X96	X97	X98	X99																																																																												

Section 6 Details of Device Messagess

Command	:{SDH | SONet}:OVERhead:PRESet:H4:DATA <BINARY>,<BINARY>,...
Query	:{SDH | SONet}:OVERhead:PRESet:H4:DATA?
Response	<BINARY>,<BINARY>,...
Description	<p>Sets the Virtual Concatenation H4 Byte preset data.</p> <p>The bytes that can be set differ depending on the setting of the LCAS function ON/OFF.</p> <p>*Valid only for MU150101A module.</p>
Module	– MbE – GbE √ 2.5G/10G
Parameter	<p><BINARY>,<BINARY>,...</p> <p>Set H4 byte (Bits 1 to 4) values for 16 items in order from No. 0 to No. 15 in the 4-bit <BINARY> format.</p> <p>The bytes that can be set differ depending on the setting of the LCAS function ON/OFF as follows. The bytes that cannot be specified are set to optional (Don't Care).</p> <p>No.2 through No.13 can be set when the LCAS function is OFF.</p> <p>No.3 through No.5 and No.10 through No.13 can be set when the LCAS function is ON. In this event, bit 4 of No. 3 and No. 10 is set to optional (Don't Care).</p>
Default	#B0000

Command	:{SDH | SONet}:OVERhead:PRESet::{K4 | Z7}:B1:ESLabel <BINARY>	
Query	:{SDH | SONet}:OVERhead:PRESet::{K4 | Z7}:B1:ESLabel?	
Response	<BINARY>	
Description	Sets the Virtual Concatenation K4 b1 Extended Signal Label value. * Valid only for MU150101A module.	
Module	– MbE – GbE √ 2.5G/10G	
Parameter	<BINARY> Set a K4 b1 extended signal label value in the 8-bit <BINARY> format. Descriptions for values of the response data are shown below.	
	BINARY	Description
	-----	-----
	00000000	Reserved
	:	
	00000111	Reserved
	00001000	Experimental mapping
	00001001	ATM mapping
	00001010	Mapping of HDLC/PPP framed signal
	00001011	Mapping of HDLC/LAPS framed signal
	00001100	Virtual concatenated test signal, O.181 specific mapping
	00001101	GFP mapping
	11010000	Reserved for proprietary use
	:	
	11011110	Reserved for proprietary use
	11111111	Reserved
	Others	Unused
Default	#B00000000	

Section 6 Details of Device Messagess

Command	:{SDH | SONet}:OVERhead:PRESet:{K4 | Z7}:B1:REServed <BINARY>
Query	:{SDH | SONet}:OVERhead:PRESet:{K4 | Z7}:B1:REServed?
Response	<BINARY>
Description	Sets the Virtual Concatenation K4 b1 Reserved Bit value. * Valid only for MU150101A module.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<BINARY> Set a K4 b1 reserved bit value in the 12-bit <BINARY> format.
Default	#B0000000000000

Command	:{SDH | SONet}:OVERhead:PRESet:{K4 | Z7}:B2:REServed <BINARY>
Query	:{SDH | SONet}:OVERhead:PRESet:{K4 | Z7}:B2:REServed?
Response	<BINARY>
Description	Sets the Virtual Concatenation K4 b2 Reserved Bits value. Enables settings at LCAS OFF. * Valid only for MU150101A module.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<BINARY> Set a K4 b2 reserved bit value in the 21-bit <BINARY> format.
Default	#B000000000000000000000

Command	:{SDH | SONet}:OVERhead:PRESet:{K4 | Z7}:B2:SPARe <BINARY>
Query	:{SDH | SONet}:OVERhead:PRESet:{K4 | Z7}:B2:SPARe?
Response	<BINARY>
Description	Sets the Virtual Concatenation K4 b2 Spare value. Valid when the LCAS function is ON. * Valid only for MU150101A module.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<BINARY> Set a K4 b2 spare value in 4-bit <BINARY> format.
Default	#B0000

Command	:{SDH | SONet}:OVERhead:PRESet:K1 <HEX>
Query	:{SDH | SONet}:OVERhead:PRESet:K1?
Response	<HEX>
Description	Sets a value of K1 byte.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<HEX> Set a value of K1 byte in the 1-octet <HEX> format.
Default	#H00 (0x00)

Section 6 Details of Device Messagess

Command	:{SDH | SONet}:OVERhead:PRESet:K2 <HEX>
Query	:{SDH | SONet}:OVERhead:PRESet:K2?
Response	<HEX>
Description	Sets a value of K2 byte.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<HEX> Set a value of K2 byte in the 1-octet <HEX> format.
Default	#H00 (0x00)

Command	:{SDH | SONet}:OVERhead:PRESet:POINter:ID <NR1>
Query	:{SDH | SONet}:OVERhead:PRESet:POINter:ID?
Response	<NR1>
Description	Sets an AU/STS pointer value (ID field, 10 bits). During virtual concatenation, the pointer of the member specified by the {SDH | SONet}:OVERhead:PRESet:POINter:MEMBer command is the target. The setting range is limited to the ±100 around the reference of the beginning member.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 1023. During virtual concatenation with the MU120103B/04B, however, the maximum value is 782.

Command	:{SDH | SONet}:OVERhead:PRESet:POINter:SS <BINARY>
Query	:{SDH | SONet}:OVERhead:PRESet:POINter:SS?
Response	<BINARY>
Description	<p>Sets a pointer value (SS field, 2 bits).</p> <p>During virtual concatenation, a member specified by the {SDH | SONet}:OVERhead: MONitor:POH:MEMBer command is the target.</p>
Module	– MbE – GbE √ 2.5G/10G
Parameter	<p><BINARY></p> <p>Set a pointer value (SS field) in the 2-bit <BINARY> format.</p>
Default	SDH: #B10 (10), SONET: #B00 (00)

Command	:{SDH | SONet}:OVERhead:PRESet:POINter:NDF <BINARY>
Query	:{SDH | SONet}:OVERhead:PRESet:POINter:NDF?
Response	<BINARY>
Description	<p>Sets a pointer value (NDF field, 4 bits).</p> <p>During virtual concatenation, a member specified by the {SDH | SONet}:OVERhead: MONitor:POH:MEMBer command is the target.</p>
Module	– MbE – GbE √ 2.5G/10G
Parameter	<p><BINARY></p> <p>Set a pointer value (NDF field) in the 4-bit <BINARY> format.</p>
Default	#B0110 (0110)

Command	:{SDH | SONet}:OVERhead:PRESet:POINter:DEFault
Description	<p>Aligns the pointers of all members to that of the head member.</p> <p>The pointers of all members within the measurement CH in virtual concatenation are aligned to that of the head pointer.</p>
Module	– MbE – GbE √ 2.5G/10G

Section 6 Details of Device Messagess

Command	:{SDH | SONet}:OVERhead:PRESet:POH:MEMBer <NR1>
Query	:{SDH | SONet}:OVERhead:PRESet:POH:MEMBer?
Response	<NR1>
Description	Sets a target member of POH setting in the OH Preset screen.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 24 inclusive. The setting range depends on the current Multiplexing setting.
Default	1

Command	:{SDH | SONet}:OVERhead:PRESet:POINter:MEMBer <NR1>
Query	:{SDH | SONet}:OVERhead:PRESet:POINter:MEMBer?
Response	<NR1>
Description	Sets a target member of Pointer setting in the K1 and K2 Pointer setting screen.
Module	– MbE – GbE √ 2.5G/10G
Parameter	Set a value from 0 to 24 inclusive. The setting range depends on the current Multiplexing setting.
Default	1

Command	:{SDH | SONet}:OVERhead:PRESet:POINter:MEMBer:ENABle <BOOLEAN>
Query	:{SDH | SONet}:OVERhead:PRESet:POINter:MEMBer:ENABle?
Response	<BOOLEAN>
Description	<p>Whether to enable/disable a function to have a target for inserting +/- PJC.</p> <p>A pointer of the member specified by the :{SDH | SONet}:OVERhead:PRESet:POINter:MEMBer command is a target.</p> <p>Sets available or not of an operation target of</p> <p>:{SDH | SONet}:OVERhead:PRESet:POINter:NPJC command and</p> <p>:{SDH | SONet}:OVERhead:PRESet:POINter:PPJC command.</p> <p>This command requires the MU120103B/04B-02/MU150101A-11 option.</p>
Module	– MbE – GbE √ 2.5G/10G
Parameter	<p><BOOLEAN></p> <p>Set {ON | 1} (ON or 1) for the member who targets the +/-PJC operation.</p> <p>Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.</p>
Default	{ON | 1}
Command	:{SDH | SONet}:OVERhead:PRESet:POINter:MEMBer:AENABle
Description	<p>For all AU/STS members, enables a function to have a target for inserting +/-PJC.</p> <p>* Valid only for MU150101A module.</p>
Module	– MbE – GbE √ 2.5G/10G
Command	:{SDH | SONet}:OVERhead:PRESet:POINter:MEMBer:ADISABle
Description	<p>For all AU/STS members, disables a function to have a target for inserting +/-PJC.</p> <p>* Valid only for MU150101A module.</p>
Module	– MbE – GbE √ 2.5G/10G

Section 6 Details of Device Messagess

Command	:{SDH | SONet}:OVERhead:PRESet:POINter:{TU | VT}:MEMBer <ch1>[,<ch2>,<ch3>,<ch4>]
Query	:{SDH | SONet}:OVERhead:PRESet:POINter:{TU | VT}:MEMBer?
Response	<ch1>[,<ch2>,<ch3>,<ch4>]
Description	Sets a target member of TU/VT Pointer setting in the K1 and K2 Pointer setting screen. * Valid only for MU150101A module.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<ch1>[,<ch2>,<ch3>,<ch4>] Specify a member channel. The channel to be set differs depending on the Tx Multiplexing setting as follows: <ch1> Specify a channel of AUG/STS3c(*1). <ch2> Specify a channel of AU3/STS1(1 to 3) or TUG3(1 to 3). <ch3> Specify a channel of TUG2/VTG(1 to 7). <ch4> Specify a channel of TU12/VT2(1 to 3) or TU11/VT1.5(1 to 4). *1 Varies according to the bit rate. 1 to 16 at 2488 Mbps 1 to 4 at 622 Mbps 1 at 156 Mbps
Default	1

Command	:{SDH | SONet}:OVERhead:PRESet:POINter:{TU | VT}:MEMBer:ENABLE <BOOLEAN>		
Query	:{SDH | SONet}:OVERhead:PRESet:POINter:{TU | VT}:MEMBer:ENABLE?		
Response	<BOOLEAN>		
Description	<p>Enables/disables a function to insert +/- PJC for each TU/VT member.</p> <p>The pointer of the member specified by the {SDH | SONet}:OVERhead:PRESet:POINter:{TU | VT}:MEMBer command is the target.</p> <p>Sets available or not of an operation target of :</p> <p>{SDH | SONet}:OVERhead:PRESet:POINter:NPJC and :</p> <p>{SDH | SONet}:OVERhead:PRESet:POINter:PPJC commands.</p> <p>This command requires the MU150101A-12 option.</p> <p>* Valid only for MU150101A module.</p>		
Module	– MbE	– GbE	√ 2.5G/10G
Parameter	<BOOLEAN> <p>Set {ON | 1}{ON or 1) for +/-PJC operation target member. Otherwise, sets {OFF | 0}{OFF or 0). 1 or 0 is returned as query response data.</p>		

Section 6 Details of Device Messagess

Command	:{SDH | SONet}:OVERhead:PRESet:POINter:{TU | VT}:NDF <BINARY>
Query	:{SDH | SONet}:OVERhead:PRESet:POINter:{TU | VT}:NDF?
Response	<BINARY>
Description	<p>Sets a TU/VT pointer value (NDF field, 4 bits).</p> <p>During virtual concatenation, the pointer of the member set by the :{SDH | SONet}:OVERhead:PRESet:POINter:{TU | VT}:MEMBer command is the target.</p> <p>* Valid only for MU150101A module.</p>
Module	– MbE – GbE √2.5G/10G
Parameter	<BINARY> Set a pointer value (NDF field) in the 4-bit <BINARY> format.
Default	#B0000

Command	:{SDH | SONet}:OVERhead:PRESet:POINter:{TU | VT}:SS <BINARY>
Query	:{SDH | SONet}:OVERhead:PRESet:POINter:{TU | VT}:SS?
Response	<BINARY>
Description	<p>Sets a TU/VT pointer value (SS field, 2 bits).</p> <p>During virtual concatenation, the pointer of the member set by the :{SDH | SONet}:OVERhead:PRESet:POINter:{TU | VT}:MEMBer command is the target.</p> <p>* Valid only for MU150101A module.</p>
Module	– MbE – GbE √ 2.5G/10G
Parameter	<BINARY> Set a pointer value (SS field) in the 2-bit <BINARY> format.
Default	SDH: #B10 (10), SONET: #B00 (00)

Command	:{SDH | SONet}:OVERhead:PRESet:POINter:{TU | VT}:ID <NR1>
Query	:{SDH | SONet}:OVERhead:PRESet:POINter:{TU | VT}:ID?
Response	<NR1>
Description	<p>Set a TU/VT pointer value (ID field, 10 bits).</p> <p>During virtual concatenation, the pointer of the member set by the :{SDH | SONet}:OVERhead:PRESet:{TU | VT}:POINter:MEMBer command is the target.</p> <p>* Valid only for MU150101A module.</p>
Module	– MbE – GbE √ 2.5G/10G
Parameter	<p><NR1></p> <p>Set a pointer values (ID field) using the following range:</p> <p>0 to 764 when Tx Multiplexing is VC3-Xv (STS1-Xv)</p> <p>0 to 139 when Tx Multiplexing is VC12-Xv (VT2-Xv)</p> <p>0 to 103 when Tx Multiplexing is VC11-Xv(VT1.5-Xv)</p>
Default	0

Command	:{SDH | SONet}:OVERhead:PRESet:POINter:{TU | VT}:DEFault
Description	<p>Aligns the pointers of all TU/VT members to that of the head member.</p> <p>During virtual concatenation, aligns the pointers of all TU/VT members within the measurement channel to that of the head member.</p> <p>* Valid only for MU150101A module.</p>
Module	– MbE – GbE √ 2.5G/10G

Command	:{SDH | SONet}:OVERhead:PRESet:POINter:{TU | VT}:MEMBer:AENable
Description	<p>For all the TU/VT members, enables a function to have a target for inserting +/-PJC.</p> <p>* Valid only for MU150101A module.</p>
Module	– MbE – GbE √ 2.5G/10G

Command	:{SDH | SONet}:OVERhead:PRESet:POINter:{TU | VT}:MEMBer:ADISable
Description	<p>For all the TU/VT members, disables a function to have a target for inserting +/-PJC.</p> <p>* Valid only for MU150101A module.</p>
Module	– MbE – GbE √ 2.5G/10G

Section 6 Details of Device Messagess

Command :{SDH | SONet}:ERRor:STOP

Description Stops to insert an error.

Module – MbE – GbE √ 2.5G/10G

Command :{SDH | SONet}:ERRor:STARt

Description Inserts an error.

For Virtual Concatenation, an error is inserted in all members of the measurement channel at the same time.

* In Through Mode, this command cannot be executed if OH Overwrite is not set.

Module – MbE – GbE √ 2.5G/10G

Query :{SDH | SONet}:ERRor:STATe?

Response {0 | 1 | 2}

Description Queries the status of error insertion.

Module – MbE – GbE √ 2.5G/10G

Parameter {0 | 1 | 2}

The code number is returned as the processing status. Meanings of the numbers are shown below:

0 Error insertion is stopped.

1 Error insertion is underway.

2 Starting/Halting alarm insertion.

Command	:{SDH | SONet}:ERRor:TYPE <errortype>	
Query	:{SDH | SONet}:ERRor:TYPE?	
Response	<errortype>	
Description	Sets the type of errors added to SDH/SONET frame.	
Module	– MbE – GbE √ 2.5G/10G	
Parameter	<errortype> Select the type of errors to be added from the followings: OFF No error is added. FAS FAS (*2) BIT_ALL Bit all B1 B1 B2 B2 B3 B3 {MS_REI | REI_L} MS-REI/REI_L {HP_REI | REI_P} HP-REI/REI_P HP_IEC HP-IEC BIT_INFO Bit-info (*1) *1: This is valid only when the mapping is set to Bulk. *2: This is invalid when the alarm insertion type is set to LOF.	
Default	OFF	

Section 6 Details of Device Messagess

Command	:{SDH | SONet}:ERRor:TIMing:ALternate:NORMal <NR1>
Query	:{SDH | SONet}:ERRor:TIMing:ALternate:NORMal?
Response	<NR1>
Description	Sets the number of normal frames (Normal) in the alternate mode. * This command is valid when the error insertion type is set to alternate.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 1 to 8000 (frame).
Default	1

Command	:{SDH | SONet}:ERRor:TIMing:ALternate:ERRor <NR1>
Query	:{SDH | SONet}:ERRor:TIMing:ALternate:ERRor?
Response	<NR1>
Description	Sets the number of error frames (Errors) in the alternate mode. * This command is valid when the error insertion type is set to alternate.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 8000 (frame).

Command	:{SDH | SONet}:ERRor:TIMing:BURSt <NR1>
Query	:{SDH | SONet}:ERRor:TIMing:BURSt?
Response	<NR1>
Description	Sets the number of bits for error insertion. * When the timing of error insertion is set to single (burst) bit
Module	– MbE – GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 1 to 64000 (bit).
Default	1

Command	:{SDH | SONet}:ERRor:TIMing {SINGLE | BURST | RATE | ALTERNATE | ALL}	
Query	:{SDH | SONet}:ERRor:TIMing?	
Response	{SINGLE | BURST | RATE | ALTERNATE | ALL}	
Description	Sets the timing of error insertion.	
Module	– MbE – GbE √ 2.5G/10G	
Parameter	{SINGLE | BURST | RATE | ALTERNATE | ALL} Select the timing of error insertion from the followings: SINGLE Single BURST Single (burst) bit RATE Rate ALTERNATE Alternate ALL All * When the error type is set to FAS, only Alternate can be selected. * When the error type is set to Bit all, Single (burst) bit and All cannot be set. * When the error type is set to Bit-info, Single (burst) bit, Alternate and All cannot be set.	
Default	SINGLE (Single)	

Section 6 Details of Device Messagess

Command :{SDH | SONet}:ERRor:TIMing:RATE <NR3>

Query :{SDH | SONet}:ERRor:TIMing:RATE?

Response <NR3>

Description Sets the rate of error insertion.

* This setting is valid when selecting the rate.

Module – MbE – GbE √ 2.5G/10G

Parameter <NR3>

Set the error insertion ratio. The minimum value is 1.0E-10 while the maximum value varies depending on the error type as shown below:

	156M	622M	2.5G	10G
B1	4.1E-04	1.0E-04	2.5E-05	6.4E-06
B2	1.2E-03	1.2E-03	1.2E-03	1.2E-03
B3	4.2E-04	1.0E-04	2.6E-05	6.6E-06
MS-REI	1.2E-03	1.2E-03	8.2E-04	2.0E-04
HP-REI	4.2E-04	1.0E-04	2.6E-05	6.6E-06
HP-IEC	4.2E-04	1.0E-04	2.6E-05	6.6E-06
Bit all	1.0E-03	1.0E-03	1.0E-03	1.0E-03
Bit info	1.0E-03	1.0E-03	1.0E-03	1.0E-03

Default 1.0E-3

Command	:{SDH | SONet}:ERRor:CHS "<CH>","<CH>",...
Query	:{SDH | SONet}:ERRor:CHS?
Response	"<CH>","<CH>",...
Description	Specifies two or more channels for which Error may be inserted. * Valid only for MU150101A module.
Module	– MbE – GbE √ 2.5G/10G
Parameter	"<CH>","<CH>",... = <STRING>,<STRING>,... Selects a channel for which an error may be inserted. Set channels to be added from 1 to 84 with a character string. The channel layers are delimited with dots from the upper level, according to the Tx Multiplexing setting as shown below: "[ch1].[ch2].[ch3].[ch4]" Specify "All" when selecting all settable channels. Specify a channel in accordance with Appendix D "Basic Rules for Channel Expression in Virtual Concatenation." <ul style="list-style-type: none">• If a channel that is not allowed to be set exists in a series of the specified channels, it is regarded as an error and the operation is aborted. In this event, no channels are set even if the other specified channels are settable.• Other functions are the same as that for the :SDH:ALARm:CHS command.
Default	All settable channels

Command	:{SDH | SONet}:ERRor:SQValue <NR1>
Query	:{SDH | SONet}:ERRor:SQValue?
Response	<NR1>
Description	Sets a value of SQ when SQ change is selected in SDH error. * Valid only for MU150101A module.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<NR1> The value of 0 to 255(STS3c-Xv/VC4-Xv,STS1c-Xv/VC3-Xv), 0 to 63(VT2-Xv/VC12-Xv,VT1.5-Xv/VC11-Xv) is set. Setting it when addition Type is SQ Change becomes possible.
Default	It differs according to the setting of Tx Multiplexing.

Section 6 Details of Device Messages

Command :{SDH | SONet}:ALARm:STOP

Description Stops to insert an alarm.

Module – MbE – GbE √ 2.5G/10G

Command :{SDH | SONet}:ALARm:START

Description Inserts an alarm.

For Virtual Concatenation, an alarm is inserted in all members of the measurement channel at the same time.

* In Through Mode, this command cannot be executed if OH Overwrite is not set.

Module – MbE – GbE √ 2.5G/10G

Query :{SDH | SONet}:ALARm:STATe?

Response {0 | 1 | 2}

Description Queries the status of alarm insertion.

Module – MbE – GbE √ 2.5G/10G

Parameter {0 | 1 | 2}

The code number is returned as the processing status. Meanings of the numbers are shown below:

0 Alarm insertion is stopped.

1 Alarm insertion is underway.

2 Starting/Halting alarm insertion.

Command	:{SDH | SONet}:ALARm:TYPE <errortype>	
Query	:{SDH | SONet}:ALARm:TYPE?	
Response	<errortype>	
Description	Sets the type of alarms to be added to SDH/SONET frame.	
Module	– MbE – GbE √ 2.5G/10G	
Parameter	<errortype> Select the alarm type to be added from the followings: OFF No alarm is added. LOS LOS LOF LOF (*) {MS_AIS | AIS_L} MS-AIS/AIS-L {MS_RDI | RDI_L} MS-RDI/RDI-L {MS_TIM | TIM_L} MS-TIM/TIM-L {AU_AIS | AIS_P} AU-AIS/AIS-P {AU_LOP | LOP_P} AU-LOP/LOP-P {HP_SLM | SLM_P} HP-SLM/SLM-P {HP_TIM | TIM_P} HP-TIM/TIM-P {HP_RDI | RDI_P} HP-RDI/RDI-P {HP_UNEQ | UNEQ_P} HP-UNEQ/UNEQ-P *: Cannot be selected when the error insertion type is set to FAS.	
Default	OFF	

Section 6 Details of Device Messages

Command	:{SDH | SONet}:ALARm:TIMing:ALTErnate:ALARm <NR1>
Query	:{SDH | SONet}:ALARm:TIMing:ALTErnate:ALARm?
Response	<NR1>
Description	Sets the number of alarm frames (Alarms) when the alarm insertion mode is Alternate. * This command is valid when the alarm insertion type is set to alternate.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 8000 (frame).

Command	:{SDH | SONet}:ALARm:TIMing:ALTErnate:NORMal <NR1>
Query	:{SDH | SONet}:ALARm:TIMing:ALTErnate:NORMal?
Response	<NR1>
Description	Sets the number of normal frames (Normal) when the alarm insertion mode is Alternate. * This command is valid when the alarm insertion type is set to alternate.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 8000 (frame).
Default	1

Command	:{SDH | SONet}:ALARm:TIMing:BURSt <NR1>
Query	:{SDH | SONet}:ALARm:TIMing:BURSt?
Response	<NR1>
Description	Sets the rate of alarm insertion when the alarm insertion mode is Burst. * When the timing of alarm insertion is set to single (burst) bit.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 1 to 8000 (frame).
Default	1

Command	:{SDH | SONet}:ALARm:TIMing {SINGLE | BURST | ALTERNATE | ALL}
Query	:{SDH | SONet}:ALARm:TIMing?
Response	{SINGLE | BURST | ALTERNATE | ALL}
Description	Sets the alarm insertion mode.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<div>{SINGLE | BURST | ALTERNATE | ALL}</div> <div>Select an alarm insertion mode from the followings:</div> <div>SINGLE Single</div> <div>BURST Single (burst) frame</div> <div>ALTERNATE Alternative</div> <div>ALL All</div> <div>* When the alarm insertion type is set to LOS, only All can be set.</div>
Default	ALL

Section 6 Details of Device Messagess

Command	::{SDH | SONet}:ALARm:CHS "<CH>","<CH>",...
Query	::{SDH | SONet}:ALARm:CHS?
Response	"<CH>","<CH>",...
Description	<p>Specifies two or more channels for which Alarm may be inserted.</p> <ul style="list-style-type: none"> * This command is valid only when Concatenation type is set to Virtual. * Valid only for MU150101A module.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<p>"<CH>","<CH>",... = <STRING>,<STRING>,...</p> <p>Selects a channel for which an alarm may be inserted.</p> <p>Set channels to be added from 1 to 84 with a character string.</p> <p>The channel layers are delimited with dots from the upper level, according to the Tx Multiplexing setting as shown below:</p> <p>"[ch1].[ch2].[ch3].[ch4]"</p> <p>Specify "All" when selecting all settable channels.</p> <p>Specify a channel in accordance with Appendix D "Basic Rules for Channel Expression in Virtual Concatenation."</p> <ul style="list-style-type: none"> * If a channel that is already set is specified, no operation is performed for that channel. * If a channel that is not allowed to be set exists in a series of the specified channels, it is regarded as an error and the operation is aborted. In this event, no channels are set even if the other specified channels are settable. * A selectable channel becomes unselected if it is not selected. * All the selected channels (channels that can be selected with the current condition and actually selected) are concatenated by a comma and are output as the response data for the query. <p>Response example: "1.1","1.2","1.3","2.1","2.2","2.3"</p>
Default	All settable channels

Command	:{SDH | SONet}:PTRace:ENABle {J0 | J1},<BOOLEAN>
Query	:{SDH | SONet}:PTRace:ENABle? {J0 | J1}
Response	<BOOLEAN>
Description	<p>Sets the path trace function to enable or disable. For Virtual Concatenation, J1 is common to all members of the measurement channel.</p> <p>*In Through Mode, only J0 can be set when OH Overwrite is set. When OH Overwrite is not set, neither J0 nor J1 can be set. The setting is invalid in this case.</p>
Module	– MbE – GbE √ 2.5G/10G
Parameter	<p>{J0 | J1}</p> <p>Specify a target of the path trace (J0/J1 bytes).</p> <p><BOOLEAN></p> <p>To enable the path trace function, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.</p>
Default	0 (disable)

Section 6 Details of Device Messages

Command	:{SDH | SONet}:PTRace:PATtern {J0 | J1},"<pattern>"
Query	:{SDH | SONet}:PTRace:PATtern? {J0 | J1}
Response	"<pattern>"
Description	<p>Sets a transmission pattern of the path trace.</p> <p>For Virtual Concatenation, J1 is common to all members of the measurement channel.</p>
Module	– MbE – GbE √ 2.5G/10G
Parameter	<p>{J0 | J1}</p> <p>Specify a target of the pattern setting (J0/J1 bytes).</p> <p><pattern></p> <p>Set a transmission pattern of the path trace with a string. The number of characters available for setting ranges as follows:</p> <p>When CRC-7 is ON, 0 to 15 bytes.</p> <p>When CRC-7 is OFF, 0 to 64 bytes.</p> <p>* When the number of characters is less than 15/64 (CRC-7 ON/OFF), the trailing space of the actual pattern is filled with white space.</p> <p>* A 64-byte character string is returned as the response data for the query regardless of ON/OFF of CRC.</p> <p>* When CRC-7 is ON, the actual transmission pattern forms the preset pattern preceded by 1-byte CRC. The set pattern with 1-byte <white space> inserted before it is returned as the response data for the query.</p>
Default	"TRACE PATTERN Anritsu MD1230B Data Quality Analyzer"

Command	:{SDH | SONet}:PTRace:HEX:PATtern {J0 | J1 | J1L | J2},<HEX>
Query	:{SDH | SONet}:PTRace:HEX:PATtern? {J0 | J1 | J1L | J2}
Response	<HEX>
Description	<p>Sets a transmission pattern of the path trace in the <HEX> format.</p> <p>For Virtual Concatenation, the setting is common to all members of the measurement channel.</p> <p>* Valid only for MU150101A module.</p>
Module	– MbE – GbE √ 2.5G/10G
Parameter	<p>{J0 | J1 | J1L | J2}</p> <p>Specify a target of the pattern setting (J0/J1-HP/J1-LP/J2 byte).</p> <p><HEX></p> <p>Set a transmission pattern of the path trace with a HEX. The range of the valid number of bytes is as follows:</p> <p>When CRC-7 is ON, 1 to 15 bytes.</p> <p>When CRC-7 is OFF, 1 to 64 bytes.</p> <p>* When the number of characters is less than 15/64 (CRC-7 ON/OFF), the trailing space of the valid pattern is filled with white space.</p> <p>* A 64-byte character string is returned as the response data for the query regardless of ON/OFF of CRC.</p> <p>* When CRC-7 is ON, the actual transmission pattern forms the preset pattern preceded by 1 byte CRC. The set pattern with 1-byte <white space> inserted before it is returned as the response data for the query.</p> <p>* If the number of input characters is odd, it is regarded as an error.</p>
Default	Depends on the default value of the :{SDH | SONet}:PTRace:PATtern command.

Section 6 Details of Device Messagess

Command	:{SDH | SONet}:PTRace:CRC7:ENABle {J0 | J1},<BOOLEAN>
Query	:{SDH | SONet}:PTRace:CRC7:ENABle? {J0 | J1}
Response	<BOOLEAN>
Description	Sets CRC-7 of the path trace to enable or disable. For Virtual Concatenation, J1 is common to all members of the measurement channel.
Module	– MbE – GbE √ 2.5G/10G
Parameter	{J0 | J1} Specify a target of the CRC-7 setting (Jo/J1 bytes). <BOOLEAN> To enable CRC-7, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	0 (disable)

Command	:{SDH | SONet}:PTRace:RX:CRC7:ENABle {J0 | J1 | J1L | J2}, <BOOLEAN>
Query	:{SDH | SONet}:PTRace:RX:CRC7:ENABle? {J0 | J1 | J1L | J2}
Response	<BOOLEAN>
Description	Sets CRC-7 of the received path trace to enable or disable. For Virtual Concatenation, the setting is common to all members of the measurement channel. * Valid only for MU150101A module.
Module	– MbE – GbE √ 2.5G/10G
Parameter	{J0 | J1 | J1L | J2} Specify a target of the CRC-7 setting (J0/J1-HP/J1-LP/J2 byte). <BOOLEAN> To enable CRC-7, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	0 (disable)

Command	:{SDH | SONet}:PTRace:RX:PATtern {J0 | J1 | J1L | J2},"<pattern>"		
Query	:{SDH | SONet}:PTRace:RX:PATtern? {J0 | J1 | J1L | J2}		
Response	"<pattern>"		
Description	<p>Sets receive pattern of the path trace.</p> <p>For Virtual Concatenation, the setting is common to all members of the measurement channel.</p> <p>* Valid only for MU150101A module.</p>		
Module	– MbE – GbE √ 2.5G/10G		
Parameter	<p>{J0 | J1 | J1L | J2}</p> <p>Specify a target of the receive pattern setting (J0/J1-HP/J1-LP/J2 byte).</p> <p><pattern></p> <p>Set a transmission pattern of the path trace with a string. The range of the valid number of characters is as follows:</p> <p>When CRC-7 is ON, 0 to 15 bytes.</p> <p>When CRC-7 is OFF, 0 to 64 bytes.</p> <p>* When the number of characters is less than 15/64 (CRC-7 ON/OFF), the trailing space of the valid pattern is filled with white space.</p> <p>* A 64-byte character string is returned as the response data for the query regardless of ON/OFF of CRC.</p> <p>* When CRC-7 is ON, the actual transmission pattern forms the preset pattern preceded by 1 byte CRC. The set pattern with 1-byte <white space> inserted before it is returned as the response data for the query.</p>		
Default	" TRACE PATTERN Anritsu Corporation "		

Section 6 Details of Device Messagess

Command	:{SDH | SONet}:PTRace:RX:HEX:PATtern {J0 | J1 | J1L | J2},<HEX>
Query	:{SDH | SONet}:PTRace:RX:HEX:PATtern? {J0 | J1 | J1L | J2}
Response	<HEX>
Description	<p>Sets a reception pattern of the path trace in the <HEX> format.</p> <p>For Virtual Concatenation, the setting is common to all members of the measurement channel.</p> <p>* Valid only for MU150101A module.</p>
Module	– MbE – GbE √ 2.5G/10G
Parameter	<p>{J0 | J1 | J1L | J2}</p> <p>Specify a target of the pattern setting (J0/J1-HP/J1-LP/J2 byte).</p> <p><HEX></p> <p>Sets a reception pattern of the path trace with a HEX. The range of the valid number of bytes is as follows:</p> <p>When CRC-7 is ON, 1 to 15 bytes.</p> <p>When CRC-7 is OFF, 1 to 64 bytes.</p> <p>* When the number of characters is less than 15/64 (CRC-7 ON/OFF), the trailing space of the valid pattern is filled with white space.</p> <p>* A 64-byte character string is returned as the response data for the query regardless of ON/OFF of CRC.</p> <p>* When CRC-7 is ON, the actual reception pattern forms the preset pattern preceded by 1 byte CRC. The set pattern with 1-byte <white space> inserted before it is returned as the response data for the query.</p> <p>* If the number of input characters is odd, it is regarded as an error.</p>
Default	Depends on the default value of the :{SDH | SONet}:PTRace:RX:PATtern command.

Query	:{SDH | SONet}:PTRace:MONitor:PATtern? {J0 | J1}
Response	"<pattern>"
Description	<p>Queries a receive pattern of path trace.</p> <p>During Virtual Concatenation, a member specified by :{SDH | SONet}:Overhead:MONitor:POH:MEMber command is a target.</p>
Module	– MbE – GbE √ 2.5G/10G
Parameter	<p>{J0 | J1}</p> <p>Specify a target (J0/J1 bytes) to be queried.</p> <p><pattern></p> <p>The receive pattern of path trace is returned in a string. Unlike a transmission pattern, 64-byte data is always returned regardless of whether CRC-7 is ON or OFF.</p> <p>* Characters other than 0x20-0x7e are replaced with "?".</p> <p>* If there is no CRC error, each beginning byte of the 16-byte pattern corresponding to CRC is replaced with "*". For the MU150101A, however, the beginning byte is replaced with "*" only when the CRC is set to ON by a reception setting pattern and there is no CRC error.</p> <p>* When J1 byte is queried by this command during Virtual Concatenation, it always responses about POH of the head member.</p>

Section 6 Details of Device Messagess

Query	:{SDH | SONet}:PTRace:TIM? {J0 | J1}
Response	<BOOLEAN>
Description	Queries whether TIM error has occurred. During Virtual Concatenation, a member specified by :{SDH | SONet}:Overhead:MONitor:POH:MEMber command is a target.
Module	– MbE – GbE √ 2.5G/10G
Parameter	{J0 | J1} Specify a target (J0/J1 bytes) to be queries. <BOOLEAN> When the TIM error has occurred, 1 is returned. Otherwise, 0 is returned. * When J1 byte is queried by this command during Virtual Concatenation, it always responses about POH of the head member.

Query	:{SDH | SONet}:PTRace:CERRor? {J0 | J1}
Response	<BOOLEAN>
Description	Queries whether CRC error has occurred. During Virtual Concatenation, a member specified by :{SDH | SONet}:Overhead:MONitor:POH:MEMber command is a target.
Module	– MbE – GbE √ 2.5G/10G
Parameter	{J0 | J1} Specify a target (J0/J1 bytes) to be queries. <BOOLEAN> When the CRC error has occurred, 1 is returned. Otherwise, 0 is returned. * When J1 byte is queried by this command during Virtual Concatenation, it always responses about POH of the head member.

Query	:{SDH | SONet}:PERFORMANCE:TIME:START?
Response	"<DATETIME>"
Description	Queries the start time of a measurement.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<DATETIME> A string that indicates the date and the time. This is expressed in the following format: <date><space><time> <date> The format is yyyy/mm/dd. These refer to "year", "month", and "date", respectively. The value ranges from 2000/01/01 to 2098/12/31. <time> The format is hh:mm:ss.sss. These refer to "hours", "minutes", and "seconds", respectively. This is expressed on a 24-hour basis. The value ranges from 00:00:00.000 to 23:59:59.999. Example: "2003/08/15 13:22:51.01"

Query	:{SDH | SONet}:PERFORMANCE:TIME:ELAPSED?
Response	<NR1>
Description	Queries the elapsed time of a measurement.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<NR1> An integer value that indicates the elapsed time of a measurement. It takes values from 0 to 315360000 (second).

Query	:{SDH | SONet}:PERFormance:TIME:STOP?
Response	"<DATETIME>"
Description	Queries the stop time of a measurement.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<p><DATETIME></p> <p>A string that indicates the date and the time. This is expressed in the following format:</p> <p><date><space><time></p> <p><date></p> <p>The format is yyyy/mm/dd. These refer to "year", "month", and "date", respectively.</p> <p>The value ranges from 2000/01/01 to 2098/12/31.</p> <p><time></p> <p>The format is hh:mm:ss.sss. These refer to "hours", "minutes", and "seconds", respectively. This is expressed on a 24-hour basis.</p> <p>The value ranges from 00:00:00.000 to 23:59:59.999.</p> <p>Example: "2003/08/15 13:22:51.01"</p>

Query	:{SDH | SONet}:PERformance:DATA? <errortype>
Response	<ec>,<ses>,<bbe>,<esr>,<sesr>,<bber>,<sdp>,<us>
Description	Queries the result of a performance measurement through G. 826.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<p><errortype></p> <p>Select the type of error to be measured.</p> <p>{B1 | B2 | B3 | {MS_REI | REI_L} | {HP_REI | REI_P}}</p> <p><ec>,<ses>,<bbe>,<esr>,<sesr>,<bber>,<sdp>,<us></p> <p>The result of the performance measurement through G. 826.</p> <p><ec></p> <p>ES (Error Second). The time period during which error has occurred. A value from 0 to 2⁶⁴-1 (second) is returned.</p> <p><ses></p> <p>SES (Severely Error Seconds). It is the time period during which 30% or more of EB (Block Error) or one or more SDP (Severely Disturbed Period) have occurred. A value from 0 to 2⁶⁴-1 (second) is returned.</p> <p><bbe></p> <p>BBE (Background Block Error). It is the number of Ebs that occur in the time period subtracting SES from the measurement active time. A value from 0 to 2⁶⁴-1 (second) is returned.</p> <p><esr></p> <p>ESR (Error Second Ratio). It is the ratio of ES to the measurement active time (*1). $ESR = SES / \text{measurement active time}$</p> <p><sesr></p> <p>SESR (Severely Error Second Ratio). It is the ratio of SES to the measurement active time (*1). $ESR = ES / \text{measurement active time}$</p> <p><bber></p> <p>BBER (Background Block Error Ratio). It is the ratio of BBE to all blocks in the measurement active time subtracting SES (*1). $BBER = BBE / ((\text{measurement active time} - SES) \times \text{The number of blocks for a second})$</p> <p><sdp></p> <p>SDP (Severely Disturbed Period). It is the time period when SDP has occurred. A value from 0 to 2⁶⁴-1 (second) is returned.</p>

<us>

US (Unavailable Seconds) It indicates the time period when a measurement is invalid. A value from 0 to 2^64-1 (second) is returned.

*1:

A value from 0.0E-00 to 1.0E-00 is returned. For a value under 1.0E-15, 0.0E-00 is returned. For a value beyond 9.9E-01, 1.0E-00 is returned.

Default 0,0,0,0.0E-00,0.0E-00,0.0E-00,0,0

Command	:{SDH | SONet}:APS:SGENerator:STARt
Description	Starts the transmission of a sequence.
Module	– MbE – GbE √ 2.5G/10G

Command	:{SDH | SONet}:APS:SGENerator:STOP
Description	Stops the transmission of a sequence.
Module	– MbE – GbE √ 2.5G/10G

Query	:{SDH | SONet}:APS:SGENerator:STATe?
Response	{0 | 1 | 2}
Description	Queries the status of sequence data transmission.
Module	– MbE – GbE √ 2.5G/10G
Parameter	{0 | 1 | 2}

The code number is returned as the processing status. Meanings of the numbers are shown below:

- 0 Transmission of the APS sequence data is stopped.
- 1 The APS sequence data is been transmitted.
- 2 Starting/Halting transmission of the APS sequence data.

Query	:{SDH | SONet}:APS:SGENerator:TIME:ELAPsed?
Response	<NR1>
Description	Queries the elapsed time of transmission.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<NR1>

An integer value that indicates the elapsed time of measurement. This value ranges from 0 to 315360000 (second).

Section 6 Details of Device Messagess

Query	:{SDH | SONet}:APS:SGENerator:TIME:START?
Response	"<DATETIME>"
Description	Queries the start time of transmission.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<p><DATETIME></p> <p>A string that indicates the date and the time. This is expressed in the following format:</p> <p><date><space><time></p> <p><date></p> <p>The format is yyyy/mm/dd. These refer to "year", "month", and "date", respectively.</p> <p>The value ranges from 2000/01/01 to 2098/12/31.</p> <p><time></p> <p>The format is hh:mm:ss.sss. These refer to "hours", "minutes", and "seconds", respectively. This is expressed on a 24-hour basis.</p> <p>The value ranges from 00:00:00.000 to 23:59:59.999.</p> <p>Example: "2003/08/15 13:22:51.01"</p>

Query	{SDH | SONet}:APS:SGENerator:TIME:STOP?	
Response	<DATETIME>	
Description	Queries the stop time of sequence transmission.	
Module	– MbE – GbE √ 2.5G/10G	
Parameter	<DATETIME>	
	<p>A string that indicates the date and the time. This is expressed in the following format:</p> <p><date><space><time></p> <p><date></p> <p>The format is yyyy/mm/dd. These refer to "year", "month", and "date", respectively.</p> <p>The value ranges from 2000/01/01 to 2098/12/31.</p> <p><time></p> <p>The format is hh:mm:ss.sss. These refer to "hours", "minutes", and "seconds", respectively. This is expressed on a 24-hour basis.</p> <p>The value ranges from 00:00:00.000 to 23:59:59.999.</p> <p>Example: "2003/08/15 13:22:51.01"</p>	

Command	{SDH | SONet}:APS:SGENerator:MODE {SINGLE | REPEAT}	
Query	{SDH | SONet}:APS:SGENerator:MODE?	
Response	{SINGLE | REPEAT}	
Description	Switches the single/repeat mode of the sequence generator.	
Module	– MbE – GbE √ 2.5G/10G	
Parameter	{SINGLE | REPEAT}	
	<p>Select either of the following:</p> <p>SINGLE Single</p> <p>REPEAT Repeat</p>	
Default	SINGLE	

Command	{SDH | SONet}:APS:SGENerator:TABLE:ADD	
Description	Adds the new sequence data.	
Module	– MbE – GbE √ 2.5G/10G	

Section 6 Details of Device Messagess

Command	:{SDH | SONet}:APS:SGENerator:TABLE:AClear
Description	Clears contents of the sequence table.
Module	– MbE – GbE √ 2.5G/10G

Command	:{SDH | SONet}:APS:SGENerator:TABLE:DELete <sequence_number>
Description	Deletes the specified sequence data.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<sequence_number> Specify the sequence number. It is a value of a serial number given to the sequence data that is sent through the APS sequence generator. It takes integer values from 1 to 64.

Command	:{SDH | SONet}:APS:SGENerator:TABLE:PASTe <sequence_number>
Description	Pastes the copied sequence data.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<sequence_number> Specify the sequence number. It is a value of a serial number given to the sequence data that is sent through the APS sequence generator. The sequence data is inserted to the location before the number specified here.

Command	:{SDH | SONet}:APS:SGENerator:TABLE:CUT <sequence_number>
Description	Cuts the sequence data with the specified number.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<sequence_number> Specify the sequence number. It is a value of a serial number given to the sequence data that is sent through the APS sequence generator. It takes integer values from 1 to 64.

Command	:{SDH | SONet}:APS:SGENerator:TABLE:COPY <sequence_number>		
Description	Copies the specified sequence data.		
Module	– MbE – GbE √ 2.5G/10G		
Parameter	<sequence_number>		
	Specify the sequence number. It is a value of a serial number given to the sequence data that is sent through the APS sequence generator. It takes integer values from 1 to 64.		
Command	:{SDH | SONet}:APS:SGENerator:TABLE:ID <sequence_number>		
Query	:{SDH | SONet}:APS:SGENerator:TABLE:ID?		
Response	<sequence_number>		
Description	Sets the number of a sequence to be edited.		
Module	– MbE – GbE √ 2.5G/10G		
Parameter	<sequence_number>		
	Specify the number of a sequence to be edited. It is a value of a serial number given to the sequence data that is sent through the APS sequence generator. It takes integer values from 1 to 64.		
Default	1		
Query	:{SDH | SONet}:APS:SGENerator:TABLE:NITems?		
Response	<NR1>		
Description	Queries the number of pieces of preset sequence data.		
Module	– MbE – GbE √ 2.5G/10G		
Parameter	<NR1>		
	A value from 0 to 64 is returned.		

Section 6 Details of Device Messages

Command	::{SDH | SONet}:APS:SGENerator:TABLE:ITEM:COUNT <NR1>
Query	::{SDH | SONet}:APS:SGENerator:TABLE:ITEM:COUNT?
Response	<NR1>
Description	Sets the number of frames where a pattern is repeatedly generated.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 1 to 8000 (frame).
Default	8000

Command	::{SDH | SONet}:APS:SGENerator:TABLE:ITEM:K1 <HEX>
Query	::{SDH | SONet}:APS:SGENerator:TABLE:ITEM:K1?
Response	<HEX>
Description	Sets a value of K1 byte.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<HEX> Set a value of K1 byte in the 1-octet <HEX> format.
Default	#H00 (0x00)

Command	::{SDH | SONet}:APS:SGENerator:TABLE:ITEM:K2 <HEX>
Query	::{SDH | SONet}:APS:SGENerator:TABLE:ITEM:K2?
Response	<HEX>
Description	Sets a value of K2 byte.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<HEX> Set a value of K2 byte in the 1-octet <HEX> format.
Default	#H00 (0x00)

Command	::{SDH | SONet}:APS:SCAPture:STOP
Description	Stops APS sequence capture.
Module	– MbE – GbE √ 2.5G/10G

Command	:{SDH | SONet}:APS:SCAPture:STARt		
Description	Starts APS sequence capture.		
Module	– MbE	– GbE	√ 2.5G/10G
Query	:{SDH | SONet}:APS:SCAPture:STATe?		
Response	{0 | 1 | 2 | 3}		
Description	Queries the operation status of capture.		
Module	– MbE	– GbE	√ 2.5G/10G
Parameter	{0 | 1 | 2 | 3}		
	The code number is returned as processing status. Meanings of the numbers are shown below:		
	0 Capture is stopped.		
	1 Waiting a trigger		
	2 Capturing		
	3 Starting/Halting capture		
Query	:{SDH | SONet}:APS:SCAPture:TIME:ELAPsed?		
Response	<NR1>		
Description	Queries the elapsed time since the start of the capture.		
Module	– MbE	– GbE	√ 2.5G/10G
Parameter	<NR1>		
	An integer value that indicates the elapsed time of a measurement. It takes values from 0 to 315360000 (second).		

Section 6 Details of Device Messagess

Query	:{SDH | SONet}:APS:SCAPture:TIME:START?
Response	"<DATETIME>"
Description	Queries the start time of capture.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<DATETIME> A string that indicates the date and the time. This is expressed in the following format: <date><space><time> <date> The format is yyyy/mm/dd. These refer to "year", "month", and "date", respectively. The value ranges from 2000/01/01 to 2098/12/31. <time> The format is hh:mm:ss.sss. These refer to "hours", "minutes", and "seconds", respectively. This is expressed on a 24-hour basis. The value ranges from 00:00:00.000 to 23:59:59.999. Example: "2003/08/15 13:22:51.01"

Query	:{SDH | SONet}:APS:SCAPture:TIME:STOP?
Response	"<DATETIME>"
Description	Queries the stop time of capture.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<DATETIME> A string indicating the date and the time. This is expressed in the following format: <date><space><time> <date> The format is yyyy/mm/dd. These refer to "year", "month", and "date", respectively. The value ranges from 2000/01/01 to 2098/12/31. <time> The format is hh:mm:ss.sss. These refer to "hours", "minutes", and "seconds", respectively. This is expressed on a 24-hour basis. The value ranges from 00:00:00.000 to 23:59:59.999. Example: "2003/08/15 13:22:51.01"

Command	:{SDH | SONet}:APS:SCAPture:TRIGger:POSition <NR1>
Query	:{SDH | SONet}:APS:SCAPture:TRIGger:POSition?
Response	<NR1>
Description	Sets a trigger position in the capture data.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<NR1> Specify a trigger position with the number of the captured sequence data (1 to 64). This is a value of a serial number given to the sequence data captured by the APS Sequence Capture.
Default	64

Section 6 Details of Device Messagess

Command	:{SDH | SONet}:APS:SCAPture:TRIGger:TYPE <errortype>	
Query	:{SDH | SONet}:APS:SCAPture:TRIGger:TYPE?	
Response	<errortype>	
Description	Sets a trigger item.	
Module	– MbE – GbE √ 2.5G/10G	
Parameter	<errortype> Select a trigger item from the followings: * These are the same as the items to select search condition for APS switch time measurement.	
	OOF	OOF
	LOF	LOF
	{AU_AIS | AIS_P}	AU-AIS/AIS-P
	{AU_LOP | LOP_P}	AU-LOP/LOP-P
	B1	B1 Error
	B2	B2 Error
	B3	B3 Error
	{MS_REI | REI_L}	MS-REI/REI-L Error
	{MS_AIS | AIS_L}	MS-AIS/AIS-L
	{MS_RDI | RDI_L}	MS-RDI/RDI-L
	{HP_REI | REI_P}	HP-REI/REI-P Error
	HP_IEC	HP-IEC
	{HP_SLM | SLM_P}	HP-SLM/SLM-P
	{HP_RDI | RDI_P}	HP-RDI/RDI-P
	{HP_UNEQ | UNEQ-P}	HP-UNEQ/UNEQ-P
	EXTERNAL	External Trigger
	FRAGMENTS	Fragments
	UNDERSIZE	Undersize
	OVERSIZE	Oversize
	OVER_FCS	Oversize and FCS Error
	FCS	FCS Error
	ABORTED	Aborted frame
	CHEC	cHEC Error (*1)
	CHEC_CORR	Correctable cHEC Error (*1)
	THEC	tHEC Error (*1)
	THEC_CORR	Correctable tHEC Error (*1)
	EHEC	eHEC Error (*1)
	ETH_FCS	Ethernet FCS Error (*1) (*2)
	ETH_FRAG	Ethernet Fragment (*1) (*2)
	ETH_UNDER	Ethernet Undersize (*1) (*2)
	ETH_OVER	Ethernet Oversize (*1) (*2)
	ETH_OVER_FCS	Ethernet Oversize and FCS Error (*1) (*2)

IP_CHECKSUM	IP header checksum error
TCP_CHECKSUM	TCP checksum error
UDP_CHECKSUM	UDP checksum error
LATENCY	Latency over

*1 Only available for 2.5G/10G module. MU120103B/04B-01 option is required.

*2 Indicates an error event against the Ethernet frame accommodated in GFP/LAPS/LEX.

Default Error: B1 Alarm: LOF

Section 6 Details of Device Messagess

Query :{SDH | SONet}:APS:SCAPture:DATA:NSEquence?

Response <NR1>

Description Queries the numbers of captured sequence data.

Module – MbE – GbE √ 2.5G/10G

Parameter <NR1>

The numbers of captured sequence data (0 to 64).

Query :{SDH | SONet}:APS:SCAPture:DATA:TRIGger?

Response <NR1>

Description Queries the trigger position in the captured sequence data.

Module – MbE – GbE √ 2.5G/10G

Parameter <NR1>

The trigger position in the captured sequence data (1 to 64). If there is no expected trigger position, 0 is returned.

Query	:{SDH | SONet}:APS:SCAPture:DATA? <sequence_number>		
Response	<k1>,<k2>,<frame>		
Description	Queries the captured sequence data.		
Module	– MbE – GbE √ 2.5G/10G		
Parameter	<sequence_number> Specify the sequence number. It is a value of a serial number given to the sequence data that is captured by the APS Sequence Capture. It takes integer values from 1 to 64. <k1>,<k2>,<frame> The sequence data of APS capture. <k1> A value of K1 byte (<HEX>) <k2> A value of K2 byte (<HEX>) <frame> The number of frames (<NR1>)		
Default	#H00,#H00,0		
Command	:{SDH | SONet}:APS:STIME:STOP		
Description	Stops a measurement		
Module	– MbE – GbE √ 2.5G/10G		
Command	:{SDH | SONet}:APS:STIME:START		
Description	Starts a measurement.		
Module	– MbE – GbE √ 2.5G/10G		

Section 6 Details of Device Messagess

Query	:{SDH | SONet}:APS:STIME:STATe?
Response	{0 | 1 | 2 | 3}
Description	Queries the measurement status.
Module	– MbE – GbE √ 2.5G/10G
Parameter	{0 | 1 | 2 | 3}

The code number is returned as the processing status. Meanings of the numbers are shown below:

- 0 Measurement is stopped.
- 1 Waiting a trigger
- 2 Measuring
- 3 Starting/Halting a measurement

Query	:{SDH | SONet}:APS:STIME:TIME:START?
Response	"<DATETIME>"
Description	Queries the start time of a measurement.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<DATETIME>

A string that indicates the date and the time. This is expressed in the following format:

<date><space><time>

<date>

The format is yyyy/mm/dd. These refer to "year", "month", and "date", respectively.

The value ranges from 2000/01/01 to 2098/12/31.

<time>

The format is hh:mm:ss.sss. These refer to "hours", "minutes", and "seconds", respectively. This is expressed on a 24-hour basis.

The value ranges from 00:00:00.000 to 23:59:59.999.

Example: "2003/08/15 13:22:51.01"

Query	:{SDH | SONet}:APS:STIME:TIME:STOP?
Response	"<DATETIME>"
Description	Queries the stop time of a measurement.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<DATETIME> A string that indicates the date and the time. This is expressed in the following format: <date><space><time> <date> The format is yyyy/mm/dd. These refer to "year", "month", and "date", respectively. The value ranges from 2000/01/01 to 2098/12/31. <time> The format is hh:mm:ss.sss. These refer to "hours", "minutes", and "seconds", respectively. This is expressed on a 24-hour basis. The value ranges from 00:00:00.000 to 23:59:59.999. Example: "2003/08/15 13:22:51.01"

Query	:{SDH | SONet}:APS:STIME:TIME:ELAPsed?
Response	<NR1>
Description	Queries the elapsed time of a measurement.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<NR1> An integer value that indicates the elapsed time of a measurement. It takes values from 0 to 315360000 (second).

Section 6 Details of Device Messages

Command	:{SDH | SONet}:APS:STIME:THReshold {T1MS | T10MS | T100MS}		
Query	:{SDH | SONet}:APS:STIME:THReshold?		
Response	{T1MS | T10MS | T100MS}		
Description	Sets the threshold time (wait time from detecting no error status to measurement completion).		
Module	– MbE	– GbE	√ 2.5G/10G
Parameter	{T1MS | T10MS | T100MS}		
	Select the threshold time from the followings:		
	T1MS	1 ms	
	T10MS	10 ms	
	T100MS	100 ms	
Default	T1MS (1 ms)		

Command	:{SDH | SONet}:APS:STIME:TRIGger:TYPE <errortype>
Query	:{SDH | SONet}:APS:STIME:TRIGger:TYPE?
Response	<errortype>
Description	Sets search condition (errors and alarms provided as a trigger to start a measurement of the switch time).
Module	– MbE – GbE √ 2.5G/10G
Parameter	<errortype>

Select the search condition from the followings:

* These are the same as the items to select a trigger for APS sequence capture.

OOF	OOF
LOF	LOF
{AU_AIS | AIS_P}	AU-AIS/AIS-P
{AU_LOP | LOP_P}	AU-LOP/LOP-P
B1	B1 Error
B2	B2 Error
B3	B3 Error
{MS_REI | REI_L}	MS-REI/REI-L Error
{MS_AIS | AIS_L}	MS-AIS/AIS-L
{MS_RDI | RDI_L}	MS-RDI/RDI-L
{HP_REI | REI_P}	HP-REI/REI-P Error
HP_IEC	HP-IEC
{HP_SLM | SLM_P}	HP-SLM/SLM-P
{HP_RDI | RDI_P}	HP-RDI/RDI-P
{HP_UNEQ | UNEQ-P}	HP-UNEQ/UNEQ-P
EXTERNAL	External Trigger
FRAGMENTS	Fragments
UNDERSIZE	Undersize
OVERSIZE	Oversize
OVER_FCS	Oversize and FCS Error
FCS	FCS Error
ABORTED	Aborted frame
CHEC	cHEC Error (*1)
CHEC_CORR	Correctable cHEC Error (*1)
THEC	tHEC Error (*1)
THEC_CORR	Correctable tHEC Error (*1)
EHEC	eHEC Error (*1)
ETH_FCS	Ethernet FCS Error (*1) (*2)
ETH_FRAG	Ethernet Fragment (*1) (*2)
ETH_UNDER	Ethernet Undersize (*1) (*2)
ETH_OVER	Ethernet Oversize (*1) (*2)
ETH_OVER_FCS	Ethernet Oversize and FCS Error (*1) (*2)

Section 6 Details of Device Messages

IP_CHECKSUM	IP header checksum error
TCP_CHECKSUM	TCP checksum error
UDP_CHECKSUM	UDP checksum error
LATENCY	Latency over

*1 Only available for 2.5G/10G module. MU120103B/04B-01 option is required.

*2 Indicates an error event against the Ethernet frame accommodated in GFP/LAPS/LEX.

Default Error: B1 Alarm: LOF

Query	:{SDH | SONet}:APS:STIME:DATA:AVERage?
Response	<NR2>
Description	Quires an average of the APS Switching Time measurement results.
Module	– MbE – GbE √ 2.5G/10G
Query	:{SDH | SONet}:APS:STIME:DATA:MAX?
Response	<NR2>
Description	Quires the maximum value of the APS Switching Time measurement results.
Module	– MbE – GbE √ 2.5G/10G
Query	:{SDH | SONet}:APS:STIME:DATA:MIN?
Response	<NR2>
Description	Quires the minimum value of the APS Switching Time measurement results.
Module	– MbE – GbE √ 2.5G/10G
Query	:{SDH | SONet}:APS:STIME:DATA:TOTal:COUNT:OK?
Response	<NR1>
Description	Quires the number of times passed in measurement times of the APS Switching Time measurement results.
Module	– MbE – GbE √ 2.5G/10G
Query	:{SDH | SONet}:APS:STIME:DATA:TOTal:COUNT:NG?
Response	<NR1>
Description	Quires the number of times failed in measurement times of the APS Switching Time measurement results.
Module	– MbE – GbE √ 2.5G/10G

Section 6 Details of Device Messagess

Query	:{SDH | SONet}:APS:STIME:DATA:TOTAl:COUNT:OVERflow?
Response	<NR1>
Description	Quires the number of Overflow times in measurement times of the APS Switching Time measurement results.
Module	– MbE – GbE √ 2.5G/10G

Query	:{SDH | SONet}:APS:STIME:DATA:TOTAl:COUNT?
Response	<NR1>
Description	Quires the number of measurement times of the APS Switching Time measurement results.
Module	– MbE – GbE √ 2.5G/10G

Command	:{SDH | SONet}:APS:STIME:MMODE {SINGLE | REPEAT}
Query	:{SDH | SONet}:APS:STIME:MMODE?
Response	{SINGLE | REPEAT}
Description	Sets whether to measure APS Switching Time only once or repeatedly.
Module	– MbE – GbE √ 2.5G/10G
Parameter	{SINGLE | REPEAT}
	Select either of the following:
	SINGLE: Stops after once measuring APS switching time.
	REPEAT: Repeats until receiving a measurement stop command or the number of the measurement results reach 1000 times.
Default	SINGLE

Query	:{SDH | SONet}:APS:STIME:NDATa? <sequence number>
Response	<NR2>
Description	Quires measurement result (switching time) at a specified time.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<NR2>
	Return a switching time value (0.0 to 3599.999999999 seconds). Return -9999.0 when there is no data.

Query	:{SDH | SONet}:APS:STIME:NDATa:JUDGe? <sequence number>
Response	{OK | NG | OVERFLOW}
Description	Queries whether the measurement result at a specified time is passed or failed.
Module	– MbE – GbE √ 2.5G/10G
Parameter	{OK | NG | OVERFLOW}
	One of the following is returned:
	OK: Passed because of the specified switching time or less.
	NG: Failed due to exceeding the specified switching time.
	OVERFLOW: Two or more seconds passed and not possible to get measurement result.

Query	:{SDH | SONet}:APS:STIME:NDATa:STArT? <sequence number>
Response	"<DATETIME>"
Description	Queries the start time of the measurement at a specified time.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<DATETIME>
	A string that indicates date and time. This is expressed in the following format:
	<date><space><time>
	<date>
	The format is yyyy/mm/dd. These refer to "year", "month", and "day", respectively. The value ranges from 2000/01/01 to 2098/12/31.
	<time>
	The format is hh:mm:ss.sss. These refer to "hour", "minute" and "second", respectively. This is expressed on a 24-hour basis.
	The value ranges from 00:00:00.000 to 23:59:59.999.
	Example: "2003/08/15 13:22:51.01"

Section 6 Details of Device Messages

Query	:{SDH | SONet}:APS:STIME:DATA?		
Response	<NR2>		
Description	Queries the measured result (switch time).		
Module	– MbE	– GbE	√ 2.5G/10G
Parameter	<NR2>		
	A value of switch time (0.0 to 3599.999999999 seconds) is returned. When no data exists, –9999.0 is returned.		

Command	:{SDH | SONet}:CONCate:MULTiplexing
Query	:{SDH | SONet}:CONCate:MULTiplexing?
Description	<p>Selects Contiguous and Virtual Concatenation mappings (Multiplexing).</p> <p>"VC4_64C" and "STS-192C" cannot be select for 2.5G module.</p> <p>"*C" can be selected for Contiguous Concatenation only. "*V" can be selected for Virtual Concatenation only.</p>
Module	– MbE – GbE √ 2.5G/10G
Parameter	<type>

Select one of the following for Contiguous Concatenation:

STS_48C	STS-48c/STM-16c
STS_24C	STS-24c/STM-8c
STS_12C	STS-12c/STM-4c
STS_9C	STS-9c /STM-3c
STS_6C	STS-6c /STM-2c
STS_3C	STS-3c /STM1
STS_1	STS-1 /STM0

Select one of the following for Virtual Concatenation:

STS3C_8V	STS3c-8v /VC4-8v
STS3C_7V	STS3c-7v /VC4-7v
STS3C_6V	STS3c-6v /VC4-6v
STS3C_5V	STS3c-5v /VC4-5v
STS3C_4V	STS3c-4v /VC4-4v
STS3C_3V	STS3c-3v /VC4-3v
STS3C_2V	STS3c-2v /VC4-2v
STS1C_24V	STS1c-24v/VC3-24v
STS1C_21V	STS1c-21v/VC3-21v
STS1C_18V	STS1c-18v/VC3-18v
STS1C_12V	STS1c-12v/VC3-12v
STS1C_9V	STS1c-9v /VC3-9v
STS1C_6V	STS1c-6v /VC3-6v
STS1C_3V	STS1c-3v /VC3-3v

Default STS_48C

Section 6 Details of Device Messages

Command :{SDH | SOnet}:CONCate:STARtch:TXCHannel <NR1>

Query :{SDH | SOnet}:CONCate:STARtch:TXCHannel?

Response <NR1>

Description Sets the start channel from received channels.

* Valid only for MU150101A module.

Module – MbE – GbE √ 2.5G/10G

Parameter <NR1>

The setting range is from 1 to "(Size maximum value – size setting value + 1)".

Command :{SDH | SOnet}:CONCate:STARtch:RXCHannel <NR1>

Query :{SDH | SOnet}:CONCate:STARtch:RXCHannel?

Response <NR1>

Description Sets the start channel from received channels.

* Valid only for MU150101A module.

Module – MbE – GbE √ 2.5G/10G

Parameter <NR1>

The setting range is from 1 to "(Size maximum value – size setting value + 1)".

Command	:{SDH | SONet}:CONCate:TX:SIZE <NR1>
Query	:{SDH | SONet}:CONCate:TX:SIZE?
Response	<NR1>
Description	<p>Sets the size of Tx mapping (Multiplexing) for Contiguous and Virtual concatenations.</p> <p>* Valid for the MU150101A module in the EoS mode.</p>
Module	– MbE – GbE √ 2.5G/10G
Parameter	<p><NR1></p> <p>The setting value range varies depending on the mapping.</p> <p>* 0 is returned when there is no member.</p> <p>Contiguous concatenation:</p> <p>STS3c-Xc/VC4-Xc: 1 to 16 *1</p> <p>STS1-Xc/VC3-Xc: 1 to 48 *2</p> <p>Virtual concatenation:</p> <p>STS3c-Xv/VC4-Xv: 1 to 16 *1</p> <p>STS1c-Xv/VC3-Xv: 1 to 48 *2</p> <p>VT2-Xv/VC12-Xv: 1 to 63</p> <p>VT1.5-Xv/VC11-Xv: 1 to 84 (1 to 64 case of LCAS OFF)</p> <p>*1: The maximum value varies according to the bit rate.</p> <p>1 to 16 at 2488 Mbps</p> <p>1 to 4 at 622 Mbps</p> <p>*2: The maximum value varies according to the bit rate.</p> <p>1 to 48 at 2488 Mbps</p> <p>1 to 12 at 622 Mbps</p> <p>1 to 3 at 156 Mbps</p>

Section 6 Details of Device Messages

Command	:{SDH | SONet}:CONCate:TX:ROUTE {STS3C | STS1 | AU4 | AU3}
Query	:{SDH | SONet}:CONCate:TX:ROUTE?
Response	{STS3C | STS1}
Description	Selects a Tx mapping route for virtual concatenation. Valid for the MU150101A module in the EoS mode. * Valid only for MU150101A module.
Module	– MbE – GbE √ 2.5G/10G
Parameter	{STS3C | STS1 | AU4 | AU3} Selects a STS1c-Xv/VC3-Xv, VT2-Xv/VC12-Xv or VT1.5-Xv/VC11-Xv mapping route. {STS3C | AU4} STS3C/AU4 {STS1 | AU3} STS1/AU3

Command	:{SDH | SONet}:CONCate:TX:MEMBers "<member>"["<member>",...]
Query	:{SDH | SONet}:CONCate:TX:MEMBers?
Response	"<member>"["<member>",...]
Description	Sets the Tx member channel for Virtual Concatenation. * This command is valid for the MU150101A module in the EoS mode.
Module	– MbE – GbE √ 2.5G/10G
Parameter	"<member>"["<member>",...]

Sets up to 84 member channels with a character string.

Up to 64 member channels can be set when the LCAS function is OFF.

The member channels align in the SQ order.

When the LCAS function is ON, the channel selected as a member is automatically set as a provisioned member. When 65 or more channels are selected, however, the 65th and subsequent channels become an idle channel while the 1st to 64th channels become a provisioned member.

The channel layers are delimited with dots from the upper level, according to the Tx Multiplexing setting as shown below:

"[ch1].[ch2].[ch3].[ch4]"

Specify a channel in accordance with Appendix D "Basic Rules for Channel Expression in Virtual Concatenation."

If a channel that is not allowed to be set exists in a series of the specified channels, it is regarded as an error and the operation is aborted. In this event, no channels are set even if the other specified channels are settable.

Section 6 Details of Device Messages

Command	:{SDH | SONet}:CONCate:TX:PMEMbers "<member>"[,"<member>",...]
Query	:{SDH | SONet}:CONCate:TX:PMEMbers? * Valid only for MU150101A module.
Response	"<member>"[,"<member>",...]
Description	Sets the Tx provisioned member channel for Virtual Concatenation. * This command is valid for the MU150101A module in the EoS mode.
Module	– MbE – GbE √ 2.5G/10G
Parameter	"<member>"[,"<member>",...] Specifies whether a channel that is specified as a VCG member is set as a provisioned channel or an idle channel. Among VCG member channels, specify up to 64 channels to be set as a provisioned channel with a character string, in the SQ order. The specified VCG member channels become a provisioned channel, and the others (not specified channels) become an idle channel. When "All" is specified, all VCG member channels become a provisioned channel. If a channel that is not a VCG member channel is specified, an error (Setting conflict) occurs. If a channel that is not allowed to be set exists in a series of the specified channels, it is regarded as an error and the operation is aborted. In this event, no channels are set even if the other specified channels are settable. This command is valid only when the LCAS function is ON. The channel layers are delimited with dots from the upper level, according to the Tx Multiplexing setting as shown below: "[ch1].[ch2].[ch3].[ch4]" Specify a channel in accordance with Appendix D "Basic Rules for Channel Expression in Virtual Concatenation."

Command	:{SDH | SONet}:CONCate:TX:RESet:MEMBers
Description	Resets the channel and SQ of the members. Reassigns SQs to members from the head member for which SQ0 is assigned. * Valid only for MU150101A module.
Module	– MbE – GbE √ 2.5G/10G

Command	:{SDH | SONet}:CONCate:TX:PROVIsioned <NR1>
Query	:{SDH | SONet}:CONCate:TX:PROVIsioned?
Response	<NR1>
Description	<p>Sets the size of provisioned members for Tx mapping in Virtual Concatenation.</p> <p>This command is valid for the MU150101A module in the EoS mode.</p> <p>* Valid only for MU150101A module.</p>
Module	– MbE – GbE ✓ 2.5G/10G
Parameter	<p><NR1></p> <p>The setting value range varies depending on the mapping.</p> <p>* This command is valid only when Concatenation type is set to Virtual.</p> <p>* 0 is returned when there is no member.</p> <p>For STS3c-Xv/VC4-Xv: 1 to 16 *1</p> <p>For STS1c-Xv/VC3-Xv: 1 to 48 *2</p> <p>For VT2-Xv/VC12-Xv: 1 to 63</p> <p>For VT1.5-Xv/VC11-Xv: 1 to 64</p> <p>*1: The maximum value varies according to the bit rate.</p> <p>For 2488 Mbps: 1 to 16</p> <p>For 622 Mbps: 1 to 4</p> <p>*2: The maximum value varies according to the bit rate.</p> <p>For 2488 Mbps: 1 to 48</p> <p>For 622 Mbps: 1 to 12</p> <p>For 156 Mbps: 1 to 3</p>

Section 6 Details of Device Messagess

Query	:{SDH | SONet}:CONCate:TX:CONDition?	
Response	"<ADD>","<REMOVE>"	
Description	Queries the ADD/REMOVE execution state at Tx side when LCAS Negotiation is executed.	
	This command is valid only when the LCAS Negotiation is set to ON.	
	* Valid only for MU150101A module.	
Module	– MbE – GbE ✓ 2.5G/10G	
Parameter	"<ADD>","<REMOVE>" = <STRING>,<STRING>	
	Returns the execution status at TX side when Negotiation is ON.	
	<ADD> status	Character string

	Under execution	"Adding..."
	No execution or before execution	""
	The command has been sent normally.	"ADD:OK"
	The operation was cancelled by a user.	"ADD:User Cancel"
	The command is invalid.	"ADD:Invalid Command"
	(The specified member is already Provisioned,or Provisioned Size is MAX.)	
	Timeout while MST is FAIL.	"ADD:MST Time Out"
	Timeout while RS-Ack Invert has not been returned.	"ADD:RS-Ack Time Out"
	Other than the above	"ADD:Other"
	<REMOVE> status	Character string

	Under execution	"Removing..."
	No execution or before execution	""
	The command has been sent normally.	"REMOVE:OK"
	The operation is cancelled by a user.	"REMOVE:User Cancel"
	The command is invalid.	"REMOVE:Invalid Command"
	(The specified member is not Provisioned.)	
	Timeout while MST is OK	"REMOVE:MST Time Out"
	Timeout while RS-Ack Invert has not been returned	"REMOVE:RS-Ack Time Out"
	Other than the above	"REMOVE:Other"

Command	:{SDH | SONet}:CONCate:TX:RXCopy
Description	Copies virtual concatenation Rx settings to Tx settings. * Valid only for MU150101A module.
Module	– MbE – GbE √ 2.5G/10G

Command	:{SDH SONet}:CONCate:RX:MULTiplexing <type>
Query	:{SDH | SONet}:CONCate:RX:MULTiplexing?
Response	<type>
Description	Selects an Rx mapping (Multiplexing) for contiguous and virtual concatenations. * Valid only for MU150101A module.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<type> Select from the following. {STS3C_XV VC4_XV} STS3c-Xv/VC4-Xv {STS1C_XV VC3_XV} STS1c-Xv/VC3-Xv {VT2_XV VC12_XV} VT2-Xv /VC12-Xv {VT15_XV VC11_XV} VT1.5-Xv /VC11-Xv

Section 6 Details of Device Messagess

Command	:{SDH | SONet}:CONCate:RX:SIZE <NR1>
Query	:{SDH | SONet}:CONCate:RX:SIZE?
Response	<NR1>
Description	Sets the size of the Rx mapping (Multiplexing) for virtual concatenations. * Valid only for MU150101A module.
Module	– MbE – GbE $\sqrt{2.5G/10G}$
Parameter	<NR1> The setting value range varies depending on the mapping. * 0 is returned when there is no member. STS3c-Xv/VC4-Xv: 1 to 16 *1 STS1c-Xv/VC3-Xv: 1 to 48 *2 VT2-Xv/VC12-Xv: 1 to 63 VT1.5-Xv/VC11-Xv: 1 to 84 (1 to 64 case of LCAS OFF) *1: The maximum value varies according to the bit rate. 1 to 16 at 2488 Mbps 1 to 4 at 622 Mbps *2: The maximum value varies according to the bit rate. 1 to 48 at 2488 Mbps 1 to 12 at 622 Mbps 1 to 3 at 156 Mbps

Command	:{SDH SONet}:CONCate:RX:ROUTe {STS3C STS1 AU4 AU3}				
Query	:{SDH SONet}:CONCate:RX:ROUTe?				
Response	{STS3C STS1}				
Description	Selects an Rx mapping route for virtual concatenation. * Valid only for MU150101A module.				
Module	– MbE – GbE √ 2.5G/10G				
Parameter	{STS3C STS1 AU4 AU3} Select a STS1c-Xv/VC3-Xv, VT2-Xv/VC12-Xv or VT1.5-Xv/VC11-Xv mapping route. <table> <tr> <td>{STS3C AU4}</td><td>STS3C/AU4</td></tr> <tr> <td>{STS1 AU3}</td><td>STS1C/AU3</td></tr> </table>	{STS3C AU4}	STS3C/AU4	{STS1 AU3}	STS1C/AU3
{STS3C AU4}	STS3C/AU4				
{STS1 AU3}	STS1C/AU3				

Command	:{SDH | SONet}:CONCate:RX:MEMbers "<member>"["<member>",...]
Query	:{SDH | SONet}:CONCate:RX:MEMbers?
Response	"<member>"["<member>",...]
Description	Sets the Rx member channel for Virtual Concatenation. * Valid only for MU150101A module.
Module	– MbE – GbE √ 2.5G/10G
Parameter	"<member>"["<member>",...] <p>Sets up to 84 member channels with a character string.</p> <p>Up to 64 member channels can be set when the LCAS function is OFF.</p> <p>The member channels align in the SQ order.</p> <p>"None" returns when there is no Member.</p> <p>When the LCAS function is ON, the channel selected as a member is automatically set as a provisioned member.</p> <p>The channel layers are delimited with dots from the upper level, according to the Rx Multiplexing setting as shown below:</p> <p>"[ch1].[ch2].[ch3].[ch4]"</p> <p>Specify a channel in accordance with Appendix D "Basic Rules for Channel Expression in Virtual Concatenation."</p> <p>If a channel that is not allowed to be set exists in a series of the specified channels, it is regarded as an error and the operation is aborted. In this event, no channels are set even if the other specified channels are settable.</p>

Section 6 Details of Device Messagess

Command	:{SDH | SONet}:CONCate:RX:RESet:MEMBers
Description	Resets the channels and SQ of members. Reassigns SQs to members from the head member for which SQ0 is assigned. * Valid only for MU150101A module.
Module	– MbE – GbE ✓ 2.5G/10G

Command	:{SDH | SONet}:CONCate:RX:PROVisioned <NR1>
Query	:{SDH | SONet}:CONCate:RX:PROVisioned?
Response	<NR1>
Description	Sets the size of provisioned members for Rx mapping in Virtual Concatenation. This command is valid for the MU150101A module in the EoS mode. * Valid only for MU150101A module.
Module	– MbE – GbE ✓ 2.5G/10G
Parameter	<NR1> The setting value range varies depending on the mapping. * This command is valid only when Concatenation type is set to Virtual. * 0 is returned when there is no member. For STS3c-Xv/VC4-Xv: 1 to 16 *1 For STS1c-Xv/VC3-Xv: 1 to 48 *2 For VT2-Xv/VC12-Xv: 1 to 63 For VT1.5-Xv/VC11-Xv: 1 to 64 *1: The maximum value varies according to the bit rate. 1 to 16 at 2488 Mbps 1 to 4 at 622 Mbps *2: The maximum value varies according to the bit rate. 1 to 48 at 2488 Mbps 1 to 12 at 622 Mbps 1 to 3 at 156 Mbps

Command	:{SDH | SONet}:CONCate:RX:PMEMBERS "<member>","<member>",...
Query	:{SDH | SONet}:CONCate:RX:PMEMBERS?
Response	"<member>","<member>",...
Description	<p>Sets the Rx provisioned member channel for Virtual Concatenation.</p> <p>* This command is valid for the MU150101A module in the EoS mode.</p> <p>* Valid only for MU150101A module.</p>
Module	– MbE – GbE √ 2.5G/10G
Parameter	<p>"<member>":["<member>"],...]</p> <p>Specifies whether a channel that is specified as a VCG member is set as a provisioned channel or an idle channel.</p> <p>Among VCG member channels, specify up to 64 channels to be set as a provisioned channel with a character string, in the SQ order.</p> <p>The specified VCG member channels become a provisioned channel, and the others (not specified channels) become an idle channel.</p> <p>When "All" is specified, all VCG member channels become a provisioned channel.</p> <p>If a channel that is not a VCG member channel is specified, an error (Setting conflict) occurs.</p> <p>If a channel that is not allowed to be set exists in a series of the specified channels, it is regarded as an error and the operation is aborted. In this event, no channels are set even if the other specified channels are settable.</p> <p>This command is valid only when the LCAS function is ON.</p> <p>The channel layers are delimited with dots from the upper level, according to the Rx Multiplexing setting as shown below:</p> <p>"[ch1].[ch2].[ch3].[ch4]"</p> <p>Specify a channel in accordance with Appendix D "Basic Rules for Channel Expression in Virtual Concatenation."</p>

Section 6 Details of Device Messagess

Query	:{SDH | SONet}:CONCate:RX:CONDition?		
Response	{NG_SQ | NG_CTRL | NG_NON | OK}		
Description	Queries the state of VCAT Member when executing LCAS Negotiation. * Valid only for MU150101A module.		
Module	– MbE – GbE √ 2.5G/10G		
Parameter	{NG_SQ | NG_CTRL | NG_NON | OK}		
	Returns a member status from among the following.		
	NG_SQ	Abnormal SQ value	
	NG_CTRL	Abnormal CTRL value	
	NG_NON	There is no channel that has information (NG (TLCR)).	
	OK	Normal	

Query	:{SDH | SONet}:CONCate:RX:DETECT:VCG:GROup?		
Response	<NR1>		
Description	Queries the number of VCAT groups within received signals. Valid when the LCAS function is ON. * Valid only for MU150101A module.		
Module	– MbE – GbE √ 2.5G/10G		
Parameter	<NR1>		
	Returns the number of VCAT groups included in received signals at a range from 0 to 1344.		

Query	:{SDH SONet}:CONCate:RX:DETect:VCG:CONDition?									
Response	{NG_SQ NG_CTRL NG_NON OK}									
Description	<p>Queries the status of the specified VCAT group.</p> <p>This command is valid when the LCAS function is ON.</p> <p>* Valid only for MU150101A module.</p>									
Module	– MbE – GbE √ 2.5G/10G									
Parameter	<p><NR1></p> <p>Specify a VCAT group to be queried at a range from 1 to 1344.</p> <p>However, the maximum value is the response value of the</p> <p>:{SDH SONet}:CONCate:RX:DETect:VCG:GROup command.</p> <p>{NG_SQ NG_CTRL NG_NON OK}</p> <p>Returns a VCAT group status from among the following:</p> <table><tr><td>NG_SQ</td><td>Abnormal SQ value</td></tr><tr><td>NG_CTRL</td><td>Abnormal CTRL value</td></tr><tr><td>NG_NON</td><td>There is no channel that has information (NG (TLCR)).</td></tr><tr><td>OK</td><td>Normal</td></tr></table>		NG_SQ	Abnormal SQ value	NG_CTRL	Abnormal CTRL value	NG_NON	There is no channel that has information (NG (TLCR)).	OK	Normal
NG_SQ	Abnormal SQ value									
NG_CTRL	Abnormal CTRL value									
NG_NON	There is no channel that has information (NG (TLCR)).									
OK	Normal									

Section 6 Details of Device Messagess

Query	:{SDH | SONet}:CONCate:RX:DETECT:VCG:MEMBERS?
Response	"<member>","<member>","..."
Description	<p>Queries the member channel of the specified VCAT group.</p> <ul style="list-style-type: none">* The member channels align in the SQ order.* Use the :{SDH | SONet}:CONCate:RX:MEMBERS command for setting a read-out channel member.* Valid only for MU150101A module.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<p><NR1></p> <p>Specify a VCAT group to be queried at a range from 1 to 1344. However, the maximum value is the response value of the :{SDH | SONet}:CONCate:RX:DETECT:VCG:GROUP command.</p> <p>"<member>","<member>","..."</p> <p>Returns up to 64 provisioned member channels of the specified VCAT group with a character string in the SQ order.</p> <p>The channel layer description method conforms to Appendix D "Basic Rules for Channel Expression in Virtual Concatenation."</p> <p>"None" is returned when there is no member.</p>

Query	:{SDH | SONet}:CONCate:RX:DETECT:VCG:VCGMembers? <NR1>
Response	"<member>","<member>",...
Description	<p>Queries the VCG member channel of the specified VCAT group.</p> <p>* Valid only for MU150101A module.</p>
Module	– MbE – GbE ✓ 2.5G/10G
Parameter	<p><NR1></p> <p>Specify a VCAT group to be queried at a range from 1 to 1344. However, the maximum value is the response value of the :{SDH | SONet}:CONCate:RX:DETECT:VCG:GROUp? command.</p> <p>"<member>","<member>",...</p> <p>Returns up to 1344 member channels (including provisioned and idle channels) of the specified VCAT group with a character string in ascending order.</p> <p>The channel layer description method conforms to Appendix D "Basic Rules for Channel Expression in Virtual Concatenation."</p> <p>"None" is returned when there is no member. "---" is returned when Detect VCG is not executed.</p>

Section 6 Details of Device Messages

Command	:{SDH | SONet}:CONCate:RX:DETect:VCG:EXECute <BOOLEAN>
Query	:{SDH | SONet}:CONCate:RX:DETect:VCG:EXECute? * Valid only for MU150101A module.
Response	<BOOLEAN>
Description	Sets Start or Stop of the VCG Detect.
Module	– MbE – GbE ✓ 2.5G/10G
Parameter	<BOOLEAN> To set Start of the VCG Detect, set {ON | 1}(ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.

Command	:{SDH | SONet}:CONCate:RX:TXCopy
Description	Copies virtual concatenation Tx settings to Rx settings. Valid for the MU150101A module in the EoS mode. * Valid only for MU150101A module.
Module	– MbE – GbE ✓ 2.5G/10G

Command	:{SDH SONet}:DUMMy:SETTing <type>																
Query	:{SDH SONet}:DUMMy:SETTing?																
Response	<type>																
Description	<p>Selects a pattern to be inserted to the payload of the DummyCH, which is other than ones specified as a measurement CH at the sending side.</p> <ul style="list-style-type: none">* IDLE can be selected only when Mapping is GFP.* COPY cannot be selected when Multiplexing is STS-9c/VC-4-3c.* COPY cannot be selected for Virtual Concatenation.																
Module	– MbE – GbE √ 2.5G/10G																
Parameter	{COPY ALL0 ALL1 PRBS15 PRBS23 PRBS31 IDLE}																
	<p>Select one of the following:</p> <table><tr><td>COPY</td><td>Sends a pattern copied a payload of a measurement CH.</td></tr><tr><td>ALL0</td><td>Pattern of all 0</td></tr><tr><td>ALL1</td><td>Pattern of all 1</td></tr><tr><td>PRBS15</td><td>PRBS15 pseudo-random pattern</td></tr><tr><td>PRBS23</td><td>PRBS23 pseudo-random pattern</td></tr><tr><td>PRBS31</td><td>PRBS31 pseudo-random pattern</td></tr><tr><td>IDLE</td><td>GFP Idle frame (*1)</td></tr></table> <p>*1 Valid only when Mapping is Frame-mapped GFP.</p>			COPY	Sends a pattern copied a payload of a measurement CH.	ALL0	Pattern of all 0	ALL1	Pattern of all 1	PRBS15	PRBS15 pseudo-random pattern	PRBS23	PRBS23 pseudo-random pattern	PRBS31	PRBS31 pseudo-random pattern	IDLE	GFP Idle frame (*1)
COPY	Sends a pattern copied a payload of a measurement CH.																
ALL0	Pattern of all 0																
ALL1	Pattern of all 1																
PRBS15	PRBS15 pseudo-random pattern																
PRBS23	PRBS23 pseudo-random pattern																
PRBS31	PRBS31 pseudo-random pattern																
IDLE	GFP Idle frame (*1)																
Default	COPY																

Section 6 Details of Device Messagess

Command	:{SDH | SONet}:DUMMy:C2 <BINARY>
Query	:{SDH | SONet}:DUMMy:C2?
Response	<BINARY>
Description	Sets POH C2 byte of the Concatenation DummyCH.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<BINARY> Set a C2 byte value of Dummy CH in 8-bit <BINARY> format. Description to the value is as follows.

(SDH)

1234 5678	Hex	Description
-----	---	-----
0000 0000	00	Unequipped
0000 0001	01	Equipped-non-specific
0000 0010	02	TUG structure
0000 0011	03	Locked TU-n
0000 0100	04	Async. 34M or 45M(C-3)
0000 0101	05	Mapping under development
0001 0010	12	Async. 139M(C-4)
0001 0011	13	ATM mapping
0001 0100	14	MAN(DQDB)mapping
0001 0101	15	FDDI mapping
0001 0110	16	Mapping of HDLC/PPP framed signals
0001 0111	17	Mapping of Simple Data Link (SDL) with SDH self synchronizing scrambler
0001 1000	18	Mapping of HDLC/LAPS framed signals
0001 1001	19	Mapping of Simple Data Link (SDL) with set-reset scrambler
0001 1010	1A	Mapping of 10 Gbit/s Ethernet frames
0001 1011	1B	GFP Mapping
1000 0000	80	MAPOS 8 without scrambling(CRC16)
1000 0001	81	MAPOS 16 without scrambling(CRC16)
1000 1000	88	MAPOS 8 with scrambling(CRC16)
1000 1001	89	MAPOS 16 with scrambling(CRC16)
1000 1100	8C	MAPOS 8 with scrambling(CRC32)
1000 1101	8D	MAPOS 16 with scrambling(CRC32)
1000 1110	8E	MAPOS Reserved
1000 1111	8F	MAPOS Reserved

1100 1111	CF	PPP without scrambling
1111 1110	FE	O.181 mapping
1111 1111	FF	VC-AIS
(Other than those above)		Unused

(SONET)

1234 5678	Hex	Description
-----	---	-----
0000 0000	00	Unequipped
0000 0001	01	Equipped-non-specific
0000 0010	02	VT-Structured STS-1 SPE
0000 0011	03	Locked VT Mode
0000 0100	04	Async. Mapping DS3
0001 0010	12	Async. Mapping DS4NA
0001 0011	13	Mapping for ATM
0001 0100	14	Mapping for DQDB
0001 0101	15	Async. Mapping FDDI
0001 0110	16	HDLC-Over-SONET Mapping
1000 0000	80	MAPOS 8 without scrambling(CRC16)
1000 0001	81	MAPOS 16 without scrambling(CRC16)
1000 1000	88	MAPOS 8 with scrambling(CRC16)
1000 1001	89	MAPOS 16 with scrambling(CRC16)
1000 1100	8C	MAPOS 8 with scrambling(CRC32)
1000 1101	8D	MAPOS 16 with scrambling(CRC32)
1000 1110	8E	MAPOS Reserved
1000 1111	8F	MAPOS Reserved
1100 1111	CF	PPP without scrambling
1110 0001	E1	VT-Structured STS-1 SPE with 1 VTx Payload Defect (STS-1 w/1 VTx PD)
1110 0010	E2	STS-1 w/2 VTx PDs
1110 0011	E3	STS-1 w/3 VTx PDs
1110 0100	E4	STS-1 w/4 VTx PDs
1110 0101	E5	STS-1 w/5 VTx PDs
1110 0110	E6	STS-1 w/6 VTx PDs
1110 0111	E7	STS-1 w/7 VTx PDs
1110 1000	E8	STS-1 w/8 VTx PDs
1110 1001	E9	STS-1 w/9 VTx PDs
1110 1010	EA	STS-1 w/10 VTx PDs
1110 1011	EB	STS-1 w/11 VTx PDs

Section 6 Details of Device Messages

1110 1100	EC	STS-1 w/12 VTx PDs
1110 1101	ED	STS-1 w/13 VTx PDs
1110 1110	EE	STS-1 w/14 VTx PDs
1110 1111	EF	STS-1 w/15 VTx PDs
1111 0000	F0	STS-1 w/16 VTx PDs
1111 0001	F1	STS-1 w/17 VTx PDs
1111 0010	F2	STS-1 w/18 VTx PDs
1111 0011	F3	STS-1 w/19 VTx PDs
1111 0100	F4	STS-1 w/20 VTx PDs
1111 0101	F5	STS-1 w/21 VTx PDs
1111 0110	F6	STS-1 w/22 VTx PDs
1111 0111	F7	STS-1 w/23 VTx PDs
1111 1000	F8	STS-1 w/24 VTx PDs
1111 1001	F9	STS-1 w/25 VTx PDs
1111 1010	FA	STS-1 w/26 VTx PDs
1111 1011	FB	STS-1 w/27 VTx PDs
1111 1100	FC	VT-structured STS-1 SPE with 28 VT1.5 Payload Defects, or a non-VT-structured STS-1 or STS-Nc SPE with a Payload Defect
1111 1110	FE	O.181 Test Signal(TSS1 to TSS3) Mapping
1111 1111	FF	AIS-P
(Other than those above)		Unused

Command	:{SDH | SONet}:DUMMy:{VC3 | STS1}:C2 <BINARY>
Query	:{SDH | SONet}:DUMMy:{VC3 | STS1}:C2?
Response	<BINARY>
Description	Sets the value of VC3/STS1 POH of the concatenation dummy channel. * Valid only for MU150101A module.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<BINARY>

Sets POH preset values with 9 bytes data in the following order.

(SDH)

1234 5678	Hex	Description
-----	---	-----
0000 0000	00	Unequipped
0000 0001	01	Reserved
0000 0010	02	TUG structure
0000 0011	03	Locked TU-n
0000 0100	04	Async. 34 M or 45 M (C-3)
0000 0101	05	Experimental mapping
0001 0010	12	Async. 139M(C-4)
0001 0011	13	ATM mapping
0001 0100	14	MAN (DQDB) mapping
0001 0101	15	FDDI mapping
0001 0110	16	Mapping of HDLC/PPP framed signals
0001 0111	17	Reserved for proprietary use
0001 1000	18	HDLC/LAPS framed signals
0001 1001	19	Reserved for proprietary use
0001 1010	1A	Mapping of 10 Gbit/s Ethernet frames
0001 1011	1B	GFP Mapping
0001 1100	1C	10 G Fibre Channel frames
0010 0000	20	Async. ODUk into VC-4-Xv
1000 0000	80	MAPOS 8 without scrambling (CRC16)
1000 0001	81	MAPOS 16 without scrambling (CRC16)
1000 1000	88	MAPOS 8 with scrambling (CRC16)
1000 1001	89	MAPOS 16 with scrambling (CRC16)
1000 1100	8C	MAPOS 8 with scrambling (CRC32)
1000 1101	8D	MAPOS 16 with scrambling (CRC32)
1000 1110	8E	MAPOS Reserved
1000 1111	8F	MAPOS Reserved
1100 1111	CF	Reserved
1101 0000	D0	Reserved for proprietary use

Section 6 Details of Device Messagess

.....

1101 1111	DF	Reserved for proprietary use
1110 0001	E1	Reserved for national use
1111 1011	FB	Reserved for national use
1111 1100	FC	Reserved for national use (Except LEX) RFC 1841 LEX mapping (LEX)
1111 1110	FE	O.181 mapping
1111 1111	FF	VC-AIS
(Others)		Unused

(SONET)

1234 5678	Hex	Description
-----	---	-----
0000 0000	00	Unequipped
0000 0001	01	Equipped-Nonspecific
0000 0010	02	Floating VT Mode
0000 0011	03	Locked VT Mode
0000 0100	04	Async. Mapping DS3
0000 0100	05	Mapping under development
0001 0010	12	Async. Mapping 139M
0001 0011	13	Mapping for ATM
0001 0100	14	Mapping for DQDB
0001 0101	15	Async. Mapping FDDI
0001 0110	16	Mapping HDLC Over SONET
1000 0000	80	MAPOS 8 without scrambling (CRC16)
1000 0001	81	MAPOS 16 without scrambling (CRC16)
1000 1000	88	MAPOS 8 with scrambling (CRC16)
1000 1001	89	MAPOS 16 with scrambling (CRC16)
1000 1100	8C	MAPOS 8 with scrambling (CRC32)
1000 1101	8D	MAPOS 16 with scrambling (CRC32)
1000 1110	8E	MAPOS Reserved
1000 1111	8F	MAPOS Reserved
1100 1111	CF	Reserved
1110 0001	E1	VT-Structured STS-1 SPE with 1 VTx Payload Defect (STS-1 w/1 VTx PD)
1110 0010	E2	STS-1 w/2 VTx PDs
1110 0011	E3	STS-1 w/3 VTx PDs
1110 0100	E4	STS-1 w/4 VTx PDs
1110 0101	E5	STS-1 w/5 VTx PDs
1110 0110	E6	STS-1 w/6 VTx PDs
1110 0111	E7	STS-1 w/7 VTx PDs

1110 1000	E8	STS-1 w/8 VT _x PDs
1110 1001	E9	STS-1 w/9 VT _x PDs
1110 1010	EA	STS-1 w/10 VT _x PDs
1110 1011	EB	STS-1 w/11 VT _x PDs
1110 1100	EC	STS-1 w/12 VT _x PDs
1110 1101	ED	STS-1 w/13 VT _x PDs
1110 1110	EE	STS-1 w/14 VT _x PDs
1110 1111	EF	STS-1 w/15 VT _x PDs
1111 0000	F0	STS-1 w/16 VT _x PDs
1111 0001	F1	STS-1 w/17 VT _x PDs
1111 0010	F2	STS-1 w/18 VT _x PDs
1111 0011	F3	STS-1 w/19 VT _x PDs
1111 0100	F4	STS-1 w/20 VT _x PDs
1111 0101	F5	STS-1 w/21 VT _x PDs
1111 0110	F6	STS-1 w/22 VT _x PDs
1111 0111	F7	STS-1 w/23 VT _x PDs
1111 1000	F8	STS-1 w/24 VT _x PDs
1111 1001	F9	STS-1 w/25 VT _x PDs
1111 1010	FA	STS-1 w/26 VT _x PDs
1111 1011	FB	STS-1 w/27 VT _x PDs
1111 1100	FC	VT-structured STS-1 SPE (Except LEX) RFC 1841 LEX mapping (LEX)
1111 1110	FE	O.181 Test Signal Mapping
1111 1111	FF	AIS-P
(Others)		Unused

Section 6 Details of Device Messagess

Command : {SDH | SONet}:DUMMy:{VC1 | VT}:V5 <BINARY>

Query : {SDH | SONet}:DUMMy:{VC1 | VT}:V5?

 * Valid only for MU150101A module.

Module - MbE - GbE √ 2.5G/10G

Parameter <BINARY>

Set the V5 byte values in the 3-bit <BINARY> format.
Descriptions for values of the response data are shown below.

(SDH)

567	Description
---	-----
000	Unequipped
001	Reserved
010	Asynchronous
011	Bit synchronous
100	Byte synchronous
101	Extended signal label
110	O.181 mapping
111	VC-AIS

(SONET)

567	Description
---	-----
000	Unequipped
001	Reserved
010	Asynchronous
011	Bit synchronous
100	Byte synchronous
101	Extended signal label
110	O.181 mapping
111	AIS-V

Default #B110

Command	:{SDH | SONet}:DUMMy:{VC1 | VT}:POH <HEX>
Query	:{SDH | SONet}:DUMMy:{VC1 | VT}:POH?
Response	<HEX>
Description	VC1/VT POH of Concatenation Dummy CH is set. * Valid only for MU150101A module.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<HEX> Set the POH preset value with 4-byte data in the following order: SDH: V5 J2 N2 K4 SONET: V5 J2 N2 Z7
Default	#H0C000000
Command	:{SDH | SONet}:DUMMy:PTRace:CRC7:ENABLE <BOOLEAN>
Query	:{SDH | SONet}:DUMMy:PTRace:CRC7:ENABLE?
Response	<BOOLEAN>
Description	Sets ON/Off of CRC7 in J1 trace of Concatenation DummyCH.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<BOOLEAN> Set {ON | 1} (ON or 1) to enable the path trace function. Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	0 (disable)
Command	:{SDH | SONet}:DUMMy:PTRace:ENABLE <BOOLEAN>
Query	:{SDH | SONet}:DUMMy:PTRace:ENABLE?
Response	<BOOLEAN>
Description	Sets On/Off of the transmission in J1 trace of Concatenation DummyCH.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<BOOLEAN> Set {ON | 1} (ON or 1) to enable the path trace function. Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	0 (disable)

Section 6 Details of Device Messages

Command	:{SDH | SONet}:DUMMy:PTRace:PTRace "<pattern>"
Query	:{SDH | SONet}:DUMMy:PTRace:PTRace?
Response	"<pattern>"
Description	Sets J1 trace byte sequence of Concatenation DummyCH.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<p><pattern></p> <p>Set a transmitting pattern of the path trace in a string.</p> <p>The setting range of the number of characters is as follows:</p> <p>When CRC-7 is ON: 0 to 15 bytes</p> <p>When CRC-7 is OFF: 0 to 64 bytes</p> <ul style="list-style-type: none">* When less than 15/64 characters (CRC-7 ON/OFF), an actual pattern is the one filled with <white space> in the back.* A string of 64 bytes is returned as the response data for the query, regardless of whether the CRS is ON/OFF.* When CRC-7 is ON, an actual transmitting pattern is the one added 1-byte CRC before the set pattern. For the response data for the query, the set pattern with 1-byte <white space> inserted to its head is returned.
Default	"TRACE PATTERN Anritsu MD1230B Data Quality Analyzer"

Command	:{SDH | SONet}:DUMMy:PTRace:J1:HEX:PTRace <HEX>
Query	:{SDH | SONet}:DUMMy:PTRace:J1:HEX:PTRace?
Response	<HEX>
Description	<p>Sets with HEX path trace byte of the J1-HP of Concatenation Dummy CH.</p> <p>* Valid only for MU150101A module.</p>
Module	– MbE – GbE √ 2.5G/10G
Parameter	<p><HEX></p> <p>Sets a reception pattern of the path trace with a HEX. The range of the valid number of bytes is as follows:</p> <p>When CRC-7 is ON, 1 to 15 bytes. When CRC-7 is OFF, 1 to 64 bytes.</p> <p>* When the number of characters is less than 15/64 (CRC-7 ON/OFF), the trailing space of the valid pattern is filled with white space.</p> <p>* A 64-byte character string is returned as the response data for the query regardless of ON/OFF of CRC.</p> <p>* When CRC-7 is ON, the actual transmission pattern forms the preset pattern preceded by 1 byte CRC. The set pattern with 1-byte <white space> inserted before it is returned as the response data for the query.</p> <p>* If the number of input characters is odd, it is regarded as an error.</p>
Default	Depends on the default value of the :{SDH | SONet}:DUMMy:PTRace:PTRace command.

Section 6 Details of Device Messagess

Command	:{SDH | SONet}:DUMMy:POH <HEX>
Query	:{SDH | SONet}:DUMMy:POH?
Response	<HEX>
Description	Sets POH of Concatenation DummyCH.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<HEX> Set a POH preset value in 9-byte data arranged as follows: SDH: J1 B3 C2 G1 F2 H4 F3 K3 N1 SONET: J1 B3 C2 G1 F2 H4 Z3 Z4 Z5
Default	#H00001B000000000000 (C2: 0x1B)

Command	:{SDH | SONet}:DUMMy:{VC3 | STS1}:POH <HEX>
Query	:{SDH | SONet}:DUMMy:{VC3 | STS1}:POH?
Response	<HEX>
Description	Sets VC3/STS1 POH of Concatenation DummyCH. * Valid only for MU150101A module.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<HEX> Set a POH preset value in 9-byte data arranged as follows: SDH: J1 B3 C2 G1 F2 H4 F3 K3 N1 SONET: J1 B3 C2 G1 F2 H4 Z3 Z4 Z5

Command	{SDH SONet}:MEASch:RXCHannel																		
Query	{SDH SONet}:MEASch:RXCHannel?																		
Description	<p>Selects which CH is a measurement target among the sending CHs divided by Concatenation. For STS-9c, it has a different meaning. The number of the starting member is selected for Virtual Concatenation.</p> <p>The maximum value depends on a set value of Multiplexing. See the screen specifications.</p>																		
Module	– MbE – GbE √ 2.5G/10G																		
Parameter	<p><NR1></p> <p>The setting range varies depending on Concatenation mapping (Multiplexing) currently selected.</p> <p><Contiguous Concatenation></p> <table><tr><td>STS-48c/STM-16c:</td><td>Fixed to 1</td></tr><tr><td>STS-24c/STM-8c:</td><td>Up to 2</td></tr><tr><td>STS-12c/STM-4c:</td><td>Up to 4</td></tr><tr><td>STS-9c/STM-3c:</td><td>Up to 14</td></tr><tr><td>STS-6c/STM-2c:</td><td>Up to 8</td></tr><tr><td>STS-3c/STM1:</td><td>Up to 16</td></tr><tr><td>STS-1/STM0:</td><td>Up to 48</td></tr></table> <p><Virtual Concatenation></p> <table><tr><td>STS3c-Nv/VC4-Nv:</td><td>Up to N (N = 1, 2, ..., 24)</td></tr></table>			STS-48c/STM-16c:	Fixed to 1	STS-24c/STM-8c:	Up to 2	STS-12c/STM-4c:	Up to 4	STS-9c/STM-3c:	Up to 14	STS-6c/STM-2c:	Up to 8	STS-3c/STM1:	Up to 16	STS-1/STM0:	Up to 48	STS3c-Nv/VC4-Nv:	Up to N (N = 1, 2, ..., 24)
STS-48c/STM-16c:	Fixed to 1																		
STS-24c/STM-8c:	Up to 2																		
STS-12c/STM-4c:	Up to 4																		
STS-9c/STM-3c:	Up to 14																		
STS-6c/STM-2c:	Up to 8																		
STS-3c/STM1:	Up to 16																		
STS-1/STM0:	Up to 48																		
STS3c-Nv/VC4-Nv:	Up to N (N = 1, 2, ..., 24)																		
Default	1																		

Section 6 Details of Device Messagess

Command	:{SDH | SONet}:MEASch:TXCHannel
Query	:{SDH | SONet}:MEASch:TXCHannel?
Description	Selects which CH is a setting target among the sending CHs divided by Concatenation. The number of the starting member is selected for Virtual Concatenation.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<NR1> <Contiguous Concatenation> STS-48c/STM-16c: Fixed to 1 STS-24c/STM-8c: Up to 2 STS-12c/STM-4c: Up to 4 STS-9c/STM-3c: Up to 14 STS-6c/STM-2c: Up to 8 STS-3c/STM1: Up to 16 STS-1/STM0: Up to 48 <Virtual Concatenation> STS3c-Nv /VC4-Nv: Up to N (N = 1, 2, ..., 24)
Default	1

Command	:{SDH | SONet}:DDElay:TX:AU:PPJC
Description	<p>Executes Justification once for an AU pointer in the positive (+) direction.</p> <ul style="list-style-type: none"> * Requires MU150101A-14 Differential Delay option. * When MODE is Through and Differential Delay is ON, +PJC cannot be executed if the MFI of the Differential Delay Present Value becomes maximum. * Valid only for MU150101A module.
Module	– MbE – GbE √ 2.5G/10G

Command	:{SDH | SONet}:DDElay:TX:TU:PPJC
Description	<p>Executes Justification once for a TU pointer in the positive (+) direction.</p> <ul style="list-style-type: none"> * Requires MU150101A-14 Differential Delay option. * When MODE is Through and Differential Delay is ON, +PJC cannot be executed if the MFI of the Differential Delay Present Value becomes maximum. * Valid only for MU150101A module.
Module	– MbE – GbE √ 2.5G/10G

Command	:{SDH | SONet}:DDElay:TX:AU:NPJC
Description	<p>Executes Justification once for an AU pointer in the negative (–) direction.</p> <ul style="list-style-type: none"> * Requires MU150101A-14 Differential Delay option. * When MODE is Through and Differential Delay is ON, –PJC cannot be executed if the MFI of the Differential Delay Present Value becomes 0. * Valid only for MU150101A module.
Module	– MbE – GbE √ 2.5G/10G

Command	:{SDH | SONet}:DDElay:TX:TU:NPJC
Description	<p>Executes Justification once for a TU pointer in the negative (–) direction.</p> <ul style="list-style-type: none"> * Requires MU150101A-14 Differential Delay option. * When MODE is Through and Differential Delay is ON, –PJC cannot be executed if the MFI of the Differential Delay Present Value becomes 0. * Valid only for MU150101A module.
Module	– MbE – GbE √ 2.5G/10G

Section 6 Details of Device Messagess

Command	:{SDH | SONet}:DDElay:TX:SWEep <BOOLEAN>
Query	:{SDH | SONet}:DDElay:TX:SWEep?
Response	<BOOLEAN>
Description	Instructs to start/stop the sweep operation. * Requires MU150101A-14 Differential Delay option. * Valid only for MU150101A module.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<BOOLEAN> Set {ON | 1} (ON or 1) to start a sweep operation. To stop the sweep operation, set {OFF | 0} (OFF or 0). As the response data for the query, 1 is returned when a sweep operation is in progress, and 0 is returned when the sweep operation is stopped.
Default	{OFF | 0}

Command	:{SDH | SONet}:DDElay:TX:ORDer { STEP | SIMultaneous }
Query	:{SDH | SONet}:DDElay:TX:ORDer?
Response	{ STEP | SIMultaneous }
Description	Specifies whether to generate justification for each channel or for all channels simultaneously. * Requires MU150101A-14 Differential Delay option. * Valid only for MU150101A module.
Module	– MbE – GbE √ 2.5G/10G
Parameter	{ STEP | SIMultaneous } Select the justification generation method from the followings: STEP Step (justification is generated for each channel) SIMultaneous Simultaneous (justification is generated for all channels simultaneously)
Default	STEP

Command	:{SDH SONet}:DDElay:TX:SWEep:TRANSition {TOA TOB TOATOB TOAB}								
Query	:{SDH SONet}:DDElay:TX:SWEep:TRANSition?								
Response	{TOA TOB TOATOB TOAB}								
Description	<p>Selects the pointer value transition direction.</p> <ul style="list-style-type: none"> * Requires MU150101A-14 Differential Delay option. * Valid only for MU150101A module. 								
Module	– MbE – GbE √ 2.5G/10G								
Parameter	<p>{ TOA TOB TOATOB TOAB }</p> <p>Select the pointer-transition direction from the followings:</p> <table> <tr> <td>TOA</td><td>→ A</td></tr> <tr> <td>TOB</td><td>→ B</td></tr> <tr> <td>TOATOB</td><td>→ A → B</td></tr> <tr> <td>TOAB</td><td>→ A ⇔ B</td></tr> </table>	TOA	→ A	TOB	→ B	TOATOB	→ A → B	TOAB	→ A ⇔ B
TOA	→ A								
TOB	→ B								
TOATOB	→ A → B								
TOAB	→ A ⇔ B								
Default	TOA								

Command	:{SDH | SONet}:DDElay:TX:SWEep:REPeat <NR1>
Query	:{SDH | SONet}:DDElay:TX:SWEep:REPeat?
Response	<NR1>
Description	<p>Sets the sweep repetition number of times when Transition is "→ A ⇔ B".</p> <ul style="list-style-type: none"> * Requires MU150101A-14 Differential Delay option. * Valid only for MU150101A module.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<p><NR1></p> <p>Set a value from 1 to 99.</p> <p>This is valid only when Transition is "→ A ⇔ B".</p>
Default	1

Section 6 Details of Device Messagess

Command	:{SDH | SONet}:DDElay:TX:SWEep:INterval <NR1>
Query	:{SDH | SONet}:DDElay:TX:SWEep:INterval?
Response	<NR1>
Description	Sets the interval of justification. * Requires MU150101A-14 Differential Delay option. * Valid only for MU150101A module.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 4 to 8000.
Default	8

Command	:{SDH | SONet}:DDElay:TX:SWEep:PRIority { AU | TU }
Query	:{SDH | SONet}:DDElay:TX:SWEep:PRIority?
Response	{ AU | TU }
Description	Selects a pointer that takes priority for sweep execution. * Requires MU150101A-14 Differential Delay option. * Valid only for MU150101A module.
Module	– MbE – GbE √ 2.5G/10G
Parameter	{ AU | TU } Select a pointer that takes priority from the followings: AU AU pointer TU TU pointer
Default	TU

Command	:{SDH | SONet}:DDElay:TX:PRESent:CH <ch1>[,<ch2>,<ch3>,<ch4>]
Query	:{SDH | SONet}:DDElay:TX:PRESent:CH?
Response	<ch1>[,<ch2>,<ch3>,<ch4>]
Description	<p>Specifies the target channel on the Present side for Delay setting on the Differential Delay setup screen.</p> <ul style="list-style-type: none"> * Requires MU150101A-14 Differential Delay option. * Valid only for MU150101A module.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<p><ch1>[,<ch2>,<ch3>,<ch4>] = <NR1>[,<NR1>,<NR1>,<NR1>]</p> <p>Specify the target channel on the Present side for Differential Delay setting.</p> <p>Specify a channel in accordance with Appendix D "Basic Rules for Channel Expression in Virtual Concatenation."</p>

Command	:{SDH | SONet}:DDElay:TX:A:CH <ch1>[,<ch2>,<ch3>,<ch4>]
Query	:{SDH | SONet}:DDElay:TX:A:CH?
Response	<ch1>[,<ch2>,<ch3>,<ch4>]
Description	<p>Specifies the target channel on the Target (A) side for Delay setting on the Differential Delay setup screen.</p> <ul style="list-style-type: none"> * Requires MU150101A-14 Differential Delay option. * Valid only for MU150101A module.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<p><ch1>[,<ch2>,<ch3>,<ch4>] = <NR1>[,<NR1>,<NR1>,<NR1>]</p> <p>Specify the target channel on the Target (A) side for Differential Delay setting.</p> <p>Specify a channel in accordance with Appendix D "Basic Rules for Channel Expression in Virtual Concatenation."</p>

Section 6 Details of Device Messages

Command	:{SDH | SONet}:DDElay:TX:B:CH <ch1>[,<ch2>,<ch3>,<ch4>]
Query	:{SDH | SONet}:DDElay:TX:B:CH?
Response	<ch1>[,<ch2>,<ch3>,<ch4>]
Description	<p>Specifies the target channel on the Target (B) side for Delay setting on the Differential Delay setup screen.</p> <ul style="list-style-type: none">* Requires MU150101A-14 Differential Delay option.* Valid only for MU150101A module.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<p><ch1>[,<ch2>,<ch3>,<ch4>] = <NR1>[,<NR1>,<NR1>,<NR1>]</p> <p>Specify the target channel on the Target (B) side for Differential Delay setting.</p> <p>Specify a channel in accordance with Appendix D "Basic Rules for Channel Expression in Virtual Concatenation."</p>

Command	:{SDH | SONet}:DDElay:TX:PREsent:SET <MF>,<AU Pointer>[,<TU Pointer>]
Query	:{SDH | SONet}:DDElay:TX:PREsent:SET?
Response	<MF>,<AU Pointer>[,<TU Pointer>]
Description	Sets the delay with a pointer value for the specified channel at the Present side. * Requires MU150101A-14 Differential Delay option. * Valid only for MU150101A module.

Module – MbE – GbE √ 2.5G/10G

Parameter <MF>,<AU Pointer>[,<TU Pointer>] = <NR1>,<NR1>[,<NR1>]
 Specify the delay using the MF and a pointer value (AU, TU).
 <MF> Set the MF value.
 <AU Pointer> Set an AU pointer value.
 <TU Pointer> Set a TU pointer value.

A TU pointer is required to be set when Multiplexing is set to STS1c-Xv(STS3C)/VC3-Xv(AU4), VT2-Xv/VC12-Xv, or VT1.5-Xv/VC11-Xv. When Multiplexing is other than the above, the specified TU pointer value is ignored.

The specified AU pointer is applied to the settings when Multiplexing is set to STS3c-Xv/VC4-Xv or STS1c-Xv/VC3-Xv. When Multiplexing is set to VT2-Xv/VC12-Xv or VT1.5-Xv/VC11-Xv, a certain value is required to be set as a parameter of the command, but it is ignored.

The range of the setting values is as follows:

MF	VC4-Xv, VC3-Xv:	0 to 4095
	VC12-Xv, VC11-Xv:	0 to 1023
AU:		0 to 782
TU	VC3-Xv(AU4):	0 to 764
	VC12-Xv:	0 to 139
	VC11-Xv:	0 to 103

When a value other than the above is specified, it is ignored.

Default 1, 0

Section 6 Details of Device Messagess

Command	:{SDH | SONet}:DDElay:TX:PRESent:ENABle <BOOLEAN>		
Query	:{SDH | SONet}:DDElay:TX:PRESent:ENABle?		
Response	<BOOLEAN>		
Description	Sets whether the specified channel at the Present side is targeted for justification. * Requires MU150101A-14 Differential Delay option. * Valid only for MU150101A module.		
Module	– MbE – GbE √ 2.5G/10G		
Parameter	<BOOLEAN> Sets whether the specified channel at the Present side is targeted for justification (1 or ON) or not (0 or OFF).		
Default	1		

Command	:{SDH | SONet}:DDElay:TX:A:SET <MF>,<AU Pointer>[,<TU Pointer>]		
Query	:{SDH | SONet}:DDElay:TX:A:SET?		
Response	<MF>,<AU Pointer>[,<TU Pointer>]		
Description	Sets the delay with a pointer value for the specified channel at the Target (A) side. * Requires MU150101A-14 Differential Delay option. * Valid only for MU150101A module.		
Module	– MbE – GbE √ 2.5G/10G		
Parameter	<MF>,<AU Pointer>[,<TU Pointer>] Specify the delay using the MF and a pointer value (AU, TU). <MF> Set the MF value. <AU Pointer> Set an AU pointer value. <TU Pointer> Set a TU pointer value. The detailed function is the same as that for the :SDH:DDElay:Tx:PRESent:Set command, except for the followings: When Mode is Through and Differential Delay is ON, the setting range for the MF value is as follows:		
	MF	STS3c-Xv/VC4-Xv, STS1c-Xv/VC3-Xv: VT2-Xv/VC12-Xv, VT1.5-Xv/VC11-Xv:	1 to 4094 1 to 1022
Default	2048, 782		

Command	:{SDH SONet}:DDElay:TX:B:SET <MF>,<AU Pointer>[,<TU Pointer>]								
Query	:{SDH SONet}:DDElay:TX:B:SET?								
Response	<MF>,<AU Pointer>[,<TU Pointer>]								
Description	<p>Sets the delay with a pointer value for the specified channel at the Target (B) side.</p> <ul style="list-style-type: none">* Requires MU150101A-14 Differential Delay option.* Valid only for MU150101A module.								
Module	– MbE – GbE √ 2.5G/10G								
Parameter	<p><MF>,<AU Pointer>[,<TU Pointer>] = <NR1>,<NR1>[,<NR1>]</p> <p>Specify the delay using the MF and a pointer value (AU, TU).</p> <p><MF> Set the MF value.</p> <p><AU Pointer> Set an AU pointer value.</p> <p><TU Pointer> Set a TU pointer value.</p> <p>The detailed function is the same as that for the :SDH:DDElay:Tx:PRESet:Set command, except for the followings:</p> <p>When Mode is Through and Differential Delay is ON, the setting range for the MF value is as follows:</p> <table><tr><td>MF</td><td>STS3c-Xv/VC4-Xv, STS1c-Xv/VC3-Xv:</td><td>1 to 4094</td></tr><tr><td></td><td>VT2-Xv/VC12-Xv, VT1.5-Xv/VC11-Xv:</td><td>1 to 1022</td></tr></table>			MF	STS3c-Xv/VC4-Xv, STS1c-Xv/VC3-Xv:	1 to 4094		VT2-Xv/VC12-Xv, VT1.5-Xv/VC11-Xv:	1 to 1022
MF	STS3c-Xv/VC4-Xv, STS1c-Xv/VC3-Xv:	1 to 4094							
	VT2-Xv/VC12-Xv, VT1.5-Xv/VC11-Xv:	1 to 1022							
Default	1, 0								

Section 6 Details of Device Messagess

Query	:{SDH | SONet}:DDElay:MONitor:DATA?
Response	(1CH Delay data),...,(nCH Delay data),<Group Delay>
Description	<p>Queries all the Differential Delay Monitor results.</p> <ul style="list-style-type: none"> * Requires MU150101A-14 Differential Delay option. * Valid only for MU150101A module.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<p>(1CH Delay data),...,(nCH Delay data),<Group Delay> = (1CH Delay data),...,(nCH Delay data),<NR2></p> <p>The delay monitor results for all channels are aligned in the ascending channel order and are output. In addition, the group delay value is output.</p> <p>(nCH Delay data) Measured delay result for one channel "<ch>",<sq>,<MF>,<AU Pointer>,<TU Pointer>,<Time>,<State> = <STRING>,<NR1>,<NR1>.<NR1>,<NR1>,<NR2>,<STRING></p> <p>"<ch>" Returns the channel with a character string.</p> <p>The channel layers are delimited with dots from the upper layer as follows: "[ch1].[ch2].[ch3].[ch4]"</p> <p>Specify a channel in accordance with Appendix D "Basic Rules for Channel Expression in Virtual Concatenation."</p> <p><sq> Returns the SQ value. <MF> Returns the MF value. <AU Pointer> Returns the AU Pointer value. <TU Pointer> Returns the TU Pointer value Fixed to 0 if there is no TU level for Multiplexing. <Time> Returns the Time value in ms units (to five places of decimals) <State> Channel with no delay ($\Delta t = 0$): "Fastest" Channel with the maximum delay (Δt is largest in all the channels): "Latest" Channel on which an alarm occurs: "Alarm" Other than the above: ""</p>

- Response example for VC3-Xv(AU3)

```
"1.1",1,2,3,0,0.00000,"Fastest",
"1.2",2,3,4,0,5.12345,"Alarm",
"1.3",3,4,5,0,5.12345,"",
"2.1",4,5,6,0,0.00000,"Fastest",
"2.2",5,6,7,0,5.12345,"",
"2.3",6,7,8,0,5.99999,"Latest",
"3.1",7,8,9,0,5.12345,"",
:
```

- Response example for VC3-Xv(AU4)

```
"1.1",1,2,3,4,0.00000,"Fastest",
"1.2",2,3,3,5,5.12345,"",
"1.3",3,4,3,6,5.12345,"",
"2.1",4,5,4,4,5.12345,"",
"2.2",5,6,4,5,5.12345,"",
"2.3",6,7,4,6,5.12345,"Latest",
"3.1",7,8,5,4,5.12345,"",
:
```

- Does not depend on the pause function on the screen.
The monitor data at the queried point is output even if Pause is set to ON.

Section 6 Details of Device Messagess

Query	:{SDH | SONet}:PATH:MONitor:DATA?
Response	<VCAT/LCAS(Common)>,<SDH/SONET(Common)>,<GFP(Common)>,<PPP(Common)>,<Ethernet/IP(Common)>,(ch),...,(ch)
Description	Queries the status of all the current channels of the path monitor. * Valid only for MU150101A module.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<VCAT/LCAS(Common)>,<SDH/SONET(Common)>,<GFP(Common)>,<PPP(Common)>,<Ethernet/IP(Common)>,(ch),...,(ch) =<NR1>,<NR1>,<NR1>,<NR1>,<NR1>,(ch),...,(ch) Five elements of the common items followed by elements for each channel, delimited with dots, are returned for 84 channels (the maximum VCG size), in series of decimal numbers in the channel ascending order. Portions per channel (ch) have the following elements for each channel: (ch): <CH>,<AU>,<TU>,<VCAT/LCAS>,<LCAS State> =<STRING>,<NR1>,<NR1>,<NR1>,<NR1> <CH> is expressed in the following format: "[ch1].[ch2].[ch3].[ch4]" The channel description method conforms to Appendix D "Basic Rules for Channel Description in Virtual Concatenation." An element under channel expresses the generation of an Error, Alarm, or PJC item. A certain value is assigned to the Error, Alarm, and PJC items individually (0 is assigned for no generation). The sum of them is output for each element. 0 is returned for an element that becomes invalid according to the upper setting conditions. Assuming element X contains a and b, for example, if the item value of a is 1 and that of b is 2, the value of X becomes as follows according to the generation conditions of a and b: a: Generated b: generated X = 0 a: Generated b: Not generated X = 1 a: Not generated b: Generated X = 2 a: Generated b: Generated X = 3 For details on items contained in each element and their values, refer to Appendix E "Path Monitor Item Correspondence Table."

Query	:{SDH | SONet}:PATH:MONitor:HISTory?
Response	<VCAT/LCAS(Common)>,<SDH/SONET(Common)>,<GFP(Common)>,<PPP(Common)>,<Ethernet/IP(Common)>,(ch),...,(ch)
Description	<p>Queries the history status of all channels of the path monitor. The history status is returned regardless of ON/OFF of History.</p> <p>* Valid only for MU150101A module.</p>
Module	– MbE – GbE √ 2.5G/10G
Parameter	<p><VCAT/LCAS(Common)>,<SDH/SONET(Common)>,<GFP(Common)>,<PPP(Common)>,<Ethernet/IP(Common)>,(ch),...,(ch) =<NR1>,<NR1>,<NR1>,<NR1>,<NR1>,(ch),...,(ch)</p> <p>Five elements of the common items followed by elements for each channel, delimited with dots, are returned for 84 channels (the maximum VCG size), in series of decimal numbers in the channel ascending order.</p> <p>Portions per channel (ch) have the following elements for each channel: (ch): <CH>,<AU>,<TU>,<VCAT/LCAS> =<STRING>,<NR1>,<NR1>,<NR1></p> <p>The detailed function is the same as that for the :PATH:MONitor:DATA? command.</p>

Ethernet commands (ETHERnet)

The commands related to the following Ethernet function are explained below.

- Collision generation function
- Error Insertion function

Command	:ETHERnet:ERRor:COLLision:ENABle <BOOLEAN>
Query	:ETHERnet:ERRor:COLLision:ENABle?
Response	<BOOLEAN>
Description	Sets a collision to enable or disable.
Module	√ MbE – GbE – 2.5G/10G
Parameter	<BOOLEAN> To generate a collision, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	0 (disable)

Command	:ETHERnet:ERRor:COLLision:INTerval <NR1>
Query	:ETHERnet:ERRor:COLLision:INTerval?
Response	<NR1>
Description	Sets an interval that a collision is generated.
Module	√ MbE – GbE – 2.5G/10G
Parameter	<NR1> Set a value from 1 to 10 (s).
Default	1

Command	:ETHerNet:ERRor:COLLision:FRAMes <NR1>
Query	:ETHerNet:ERRor:COLLision:FRAMes?
Response	<NR1>
Description	Sets a maximum value of the number of collision frames to be generated in the preset interval.
Module	√ MbE – GbE – 2.5G/10G
Parameter	<NR1> Set a value from 1 to 255 (frames).
Default	1

GFP transmission commands (GFP)

The commands related to the following GFP transmission functions are explained below.

- GFP header function for protocol transmission
- Client Management Frame function

Command	:GFP:HEADer:EXI
Query	:GFP:HEADer:EXI?
Description	<p>Sets an EXI field the GFP header transmitted outside the stream.</p> <p>A setting target is GFP frame header transmitted by measuring equipment when PING/ARP Reply, IGMP, and BGP-4 protocols operate.</p>
Module	– MbE – GbE √ 2.5G/10G
Parameter	<p><BINARY></p> <p>Set the EXI field of the GFP header in the 4-bit <BINARY> format.</p> <p>Select an Extension Header type.</p> <p>0000: Null Extension Header</p> <p>0001: Linear Frame</p> <p>0010: Ring Frame</p> <p>Others: Reserved</p>
Default	#B0000

Command	:GFP:HEADer:PFI
Query	:GFP:HEADer:PFI?
Description	<p>Sets a PFI field of the GFP header transmitted outside the stream.</p> <p>A setting target is GFP frame header transmitted by measuring equipment when PING/ARP Reply, IGMP, and BGP-4 protocols operate.</p>
Module	– MbE – GbE √ 2.5G/10G
Parameter	<p><NR1></p> <p>Set a PFI field (1 bit) value of the GFP header and select with or without Payload FCS.</p> <p>0: Not adding Payload FCS.</p> <p>1: Adding Payload FCS.</p>
Default	1

Command	:GFP:HEADer:PTI
Query	:GFP:HEADer:PTI?
Description	<p>Sets a PTI field of the GFP header transmitted outside the stream.</p> <p>A setting target is GFP frame header transmitted by measuring equipment when PING/ARP Reply, IGMP, and BGP-4 protocols operate.</p>
Module	– MbE – GbE √ 2.5G/10G
Parameter	<p><BINARY></p> <p>Set the PTI field of the GFP header in the 3-bit <BINARY> format.</p> <p>000: Client Data</p> <p>100: Client Management Frame</p> <p>Others: Reserved</p>
Default	#B000

Section 6 Details of Device Messagess

Command	:GFP:HEADer:EXTension:PATtern <HEX>
Query	:GFP:HEADer:EXTension:PATtern?
Response	<HEX>
Description	Sets the common setting of the GFP Client Frame header transmitted outside the stream. Edits the internal pattern of the Extension Header.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<HEX> Set a field pattern value of the Extension Header in <HEX> format from 0 to 58 octets.
Default	#H00

Command	:GFP:HEADer:EXTension:LENGth
Query	:GFP:HEADer:EXTension:LENGth?
Description	Sets the common setting of the GFP Client Frame header transmitted outside the stream. Set the length of the Extension Header. A setting target is GFP frame header sent by measuring equipment when PING/ARP Reply, IGMP, and BGP-4 protocols operate. * Set the hardware to make the Extension Header Length 0 when EXI (ID706) is #B0000.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<NR1> Set the length of the GFP Extension Header in the byte units. The setting range is from two up to 58 bytes because eHEC size is not included. Fixed to 0 when NULL Extension Header is selected as an Extension Header type, and two bytes when Linear Frame is selected.
Default	2

Command	:GFP:HEADer:EXTension:PATtern:TYPE {ALL0 | ALL1 | PROGRAM}
Query	:GFP:HEADer:EXTension:PATtern:TYPE?
Response	{ALL0 | ALL1 | PROGRAM}
Description	<p>Sets the common setting of the GFP Client Frame header transmitted outside the stream.</p> <p>Select the internal pattern of the Extension Header.</p>
Module	– MbE – GbE √ 2.5G/10G
Parameter	<p>{ALL0 | ALL1 | PROGRAM}</p> <p>Select one of the following as an Extension Header pattern:</p> <p>ALL0: All 0</p> <p>ALL1: All 1</p> <p>PROGRAM: Programmable Pattern</p>
Default	ALL0

Section 6 Details of Device Messagess

Command	:GFP:HEADer:UPI <BINARY>																																						
Query	:GFP:HEADer:UPI?																																						
Response	<BINARY>																																						
Description	<p>Sets the common setting of the GFP Client Frame header transmitted outside the stream.</p> <p>A setting target is GFP frame header transmitted by measuring equipment when PING/ARP Reply, IGMP, and BGP-4 protocols operate.</p>																																						
Module	– MbE – GbE √ 2.5G/10G																																						
Parameter	<p><BINARY></p> <p>Set the UPI field of the GFP header in the 8-bit <BINARY> format.</p> <p>Select an Extension Header type.</p> <p><When PTI = 000></p> <table><tr><td>0000 0000:</td><td>Reserved and not available</td></tr><tr><td>0000 0001:</td><td>Frame-Mapped Ethernet</td></tr><tr><td>0000 0010:</td><td>Frame-Mapped PPP</td></tr><tr><td>0000 0011:</td><td>Transparent Fiber Channel</td></tr><tr><td>0000 0100:</td><td>Transparent FICON</td></tr><tr><td>0000 0101:</td><td>Transparent ESCON</td></tr><tr><td>0000 0110:</td><td>Transparent Gb Ethernet</td></tr><tr><td>0000 0111:</td><td>Reserved for future</td></tr><tr><td>0000 1000:</td><td>MAPOS</td></tr><tr><td>0000 1001:</td><td>Transparent DVB ASI</td></tr><tr><td>0000 1010:</td><td>Framed Mapped RPR</td></tr><tr><td>0000 1011:</td><td>Frame-Mapped FC-BBW</td></tr><tr><td>0000 1100:</td><td>Asynco Transparent FC</td></tr><tr><td>1111 1111:</td><td>Reserved and not available</td></tr><tr><td>Others:</td><td>Reserved</td></tr></table> <p><When PTI = 100></p> <table><tr><td>0000 0001:</td><td>Loss of Client Signal</td></tr><tr><td>0000 0010:</td><td>Loss of Character Synchronization</td></tr><tr><td>Others:</td><td>Reserved</td></tr></table> <p><When PTI is other than 000 and 100></p> <table><tr><td>All:</td><td>Reserved</td></tr></table>	0000 0000:	Reserved and not available	0000 0001:	Frame-Mapped Ethernet	0000 0010:	Frame-Mapped PPP	0000 0011:	Transparent Fiber Channel	0000 0100:	Transparent FICON	0000 0101:	Transparent ESCON	0000 0110:	Transparent Gb Ethernet	0000 0111:	Reserved for future	0000 1000:	MAPOS	0000 1001:	Transparent DVB ASI	0000 1010:	Framed Mapped RPR	0000 1011:	Frame-Mapped FC-BBW	0000 1100:	Asynco Transparent FC	1111 1111:	Reserved and not available	Others:	Reserved	0000 0001:	Loss of Client Signal	0000 0010:	Loss of Character Synchronization	Others:	Reserved	All:	Reserved
0000 0000:	Reserved and not available																																						
0000 0001:	Frame-Mapped Ethernet																																						
0000 0010:	Frame-Mapped PPP																																						
0000 0011:	Transparent Fiber Channel																																						
0000 0100:	Transparent FICON																																						
0000 0101:	Transparent ESCON																																						
0000 0110:	Transparent Gb Ethernet																																						
0000 0111:	Reserved for future																																						
0000 1000:	MAPOS																																						
0000 1001:	Transparent DVB ASI																																						
0000 1010:	Framed Mapped RPR																																						
0000 1011:	Frame-Mapped FC-BBW																																						
0000 1100:	Asynco Transparent FC																																						
1111 1111:	Reserved and not available																																						
Others:	Reserved																																						
0000 0001:	Loss of Client Signal																																						
0000 0010:	Loss of Character Synchronization																																						
Others:	Reserved																																						
All:	Reserved																																						
Default	#B0000001																																						

Command	:GFP:MANagement:START
Description	Starts transmission of the GFP Client Management Frame.
Module	– MbE – GbE √ 2.5G/10G

Command	:GFP:MANagement:STOP
Description	Stops transmission of the GFP Client Management Frame.
Module	– MbE – GbE √ 2.5G/10G

Query	:GFP:MANagement:STATe?
Response	{0 | 1}
Description	Queries the transmission state of the GFP Management Frame.
Module	– MbE – GbE √ 2.5G/10G
Parameter	{0 | 1}

0: Client Management Frame transmission is stopped.
1: Client Management Frame is being sent.

Command	:GFP:MANagement:HEADer:EXI <BINARY>
Query	:GFP:MANagement:HEADer:EXI?
Response	<BINARY>
Description	Sets an EXI field of the GFP Client Management Frame.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<BINARY>

Set the EXI field of the GFP header in 4-bit <BINARY> format.

Select an Extension Header type.

0000: Null Extension Header
0001: Linear Frame
0010: Ring Frame
Others: Reserved

Default	#B0000
---------	--------

Section 6 Details of Device Messagess

Command	:GFP:MANagement:HEADer:EXTension:PATtern <HEX>
Query	:GFP:MANagement:HEADer:EXTension:PATtern?
Response	<HEX>
Description	Edits an Extension Header field pattern of the GFP Client Management Frame.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<HEX> Set a value of the Extension Header field pattern in <HEX> format from 0 to 58 octets.
Default	#H00

Command	:GFP:MANagement:HEADer:EXTension:PATtern:TYPE {ALL0 | ALL1 | PROGRAM}
Query	:GFP:MANagement:HEADer:EXTension:PATtern:TYPE?
Response	{ALL0 | ALL1 | PROGRAM}
Description	Selects a pattern type of an Extension Header field of the GFP Client Management Frame.
Module	– MbE – GbE √ 2.5G/10G
Parameter	{ALL0 | ALL1 | PROGRAM} Select one of the following as an Extension Header pattern: ALL0: All 0 ALL1: All 1 PROGRAM: Programmable Pattern
Default	ALL0

Command	:GFP:MANagement:HEADer:EXTension:LENGth <NR1>
Query	:GFP:MANagement:HEADer:EXTension:LENGth?
Response	<NR1>
Description	<p>Sets the Extension Header length of the GFP Client Management Frame. eHEC size is not included.</p> <p>* Set the hardware to make the Extension Header Length 0 when EXI (ID727) is #B0000.</p>
Module	– MbE – GbE √ 2.5G/10G
Parameter	<p><NR1></p> <p>Set the length of the GFP Extension Header in the byte units. The setting range is from two up to 58 bytes because eHEC size is not included. Fixed to 0 when NULL Extension Header is selected as an Extension Header type. Fixed to 2 bytes when Linear Frame is selected as an Extension Header type.</p>
Default	2

Command	:GFP:MANagement:HEADer:PFI <NR1>
Query	:GFP:MANagement:HEADer:PFI?
Response	<NR1>
Description	Sets a PFI field of the GFP Client Management Frame.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<p><NR1></p> <p>Set a PFI field (1 bit) value of the GFP header and select whether to add the Payload FCS.</p> <p>0: Does not add Payload FCS. 1: Adds Payload FCS.</p>
Default	1

Section 6 Details of Device Messages

Command	:GFP:MANagement:HEADer:UPI <BINARY>
Query	:GFP:MANagement:HEADer:UPI?
Response	<BINARY>
Description	Sets a UPI field of the GFP Client Management Frame.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<p><BINARY></p> <p>Set the UPI field of the GFP header in the 8-bit <BINARY> format. Select an Extension Header type.</p> <p><When PTI = 000></p> <p>0000 0000: Reserved and not available 0000 0001: Frame-Mapped Ethernet 0000 0010: Frame-Mapped PPP 0000 0011: Transparent Fiber Channel 0000 0100: Transparent FICON 0000 0101: Transparent ESCON 0000 0110: Transparent Gb Ethernet 0000 0111: Reserved for future 0000 1000: MAPOS 0000 1001: Transparent DVB ASI 0000 1010: Framed Mapped RPR 0000 1011: Frame-Mapped FC-BBW 0000 1100: Asynco Transparent FC 1111 1111: Reserved and not available Others: Reserved</p> <p><When PTI = 100></p> <p>0000 0001: Loss of Client Signal 0000 0010: Loss of Character Synchronization Others: Reserved</p> <p><When PTI is other than 000 and 100></p> <p>All: Reserved</p>
Default	#B00000001

Command	:GFP:MANagement:INTerim:TYPE {IDLE | CLIENT_DATA}
Query	:GFP:MANagement:INTerim:TYPE?
Response	{IDLE | CLIENT_DATA}
Description	<p>Selects a frame type of the interim GFP Client Management Frames.</p> <p>Selects a frame type to insert the interim Client Management Frames when the Client Management Frames are continuously transmitted by REPEAT.</p>
Module	– MbE – GbE √ 2.5G/10G
Parameter	<p>{IDLE | CLIENT_DATA}</p> <p>Select either of the following:</p> <p>IDLE: GFP Idle frame</p> <p>CLIENT_DATA: Sending signal specified in the Stream screen.</p>
Default	IDLE

Command	:GFP:MANagement:MODE {SINGLE | REPEAT}
Query	:GFP:MANagement:MODE?
Response	{SINGLE | REPEAT}
Description	Sets whether to insert the GFP Client Management Frame once or repeatedly.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<p>{SINGLE | REPEAT}</p> <p>Select either of the following:</p> <p>SINGLE: Transmits only one frame when being instructed to send the Client Management Frame.</p> <p>REPEAT: Transmits the Client Management Frame repeatedly at a fixed interval until being instructed to stop.</p>
Default	SINGLE

Section 6 Details of Device Messagess

Command	:GFP:MANagement:PAYLoad:LENGth <NR1>
Query	:GFP:MANagement:PAYLoad:LENGth?
Response	<NR1>
Description	Sets the Payload length of the GFP Client Management Frame. The length of the Management frame including a header and FCS should be a multiple of four and also less than 2047.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<NR1> The length of the Client Management frame including a header and FCS should be a multiple of four and also less than 2047.

Command	:GFP:MANagement:PAYLoad:PATtern:TYPE {ALL0 | ALL1 | PROGRAM}
Query	:GFP:MANagement:PAYLoad:PATtern:TYPE?
Response	{ALL0 | ALL1 | PROGRAM}
Description	Selects a Payload pattern type of the GFP Client Management Frame.
Module	– MbE – GbE √ 2.5G/10G
Parameter	{ALL0 | ALL1 | PROGRAM} Select one of the following as a Payload Information pattern of the GFP Client Management Frame: ALL0: All 0 ALL1: All 1 PROGRAM: Programmable Pattern
Default	ALL0

Command	:GFP:MANagement:PAYLoad:PATtern <HEX>
Query	:GFP:MANagement:PAYLoad:PATtern?
Response	<HEX>
Description	Edits a Payload pattern of the GFP Management Frame.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<HEX> Sets a value of the data field pattern in <HEX> format from 0 to 2048 octets.
Default	#H00

Command	:GFP:MANagement:PERiod <NR1>
Query	:GFP:MANagement:PERiod?
Response	<NR1>
Description	Sets an interval to insert the GFP Client Management Frame. Sets an interval in ms-units when the Client Management Frames are sent repeatedly.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<NR1> Set in a range from 10ms to 2560ms.
Default	100

Section 6 Details of Device Messages

Command	:GFP:MANagement:TYPE {LOSS_SIG | LOSS_SYNC | USER1 | USER2}
Query	:GFP:MANagement:TYPE?
Response	{LOSS_SIG | LOSS_SYNC | USER1 | USER2}
Description	<p>Selects a type of GFP Client Management Frame to insert.</p> <p>The content of the Client Management Frame is reserved in the independent memory area of two user definitions, Loss of Sync and Loss of Signal, respectively. Specifies one of them to send.</p>
Module	– MbE – GbE √ 2.5G/10G
Parameter	<p>{LOSS_SIG | LOSS_SYNC | USER1 | USER2}</p> <p>Select one of the following:</p> <p>LOSS_SIG: Loss of Signal (UPI = 0000 0001)</p> <p>LOSS_SIN: Loss of Synchronization (UPI = 0000 0010)</p> <p>USER1: User definition 1</p> <p>USER2: User definition 2</p>
Default	LOSS_SIG

Counter measurement commands (COUNter)

The commands related to the counter measurement function are explained below.

Command	:COUNter:STOP
Description	Stops a measurement.
Module	√ MbE √ GbE √ 2.5G/10G

Command	:COUNter:STARt
Description	Starts a measurement.
Module	√ MbE √ GbE √ 2.5G/10G

Command	:COUNter:CLEar
Description	Clears the counter value.
Module	√ MbE √ GbE √ 2.5G/10G

Query	:COUNter:STATe?
Response	{0 | 1 | 2}
Description	Returns the state of counter measurement.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	{0 | 1 | 2}

Counter processing state is returned with code number, as below.

0 Measurement stopped

1 Measurement in progress

2 Processing in measurement start or stop

Section 6 Details of Device Messagess

Query	:COUNter:TIME:START?
Response	"<DATETIME>"
Description	Queries the start time of a measurement.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<DATETIME> A string that indicates the date and the time. This is expressed in the following format: <date><space><time> <date> The format is yyyy/mm/dd. These refer to "year", "month", and "date", respectively. The value ranges from 2000/01/01 to 2098/12/31. <time> The format is hh:mm:ss.sss. These refer to "hour", "minutes", and "seconds", respectively. This is expressed on a 24-hour basis. The value ranges from 00:00:00.000 to 23:59:59.999. Example: "2003/08/15 13:22:51.01"

Query	:COUNter:TIME:STOP?
Response	"<DATETIME>"
Description	Queries the stop time of a measurement.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<DATETIME> A string that indicates the date and the time. This is expressed in the following format: <date><space><time> <date> The format is yyyy/mm/dd. These refer to "year", "month", and "date", respectively. The value ranges from 2000/01/01 to 2098/12/31. <time> The format is hh:mm:ss.sss. These refer to "hours", "minutes" and "seconds", respectively. This is expressed on a 24-hour basis. The value ranges from 00:00:00.000 to 23:59:59.999. Example:"2003/08/15 13:22:51.01"

Query	:COUNter:TIME:ELAPsed?
Response	<NR1>
Description	Queries the elapsed time of a measurement.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> An integer value that indicates the elapsed time of a measurement. It takes values from 0 to 313560000 (second).

Command	:COUNter:QOS:TYPE {IP | VLAN}
Query	:COUNter:QOS:TYPE?
Response	{IP | VLAN}
Description	Sets the type of frame to be counted by the QoS counter.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	{IP | VLAN} Select either of the following: IP ToS field of IP VLAN VLAN User priority field (*1) *1: Valid for Ethernet module. For 2.5G/10G module, valid only when Mapping is GFP/LAPS/LEX.
Default	IP

Section 6 Details of Device Messagess

Command	:COUNter:LERRor:TYPE {CODE | RD | BOTH | XGMII}
Query	:COUNter:LERRor:TYPE?
Response	{CODE | RD | BOTH | XGMII}
Description	<p>Sets the count condition for the Line Error counter.</p> <p>* This command is available for the MU120122A (SFP)/32A/38A.</p> <p>* For the MU120122A (SFP), the setting value of the :COUNter:LERRor:TYPE command changes in accordance with that of the :ERRor:TYPE command, and vice versa.</p>
Module	× MbE ○ GbE × 2.5G/10G
Parameter	<p>{CODE | RD | BOTH | XGMII}</p> <p>Select the count condition from the following.</p> <p>For the MU120122A (SFP)/32A:</p> <p>CODE When an 8B/10B code conversion error occurs</p> <p>RD When a running disparity error occurs</p> <p>BOTH When an 8B/10B code conversion error or a running disparity error occurs</p> <p>For the MU120138A:</p> <p>XGMII When an XGMII error occurs</p>
Default	CODE (MU120122A(SFP)/32A) XGMII (MU120138A)

Command	:COUNter:UDEFinEd1:DA {DONT_CARE | NOT_MATCH | MATCH}
Query	:COUNter:UDEFinEd1:DA?
Response	{DONT_CARE | NOT_MATCH | MATCH}
Description	<p>Sets a filter to the preset destination address pattern (Don't care/Not match/Match).</p> <p>* In case of MU120121A/22A module, uses :COUNter:UDEFinEd1:PATtern* commnad. Because :COUNter:UDEFinEd1:DA command is left only to keep the version compatibility. (Since version 5.0)</p>
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p>{DONT_CARE | NOT_MATCH | MATCH}</p> <p>Select one of the following:</p> <p>DONT_CARE Don't care</p> <p>NOT_MATCH Not match</p> <p>MATCH Match</p>
Default	DONT_CARE (Don't care)

Command	:COUNTER:UDEFined1:ENABle <BOOLEAN>
Query	:COUNTER:UDEFined1:ENABle?
Response	<BOOLEAN>
Description	Sets the user-defined counter 1 to enable or disable.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<BOOLEAN> To enable the user-defined counter1, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	0 (disable)

Command	:COUNTER:UDEFined1:ERRor {DONT_CARE | NOT_MATCH | MATCH}
Query	:COUNTER:UDEFined1:ERRor?
Response	{DONT_CARE | NOT_MATCH | MATCH}
Description	Sets a filter to the preset error type (Don't care/Not match/Match).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	{DONT_CARE | NOT_MATCH | MATCH} Select one of the following: DONT_CARE Don't care NOT_MATCH Not match MATCH Match
Default	DONT_CARE (Don't care)

Section 6 Details of Device Messagess

Command	:COUNter:UDEFined1:PATtern1 {DONT_CARE | NOT_MATCH | MATCH}
Query	:COUNter:UDEFined1:PATtern1?
Response	{DONT_CARE | NOT_MATCH | MATCH}
Description	Sets a filter to the preset pattern 1 (Don't care/Not match/Match).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	{DONT_CARE | NOT_MATCH | MATCH} Select one of the following: DONT_CARE Don't care NOT_MATCH Not match MATCH Match
Default	DONT_CARE (Don't care)

Command	:COUNter:UDEFined1:PATtern2 {DONT_CARE | NOT_MATCH | MATCH}
Query	:COUNter:UDEFined1:PATtern2?
Response	{DONT_CARE | NOT_MATCH | MATCH}
Description	Sets a filter to the preset pattern 2 (Don't care/Not match/Match).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	{DONT_CARE | NOT_MATCH | MATCH} Select one of the following: DONT_CARE Don't care NOT_MATCH Not match MATCH Match
Default	DONT_CARE (Don't care)

Command	:COUNter:UDEFined1:PATtern3 {DONT_CARE | NOT_MATCH | MATCH}
Query	:COUNter:UDEFined1:PATtern3?
Response	{DONT_CARE | NOT_MATCH | MATCH}
Description	Sets a filter to the preset pattern 3 (Don't care/Not match/Match).
Module	– MbE √ GbE – 2.5G/10G
Parameter	{DONT_CARE | NOT_MATCH | MATCH} Select one of the following: DONT_CARE Don't care NOT_MATCH Not match MATCH Match
Default	DONT_CARE (Don't care)

Command	:COUNter:UDEFined1:PATtern4 {DONT_CARE | NOT_MATCH | MATCH}
Query	:COUNter:UDEFined1:PATtern4?
Response	{DONT_CARE | NOT_MATCH | MATCH}
Description	Sets a filter to the preset pattern 4 (Don't care/Not match/Match).
Module	– MbE √ GbE – 2.5G/10G
Parameter	{DONT_CARE | NOT_MATCH | MATCH} Select one of the following: DONT_CARE Don't care NOT_MATCH Not match MATCH Match
Default	DONT_CARE (Don't care)

Section 6 Details of Device Messagess

Command	:COUNter:UDEFinEd1:SA {DONT_CARE | NOT_MATCH | MATCH}
Query	:COUNter:UDEFinEd1:SA?
Response	{DONT_CARE | NOT_MATCH | MATCH}
Description	Sets a filter to the preset source address pattern (Don't care/Not match/Match). * In case of MU120121A/22A module, uses :COUNter:UDEFinEd1:PATtern* commnad. Because :COUNter:UDEFinEd1:SA command is left only to keep the version compatibility. (Since version 5.0)
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	{DONT_CARE | NOT_MATCH | MATCH} Select one of the following: DONT_CARE Don't care NOT_MATCH Not match MATCH Match
Default	DONT_CARE (Don't care)

Command	:COUNter:UDEFinEd2:PATtern1 {DONT_CARE | NOT_MATCH | MATCH}
Query	:COUNter:UDEFinEd2:PATtern1?
Response	{DONT_CARE | NOT_MATCH | MATCH}
Description	Sets a filter to the preset pattern 1 (Don't care/Not match/Match).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	{DONT_CARE | NOT_MATCH | MATCH} Select one of the following: DONT_CARE Don't care NOT_MATCH Not match MATCH Match
Default	DONT_CARE (Don't care)

Command	:COUNter:UDEFined2:PATtern2 {DONT_CARE | NOT_MATCH | MATCH}
Query	:COUNter:UDEFined2:PATtern2?
Response	{DONT_CARE | NOT_MATCH | MATCH}
Description	Sets a filter to the preset pattern 2 (Don't care/Not match/Match).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	{DONT_CARE | NOT_MATCH | MATCH} Select one of the following: DONT_CARE Don't care NOT_MATCH Not match MATCH Match
Default	DONT_CARE (Don't care)

Command	:COUNter:UDEFined2:PATtern3 {DONT_CARE | NOT_MATCH | MATCH}
Query	:COUNter:UDEFined2:PATtern3?
Response	{DONT_CARE | NOT_MATCH | MATCH}
Description	Sets a filter to the preset pattern 3 (Don't care/Not match/Match).
Module	– MbE √ GbE – 2.5G/10G
Parameter	{DONT_CARE | NOT_MATCH | MATCH} Select one of the following: DONT_CARE Don't care NOT_MATCH Not match MATCH Match
Default	DONT_CARE (Don't care)

Section 6 Details of Device Messagess

Command	:COUNter:UDEFinEd2:PATtern4 {DONT_CARE | NOT_MATCH | MATCH}
Query	:COUNter:UDEFinEd2:PATtern4?
Response	{DONT_CARE | NOT_MATCH | MATCH}
Description	Sets a filter to the preset pattern 4 (Don't care/Not match/Match).
Module	– MbE √ GbE – 2.5G/10G
Parameter	{DONT_CARE | NOT_MATCH | MATCH} Select one of the following: DONT_CARE Don't care NOT_MATCH Not match MATCH Match
Default	DONT_CARE (Don't care)

Command	:COUNter:UDEFinEd2:SA {DONT_CARE | NOT_MATCH | MATCH}
Query	:COUNter:UDEFinEd2:SA?
Response	{DONT_CARE | NOT_MATCH | MATCH}
Description	Sets a filter to the preset source address pattern (Don't care/Not match/Match). * In case of MU120121A/22A module, uses :COUNter:UDEFinEd2:PATtern* commnad. Because :COUNter:UDEFinEd2:SA command is left only to keep the version compatibility. (Since version 5.0)
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	{DONT_CARE | NOT_MATCH | MATCH} Select one of the following: DONT_CARE Don't care NOT_MATCH Not match MATCH Match
Default	DONT_CARE (Don't care)

Command	:COUNter:UDEFined2:ERRor {DONT_CARE | NOT_MATCH | MATCH}
Query	:COUNter:UDEFined2:ERRor?
Response	{DONT_CARE | NOT_MATCH | MATCH}
Description	Sets a filter to the preset error type (Don't care/Not match/Match).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	{DONT_CARE | NOT_MATCH | MATCH} Select one of the following: DONT_CARE Don't care NOT_MATCH Not match MATCH Match
Default	DONT_CARE (Don't care)

Command	:COUNter:UDEFined2:ENABle <BOOLEAN>
Query	:COUNter:UDEFined2:ENABle?
Response	<BOOLEAN>
Description	Sets the user-defined counter 2 to enable or disable.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<BOOLEAN> To enable the user-defined counter 2, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	0 (disable)

Section 6 Details of Device Messagess

Command	:COUNter:UDEFined2:DA {DONT_CARE | NOT_MATCH | MATCH}
Query	:COUNter:UDEFined2:DA?
Response	{DONT_CARE | NOT_MATCH | MATCH}
Description	Sets a filter to the preset destination address pattern (Don't care/Not match/Match). * In case of MU120121A/22A module, uses :COUNter:UDEFined2:PATtern* commnad. Because :COUNter:UDEFined2:DA command is left only to keep the version compatibility. (Since version 5.0)
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	{DONT_CARE | NOT_MATCH | MATCH} Select one of the following: DONT_CARE Don't care NOT_MATCH Not match MATCH Match
Default	DONT_CARE (Don't care)

Query	:COUNter:ERRor:FCS?
Response	<COUNT>
Description	Queries a count value of fcs errors (valid-size frames with FCS error) is returned. For 2.5G/10G module, a count target frame changes among PPP/GFP/LAPS/LEX depending on the mapping setting.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<COUNT> Counter data (counts).

Query	:COUNter:ERRor:FRAGments?
Response	<COUNT>
Description	Queries a count value of fragments. For 2.5G/10G module, a count target frame changes among PPP/LEX depending on the mapping setting.
Module	MbE √ GbE √ 2.5G/10G
Parameter	<COUNT> Counter data (counts).

Query	:COUNter:ERRor:OAFerror?
Response	<COUNT>
Description	<p>Queries a count value of oversize and fcs errors (frames which size is larger than specified and with FCS error).</p> <p>For 2.5G/10G module, a count target frame changes among PPP/LEX depending on the mapping setting.</p>
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p><COUNT></p> <p>Counter data (counts).</p>
Query	:COUNter:ERRor:OVERsize?
Response	<COUNT>
Description	<p>Queries a count value of oversize (frames with no FCS error but the size is larger than specified).</p> <p>For 2.5G/10G module, a count target frame changes among PPP/LEX depending on the mapping setting.</p>
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p><COUNT></p> <p>Counter data (counts).</p>
Query	:COUNter:ERRor:UNDersize?
Response	<COUNT>
Description	<p>Queries a count value of undersize (frames with no FCS error but the size is smaller than specified).</p> <p>For 2.5G/10G module, a count target frame changes among PPP/LEX depending on the mapping setting.</p>
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p><COUNT></p> <p>Counter data (counts).</p>

Section 6 Details of Device Messagess

Query	:COUNter:ERRor:SEQuence?
Response	<COUNT>
Description	Queries the number of SN (Sequence Number) error detection in the test frame. <ul style="list-style-type: none">* For MU120101A, this command is disabled.* This command can be used when the MD1230B-11 option of Packet BER measurement is installed.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<COUNT> Counter data (counts).

Query	:COUNter:ERRor:PRBS:BIT?
Response	<COUNT>,<RATE>
Description	Queries the number of error bits in the PRBS pattern of the received test frame and the error bit rate for the number of bits in the PRBS pattern of the received test frame. <ul style="list-style-type: none">* For MU120101A, this command is disabled* This command can be used when the MD1230B-11 option of Packet BER measurement is installed.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<COUNT>,<RATE> Counter value and the rate data.

Query	:COUNter:ERRor:PRBS:FRAMes?
Response	<COUNT>,<RATE>
Description	Queries the number of the received test frames with erroneous PRBS pattern and the frame rate with erroneous PRBS pattern for the number of received PRBS test frames. <ul style="list-style-type: none">* For MU120101A, this command is disabled.* This command can be used when the MD1230B-11 option of Packet BER measurement is installed.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<COUNT>,<RATE> Counter value and the rate data.

Query	:COUNter:QOS0?
Response	<COUNT>
Description	Queries a count value of the QoS counter 0.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<COUNT> Counter data (counts).

Query	:COUNter:QOS1?
Response	<COUNT>
Description	Queries a count value of the QoS counter 1.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<COUNT> Counter data (counts).

Query	:COUNter:QOS2?
Response	<COUNT>
Description	Queries a count value of the QoS counter 2.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<COUNT> Counter data (counts).

Query	:COUNter:QOS3?
Response	<COUNT>
Description	Queries a count value of the QoS counter 3.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<COUNT> Counter data (counts).

Section 6 Details of Device Messagess

Query :COUNter:QOS4?
Response <COUNT>
Description Queries a count value of the QoS counter 4.
Module √ MbE √ GbE √ 2.5G/10G
Parameter <COUNT>
Counter data (counts).

Query :COUNter:QOS5?
Response <COUNT>
Description Queries a count value of the QoS counter 5.
Module √ MbE √ GbE √ 2.5G/10G
Parameter <COUNT>
Counter data (counts).

Query :COUNter:QOS6?
Response <COUNT>
Description Queries a count value of the QoS counter 6.
Module √ MbE √ GbE √ 2.5G/10G
Parameter <COUNT>
Counter data (counts).

Query :COUNter:QOS7?
Response <COUNT>
Description Queries a count value of the QoS counter 7.
Module √ MbE √ GbE √ 2.5G/10G
Parameter <COUNT>
Counter data (counts).

Query	:COUNter:QOS0:PPS?
Response	<RATE_PPS>
Description	Queries the packet rate value (pps) when the QoS counter is 0.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<RATE_PPS> Counter data (packet rate value (pps)).

Query	:COUNter:QOS1:PPS?
Response	<RATE_PPS>
Description	Queries the packet rate value (pps) when the QoS counter is 1.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<RATE_PPS> Counter data (packet rate value (pps)).

Query	:COUNter:QOS2:PPS?
Response	<RATE_PPS>
Description	Queries the packet rate value (pps) when the QoS counter is 2.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<RATE_PPS> Counter data (packet rate value (pps)).

Query	:COUNter:QOS3:PPS?
Response	<RATE_PPS>
Description	Queries the packet rate value (pps) when the QoS counter is 3.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<RATE_PPS> Counter data (packet rate value (pps)).

Section 6 Details of Device Messagess

Query :COUNter:QOS4:PPS?
Response <RATE_PPS>
Description Queries the packet rate value (pps) when the QoS counter is 4.
Module √ MbE √ GbE √ 2.5G/10G
Parameter <RATE_PPS>
Counter data (packet rate value (pps)).

Query :COUNter:QOS5:PPS?
Response <RATE_PPS>
Description Queries the packet rate value (pps) when the QoS counter is 5.
Module √ MbE √ GbE √ 2.5G/10G
Parameter <RATE_PPS>
Counter data (packet rate value (pps)).

Query :COUNter:QOS6:PPS?
Response <RATE_PPS>
Description Queries the packet rate value (pps) when the QoS counter is 6.
Module √ MbE √ GbE √ 2.5G/10G
Parameter <RATE_PPS>
Counter data (packet rate value (pps)).

Query :COUNter:QOS7:PPS?
Response <RATE_PPS>
Description Queries the packet rate value (pps) when the QoS counter is 7.
Module √ MbE √ GbE √ 2.5G/10G
Parameter <RATE_PPS>
Counter data (packet rate value (pps)).

Query	:COUNter:RECEived:BPS?
Response	<RATE_BPS>
Description	Queries the received bit rate value (bit/s).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<RATE_BPS>
	Counter data (data rate value (bit/s)).

Query	:COUNter:RECEived:BYTes?
Response	<COUNT>
Description	Queries a count value of received bytes (the number of received bytes).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<COUNT>
	Counter data (counts).

Query	:COUNter:RECEived:FRAMES?
Response	<COUNT>
Description	Queries a count value of received frames (the number of normal-size frames with normal FCS). For 2.5G/10G module, a count target frame changes among PPP/GFP/LAPS/LEX depending on the mapping setting.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<COUNT>
	Counter data (counts).

Section 6 Details of Device Messagess

Query	:COUNter:RECEived:FRAMes:FPS?
Response	<RATE_FPS>
Description	Queries the frame rate value (fps) for received frames of normal size and FCS. For 2.5G/10G module, a count target frame changes among PPP/GFP/LAPS/LEX depending on the mapping setting.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<RATE_FPS> Counter data (frame rate value (fps)).

Query	:COUNter:RECEived:PCT?
Response	<RATE_PCT>
Description	Queries the received bit rate value (%). For 2.5G/10G module, a count target frame changes among PPP/GFP/LAPS/LEX depending on the mapping setting.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<RATE_PCT> Counter data (data rate value (%)).

Query	:COUNter:RECEived:PCT2?
Response	<RATE_PCT>
Description	Queries the received bit rate (a rate when the reception rate with the minimum gap is 100%) value (%).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<RATE_PCT> Counter data (data rate value (%)).

Query	:COUNter:RECEived:TFRames?
Response	<COUNT>
Description	Queries the number of received test frames. * For MU120101A, this command is disabled. This command can be used when the MD1230B-11 option of Packet BER measurement is installed.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<COUNT> Counter data (counts).

Query	:COUNter:RECEived:PROTocol:FRAMe?
Response	<COUNT>
Description	Queries a value of Received Protocol Frame counter.
Module	– MbE √ GbE – 2.5G/10G
Parameter	<COUNT> Counter data (counts).

Query	:COUNter:TRANsmitted:BPS?
Response	<RATE_BPS>
Description	Queries the transmitted bit rate value (bit/s).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<RATE_BPS> Counter data (data rate value (bit/s)).

Query	:COUNter:TRANsmitted:FRAMes?
Response	<COUNT>
Description	Queries a count value of transmitted frames (the number of transmitted frames). For 2.5G/10G module, a count target frame changes among PPP/GFP/LAPS/LEX depending on the mapping setting.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<COUNT> Counter data (counts).

Section 6 Details of Device Messages

Query	:COUNter:TRANsmitted:FRAMes:FPS?
Response	<RATE_FPS>
Description	Queries the frame rate value (fps) for the transmitted frames. For 2.5G/10G module, a count target frame changes among PPP/GFP/LAPS/LEX depending on the mapping setting.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<RATE_FPS> Counter data (frame rate value (fps)).

Query	:COUNter:TRANsmitted:BYTes?
Response	<COUNT>
Description	Queries a count value of the transmitted bytes (the number of transmitted bytes).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<COUNT> Counter data (counts).

Query	:COUNter:TRANsmitted:PCT?
Response	<RATE_PCT>
Description	Queries the transmitted bit rate value (%). For 2.5G/10G module, a count target frame changes among PPP/GFP/LAPS/LEX depending on the mapping setting.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<RATE_PCT> Counter data (data rate value (%)).

Query	:COUNter:TRANsmitted:PCT2?
Response	<RATE_PCT>
Description	Queries the transmitted data rate (a rate when the transmission rate with the minimum gap is 100%) value (%).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<RATE_PCT> Counter data (data rate value (%)).

Query	:COUNter:TRANsmitted:TFRames?
Response	<COUNT>
Description	Queries the number of transmitted test frames. * For MU120101A, this command is disabled. This command can be used when the MD1230B-11 option of Packet BER measurement is installed.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<COUNT> Counter data (counts).

Query	:COUNter:TRANsmitted:PROTOcol:FRAME?
Response	<COUNT>
Description	Queries a value of Transmitted Protocol Frame counter.
Module	– MbE √ GbE – 2.5G/10G
Parameter	<COUNT> Counter data (counts).

Query	:COUNter:UDEFinEd1:RECEived?
Response	<COUNT>
Description	Queries a value of the user defined 1 (user-defined counter 1).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<COUNT> Counter data (counts).

Section 6 Details of Device Messagess

Query	:COUNter:UDEFinEd1:RECeived:PPS?
Response	<RATE_PPS>
Description	Queries the packet rate value (pps) for user defined1 (user-defined counter 1).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<RATE_PPS> Counter data (packet rate value (pps)).

Query	:COUNter:UDEFinEd2:RECeived?
Response	<COUNT>
Description	Queries a value of the user defined 2 (user-defined counter 2).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<COUNT> Counter data (counts).

Query	:COUNter:UDEFinEd2:RECeived:PPS?
Response	<RATE_PPS>
Description	Queries the packet rate value (pps) for user defined2 (user-defined counter 2).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<RATE_PPS> Counter data (packet rate value (pps)).

Query	:COUNter:{SDH | SONet}:ALARm:OOF?
Response	<COUNT>,<SECOND>
Description	Queries a count value of OOF.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<COUNT>,<SECOND> Alarm counter data of SDH/SONET.

Query	:COUNTer:{SDH | SONet}:ALARm:LOS?
Response	<COUNT>,<SECOND>
Description	Queries a count value of LOS.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<COUNT>,<SECOND>
	Alarm counter data of SDH/SONET.

Query	:COUNTer:{SDH | SONet}:ALARm:{AULOP | LOPP}?
Response	<COUNT>,<SECOND>
Description	Queries a count value of AU-LOP/LOP-P frame.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<COUNT>,<SECOND>
	Alarm counter data of SDH/SONET.

Query	:COUNTer:{SDH | SONet}:ALARm:{HPUNEQ | UNEQP}?
Response	<COUNT>,<SECOND>
Description	Queries a count value of HP-UNEQ/UNEQ-P frame.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<COUNT>,<SECOND>
	Alarm counter data of SDH/SONET.

Query	:COUNTer:{SDH | SONet}:ALARm:{AUAIS | AISP}?
Response	<COUNT>,<SECOND>
Description	Queries a count value of AU-AIS/AIS-P frame.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<COUNT>,<SECOND>
	Alarm counter data of SDH/SONET.

Section 6 Details of Device Messagess

Query :COUNTer:{SDH | SONet}:ALARm:LOF?
Response <COUNT>,<SECOND>
Description Queries a count value of LOF.
Module – MbE – GbE √ 2.5G/10G
Parameter <COUNT>,<SECOND>
Alarm counter data of SDH/SONET.

Query :COUNTer:{SDH | SONet}:ALARm:{HPRDI | RDIP}?
Response <COUNT>,<SECOND>
Description Queries a count value of HP-RDI/RDI-P frame.
Module – MbE – GbE √ 2.5G/10G
Parameter <COUNT>,<SECOND>
Alarm counter data of SDH/SONET.

Query :COUNTer:{SDH | SONet}:ALARm:{MSAIS | AISL}?
Response <COUNT>,<SECOND>
Description Queries a count value of MS-AIS/AIS-L frame.
Module – MbE – GbE √ 2.5G/10G
Parameter <COUNT>,<SECOND>
Alarm counter data of SDH/SONET.

Query :COUNTer:{SDH | SONet}:ALARm:{MSRDI | RDIL}?
Response <COUNT>,<SECOND>
Description Queries a count value of MS-RDI/RDI-L frame.
Module – MbE – GbE √ 2.5G/10G
Parameter <COUNT>,<SECOND>
Alarm counter data of SDH/SONET.

Query	:COUNter:{SDH | SONet}:ALARm:{HPSLM | SLMP}?
Response	<COUNT>,<SECOND>
Description	Queries a count value of HP-SLM/SLM-P frame.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<COUNT>,<SECOND>
	Alarm counter data of SDH/SONET.

Query	:COUNter:{SDH | SONet}:ALARm:{TAIS | AISV}?
Response	<COUNT>,<SECOND>
Description	Queries a count value of TU-AIS/AIS-V frames. * Valid only for MU150101A module.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<COUNT>,<SECOND>
	Alarm counter data of SDH/SONET.

Query	:COUNter:{SDH | SONet}:ALARm:{TLOM | LOMV}?
Response	<COUNT>,<SECOND>
Description	Queries a count value of TU-LOM/LOM-V frames. * Valid only for MU150101A module.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<COUNT>,<SECOND>
	Alarm counter data of SDH/SONET.

Query	:COUNter:{SDH | SONet}:ALARm:{TLOP | LOPV}?
Response	<COUNT>,<SECOND>
Description	Queries a count value of TU-LOP/LOP-V frames. * Valid only for MU150101A module.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<COUNT>,<SECOND>
	Alarm counter data of SDH/SONET.

Section 6 Details of Device Messages

Query :COUNTER:{SDH | SONet}:ALARM:{LSLM | PLMV}?

Response <COUNT>,<SECOND>

Description Queries a count value of LP-SLM/PLM-V frames.
* Valid only for MU150101A module.

Module – MbE – GbE √ 2.5G/10G

Parameter <COUNT>,<SECOND>

Alarm counter data of SDH/SONET.

Query :COUNTER:{SDH | SONet}:ALARM:{LRDI | RDIV}?

Response <COUNT>,<SECOND>

Description Queries a count value of LP-RDI/RDI-V frames.
* Valid only for MU150101A module.

Module –MbE – GbE √ 2.5G/10G

Parameter <COUNT>,<SECOND>

Alarm counter data of SDH/SONET.

Query :COUNTER:{SDH | SONet}:ALARM:{LUEQ | UEQV}?

Response <COUNT>,<SECOND>

Description Queries a count value of LP-UNEQ/UNEQ-V frames.
* Valid only for MU150101A module.

Module – MbE – GbE √ 2.5G/10G

Parameter <COUNT>,<SECOND>

Alarm counter data of SDH/SONET.

Query	:COUNter:{SDH | SONet}:ALARm:SQERror?
Response	<COUNT>,<SECOND>
Description	Queries a count value of SQ error. This counter is valid for Virtual Concatenation only.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<COUNT>,<SECOND> Alarm counter data of SDH/SONET.

Query	:COUNter:{SDH | SONet}:ALARm:OOALignment?
Response	<COUNT>,<SECOND>
Description	Queries a count value of the states where skews between the members exceeds 100 pointers. This counter is valid for Virtual Concatenation only.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<COUNT>,<SECOND> Alarm counter data of SDH/SONET.

Query	:COUNter:{SDH | SONet}:ALARm:OOM1?
Response	<COUNT>,<SECOND>
Description	Queries a count value of OOM1 frames. * Valid only for MU150101A module.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<COUNT>,<SECOND> Alarm counter data of SDH/SONET.

Section 6 Details of Device Messages

Query :COUNter:{SDH | SONet}:ALARm:OOM2?

Response <COUNT>,<SECOND>

Description Queries a count value of OOM2 frames.
* Valid only for MU150101A module.

Module – MbE – GbE √ 2.5G/10G

Parameter <COUNT>,<SECOND>

Alarm counter data of SDH/SONET.

Query :COUNter:{SDH | SONet}:ALARm:OOM?

Response <COUNT>,<SECOND>

Description Queries a count value of OOM frames.
* Valid only for MU150101A module.

Module – MbE – GbE √ 2.5G/10G

Parameter <COUNT>,<SECOND>

Alarm counter data of SDH/SONET.

Query :COUNter:{SDH | SONet}:ALARm:VLOM?

Response <COUNT>,<SECOND>

Description Queries a count value of VCAT·LOM frames.
* Valid only for MU150101A module.

Module – MbE – GbE √ 2.5G/10G

Parameter <COUNT>,<SECOND>

Alarm counter data of SDH/SONET.

Query	:COUNter:{SDH | SONet}:ALARm:{LRFI | RFIV}?
Response	<COUNT>,<SECOND>
Description	Queries a count value of LP-RFI frames. * Valid only for MU150101A module.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<COUNT>,<SECOND> Alarm counter data of SDH/SONET.

Query	: COUNter:{SDH | SONet}:ALARm:{LOA | MND}?
Response	<COUNT>,<SECOND>
Description	Queries a count value of LOA frame. * Becomes the count value of MND frame at LCAS ON. * Valid only for MU150101A module.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<COUNT>,<SECOND> Alarm counter data of SDH/SONET.

Query	:COUNter:{SDH | SONet}:ALARm:PLCT?
Response	<COUNT>,<SECOND>
Description	Queries a count value of PLCT. * Valid only for MU150101A module.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<COUNT>,<SECOND> Alarm counter data of SDH/SONET.

Section 6 Details of Device Messagess

Query :COUNter:{SDH | SONet}:ALARm:TLCT?
Response <COUNT>,<SECOND>
Description Queries a count value of TLCT.
* Valid only for MU150101A module.
Module – MbE – GbE √ 2.5G/10G
Parameter <COUNT>,<SECOND>
Alarm counter data of SDH/SONET.

Query :COUNter:{SDH | SONet}:ALARm:PLCR?
Response <COUNT>,<SECOND>
Description Queries a count value of PLCR.
* Valid only for MU150101A module.
Module – MbE – GbE √ 2.5G/10G
Parameter <COUNT>,<SECOND>
Alarm counter data of SDH/SONET.

Query :COUNter:{SDH | SONet}:ALARm:TLCR?
Response <COUNT>,<SECOND>
Description Queries a count value of TLCR.
* Valid only for MU150101A module.
Module – MbE – GbE √ 2.5G/10G
Parameter <COUNT>,<SECOND>
Alarm counter data of SDH/SONET.

Query	:COUNter:{SDH | SONet}:ALARm:UMST?
Response	<COUNT>,<SECOND>
Description	Queries a count value of UMST. * Valid only for MU150101A module.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<COUNT>,<SECOND> Alarm counter data of SDH/SONET.

Query	:COUNter:{SDH | SONet}:ALARm:SQNC?
Response	<COUNT>,<SECOND>
Description	Queries a count value of SQNC. * Valid only for MU150101A module.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<COUNT>,<SECOND> Alarm counter data of SDH/SONET.

Query	:COUNter:{SDH | SONet}:ERRor:{MSREI | REIL}?
Response	<COUNT>,<RATE>
Description	Queries a count value of MS-REI/REI-L block error.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<COUNT>,<RATE> Error counter data of SDH/SONET.

Section 6 Details of Device Messagess

Query :COUNter:{SDH | SONet}:ERRor:B3?
Response <COUNT>,<RATE>
Description Queries a count value of B3 bit error.
Module – MbE – GbE √ 2.5G/10G
Parameter <COUNT>,<RATE>
Error counter data of SDH/SONET.

Query :COUNter:{SDH | SONet}:ERRor:{HPREI | REIP}?
Response <COUNT>,<RATE>
Description Queries a count value of HP-REI/REI-P block error.
Module – MbE – GbE √ 2.5G/10G
Parameter <COUNT>,<RATE>
Error counter data of SDH/SONET.

Query :COUNter:{SDH | SONet}:ERRor:B1?
Response <COUNT>,<RATE>
Description Queries a count value of B1 bit error.
Module – MbE – GbE √ 2.5G/10G
Parameter <COUNT>,<RATE>
Error counter data of SDH/SONET.

Query :COUNter:{SDH | SONet}:ERRor:B2?
Response <COUNT>,<RATE>
Description Queries a count value of B2 bit error.
Module – MbE – GbE √ 2.5G/10G
Parameter <COUNT>,<RATE>
Error counter data of SDH/SONET.

Query	:COUNter:{SDH | SONet}:ERRor:HPIEC?
Response	<COUNT>,<RATE>
Description	Queries a count value of HP-IEC bit error. * For MU150101A, this command is disabled.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<COUNT>,<RATE> Error counter data of SDH/SONET.

Query	:COUNter:{SDH | SONet}:ERRor:BIP2?
Response	<COUNT>,<RATE>
Description	Queries a count value of BIP2 error. * Valid only for MU150101A module.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<COUNT>,<RATE> Error counter data of SDH/SONET.

Query	:COUNter:{SDH | SONet}:ERRor:{LREI | REIV}?
Response	<COUNT>,<RATE>
Description	Queries a count value of LP-REI/REI-V block errors. * Valid only for MU150101A module.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<COUNT>,<RATE> Error counter data of SDH/SONET.

Query	:COUNter:{SDH | SONet}:ERRor:GID?
Response	<COUNT>,<RATE>
Description	Queries a count value of GID errors. * Valid only for MU150101A module.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<COUNT>,<RATE> Error counter data of SDH/SONET.

Section 6 Details of Device Messagess

Query	:COUNter:{SDH | SONet}:ERRor:CRC8?
Response	<COUNT>,<RATE>
Description	Queries a count value of CRC8 errors. * Valid only for MU150101A module.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<COUNT>,<RATE> Error counter data of SDH/SONET.

Query	:COUNter:{SDH | SONet}:ERRor:CRC3?
Response	<COUNT>,<RATE>
Description	Queries a count value of CRC3 errors. * Valid only for MU150101A module.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<COUNT>,<RATE> Error counter data of SDH/SONET.

Query	:COUNter:{SDH | SONet}:ERRor:SQM?
Response	<COUNT>,<RATE>
Description	Queries a count value of SQM. * Valid only for MU150101A module.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<COUNT>,<RATE> Error counter data of SDH/SONET.

Query :COUNter:{SDH | SONet}:ERRor:LPB3?

Response <COUNT>,<RATE>

Description Queries a count value of LP-B3 bit error.
* Valid only for MU150101A module.

Module – MbE – GbE √ 2.5G/10G

Parameter <COUNT>,<RATE>

Error counter data of SDH/SONET.

Query :COUNter:{SDH | SONet}:JUSTificat:PPM?

Response <ppm_current>,<ppm_accumulate>

Description Queries a count value of the amount of justification generated (unit: ppm).

Module – MbE – GbE √ 2.5G/10G

Parameter <ppm_current>,<ppm_accumulate>

Justification counter data (unit: ppm) of SDH/SONET.

<ppm_current>

ppm (parts per million) value for the last second. (<NR2>, (*1))

<ppm_accumulate>

ppm value from the start of a measurement to the present. (<NR2>, (*1))

*1:

A value between –1000.0 and +1000.0 is returned.

If the value is under –1000.0, -9999.9 is returned.

If the value is beyond +1000.0, +9999.9 is returned.

Default 0, 0

Query :COUNter:{SDH | SONet}:JUSTificat:CONSecutive?

Response <COUNT>,<RATE>

Description Queries a count value of Consecutive generated.

Module – MbE – GbE √ 2.5G/10G

Parameter <COUNT>,<RATE>

Justification counter data of SDH/SONET.

Section 6 Details of Device Messages

Query :COUNTer:{SDH | SONet}:JUSTificat:NPJC?
Response <COUNT>,<RATE>
Description Queries a count value of -PJC generated.
Module – MbE – GbE √ 2.5G/10G
Parameter <COUNT>,<RATE>
Justification counter data of SDH/SONET.

Query :COUNTer:{SDH | SONet}:JUSTificat:PPJC?
Response <COUNT>,<RATE>
Description Queries a count value of +PJC generated.
Module – MbE – GbE √ 2.5G/10G
Parameter <COUNT>,<RATE>
Justification counter data of SDH/SONET.

Query :COUNTer:{SDH | SONet}:JUSTificat:NDF?
Response <COUNT>,<RATE>
Description Queries a count value of NDF.
Module – MbE – GbE √ 2.5G/10G
Parameter <COUNT>,<RATE>
Justification counter data of SDH/SONET.

Query	:COUNter:{SDH | SONet}:JUSTificat:TUPPm?
Response	<ppm_current>,<ppm_accumulate>
Description	Queries a count value of the amount of TU/VT justification generated (unit: ppm). * Valid only for MU150101A module.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<ppm_current>,<ppm_accumulate> Justification counter data (unit: ppm) of SDH/SONET. <ppm_current> ppm (parts per million) value for the last second. (<NR2>, (*1)) <ppm_accumulate> ppm value from the start of a measurement to the present. (<NR2>, (*1)) *1: A value between –1000.0 and +1000.0 is returned (0.1 step). When the value is lower than –1000.0, –9999.9 is returned. When the value is greater than +1000.0, +9999.9 is returned.
Default	0, 0

Query	:COUNter:{SDH | SONet}:JUSTificat:TUCons?
Response	<COUNT>,<RATE>
Description	Queries a count value of TU/VT Consecutive generated. * Valid only for MU150101A module.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<COUNT>,<RATE> Justification counter data of SDH/SONET.

Section 6 Details of Device Messagess

Query :COUNTer:{SDH | SONet}:JUSTificat:TUMPjc?
Response <COUNT>,<RATE>
Description Queries a count value of TU/VT –PJC generated.
* Valid only for MU150101A module.
Module – MbE – GbE √ 2.5G/10G
Parameter <COUNT>,<RATE>
Justification counter data of SDH/SONET.

Query :COUNTer:{SDH | SONet}:JUSTificat:TUPPjc?
Response <COUNT>,<RATE>
Description Queries a count value of TU/VT +PJC generated.
* Valid only for MU150101A module.
Module – MbE – GbE √ 2.5G/10G
Parameter <COUNT>,<RATE>
Justification counter data of SDH/SONET.

Query :COUNTer:{SDH | SONet}:JUSTificat:TUNDF?
Response <COUNT>,<RATE>
Description Queries a count value of TU/VT NDF generated.
* Valid only for MU150101A module.
Module – MbE – GbE √ 2.5G/10G
Parameter <COUNT>,<RATE>
Justification counter data of SDH/SONET.

Query :COUNTer:GFP:ALARm:LOSignal:FRAMe?
Description Queries a count value of the received Client Management Frames that indicate Loss of Client Signal.
Module – MbE – GbE √ 2.5G/10G
Parameter <COUNT>
Counter data (the number of counts)

Query	:COUNter:GFP:ALARm:LOSignal:INTerval?
Description	Queries a count value of the interval between occurrences of Loss of Client Signal alarms (in a units of 1 ms).
Module	– MbE – GbE √ 2.5G/10G
Parameter	<COUNT> Counter data (the number of interval counts)
Query	:COUNter:GFP:ALARm:LOSync:INTerval?
Description	Queries a count value of the interval between occurrences of Loss of Character Synchronization alarms (in a units of 1 ms).
Module	– MbE – GbE √ 2.5G/10G
Parameter	<COUNT> Counter data (the number of interval counts)
Query	:COUNter:GFP:ALARm:SSFail:INTerval?
Description	Queries a count value of the interval between occurrences of Server Signal Fail alarms (in a units of 1 ms).
Module	– MbE – GbE √ 2.5G/10G
Parameter	<COUNT> Counter data (the number of interval counts)
Query	:COUNter:GFP:ALARm:LOSync:FRAME?
Description	Queries a count value of the received Client Management Frames that indicate Loss of Character Synchronization.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<COUNT> Counter data (the number of counts)

Section 6 Details of Device Messagess

Query	:COUNter:GFP:ERRor:THEC?
Response	<COUNT>
Description	Queries a count value of the GFP frames where a multiple-bit error is detected in tHEC.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<COUNT> Counter data (the number of counts)

Query	:COUNter:GFP:ERRor:THEC:CORRected?
Response	<COUNT>
Description	Queries a count value of the GFP frames where a single-bit error is detected in tHEC.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<COUNT> Counter data (the number of counts)

Query	:COUNter:GFP:ERRor:CHEC:CORRected?
Response	<COUNT>
Description	Queries a count value of the GFP frames where a single-bit error is detected in cHEC.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<COUNT> Counter data (the number of counts)

Query	:COUNter:GFP:ERRor:EHEC?
Response	<COUNT>
Description	Queries a count value of the GFP frames where an error is detected in eHEC. Unlike cHEC and tHEC, eHEC is not distinguished whether it is correctable or not.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<COUNT> Counter data (the number of counts)

Query	:COUNter:GFP:ERRor:FCS?
Response	<COUNT>
Description	Queries a count value of the GFP frames where an FCS error is detected.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<COUNT> Counter data (the number of counts)
Query	:COUNter:GFP:ERRor:CHEC?
Response	<COUNT>
Description	Queries a count value of the GFP frames where a multiple-bit error is detected in cHEC.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<COUNT> Counter data (the number of counts)
Query	:COUNter:LAPS:RECeived:BBEFore?
Description	Queries a count value of Received Bytes Before Adaptation (the number of received bytes before processing Rate Adaptation). This counter is valid when LAPS is selected for mapping.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<COUNT> Counter data (the number of counts)
Query	:COUNter:LAPS:TRANsmitted:BAFTer?
Description	Queries a count value of Transmitted Bytes After Adaptation (the number of transmitted bytes after processed Rate Adaptation). This counter is valid when LAPS is selected for mapping.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<COUNT> Counter data (the number of counts)

Section 6 Details of Device Messagess

Query :COUNter:ARP:RECeived:AREQuest?
Response <COUNT>
Description Queries a count value of received arp request.
Module √ MbE √ GbE – 2.5G/10G
Parameter <COUNT>
Counter data (counts).

Query :COUNter:ARP:RECeived:AREPly?
Response <COUNT>
Description Queries a count value of received arp reply.
Module √ MbE √ GbE – 2.5G/10G
Parameter <COUNT>
Counter data (counts).

Query :COUNter:ARP:TRANsmitted:AREPly?
Response <COUNT>
Description Queries a count value of transmitted arp reply.
Module √ MbE √ GbE – 2.5G/10G
Parameter <COUNT>
Counter data (counts).

Query :COUNter:ARP:TRANsmitted:AREQuest?
Response <COUNT>
Description Queries a count value of transmitted arp request.
Module √ MbE √ GbE – 2.5G/10G
Parameter <COUNT>
Counter data (counts).

Query	:COUNter:BULK:ALARm:PSLoss?
Response	<COUNT>,<SECOND>
Description	Queries a count value of Pattern Sync. Loss. A value that the sync. Loss of the Bulk pattern is counted through the receive clock (77.76 MHz) is returned.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<COUNT>,<SECOND> Alarm counter data of Bulk.

Query	:COUNter:BULK:ERRor:BINFo?
Response	<COUNT>,<RATE>
Description	Queries a count value of Bit Info. (the number of error bits in the Bulk pattern).
Module	– MbE – GbE √ 2.5G/10G
Parameter	<COUNT>,<RATE> Error counter data of Bulk.

Query	:COUNter:CAPTure:RECeived:FILTered?
Response	<COUNT>
Description	Queries a count value of the capture filter (frames that pass through the capture filter).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<COUNT> Counter data (counts).

Query	:COUNter:CAPTure:RECeived:TRIGgered?
Response	<COUNT>
Description	Queries a count value of the capture trigger (frames that pass through the capture trigger).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<COUNT> Counter data (counts).

Section 6 Details of Device Messagess

Query :COUNter:ETHernet:MCONtrol?
Response <COUNT>
Description Queries a value of the Mac Control Frame counter.
Module √ MbE √ GbE – 2.5G/10G
Parameter <COUNT>
Counter data (counts).

Query :COUNter:ETHernet:LFAiled?
Response <COUNT>
Description Queries a value of the Link Failed counter.
* This command is available only for the MU120131A/32A modules.
Module – MbE √ GbE – 2.5G/10G
Parameter <COUNT>
Counter data (counts).

Query :COUNter:ETHernet:ERRor:AERRors?
Response <COUNT>
Description Queries a count value of alignment errors (alignment error frames).
Module √ MbE – GbE – 2.5G/10G
Parameter <COUNT>
Counter data (counts).

Query :COUNter:ETHernet:ERRor:LERRor?

Response <COUNT>

Description Queries a count value of line errors.

Module √ MbE √ GbE – 2.5G/10G

Parameter <COUNT>

Counter data (counts).

Query :COUNter:ETHernet:ERRor:COLLisions?

Response <COUNT>

Description Queries a count value of collisions (collisions generated).

Module √ MbE – GbE – 2.5G/10G

Parameter <COUNT>

Counter data (counts).

Query :COUNter:ETHernet:ERRor:BAERrors?

Response <COUNT>

Description Queries a count value of byte alignment errors.

Module – MbE √ GbE – 2.5G/10G

Parameter <COUNT>

Counter data (counts).

Query :COUNter:ETHernet:ERRor:DERRRors?

Response <COUNT>

Description Queries a count value of dribble errors (dribble error frames).

Module √ MbE – GbE – 2.5G/10G

Parameter <COUNT>

Counter data (counts).

Section 6 Details of Device Messagess

Query :COUNter:ERRor:ETHernet:FRAGments?

Description Queries a count value of fragments.

This counter is valid for Ethernet over SONET/SDH mapping (GFP/LAPS/LEX).

Applied to the Ethernet layer.

Module – MbE – GbE √ 2.5G/10G

Parameter <COUNT>

Counter data (the number of counts)

Query :COUNter:ERRor:ETHernet:OAFerror?

Response <COUNT>

Description Queries a count value of oversize and fcs errors (a frame whose size is larger than the standard, and with FCS error).

This counter is valid for Ethernet over SONET/SDH mapping (GFP/LAPS/LEX).

Applied to the Ethernet layer.

Module – MbE – GbE √ 2.5G/10G

Parameter <COUNT>

Counter data (the number of counts)

Query :COUNter:ERRor:ETHernet:OVERsize?

Description Queries a count value of oversize (a frame whose size is larger than the standard).

This counter is valid for Ethernet over SONET/SDH mapping (GFP/LAPS/LEX).

Applied to the Ethernet layer.

Module – MbE – GbE √ 2.5G/10G

Parameter <COUNT>

Counter data (the number of counts)

Query	:COUNter:ERRor:ETHernet:UNDerSize?
Description	Queries a count value of undersize (a frame whose size is smaller than the standard). This counter is valid for Ethernet over SONET/SDH mapping (GFP/LAPS/LEX). Applied to the Ethernet layer.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<COUNT> Counter data (the number of counts)

Query	:COUNter:ETHernet:ALARm:RECeived:LFS?
Response	<COUNT>
Description	Queries the number of received Local Fault signals.
Module	– MbE √ GbE – 2.5G/10G
Parameter	<COUNT> Counter data (the number of counts)

Query	:COUNter:ETHernet:ALARm:RECeived:RFS?
Response	<COUNT>
Description	Queries the number of received Remote Fault signals.
Module	– MbE √ GbE – 2.5G/10G
Parameter	<COUNT> Counter data (the number of counts)

Query	:COUNter:ETHernet:ALARm:TRANsmitted:LFS?
Response	<COUNT>
Description	Queries the number of transmitted Local Fault signals.
Module	– MbE √ GbE – 2.5G/10G
Parameter	<COUNT> Counter data (the number of counts)

Section 6 Details of Device Messagess

Query :COUNter:ETHernet:ALARm:TRANsmitted:RFS?

Response <COUNT>

Description Queries the number of transmitted Remote Fault signals.

Module – MbE √ GbE – 2.5G/10G

Parameter <COUNT>

Counter data (the number of counts)

Query :COUNter:ETHernet:RECeived:BYTes?

Description Queries a count value of Received Ethernet Bytes (the number of bytes of the received Ethernet frames).

This counter is valid for Ethernet over SONET/SDH mapping (GFP/LAPS/LEX).

Applied to the Ethernet layer.

Module – MbE – GbE √ 2.5G/10G

Parameter <COUNT>

Counter data (the number of counts)

Query :COUNter:ETHernet:RECeived:FRAMe?

Description Queries a count value of the received Ethernet frames.

This counter is valid for Ethernet over SONET/SDH mapping (GFP/LAPS/LEX).

Applied to the Ethernet layer.

Module – MbE – GbE √ 2.5G/10G

Parameter COUNT>

Counter data (the number of counts)

Query :COUNter:ETHernet:RECeived:FRAMe:FPS?

Description Queries a frame rate value (fps) of the received Ethernet frame.

This counter is valid for Ethernet over SONET/SDH mapping (GFP/LAPS/LEX).

Applied to the Ethernet layer.

Module – MbE – GbE √ 2.5G/10G

Parameter RATE_FPS>

Counter data (a frame rate value (fps))

Query	:COUNter:ETHernet:RECeived:PCT?
Description	<p>Queries a value of the Received Ethernet Bit Rate (%) counter.</p> <p>The state where the SDH/SONET payload is filled with Ethernet frames (excluding Gap and Preamble) is 100%</p>
Module	– MbE – GbE √ 2.5G/10G

Query	:COUNter:ETHernet:TRANsmitted:BYTes?
Description	<p>Queries a count value of Transmitted Ethernet Bytes (the number of bytes of the transmitted Ethernet frames).</p> <p>This counter is valid for Ethernet over SONET/SDH mapping (GFP/LAPS/LEX).</p> <p>Applied to the Ethernet layer.</p>
Module	– MbE – GbE √ 2.5G/10G
Parameter	<p>COUNT></p> <p>Counter data (the number of counts)</p>

Query	:COUNter:ETHernet:TRANsmitted:FRAMe?
Description	<p>Queries a count value of the transmitted Ethernet frames.</p> <p>This counter is valid for Ethernet over SONET/SDH mapping (GFP/LAPS/LEX).</p> <p>Applied to the Ethernet layer.</p>
Module	– MbE – GbE √ 2.5G/10G
Parameter	<p><COUNT></p> <p>Counter data (the number of counts)</p>

Query	:COUNter:ETHernet:TRANsmitted:FRAMe:FPS?
Description	<p>Queries a frame rate value (fps) of the transmitted Ethernet frames.</p> <p>This counter is valid for Ethernet over SONET/SDH mapping (GFP/LAPS/LEX).</p> <p>Applied to the Ethernet layer.</p>
Module	– MbE – GbE √ 2.5G/10G
Parameter	<p><RATE_FPS></p> <p>Counter data (a frame rate value (fps))</p>

Section 6 Details of Device Messagess

Query	:COUNter:ETHernet:TRANsmitted:PCT?
Description	Queries a value of the Transmitted Ethernet Bit Rate (%) counter. The state where the SDH/SONET payload is filled with Ethernet frames (excluding Gap and Preamble) is 100%
Module	– MbE – GbE √ 2.5G/10G

Query	:COUNter:ICMPv6:RECeived:NA?
Response	<COUNT>
Description	Queries the number of received ICMPv6 (NA) packets.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<COUNT> Counter data (counts).

Query	:COUNter:ICMPv6:RECeived:EREQquest?
Response	<COUNT>
Description	Queries the number of received ICMPv6 (Echo Request) packets.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<COUNT> Counter data (counts).

Query	:COUNter:ICMPv6:RECeived:EREPLy?
Response	<COUNT>
Description	Queries the number of received ICMPv6 (Echo Reply) packets. * Valid only for MU150101A module.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<COUNT> Counter data (counts).

Query	:COUNter:ICMPv6:RECeived:REPLY?
Response	<COUNT>
Description	Queries the number of received ICMPv6 (Echo Reply) packets.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<COUNT> Counter data (counts).

Query	:COUNter:ICMPv6:RECeived:NS?
Response	<COUNT>
Description	Queries the number of received ICMPv6 (NS) packets.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<COUNT> Counter data (counts).

Query	:COUNter:ICMPv6:TRANsmitted:NA?
Response	<COUNT>
Description	Queries the number of transmitted ICMPv6 (NA) packets.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<COUNT> Counter data (counts).

Query	:COUNter:ICMPv6:TRANsmitted:NS?
Response	<COUNT>
Description	Queries the number of transmitted ICMPv6 (NS) packets.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<COUNT> Counter data (counts).

Section 6 Details of Device Messagess

Query	:COUNter:ICMPv6:TRANsmitted:EREPlY?
Response	<COUNT>
Description	Queries the number of transmitted ICMPv6 (Echo Reply) packets.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<COUNT> Counter data (counts).

Query	:COUNter:ICMPv6:TRANsmitted:EREQuesT?
Response	<COUNT>
Description	Queries the number of transmitted ICMPv6 (Echo Request) packets.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<COUNT> Counter data (counts).

Query	:COUNter:IP:ERRor:CHECksum?
Response	<COUNT>
Description	Queries a count value of the ip checksum error.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<COUNT> Counter data (counts).

Query	:COUNter:IP:RECEived:PACKets?
Response	<COUNT>
Description	Queries a count value of the received IP packets.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<COUNT> Counter data (counts).

Query	:COUNter:IP:RECeived:PACKets:PPS?
Response	<RATE_PPS>
Description	Queries the packet rate value (pps) for received IP packets.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<RATE_PPS> Counter data (packet rate value (pps)).

Query	:COUNter:IP:TRANsmitted:PACKets?
Response	<COUNT>
Description	Queries a count value of the transmitted IP packets.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<COUNT> Counter data (counts).

Query	:COUNter:IP:TRANsmitted:PACKets:PPS?
Response	<RATE_PPS>
Description	Queries the packet rate value (pps) for transmitted IP packets.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<RATE_PPS> Counter data (packet rate value (pps)).

Query	:COUNter:IPV6:RECeived:PACKets:PPS?
Response	<RATE_PPS>
Description	Queries the number of transmitted IPv6 (pps) packets.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<RATE_PPS> Counter data (packet rate value (pps)).

Section 6 Details of Device Messagess

Query :COUNter:IPV6:RECeived:PACKets?
Response <COUNT>
Description Queries the number of received IPv6 packets.
Module √ MbE √ GbE √ 2.5G/10G
Parameter <COUNT>
Counter data (counts).

Query :COUNter:IPV6:TRANsmitted:PACKets?
Response <COUNT>
Description Queries the number of transmitted IPv6 packets.
Module √ MbE √ GbE √ 2.5G/10G
Parameter <COUNT>
Counter data (counts).

Query :COUNter:IPV6:TRANsmitted:PACKets:PPS?
Response <RATE_PPS>
Description Queries the number of transmitted IPv6 (pps) packets.
Module √ MbE √ GbE √ 2.5G/10G
Parameter <RATE_PPS>
Counter data (packet rate value (pps)).

Query :COUNter:PING:RECeived:EREQuest?
Response <COUNT>
Description Queries a count value of the Received Ping Request (received icmp echo request).
Module √ MbE √ GbE √ 2.5G/10G
Parameter <COUNT>
Counter data (counts).

Query	:COUNter:PING:RECEived:EREPLY?
Response	<COUNT>
Description	Queries a count value of the Received Ping Reply (received icmp echo reply).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<COUNT> Counter data (counts).

Query	:COUNter:PING:TRANsmitted:EREPLY?
Response	<COUNT>
Description	Queries a count value of the Transmitted Ping Reply (transmitted icmp echo reply).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<COUNT> Counter data (counts).

Query	:COUNter:PING:TRANsmitted:EREQuest?
Response	<COUNT>
Description	Queries a count value of the Transmitted Ping Request (transmitted icmp echo request).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<COUNT> Counter data (counts).

Query	:COUNter:PPP:ERRor:ABORted?
Response	<COUNT>
Description	Queries a count value of the aborted frame.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<COUNT> Counter data (counts).

Section 6 Details of Device Messages

Query :COUNter:PPP:RECeived:BBSTuffing?
Response <COUNT>
Description Queries a count value of the received bytes before destuffing.
Module – MbE – GbE √ 2.5G/10G
Parameter <COUNT>
Counter data (counts).

Query :COUNter:PPP:TRANsmitted:BASTuffing?
Response <COUNT>
Description Queries a count value of the transmitted bytes after stuffing.
Module – MbE – GbE √ 2.5G/10G
Parameter <COUNT>
Counter data (counts).

Query :COUNter:TCP:RECeived:PACKets?
Response <COUNT>
Description Queries the number of received TCP packets.
Module √ MbE √ GbE √ 2.5G/10G
Parameter <COUNT>
Counter data (counts).

Query :COUNter:TCP:RECeived:PACKets:PPS?
Response <RATE_PPS>
Description Queries the number of received TCP packets (pps).
Module √ MbE √ GbE √ 2.5G/10G
Parameter <RATE_PPS>
Counter data (packet rate value (pps)).

Query	:COUNter:TCP:ERRor:CHECKsum?
Response	<COUNT>
Description	Queries a count value of the tcp checksum error.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<COUNT> Counter data (counts).

Query	:COUNter:UDP:RECeived:PACKets?
Response	<COUNT>
Description	Queries the number of received UDP packets.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<COUNT> Counter data (counts).

Query	:COUNter:UDP:RECeived:PACKets:PPS?
Response	<RATE_PPS>
Description	Queries the number of received UDP packets (pps).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<RATE_PPS> Counter data (packet rate value (pps)).

Query	:COUNter:UDP:ERRor:CHECKsum?
Response	<COUNT>
Description	Queries a count value of udp checksum errors.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<COUNT> Counter data (counts).

Section 6 Details of Device Messagess

Query	:COUNter:UNFRame:ALARm:PSLoss?
Response	<COUNT>,<SECOND>
Description	<p>Queries the counter value and number of seconds for Unframe Pattern Sync. Loss status.</p> <ul style="list-style-type: none">* For MU120101A, this command is disabled.* For MU120118A/B/C, this command can be used when the option of Packet BER measurement is installed.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<COUNT>,<SECOND> Counter value and number of seconds data.

Query	:COUNter:UNFRame:ALARm:PSLoss:LANe0?
Response	<COUNT>,<SECOND>
Description	<p>Queries the counter value and number of seconds for Unframe Pattern Sync. Loss status in Lane0.</p> <ul style="list-style-type: none">* This command can be used when the option of Packet BER measurement is installed for MU120118A/B/C.* This command is not available for the MU120138A.
Module	– MbE √ GbE – 2.5G/10G
Parameter	<COUNT>,<SECOND> Counter value and number of seconds data.

Query	:COUNter:UNFRame:ALARm:PSLoss:LANe1?
Response	<COUNT>,<SECOND>
Description	<p>Queries the counter value and number of seconds for Unframe Pattern Sync. Loss status in Lane1.</p> <ul style="list-style-type: none">* This command can be used when the option of Packet BER measurement is installed for MU120118A/B/C.* This command is not available for the MU120138A.
Module	– MbE √ GbE – 2.5G/10G
Parameter	<COUNT>,<SECOND> Counter value and number of seconds data.

Query	:COUNter:UNFRame:ALARm:PSLoss:LANe2?
Response	<COUNT>,<SECOND>
Description	<p>Queries the counter value and number of seconds for Unframe Pattern Sync. Loss status in Lane2.</p> <p>* This command can be used when the option of Packet BER measurement is installed for MU120118A/B/C.</p> <p>* This command is not available for the MU120138A.</p>
Module	– MbE √ GbE – 2.5G/10G
Parameter	<p><COUNT>,<SECOND></p> <p>Counter value and number of seconds data.</p>

Query	:COUNter:UNFRame:ALARm:PSLoss:LANe3?
Response	<COUNT>,<SECOND>
Description	<p>Queries the counter value and number of seconds for Unframe Pattern Sync. Loss status in Lane3.</p> <p>* This command can be used when the option of Packet BER measurement is installed for MU120118A/B/C.</p> <p>* This command is not available for the MU120138A.</p>
Module	– MbE √ GbE – 2.5G/10G
Parameter	<p><COUNT>,<SECOND></p> <p>Counter value and number of seconds data.</p>

Query	:COUNter:UNFRame:ERRor:BIT?
Response	<COUNT>,<RATE>
Description	<p>Queries the number of error bits and error bit rate received when Unframe is set.</p> <p>* For MU120101A, this command is disabled.</p> <p>* For MU120118A/B/C, this command can be used when the option of Packet BER measurement is installed.</p>
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p><COUNT>,<RATE></p> <p>Counter value and the rate data.</p>

Section 6 Details of Device Messagess

Query	:COUNTer:UNFRame:ERRor:BIT:LANe0?
Response	<COUNT>,<RATE>
Description	Queries the number of error bits and error bit rate received in Lane 0 when Unframe is set. * This command can be used when the option of Packet BER measurement is installed for MU120118A/B/C. * This command is not available for the MU120138A.
Module	– MbE √ GbE – 2.5G/10G
Parameter	<COUNT>,<RATE> Counter value and the rate data.

Query	:COUNTer:UNFRame:ERRor:BIT:LANe1?
Response	<COUNT>,<RATE>
Description	Queries the number of error bits and error bit rate received in Lane 1 when Unframe is set. * This command can be used when the option of Packet BER measurement is installed for MU120118A/B/C. * This command is not available for the MU120138A.
Module	– MbE √ GbE – 2.5G/10G
Parameter	<COUNT>,<RATE> Counter value and the rate data.

Query	:COUNTer:UNFRame:ERRor:BIT:LANe2?
Response	<COUNT>,<RATE>
Description	Queries the number of error bits and error bit rate received in Lane 2 when Unframe is set. * This command can be used when the option of Packet BER measurement is installed for MU120118A/B/C * This command is not available for the MU120138A.
Module	– MbE √ GbE – 2.5G/10G
Parameter	<COUNT>,<RATE> Counter value and the rate data.

Query	:COUNter:WIS:ALARm?
Response	<NR1>,<NR1>,<NR1>,<NR1>,<NR1>,<NR1>,<NR1>,<NR1>,<NR1>,<NR1>,<NR1>,<NR1>,<NR1>,<NR1>,<NR1>,<NR1>,<NR1>,<NR1>,<NR1>,<NR1>
Description	Queries a count value of alarms in the WAN-PHY counter.
Module	– MbE √ GbE – 2.5G/10G
Parameter	<NR1>

The following values are returned.

1. SEF/LOF (Current)
2. Far end PLM-P (Current)
3. Far end AIS-P/LOP-P (Current)
4. LOS (Current)
5. RDI-L (Current)
6. AIS-L (Current)
7. PLM-P (Current)
8. AIS-P (Current)
9. LOP-P (Current)
10. SEF/LOF (Accumulated)
11. Far end PLM-P (Accumulated)
12. Far end AIS-P/LOP-P (Accumulated)
13. LOS (Accumulated)
14. RDI-L (Accumulated)
15. AIS-L (Accumulated)
16. PLM-P (Accumulated)
17. AIS-P (Accumulated)
18. LOP-P (Accumulated)

Section 6 Details of Device Messagess

Query	:COUNter:WIS:ERRor?
Response	<NR1>,<NR1>,<NR1>,<NR1>,<NR1>,<NR1>,<NR1>,<NR1>,<NR1>,<NR1>
Description	Queries a count value of errors in the WAN-PHY counter.
Module	– MbE √ GbE – 2.5G/10G
Parameter	<NR1>

The following values are returned.

1. Section BIP Error (Current)
2. Line BIP Error (Current)
3. Path Block Error (Current)
4. Far End Line BIP Error (Current)
5. Far End Path Block Error (Current)
6. Section BIP Error (Accumulated)
7. Line BIP Error (Accumulated)
8. Path Block Error (Accumulated)
9. Far End Line BIP Error (Accumulated)
10. Far End Path Block Error (Accumulated)

Query	:COUNter:WIS:POINter?
Response	<BINARY>,<BINARY>,<NR1>,<BINARY>,<BINARY>,<NR1>
Description	Queries a value of STS pointer (H1,H2) and STS pointer (CI).
Module	– MbE √ GbE – 2.5G/10G
Parameter	<BINARY> <NR1>

The following values are returned.

1. STS Pointer(H1, H2) NDF
 2. STS Pointer(H1, H2) SS
 3. STS Pointer(H1, H2) Pointer
 4. STS Pointer(CI) NDF
 5. STS Pointer(CI) SS
 6. STS Pointer(CI) Pointer
-

Query	:COUNTER:PREamble?
Response	<COUNT>
Description	Returns Preamble CRC Error counter value * Enabled when E-PON at Port Setting screen On (:PORT:PREamble:EPON:ENABLE)
Module	– MbE √ GbE – 2.5G/10G
Parameter	<COUNT>

Query	:COUNTER:DATA? {CURRENT | ACCUMULATED} <number of item><item>[<item>]...
Response	<elapsed time>,<number of data>[<data>]...
Description	Fetches counter measurement data in port units as batch
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	{CURRENT | ACCUMULATED},<number of item>,<item>[,<item>]... Specify CURRENT when the current value of the counter is obtained and ACCUMULATED when the accumulated value is obtained. Specify the value for the type of counter to be obtained at <number of item> in the range of 1 to 100. Specify the ID of the counter to be obtained in <item>. Refer to Appendix F "Counter IDs" for number assignment. <elapsed time>,<number of data>[,<data>]... <elapsed time> Returns elapsed time of counter measurement <number of data> Then returns value of continuous counter data <data> Value of counter specified by command argument <item>. Returns sequence for specified item. For a normal counter, returns one value for the specified item, but when flow counter is specified in <item>, returns value of <item>×<number of flow id>. Format varies with counter type. If the specified counter does not have data, “-” is returned.

Section 6 Details of Device Messagess

Query :COUNter:POE:ALARm?

Response <SECOND>

Description Returns PoE Alarm status time (PoE OFF/UNDER status continuous time)

Module – MbE √ GbE – 2.5G/10G

Parameter <SECOND>

Query :COUNter:FREQuency?

Response <NR2>

Description Returns send clock frequency (Hz)

* For MU120131A/32A/38A, this command can be used when the MU120131A-01 option or MU120132A-01 option of Clock Measurement is installed.

Module – MbE √ GbE – 2.5G/10G

Parameter <NR2>

The setting range differs according to the Link status as follows:

10G: 10,302,187,500.0 to 10,322,812,500.0 Hz

1000M: 1,248,750,000.0 to 1,251,250,000.0 Hz

100M: 124,875,000.0 to 125,125,000.0 Hz

10M: 12,487,500.0 to 12,512,500.0 Hz

9999999999.9 is returned at an overflow and ?9999999999.9 is returned at an underflow.

Query	:COUNter:FREQuency:DIFFerence:HZ?
Response	<NR2>
Description	Returns drift of send reference clock (Hz) * For MU120131A/32A/38A, this command can be used when the MU120131A-01 option or MU120132A-01 option of Clock Measurement is installed.
Module	– MbE √ GbE – 2.5G/10G
Parameter	<NR2> The setting range differs according to the Link status as follows: 10G: –10,312,500.0 to 10,312,500.0 Hz 1000M: –1,250,000.0 to 1,250,000.0 Hz 100M: –125,000.0 to 125,000.0 Hz 10M: –12,500.0 to 12,500.0 Hz 99999999.9 is returned at an underflow and ?99999999999.9 is returned at an underflow.

Query	:COUNter:FREQuency:DIFFerence:PPM?
Response	<NR2> * For MU120131A/32A, this command can be used when the MU120131A-01 option or MU120132A-01 option of Clock Measurement is installed.
Description	Returns drift of send reference clock (ppm) * For MU1230131A/32A, this command can be used when the MU120131A-01 option or MU120132A-01 option of Clock Measurement is installed.
Module	– MbE √ GbE – 2.5G/10G
Parameter	<NR2> -A value in the range ?1000.0 to +1000.0 (ppm) is returned. 999.9 is returned at an overflow and ?9999.9 is returned at an underflow.

Section 6 Details of Device Messagess

Command	:COUNter:GRAPh:RESolution {R1SEC | R1MIN | R15MIN | R60MIN}
Query	:COUNter:GRAPh:RESolution?
Response	{R1SEC | R1MIN | R15MIN | R60MIN}
Description	Sets the resolution of the counter graph. * Changing this setting clears the graph data.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	{R1SEC | R1MIN | R15MIN | R60MIN} Select one of the following: R1SEC 1 sec R1MIN 1 min R15MIN 15 min R60MIN 60 min
Default	R1SEC (1 sec)

Command	:COUNter:GRAPh:SELEct <number>,<counter_id>[,<flow_id>]
Query	<counter_id>[,<flow_id>]
Response	<counter_id>
Description	Sets the counter type for graph display. * Changing this setting clears the graph data. * If this setting is changed during counter measurement, it is not applied until the counter is stopped and then restarted.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<number> Graph number to be displayed (<NR1>). Specify 1 to 7 for Line 1 to 7, or 8 for Bar1. <counter_id> Specify the counter type for graph display by the identification number (<NR1>). Refer to the:COUNter:GRAPh:DATA? command for number assignment. Specify 0 not to specify the counter type (not to display a counter on the graph). <flow_id> Specify flow Id when selecting the flow counter on <counter_id>.

Query	:COUNter:GRAPh:DATA? <counter_id>[,<flow_id>]
Response	<time>[,<count>]...
Description	<p>Queries the graph data of the counter.</p> <p>* A counter must be specified in advance to obtain the counter data. Use the :COUNter:GRAPh:SElect command for this setting.</p>
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p><counter id></p> <p>Specify a counter item of which the graph data is to be obtained. Refer to Appendix F "Counter IDs" for number assignment.</p> <p>Specify the flow ID when the flow counter of the MU120131A/32A/38A is specified with <flow_id><counter_id>.</p> <p><time>[,<count>]...</p> <p>Graph data of the counter. Time data indicating when the latest counter data is obtained is returned. Then 0 to 60 of count values of the counter are returned from the latest to the oldest.</p> <p>* Counter data is not returned when a counter that is not set by the :COUNter:GRAPh:SElect command is specified (only <time> is returned).</p> <p><time></p> <p>Time when the latest counter data is obtained. (<DATE_TIME>)</p> <p>* If there is no counter data, the data indicates the current time.</p> <p><count></p> <p>Counter data. The format is <NR1>, <NR2> or <NR3>, depending on the type of <counter_id>. If the specified counter does not have data, "-" is returned.</p>

Section 6 Details of Device Messagess

Query	:COUNter:VCAT:DATA:ALL?
Response	<Summary>,<CH1>,<CH2>...
Description	<p>Queries the result data of VCAT Counter measurement of all CH.</p> <p>* Valid only for MU150101A module.</p>
Module	– MbE – GbE √ 2.5G/10G
Parameter	<p><Summary>,<CH1>,<CH2>...</p> <p>The result data of VCAT Counter measurement of specifies whether a channel that is specified as a Rx VCG member is returned. However, the head always becomes Summary line.</p> <p>Elements of data of each CH are as follows.</p> <p>"<setting_sq>","<sq>","<ch>",<currenet_count>,<current_rate>,<accumlate_count>,<accumlate_rate></p> <p>"<setting_sq>"</p> <p>An Rx setting value is returned in character strings in the range from 0 to 63.</p> <p>"---" is returned for Summary line or when LCAS negotiation is ON.</p> <p>"<sq>"</p> <p>A monitored value is returned in the range from All or 0 to 255.</p> <p>"---" is returned for Summary line.</p> <p>"<ch>"</p> <p>An Rx setting value is returned in the following format:</p> <p>"[ch1].[ch2].[ch3].[ch4]"</p> <p>"---" is returned for Summary line.</p> <p>The mode of expression of the CH hierarchy follows Appendix D "Basic Rules for Channel Description in Virtual Concatenation."</p> <p><currenet_count></p> <p>The error count data of errors that occurred in a 1 second period is returned.</p> <p>Target data differs according to the layer.</p> <p>(*1)(<NR1>)</p> <p>*1)</p> <p>VC4-Xv B3</p> <p>VC3-Xv(AU3) B3</p> <p>VC3-Xv(AU4) LP-B3</p> <p>VC12/11 BIP2</p> <p><currenet_rate></p> <p>The error rate data of errors that occurred in a 1 second period is returned.</p> <p>Target data differs according to the layer.</p> <p>(*1)(<NR3>)</p>

<accumulate_count>

The accumulated error count data is returned. Target data differs according to the layer. (*1) (<NR1>)

<accumulate_rate>

The accumulated error rate data is returned. Target data differs according to the layer. (*1) (<NR3>)

Section 6 Details of Device Messagess

Command	:COUNter:FLOW:FIELD <condition>
Query	:COUNter:FLOW:FIELD?
Response	<condition>
Description	<p>Sets multiflow counter distributing conditions (count target field definition).</p> <ul style="list-style-type: none">* Up to four conditions (using test frame ID or user-defined) can be defined in the MU120131A/32A/38A. For user-defined conditions, specify Base position, Offset, and Length. Specify the position of the field in the Frame. In addition, a name can be appended to each distributing condition.* This command cannot be executed when TX is set for Tx/Rx while the Tx Stream function is being executed.
Module	– MbE √ GbE – 2.5G/10G
Parameter	<p><condition></p> <p>The distribution conditions are set using the following format. Note that the format differs depending on the module used.</p> <p>MU120121A/22A</p> <p>=====</p> <p>{TX | RX} {USER_DEFINED | TEST_FRAME} [<base position><offset><length>]</p> <p>{TX | RX} Specifies whether the count target frame is a frame transmitted from the MD1230B (Tx) or a frame received in the MD1230A (Rx).</p> <p>* When PORT MODE is IMPAIRMENT, TX is not used.</p> <p>{USER_DEFINED | TEST_FRAME} Selects the type of the count target filed (Type). When USER_DEFINED is selected, set the subsequent parameters (Base Position, Offset, Length). When TEST_FRAME is selected, the count target field is the available Flow ID field in Test Frame of the Tx Stream function. The target Flow ID field is set using the :TSTReam:TABLE:ITEM:FRAME:DFIeld1:TFRame:FID command.</p> <p>* The following parameters are invalid when Type is specified for TEST_FRAME.</p> <p><base position></p> <p>For the keywords that can be specified as Base Position, see Appendix G Base Position.</p> <p><offset></p> <p>Specify the field position by an offset from the base position. An offset can be set from 0 to 524,280 bits (65,535 bytes).</p> <p><length></p> <p>Set the field length from 1 to 16 bits.</p> <ul style="list-style-type: none">* The sum of a remainder obtained by dividing the value set to <offset> by 8 and the value set to <length> must not exceed 16.

MU120131A/32A/38A

=====

{TX | RX}{TEST_FRAME | <user defined condition>}[<user defined condition>]...

{TX | RX}

(Same as MU120121A/22A)

TEST_FRAME

(Same as MU120121A/22A)

<user defined condition> is specified in the following format:

<field name>,<base position>,<offset>,<length>,<format>

<field name>

Set the name of the filing conditions as a string of up to 24 characters.

<base position>

(Same as MU120121A/22A)

<offset>,<length>

Specify the field position by an offset from the base position and length.

The setting range for the offset is 0 to 524,280 bits (65,535 bytes), and that for the length is 1 to 64 bits. Note, however, that these ranges are restricted by certain conditions. See "Restrictions on filing conditions for MU120131A/32A/38A" below.

<format>

Select any of the following as the filing condition table format:

DEC: Decimal code

HEX: Hexadecimal code

IPV4: IPv4 Address format

IPV6: IPv6 Address format

Restrictions on filing conditions for MU120131A/32A/38A

=====

- The set filed will be assigned to a block in a size of 16 bits.
- 16-bit blocks are allocated in 8-bit units.
- Up to four 16-bit blocks can be allocated.
- The sum of a remainder obtained by dividing the <offset> value by 8 and the <length> value must not exceed "16 × the number of remaining blocks".
- One block of TEST_FRAME is used.
- If the size of the block is exceeded due to the values set in <offset> and <length>, two or more blocks are used.

Example 1: Setting an offset to 4 bits and a length to 12 bits uses one block.

```
|offset>|<----- length ----->|
+-+--+--+--+--+8-+-+--+--+--+--+
|          block          |
+-+--+--+--+--+8-+-+--+--+--+--+
```

Example 2: Setting an offset to 6 bits and a length to 12 bits uses two blocks.

```
|<- offset->|<----- length ----->|
+-+--+--+--+--+8-+-+--+--+--+--+8-+-+--+--+--+--+
|          block          |          block          |
+-+--+--+--+--+8-+-+--+--+--+--+8-+-+--+--+--+--+
```

Example 3: Setting an offset to 10 bits and a length to 12 bits uses one block.

```
|<----- offset ----->|<----- length ----->|
+-----+--+--+--+--+8-+-+--+--+--+--+
|          |          block          |
+-----+--+--+--+--+8-+-+--+--+--+--+
```

Default RX,USER_DEFINED,FRAME,0,16

Command	:COUNter:FLOW:FILTer:ENABle <BOOLEAN>
Query	:COUNter:FLOW:FILTer:ENABle?
Response	<BOOLEAN>
Description	Enables/disables the multiflow counter filter. * This command is available for the MU120121A/22A/31A/32A/38A.
Module	– MbE √ GbE – 2.5G/10G
Parameter	<BOOLEAN> To enable the multiflow counter filter, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	0 (disable)

Command	:COUNter:FLOW:FILTer:PATTerN1 {DONT_CARE | NOT_MATCH | MATCH}
Query	:COUNter:FLOW:FILTer:PATTerN1?
Response	{DONT_CARE | NOT_MATCH | MATCH}
Description	Sets a filter to the preset pattern 1 (Don't care/Not match/Match).
Module	– MbE √ GbE – 2.5G/10G
Parameter	<div>{DONT_CARE | NOT_MATCH | MATCH}</div> <div>Select one of the following:</div> <div>DONT_CARE Don't care</div> <div>NOT_MATCH Not match</div> <div>MATCH Match</div>
Default	DONT_CARE (Don't care)

Section 6 Details of Device Messagess

Command	:COUNter:FLOW:FILTer:PATtern2 {DONT_CARE | NOT_MATCH | MATCH}
Query	:COUNter:FLOW:FILTer:PATtern2?
Response	{DONT_CARE | NOT_MATCH | MATCH}
Description	Sets a filter to the preset pattern 2 (Don't care/Not match/Match).
Module	– MbE √ GbE – 2.5G/10G
Parameter	{DONT_CARE | NOT_MATCH | MATCH} Select one of the following: DONT_CARE Don't care NOT_MATCH Not match MATCH Match
Default	DONT_CARE (Don't care)

Command	:COUNter:FLOW:FILTer:PATtern3 {DONT_CARE | NOT_MATCH | MATCH}
Query	:COUNter:FLOW:FILTer:PATtern3?
Response	{DONT_CARE | NOT_MATCH | MATCH}
Description	Sets a filter to the preset pattern 3 (Don't care/Not match/Match).
Module	– MbE √ GbE – 2.5G/10G
Parameter	{DONT_CARE | NOT_MATCH | MATCH} Select one of the following: DONT_CARE Don't care NOT_MATCH Not match MATCH Match
Default	DONT_CARE (Don't care)

Command	:COUNter:FLOW:FILTer:PATtern4 {DONT_CARE | NOT_MATCH | MATCH}
Query	:COUNter:FLOW:FILTer:PATtern4?
Response	{DONT_CARE | NOT_MATCH | MATCH}
Description	Sets a filter to the preset pattern 4 (Don't care/Not match/Match).
Module	– MbE √ GbE – 2.5G/10G
Parameter	{DONT_CARE | NOT_MATCH | MATCH} Select one of the following: DONT_CARE Don't care NOT_MATCH Not match MATCH Match
Default	DONT_CARE (Don't care)

Command	:COUNter:FLOW:FILTer:ERRor {DONT_CARE | NOT_MATCH | MATCH}
Query	:COUNter:FLOW:FILTer:ERRor?
Response	{DONT_CARE | NOT_MATCH | MATCH}
Description	Sets a filter to the preset error type (Don't care/Not match/Match). * This command is available for the MU120121A/22A/31A/32A/38A.
Module	– MbE √ GbE – 2.5G/10G
Parameter	{DONT_CARE | NOT_MATCH | MATCH} Select one of the following: DONT_CARE Don't care NOT_MATCH Not match MATCH Match
Default	DONT_CARE (Don't care)

Section 6 Details of Device Messagess

Command	:COUNter:FLOW:FIELD:FID {MONITOR | RESULT},<number of flow id>[,<flow id>]...
Query	:COUNter:FLOW:FIELD:FID?
Response	{MONITOR | RESULT},<number of flow id>[,<flow id>]...
Description	<p>Specifies the Flow ID while measuring Flow Counter.</p> <ul style="list-style-type: none">* This command is valid only when measurement is stopped. Note that the setting cannot be changed during measurement.* This command is available for the MU120131A/32A/38A. For the MU120121A/22A, use the :COUNter:FLOW:MONitor:FID command instead.
Module	– MbE √ GbE – 2.5G/10G
Parameter	<p>{MONITOR | RESULT}</p> <p>RESULT: Fetches only accumulated counter data after counter measurement stop.</p> <p>MONITOR: Monitors current and accumulated counter during counter measurement.</p> <ul style="list-style-type: none">* Number of <flow id> of MONITOR port is up to 256 per unit. This number is include "Other" counter. <p><number of flow id></p> <p>Specify the number of Flow Ids to be set. Set a value of 0 to 255.</p> <p><flow id></p> <p>Set the flow ID. If multiple filing conditions (up to four) are specified, <flow id> must be specified for the same number as the filing conditions, as follows. <flow id 1>[,<flow id 2>[,<flow id 3>[,<flow id 4>]]]</p> <p>In other words, the flow ID must be specified for the number of "<number of flow id> × <number of filing conditions>".</p> <ul style="list-style-type: none">* The number of filing conditions currently set can be obtained by executing the :COUNter:FLOW:FIELD:NCONdition? command. <p><flow id> can be specified in the <NR1>, <BINARY>, or <HEX> format. The response is returned in the <HEX> format, in 8 bytes.</p>

Example:
If two filing conditions are set and three flow IDs should be set to "1", "2", and "3" for the first filing condition and to "10" all for the second condition, specify as follows:

```
:COUNter:FLOW:FIELD:NCONdition?  
=> 2  
:COUNter:FLOW:FIELD:FID MONITOR,3,1,10,2,10,3,10  
:COUNter:FLOW:FIELD:FID?  
=> MONITOR,3,#H000000000000000001,#H0000000000000000A,#H0000000000000002,  
#H0000000000000000A,#H0000000000000003,#H000000000000000A
```

Query	:COUNter:FLOW:FIELD:Nfid?
Response	<NR1>
Description	Returns count (0 to 255) for currently set flow ID * This command is available for the MU120131A/32A/38A. Flow IDs can be set by executing the :COUNter:FLOW:FIELD:FID command.
Module	– MbE √ GbE – 2.5G/10G
Parameter	<NR1>

Section 6 Details of Device Messages

Query	:COUNter:FLOW:FIELD:REMAins?
Response	<NR1>
Description	Returns currently settable remaining block count (0 to 4) as distributing condition * This command is available for the MU120131A/32A/38A. Filing conditions can be set by executing the :COUNter:FLOW:FIELD command.
Module	– MbE √ GbE – 2.5G/10G
Parameter	<NR1>

Query	:COUNter:FLOW:FIELD:NCONdition?
Response	<NR1>
Description	Returns currently set distributing condition count (0 to 4) * This command is available for the MU120131A/32A/38A. Filing conditions can be set by executing the :COUNter:FLOW:FIELD command.
Parameter	<NR1>

Command	:COUNter:FLOW:MONitor:FID <number of flow id>[,<flow id>]...
Query	:COUNter:FLOW:MONitor:FID?
Response	<number of flow id>[,<flow id>]...
Description	Specifies the Flow ID of the counter to be monitored while measuring Multiflow Counter. It is necessary to specify the Flow ID to the counter using this command in advance, when monitoring the count value during measurement. Up to 32 Flow IDs can be specified. * This command is valid only when measurement is stopped. Note that the setting cannot be changed during measurement. * This command is available for the MU120121A/22A. For the MU120131A/32A/38A, use the :COUNter:FLOW:FIELD:FID command instead.
Module	– MbE √ GbE – 2.5G/10G
Parameter	<number of flow id> Specify the number of Flow IDs to be set, from 0 to 32. <flow id>

Set the Flow ID of the counter to be monitored during measurement, from 0 to 65535, for the number of Flow IDs specified by <number of flow id> above.

Default	32, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31
---------	--

Section 6 Details of Device Messagess

Query	:COUNter:FLOW:MONitor:DATA?
Response	<number of data>,<elapsed time>[,<current>,<accumulate>]...
Description	<p>Queries the data of the counter (up to 32 counters) that can be loaded during Multiflow Counter measurement.</p> <p>* With MU120131A/32A/38A, use :COUNter:Data? or :GENTry:GROup:COUNter:Data? command.</p>
Module	– MbE √ GbE – 2.5G/10G
Parameter	<p><number of data></p> <p>The number of the subsequent count data (a set of <current> and <accumulate>) is returned.</p> <p><elapsed time></p> <p>An integer value (<NR1>) that indicates the time elapsed during measurement. It takes values from 0 to 315360000 (second).</p> <p><current>,<accumulate></p> <p>The value (a set of <current> and <accumulate>) of the counter with the Flow ID set by the :COUNter:FLOW:MONiter:FID command is returned. <current> indicates the count value within the last one second, and <accumulate> indicates the accumulated count value from the start of measurement. The format of each value is <NR1>. When this value is 999999999999999, it indicates a counter overflow.</p>
Default	0,0

Query	:COUNter:FLOW:RESult:DATA? <start flow id>,<number of data>
Response	<number of data>[,<accumulate>]...
Description	<p>Queries the data of the counter (up to 65536 counters) that can be loaded when Multiflow Counter measurement is stopped.</p> <p>* This command is available for the MU120121A/22A. For the MU120131A/32A/38A, use the :COUNter:Data? or :GENTry:GROup:COUNter:Data? command instead.</p>
Module	– MbE √ GbE – 2.5G/10G
Parameter	<p><start flow id></p> <p>Specify the start Flow ID (<NR1>) of the data to be obtained, from 0 to 65535.</p> <p><number of data></p> <p>Specify the number of data (<NR1>) to be obtained, from 1 to 1024.</p> <p>* When the number of actual data is less than the number of data specified by <number of data>, data is returned as much as available.</p> <p><number of data></p> <p>The number of the subsequent count data is returned.</p> <p><accumulate></p> <p>The accumulated count value (<NR1>) from the start of measurement and the end of measurement is returned to. Starting from the count value that corresponds to the Flow ID specified by <start flow id>, the number of data specified by <number of data> is returned. When this value is 9999999999999999, it indicates a counter overflow.</p>

Section 6 Details of Device Messagess

Query	:COUNter:FLOW:MONitor:DATA:GRAPh? <flow id number>
Response	<DATETIME>[,<current>]...
Description	<p>Queries the graph data of the counter that can be loaded during Multiflow Counter measurement.</p> <ul style="list-style-type: none">* The resolution set by the :COUNter:GRAPh:RESolution command is used for the resolution of the graph data.* This command is available for the MU120121A/22A. For the MU120131A/32A/38A, use the :COUNter:GRAPh:DATA? command instead.
Module	– MbE √ GbE – 2.5G/10G
Parameter	<p><flow id number></p> <p>Specify the Flow ID number of the graph data to be obtained, from 1 to 32 (<NR1>).</p> <ul style="list-style-type: none">* An error is returned when the Flow ID number that is not set by the :COUNter:FLOW: MONiter:FID command is specified. <p><DATETIME></p> <p>A string that indicates the date and the time when the latest counter value was obtained. This is expressed in the following format:</p> <p><date><space><time></p> <p>Current time is returned if there is no counter data.</p> <p><date></p> <p>The format is yyyy/mm/dd. These refer to "year", "month", and "date", respectively.</p> <p>The value ranges from 2000/01/01 to 2098/12/31.</p> <p><time></p> <p>The format is hh:mm:ss.sss. These refer to "hour", "minutes", and "seconds", respectively. This is expressed on a 24-hour basis.</p> <p>The value ranges from 00:00:00.000 to 23:59:59.999.</p> <p>Example: "2003/08/15 13:22:51.01"</p> <ul style="list-style-type: none">* The returned value by this command is UTC (Coordinated Universal Time). <p><current></p> <p>The graph data (<NR1>) of the counter specified by <flow id>. 60 count values (counting value per second) are returned from the latest to the oldest ones. However, when a count value is less than 60, all counter values (0 to 59) are returned.</p>
Default	0

PING commands (PING)

The commands related to the PING function are explained below.

Command	:PING:STOP
Description	Forcibly stops the ping function.
Module	√ MbE √ GbE √ 2.5G/10G

Command	:PING:START
Description	Starts a ping.
Module	√ MbE √ GbE √ 2.5G/10G

Query	:PING:STATE?
Response	{0 | 1 | 2}
Description	Queries the operation state of the ping function.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	{0 | 1 | 2}

The code number is returned as the processing state. Meanings of the numbers are shown below:

- 0 Ping is stopped.
- 1 Performing a ping
- 2 Starting/Halting a ping

Command	:PING:TYPE {IPV4 | IPV6}
Query	:PING:TYPE?
Response	{IPV4 | IPV6}
Description	Selects one of IPv4 or IPv6.
Module	√ MbE √ GbE √ 2.5G/10G
Default	IPV4

Section 6 Details of Device Messagess

Command	:PING:DESTination <HEX>
Query	:PING:DESTination?
Response	<HEX>
Description	Sets the destination IP address.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<HEX> Set the IPv4 address in the following 4-octet <HEX> format: Example: 192.168.1.3 is expressed as #HC0A80103. Set the IPv6 address in the following 16-octet <HEX> format: Example: 1:2:3:4:5:6:7:8 is expressed as #H00010002000300040005000600070008.
Default	#H00000000 (0.0.0.0), #H00000000000000000000000000000000 (::)

Query	:PING:DATA? <ping_number>
Response	<result>,<dest_address>,<size>,<ttl>,<type>,<code>,<round_trip_time>
Description	Queries the ping result.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p><ping_number></p> <p>Specify that the reply is returned for what time around of a ping request. Set a value from 1 to 4.</p> <p><result>,<dest_address>,<size>,<ttl>,<type>,<code>,<round_trip_time></p> <p>Result data of the ping function.</p> <p><result></p> <p>Result of the ICMP echo request.(<BOOLEAN>)</p> <p>0: NG 1: OK</p> <p><dest_address></p> <p>IP address used in the ICMP echo request. (<IP_ADDRESS> or <IPV6 ADDRESS>)</p> <p><size></p> <p>The size of an ICMP packet received as the result of the ICMP echo request (ICMP field section). (<NR1>, 1 byte)</p> <p><ttl></p> <p>TTL value of an ICMP packet received as the result of the ICMP echo request. (<NR1>, 1 byte)</p> <p><type></p> <p>Type value of an ICMP packet received as the result of the ICMP echo request. (<NR1>, 1 byte)</p> <p><code></p> <p>Code value of an ICMP packet received as the result of the ICMP echo request. (<NR1>, 1 byte)</p> <p><round_trip_time></p> <p>Time taken to receive a correct Echo reply from ICMP Echo request transmission (unit: msec). Set to 0 when NG. (<NR1>, 8 bytes)</p>

Stream transmission commands (TSTReam)

The commands related to the stream transmission function are explained below.

Command	:TSTReam:STOP
Description	Stops transmission of stream data.
Module	√ MbE √ GbE √ 2.5G/10G

Command	:TSTReam:START
Description	Starts transmission of stream data.
Module	√ MbE √ GbE √ 2.5G/10G

Query	:TSTReam:STATe?
Response	{0 | 1 | 2}
Description	Queries the operation status of the stream transmission.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	{0 | 1 | 2}

The code number is returned as the processing status. Meanings of the numbers are shown below:

- 0 Transmission is stopped.
- 1 Transmitting
- 2 Starting/Halting of transmission

Query	:TSTReam:TIME:START?
Response	"<DATETIME>"
Description	Queries the start time of stream transmission.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<DATETIME> A string that indicates the date and the time. This is expressed in the following format: <date><space><time> <date> The format is yyyy/mm/dd. These refer to "year", "month", and "date", respectively. The value ranges from 2000/01/01 to 2098/12/31. <time> The format is hh:mm:ss.sss. These refer to "hours", "minutes", and "seconds", respectively. This is expressed on a 24-hour basis. The value ranges from 00:00:00.000 to 23:59:59.999. Example: "2003/08/15 13:22:51.01"

Query	:TSTReam:TIME:ELAPsed?
Response	<NR1>
Description	Queries the elapsed time after stream transmission is started.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> An integer value that indicates the elapsed time of a measurement. It takes values from 0 to 315360000 (second).

Section 6 Details of Device Messagess

Query	:TSTReam:TIME:STOP?
Response	"<DATETIME>"
Description	Queries the stop time of stream transmission.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p><DATETIME></p> <p>A string that indicates the date and the time. This is expressed in the following format:</p> <p><date><space><time></p> <p><date></p> <p>The format is yyyy/mm/dd. These refer to "year", "month", and "date", respectively.</p> <p>The value ranges from 2000/01/01 to 2098/12/31.</p> <p><time></p> <p>The format is hh:mm:ss.sss. These refer to "hours", "minutes", and "seconds", respectively. This is expressed on a 24-hour basis.</p> <p>The value ranges from 00:00:00.000 to 23:59:59.999.</p> <p>Example: "2003/08/15 13:22:51.001"</p>

Command	:TSTReam:TIMestamp {LAST_BIT | FIRST_BIT}
Query	:TSTReam:TIMestamp?
Response	{LAST_BIT | FIRST_BIT}
Description	Specifies the method to add a timestamp to a transmission stream. This setting affects to latency calculation.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	{LAST_BIT | FIRST_BIT}
	<p>Select either of the following:</p> <p>LAST_BIT For store and forward devices (*1)</p> <p>FIRST_BIT For bit forwarding devices (cut through devices)(*2)</p> <p>*1: In this setting, the latency measurement calculates the time from input of the last bit of data to output of the beginning bit of data.</p> <p>*2: In this setting, the latency measurement calculates the time from input of the beginning bit of data to output of the beginning bit of data.</p>
Default	LAST_BIT (For store and forward devices)

Command	:TSTReam:TABLE:ENABle
Description	Enables all set streams.
	* This command cannot be used for the MU120101A.
Module	√ MbE √ GbE √ 2.5G/10G

Command	:TSTReam:TABLE:DISABle
Description	Disables all set streams.
Module	√ MbE √ GbE √ 2.5G/10G

Section 6 Details of Device Messagess

Query	:TSTReam:TABLE:FAIL:ID?
Response	<stream_number>
Description	<p>Queries the erroneous stream ID.</p> <p>For example, when the destination MAC address for the set stream data is set to "Gateway", the MD1230B acquires the MAC address via ARP. When address resolution fails, transmission cannot be started. However, this command can be used to query the stream ID where address resolution has failed.</p>
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p><stream_number></p> <p>Returns a value from 0 to 256 as the stream ID. 0 indicates that there is no error.</p>
Command	TSTReam:TABLE:COPY <stream_number>
Description	Copies the stream data.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p><stream_number></p> <p>An extension of a transmission stream, which is a value of a serial number given to a stream on the stream table. It is used for setting a stream.</p> <p>* The range varies with the number of preset streams.</p>
Command	TSTReam:TABLE:WRITE
Description	<p>Writes the stream setting data of the ID that is been edited to the hardware.</p> <p>* Be sure to execute this command when edit of the stream setting data is completed.</p> <p>* Value set by :TSTReam:TABLE:ITEM:--- command is actually set by execution of :TSTReam:TABLE:WRITE:--- command.</p> <p>Before the execution, the previous actual set value is returned.</p> <p>* The WRITE command processing writes the protocol settings (related to the already sent settings) at the hardware. Not-related protocols are not saved.</p>
Module	√ MbE √ GbE √ 2.5G/10G

Command	:TSTReam:TABLE:PASTe <stream_number>
Description	Pastes the stream data.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<stream_number> An extension of a transmission stream, which is a value of a serial number given to a stream on the stream table. The stream data is inserted at the previous position of the number specified here. * Specify "1" when there is no stream setting.
Command	:TSTReam:TABLE:AClear
Description	Clears all of the stream data.
Module	√ MbE √ GbE √ 2.5G/10G
Command	:TSTReam:TABLE:ADD
Description	Adds the new stream data.
Module	√ MbE √ GbE √ 2.5G/10G
Command	:TSTReam:TABLE:CUT <stream_number>
Description	Cuts the stream data with the specified number. * The cut data is used for insertion into the specified location with a paste command.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	An extension of a transmission stream, which is a value of a serial number given to a stream on the stream table. It is used for setting a stream. * The range varies with the number of preset streams.
Command	:TSTReam:TABLE:DELeTe <stream_number>
Description	Deletes the stream data.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<stream_number> An extension of a transmission stream, which is a value of a serial number given to a stream on the stream table. It is used for setting a stream. * The range varies with the number of preset streams.

Section 6 Details of Device Messagess

Query	:TSTReam:TABLE:NSTReams?
Response	<NR1>
Description	Queries the number of pieces of preset stream data.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1>
	* The maximum value of the number of streams available to set varies with settings of streams at that time.

Command	:TSTReam:TABLE:ID <stream_number>
Query	:TSTReam:TABLE:ID?
Response	<stream_number>
Description	Sets the number of a stream to be edited.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<stream_number>
	Specify the number of a stream to be edited. This is an extension of a transmission stream, which is a value of a serial number given to a stream on the stream table. It is used for setting a stream. Although values from 0 to 256 are available to set, the actual specified range is set to the number of defined streams.

Command	:TSTReam:TABLE:ITEM:ENABLE <BOOLEAN>
Query	:TSTReam:TABLE:ITEM:ENABLE?
Response	<BOOLEAN>
Description	Enables/disables this stream.
	* This command cannot be used for the MU120101A.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<BOOLEAN>
	To enable this stream setting, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	1 (enable)

Command	:TSTReam:TABLE:ITEM:CONTrol:DISTribution <type>
Query	:TSTReam:TABLE:ITEM:CONTrol:DISTribution?
Response	<type>
Description	Sets the type of operating flow of a stream.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<type> Select the type of operating flow from the followings: CONT Continuous CONT_BURST Continuous burst STOP Stop after this stream NEXT Next stream JUMP Jump to stream JUMP_COUNT Jump to stream for count JUMP_STOP: Jump to stream for count and stop(*) *: Only selectable with MU120121A/22A/31A/32A/38A.
Default	NEXT (Next stream)

Command	:TSTReam:TABLE:ITEM:CONTrol:FPBurst <NR1>
Query	:TSTReam:TABLE:ITEM:CONTrol:FPBurst?
Response	<NR1>
Description	Sets the number of frames in a burst.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> The setting range varies depending on the module. For the MU120101A/02A/11A/12A/21A/22A/31A/32A modules: 1 to 16,777,215 (24 bits) (frame/burst) For the MU120103A/03B/04A/04B/05A/06A/18A/18B/18C/38A/19A/20A modules: 1 to 1,099,511,627,775 (40 bits) (frame/burst)
Default	1

Section 6 Details of Device Messagess

Command	:TSTReam:TABLE:ITEM:CONTrol:BPSTream <NR1>
Query	:TSTReam:TABLE:ITEM:CONTrol:BPSTream?
Response	<NR1>
Description	Sets the number of bursts in a stream.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> The setting range varies depending on the module. For the MU120101A/02A/11A/12A modules: 1 to 16,777,215 (24 bits) (burst/stream) For the MU120103A/04A/05A/06A/18A/18B/18C19A/20A/21A/22A/31A/32A/38A03B/04B modules: 1 to 1,099,511,627,775 (40 bits) (burst/stream)
Default	1

Command	:TSTReam:TABLE:ITEM:CONTrol:JTID <stream_number>
Query	:TSTReam:TABLE:ITEM:CONTrol:JTID?
Response	<stream_number>
Description	Sets an ID of a stream that is the nest jump destination.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<stream_number> Specify an ID of a stream that is the next jump destination. This ID is an extension of a transmission stream, which is a value of a serial number given to a stream on the stream table. It is used for setting a stream. Although values from 0 to 256 are available to set, the actual specified range is set to the number of defined streams.

Command	:TSTReam:TABLE:ITEM:CONTRol:COUNT <NR1>
Query	:TSTReam:TABLE:ITEM:CONTRol:COUNT?
Response	<NR1>
Description	Sets the loop count when "jump to stream for count" is selected.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 1 to 16000000 (number of times)
Default	1

Section 6 Details of Device Messagess

Command :TSTReam:TABLE:ITEM:CONTRol:GAP:IBG <NR1>
Query :TSTReam:TABLE:ITEM:CONTRol:GAP:IBG?
Response <NR1>
Description Sets a value of IBG.
Module √ MbE √ GbE √ 2.5G/10G
Parameter <NR1>

The setting range, initial value, and unit vary according to the module as follows:

Module	Min	Max	Initial	Unit
MU120101A/11A	800	170 000 000 000	960	(*1)
MU120121A/22A (RJ-45)/31A	800	1 200 000 000 000	960	(*1)
MU120102A/12A/22A (SFP)/32A	640	1 200 000 000 000	960	0.1 ns
MU120118A18B/18C/38A	72	1 200 000 000 000	96	0.1 ns
MU120119A (156M)/20A	534	1 200 000 000 000	17628	0.1 ns
MU120119A (622M)	134	1 200 000 000 000	4407	0.1 ns
MU120103A/04A/03B/04B (PPP,LEX,LAPS,MAPOS, Cisco HDLC)(*2)	33	1 200 000 000 000	534	0.1 ns
MU120103B/04B (GFP)(*2)	134	1 200 000 000 000	534	0.1 ns
MU120105A/06A	8	1 200 000 000 000	275	0.1 ns

*1:

The unit varies according to the link speed (10M/100M/1000M) as follows:

Link Speed	Unit
10 Mbps	10 ns
100 Mbps	1 ns
1000 Mbps	0.1 ns

For example, when "800" is set, 80 ns is set when the link speed is 1000 M, 800 ns for 100 M, and 8000 ns for 10 M.

*2:

This setting is when STM-16/OC-48 is specified. When Contiguous/Virtual Concatenation is specified, the value is in inverse proportion to the set bit rate.

Command	:TSTReam:TABLE:ITEM:CONTRol:GAP:ISG <NR1>
Query	:TSTReam:TABLE:ITEM:CONTRol:GAP:ISG?
Response	<NR1>
Description	Sets a value of ISG.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1>

The setting range, initial value, and unit vary according to the module as follows:

Module	Min	Max	Initial	Unit
MU120101A/11A	800	170 000 000 000	960	(*1)
MU120121A/22A (RJ-45)/31A	800	1 200 000 000 000	960	(*1)
MU120102A/12A/22A (SFP)/32A	640	1 200 000 000 000	960	0.1 ns
MU120118A/18B/18C/38A	96	1 200 000 000 000	96	0.1 ns
MU120119A (156M)/20A	4274	1 200 000 000 000	77457	0.1 ns
MU120119A (622M)	1068	1 200 000 000 000	19364	0.1 ns
MU120103A/04A/03B/04B (PPP,LEX,LAPS,MAPOS, Cisco HDLC)(*2)	4274	1 200 000 000 000	4841	0.1 ns
MU120103B/04B (GFP) (*2)	2670	1 200 000 000 000	2670	0.1 ns
MU120105A/06A	1068	1 200 000 000 000	1210	0.1 ns

*1:

The unit varies according to the link speed (10M/100M/1000M) as follows:

Link Speed	Unit
10 Mbps	10 ns
100 Mbps	1 ns
1000 Mbps	0.1 ns

For example, when "800" is set, 80 ns is set when the link speed is 1000 M, 800 ns for 100 M, and 8000 ns for 10 M.

*2:

This setting is when STM-16/OC-48 is specified. When Contiguous/Virtual Concatenation is specified, the value is in inverse proportion to the set bit rate.

Section 6 Details of Device Messages

Command	:TSTReam:TABLE:ITEM:CONTRol:GAP:IFG:TYPE {FIXED | RANDOM}
Query	:TSTReam:TABLE:ITEM:CONTRol:GAP:IFG:TYPE?
Response	{FIXED | RANDOM}
Description	Sets the type IFG generates.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	{FIXED | RANDOM} Select either of the following: FIXED The fixed value is used. RANDOM Random
Default	FIXED

Command	:TSTReam:TABLE:ITEM:CONTRol:GAP:IFG:VALue <NR1>
Query	:TSTReam:TABLE:ITEM:CONTRol:GAP:IFG:VALue?
Response	<NR1>
Description	Sets a value of IFG.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1>

The setting range, initial value, and unit vary according to the module as follows:

Module	Min	Max	Initial	Unit
MU120101A/11A	800	170 000 000 000	960	(*1)
MU120121A/22A (RJ-45)	800	1 200 000 000 000	960	(*1)
MU120102A/12A/22A (SFP)	640	1 200 000 000 000	960	0.1 ns
MU120118A/18B/18C/38A	72	1 200 000 000 000	96	0.1 ns
MU120119A (156M)/20A	534(*3)	1 200 000 000 000	8547	0.1 ns
MU120119A (622M)	134(*3)	1 200 000 000 000	2137	0.1 ns
MU120103A/04A/03B/04B (PPP,LEX,LAPS,MAPOS, Cisco HDLC)(*2)	33(*3)	1 200 000 000 000	534	0.1 ns
MU120103B/04B (GFP) (*2)	0(*3)	1 200 000 000 000	534	0.1 ns
MU120105A/06A	8(*3)	1 200 000 000 000	134	0.1 ns

*1:

The unit varies according to the link speed (10M/100M/1000M) as follows:

Link Speed	Unit
10 Mbps	10 ns
100 Mbps	1 ns
1000 Mbps	0.1 ns

For example, when "800" is set, 80 ns is set when the link speed is 1000 M, 800 ns for 100 M, and 8000 ns for 10 M.

*2:

This setting is when STM-16/OC-48 is specified. When Contiguous/Virtual Concatenation is specified, the value is in inverse proportion to the set bit rate.

*3:

The minimum value follows Minimum Frag Length on Port Setting screen.

Section 6 Details of Device Messagess

Command	:TSTReam:TABLE:ITEM:CONTrol:GAP:IFG:MINimum <NR1>
Query	:TSTReam:TABLE:ITEM:CONTrol:GAP:IFG:MINimum?
Response	<NR1>
Description	Sets a minimum value of IFG.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Refer to Parameter of the :TSTReam:TABLE:ITEM:CONTrol:GAP:IFG:VALue command for details of the setting range, initial value, and unit.

Command	:TSTReam:TABLE:ITEM:CONTrol:GAP:IFG:MAXimum <NR1>
Query	:TSTReam:TABLE:ITEM:CONTrol:GAP:IFG:MAXimum?
Response	<NR1>
Description	Sets a maximum value of IFG.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Refer to Parameter of the :TSTReam:TABLE:ITEM:CONTrol:GAP:IFG:VALue command for details of the setting range, initial value, and unit.

Command	:TSTReam:TABLE:ITEM:ERRor:GFP:TYPE {OFF | CHEC | CHEC_CORR | THEC | THEC_CORR | EHEC | EHEC_CORR | FCS}
Query	:TSTReam:TABLE:ITEM:ERRor:GFP:TYPE?
Response	{OFF | CHEC | CHEC_CORR | THEC | THEC_CORR | EHEC | EHEC_CORR | FCS}
Description	Inserts an error at the GFP level.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<p><errortype></p> <p>Select one of the following:</p> <p>OFF: Does not insert an error.</p> <p>CHEC: Insert more than one bit error to cHEC</p> <p>CHEC_CORR: Insert a 1-bit error to cHEC</p> <p>THEC: Insert more than one bit error to tHEC</p> <p>THEC_CORR: Insert a 1-bit error to tHEC</p> <p>EHEC: Insert a single-bit error to eHEC</p> <p>EHEC_CORR: Insert a single-bit error to eHEC</p> <p>FCS: Insert a GFP Payload Information FCS error</p> <p>PRBS_BIT PRBS bit error^(*1)</p> <p>*1:</p> <p>This is valid when the MD1230B-11 is installed and then the MD1230B Test Pattern is selected.</p>
Default	OFF

Section 6 Details of Device Messages

Command	:TSTReam:TABLE:ITEM:ERRor:LAPS:TYPE {OFF FCS ABORT}								
Query	:TSTReam:TABLE:ITEM:ERRor:LAPS:TYPE?								
Response	{OFF FCS ABORT}								
Description	Inserts an error at the LAPS level.								
Module	– MbE – GbE √ 2.5G/10G								
Parameter	<p><errortype></p> <p>Select one of the following:</p> <table><tr><td>OFF:</td><td>Does not insert an error.</td></tr><tr><td>FCS:</td><td>Inserts a LAPS FCS error</td></tr><tr><td>ABORT:</td><td>Inserts an Abort Frame</td></tr><tr><td>PRBS_BIT</td><td>PRBS bit error^(*1)</td></tr></table> <p>*1:This is valid when the MD1230B-11 is installed and then the MD1230B Test Pattern is selected.</p>	OFF:	Does not insert an error.	FCS:	Inserts a LAPS FCS error	ABORT:	Inserts an Abort Frame	PRBS_BIT	PRBS bit error ^(*1)
OFF:	Does not insert an error.								
FCS:	Inserts a LAPS FCS error								
ABORT:	Inserts an Abort Frame								
PRBS_BIT	PRBS bit error ^(*1)								
Default	OFF								

Command	:TSTReam:TABLE:ITEM:ERRor:LEX:TYPE {OFF | FCS | FRAGMENTS | UNDERSIZE | OVERSIZE | OVER_FCS | ABORT}
Query	:TSTReam:TABLE:ITEM:ERRor:LEX:TYPE?
Response	{OFF | FCS | FRAGMENTS | UNDERSIZE | OVERSIZE | OVER_FCS | ABORT}
Description	Inserts an error at the LEX level.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<p><errortype></p> <p>Select one of the following:</p> <p>OFF: Does not insert an error.</p> <p>FRAGMENTS: Inserts a Fragments error</p> <p>UNDERSIZE: Inserts an Undersize error</p> <p>OVERSIZE: Inserts an Oversize error</p> <p>OVER_FCS: Inserts an Oversize&FCS error</p> <p>FCS: Inserts a LEX FCS error</p> <p>ABORT: Inserts an Abort Frame</p> <p>PRBS_BIT PRBS bit error^(*1)</p> <p>*1:This is valid when the MD1230B-11 is installed and then the MD1230B Test Pattern is selected.</p>
Default	OFF

Section 6 Details of Device Messagess

Command	:TSTReam:TABLE:ITEM:ERRor:ETHernet:TYPE <errortype>
Query	:TSTReam:TABLE:ITEM:ERRor:ETHernet:TYPE?
Response	<errortype>
Description	Sets the type of error added to the Ethernet frame.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<errortype> Select one of the following: OFF No error is added. FCS FCS Error ALIGNMENT Alignment Error (*1) FRAGMENTS Fragments DRIBBLE Dribble Bit Error (*1) UNDERSIZE Undersize OVERSIZE Oversize OVER_FCS Oversize and FCS Error PRBS_BIT PRBS Bit Error (*2) *1:This is valid only for 10M/100M Ethernet. *2:This is valid when Test Frame is selected for Data Field 1 (except MU120101A/03B/04B).
Default	OFF

Command	:TSTReam:TABLE:ITEM:ERRor:IP:TYPE {OFF | CHECKSUM}
Query	:TSTReam:TABLE:ITEM:ERRor:IP:TYPE?
Response	{OFF | CHECKSUM}
Description	Sets the type of error to be added to IP packets.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	{OFF | CHECKSUM} Select either of the following: OFF No error is added. CHECKSUM IP checksum error
Default	OFF

Command	:TSTReam:TABLE:ITEM:ERRor:PPP:TYPE <errortype>
Query	:TSTReam:TABLE:ITEM:ERRor:PPP:TYPE?
Response	<errortype>
Description	Sets the type of error to be added to PPP/Cisco HDLC frame.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<errortype> Select one of the following: OFF No error is added. FCS FCS Error FRAGMENTS Fragments UNDERSIZE Undersize OVERSIZE Oversize OVER_FCS Oversize and FCS Error ABORT Abort Frame
Default	OFF

Command	:TSTReam:TABLE:ITEM:ERRor:TCP:TYPE {OFF | CHECKSUM}
Query	:TSTReam:TABLE:ITEM:ERRor:TCP:TYPE?
Response	{OFF | CHECKSUM}
Description	Sets the type of error to be added to TCP/UDP packets.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	{OFF | CHECKSUM} Select either of the following: OFF No error is added. CHECKSUM TCP/UDP checksum error
Default	OFF

Section 6 Details of Device Messagess

Command	:TSTReam:TABLE:ITEM:FRAME:BDATa {ALL0 | ALL1}
Query	:TSTReam:TABLE:ITEM:FRAME:BDATa?
Response	{ALL0 | ALL1}
Description	Sets a value for a section in the frame data, which has no particular specification.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	{ALL0 | ALL1} Select either of the following: ALL0 All0 ALL1 All1
Default	ALL0 (All0)

Command	:TSTReam:TABLE:ITEM:FSIZE:MAXimum <NR1>
Query	:TSTReam:TABLE:ITEM:FSIZE:MAXimum?
Response	<NR1>
Description	Sets the maximum frame size. * This is set when the frame size type (:TSTReam:TABLE:ITEM:FSIZE:TYPE) is set to Increment or Random.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> For the setting range, see the description of the :TSTReam:TABLE:ITEM:FSIZE:VALue command.
Default	1518

Command	:TSTReam:TABLE:ITEM:FSIZE:MINimum <NR1>
Query	:TSTReam:TABLE:ITEM:FSIZE:MINimum?
Response	<NR1>
Description	Sets the minimum value of the frame size. * This is set when the frame size type (:TSTReam:TABLE:ITEM:FSIZE:TYPE) is set to Increment or Random.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> For the setting range, see the description of the :TSTReam:TABLE:ITEM:FSIZE:VALue command.
Default	64

Command	:TSTReam:TABLE:ITEM:FSIZE:VALue <NR1>
Query	:TSTReam:TABLE:ITEM:FSIZE:VALue?
Response	<NR1>
Description	Sets and loads the frame size when the frame size type is set to Fixed.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> The setting range varies with modules as follows: MU120101A/11A : 18 to 10000 (bytes) MU120102A/12A : 48 to 65280 (bytes) MU120118A/18B/18C : 48 to 65280 (bytes) MU120121A/22A/31A/32A/38A : 48 to 10000 (byte) 2.5/10G Module : 8 to 65535 (bytes) * The maximum frame size in the WANPHY mode (10GBASE-LW) is 9,600.
Default	64

Section 6 Details of Device Messagess

Command	:TSTReam:TABLE:ITEM:FSIZE:TYPE {AUTO | FIXED | INCREMENT | RANDOM}
Query	:TSTReam:TABLE:ITEM:FSIZE:TYPE?
Response	{AUTO | FIXED | INCREMENT | RANDOM}
Description	Sets the setting type of frame size.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	{AUTO | FIXED | INCREMENT | RANDOM} Select one of the following: AUTO Auto setting FIXED Fixed value INCREMENT Increment RANDOM Random
Default	AUTO

Command	:TSTReam:TABLE:ITEM:FRAMe:PROGram:ENABle <BOOLEAN>
Query	:TSTReam:TABLE:ITEM:FRAMe:PROGram:ENABle?
Response	<BOOLEAN>
Description	Sets whether or not to insert programmable pattern between Ethernet Type field and Protocol header
Module	– MbE √ GbE – 2.5G/10G
Parameter	<BOOLEAN> When wanting to insert a Programmable Pattern, set {ON | 1}. To not insert a Programmable Pattern, set {OFF | 0}.

Command	:TSTReam:TABLE:ITEM:FRAMe:PROGram:PATtern <length of data>[,<HEX>]
Query	:TSTReam:TABLE:ITEM:FRAMe:PROGram:PATtern?
Response	<length of data>[,<HEX>]
Description	Sets whether or not to insert Programmable Pattern between Ethernet Type field and Protocol header * This setting is enabled when the :TSTReam:TABLE:ITEM:FRAMe:PROGram:ENABle command is ON.
Module	– MbE √ GbE – 2.5G/10G
Parameter	<length of data>[,<HEX>] Set the Programmable Pattern size (max. 32 bytes and data (<HEX> format)).

Command	:TSTReam:TABLE:ITEM:FRAMe:DFIeld:HEADer:DATA <length of data>[,<HEX>]
Query	:TSTReam:TABLE:ITEM:FRAMe:DFIeld:HEADer:DATA?
Response	<length of data>[,<HEX>]
Description	Sets Programmable Header Pattern, which is a user-defined pattern between the header pattern selected by Protocol and the data pattern set by Data Field.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<length of data> Set the length of Programmable Header Pattern from 0 to 1500 octets. <HEX> Set the value of Programmable Header Pattern from 0 to 1500 octets in the <HEX> format.

Section 6 Details of Device Messages

Command	:TSTReam:TABLE:ITEM:FRAME:DField:HEADer:SN:ENABLE <BOOLEAN>
Query	:TSTReam:TABLE:ITEM:FRAME:DField:HEADer:SN:ENABLE?
Response	<BOOLEAN>
Description	Sets whether to add a 16-bit length sequence number (SN) field to Programmable Header Pattern. * Pattern of Data Field 1 must be set to Test Frame when setting the sequence number. At this time, the TCP/UDP port-number increment function cannot be used simultaneously.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<BOOLEAN> To add an SN field, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	0 (disable)

Command	:TSTReam:TABLE:ITEM:FRAME:DField:HEADer:SN:Offset <NR1>
Query	:TSTReam:TABLE:ITEM:FRAME:DField:HEADer:SN:Offset?
Response	<NR1>
Description	Sets a position of the Sequence Number (SN) field. Specify the position by the offset from the beginning of Programmable Header Pattern.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<NR1> Values from 0 to "<Programmable Header Pattern length> – 2" (bytes) are available to set.
Default	0

Command	:TSTReam:TABLE:ITEM:FRAME:DFIeld:HEADer:SN:INITial <NR1>
Query	:TSTReam:TABLE:ITEM:FRAME:DFIeld:HEADer:SN:INITial?
Response	<NR1>
Description	Sets the initial value of the Sequence Number field.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<NR1> Values from 0 to 65535 are available to set.
Default	0

Command	:TSTReam:TABLE:ITEM:FRAME:DFIeld1:OFFSet <NR1>
Query	:TSTReam:TABLE:ITEM:FRAME:DFIeld1:OFFSet?
Response	<NR1>
Description	Sets a position of Datafield 1. Specify the position by the offset from the beginning in the setting range.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Values from 0 to 65535 (byte) are available to set.
Default	0

Command	:TSTReam:TABLE:ITEM:FRAME:DFIeld1:LENGth <NR1>
Query	:TSTReam:TABLE:ITEM:FRAME:DFIeld1:LENGth?
Response	<NR1>
Description	Sets the pattern length of Datafield 1. * The value set by the :TSTReam:TABLE:ITEM:FRAME:DFIeld1:LENGth command remains unchanged until the :TSTReam:TABLE:WRITe command is executed.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Values from 1 to 65535 (byte) are available to set.
Default	1

Section 6 Details of Device Messagess

Command	:TSTReam:TABLE:ITEM:FRAME:DField1:TYPE <datafield>																																		
Query	:TSTReam:TABLE:ITEM:FRAME:DField1:TYPE?																																		
Response	<datafield>																																		
Description	Sets the pattern type of Datafield 1.																																		
Module	√ MbE √ GbE √ 2.5G/10G																																		
Parameter	<p><datafield></p> <p>Select the pattern type of data field in a transmission stream from the followings:</p> <table><tr><td>ALL0</td><td>All0</td></tr><tr><td>ALL1</td><td>All1</td></tr><tr><td>ALT_1BIT</td><td>Alternate1/0 by bit</td></tr><tr><td>ALT_2BIT</td><td>Alternate1/0 by 2 bits</td></tr><tr><td>ALT_NIBBLE</td><td>Alternate1/0 by nibble</td></tr><tr><td>ALT_1BYTE</td><td>Alternate1/0 by byte</td></tr><tr><td>ALT_2BYTE</td><td>Alternate1/0 by 2 bytes</td></tr><tr><td>INCREMENT</td><td>Increment</td></tr><tr><td>DECREMENT</td><td>Decrement</td></tr><tr><td>RANDOM</td><td>Random</td></tr><tr><td>PRBS9</td><td>Single PN9</td></tr><tr><td>PRBS31</td><td>Hardware Random Pattern (*2)</td></tr><tr><td>PROGRAM</td><td>Programmable Pattern (*1)</td></tr><tr><td>SEQUENCE</td><td>Sequence number (*1)</td></tr><tr><td>TIMESTAMP</td><td>Timestamp (*1)</td></tr><tr><td>TEST_FRAME</td><td>Test frame (*1)</td></tr><tr><td>TEST_FRAME2</td><td>Test frame for MU120101A (*1)</td></tr></table> <p>*1: Not selectable for MU120101A</p> <p>*2: Selectable for MU120118A/18B/18C/21A/22A/31A/32A/38</p>	ALL0	All0	ALL1	All1	ALT_1BIT	Alternate1/0 by bit	ALT_2BIT	Alternate1/0 by 2 bits	ALT_NIBBLE	Alternate1/0 by nibble	ALT_1BYTE	Alternate1/0 by byte	ALT_2BYTE	Alternate1/0 by 2 bytes	INCREMENT	Increment	DECREMENT	Decrement	RANDOM	Random	PRBS9	Single PN9	PRBS31	Hardware Random Pattern (*2)	PROGRAM	Programmable Pattern (*1)	SEQUENCE	Sequence number (*1)	TIMESTAMP	Timestamp (*1)	TEST_FRAME	Test frame (*1)	TEST_FRAME2	Test frame for MU120101A (*1)
ALL0	All0																																		
ALL1	All1																																		
ALT_1BIT	Alternate1/0 by bit																																		
ALT_2BIT	Alternate1/0 by 2 bits																																		
ALT_NIBBLE	Alternate1/0 by nibble																																		
ALT_1BYTE	Alternate1/0 by byte																																		
ALT_2BYTE	Alternate1/0 by 2 bytes																																		
INCREMENT	Increment																																		
DECREMENT	Decrement																																		
RANDOM	Random																																		
PRBS9	Single PN9																																		
PRBS31	Hardware Random Pattern (*2)																																		
PROGRAM	Programmable Pattern (*1)																																		
SEQUENCE	Sequence number (*1)																																		
TIMESTAMP	Timestamp (*1)																																		
TEST_FRAME	Test frame (*1)																																		
TEST_FRAME2	Test frame for MU120101A (*1)																																		
Default	ALL0																																		

Command	:TSTReam:TABLE:ITEM:FRAME:DField1:ENABLE <BOOLEAN>
Query	:TSTReam:TABLE:ITEM:FRAME:DField1:ENABLE?
Response	<BOOLEAN>
Description	Sets whether to add Datafield 1.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<BOOLEAN> To add Datafield 1, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	0 (disable)

Command	:TSTReam:TABLE:ITEM:FRAME:DField1:PROGram:PATtern <length of data>[,<HEX>]
Query	:TSTReam:TABLE:ITEM:FRAME:DField1:PROGram:PATtern?
Response	<length of data>[,<HEX>]
Description	Sets a pattern when the pattern type of Datafield 1 is Programmable. * This is valid only when the pattern type is set to Programmable.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<length of data> The length of the pattern data that is preset or to be set (0 to 65535, unit: octet). <HEX> Set a value of the data field pattern in the 0- to 65535-octet <HEX> format.
Default	2,#H00FF (00 FF)

Section 6 Details of Device Messagess

Command	:TSTReam:TABLE:ITEM:FRAME:DField1:SN:VALue <HEX>
Query	:TSTReam:TABLE:ITEM:FRAME:DField1:SN:VALue?
Response	<HEX>
Description	Sets the initial value at the start of transmission when the pattern type of Datafiled1 is set to Sequence number.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<HEX> Set a 16-bit value in the<HEX> format.
Default	#H0000 (00 00)

Query	:TSTReam:TABLE:ITEM:FRAME:DField1:ITFRame?
Response	<BOOLEAN>
Description	Queries whether Datafield1 is a test frame.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<BOOLEAN> When Datafield1 is a test frame, 1 is returned. Otherwise, 0 is returned.

Command	:TSTReam:TABLE:ITEM:FRAME:DField1:TFRame:TYPE {PRBS | FLOW_ID}
Query	:TSTReam:TABLE:ITEM:FRAME:DField1:TFRame:TYPE?
Response	{PRBS | FLOW_ID}
Description	Specifies the type of the contents (PRBS9 or Flow ID) to be set to the test frame. * This command is available for the MU120121A/22A/31A/32A/38A.
Module	– MbE √ GbE – 2.5G/10G
Parameter	Select either of the following: PRBS PRBS9 (Single) pattern (*1) FLOW_ID Flow ID (*2) *1: PRBS9 (Single) is set for the MU120121A/22A, and a PRBS pattern of the type set by the :PORT:TEST:PATtern:TYPE command is set for the MU120131A/32A/38A. *2: Flow IDs can be set by executing the :TSTReam:TABLE:ITEM:FRAME:DField1:TFRame:FID command.
Default	PRBS

Command	:TSTReam:TABLE:ITEM:FRAME:DFIeld1:TFRame:FID <flow id>
Query	:TSTReam:TABLE:ITEM:FRAME:DFIeld1:TFRame:FID?
Response	<flow id>
Description	Sets the Flow ID of the test frame. <ul style="list-style-type: none"> * This command is available only for the MU120121A/22A/31A/32A/38A modules. * This command is valid when FLOW_ID is specified by using the :TSTReam:TABLE:ITEM:FRAME:DFIeld1:TFRame:TYPE command.
Module	– MbE √ GbE – 2.5G/10G
Parameter	<flow id> The settable range is as follows: MU120121A/MU120122A: 0 to 65535 MU120131A/MU120132A: 0 to 255

Command	:TSTReam:TABLE:ITEM:FRAME:DFIeld2:LENGth <NR1>
Query	:TSTReam:TABLE:ITEM:FRAME:DFIeld2:LENGth?
Response	<NR1>
Description	Sets the pattern length of Datafield 2.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Values from 1 to 65535 (byte) are available to set.
Default	1

Section 6 Details of Device Messages

Command	:TSTReam:TABLE:ITEM:FRAME:DFIeld2:TYPE <datafield>
Query	:TSTReam:TABLE:ITEM:FRAME:DFIeld2:TYPE?
Response	<datafield>
Description	Sets the pattern type of Datafield 2.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<datafield> See the description of the Datafield 1 pattern type setting command :TSTReam:TABLE:ITEM:FRAME:DFIeld1:TYPE.
Default	ALL0

Command	:TSTReam:TABLE:ITEM:FRAME:DFIeld2:OFFSet <NR1>
Query	:TSTReam:TABLE:ITEM:FRAME:DFIeld2:OFFSet?
Response	<NR1>
Description	Sets a position of Datafield 2. Specify the position by the offset from the beginning in the setting range.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Values from 0 to 65535 (byte) are available to set.
Default	0

Command	:TSTReam:TABLE:ITEM:FRAME:DField2:ENABLE <BOOLEAN>
Query	:TSTReam:TABLE:ITEM:FRAME:DField2:ENABLE?
Response	<BOOLEAN>
Description	Sets whether to add Datafield 2.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<BOOLEAN> To add Datafield 2, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	0 (disable)

Command	:TSTReam:TABLE:ITEM:FRAME:DField3:OFFSet <NR1>
Query	:TSTReam:TABLE:ITEM:FRAME:DField3:OFFSet?
Response	<NR1>
Description	Sets a position of Datafield 3. Specify the position by the offset from the beginning in the setting range.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> It is allowed to set a value from 0 to 65535 (byte).
Default	0

Command	:TSTReam:TABLE:ITEM:FRAME:DField3:LENGth <NR1>
Query	:TSTReam:TABLE:ITEM:FRAME:DField3:LENGth?
Response	<NR1>
Description	Sets the pattern length of Datafield 3.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Values from 1 to 65535 (byte) are available to set.
Default	1

Section 6 Details of Device Messages

Command	:TSTReam:TABLE:ITEM:FRAME:DFIeld3:TYPE <datafield>
Query	:TSTReam:TABLE:ITEM:FRAME:DFIeld3:TYPE?
Response	<datafield>
Description	Sets the pattern type of Datafield 3.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<datafield> See the description of the Datafield 1 pattern type setting command :TSTReam:TABLE:ITEM:FRAME:DFIeld1:TYPE.
Default	ALL0

Command	:TSTReam:TABLE:ITEM:FRAME:DFIeld3:ENABLE <BOOLEAN>
Query	:TSTReam:TABLE:ITEM:FRAME:DFIeld3:ENABLE?
Response	<BOOLEAN>
Description	Sets whether to add Datafield 3.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<BOOLEAN> To add Datafield 3, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	0 (disable)

Command	:TSTReam:TABLE:ITEM:FRAME:DField4:LENGTH <NR1>
Query	:TSTReam:TABLE:ITEM:FRAME:DField4:LENGTH?
Response	<NR1>
Description	Sets the pattern length of Datafield 4.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Values from 0 to 65535 (byte) are available to set.
Default	1

Command	:TSTReam:TABLE:ITEM:FRAME:DField4:TYPE <datafield>
Query	:TSTReam:TABLE:ITEM:FRAME:DField4:TYPE?
Response	<datafield>
Description	Sets the pattern type of Datafield 4.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<datafield> See the description of the Datafield 1 pattern type setting command :TSTReam:TABLE:ITEM:FRAME:DField1:TYPE.
Default	ALL0

Section 6 Details of Device Messagess

Command	:TSTReam:TABLE:ITEM:FRAME:DField4:ENABLE <BOOLEAN>
Query	:TSTReam:TABLE:ITEM:FRAME:DField4:ENABLE?
Response	<BOOLEAN>
Description	Sets whether to add Datafield 4 or not.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<BOOLEAN> To add Datafield4, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	0 (disable)

Command	:TSTReam:TABLE:ITEM:FRAME:DField4:OFFSet <NR1>
Query	:TSTReam:TABLE:ITEM:FRAME:DField4:OFFSet?
Response	<NR1>
Description	Sets a position of Datafield 4. Specify the position by the offset from the beginning in the setting range.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Values from 0 to 65535 (byte) are available to set.
Default	0

Command	:TSTReam:TABLE:ITEM:FRAME:ETHernet:SFD <BINARY>
Query	:TSTReam:TABLE:ITEM:FRAME:ETHernet:SFD?
Response	<BINARY>
Description	Sets a value of the SFD field (8 bits).
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<BINARY> Set a value of the SFD field in the 8-bit <BINARY> format. *: Starting in Ver. 7.0, the expression method for Preamble and SFD of the Tx Stream function is MSB first, not LSB first. Due to this change, the default value was changed from #B10101011 (AB) to #B11010101 (D5).
Default	#B11010101 (D5)

Command	:TSTReam:TABLE:ITEM:FRAME:ETHernet:DA:MASK <MAC_ADDRESS>
Query	:TSTReam:TABLE:ITEM:FRAME:ETHernet:DA:MASK?
Response	<MAC_ADDRESS>
Description	<p>Sets a mask pattern of the DA field (destination MAC address, 48 bits).</p> <p>* This is valid when Increment, Decrement or Random is selected for: TSTReam:TABLE:ITEM:FRAME:ETHernet:DA:TYPE</p>
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p><MAC_ADDRESS></p> <p>Set a mask pattern of the DA field in the following 6-octet <HEX> format:</p> <p>Example: 00-00-00-00-FF-00 is expressed as #H00000000FF00.</p>
Default	#HFFFFFFFFFFFF (FF-FF-FF-FF-FF-FF)

Command	:TSTReam:TABLE:ITEM:FRAME:ETHernet:DA:VALue <MAC_ADDRESS>
Query	:TSTReam:TABLE:ITEM:FRAME:ETHernet:DA:VALue?
Response	<MAC_ADDRESS>
Description	<p>Sets a value of the DA field (destination MAC address, 48 bits).</p> <p>* If Increment, Decrement or Random is selected for: TSTReam:TABLE:ITEM:FRAME:ETHernet:DA:TYPE, this is masked with the value set for :TSTReam:TABLE:ITEM:FRAME:ETHernet:DA:MASK.</p>
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p><MAC_ADDRESS></p> <p>Set a value of the DA field in the following 6-octet <HEX> format.</p> <p>Example: 01-02-03-04-05-06 is expressed as #H010203040506.</p>
Default	#H000000000000 (00-00-00-00-00-00)

Section 6 Details of Device Messagess

Command	:TSTReam:TABLE:ITEM:FRAME:ETHernet:DA:TYPE {GATEWAY STATIC INCREMENT DECREMENT RANDOM PAUSE}												
Query	:TSTReam:TABLE:ITEM:FRAME:ETHernet:DA:TYPE?												
Response	{GATEWAY STATIC INCREMENT DECREMENT RANDOM PAUSE}												
Description	Sets the type to generate DA (destination MAC address, 48 bits)												
Module	√ MbE √ GbE √ 2.5G/10G												
Parameter	<div>{GATEWAY STATIC INCREMENT DECREMENT RANDOM PAUSE}</div> <div>Select one of the following:</div> <table><tr><td>GATEWAY</td><td>The value set for Gateway of this port is used. (*1)</td></tr><tr><td>STATIC</td><td>The fixed value is used.</td></tr><tr><td>INCREMENT</td><td>Increment</td></tr><tr><td>DECREMENT</td><td>Decrement</td></tr><tr><td>RANDOM</td><td>Random</td></tr><tr><td>PAUSE</td><td>Multicast Control Frame (01 80 C2 00 00 01) is used. (*2)</td></tr></table> <div>*1: This cannot be selected when Mac Control Frame (Pause Function) is selected in the upper protocol setting. The IPv6 option is required for IPv6 packets.</div> <div>*2: This can be used only when Mac Control Frame (Pause Function) is selected in the upper protocol setting.</div>	GATEWAY	The value set for Gateway of this port is used. (*1)	STATIC	The fixed value is used.	INCREMENT	Increment	DECREMENT	Decrement	RANDOM	Random	PAUSE	Multicast Control Frame (01 80 C2 00 00 01) is used. (*2)
GATEWAY	The value set for Gateway of this port is used. (*1)												
STATIC	The fixed value is used.												
INCREMENT	Increment												
DECREMENT	Decrement												
RANDOM	Random												
PAUSE	Multicast Control Frame (01 80 C2 00 00 01) is used. (*2)												
Default	STATIC												

Command	:TSTReam:TABLE:ITEM:FRAME:ETHernet:PREamble:PATtern <BINARY>
Query	:TSTReam:TABLE:ITEM:FRAME:ETHernet:PREamble:PATtern?
Response	<BINARY>
Description	<p>Sets a value of the preamble field pattern (8 bits).</p> <ul style="list-style-type: none"> * The pattern set here is repeated the number of times corresponding to the size specified for: TSTReam:TABLE:ITEM:FRAME:ETHernet:PREamble:SIZE. * With the MU120121A/22A/31A/32A/38A module, use the:TSTReam:TABLE:ITEM: FRAME:ETHernet:PREamble:PROGram command instead of this command.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<p><BINARY></p> <p>Set a value of the preamble field pattern in the 8-bit <BINARY> format.</p> <p>*: Starting in Ver. 7.0, the expression method for Preamble and SFD of the Tx Stream function is MSB first, not LSB first. Due to this change, the default value was changed from #B10101010 (AA) to #B01010101 (55).</p>
Default	#B01010101 (55)

Command	:TSTReam:TABLE:ITEM:FRAME:ETHernet:PREamble:SIZE <NR1>
Query	:TSTReam:TABLE:ITEM:FRAME:ETHernet:PREamble:SIZE?
Response	<NR1>
Description	<p>Sets a size of the preamble field.</p> <ul style="list-style-type: none"> * The pattern of the preamble field is set for: TSTReam:TABLE:ITEM:FRAME:ETHernet:PREamble:PATtern. * With the MU120121A/22A/31A/32A/38A module, use the:TSTReam:TABLE:ITEM: FRAME:ETHernet:PREamble:PROGram command instead of this command.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<p><NR1></p> <p>For 10M/100M Ethernet module (MU120101A/11A), set a value from 4 to 255 (bytes). For other modules, set a value from 2 to 255 (bytes).</p>
Default	8

Section 6 Details of Device Messagess

Command	:TSTReam:TABLE:ITEM:FRAME:ETHernet:PREamble:PROGram <size>,<pattern>
Query	:TSTReam:TABLE:ITEM:FRAME:ETHernet:PREamble:PROGram?
Response	<size>,<pattern>
Description	Sets the size and pattern of the preamble. * This command is available only for the MU120121A/22A/31A/32A/38A modules.
Module	– MbE √ GbE – 2.5G/10G
Parameter	<size> Specify the size of the preamble pattern to be set from 0 to 253 bytes (<NR1>). <pattern> Set the pattern of the preamble of 0 to 253 bytes, excluding the first byte (fixed to 10101010) and SFD (*1), in the <HEX> format(*2). *1: The pattern of SFD is set by using the :TSTReam:TABLE:ITEM:FRAME:ETHernet:SFD command. *2: Starting in Ver. 7.0, the expression method for Preamble and SFD of the Tx Stream function is MSB first, not LSB first. Due to this change, the default value was changed from #HAAAAAAAAAAAAA to #H555555555555. Default 6,#H555555555555

Command	:TSTReam:TABLE:ITEM:FRAME:ETHernet:PROTocol:AUTO <BOOLEAN>
Query	:TSTReam:TABLE:ITEM:FRAME:ETHernet:PROTocol:AUTO?
Response	<BOOLEAN>
Description	Sets the auto setting of a type field value to enable or disable.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<BOOLEAN> To automatically set a value of the type field, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	1 (enable)

Command	:TSTReam:TABLE:ITEM:FRAME:ETHernet:SA:MASK <MAC_ADDRESS>
Query	:TSTReam:TABLE:ITEM:FRAME:ETHernet:SA:MASK?
Response	<MAC_ADDRESS>
Description	<p>Sets a mask value of the SA field (source MAC address, 48 bits)</p> <p>* This is valid when Increment, Decrement or Random is selected for: TSTReam:TABLE:ITEM:FRAME:ETHernet:SA:TYPE.</p>
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p><MAC_ADDRESS></p> <p>Set a mask value of the SA field in the following 6-octet <HEX> format.</p> <p>Example: 00-00-00-00-FF-00 is expressed as #H00000000FF00.</p>
Default	#HFFFFFFFFFFFF (FF-FF-FF-FF-FF-FF)

Command	:TSTReam:TABLE:ITEM:FRAME:ETHernet:SA:VALue <MAC_ADDRESS>
Query	:TSTReam:TABLE:ITEM:FRAME:ETHernet:SA:VALue?
Response	<MAC_ADDRESS>
Description	<p>Sets a value of the SA field (source MAC address, 48 bits).</p> <p>* If Increment, Decrement or Random is selected for: TSTReam:TABLE:ITEM:FRAME:ETHernet:SA:TYPE, this is masked with the value set for: TSTReam:TABLE:ITEM:FRAME:ETHernet:SA:MASK.</p>
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p><MAC_ADDRESS></p> <p>Set a value of the SA field in the following 6-octet <HEX> format:</p> <p>Example: 01-02-03-04-05-06 is expressed as #H010203040506.</p>
Default	#H000000000000 (00-00-00-00-00-00)

Section 6 Details of Device Messagess

Command	:TSTReam:TABLE:ITEM:FRAME:ETHernet:SA:TYPE {THIS_PORT | STATIC | INCREMENT | DECREMENT | RANDOM}
Query	:TSTReam:TABLE:ITEM:FRAME:ETHernet:SA:TYPE?
Response	{THIS_PORT | STATIC | INCREMENT | DECREMENT | RANDOM}
Description	Sets the type to generate SA (source MAC address, 48 bits).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	{THIS_PORT | STATIC | INCREMENT | DECREMENT | RANDOM} Select one of the following: THIS_POR MAC address set for this port is used. STATIC The fixed value is used. INCREMENT Increment DECREMENT Decrement RANDOM Random
Default	STATIC

Command	:TSTReam:TABLE:ITEM:FRAME:ETHernet:TYPE <HEX>
Query	:TSTReam:TABLE:ITEM:FRAME:ETHernet:TYPE?
Response	<HEX>
Description	Sets a value of the type field (16 bits).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<HEX> Set a value of the type field in the 2-octet <HEX> format. See http://www.iana.org .
Default	#H0800 (IP)

Command	:TSTReam:TABLE:ITEM:FRAME:LLC:DATA <HEX>
Query	:TSTReam:TABLE:ITEM:FRAME:LLC:DATA?
Response	<HEX>
Description	Sets/queries the value of the LLC field.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<HEX> Set a value of the LLC field in the 3-octet <HEX> format.
Default	#HFEFE03

Command	:TSTReam:TABLE:ITEM:FRAME:MAPos:ADDReSS <HEX>
Query	:TSTReam:TABLE:ITEM:FRAME:MAPos:ADDReSS?
Response	<HEX>
Description	<p>Sets the value for Address field (8 or 16 bits) in a MAPOS frame.</p> <p>* The setting field size differs depending on the MAPOS type set during mapping setting. 8 bits when MAPOS Version 1 is selected, or 16 bits when MAPOS 16 is selected. This value is automatically returned to default when the MAPOS type is changed.</p>
Module	– MbE – GbE √ 2.5G/10G
Parameter	<p><HEX></p> <p>Sets the value for Address field in the 1-octet (Version 1) or 2-octet (MAPOS 16) <HEX> format.</p>
Default	#H03 (Type: Version1)
Command	:TSTReam:TABLE:ITEM:FRAME:MAPos:CONTRol <HEX>
Query	:TSTReam:TABLE:ITEM:FRAME:MAPos:CONTRol?
Response	<HEX>
Description	<p>Sets the value for Control field (8 bits) in a MAPOS frame.</p> <p>* This setting is not used when MAPOS 16 is selected for MAPOS type during mapping setting.</p>
Module	– MbE – GbE √ 2.5G/10G
Parameter	<p><HEX></p> <p>Sets the value for Control field in the 1-octet <HEX> format.</p>
Default	#H03

Section 6 Details of Device Messagess

Command	:TSTReam:TABLE:ITEM:FRAME:MAPos:PROTocol <HEX>
Query	:TSTReam:TABLE:ITEM:FRAME:MAPos:PROTocol?
Response	<HEX>
Description	Sets the value for Protocol field (16 bits) in a MAPOS frame. * This item can be set when the automatic setting function is Off. Read Only, when it is On.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<HEX> Sets the value for Protocol field in the 2-octet <HEX> format.
Default	#H0021 (IPv4)

Command	:TSTReam:TABLE:ITEM:FRAME:MAPos:PROTocol:AUTO <BOOLEAN>
Query	:TSTReam:TABLE:ITEM:FRAME:MAPos:PROTocol:AUTO?
Response	<BOOLEAN>
Description	Selects whether to automatically set the Protocol field value in a MAPOS frame. * When the upper layer protocol is set, this item is set to On and a value according to the upper protocol is set. Set to Off when no upper layer protocol is set.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<BOOLEAN> Set {ON | 1} (ON or 1) to automatically set the Protocol field value. Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data to the query.

Command	:TSTReam:TABLE:ITEM:FRAME:MPLS:TABLE:DELeTe <mpls_label_number>
Description	Deletes the MPLS label data.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<mpls_label_number> Specify the MPS label number (1 to 10).

Command	:TSTReam:TABLE:ITEM:FRAME:MPLS:TABLE:ADD
Description	Adds a new MPLS label.
Module	√ MbE √ GbE √ 2.5G/10G

Command	:TSTReam:TABLE:ITEM:FRAME:MPLS:ENABLE <BOOLEAN>
Query	:TSTReam:TABLE:ITEM:FRAME:MPLS:ENABLE?
Response	<BOOLEAN>
Description	Sets the MPLS label to enable or disable. * This cannot be set when the :TSTReam:TABLE:ITEM:FRAME:VLAN:ENABLE (setting of 802.1q Vlan tag) is set to enable.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<BOOLEAN> To enable the MPLS label, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	0 (disable)

Command	:TSTReam:TABLE:ITEM:FRAME:MPLS:TYPE {UNICAST | MULTICAST}
Query	:TSTReam:TABLE:ITEM:FRAME:MPLS:TYPE?
Response	{UNICAST | MULTICAST}
Description	Sets the type of MPLS label.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	{UNICAST | MULTICAST} Select one of the following: UNICAST MPLS unicast MULTICAST MPLS multicast [RFC 3032] PPP Protocol field indicates either type hex 0281 (MPLS Unicast) or type hex 0283 (MPLS Multicast) The ethertype value 8847 hex is used to indicate that a frame is carrying an MPLS unicast packet. The ethertype value 8848 hex is used to indicate that a frame is carrying an MPLS multicast packet.
Default	UNICAST (MPLS unicast)

Section 6 Details of Device Messagess

Command	:TSTReam:TABLE:ITEM:FRAME:MPLS:TABLE:ID <mpls_label_number>
Query	:TSTReam:TABLE:ITEM:FRAME:MPLS:TABLE:ID?
Response	<mpls_label_number>
Description	Specifies the MPLS label number to be edited.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<mpls_label_number> The MPLS label number defined in the setting of a transmission stream. It is an integer value from 1 to 10.

Command	:TSTReam:TABLE:ITEM:FRAME:MPLS:TABLE:ITEM:LABel <NR1>
Query	:TSTReam:TABLE:ITEM:FRAME:MPLS:TABLE:ITEM:LABel?
Response	<NR1>
Description	Sets a value of the label field (20 bits).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 1048575. [RFC 3032] This 20-bit field carries the actual value of the Label. 0 IPv4 Explicit NULL Label 1 Router Alert Label 2 IPv6 Explicit NULL Label 3 Implicit NULL Label 4-15 reserved
Default	0 (IPv4 Explicit NULL Label)

Command	:TSTReam:TABLE:ITEM:FRAME:MPLS:TABLE:ITEM:TTL <NR1>
Query	:TSTReam:TABLE:ITEM:FRAME:MPLS:TABLE:ITEM:TTL?
Response	<NR1>
Description	Sets a value of the Time to Live (TTL) field (8 bits).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1>
	Set a value from 0 to 255.
	[RFC 3032]
	This 8-bit field is used to encode a time-to-live value

Command	:TSTReam:TABLE:ITEM:FRAME:MPLS:TABLE:ITEM:EXP <NR1>
Query	:TSTReam:TABLE:ITEM:FRAME:MPLS:TABLE:ITEM:EXP?
Response	<NR1>
Description	Sets a value of the Experimental Use field (3 bits).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1>
	Set a value from 0 to 7.
	[RFC 3032]
	This 3-bit field is reserved for experimental use.

Command	:TSTReam:TABLE:ITEM:FRAME:MPLS:TABLE:ITEM:BOSTack <NR1>
Query	:TSTReam:TABLE:ITEM:FRAME:MPLS:TABLE:ITEM:BOSTack?
Response	<NR1>
Description	Sets a value of the Bottom of Stack (S) field (1 bit).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1>
	Set a value of 0 or 1.
	[RFC 3032]
	This bit is set to one for the last entry in the label stack (i.e., for the bottom of the stack), and zero for all other label stack entries.
Default	1 (the last entry in the label stack)

Section 6 Details of Device Messagess

Query	:TSTReam:TABLE:ITEM:FRAME:MPLS:TABLE:NITems?
Response	<NR1>
Description	Queries the numbers of preset MPLS labels.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> A value from 0 to 10 is returned.

Command	:TSTReam:TABLE:ITEM:FRAME:PPP:PROTOcol <HEX>
Query	:TSTReam:TABLE:ITEM:FRAME:PPP:PROTOcol?
Response	<HEX>
Description	Sets a value of the protocol field (16 bits). * This field can be set when :TSTReam:TABLE:ITEM:FRAME:PPP:PROTOcol:AUTO (protocol field auto-setting) is set to Off. When it is On, this field is read only.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<HEX> Set a value of the protocol field in the 2-octet <HEX> format. For PPP: see http://www.iana.org/ For Cisco HDLC: The following values may be used as well as Ethernet Type field (http://www.iana.org/). 0x0808 Frame Relay ARP. 0x4242 IEEE bridge spanning protocol. 0x6558 Bridged Ethernet/802.3 packet. 0xFEFE ISO CLNP/ISO ES-IS DSAP/SSAP.
Default	PPP: #H0021 (IPv4), Cisco HDLC: #H0800 (IPv4)

Command	:TSTReam:TABLE:ITEM:FRAMe:PPP:CONTRol <HEX>
Query	:TSTReam:TABLE:ITEM:FRAMe:PPP:CONTRol?
Response	<HEX>
Description	Sets a value of the control field (8 bits).
Module	– MbE – GbE √ 2.5G/10G
Parameter	<p><HEX></p> <p>Set a value of the control field in the 1-octet <HEX> format.</p> <p>For PPP [RFC 1662]:</p> <p>Control Field</p> <p>The Control field is a single octet, which contains the binary sequence 00000011 (hexadecimal 0x03), the Unnumbered Information (UI) command with the Poll/Final (P/F) bit set to zero.</p> <p>The use of other Control field values may be defined at a later time, or by prior agreement. Frames with unrecognized Control field values SHOULD be silently discarded.</p> <p>For Cisco HDLC:</p> <p>The value is always set to 0.</p>
Default	PPP: #H03, Cisco HDLC: #H00

Section 6 Details of Device Messages

Command	:TSTReam:TABLE:ITEM:FRAME:PPP:ADDReSS <HEX>
Query	:TSTReam:TABLE:ITEM:FRAME:PPP:ADDReSS?
Response	<HEX>
Description	Sets a value of the address field (8 bits).
Module	– MbE – GbE √ 2.5G/10G
Parameter	<HEX> Set a value of the Address field in the 1-octet <HEX> format. For PPP [RFC 1662]: Address Field The Address field is a single octet, which contains the binary sequence 11111111 (hexadecimal 0xff), the All-Stations address. Individual station addresses are not assigned. The All-Stations address MUST always be recognized and received. The use of other address lengths and values may be defined at a later time, or by prior agreement. Frames with unrecognized Addresses SHOULD be silently discarded. For Cisco HDLC: 0x0F Unicast packets. 0x8F Broadcast packets.
Default	PPP: #HFF, Cisco HDLC: #H0F

Command	:TSTReam:TABLE:ITEM:FRAME:PPP:PROTOcol:AUTO <BOOLEAN>
Query	:TSTReam:TABLE:ITEM:FRAME:PPP:PROTOcol:AUTO?
Response	<BOOLEAN>
Description	Sets the auto setting of a protocol field value to enable or disable. * If the upper layer protocol is set, the auto setting becomes On and a value corresponding to the protocol is set. If the upper layer protocol is not set, the function becomes Off.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<BOOLEAN> To automatically set a value of the protocol field, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.

Command	:TSTReam:TABLE:ITEM:FRAME:VLAN:ENABLE <BOOLEAN>
Query	:TSTReam:TABLE:ITEM:FRAME:VLAN:ENABLE?
Response	<BOOLEAN>
Description	<p>Sets the 802. 1q Vlan tag to enable or disable.</p> <p>* This cannot be set when :TSTReam:TABLE:ITEM:FRAME:MPLS:ENABLE (setting of MPLS label) is set to enable.</p>
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p><BOOLEAN></p> <p>To enable the 802. 1q Vlan tag, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.</p>
Default	0 (disable)

Command	:TSTReam:TABLE:ITEM:FRAME:VLAN:TPID <HEX>
Query	:TSTReam:TABLE:ITEM:FRAME:VLAN:TPID?
Response	<HEX>
Description	<p>Sets a value of the TPID field (2 bytes).</p> <p>* This command cannot be used for the MU120121A/22A/31A/32A/38A. Please use :TSTReam:TABLE:ITEM:FRAME:VLAN:PATtern.</p>
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p><HEX></p> <p>Set a value of the TPID field (2 bytes) in the <HEX> format.</p>
Default	#H8100 (802.1QTagType)

Section 6 Details of Device Messages

Command	:TSTReam:TABLE:ITEM:FRAME:VLAN:CFI <NR1>
Query	:TSTReam:TABLE:ITEM:FRAME:VLAN:CFI?
Response	<NR1>
Description	Sets a value of the CFI field (1 bit). * This command cannot be used for the MU120121A/22A/31A/32A/38A. Please use :TSTReam:TABLE:ITEM:FRAME:VLAN:PATtern.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value of 0 or 1. 0 reset 1 set
Default	0 (reset)

Command	:TSTReam:TABLE:ITEM:FRAME:VLAN:UPRiority <NR1>
Query	:TSTReam:TABLE:ITEM:FRAME:VLAN:UPRiority?
Response	<NR1>
Description	Sets a value of the user priority field (3 bits). * This command cannot be used for the MU120121A/22A/31A/32A/38A. Please use :TSTReam:TABLE:ITEM:FRAME:VLAN:PATtern.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 7.
Default	1

Command	:TSTReam:TABLE:ITEM:FRAME:VLAN:ID:VALue <NR1>
Query	:TSTReam:TABLE:ITEM:FRAME:VLAN:ID:VALue?
Response	<NR1>
Description	Sets a value of the ID field (12 bits). * This command cannot be used for the MU120121A/22A/31A/32A/38A. Please use :TSTReam:TABLE:ITEM:FRAME:VLAN:PATtern.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 4095.
Default	1

Command	:TSTReam:TABLE:ITEM:FRAME:VLAN:ID:MODE {STATIC INCREMENT DECREMENT RANDOM}								
Query	:TSTReam:TABLE:ITEM:FRAME:VLAN:ID:MODE?								
Response	{STATIC INCREMENT DECREMENT RANDOM}								
Description	Sets the mode to generate VLAN ID.								
Module	√ MbE √ GbE √ 2.5G/10G								
Parameter	{STATIC INCREMENT DECREMENT RANDOM} Select one of the following. <table> <tr> <td>STATIC</td><td>Static</td></tr> <tr> <td>INCREMENT</td><td>Increment</td></tr> <tr> <td>DECREMENT</td><td>Decrement</td></tr> <tr> <td>RANDOM</td><td>Random</td></tr> </table>	STATIC	Static	INCREMENT	Increment	DECREMENT	Decrement	RANDOM	Random
STATIC	Static								
INCREMENT	Increment								
DECREMENT	Decrement								
RANDOM	Random								
Default	STATIC (Static)								

Section 6 Details of Device Messagess

Command	:TSTReam:TABLE:ITEM:FRAME:VLAN:ID:MASK <BINARY>
Query	:TSTReam:TABLE:ITEM:FRAME:VLAN:ID:MASK?
Response	<BINARY>
Description	<p>Sets a mask pattern of the ID field (12 bits).</p> <p>* "0" that indicates a target bit for Increment, Decrement and Random should be sequential.</p> <p>Example: Applicable: #B111100001111 Not applicable: #B110001100011</p>
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<BINARY>
	Set a mask pattern value of the ID field in the 12-bit <BINARY> format.
Default	#B111111111111

Command	:TSTReam:TABLE:ITEM:FRAME:VLAN:PATTErn <number>[,<vlan tag>]...
Query	:TSTReam:TABLE:ITEM:FRAME:VLAN:PATTErn?
Response	<number>[,<vlan tag>]...
Description	<p>Sets the pattern of the VLAN tags at multiple stages.</p> <p>* This command is available only for the MU120121A/22A/31A/32A/38A modules.</p>
Module	– MbE √ GbE – 2.5G/10G
Parameter	<number>
	Specify the number of stages for the VLAN tag to be set from 1 to 10 (<NR1>).
	<vlan tag>
	Set the encode value of the VLAN tag (*) in the <HEX> format, for the number of VLAN stages specified by <number> above.
	*: This is a 32-bit value consisting of TPID (16 bits), Priority (3 bits), CFI (1 bit), and VID (12 bits), in descending order.
	Example: When there are two setting data: 2,#H81000123,#H8100FFFF
Default	1,#H81000001

Command	:TSTReam:TABLE:ITEM:FRAME:VLAN:ID:NUMBer <number>
Query	:TSTReam:TABLE:ITEM:FRAME:VLAN:ID:NUMBer?
Response	<number>
Description	<p>Specifies the number of stages of the VID that is generated in the Increment, Decrement or Random mode.</p> <ul style="list-style-type: none"> * This command is available only for the MU120121A/22A/31A/32A/38A modules. * The value set by this command is valid when INCREMENT, DECREMENT or RANDOM is specified by the :TSTReam:TABLE:ITEM:FRAME:VLAN:ID:MODE command.
Module	– MbE √ GbE – 2.5G/10G
Parameter	<p><number></p> <p>Specify the number of stages for the VLAN from 1 to 10 (<NR1>).</p> <ul style="list-style-type: none"> *: The number of stages exceeding the VLAN tag data size set by the TSTReam:TABLE:ITEM:FRAME:VLAN:PATtern command must not be specified. <p>Note that this value is reset to the default value when a value in the VLAN tag fields is changed.</p>
Default	1

Command	:TSTReam:TABLE:ITEM:PROTOcol:LACP:TYPE <Type>
Query	:TSTReam:TABLE:ITEM:PROTOcol:LACP:TYPE?
Response	<Type>
Description	<p>Sets a type of the Link Aggregation template.</p> <p>PDU of the type specified by this command will be created. An actual data pattern is set by the :TSTReam:TABLE:ITEM:PROTOcol:DATA command.</p> <ul style="list-style-type: none"> * This command is valid when LACP is selected by the :TSTReam:TABLE:ITEM:PROTOcol:TYPE command.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<p><type></p> <p>Select one of the following:</p> <p>LACPDU LACPDU</p> <p>MARKER Marker PDU</p> <p>RESPONSE Marker Response PDU</p>
Default	LACPDU

Section 6 Details of Device Messagess

Command	:TSTReam:TABLE:ITEM:PROTOcol:BPDU:TYPE <Type>								
Query	:TSTReam:TABLE:ITEM:PROTOcol:BPDU:TYPE?								
Response	<Type>								
Description	<p>Sets a type of the BPDU template.</p> <p>PDU of the type specified by this command will be created. An actual data pattern is set by the :TSTReam:TABLE:ITEM:PROTOcol:DATA command.</p> <p>* This command is valid when BPDU is selected by the :TSTReam:TABLE:ITEM:PROTOcol:TYPE command.</p>								
Module	√ MbE √ GbE – 2.5G/10G								
Parameter	<p><type></p> <p>Select one of the following:</p> <table><tr><td>STP</td><td>STP Configuration BPDU</td></tr><tr><td>TCN</td><td>STP TCN (Topology Change Notification) BPDU</td></tr><tr><td>RST</td><td>RST BPDU</td></tr><tr><td>MST</td><td>MST BPDU</td></tr></table>	STP	STP Configuration BPDU	TCN	STP TCN (Topology Change Notification) BPDU	RST	RST BPDU	MST	MST BPDU
STP	STP Configuration BPDU								
TCN	STP TCN (Topology Change Notification) BPDU								
RST	RST BPDU								
MST	MST BPDU								
Default	STP (STP Configuration BPDU)								

Command	:TSTReam:TABLE:ITEM:FRAME:PIM:REGister:HEADer:ENABLE <BOOLEAN>
Query	:TSTReam:TABLE:ITEM:FRAME:PIM:REGister:HEADer:ENABLE?
Response	<BOOLEAN>
Description	<p>Sets whether to insert a header for PIM Register Message.</p> <p>* PIM Register Message can be set only when Protocol is set to a type that includes IPv4 or IPv6.</p>
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<p><BOOLEAN></p> <p>To insert a header for PIM Register Message, specify {ON | 1} (ON or 1). Otherwise, specify {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.</p>
Default	0 (disable)

Command	:TSTReam:TABLE:ITEM:FRAME:PIM:REGister:HEADer:DATA <HEX>
Query	:TSTReam:TABLE:ITEM:FRAME:PIM:REGister:HEADer:DATA?
Response	<HEX>
Description	<p>Sets the data of a header for PIM Register Message.</p> <p>When insertion of a header for PIM Register Message is enabled, the hexadecimal data pattern specified by this command is inserted immediately before the Protocol header. When creating a standard PIM Register Message, it is necessary to set the data from the IP header for the RP unicast address to the Reserve2 field of PIM Register Message (i.e., up to immediately before the Multicast data packet), by using this command.</p>
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<p><HEX></p> <p>Sets and reads the data pattern of a header for PIM Register Message (2000 bytes max.) in the variable-length <HEX> format.</p>
Default	#H00

Section 6 Details of Device Messagess

Command	:TSTReam:TABLE:ITEM:PROTOCOL:TYPE <type>																																																						
Query	:TSTReam:TABLE:ITEM:PROTOCOL:TYPE?																																																						
Response	<type>																																																						
Description	<p>Specifies the upper protocol header.</p> <p>* Any setting command for the protocol header that is not specified with this command cannot be executed. However, the default value is returned for a command that queries the set value.</p> <p>Example:</p> <p>When Ipv4 is set with this command, the value cannot be changed with such a command as to set the TCP header field. If the command queries a value of the TCP header field, the default is returned.</p>																																																						
Module	√ MbE √ GbE √ 2.5G/10G																																																						
Parameter	<p><type></p> <p>Select one of the following:</p> <table><tr><td>NONE</td><td>None</td></tr><tr><td>ARP</td><td>ARP</td></tr><tr><td>IPV4</td><td>IPv4</td></tr><tr><td>IGMP</td><td>IGMP/IPv4</td></tr><tr><td>IGAP</td><td>IGAP/IPv4 (*2)</td></tr><tr><td>ICMP</td><td>ICMP/IPv4</td></tr><tr><td>TCP</td><td>TCP/IPv4</td></tr><tr><td>UDP</td><td>UDP/IPv4</td></tr><tr><td>RIP</td><td>RIP/UDP/IPv4</td></tr><tr><td>DHCP</td><td>DHCP/UDP/IPv4</td></tr><tr><td>IPV6</td><td>IPv6</td></tr><tr><td>ICMP6</td><td>ICMPv6/IPv6 (*1)</td></tr><tr><td>TCP_IPV6</td><td>TCP/IPv6 (*1)</td></tr><tr><td>UDP_IPV6</td><td>UDP/IPv6 (*1)</td></tr><tr><td>TUNNEL</td><td>IPv6 over IPv4 (*1)</td></tr><tr><td>ICMP6_TUNNEL</td><td>ICMPv6/IPv6 over IPv4 (*1)</td></tr><tr><td>TCP_TUNNEL</td><td>TCP/IPv6 over IPv4 (*1)</td></tr><tr><td>UDP_TUNNEL</td><td>UDP/IPv6 over IPv4 (*1)</td></tr><tr><td>TUNNEL6</td><td>IPv6 over IPv6 (*1)</td></tr><tr><td>TCP_TUNNEL6</td><td>TCP/IPv6 over IPv6 (*1)</td></tr><tr><td>UDP_TUNNEL6</td><td>UDP/IPv6 over IPv6 (*1)</td></tr><tr><td>IPX</td><td>IPX</td></tr><tr><td>IS-IS</td><td>IS-IS</td></tr><tr><td>MAC_CONTROL</td><td>MAC Control Frame</td></tr><tr><td>EHTERNET</td><td>Ethernet</td></tr><tr><td>LEX_CONTROL</td><td>LEX Control Packet</td></tr><tr><td>BPUD</td><td>BPUD (*3) (*4)</td></tr></table>	NONE	None	ARP	ARP	IPV4	IPv4	IGMP	IGMP/IPv4	IGAP	IGAP/IPv4 (*2)	ICMP	ICMP/IPv4	TCP	TCP/IPv4	UDP	UDP/IPv4	RIP	RIP/UDP/IPv4	DHCP	DHCP/UDP/IPv4	IPV6	IPv6	ICMP6	ICMPv6/IPv6 (*1)	TCP_IPV6	TCP/IPv6 (*1)	UDP_IPV6	UDP/IPv6 (*1)	TUNNEL	IPv6 over IPv4 (*1)	ICMP6_TUNNEL	ICMPv6/IPv6 over IPv4 (*1)	TCP_TUNNEL	TCP/IPv6 over IPv4 (*1)	UDP_TUNNEL	UDP/IPv6 over IPv4 (*1)	TUNNEL6	IPv6 over IPv6 (*1)	TCP_TUNNEL6	TCP/IPv6 over IPv6 (*1)	UDP_TUNNEL6	UDP/IPv6 over IPv6 (*1)	IPX	IPX	IS-IS	IS-IS	MAC_CONTROL	MAC Control Frame	EHTERNET	Ethernet	LEX_CONTROL	LEX Control Packet	BPUD	BPUD (*3) (*4)
NONE	None																																																						
ARP	ARP																																																						
IPV4	IPv4																																																						
IGMP	IGMP/IPv4																																																						
IGAP	IGAP/IPv4 (*2)																																																						
ICMP	ICMP/IPv4																																																						
TCP	TCP/IPv4																																																						
UDP	UDP/IPv4																																																						
RIP	RIP/UDP/IPv4																																																						
DHCP	DHCP/UDP/IPv4																																																						
IPV6	IPv6																																																						
ICMP6	ICMPv6/IPv6 (*1)																																																						
TCP_IPV6	TCP/IPv6 (*1)																																																						
UDP_IPV6	UDP/IPv6 (*1)																																																						
TUNNEL	IPv6 over IPv4 (*1)																																																						
ICMP6_TUNNEL	ICMPv6/IPv6 over IPv4 (*1)																																																						
TCP_TUNNEL	TCP/IPv6 over IPv4 (*1)																																																						
UDP_TUNNEL	UDP/IPv6 over IPv4 (*1)																																																						
TUNNEL6	IPv6 over IPv6 (*1)																																																						
TCP_TUNNEL6	TCP/IPv6 over IPv6 (*1)																																																						
UDP_TUNNEL6	UDP/IPv6 over IPv6 (*1)																																																						
IPX	IPX																																																						
IS-IS	IS-IS																																																						
MAC_CONTROL	MAC Control Frame																																																						
EHTERNET	Ethernet																																																						
LEX_CONTROL	LEX Control Packet																																																						
BPUD	BPUD (*3) (*4)																																																						

	LACP	Link Aggregation (*3) (*4)
		*1: Enabled when the IPv6 Option is installed.
		*2: Enabled when the IGAP Option is installed.
		*3: Enabled when the Spanning Tree/Link Aggregation Option is installed.
		*4: When this type is selected, set the effective data pattern by using :TSTReam:TABLE:ITEM:PROTOcol:DATA command.
Default	IPV4	

Section 6 Details of Device Messagess

Command	:TSTReam:TABLE:ITEM:PROTOcol:DATA <HEX>
Query	:TSTReam:TABLE:ITEM:PROTOcol:DATA?
Response	<HEX>
Description	<p>Sets the data pattern of the selected protocol.</p> <p>When BPUD ore LACP is selected for Protocol Type, the data pattern of PDU can be set by using this command.</p> <ul style="list-style-type: none">* When creating a standard BPUD to be used in the spanning tree protocol, specify BPUD for Protocol Type and set as follows:<ol style="list-style-type: none">1. Specify "AUTO (Length)" for the Ethernet header type setting command to execute.2. Specify "Static, 01-80-C2-00-00-00" for the Ethernet header destination address setting comcome to execute.3. Specify "#H424203" for the LLC pattern (3 bytes) setting command to execute.4. Specify the type of the BPUD template.* When creating a standard PUD to be used in the link aggregation, specify LACP for Protocol Type and set as follows:<ol style="list-style-type: none">1. Specify "AUTO (Length)" for the Ethernet header type setting command to execute.2. Specify "Static, 01-80-C2-00-00-02" for the Ethernet header destination address setting command to execute.3. Specify the type of the Link Aggregation template.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<HEX> Sets and reads the data pattern (2000 bytes max.) in the variable-length <HEX> format. For BPUD, the data pattern must start from the Protocol Identifier field. For Link Aggregation, the data pattern must start from the Subtype field.
Default	#H00

Command	:TSTReam:TABLE:ITEM:PROTOCOL:ARP:OPERation <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:ARP:OPERation?
Response	<NR1>
Description	Sets a value of the ar\$op (operation) field (16 bits).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 65535. [RFC 826][RFC 903] 1 ARP request 2 ARP reply 3 RARP request 4 RARP reply
Default	1 (ARP Request)

Command	:TSTReam:TABLE:ITEM:PROTOCOL:ARP:SIAddress <IP_ADDRESS>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:ARP:SIAddress?
Response	<IP_ADDRESS>
Description	Sets a value of the ar\$spa (sender ip address) field.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<IP_ADDRESS> Set a value of the ar\$spa (sender ip address) field in the following 4-octet <HEX> format: Example: 192.168.1.3 is expressed as #HC0A80103. [RFC 826] Protocol address of sender of this packet, m from the ar\$pln field.
Default	#H7F000001 (127.0.0.1)

Section 6 Details of Device Messagess

Command	:TSTReam:TABLE:ITEM:PROTocol:ARP:SMADdress <HEX>
Query	:TSTReam:TABLE:ITEM:PROTocol:ARP:SMADdress?
Response	<HEX>
Description	Sets a value of the ar\$sha (sender hardware address) field. * The setting field size is 4 octets for MAPOS, otherwise 6 octets.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<HEX> Set a value of the ar\$sha (sender hardware address) field in the following <HEX> format: Example: 192.168.1.3 is expressed as #HC0A80103. [RFC 826] Hardware address of sender of this packet, n from the ar\$hlh field.
Default	#H00DEBB000000 (00-DE-BB-00-00-00), #H00000000 (MAPOS)

Command	:TSTReam:TABLE:ITEM:PROTocol:ARP:TIADdress <IP_ADDRESS>
Query	:TSTReam:TABLE:ITEM:PROTocol:ARP:TIADdress?
Response	<IP_ADDRESS>
Description	Sets a value of the ar\$tpa (target ip address) field.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<IP_ADDRESS> Set a value of the ar\$tpa (target ip address) field in the following 4-octet <HEX> format: Example: 192.168.1.3 is expressed as #HC0A80103. [RFC 826] Protocol address of target.
Default	#H7F000001 (127.0.0.1)

Command	:TSTReam:TABLE:ITEM:PROTOCOL:ARP:TMADdress <HEX>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:ARP:TMADdress?
Response	<HEX>
Description	Sets a value of the ar\$tha (target hardware address) field. * The setting field size is 4 octets for MAPOS, otherwise 6 octets.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<HEX> Set a value of the ar\$tha (target hardware address) field in the following <HEX> format: Example: 01-02-03-04-05-06 is expressed as #H010203040506. [RFC 826] Hardware address of target of this packet (if known).
Default	#H00DEBB000000 (00-DE-BB-00-00-00), #H00000000 (MAPOS)

Command	:TSTReam:TABLE:ITEM:PROTOCOL:DHCP:SECS <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:DHCP:SECS?
Response	<NR1>
Description	Sets a value of secs field (16 bits).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 65535 (s). [RFC 2131] Filled in by client, seconds elapsed since client began address acquisition or renewal process.

Section 6 Details of Device Messagess

Command	:TSTReam:TABLE:ITEM:PROTOcol:DHCP:HTYPE <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOcol:DHCP:HTYPE?
Response	<NR1>
Description	Sets a value of the htype field (1 octet).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 255. For details, see http://www.iana.org/ [RFC 2131] Hardware address type, see ARP section in "Assigned Numbers" RFC; e.g., '1' = 10 mb ethernet.
Default	1 (Ethernet (10 Mb))

Command	:TSTReam:TABLE:ITEM:PROTOcol:DHCP:OP <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOcol:DHCP:OP?
Response	<NR1>
Description	Sets a value of op field (1 octet).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 255. [RFC 2131] Message op code / message type. 1 BOOTREQUEST 2 BOOTREPLY
Default	1 (BOOTREQUEST)

Command	:TSTReam:TABLE:ITEM:PROTocol:DHCP:SIADdr <IP_ADDRESS>
Query	:TSTReam:TABLE:ITEM:PROTocol:DHCP:SIADdr?
Response	<IP_ADDRESS>
Description	Sets a value of the siaddr field.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<IP_ADDRESS> Set a value of the siaddr field in the following 4-octet <HEX> format: Example: 192.168.1.3 is expressed as #HC0A80103.
Default	#H00000000 (0.0.0.0)

Command	:TSTReam:TABLE:ITEM:PROTocol:DHCP:HOPS <NR1>
Query	:TSTReam:TABLE:ITEM:PROTocol:DHCP:HOPS?
Response	<NR1>
Description	Sets a value of the hops field (1 octet).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 255. [RFC 2131] Client sets to zero, optionally used by relay agents when booting via a relay agent.

Command	:TSTReam:TABLE:ITEM:PROTocol:DHCP:XID <NR1>
Query	:TSTReam:TABLE:ITEM:PROTocol:DHCP:XID?
Response	<NR1>
Description	Sets a value of the xid field (4 octets).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 4294967295. [RFC 2131] Transaction ID, a random number chosen by the client, used by the client and server to associate messages and responses between a client and a server.

Section 6 Details of Device Messagess

Command	:TSTReam:TABLE:ITEM:PROTocol:DHCP:CHADdr <HEX>
Query	:TSTReam:TABLE:ITEM:PROTocol:DHCP:CHADdr?
Response	<HEX>
Description	Sets a value of the chaddr field (16 octets).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<HEX> Set a value of the chaddr field in the 16-octet <HEX> format. [RFC 2131] Client hardware address.
Default	#H00000000000000000000000000000000

Command	:TSTReam:TABLE:ITEM:PROTocol:DHCP:GIADdr <IP_ADDRESS>
Query	:TSTReam:TABLE:ITEM:PROTocol:DHCP:GIADdr?
Response	<IP_ADDRESS>
Description	Sets a value of the giaddr field.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<IP_ADDRESS> Set a value of the giaddr field in the following 4-octet <HEX> format. Example: 192.168.1.3 is expressed as #HC0A80103. [RFC 2131] Relay agent IP address, used in booting via a relay agent.
Default	#H00000000 (0.0.0.0)

Command	:TSTReam:TABLE:ITEM:PROTocol:DHCP:FLAGs <HEX>
Query	:TSTReam:TABLE:ITEM:PROTocol:DHCP:FLAGs?
Response	<HEX>
Description	Sets a value of the flags field (2 octets).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<HEX> Set a value of the flags field in the 2-octet <HEX> format. [RFC 2131, Figure 2: Format of the 'flags' field] <div style="text-align: center;"> <pre> 1 1 1 1 1 1 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 +-+-+-+-+-+-+-+-+ |B| MBZ | +-+-+-+-+-+-+-+-+ B: BROADCAST flag MBZ: MUST BE ZERO (reserved for future use) </pre> </div>
Default	#H0000 (Do not broadcast)

Command	:TSTReam:TABLE:ITEM:PROTocol:DHCP:OPTions <length of data>[,<HEX>]
Query	:TSTReam:TABLE:ITEM:PROTocol:DHCP:OPTions?
Response	<length of data>[,<HEX>]
Description	Sets a value of the options field.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<length of data> The length of the option field that is preset or to be set (0 to 64, unit: octet). <HEX> Set a value of the option field in the 0- to 64-octet <HEX> format. [RFC 2131]

Section 6 Details of Device Messagess

Command	:TSTReam:TABLE:ITEM:PROTOCOL:DHCP:CIADDR <IP_ADDRESS>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:DHCP:CIADDR?
Response	<IP_ADDRESS>
Description	Sets a value of the ciaddr field.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<IP_ADDRESS> Set a value of the ciaddr field in the following 4-octet <HEX> format. Example: 192.168.1.3 is expressed as #HC0A80103. [RFC 2131] Client IP address; only filled in if client is in BOUND, RENEW or REBINDING state and can respond to ARP requests.
Default	#H00000000 (0.0.0.0)

Command	:TSTReam:TABLE:ITEM:PROTOCOL:DHCP:HLEN <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:DHCP:HLEN?
Response	<NR1>
Description	Sets a value of the hlen field (1 octet).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 255. [RFC 2131] Hardware address length (e.g. '6' for 10 mb ethernet).
Default	6 (for MAC address)

Command	:TSTReam:TABLE:ITEM:PROTocol:DHCP:SNAME "<sname>"
Query	:TSTReam:TABLE:ITEM:PROTocol:DHCP:SNAME?
Response	"<sname>"
Description	Sets a value of the sname field (0 to 64 octets).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<sname> A value of the sname field. Specify it with a 0- to 64-octet string. [RFC 2131] Optional server host name, null terminated string.
Default	""

Command	:TSTReam:TABLE:ITEM:PROTocol:DHCP:FILE "<file>"
Query	:TSTReam:TABLE:ITEM:PROTocol:DHCP:FILE?
Response	"<file>"
Description	Sets a value of the file field (0 to 128 octets).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<file> A value of the file field. Specify it with a 0- to 128-octet string. [RFC 2131] Boot file name, null terminated string; "generic" name or null in DHCPDISCOVER, fully qualified directory-path name in DHCPOFFER.
Default	""

Section 6 Details of Device Messagess

Command	:TSTReam:TABLE:ITEM:PROTocol:DHCP:YIADdr <IP_ADDRESS>
Query	:TSTReam:TABLE:ITEM:PROTocol:DHCP:YIADdr?
Response	<IP_ADDRESS>
Description	Sets a value of the yiaddr field.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<IP_ADDRESS> Set a value of the yiaddr field in the following 4-octet <HEX> format. Example: 192.168.1.3 is expressed as #HC0A80103. [RFC 2131] 'your' (client) IP address.
Default	#H00000000 (0.0.0.0)

Command	:TSTReam:TABLE:ITEM:PROTocol:ICMP:ID <NR1>
Query	:TSTReam:TABLE:ITEM:PROTocol:ICMP:ID?
Response	<NR1>
Description	Sets a value of the id field (16 bits). * This is valid when the type field value is 0 (echo request message) or 8 (echo reply message).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 65535. [RFC 792] If code = 0, an identifier to aid in matching echoes and replies, may be zero.

Command	:TSTReam:TABLE:ITEM:PROTocol:ICMP:CODE <NR1>
Query	:TSTReam:TABLE:ITEM:PROTocol:ICMP:CODE?
Response	<NR1>
Description	Sets a value of the code field (8 bits).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 255.

Command	:TSTReam:TABLE:ITEM:PROTOCOL:ICMP:TYPE <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:ICMP:TYPE?
Response	<NR1>
Description	Sets a value of the type field (8 bits).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 255. [RFC 792][RFC 950][RFC 1256] 0 Echo Reply 3 Destination Unreachable 4 Source Quench 5 Redirect 8 Echo 9 Router Advertisement [RFC 1256] 10 Router Selection [RFC 1256] 11 Time Exceeded 12 Parameter Problem 13 Timestamp 14 Timestamp Reply 15 Information Request 16 Information Reply 17 Address Mask Request [RFC 950] 18 Address Mask Reply [RFC 950]
Default	0 (Echo Reply)

Section 6 Details of Device Messagess

Command	:TSTReam:TABLE:ITEM:PROTOCOL:ICMP:SNUMber <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:ICMP:SNUMber?
Response	<NR1>
Description	<p>Sets a value of the sequence number field (16 bits).</p> <p>* This is valid when the type field value is 0 (echo request message) or 8 (echo reply message).</p>
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p><NR1></p> <p>Set a value from 0 to 65535.</p> <p>[RFC 792]</p> <p>If code = 0, a sequence number to aid in matching echoes and replies, may be zero.</p>

Command	:TSTReam:TABLE:ITEM:PROTOCOL:ICMPv6:TYPE <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:ICMPv6:TYPE?
Response	<NR1>
Description	Sets a value of the Type field (8 bits) of the ICMPv6 message.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p><IP_ADDRESS></p> <p>Set a value from 0 to 255.</p> <p>For details on value setting, see http://www.iana.org/.</p> <p>[RFC 2463 2.1 Message General Format]</p> <p>The type field indicates the type of the message. Its value determines the format of the remaining data.</p>
Default	128 (Echo Request)

Command	:TSTReam:TABLE:ITEM:PROTOCOL:ICMPv6:CODE <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:ICMPv6:CODE?
Response	<NR1>
Description	Sets a value of the Code field (8 bits) of the ICMPv6 message.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 255. For details on value setting, see http://www.iana.org/ . [RFC 2463 2.1 Message General Format] The code field depends on the message type. It is used to create an additional level of message granularity.

Command	:TSTReam:TABLE:ITEM:PROTOCOL:ICMPv6:ECHO:IDENTifier <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:ICMPv6:ECHO:IDENTifier?
Response	<NR1>
Description	Sets a value of the Identifier field (16 bits) of the Echo Request/Echo Reply message.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 65535. [RFC 2463 4.1 Echo Request Message] An identifier to aid in matching Echo Replies to this Echo Request. May be zero. [RFC 2463 4.2 Echo Reply Message] The identifier from the invoking Echo Request message.

Section 6 Details of Device Messagess

Command	:TSTReam:TABLE:ITEM:PROTOCOL:ICMPv6:ECHO:SNUMBER <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:ICMPv6:ECHO:SNUMBER?
Response	<NR1>
Description	Sets a value of the Sequence Number field (16 bits) of the Echo Request/Echo Reply message.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 65535. [RFC 2463 4.1 Echo Request Message] A sequence number to aid in matching Echo Replies to this Echo Request. May be zero. [RFC 2463 4.2 Echo Reply Message] The sequence number from the invoking Echo Request message.

Command	:TSTReam:TABLE:ITEM:PROTOCOL:ICMPv6:MLD:MRDELAY <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:ICMPv6:MLD:MRDELAY?
Response	<NR1>
Description	Sets a value of the Maximum Response Delay field (16 bits) of the MLD (Multicast Listener Query/Report/Done) message.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 65535 (ms). [RFC 2710 3. Message Format] The Maximum Response Delay field is meaningful only in Query messages, and specifies the maximum allowed delay before sending a responding Report, in units of milliseconds. In all other messages, it is set to zero by the sender and ignored by receivers. Varying this value allows the routers to tune the "leave latency" (the time between the moment the last node on a link ceases listening to a particular multicast address and moment the routing protocol is notified that there are no longer any listeners for that address), as discussed in section 7.8. It also allows tuning of the burstiness of MLD traffic on a link, as discussed in section 7.3.

Command	:TSTReam:TABLE:ITEM:PROTOCOL:ICMPv6:MLD:MADDRESS <IPV6_ADDRESS>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:ICMPv6:MLD:MADDRESS?
Response	<IPV6_ADDRESS>
Description	Sets a value of the Multicast Address field of the MLD (Multicast Listener Query/Report/Done) message.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p><IPV6_ADDRESS></p> <p>Set the IPv6 address value in the following 128-bit <HEX> format.</p> <p>Example: 1:2:3:4:5:6:7:8 is expressed as #H00010002000300040005000600070008.</p> <p>[RFC 2710 3. Message Format]</p> <p>In a Query message, the Multicast Address field is set to zero when sending a General Query, and set to a specific IPv6 multicast address when sending a Multicast-Address-Specific Query.</p> <p>In a Report or Done message, the Multicast Address field holds a specific IPv6 multicast address to which the message sender is listening or is ceasing to listen, respectively.</p>
Default	#H00000000000000000000000000000000 (::)
Command	:TSTReam:TABLE:ITEM:PROTOCOL:ICMPv6:MLDA:DATA <HEX>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:ICMPv6:MLDA:DATA?
Response	<HEX>
Description	<p>Sets the data pattern of the MLDA message (MLDA Query/MLDA ACK/MLDA Report).</p> <p>* IPv6 option and MLDA option are required.</p>
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<p><HEX></p> <p>Sets and reads the data pattern (1518 bytes max.) of the MLDA message excluding the Type/Code/Checksum fields in the variable-length <HEX> format.</p>
Default	#H271000 27D000001020000

Section 6 Details of Device Messagess

Command	:TSTReam:TABLE:ITEM:PROTocol:ICMPv6:NA:RBIT <NR1>
Query	:TSTReam:TABLE:ITEM:PROTocol:ICMPv6:NA:RBIT?
Response	<NR1>
Description	Sets a value of the R (Router flag) bit of the Neighbor Advertisement message.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value of 0 or 1. [RFC 2461 4.4. Neighbor Advertisement Message Format] Router flag. When set, the R-bit indicates that the sender is a router. The R-bit is used by Neighbor Unreachability Detection to detect a router that changes to a host.

Command	:TSTReam:TABLE:ITEM:PROTocol:ICMPv6:NA:SBIT <NR1>
Query	:TSTReam:TABLE:ITEM:PROTocol:ICMPv6:NA:SBIT?
Response	<NR1>
Description	Sets a value of the S (Solicited flag) bit of the Neighbor Advertisement message.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value of 0 or 1. [RFC 2461 4.4. Neighbor Advertisement Message Format] Solicited flag. When set, the S-bit indicates that the advertisement was sent in response to a Neighbor Solicitation from the Destination address. The S-bit is used as a reachability confirmation for Neighbor Unreachability Detection. It MUST NOT be set in multicast advertisements or in unsolicited unicast advertisements.

Command	:TSTReam:TABLE:ITEM:PROTOCOL:ICMPv6:NA:OBIT <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:ICMPv6:NA:OBIT?
Response	<NR1>
Description	Sets a value of the O (Override flag) bit of the Neighbor Advertisement message.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p><NR1></p> <p>Set a value of 0 or 1.</p> <p>[RFC 2461 4.4. Neighbor Advertisement Message Format]</p> <p>Override flag. When set, the O-bit indicates that the advertisement should override an existing cache entry and update the cached link-layer address. When it is not set the advertisement will not update a cached link-layer address though it will update an existing Neighbor Cache entry for which no link-layer address is known. It SHOULD NOT be set in solicited advertisements for anycast addresses and in solicited proxy advertisements. It SHOULD be set in other solicited advertisements and in unsolicited advertisements.</p>

Command	:TSTReam:TABLE:ITEM:PROTOCOL:ICMPv6:NA:TARGET <IPV6_ADDRESS>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:ICMPv6:NA:TARGET?
Response	<IPV6_ADDRESS>
Description	Sets a value of the Target Address field of the Neighbor Advertisement message.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p><IPV6_ADDRESS></p> <p>Set the IPv6 address value in the following 128-bit <HEX> format.</p> <p>Example: 1:2:3:4:5:6:7:8 is expressed as #H00010002000300040005000600070008.</p> <p>[RFC 2461 4.4. Neighbor Advertisement Message Format]</p> <p>For solicited advertisements, the Target Address field in the Neighbor Solicitation message that prompted this advertisement. For an unsolicited advertisement, the address whose link-layer address has changed. The Target Address MUST NOT be a multicast address.</p>
Default	#H00000000000000000000000000000000 (::)

Section 6 Details of Device Messagess

Command	:TSTReam:TABLE:ITEM:PROTocol:ICMPv6:NA:LADDRESS:TARGET <HEX>
Query	:TSTReam:TABLE:ITEM:PROTocol:ICMPv6:NA:LADDRESS:TARGET?
Response	<HEX>
Description	<p>Sets a value of the Link-Layer Address field of the Neighbor Advertisement message.</p> <p>* To enable this setting, option setting must be enabled.</p>
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p><HEX></p> <p>Set the Link-Layer Address value in the <HEX> format.</p> <p>Example: Ethernet MAC address 01-02-03-04-05-06 is expressed as #H010203040506.</p> <p>[RFC 2461 4.6.1. Source/Target Link-layer Address]</p> <p>The variable length link-layer address. The content and format of this field (including byte and bit ordering) is expected to be specified in specific documents that describe how IPv6 operates over different link layers. For instance, [IPv6-ETHER].</p>
Default	#H000000000000

Command	:TSTReam:TABLE:ITEM:PROTOcol:ICMPv6:NA:LADdress:ENABLE <BOOLEAN>
Query	:TSTReam:TABLE:ITEM:PROTOcol:ICMPv6:NA:LADdress:ENABLE?
Response	<BOOLEAN>
Description	Selects to enable or disable the Target link-layer address Option setting for Neighbor Advertisement message.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p><BOOLEAN></p> <p>To enable option setting, specify {ON | 1} (ON or 1). Otherwise, specify {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.</p> <p>[RFC 2461 4.4. Neighbor Advertisement Message Format]</p> <p>The link-layer address for the target, i.e., the sender of the advertisement. This option MUST be included on link layers that have addresses when responding to multicast solicitations. When responding to a unicast Neighbor Solicitation this option SHOULD be included.</p> <p>The option MUST be included for multicast solicitations in order to avoid infinite Neighbor Solicitation "recursion" when the peer node does not have a cache entry to return a Neighbor Advertisements message. When responding to unicast solicitations, the option can be omitted since the sender of the solicitation has the correct link-layer address; otherwise it would not have be able to send the unicast solicitation in the first place. However, including the link-layer address in this case adds little overhead and eliminates a potential race condition where the sender deletes the cached link-layer address prior to receiving a response to a previous solicitation.</p>
Default	0 (disable)

Section 6 Details of Device Messagess

Command	:TSTReam:TABLE:ITEM:PROTocol:ICMPv6:NS:TARGet <IPV6_ADDRESS>
Query	:TSTReam:TABLE:ITEM:PROTocol:ICMPv6:NS:TARGet?
Response	<IPV6_ADDRESS>
Description	Sets a value of the Target Address field of the Neighbor Solicitation message.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<IPV6_ADDRESS> Set the IPv6 address value in the following 128-bit <HEX> format. Example: 1:2:3:4:5:6:7:8 is expressed as #H00010002000300040005000600070008. [RFC 2461 4.3. Neighbor Solicitation Message Format] The IP address of the target of the solicitation. It MUST NOT be a multicast address.
Default	#H00000000000000000000000000000000 (::)

Command	:TSTReam:TABLE:ITEM:PROTocol:ICMPv6:NS:LADdress:ENABle <BOOLEAN>
Query	:TSTReam:TABLE:ITEM:PROTocol:ICMPv6:NS:LADdress:ENABle?
Response	<BOOLEAN>
Description	Selects to enable or disable the Source link-layer address Option setting for Neighbor Solicitation message.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<BOOLEAN> To enable option setting, specify {ON | 1} (ON or 1). Otherwise, specify {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query. [RFC 2461 4.3. Neighbor Solicitation Message Format] The link-layer address for the sender. MUST NOT be included when the source IP address is the unspecified address. Otherwise, on link layers that have addresses this option MUST be included in multicast solicitations and SHOULD be included in unicast solicitations.
Default	0 (disable)

Command	:TSTReam:TABLE:ITEM:PROTOCOL:ICMPv6:NS:LADDRESS:SOURCe <HEX>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:ICMPv6:NS:LADDRESS:SOURCe?
Response	<HEX>
Description	Sets a value of the Link-Layer Address field of the Neighbor Solicitation message. * To enable this setting, option setting must be enabled.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<HEX> Set the Link-Layer Address value in the <HEX> format. Example: Ethernet MAC address 01-02-03-04-05-06 is expressed as #H010203040506. [RFC 2461 4.6.1. Source/Target Link-layer Address] The variable length link-layer address. The content and format of this field (including byte and bit ordering) is expected to be specified in specific documents that describe how IPv6 operates over different link layers. For instance, [IPv6-ETHER].
Default	#H000000000000

Command	:TSTReam:TABLE:ITEM:PROTOCOL:ICMPv6:PTBig:MTU <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:ICMPv6:PTBig:MTU?
Response	<NR1>
Description	Sets a value of the MTU field (32 bits) of the Packet Too Big message.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 4,294,967,295. [RFC 2463 3.2 Packet Too Big Message] The Maximum Transmission Unit of the next-hop link.

Section 6 Details of Device Messages

Command	:TSTReam:TABLE:ITEM:PROTOCOL:ICMPv6:PPROblem:POINter <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:ICMPv6:PPROblem:POINter?
Response	<NR1>
Description	Sets a value of the Pointer field (32 bits) of the Parameter Problem message.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p><NR1></p> <p>Set a value from 0 to 4,294,967,295.</p> <p>[RFC 2463 3.4 Parameter Problem Message]</p> <p>Identifies the octet offset within the invoking packet where the error was detected. The pointer will point beyond the end of the ICMPv6 packet if the field in error is beyond what can fit in the maximum size of an ICMPv6 error message.</p>

Command	:TSTReam:TABLE:ITEM:PROTOCOL:ICMPv6:RA:RETRans <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:ICMPv6:RA:RETRans?
Response	<NR1>
Description	Sets a value of the Retrans Timer field (32 bits) of the Router Advertisement message.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p><NR1></p> <p>Set a value from 0 to 4,294,967,295 (ms).</p> <p>[RFC 2461 4.2. Router Advertisement Message Format]</p> <p>32-bit unsigned integer. The time, in milliseconds, between retransmitted Neighbor Solicitation messages. Used by address resolution and the Neighbor Unreachability Detection algorithm (see Sections 7.2 and 7.3). A value of zero means unspecified (by this router).</p>

Command	:TSTReam:TABLE:ITEM:PROTOCOL:ICMPv6:RA:REACHable <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:ICMPv6:RA:REACHable?
Response	<NR1>
Description	Sets a value of the Reachable Time field (32 bits) of the Router Advertisement message.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 4,294,967,295 (ms). [RFC 2461 4.2. Router Advertisement Message Format] 32-bit unsigned integer. The time, in milliseconds, that a node assumes a neighbor is reachable after having received a reachability confirmation. Used by the Neighbor Unreachability Detection algorithm (see Section 7.3). A value of zero means unspecified (by this router).

Command	:TSTReam:TABLE:ITEM:PROTOCOL:ICMPv6:RA:RLIFetime <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:ICMPv6:RA:RLIFetime?
Response	<NR1>
Description	Sets a value of the Router Lifetime field (16 bits) of the Router Advertisement message.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 65535 (s). [RFC 2461 4.2. Router Advertisement Message Format] 16-bit unsigned integer. The lifetime associated with the default router in units of seconds. The maximum value corresponds to 18.2 hours. A Lifetime of 0 indicates that the router is not a default router and SHOULD NOT appear on the default router list. The Router Lifetime applies only to the router's usefulness as a default router; it does not apply to information contained in other message fields or options. Options that need time limits for their information include their own lifetime fields.

Section 6 Details of Device Messages

Command	:TSTReam:TABLE:ITEM:PROTOcol:ICMPv6:RA:OBIT <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOcol:ICMPv6:RA:OBIT?
Response	<NR1>
Description	Sets a value of the O ("Other stateful configuration" flag) bit of the Router Advertisement message.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value of 0 or 1. [RFC 2461 4.2. Router Advertisement Message Format] 1-bit "Other stateful configuration" flag. When set, hosts use the administered (stateful) protocol for autoconfiguration of other (non-address) information. The use of this flag is described in [ADDRCONF].

Command	:TSTReam:TABLE:ITEM:PROTOcol:ICMPv6:RA:MBIT <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOcol:ICMPv6:RA:MBIT?
Response	<NR1>
Description	Sets a value of the M ("Managed address configuration" flag) bit of the Router Advertisement message.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value of 0 or 1. [RFC 2461 4.2. Router Advertisement Message Format] 1-bit "Managed address configuration" flag. When set, hosts use the administered (stateful) protocol for address autoconfiguration in addition to any addresses autoconfigured using stateless address autoconfiguration. The use of this flag is described in [ADDRCONF].

Command	:TSTReam:TABLE:ITEM:PROTOCOL:ICMPv6:RA:CHLimit <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:ICMPv6:RA:CHLimit?
Response	<NR1>
Description	Sets a value of the Cur Hop Limit field (8 bits) of the Router Advertisement message.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 255. [RFC 2461 4.2. Router Advertisement Message Format] 8-bit unsigned integer. The default value that should be placed in the Hop Count field of the IP header for outgoing IP packets. A value of zero means unspecified (by this router).

Command	:TSTReam:TABLE:ITEM:PROTOCOL:ICMPv6:RA:LADDRESS:SOURCE <HEX>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:ICMPv6:RA:LADDRESS:SOURCE?
Response	<HEX>
Description	Sets a value of the Link-Layer Address field of the Router Advertisement message. * To enable this setting, option setting must be enabled.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<HEX> Set the Link-Layer Address value in the <HEX> format. Example: Ethernet MAC address 01-02-03-04-05-06 is expressed as #H010203040506. [RFC 2461 4.6.1. Source/Target Link-layer Address] The variable length link-layer address. The content and format of this field (including byte and bit ordering) is expected to be specified in specific documents that describe how IPv6 operates over different link layers. For instance, [IPv6-ETHER].
Default	#H000000000000

Section 6 Details of Device Messages

Command	:TSTReam:TABLE:ITEM:PROTOCOL:ICMPv6:RA:LADDRESS:ENABLE <BOOLEAN>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:ICMPv6:RA:LADDRESS:ENABLE?
Response	<BOOLEAN>
Description	Selects to enable or disable the Source link-layer address Option setting for Router Advertisement message.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<BOOLEAN> To enable option setting, specify {ON | 1} (ON or 1). Otherwise, specify {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query. [RFC 2461 4.2. Router Advertisement Message Format] The link-layer address of the interface from which the Router Advertisement is sent. Only used on link layers that have addresses. A router MAY omit this option in order to enable inbound load sharing across multiple link-layer addresses.
Default	0 (disable)

Command	:TSTReam:TABLE:ITEM:PROTOCOL:ICMPv6:RA:MTU:VALUE <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:ICMPv6:RA:MTU:VALUE?
Response	<NR1>
Description	Sets a value of the MTU field (32 bits) of the Router Advertisement message. * To enable this setting, option setting must be enabled.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 4,294,967,295. [RFC 2461 4.6.4. MTU] 32-bit unsigned integer. The recommended MTU for the link.

Command	:TSTReam:TABLE:ITEM:PROTOCOL:ICMPv6:RA:MTU:ENABLE <BOOLEAN>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:ICMPv6:RA:MTU:ENABLE?
Response	<BOOLEAN>
Description	Selects to enable or disable the MTU Option setting for Router Advertisement message.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<BOOLEAN> To enable option setting, specify {ON | 1} (ON or 1). Otherwise, specify {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query. [RFC 2461 4.2. Router Advertisement Message Format] SHOULD be sent on links that have a variable MTU (as specified in the document that describes how to run IP over the particular link type). MAY be sent on other links.
Default	0 (disable)

Command	:TSTReam:TABLE:ITEM:PROTOCOL:ICMPv6:RA:PREFIX:VALUE <IPV6_ADDRESS>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:ICMPv6:RA:PREFIX:VALUE?
Response	<IPV6_ADDRESS>
Description	Sets a value of the Prefix field of the Router Advertisement message. * To enable this setting, option setting must be enabled.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<IPV6_ADDRESS> Set the IPv6 address value in the following 128-bit <HEX> format. Example: 1:2:3:4:5:6:7:8 is expressed as #H00010002000300040005000600070008. [RFC 2461 4.6.2. Prefix Information] An IP address or a prefix of an IP address. The Prefix Length field contains the number of valid leading bits in the prefix. The bits in the prefix after the prefix length are reserved and MUST be initialized to zero by the sender and ignored by the receiver. A router SHOULD NOT send a prefix option for the link-local prefix and a host SHOULD ignore such a prefix option.
Default	#H00000000000000000000000000000000 (::)

Section 6 Details of Device Messagess

Command	:TSTReam:TABLE:ITEM:PROTOcol:ICMPv6:RA:PREFIX:ABIT <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOcol:ICMPv6:RA:PREFIX:ABIT?
Response	<NR1>
Description	Sets a value of the A (autonomous address-configuration flag) bit of the Router Advertisement message. * To enable this setting, option setting must be enabled.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value of 0 or 1. [RFC 2461 4.6.2. Prefix Information] 1-bit autonomous address-configuration flag. When set indicates that this prefix can be used for autonomous address configuration as specified in [ADDRCONF].

Command	:TSTReam:TABLE:ITEM:PROTOcol:ICMPv6:RA:PREFIX:LBIT <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOcol:ICMPv6:RA:PREFIX:LBIT?
Response	<NR1>
Description	Sets a value of the L (on-link flag) bit of the Router Advertisement message. * To enable this setting, option setting must be enabled.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value of 0 or 1. [RFC 2461 4.6.2. Prefix Information] 1-bit on-link flag. When set, indicates that this prefix can be used for on-link determination. When not set the advertisement makes no statement about on-link or off-link properties of the prefix. For instance, the prefix might be used for address configuration with some of the addresses belonging to the prefix being on-link and others being off-link.

Command	:TSTReam:TABLE:ITEM:PROTOCOL:ICMPv6:RA:PREFIX:LENGTH <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:ICMPv6:RA:PREFIX:LENGTH?
Response	<NR1>
Description	Sets a value of the Prefix Length field (8 bits) of the Router Advertisement message. * To enable this setting, option setting must be enabled.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 255. [RFC 2461 4.6.2. Prefix Information] 8-bit unsigned integer. The number of leading bits in the Prefix that are valid. The value ranges from 0 to 128.

Command	:TSTReam:TABLE:ITEM:PROTOCOL:ICMPv6:RA:PREFIX:ENABLE <BOOLEAN>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:ICMPv6:RA:PREFIX:ENABLE?
Response	<BOOLEAN>
Description	Selects to enable or disable the Prefix Information Option setting for Router Advertisement message.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<BOOLEAN> To enable option setting, specify {ON | 1} (ON or 1). Otherwise, specify {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query. [RFC 2461 4.2. Router Advertisement Message Format] These options specify the prefixes that are on-link and/or are used for address autoconfiguration. A router SHOULD include all its on-link prefixes (except the link-local prefix) so that multihomed hosts have complete prefix information about on-link destinations for the links to which they attach. If complete information is lacking, a multihomed host may not be able to choose the correct outgoing interface when sending traffic to its neighbors.
Default	0 (disable)

Section 6 Details of Device Messagess

Command	:TSTReam:TABLE:ITEM:PROTOcol:ICMPv6:RA:PREFix:VLIFetime <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOcol:ICMPv6:RA:PREFix:VLIFetime?
Response	<NR1>
Description	Sets a value of the Valid Lifetime field (32 bits) of the Router Advertisement message. * To enable this setting, option setting must be enabled.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 4,294,967,295 (s). [RFC 2461 4.6.2. Prefix Information] 32-bit unsigned integer. The length of time in seconds (relative to the time the packet is sent) that the prefix is valid for the purpose of on-link determination. A value of all "1" bits (0xffffffff) represents infinity. The Valid Lifetime is also used by [ADDRCONF].

Command	:TSTReam:TABLE:ITEM:PROTOcol:ICMPv6:RA:PREFix:PLIFetime <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOcol:ICMPv6:RA:PREFix:PLIFetime?
Response	<NR1>
Description	Sets a value of the Preferred Lifetime field (32 bits) of the Router Advertisement message. * To enable this setting, option setting must be enabled.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 4,294,967,295 (s). [RFC 2461 4.6.2. Prefix Information] 32-bit unsigned integer. The length of time in seconds (relative to the time the packet is sent) that addresses generated from the prefix via stateless address autoconfiguration remain preferred [ADDRCONF]. A value of all "1" bits (0xffffffff) represents infinity. See [ADDRCONF].

Command	:TSTReam:TABLE:ITEM:PROTOCOL:ICMPv6:REDirect:DESTination<IPV6_ADDRESS>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:ICMPv6:REDirect:DESTination?
Response	<IPV6_ADDRESS>
Description	Sets a value of the Destination Address field of the Redirect message.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<IPV6_ADDRESS> Set the IPv6 address value in the following 128-bit <HEX> format. Example: 1:2:3:4:5:6:7:8 is expressed as #H00010002000300040005000600070008. [RFC 2461 4.5. Redirect Message Format] The IP address of the destination that is redirected to the target.
Default	#H00000000000000000000000000000000 (::)

Command	:TSTReam:TABLE:ITEM:PROTOCOL:ICMPv6:REDirect:TARGet <IPV6_ADDRESS>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:ICMPv6:REDirect:TARGet?
Response	<IPV6_ADDRESS>
Description	Sets a value of the Target Address field of the Redirect message.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<IPV6_ADDRESS> Set the IPv6 address value in the following 128-bit <HEX> format. Example: 1:2:3:4:5:6:7:8 is expressed as #H00010002000300040005000600070008. [RFC 2461 4.5. Redirect Message Format] An IP address that is a better first hop to use for the ICMP Destination Address. When the target is the actual endpoint of communication, i.e., the destination is a neighbor, the Target Address field MUST contain the same value as the ICMP Destination Address field. Otherwise the target is a better first-hop router and the Target Address MUST be the router's link-local address so that hosts can uniquely identify routers.
Default	#H00000000000000000000000000000000 (::)

Section 6 Details of Device Messagess

Command	:TSTReam:TABLE:ITEM:PROTOCOL:ICMPv6:REDirect:LADDRESS:ENABLe<BOOLEAN>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:ICMPv6:REDirect:LADDRESS:ENABLe?
Response	<BOOLEAN>
Description	Selects to enable or disable the Target link-layer address Option setting for Redirect message.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<BOOLEAN> To enable option setting, specify {ON | 1} (ON or 1). Otherwise, specify {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query. [RFC 2461 4.5. Redirect Message Format] The link-layer address for the target. It SHOULD be included (if known). Note that on NBMA links, hosts may rely on the presence of the Target Link- Layer Address option in Redirect messages as the means for determining the link-layer addresses of neighbors. In such cases, the option MUST be included in Redirect messages.
Default	0 (disable)

Command	:TSTReam:TABLE:ITEM:PROTOCOL:ICMPv6:REDirect:LADDRESS:TARGet <HEX>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:ICMPv6:REDirect:LADDRESS:TARGet?
Response	<HEX>
Description	Sets a value of the Link-Layer Address field of the Redirect message. * To enable this setting, option setting must be enabled.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<HEX> Set the Link-Layer Address value in the <HEX> format. Example: Ethernet MAC address 01-02-03-04-05-06 is expressed as #H010203040506. [RFC 2461 4.6.1. Source/Target Link-layer Address] The variable length link-layer address. The content and format of this field (including byte and bit ordering) is expected to be specified in specific documents that describe how IPv6 operates over different link layers. For instance, [IPv6-ETHER].
Default	#H000000000000

Command	:TSTReam:TABLE:ITEM:PROTOCOL:IGMP:GADDRESS <IP_ADDRESS>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:IGMP:GADDRESS?
Response	<IP_ADDRESS>
Description	Sets a value of the group address field.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p><IP_ADDRESS></p> <p>Set a value of the group address field in the following 4-octet <HEX> format:</p> <p>Example:</p> <p>192.168.1.3 is expressed as #HC0A80103.</p> <p>See http://www.iana.org/</p> <p>[RFC 2236]</p> <p>In a Membership Query message, the group address field is set to zero when sending a General Query, and set to the group address being queried when sending a Group-Specific Query.</p> <p>In a Membership Report or Leave Group message, the group address field holds the IP multicast group address of the group being reported or left.</p>
Default	#HE0000000 (224.0.0.0)

Command	:TSTReam:TABLE:ITEM:PROTOCOL:IGMP:TYPE <HEX>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:IGMP:TYPE?
Response	<HEX>
Description	Sets a value of the type field (8 bits).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p><HEX></p> <p>Set a value of the type field in the 1-octet <HEX> format.</p> <p>[RFC 2236]</p> <p>0x11 Membership Query</p> <p>0x12 Version 1 Membership Report</p> <p>0x16 Version 2 Membership Report</p> <p>0x17 Leave Group</p>
Default	#H16

Section 6 Details of Device Messagess

Command	:TSTReam:TABLE:ITEM:PROTOCOL:IGMP:MRTIME <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:IGMP:MRTIME?
Response	<NR1>
Description	Sets a value of the max response time field (8 bits).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 255 (x0.1s) [RFC 2236] The Max Response Time field is meaningful only in Membership Query messages, and specifies the maximum allowed time before sending a responding report in units of 1/10 second. In all other messages, it is set to zero by the sender and ignored by receivers.

Command	:TSTReam:TABLE:ITEM:PROTOCOL:IP:OPTIONS <length of data>[,<HEX>]
Query	:TSTReam:TABLE:ITEM:PROTOCOL:IP:OPTIONS?
Response	<length of data>[,<HEX>]
Description	Sets a value of the option field (0 to 40 octets). * The length of the option field (octets) should be set to a multiple of 4.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<length of data> The length of the option field that is preset or to be set (0 to 40, unit: octet). <HEX> Set a value of the option field in the 0- to 40-octet <HEX> format. [RFC 791]

Command	:TSTReam:TABLE:ITEM:PROTocol:IP:FOFFset <NR1>
Query	:TSTReam:TABLE:ITEM:PROTocol:IP:FOFFset?
Response	<NR1>
Description	Sets a value of the fragment offset field (13 bits).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1>
	Set a value from 0 to 8191 (x8 octets).
	[RFC 791]
	This field indicates where in the datagram this fragment belongs. The fragment offset is measured in 8-octet units (64 bits). The first fragment has offset zero.

Command	:TSTReam:TABLE:ITEM:PROTocol:IP:TTLive <NR1>
Query	:TSTReam:TABLE:ITEM:PROTocol:IP:TTLive?
Response	<NR1>
Description	Sets a value of the time to live field (8 bits).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1>
	Set a value from 0 to 255 (router).
	[RFC 791]
	This field indicates the maximum time the datagram is allowed to remain in the internet system. If this field contains the value zero, then the datagram must be destroyed. This field is modified in internet header processing. The time is measured in units of seconds, but since every module that processes a datagram must decrease the TTL by at least one even if it process the datagram in less than a second, the TTL must be thought of only as an upper bound on the time a datagram may exist. The intention is to cause undeliverable datagrams to be discarded, and to bound the maximum datagram lifetime.
Default	64

Section 6 Details of Device Messagess

Command :TSTReam:TABLE:ITEM:PROTOCOL:IP:ID <NR1>

Query :TSTReam:TABLE:ITEM:PROTOCOL:IP:ID?

Response <NR1>

Description Sets a value of the identification field (16 bits).

Module √ MbE √ GbE √ 2.5G/10G

Parameter <NR1>

Set a value from 0 to 65535.

Command :TSTReam:TABLE:ITEM:PROTOCOL:IP:DA:VALUE <IP_ADDRESS>

Query :TSTReam:TABLE:ITEM:PROTOCOL:IP:DA:VALUE?

Response <IP_ADDRESS>

Description Sets a value of the destination address field.

Module √ MbE √ GbE √ 2.5G/10G

Parameter <IP_ADDRESS>

Set a value of the destination address field in the following 4-octet <HEX> format:

Example: 192.168.1.3 is expressed as #HC0A80103.

Default #H7F000001

Command :TSTReam:TABLE:ITEM:PROTOCOL:IP:DA:TYPE {GATEWAY | STATIC | INCREMENT | DECREMENT | RANDOM}

Query :TSTReam:TABLE:ITEM:PROTOCOL:IP:DA:TYPE?

Response {GATEWAY | STATIC | INCREMENT | DECREMENT | RANDOM}

Description Sets the type the destination address generates.

Module √ MbE √ GbE √ 2.5G/10G

Parameter {GATEWAY | STATIC | INCREMENT | DECREMENT | RANDOM}

Select one of the following:

GATEWAY Gateway value set in This Port settings

STATIC Static

INCREMENT Increment

DECREMENT Decrement

RANDOM Random

Default STATIC (Static)

Command	:TSTReam:TABLE:ITEM:PROTocol:IP:DA:MASK <IP_ADDRESS>
Query	:TSTReam:TABLE:ITEM:PROTocol:IP:DA:MASK?
Response	<IP_ADDRESS>
Description	Sets a mask value of the destination address field.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<IP_ADDRESS> Set a mask value of the destination address field in the following 4-octet <HEX> format: Example: 0.0.255.0 is expressed as #H0000FF00.
Default	#HFFFFFFF (255.255.255.255)

Command	:TSTReam:TABLE:ITEM:PROTocol:IP:FLAG:BIT2 <NR1>
Query	:TSTReam:TABLE:ITEM:PROTocol:IP:FLAG:BIT2?
Response	<NR1>
Description	Sets a value of flags (bit2)(MF).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value of 0 or 1. [RFC 791] 0 Last Fragment 1 More Fragments.
Default	0 (Last Fragment)

Section 6 Details of Device Messagess

Command	:TSTReam:TABLE:ITEM:PROTOcol:IP:FLAG:BIT1 <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOcol:IP:FLAG:BIT1?
Response	<NR1>
Description	Sets a value of flags (bit 1) (DF).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value of 0 or 1. [RFC 791] 0 May Fragment 1 Don't Fragment
Default	1 (Don't Fragment)

Command	:TSTReam:TABLE:ITEM:PROTOcol:IP:FLAG:BIT0 <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOcol:IP:FLAG:BIT0?
Response	<NR1>
Description	Sets a value of the Flags (bit 0) (reserved).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value of 0 or 1. [RFC 791] must be zero

Command	:TSTReam:TABLE:ITEM:PROTOcol:IP:PROTOcol:AUTO <BOOLEAN>
Query	:TSTReam:TABLE:ITEM:PROTOcol:IP:PROTOcol:AUTO?
Response	<BOOLEAN>
Description	Sets the auto setting of a Protocol field value to enable or disable.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<BOOLEAN> To enable the auto setting, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	1 (enable)

Command	:TSTReam:TABLE:ITEM:PROTOCOL:IP:PROTOCOL <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:IP:PROTOCOL?
Response	<NR1>
Description	<p>Sets a value of the protocol field (8 bits).</p> <p>* This value is automatically entered when the IPv4 or upper layer protocol is selected.</p>
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p><NR1></p> <p>Set a value from 0 to 255.</p> <p>For details, see http://www.iana.org/numbers.htm</p> <p>[RFC 791]</p> <p>This field indicates the next level protocol used in the data portion of the internet datagram.</p>

Command	:TSTReam:TABLE:ITEM:PROTOCOL:IP:SA:TYPE {THIS_PORT STATIC INCREMENT DECREMENT RANDOM}										
Query	:TSTReam:TABLE:ITEM:PROTOCOL:IP:SA:TYPE?										
Response	{THIS_PORT STATIC INCREMENT DECREMENT RANDOM}										
Description	Sets the type the source address generates.										
Module	√ MbE √ GbE √ 2.5G/10G										
Parameter	<p>{THIS_PORT STATIC INCREMENT DECREMENT RANDOM}</p> <p>Select one of the following:</p> <table> <tr> <td>THIS_PORT</td><td>IPv4 address set in This port settings.</td></tr> <tr> <td>STATIC</td><td>Static</td></tr> <tr> <td>INCREMENT</td><td>Increment</td></tr> <tr> <td>DECREMENT</td><td>Decrement</td></tr> <tr> <td>RANDOM</td><td>Random</td></tr> </table>	THIS_PORT	IPv4 address set in This port settings.	STATIC	Static	INCREMENT	Increment	DECREMENT	Decrement	RANDOM	Random
THIS_PORT	IPv4 address set in This port settings.										
STATIC	Static										
INCREMENT	Increment										
DECREMENT	Decrement										
RANDOM	Random										
Default	STATIC (Static)										

Section 6 Details of Device Messages

Command	:TSTReam:TABLE:ITEM:PROTOCOL:IP:SA:MASK <IP_ADDRESS>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:IP:SA:MASK?
Response	<IP_ADDRESS>
Description	Sets a mask value of the source address field.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<IP_ADDRESS> Set a mask value of the source address field in the following 4-octet <HEX> format: Example: 0.0.255.0 is expressed as #H0000FF00.
Default	#HFFFFFFF (255.255.255.FF)

Command	:TSTReam:TABLE:ITEM:PROTOCOL:IP:SA:VALUE <IP_ADDRESS>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:IP:SA:VALUE?
Response	<IP_ADDRESS>
Description	Sets a value of the source address field.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<IP_ADDRESS> Set a value of the source address field [RFC 791] in the following 4-octet <HEX> format: Example: 192.168.1.3 is expressed as #HC0A80103.
Default	#H7F000001 (127.0.0.1)

Command	:TSTReam:TABLE:ITEM:PROTOCOL:IP:TOS:PRECedence <BINARY>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:IP:TOS:PRECedence?
Response	<BINARY>
Description	Sets a value of bit0 to bit2 (Precedence) in the Type of Service field.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<BINARY> Set a value of bit0 to bit2 in the Type of Service field in the 3-bit <BINARY> format. [RFC 791] 111 Network Control 110 Internetwork Control 101 CRITIC/ECP 100 Flash Override 011 Flash 010 Immediate 001 Priority 000 Routine
Default	#B000 (Routine)

Command	:TSTReam:TABLE:ITEM:PROTOCOL:IP:TOS:REServed <BINARY>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:IP:TOS:REServed?
Response	<BINARY>
Description	Sets a value of bit6 and bit7 (Reserved for Future Use) in the Type of Service field.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<BINARY> Set a value of bit6 and bit7 in the Type of Service field in the 2-bit <BINARY> format. [RFC 791]
Default	#B00

Section 6 Details of Device Messagess

Command	:TSTReam:TABLE:ITEM:PROTocol:IP:TOS:RELIability <NR1>
Query	:TSTReam:TABLE:ITEM:PROTocol:IP:TOS:RELIability?
Response	<NR1>
Description	Sets a value of bit5 in the Type of Service field.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value of 0 or 1. [RFC 791] 0 Normal Reliability 1 High Reliability
Default	0 (Normal Reliability)

Command	:TSTReam:TABLE:ITEM:PROTocol:IP:TOS:DELAy <NR1>
Query	:TSTReam:TABLE:ITEM:PROTocol:IP:TOS:DELAy?
Response	<NR1>
Description	Sets a value of bit3 in the Type of Service field.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value of 0 or 1. [RFC 791] 0 Normal Delay 1 Low Delay
Default	0 (Normal Delay)

Command	:TSTReam:TABLE:ITEM:PROTOCOL:IP:TOS:THROUGHPUT <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:IP:TOS:THROUGHPUT?
Response	<NR1>
Description	Sets a value of bit4 in the Type of Service field.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value of 0 or 1. [RFC 791] 0 Normal Throughput 1 High Throughput
Default	0 (Normal Throughput)

Command	:TSTReam:TABLE:ITEM:PROTOCOL:IP:TLENGTH <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:IP:TLENGTH?
Response	<NR1>
Description	Sets the value for Total length field (16 bits). * This item can be set when the automatic setting function is Off. Read Only, when it is On.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 65535 (byte). [RFC 791] Total Length is the length of the datagram, measured in octet units, including internet header and data. This field allows the length of a datagram to be up to 65,535 octets. Such long datagrams are impractical for most hosts and networks. All hosts must be prepared to accept datagrams of up to 576 octets (whether they arrive whole or in fragments). It is recommended that hosts only send datagrams larger than 576 octets if they have assurance that the destination is prepared to accept the larger datagrams. The number 576 is selected to allow a reasonable sized data block to be transmitted in addition to the required header information. For example, this size allows a data block of 512 octets plus 64 header octets to fit in a datagram. The maximal internet header is 60 octets, and a typical internet header is 20 octets, allowing a margin for headers of higher level protocols.

Section 6 Details of Device Messagess

Command	:TSTReam:TABLE:ITEM:PROTocol:IP:TLENgth:AUTO <BOOLEAN>
Query	:TSTReam:TABLE:ITEM:PROTocol:IP:TLENgth:AUTO?
Response	<BOOLEAN>
Description	Selects whether to automatically set the Total length field value.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<BOOLEAN> Set {ON | 1} (ON or 1) to automatically set the Total length field value. Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data to the query.
Default	1 (enable)

Command	:TSTReam:TABLE:ITEM:PROTocol:IPV6:HLIMit <NR1>
Query	:TSTReam:TABLE:ITEM:PROTocol:IPV6:HLIMit?
Response	<NR1>
Description	Sets a value of the hop limit field (8 bits).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 255. [RFC 2460] Decrementd by 1 by each node that forwards the packet. The packet is discarded if Hop Limit is decremented to zero.
Default	255

Command	:TSTReam:TABLE:ITEM:PROTocol:IPV6:NHEader:AUTO <BOOLEAN>
Query	:TSTReam:TABLE:ITEM:PROTocol:IPV6:NHEader:AUTO?
Response	<BOOLEAN>
Description	Selects whether to enable/disable automatic setting of the next header field value.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<BOOLEAN> To set the next header field value automatically, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	1 (enable)

Section 6 Details of Device Messagess

Command	:TSTReam:TABLE:ITEM:PROTocol:IPV6:NHEader <NR1>
Query	:TSTReam:TABLE:ITEM:PROTocol:IPV6:NHEader?
Response	<NR1>
Description	Sets a value of the next header field (8 bits). * This item can be set when the automatic setting function is Off. Read Only, when it is On.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 255. For details, see http://www.iana.org/ [RFC 2460] 8-bit selector. Identifies the type of header immediately following the IPv6 header. Uses the same values as the IPv4 Protocol field [RFC-1700 et seq.].
Default	59 (IPv6-NoNxt)

Command	:TSTReam:TABLE:ITEM:PROTocol:IPV6:FLABel <NR1>
Query	:TSTReam:TABLE:ITEM:PROTocol:IPV6:FLABel?
Response	<NR1>
Description	Sets a value of the flow label field (20 bits).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 1048575. [RFC 2460] 20-bit flow label.

Command	:TSTReam:TABLE:ITEM:PROTOCOL:IPV6:TCLass <BINARY>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:IPV6:TCLass?
Response	<BINARY>
Description	Sets a value of the traffic class field (8 bits).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<BINARY> Set a value of the traffic class field in the 8-bit <BINARY> format. [RFC 2460] 8-bit traffic class field. See also [RFC 2474] and [RFC2475].
Default	#B00000000

Command	:TSTReam:TABLE:ITEM:PROTOCOL:IPV6:DA:MASK <IPV6_ADDRESS>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:IPV6:DA:MASK?
Response	<IPV6_ADDRESS>
Description	Sets a mask value of the destination address field.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<IPV6_ADDRESS> Set a mask value of the destination address field in the following 16-octet <HEX> format. The fields whose bits become "1" by masking are subject to Increment, Decrement, and Random. Example: ::FFFF:0 is expressed as #H000000000000000000000000FFFF0000. * For the MU120101A/02A, MU120103A/03B/04A/05A/06A/04B/19A/20A, and MU150101A, up to 32 bits can be set to "1" by masking.
Default	#HFFFFFFFFFFFFFFFFFFFFFFFFFFFF (FFFF:FFFF:FFFF:FFFF:FFFF:FFFF:FFFF:FFFF:FFFF)

Section 6 Details of Device Messagess

Command	:TSTReam:TABLE:ITEM:PROTOcol:IPV6:DA:TYPE {GATEWAY | STATIC | INCREMENT | DECREMENT | RANDOM}
Query	:TSTReam:TABLE:ITEM:PROTOcol:IPV6:DA:TYPE?
Response	{GATEWAY | STATIC | INCREMENT | DECREMENT | RANDOM}
Description	Sets the type the destination address generates.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	{GATEWAY | STATIC | INCREMENT | DECREMENT | RANDOM}

Select one of the following:

GATEWAY	Default Router value set in This Port settings. (*1)
STATIC	Static
INCREMENT	Increment (*2)
DECREMENT	Decrement (*2)
RANDOM	Random (*2)

*1: Enabled when MD1230B-12 of IPv6 Option is installed.

*2: For the MU120103A/04A/05A/06A/03B/04B and MU150101A, Increment, Decrement, and Random can only be set to either the source address or destination address.

Default	STATIC (Static)
---------	-----------------

Command	:TSTReam:TABLE:ITEM:PROTOcol:IPV6:DA:VALue <IPV6_ADDRESS>
Query	:TSTReam:TABLE:ITEM:PROTOcol:IPV6:DA:VALue?
Response	<IPV6_ADDRESS>
Description	Sets a value of the destination address field.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<IPV6_ADDRESS> Set a value of the destination address field in the following 16-octet <HEX> format: Example: 1:2:3:4:5:6:7:8 is expressed as #H00010002000300040005000600070008. [RFC 2460] 128-bit address of the intended recipient of the packet (possibly not the ultimate recipient, if a Routing header is present).
Default	#H00000000000000000000000000000000 (::)

Command	:TSTReam:TABLE:ITEM:PROTOCOL:IPV6:SA:MASK <IPV6_ADDRESS>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:IPV6:SA:MASK?
Response	<IPV6_ADDRESS>
Description	Sets a mask value of the source address field.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<IPV6_ADDRESS> Set a mask value of the source address field in the following 16-octet <HEX> format. The fields whose bits become "1" by masking are subject to Increment, Decrement, and Random. Example: ::FFFF:0 is expressed as #H000000000000000000000000FFFF0000. * For the MU120101A/02A, MU120103A/03B/04A/05A/06A/04B/19A/20A, and MU150101A, up to 32 bits can be set to "1" by masking.
Default	#HFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF (FFFF:FFFF:FFFF:FFFF:FFFF:FFFF:FFFF:FFFF)

Command	:TSTReam:TABLE:ITEM:PROTOCOL:IPV6:SA:VALUE <IPV6_ADDRESS>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:IPV6:SA:VALUE?
Response	<IPV6_ADDRESS>
Description	Sets a value of the source address field.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<IPV6_ADDRESS> Set a value of the source address field in the following 16-octet <HEX> format: Example: 1:2:3:4:5:6:7:8 is expressed as #H00010002000300040005000600070008. [RFC 2460] 128-bit address of the originator of the packet.
Default	#H00000000000000000000000000000000 (::)

Section 6 Details of Device Messagess

Command	:TSTReam:TABLE:ITEM:PROTOCOL:IPV6:SA:TYPE {THIS_PORT STATIC INCREMENT DECREMENT RANDOM}										
Query	:TSTReam:TABLE:ITEM:PROTOCOL:IPV6:SA:TYPE?										
Response	{THIS_PORT STATIC INCREMENT DECREMENT RANDOM}										
Description	Sets the type the source address generates.										
Module	√ MbE √ GbE √ 2.5G/10G										
Parameter	<div>{THIS_PORT STATIC INCREMENT DECREMENT RANDOM}</div> <div>Select one of the following:</div> <table><tr><td>THIS_PORT</td><td>IPv6 address set in This port settings. (*1)</td></tr><tr><td>STATIC</td><td>Static</td></tr><tr><td>INCREMENT</td><td>Increment (*2)</td></tr><tr><td>DECREMENT</td><td>Decrement (*2)</td></tr><tr><td>RANDOM</td><td>Random (*2)</td></tr></table> <div>*1: Enabled when MD1230B-12 of IPv6 Option is installed.</div> <div>*2: For the MU120103A/04A/05A/06A/03B/04B and MU150101A, Increment, Decrement, and Random can only be set to either the source address or destination address.</div>	THIS_PORT	IPv6 address set in This port settings. (*1)	STATIC	Static	INCREMENT	Increment (*2)	DECREMENT	Decrement (*2)	RANDOM	Random (*2)
THIS_PORT	IPv6 address set in This port settings. (*1)										
STATIC	Static										
INCREMENT	Increment (*2)										
DECREMENT	Decrement (*2)										
RANDOM	Random (*2)										
Default	STATIC (Static)										

Command	:TSTReam:TABLE:ITEM:PROTOCOL:IPV6:PLENgtH <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:IPV6:PLENgtH?
Response	<NR1>
Description	<div>Sets the value for Payload length field (16 bits).</div> <div>* This item can be set when the automatic setting function is Off. Read Only, when it is On.</div>
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<div><NR1></div> <div>Set a value from 0 to 65535 (byte).</div> <div>[RFC 2460]</div> <div>16-bit unsigned integer. Length of the IPv6 payload, i.e., the rest of the packet following this IPv6 header, in octet units. (Note that any extension headers present are considered part of the payload, i.e., included in the length count.)</div>

Command	:TSTReam:TABLE:ITEM:PROTocol:IPV6:PLENgtH:AUTO <BOOLEAN>
Query	:TSTReam:TABLE:ITEM:PROTocol:IPV6:PLENgtH:AUTO?
Response	<BOOLEAN>
Description	Selects whether to automatically set the Payload length field value.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<BOOLEAN> Set {ON | 1} (ON or 1) to automatically set the Payload length field value. Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data to the query.
Default	1 (enable)

Command	:TSTReam:TABLE:ITEM:PROTocol:IPV6:EXTension:DESTination:FIRSt:ENABle <BOOLEAN>
Query	:TSTReam:TABLE:ITEM:PROTocol:IPV6:EXTension:DESTination:FIRSt:ENABle?
Response	<BOOLEAN>
Description	Selects whether to enable/disable the setting for the Destination Options extension header that appears at first.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<BOOLEAN> To enable the setting, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	0 (disable)

Section 6 Details of Device Messagess

Command	:TSTReam:TABLE:ITEM:PROTocol:IPV6:EXTension:DESTination:FIRSt:OPTions <HEX>
Query	:TSTReam:TABLE:ITEM:PROTocol:IPV6:EXTension:DESTination:FIRSt:OPTions?
Response	<HEX>
Description	Sets the Option field value in the Destination Options extension header that appears at first.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<HEX> Set the field value in the 6- to 254-octet <HEX> format. [RFC 2460 4.6 Destination Options Header] Options Variable-length field, of length such that the complete Destination Options header is an integer multiple of 8 octets long. Contains one or more TLV-encoded options, as described in section 4.2.
Default	#H00000000000000

Command	:TSTReam:TABLE:ITEM:PROTocol:IPV6:EXTension:DESTination:SECOnd:ENABle <BOOLEAN>
Query	:TSTReam:TABLE:ITEM:PROTocol:IPV6:EXTension:DESTination:SECOnd:ENABle?
Response	<BOOLEAN>
Description	Selects whether to enable/disable the setting for the Destination Options extension header that appears secondly.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<BOOLEAN> To enable the setting, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	0 (disable)

Command	:TSTReam:TABLE:ITEM:PROTOCOL:IPV6:EXTension:DESTination:SECond:OPTions<HEX>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:IPV6:EXTension:DESTination:SECond:OPTions?
Response	<HEX>
Description	Sets the Option field value in the Destination Options extension header that appears secondly.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<HEX> Set the field value in the 6- to 254-octet <HEX> format. [RFC 2460 4.6 Destination Options Header] Options Variable-length field, of length such that the complete Destination Options header is an integer multiple of 8 octets long. Contains one or more TLV-encoded options, as described in section 4.2.
Default	#H000000000000

Command	:TSTReam:TABLE:ITEM:PROTOCOL:IPV6:EXTension:FRAGment:ID <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:IPV6:EXTension:FRAGment:ID?
Response	<NR1>
Description	Sets the value for the Identification field in the Fragment extension header.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 4,294,967,295. [RFC 2460 4.5 Fragment Header] Identification 32 bits. For every packet that is to be fragmented, the source node generates an Identification value. The Identification must be different than that of any other fragmented packet sent recently* with the same Source Address and Destination Address.

Section 6 Details of Device Messagess

Command	:TSTReam:TABLE:ITEM:PROTOcol:IPV6:EXTension:FRAGment:ENABle <BOOLEAN>
Query	:TSTReam:TABLE:ITEM:PROTOcol:IPV6:EXTension:FRAGment:ENABle?
Response	<BOOLEAN>
Description	Selects whether to enable the Fragment extension header setting.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<BOOLEAN> To enable the setting, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	0 (disable)

Command	:TSTReam:TABLE:ITEM:PROTOcol:IPV6:EXTension:FRAGment:M <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOcol:IPV6:EXTension:FRAGment:M?
Response	<NR1>
Description	Sets the value of M flag for the Fragment extension header.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value 0 or 1. [RFC 2460 4.5 Fragment Header] M flag 1 = more fragments; 0 = last fragment.
Default	0 (last fragment)

Command	:TSTReam:TABLE:ITEM:PROTOCOL:IPV6:EXTension:FRAGment:OFFSet <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:IPV6:EXTension:FRAGment:OFFSet?
Response	<NR1>
Description	Sets the value of Fragment Offset field in the Fragment extension header.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1>

Set a value from 0 to 8191(* 8 octets).

[RFC 2460 4.5 Fragment Header]

Fragment Offset

13-bit unsigned integer. The offset, in 8-octet units, of the data following this header, relative to the start of the Fragmentable Part of the original packet.

Command	:TSTReam:TABLE:ITEM:PROTOCOL:IPV6:EXTension:HOP:ENABle <BOOLEAN>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:IPV6:EXTension:HOP:ENABle?
Response	<BOOLEAN>
Description	Selects whether to enable the Hop-by-Hop Options extension header setting.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<BOOLEAN>

To enable the setting, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0).
1 or 0 is returned as the response data for the query.

Default 0 (disable)

Section 6 Details of Device Messagess

Command	:TSTReam:TABLE:ITEM:PROTOcol:IPV6:EXTension:HOP:OPTions <HEX>
Query	:TSTReam:TABLE:ITEM:PROTOcol:IPV6:EXTension:HOP:OPTions?
Response	<HEX>
Description	Sets the value of the Option field in the Hop-by-Hop Options extension header.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<HEX> Set the field value in the 6- to 254-octet <HEX> format. [RFC 2460 4.3 Hop-by-Hop Options Header] Options Variable-length field, of length such that the complete Hop-by-Hop Options header is an integer multiple of 8 octets long. Contains one or more TLV-encoded options, as described in section 4.2.
Default	#H0000000000000

Command	:TSTReam:TABLE:ITEM:PROTOcol:IPV6:EXTension:ROUTing:TYPE <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOcol:IPV6:EXTension:ROUTing:TYPE?
Response	<NR1>
Description	Sets the Routing Type field value in the Routing extension header.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 255. See http://www.iana.org/ [RFC 2460 4.4 Routing Header] Routing Type 8-bit identifier of a particular Routing header variant.
Default	0 (Source Route)

Command	:TSTReam:TABLE:ITEM:PROTOCOL:IPV6:EXTension:ROUTing:SLEFt <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:IPV6:EXTension:ROUTing:SLEFt?
Response	<NR1>
Description	Sets the Segments Left field value in the Routing extension header.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 255. [RFC 2460 4.4 Routing Header] Segments Left 8-bit unsigned integer. Number of route segments remaining, i.e., number of explicitly listed intermediate nodes still to be visited before reaching the final destination.

Command	:TSTReam:TABLE:ITEM:PROTOCOL:IPV6:EXTension:ROUTing:ADDRess <number of address>[,<IPV6_ADDRESS>]...
Query	:TSTReam:TABLE:ITEM:PROTOCOL:IPV6:EXTension:ROUTing:ADDRess?
Response	<number of address>[,<IPV6_ADDRESS>]...
Description	Sets the address field value in the Routing extension header.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<number of address> Number of the IPv6 address. Can be set from 0 to 16. <IPV6_ADDRESS> Set the IPv6 address value in the following 128-bit <HEX> format: Example: 1:2:3:4:5:6:7:8 is expressed as #H00010002000300040005000600070008.

Section 6 Details of Device Messagess

Command	:TSTReam:TABLE:ITEM:PROTOCOL:IPV6:EXTension:ROUTing:ENABle <BOOLEAN>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:IPV6:EXTension:ROUTing:ENABle?
Response	<BOOLEAN>
Description	Selects whether to enable/disable the setting for the Routing extension header.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<BOOLEAN> To enable the setting, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	0 (disable)

Command	:TSTReam:TABLE:ITEM:PROTOCOL:IPV6:EXTension:NHEader <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:IPV6:EXTension:NHEader?
Response	<NR1>
Description	Sets the value of the next header field (8 bits) in the last extension header. * This item can be set when the automatic setting function is Off. Read Only, when it is On.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 255. See http://www.iana.org/ [RFC 2460] 8-bit selector. Identifies the type of header immediately following the IPv6 header. Uses the same values as the IPv4 Protocol field [RFC-1700 et seq.].
Default	59 (IPv6-NoNxt)

Command	:TSTReam:TABLE:ITEM:PROTOCOL:IPV6:EXTension:NHEader:AUTO <BOOLEAN>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:IPV6:EXTension:NHEader:AUTO?
Response	<BOOLEAN>
Description	Selects whether to set the value of the next header field in the last extension header automatically.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<BOOLEAN> To set the next header field value automatically, set {ON | 1}(ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	1 (enable)

Command	:TSTReam:TABLE:ITEM:PROTOCOL:IPX:PTYPE <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:IPX:PTYPE?
Response	<NR1>
Description	Sets a value of the packet type field (1 octet).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 255. 0 Unknown 1 RIP 2 Echo 3 Error 4 IPX 5 SPX 17 NCP
Default	0 (Unknown)

Section 6 Details of Device Messagess

Command	:TSTReam:TABLE:ITEM:PROTOcol:IPX:TCONtrol <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOcol:IPX:TCONtrol?
Response	<NR1>
Description	Sets a value of the transport control field (1 octet).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 255 (router).

Command	:TSTReam:TABLE:ITEM:PROTOcol:IPX:SSOCKet <HEX>
Query	:TSTReam:TABLE:ITEM:PROTOcol:IPX:SSOCKet?
Response	<HEX>
Description	Sets a value of the source socket field (2 octets).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<HEX> Set a value of the source socket field in the 2-octet <HEX> format.
Default	#H0000

Command	:TSTReam:TABLE:ITEM:PROTOcol:IPX:SNODE <HEX>
Query	:TSTReam:TABLE:ITEM:PROTOcol:IPX:SNODE?
Response	<HEX>
Description	Sets a value of the source node field (6 octets).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<HEX> Set a value of the source node field in the 6-octet <HEX> format.
Default	#H000000000000

Command	:TSTReam:TABLE:ITEM:PROTOCOL:IPX:SNETWORK <HEX>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:IPX:SNETWORK?
Response	<HEX>
Description	Sets a value of the source network field (4 octets).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<HEX> Set a value of the source network field in the 4-octet <HEX> format.
Default	#H00000000

Command	:TSTReam:TABLE:ITEM:PROTOCOL:IPX:DSOCKET <HEX>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:IPX:DSOCKET?
Response	<HEX>
Description	Sets a value of the destination socket field (2 octets).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<HEX> Set a value of the destination socket field in the 2-octet <HEX> format.
Default	#H0000

Command	:TSTReam:TABLE:ITEM:PROTOCOL:IPX:DNETWORK <HEX>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:IPX:DNETWORK?
Response	<HEX>
Description	Sets a value of the destination network field (4 octets).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<HEX> Set a value of the destination network field in the 4-octet <HEX> format.
Default	#H00000000

Section 6 Details of Device Messagess

Command	:TSTReam:TABLE:ITEM:PROTOCOL:IPX:DNODE <HEX>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:IPX:DNODE?
Response	<HEX>
Description	Sets a value of the destination node field (6 octets).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<HEX> Set a value of the destination node field in the 6-octet <HEX> format.
Default	#H000000000000

Command	:TSTReam:TABLE:ITEM:PROTOCOL:ISIS:MAADDR <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:ISIS:MAADDR?
Response	<NR1>
Description	Sets a value of the Maximum Area Addresses field (1 octet).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 254. 0 Handled as 3 when the Maximum Area Addresses supports only 3 while using IS. 1 to 254 Number of Area Addresses

Command	:TSTReam:TABLE:ITEM:PROTOCOL:ISIS:ILENGTH <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:ISIS:ILENGTH?
Response	<NR1>
Description	Sets a value of the ID Length field (1 octet).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 255. 0 Source ID length is 6 octets. 1 to 8 Source ID length 255 Source ID length is 0 octets.

Command	:TSTReam:TABLE:ITEM:PROTOCOL:ISIS:VLFields <length of data>[,<HEX>]
Query	:TSTReam:TABLE:ITEM:PROTOCOL:ISIS:VLFields?
Response	<length of data>[,<HEX>]
Description	Sets a value of the Variable Length field.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<length of data> Set the Variable Length Field length (0 to 255 octets). <HEX> Set the Variable Length Field value in the 0- to 255-octet <HEX> format.

Command	:TSTReam:TABLE:ITEM:PROTOCOL:ISIS:PTYPE <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:ISIS:PTYPE?
Response	<NR1>
Description	Sets a value of the PDU Type field (5 bits).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 31. 15 Level 1 LAN IS to IS Hello PDU 16 Level 2 LAN IS to IS Hello PDU 17 Point-to-point IS to IS Hello PDU 18 Level 1 Link State PDU 20 Level 2 Link State PDU 24 Level 1 Complete Sequence Numbers PDU 25 Level 2 Complete Sequence Numbers PDU 26 Level 1 Partial Sequence Numbers PDU 27 Level 2 Partial Sequence Numbers PDU
Default	15 (Level 1 LAN IS to IS Hello PDU)

Section 6 Details of Device Messagess

Command :TSTReam:TABLE:ITEM:PROTOCOL:ISIS:CSN:ELSP <HEX>
Query :TSTReam:TABLE:ITEM:PROTOCOL:ISIS:CSN:ELSP?
Response <HEX>
Description Sets a value of the End LSP ID field of Level 1/2 Complete Sequence Numbers PDU.
Module √ MbE √ GbE √ 2.5G/10G
Parameter <HEX>

The End LSP ID field length is the set value for ID Length +2.
ID configuration are shown below:

Name	Length
Source ID	ID Length
Pseudo node ID	1
LSP Number	1

Default #H0000000000000000

Command :TSTReam:TABLE:ITEM:PROTOCOL:ISIS:CSN:SLSP <HEX>
Query :TSTReam:TABLE:ITEM:PROTOCOL:ISIS:CSN:SLSP?
Response <HEX>
Description Sets a value of the Start LSP ID field of Level 1/2 Complete Sequence Numbers PDU.
Module √ MbE √ GbE √ 2.5G/10G
Parameter <HEX>

The Start LSP ID field length is the set value for ID Length +2.
ID configuration are shown below:

Name	Length
Source ID	ID Length
Pseudo node ID	1
LSP Number	1

Default #H0000000000000000

Command	:TSTReam:TABLE:ITEM:PROTOCOL:ISIS:CSN:SOURce <HEX>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:ISIS:CSN:SOURce?
Response	<HEX>
Description	Sets a value of the Source ID field of Level 1/2 Complete Sequence Numbers PDU.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<HEX> The Source ID (System ID + Circuit ID) field length is the set value for ID Length +1.
Default	#H0000000000000000

Command	:TSTReam:TABLE:ITEM:PROTOCOL:ISIS:LHELlo:CTYPE <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:ISIS:LHELlo:CTYPE?
Response	<NR1>
Description	Sets a value of the Reserved/Circuit Type field (1 octet) of Level 1/2 LAN IS to IS Hello PDU.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 255. 0 reserved 1 Level 1 Only 2 Level 2 Only 3 Level 1 and Level 2

Section 6 Details of Device Messagess

Command	:TSTReam:TABLE:ITEM:PROTOCOL:ISIS:LHELlo:SOURce <HEX>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:ISIS:LHELlo:SOURce?
Response	{<HEX> | NULL}
Description	Sets a value of the Source ID field of Level 1/2 LAN IS to IS Hello PDU.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	{<HEX> | NULL} Set a value of the Source ID field in the <HEX> format of the field length specified in ID Length settings. When the ID Length field value is 255 (Source ID length is 0 octets), NULL is returned.
Default	#H000000000000

Command	:TSTReam:TABLE:ITEM:PROTOCOL:ISIS:LHELlo:HTIME <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:ISIS:LHELlo:HTIME?
Response	<NR1>
Description	Sets a value of the Holding Time field (2 octets) of Level 1/2 LAN IS to IS Hello PDU.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 65,535.

Command	:TSTReam:TABLE:ITEM:PROTOCOL:ISIS:LHELlo:PRIority <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:ISIS:LHELlo:PRIority?
Response	<NR1>
Description	Sets a value of the Priority field (7 bits) of Level 1/2 LAN IS to IS Hello PDU.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 127.

Command	:TSTReam:TABLE:ITEM:PROTOCOL:ISIS:LHELlo:LAN <HEX>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:ISIS:LHELlo:LAN?
Response	<HEX>
Description	Sets a value of the LAN ID field of Level 1/2 LAN IS to IS Hello PDU.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<HEX>
	The LAN ID field length is the set value for ID Length +1.
Default	#H0000000000000000

Command	:TSTReam:TABLE:ITEM:PROTOCOL:ISIS:LSTate:LSP <HEX>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:ISIS:LSTate:LSP?
Response	<HEX>
Description	Sets a value of the LSP ID field of Level 1/2 Link State PDU.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<HEX>
	The LSP ID field length is the set value for ID Length +2.
	ID configuration are shown below:

Name	Length
Source ID	ID Length
Pseudo node ID	1
LSP Number	1

Default	#H0000000000000000
---------	--------------------

Section 6 Details of Device Messagess

Command	:TSTReam:TABLE:ITEM:PROTOCOL:ISIS:LSTate:ITYPE <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:ISIS:LSTate:ITYPE?
Response	<NR1>
Description	Sets a value of the IS Type field (Bits 1, 2) of Level 1/2 Link State PDU.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 3. 0 Unused 1 Level 1 Intermediate system 2 Unused 3 Level 2 Intermediate system

Command	:TSTReam:TABLE:ITEM:PROTOCOL:ISIS:LSTate:LSPDbol <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:ISIS:LSTate:LSPDbol?
Response	<NR1>
Description	Sets a value of the LSPDBOL bit (Bit 3, LSP Database Overload) of Level 1/2 Link State PDU.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value of 0 or 1. 0 No LSP Database Overload 1 LSP Database Overload

Command	:TSTReam:TABLE:ITEM:PROTOCOL:ISIS:LSTate:SN <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:ISIS:LSTate:SN?
Response	<NR1>
Description	Sets a value of the Sequence Number field (4 octets) of Level 1/2 Link State PDU.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 4,294,967,295.

Command	:TSTReam:TABLE:ITEM:PROTOCOL:ISIS:LSTate:RLIFetime <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:ISIS:LSTate:RLIFetime?
Response	<NR1>
Description	Sets a value of the Remaining Lifetime field (2 octets) of Level 1/2 Link State PDU.Module
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 65,535.

Command	:TSTReam:TABLE:ITEM:PROTOCOL:ISIS:LSTate:ATT <BINARY>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:ISIS:LSTate:ATT?
Response	<BINARY>
Description	Sets a value of the ATT field (Bits 7 to 4) of Level 1/2 Link State PDU.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<BINARY> Set the bit7 through bit4 values of the ATT field in the following 4-bit < BINARY > format. Bit 4 - Default Metric Bit 5 - Delay Metric Bit 6 - Expense Metric Bit 7 - Error Metric
Default	#B0000

Command	:TSTReam:TABLE:ITEM:PROTOCOL:ISIS:LSTate:PBIT <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:ISIS:LSTate:PBIT?
Response	<NR1>
Description	Sets a value of the P bit (Bit8, Repair Partition option) of Level 1/2 Link State PDU.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value of 0 or 1.

Section 6 Details of Device Messagess

Command	:TSTReam:TABLE:ITEM:PROTocol:ISIS:PSN:SOURce <HEX>
Query	:TSTReam:TABLE:ITEM:PROTocol:ISIS:PSN:SOURce?
Response	<HEX>
Description	Sets a value of the Source ID field of Level 1/2 Partial Sequence Numbers PDU.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<HEX> The Source ID (System ID + Circuit ID) field length is the set value for ID Length +1.
Default	#H0000000000000000

Command	:TSTReam:TABLE:ITEM:PROTocol:ISIS:PHELlo:LCIRcuit <NR1>
Query	:TSTReam:TABLE:ITEM:PROTocol:ISIS:PHELlo:LCIRcuit?
Response	<NR1>
Description	Sets a value of the Local Circuit ID field (1 octet) of Point-to-point IS to IS Hello PDU.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 255.

Command	:TSTReam:TABLE:ITEM:PROTocol:ISIS:PHELlo:HTIME <NR1>
Query	:TSTReam:TABLE:ITEM:PROTocol:ISIS:PHELlo:HTIME?
Response	<NR1>
Description	Sets a value of the Holding Time field (2 octets) of Point-to-point IS to IS Hello PDU.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 65,535.

Command	:TSTReam:TABLE:ITEM:PROTOCOL:ISIS:PHello:SOURce <HEX>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:ISIS:PHello:SOURce?
Response	{<HEX> | NULL}
Description	Sets a value of the Source ID field of Point-to-point IS to IS Hello PDU.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	{<HEX> | NULL}
	Set a value of the Source ID field in the <HEX> format of the field length specified in ID Length settings. When the ID Length field value is 255 (Source ID length is 0 octets), NULL is returned.
Default	#H000000000000

Command	:TSTReam:TABLE:ITEM:PROTOCOL:ISIS:PHello:CTYPe <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:ISIS:PHello:CTYPe?
Response	<NR1>
Description	Sets a value of the Reserved/Circuit Type field (1 octet) of Point-to-point IS to IS Hello PDU.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1>
	Set a value from 0 to 255.
	0 Reserved
	1 Level 1 Only
	2 Level 2 Only
	3 Level 1 and Level 2

Command	:TSTReam:TABLE:ITEM:PROTOCOL:MCONTROL:QUANta <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:MCONTROL:QUANta?
Response	<NR1>
Description	Sets the Quanta Value of the pause function (the MAC CONTROL PARAMETERS field when MAC CONTROL OP CODE field is set to PAUSE).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1>
	Set a value from 0 to 65535.

Section 6 Details of Device Messagess

Command	:TSTReam:TABLE:ITEM:PROTOcol:RIP:COMMand <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOcol:RIP:COMMand?
Response	<NR1>
Description	Sets a value of the command field (8 bits).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 255. 1 Request 2 Response
Default	1 (Request)

Command	:TSTReam:TABLE:ITEM:PROTOcol:RIP:VERSion <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOcol:RIP:VERSion?
Response	<NR1>
Description	Sets a value of the version field (8 bits).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 255. 1 Version1 (*1) 2 Version2 (*1) *1:When version1 is set, the value set for rip1 becomes valid. When version2 is set, the value set for rip2 becomes valid.
Default	2 (Version2)

Command	:TSTReam:TABLE:ITEM:PROTOCOL:RIP:ENTRY:ID <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:RIP:ENTRY:ID?
Response	<NR1>
Description	Specified the RIP entry ID to be edited.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 1 to 25.
Default	1

Command	:TSTReam:TABLE:ITEM:PROTOCOL:RIP:ENTRY:ENABLE <BOOLEAN>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:RIP:ENTRY:ENABLE?
Response	<BOOLEAN>
Description	Sets whether to use the RIP entry setting for the specified ID.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<BOOLEAN> To use the setting, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	0 (disable)

Command	:TSTReam:TABLE:ITEM:PROTOCOL:RIP:ENTRY:AFIdentifier <HEX>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:RIP:ENTRY:AFIdentifier?
Response	<HEX>
Description	Sets a value of the address family identifier field (16 bits). * When the value is set to 0xFFFF, the value set for the authentication field becomes valid.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<HEX> Set a value of the address family identifier field in the 2-octet <HEX> format.
Default	#H0000

Section 6 Details of Device Messagess

Command	:TSTReam:TABLE:ITEM:PROTOCOL:RIP:ENTRY:AUTHenticat:TYPE <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:RIP:ENTRY:AUTHenticat:TYPE?
Response	<NR1>
Description	Sets a value of the type field (16 bits).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 65535. [RFC 2453] 1 IP Route 2 Password 3 Keyed Message Digest Algorithm
Default	2 (Password)

Command	:TSTReam:TABLE:ITEM:PROTOCOL:RIP:ENTRY:AUTHenticat "<authentication>"
Query	:TSTReam:TABLE:ITEM:PROTOCOL:RIP:ENTRY:AUTHenticat?
Response	"<authentication>"
Description	Sets a value of the authentication field (0 to 16 octets).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<authentication> A value of the authentication field. Specify it with a 0- to 16-octet string. [RFC 2453, 4.1 Authentication] The remaining 16 octets contain the plain text password. If the password is under 16 octets, it must be left-justified and padded to the right with nulls (0x00).
Default	""

Command	:TSTReam:TABLE:ITEM:PROTOCOL:RIP:ENTRy:RIP1:IADDRESS <IP_ADDRESS>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:RIP:ENTRy:RIP1:IADDRESS?
Response	<IP_ADDRESS>
Description	Sets a value of the ip address field.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<IP_ADDRESS> Set a value of the ip address field in the following 4-octet <HEX> format. Example: 192.168.1.3 is expressed as #HC0A80103.
Default	#H00000000 (0.0.0.0)

Command	:TSTReam:TABLE:ITEM:PROTOCOL:RIP:ENTRy:RIP1:METRic <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:RIP:ENTRy:RIP1:METRic?
Response	<NR1>
Description	Sets a value of the metric field (4 octets).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 4294967295. [RFC 2453] The metric field contains a value between 1 and 15 (inclusive) that specifies the current metric for the destination; or the value 16 (infinity), which indicates that the destination is not reachable.
Default	1

Section 6 Details of Device Messagess

Command	:TSTReam:TABLE:ITEM:PROTocol:RIP:ENTRy:RIP2:IADdress <IP_ADDRESS>
Query	:TSTReam:TABLE:ITEM:PROTocol:RIP:ENTRy:RIP2:IADdress?
Response	<IP_ADDRESS>
Description	Sets a value of the ip address field.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<IP_ADDRESS> Set a value of the ip address field in the following 4-octet <HEX> format. Example: 192.168.1.3 is expressed as #HC0A80103.
Default	#H00000000 (0.0.0.0)

Command	:TSTReam:TABLE:ITEM:PROTocol:RIP:ENTRy:RIP2:NHOP <IP_ADDRESS>
Query	:TSTReam:TABLE:ITEM:PROTocol:RIP:ENTRy:RIP2:NHOP?
Response	<IP_ADDRESS>
Description	Sets a value of the next hop field.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<IP_ADDRESS> Set a value of the next hop field in the following 4-octet <HEX> format: Example: 192.168.1.3 is expressed as #HC0A80103. [RFC 2453] The immediate next hop IP address to which packets to the destination specified by this route entry should be forwarded. Specifying a value of 0.0.0.0 in this field indicates that routing should be via the originator of the RIP advertisement. An address specified as a next hop must, per force, be directly reachable on the logical subnet over which the advertisement is made. The purpose of the Next Hop field is to eliminate packets being routed through extra hops in the system. It is particularly useful when RIP is not being run on all of the routers on a network. A simple example is given in Appendix A. Note that Next Hop is an "advisory" field. That is, if the provided information is ignored, a possibly sub-optimal, but absolutely valid, route may be taken. If the received Next Hop is not directly reachable, it should be treated as 0.0.0.0.
Default	#H00000000 (0.0.0.0)

Command	:TSTReam:TABLE:ITEM:PROTOCOL:RIP:ENTRY:RIP2:RTAG <HEX>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:RIP:ENTRY:RIP2:RTAG?
Response	<HEX>
Description	Sets a value of the route tag field (16 bits)
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<HEX> Set a value of the route tag field in the 2-octet <HEX> format. [RFC 2453] The Route Tag (RT) field is an attribute assigned to a route that must be preserved and readvertised with a route. The intended use of the Route Tag is to provide a method of separating "internal" RIP routes (routes for networks within the RIP routing domain) from "external" RIP routes, which may have been imported from an EGP or another IGP.
Default	#H0000

Command	:TSTReam:TABLE:ITEM:PROTOCOL:RIP:ENTRY:RIP2:METRIC <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:RIP:ENTRY:RIP2:METRIC?
Response	<NR1>
Description	Sets a value of the metric field (4 octets).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 4294967295. [RFC 2453] The metric field contains a value between 1 and 15 (inclusive) that specifies the current metric for the destination; or the value 16 (infinity), which indicates that the destination is not reachable.
Default	1

Section 6 Details of Device Messagess

Command	:TSTReam:TABLE:ITEM:PROTocol:RIP:ENTRy:RIP2:SMASk <IP_ADDRESS>
Query	:TSTReam:TABLE:ITEM:PROTocol:RIP:ENTRy:RIP2:SMASk?
Response	<IP_ADDRESS>
Description	Sets a value of the subnet mask field.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<IP_ADDRESS> Set a value of the subnet mask in the following 4-octet <HEX> format. Example: 192.168.1.3 is expressed as #HC0A80103. [RFC 2453] The Subnet Mask field contains the subnet mask that is applied to the IP address to yield the non-host portion of the address. If this field is zero, then no subnet mask has been included for this entry.
Default	#H00000000 (0.0.0.0)

Command	:TSTReam:TABLE:ITEM:PROTocol:TCP:INCRement <field>
Query	:TSTReam:TABLE:ITEM:PROTocol:TCP:INCRement?
Response	<field>
Description	Sets whether to increment the source/destination port field value. When incrementing, the set value for the source/destination port field becomes Default. * When incrementing is specified, the Pattern for Data Field 1 is changed to MD1230B Test Frame.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	Select one of the following: OFF Does not increment. SRC Increments the source port field value. DST Increments the destination port field value.
Default	OFF

Command	:TSTReam:TABLE:ITEM:PROTOcol:TCP:WINDow <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOcol:TCP:WINDow?
Response	<NR1>
Description	Sets a value of the window field (16 bits).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value of 0 to 65535. [RFC 793] The number of data octets beginning with the one indicated in the acknowledgment field that the sender of this segment is willing to accept.

Command	:TSTReam:TABLE:ITEM:PROTOcol:TCP:DPORT <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOcol:TCP:DPORT?
Response	<NR1>
Description	Sets a value of destination port field (16 bits).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 65535. For details, see http://www.iana.org/ [RFC 793] The destination port number.

Section 6 Details of Device Messagess

Command	:TSTReam:TABLE:ITEM:PROTOCOL:TCP:UPOinter <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:TCP:UPOinter?
Response	<NR1>
Description	Sets a value of the urgent pointer field (16 bits).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 65535. [RFC 793] This field communicates the current value of the urgent pointer as a positive offset from the sequence number in this segment. The urgent pointer points to the sequence number of the octet following the urgent data. This field is only be interpreted in segments with the URG control bit set.

Command	:TSTReam:TABLE:ITEM:PROTOCOL:TCP:SNUMber <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:TCP:SNUMber?
Response	<NR1>
Description	Sets a value of the sequence number field (32 bits).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 4294967295. [RFC 793] The sequence number of the first data octet in this segment (except when SYN is present). If SYN is present the sequence number is the initial sequence number (ISN) and the first data octet is ISN+1.

Command	:TSTReam:TABLE:ITEM:PROTOCOL:TCP:OPTions <length of data>[,<HEX>]
Query	:TSTReam:TABLE:ITEM:PROTOCOL:TCP:OPTions?
Response	<length of data>[,<HEX>]
Description	<p>Sets a value of the option field (0 to 40 octets).</p> <p>* Set the length of the option field (the number of octets) to a multiple of 4.</p>
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p><length of data></p> <p>The length of the option field that is preset or to be set (0 to 40, unit: octet).</p> <p><HEX></p> <p>Set a value of the option field in the 0- to 40-octet <HEX> format.</p> <p>[RFC 793]</p> <p>Options may occupy space at the end of the TCP header and are a multiple of 8 bits in length. All options are included in the checksum. An option may begin on any octet boundary.</p>

Command	:TSTReam:TABLE:ITEM:PROTOCOL:TCP:REServed <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:TCP:REServed?
Response	<NR1>
Description	Sets a value of the reserved field (6 bits).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p><NR1></p> <p>Set a value from 0 to 63.</p> <p>[RFC 793]</p> <p>Reserved for future use. Must be zero.</p>

Section 6 Details of Device Messagess

Command	:TSTReam:TABLE:ITEM:PROTOcol:TCP:ANUMber <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOcol:TCP:ANUMber?
Response	<NR1>
Description	Sets a value of the acknowledgement number field (32 bits).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 4294967295. [RFC 793] If the ACK control bit is set this field contains the value of the next sequence number the sender of the segment is expecting to receive. Once a connection is established this is always sent.

Command	:TSTReam:TABLE:ITEM:PROTOcol:TCP:SPORt <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOcol:TCP:SPORt?
Response	<NR1>
Description	Sets a value of the source port field (16 bits).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 65535. [RFC 793] The source port number.

Command	:TSTReam:TABLE:ITEM:PROTOcol:TCP:CBITs:SYN <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOcol:TCP:CBITs:SYN?
Response	<NR1>
Description	Sets a value of bit4 in the control bits field (SYN: Synchronize sequence number).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value of 0 or 1.

Command	:TSTReam:TABLE:ITEM:PROTocol:TCP:CBITs:RST <NR1>
Query	:TSTReam:TABLE:ITEM:PROTocol:TCP:CBITs:RST?
Response	<NR1>
Description	Sets a value of bit 3 in the control bits field (RST: Reset the connection).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value of 0 or 1.

Command	:TSTReam:TABLE:ITEM:PROTocol:TCP:CBITs:PSH <NR1>
Query	:TSTReam:TABLE:ITEM:PROTocol:TCP:CBITs:PSH?
Response	<NR1>
Description	Sets a value of bit 2 in the control bits field (PSH: Push Function).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value of 0 or 1.

Command	:TSTReam:TABLE:ITEM:PROTocol:TCP:CBITs:ACK <NR1>
Query	:TSTReam:TABLE:ITEM:PROTocol:TCP:CBITs:ACK?
Response	<NR1>
Description	Sets a value of bit 1 in the control bits field (ACK: Acknowledgement field significant).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value of 0 or 1.

Section 6 Details of Device Messagess

Command	:TSTReam:TABLE:ITEM:PROTOCOL:TCP:CBITS:URG <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:TCP:CBITS:URG?
Response	<NR1>
Description	Sets a value of bit 0 in the control bits field (URG: Urgent Pointer field significant).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value of 0 or 1.

Command	:TSTReam:TABLE:ITEM:PROTOCOL:TCP:CBITS:FIN <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:TCP:CBITS:FIN?
Response	<NR1>
Description	Sets a value of bit 5 in the control bits field (FIN: No more data from sender).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value of 0 or 1.

Command	:TSTReam:TABLE:ITEM:PROTOCOL:UDP:INCRement <field>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:UDP:INCRement?
Response	<field>
Description	Sets whether to increment the source/destination port field value. When incrementing, the set value for the source/destination port field becomes Default. * When incrementing is specified, the Pattern for Data Field 1 is changed to MD1230B Test Frame.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	Select one of the following: OFF Does not increment. SRC Increments the source port field value. DST Increments the destination port field value.
Default	OFF

Command	:TSTReam:TABLE:ITEM:PROTOCOL:UDP:SPORT <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:UDP:SPORT?
Response	<NR1>
Description	<p>Sets a value of the source port field (16 bits).</p> <p>* When RIP/UDP/IP or DHCP/UDP/IP is selected in Protocol setting, the UDP Port number is changed as follows:</p> <p>RIP/UDP/IP: Source Port/Destination Port is changed to 520.</p> <p>DHCP/UDP/IP: Source Port is changed to 68 and Destination Port is changed to 67.</p>

Module √ MbE √ GbE √ 2.5G/10G

Parameter <NR1>

Set a value from 0 to 65535.
 For details, see <http://www.iana.org/>
 [RFC 768]
 Source Port is an optional field, when meaningful, it indicates the port of the sending process, and may be assumed to be the port to which a reply should be addressed in the absence of any other information. If not used, a value of zero is inserted.

Command	:TSTReam:TABLE:ITEM:PROTOCOL:UDP:DPORT <NR1>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:UDP:DPORT?
Response	<NR1>
Description	<p>Sets a value of the destination port field (16 bits).</p> <p>* When RIP/UDP/IP or DHCP/UDP/IP is selected in Protocol setting, the UDP Port number is changed as follows:</p> <p>RIP/UDP/IP: Source Port/Destination Port is changed to 520.</p> <p>DHCP/UDP/IP: Source Port is changed to 68 and Destination Port is changed to 67.</p>

Module √ MbE √ GbE √ 2.5G/10G

Parameter <NR1>

Set a value from 0 to 65535.
 For details, see <http://www.iana.org/>
 [RFC 768]
 Destination Port has a meaning within the context of a particular internet destination address.

Section 6 Details of Device Messagess

Command	:TSTReam:TABLE:ITEM:PROTocol:UDP:LENGth:AUTO <BOOLEAN>
Query	:TSTReam:TABLE:ITEM:PROTocol:UDP:LENGth:AUTO?
Response	<BOOLEAN>
Description	Selects whether to automatically set the Length field value.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<BOOLEAN> Set {ON | 1} (ON or 1) to automatically set the Length field value. Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data to the query.
Default	1 (enable)

Command	:TSTReam:TABLE:ITEM:PROTocol:UDP:LENGth <NR1>
Query	:TSTReam:TABLE:ITEM:PROTocol:UDP:LENGth?
Response	<NR1>
Description	Sets the value for Length field (16 bits). * This item can be set when the automatic setting function is Off. Read Only, when it is On.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 65535 (byte). [RFC 768] Length is the length in octet units of this user datagram including this header and the data. (This means the minimum value of the length is eight.)

Command	:TSTReam:TABLE:ITEM:PROTocol:UDP:CHECKsum:AUTO <BOOLEAN>
Query	:TSTReam:TABLE:ITEM:PROTocol:UDP:CHECKsum:AUTO?
Response	<BOOLEAN>
Description	Selects whether to set the checksum field value automatically.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<BOOLEAN> To set the checksum field value automatically, set {ON | 1}(ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	1 (enable)

Command	:TSTReam:TABLE:ITEM:PROTOcol:UDP:CHECKsum <HEX>
Query	:TSTReam:TABLE:ITEM:PROTOcol:UDP:CHECKsum?
Response	<HEX>
Description	<p>Sets the checksum field value (16 bits).</p> <p>* This item can be set when the automatic setting function is Off. Read Only, when it is On.</p>
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p><HEX></p> <p>Set the checksum field value in the 2-octet <HEX> format:</p> <p>[RFC 768]</p> <p>If the computed checksum is zero, it is transmitted as all ones (the equivalent in one's complement arithmetic). An all zero transmitted checksum value means that the transmitter generated no checksum (for debugging or for higher level protocols that don't care).</p>
Default	#H0000

Command	:TSTReam:TABLE:ITEM:PROTOcol:IGAP:TYPE <HEX>
Query	:TSTReam:TABLE:ITEM:PROTOcol:IGAP:TYPE?
Response	<HEX>
Description	<p>Sets a value of the type field (8 bits).</p> <p>0x40: IGAP Membership Report (Join)</p> <p>0x41: IGAP Membership Query</p> <p>0x42: IGAP Leave Group</p> <p>* This command is available only for MU120111A and MU120112A.</p> <p>* This command is enabled only when the MD1230B-14 IGAP Protocol option is installed.</p>
Module	√ MbE √ GbE – 2.5G/10G
Default	#H40

Section 6 Details of Device Messages

Command	:TSTReam:TABLE:ITEM:PROTocol:IGAP:MRTTime <NR1>
Query	:TSTReam:TABLE:ITEM:PROTocol:IGAP:MRTTime?
Response	<NR1>
Description	<p>Sets a value of the max response time field (8 bits).</p> <p>Value for 100 seconds is established from 0 (0.1 second unit).</p> <p>* This command is available only for MU120111A and MU120112A.</p> <p>* This command is enabled only when the MD1230B-14 IGAP Protocol option is installed.</p>
Module	√ MbE √ GbE – 2.5G/10G
Default	100 (10 seconds)

Command	:TSTReam:TABLE:ITEM:PROTocol:IGAP:GADDRESS <IP_ADDRESS>
Query	:TSTReam:TABLE:ITEM:PROTocol:IGAP:GADDRESS?
Response	<IP_ADDRESS>
Description	<p>Sets a value of the group address field.</p> <p>* This command is enabled only when the IGAP Protocol option is installed.</p>
Module	√ MbE √ GbE – 2.5G/10G
Default	#HE0000000 (224.0.0.0)

Command	:TSTReam:TABLE:ITEM:PROTOcol:IGAP:RTYPE <HEX>
Query	:TSTReam:TABLE:ITEM:PROTOcol:IGAP:RTYPE?
Response	<HEX>
Description	<p>Sets a value of the report type field (8 bits).</p> <p>In case of Type = 0x40 IGAP Membership Report (Join)</p> <p>0x01: Basic Join</p> <p>0x02: PAP Join Authentication Request</p> <p>0x03: CHAP Join Challenge Request</p> <p>0x04: CHAP Join Response</p> <p>In case of Type = 0x41 IGAP Membership Query</p> <p>0x21: Basic Query</p> <p>0x22: User Specific Query</p> <p>0x23: CHAP Challenge</p> <p>0x24: Authentication Message</p> <p>0x25: Accounting Message</p> <p>0x26: Notification Message</p> <p>0x27: Error Message</p> <p>In case of Type = 0x42 IGAP Leave Group</p> <p>0x41: Basic Leave</p> <p>0x42: PAP Leave Authentication Request</p> <p>0x43: CHAP Leave Challenge Request</p> <p>0x44: CHAP Leave Response</p> <p>* This command is available only for MU120111A and MU120112A.</p> <p>* This command is enabled only when the MD1230B-14 IGAP Protocol option is installed.</p>
Module	√ MbE √ GbE – 2.5G/10G
Default	#H01

Section 6 Details of Device Messagess

Command	:TSTReam:TABLE:ITEM:PROTOCOL:IGAP:CID <HEX>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:IGAP:CID?
Response	<HEX>
Description	Sets a value of the CHAP ID field (8 bits). Value for 0xff seconds is established from 0. * This command is available only for MU120111A and MU120112A. * This command is enabled only when the MD1230B-14 IGAP Protocol option is installed.
Module	√ MbE √ GbE – 2.5G/10G
Default	#H00

Command	:TSTReam:TABLE:ITEM:PROTOCOL:IGAP:UACCount:TYPE {ALL0 | ALL1 | PROG}
Query	:TSTReam:TABLE:ITEM:PROTOCOL:IGAP:UACCount:TYPE?
Response	<ALL0,ALL1,PROG>
Description	Sets the user account mode. * This command is available only for MU120111A and MU120112A. * This command is enabled only when the MD1230B-14 IGAP Protocol option is installed.
Module	√ MbE √ GbE – 2.5G/10G
Default	ALL0

Command	:TSTReam:TABLE:ITEM:PROTOCOL:IGAP:UACCount:VALUE <HEX>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:IGAP:UACCount:VALUE?
Response	<HEX>
Description	Sets a value of the user account (16 bytes). * This command is available only for MU120111A and MU120112A. * This command is enabled only when the MD1230B-14 IGAP Protocol option is installed.
Module	√ MbE √ GbE – 2.5G/10G
Default	#H00000000000000000000000000000000

Command	:TSTReam:TABLE:ITEM:PROTOCOL:IGAP:MESSAGE {ALL0 | ALL1 | PROG}
Query	:TSTReam:TABLE:ITEM:PROTOCOL:IGAP:MESSAGE?
Response	<ALL0,ALL1,PROG>
Description	<p>Sets the message mode.</p> <p>* This command is available only for MU120111A and MU120112A.</p> <p>* This command is enabled only when the MD1230B-14 IGAP Protocol option is installed.</p>
Module	√ MbE √ GbE – 2.5G/10G
Default	ALL0

Command	:TSTReam:TABLE:ITEM:PROTOCOL:IGAP:MESSAGE:VALUE <HEX>
Query	:TSTReam:TABLE:ITEM:PROTOCOL:IGAP:MESSAGE:VALUE?
Response	<HEX>
Description	<p>Sets a value of the message (64 bytes).</p> <p>* This command is enabled only when the IGAP Protocol option is installed.</p>
Module	√ MbE √ GbE – 2.5G/10G
Default	#H00000000000000000000.....0000 (64 bytes)

Section 6 Details of Device Messages

Command	:TSTReam:TABLE:ITEM:FRAME:GFP:HEADer:PFI <NR1>
Query	:TSTReam:TABLE:ITEM:FRAME:GFP:HEADer:PFI?
Response	<NR1>
Description	Sets a PFI field of the GFP frame header.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<NR1> Set a PFI field (1 bit) value of the GFP header and select with or without Payload FCS. 0: Not adding Payload FCS. 1: Adding Payload FCS.
Default	1

Command	:TSTReam:TABLE:ITEM:FRAME:GFP:HEADer:PTI <BINARY>
Query	:TSTReam:TABLE:ITEM:FRAME:GFP:HEADer:PTI?
Response	<BINARY>
Description	Sets a PTI field of the GFP frame header.
Module	– MbE – GbE √ 2.5G/10G
Parameter	Set a PTI field of the GFP header in the 3-bit <BINARY> format. 000: Client Data 100: Client Management Frame Others: Reserved
Default	#B000

Command	:TSTReam:TABLE:ITEM:FRAME:GFP:HEADer:UPI <BINARY>
Query	:TSTReam:TABLE:ITEM:FRAME:GFP:HEADer:UPI?
Response	<BINARY>
Description	Sets a UPI field of the GFP header.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<p><BINARY></p> <p>Set a UPI field of the GFP header in the 8-bit <BINARY> format.</p> <p>Select an Extension Header type.</p> <p><When PTI = 000></p> <p>0000 0000: Reserved and not available</p> <p>0000 0001: Frame-Mapped Ethernet</p> <p>0000 0010: Frame-Mapped PPP</p> <p>0000 0011: Transparent Fiber Channel</p> <p>0000 0100: Transparent FICON</p> <p>0000 0101: Transparent ESCON</p> <p>0000 0110: Transparent Gb Ethernet</p> <p>0000 0111: Reserved for future</p> <p>0000 1000: MAPOS</p> <p>0000 1001: Transparent DVB ASI</p> <p>0000 1010: Framed Mapped RPR</p> <p>0000 1011: Frame-Mapped FC-BBW</p> <p>0000 1100: Asynco Transparent FC</p> <p>1111 0000:</p> <p>to Reserved for proprietary use</p> <p>1111 1110:</p> <p>1111 1111: Reserved and not available</p> <p>Others: Reserved</p> <p><When PTI = 100></p> <p>0000 0001: Loss of Client Signal</p> <p>0000 0010: Loss of Character Synchronization</p> <p>Others: Reserved</p> <p><When PTI is other than 000 and 100></p> <p>All: Reserved</p>
Default	#B00000001

Section 6 Details of Device Messagess

Command	:TSTReam:TABLE:ITEM:FRAME:GFP:HEADer:EXI <BINARY>
Query	:TSTReam:TABLE:ITEM:FRAME:GFP:HEADer:EXI?
Response	<BINARY>
Description	Sets an EXI field of the GFP frame header.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<p><BINARY></p> <p>Set an EXI field of the GFP header in the 4-bit <BINARY> format.</p> <p>Select an Extension Header type.</p> <p>0000: Null Extension Header</p> <p>0001: Linear Frame</p> <p>0010: Ring Frame</p> <p>Others: Reserved</p>
Default	#B0000

Command	:TSTReam:TABLE:ITEM:FRAME:GFP:HEADer:EXTension:LENGth <NR1>
Query	:TSTReam:TABLE:ITEM:FRAME:GFP:HEADer:EXTension:LENGth?
Response	<NR1>
Description	Sets an extension header size of the GFP frame header. An eHEC size is not included.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<p><NR1></p> <p>Set the length of the GFP Extension Header in byte units. The setting range is from two up to 58 bytes since an eHEC size is not included. Fixed to 0 when a NULL Extension Header is selected as the Extension Header type. Fixed to 2 bytes when a Linear Frame is selected as the Extension Header type.</p>
Default	2

Command	:TSTReam:TABLE:ITEM:FRAME:GFP:HEADer:EXTension:TYPE {ALL0 | ALL1 | PROGRAM}
Query	:TSTReam:TABLE:ITEM:FRAME:GFP:HEADer:EXTension:TYPE?
Response	{ALL0 | ALL1 | PROGRAM}
Description	Sets an extension header type of the GFP frame header.
Module	– MbE – GbE √ 2.5G/10G
Parameter	{ALL0 | ALL1 | PROGRAM} Select one of the following as an Extension Header pattern type: ALL0: All 0 ALL1: All 1 PROGRAM: Programmable Pattern
Default	ALL0

Command	:TSTReam:TABLE:ITEM:FRAME:GFP:HEADer:EXTension:PATtern <HEX>
Query	:TSTReam:TABLE:ITEM:FRAME:GFP:HEADer:EXTension:PATtern?
Response	<HEX>
Description	Edits an area in the Extension Header of the GFP header, excluding eHEC.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<HEX> Set a field pattern value of the Extension Header in <HEX> format from 0 to 58 octets.
Default	#H00

Section 6 Details of Device Messagess

Command :TSTReam:TABLE:ITEM:FRAME:LX86:ADDReSS <HEX>

Query :TSTReam:TABLE:ITEM:FRAME:LX86:ADDReSS?

Response <HEX>

Description Sets a value of the address field (8 bits).

Module – MbE – GbE √ 2.5G/10G

Parameter <HEX>

Set an address field value in the 1-octet <HEX> format.

Default #H04

Command :TSTReam:TABLE:ITEM:FRAME:LX86:PROTOcol:AUTO <BOOLEAN>

Query :TSTReam:TABLE:ITEM:FRAME:LX86:PROTOcol:AUTO?

Response <BOOLEAN>

Description Selects whether to enable/disable the auto setting of a protocol field value.

* When an upper layer protocol is set, it becomes On and a value corresponding to that protocol is set. When an upper layer protocol is not set, it becomes Off.

Module – MbE – GbE √ 2.5G/10G

Parameter <BOOLEAN>

Set {ON | 1} (ON or 1) to enable the auto setting of a protocol field value.

Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.

Command :TSTReam:TABLE:ITEM:FRAME:LX86:CONTRol <HEX>

Query :TSTReam:TABLE:ITEM:FRAME:LX86:CONTRol?

Response <HEX>

Description Sets a value of the control field (8 bits).

Module – MbE – GbE √ 2.5G/10G

Parameter <HEX>

Set a control field value in the 1-octet <HEX> format.

Default #H03

Command	:TSTReam:TABLE:ITEM:FRAME:LX86:PROTOcol <HEX>
Query	:TSTReam:TABLE:ITEM:FRAME:LX86:PROTOcol?
Response	<HEX>
Description	Sets a value of the protocol field (16 bits). * This can be set when the automatic setting function is Off. Read only when it is On.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<HEX> Set a protocol field value in the 2-octet <HEX> format.
Default	#H0021

Command	:TSTReam:TABLE:ITEM:FRAME:LEX:ADDReSS <HEX>
Query	:TSTReam:TABLE:ITEM:FRAME:LEX:ADDReSS?
Response	<HEX>
Description	Sets a value of the address field (8 bits).
Module	– MbE – GbE √ 2.5G/10G
Parameter	<HEX> Set an address field value in the 1-octet <HEX> format.
Default	#HFF

Command	:TSTReam:TABLE:ITEM:FRAME:LEX:CONTRol <HEX>
Query	:TSTReam:TABLE:ITEM:FRAME:LEX:CONTRol?
Response	<HEX>
Description	Sets a value of the control field (8 bits).
Module	– MbE – GbE √ 2.5G/10G
Parameter	<HEX> Set a control field value in the 1-octet <HEX> format.
Default	#H03

Section 6 Details of Device Messagess

Command	:TSTReam:TABLE:ITEM:FRAME:LEX:FLAGs <HEX>
Query	:TSTReam:TABLE:ITEM:FRAME:LEX:FLAGs?
Response	<HEX>
Description	Sets a value of the Flags field + Pad (8 bits).
Module	– MbE – GbE √ 2.5G/10G
Parameter	<HEX> Set a value of the Flags field + Pad field in the 1-octet <HEX> format.
Default	#H20

Command	:TSTReam:TABLE:ITEM:FRAME:LEX:PROTOcol <HEX>
Query	:TSTReam:TABLE:ITEM:FRAME:LEX:PROTOcol?
Response	<HEX>
Description	Sets a value of the protocol field (16 bits).
Module	– MbE – GbE √ 2.5G/10G
Parameter	<HEX> Set a protocol field value in the 2-octet <HEX> format.
Default	#H0041

Command	:TSTReam:TABLE:ITEM:FRAME:LEX:PROTOcol:AUTO <BOOLEAN>
Query	:TSTReam:TABLE:ITEM:FRAME:LEX:PROTOcol:AUTO?
Response	<BOOLEAN>
Description	Selects whether to enable/disable the auto setting of a protocol field value. * When setting an upper layer protocol, it becomes On and a value corresponding to that protocol is set. When not setting an upper layer protocol, it becomes Off.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<BOOLEAN> Set {ON | 1} (ON or 1) to enable the auto setting of a protocol field value. Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	1 (enable)

Command	:TSTReam:TABLE:ITEM:FRAME:LEX:MTYPE <HEX>
Query	:TSTReam:TABLE:ITEM:FRAME:LEX:MTYPE?
Response	<HEX>
Description	Sets a value of the MAC type field (8 bits).
Module	– MbE – GbE √ 2.5G/10G
Parameter	<HEX> Set a MAC type field value in the 1-octet <HEX> format.
Default	#H01

Command	:TSTReam:TABLE:ITEM:FRAME:LCONtrol:IDENtifier <HEX>
Query	:TSTReam:TABLE:ITEM:FRAME:LCONtrol:IDENtifier?
Response	<HEX>
Description	Sets a value of the Identifier field (8 bits).
Module	– MbE – GbE √ 2.5G/10G
Parameter	<HEX> Set an Identifier field value in the 1-octet <HEX> format.
Default	#H00

Command	:TSTReam:TABLE:ITEM:FRAME:LCONtrol:ADDRess <HEX>
Query	:TSTReam:TABLE:ITEM:FRAME:LCONtrol:ADDRess?
Response	<HEX>
Description	Sets a value of the address field (8 bits).
Module	– MbE – GbE √ 2.5G/10G
Parameter	<HEX> Set an address field value in the 1-octet <HEX> format.
Default	#HFF

Section 6 Details of Device Messagess

Command	:TSTReam:TABLE:ITEM:FRAME:LCONtrol:OPTions <HEX>
Query	:TSTReam:TABLE:ITEM:FRAME:LCONtrol:OPTions?
Response	<length of data>[,<HEX>]
Description	Edits and sets an option part of the LEX Control Packet with a header and option data mixed.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<length of data> Set the length of the Variable Length Field (0 to 65532 octets). <HEX> Set a value of the Variable Length Field in the <HEX> format from 0 to 65532 octets.

Command	:TSTReam:TABLE:ITEM:FRAME:LCONtrol:CODE <HEX>
Query	:TSTReam:TABLE:ITEM:FRAME:LCONtrol:CODE?
Response	<HEX>
Description	Sets a value of the code field (8 bits).
Module	– MbE – GbE √ 2.5G/10G
Parameter	<HEX> Set a code field value in the 1-octet <HEX> format.
Default	#H40

Command	:TSTReam:TABLE:ITEM:FRAME:LCONtrol:CONTRol <HEX>
Query	:TSTReam:TABLE:ITEM:FRAME:LCONtrol:CONTRol?
Response	<HEX>
Description	Sets a value of the control field (8 bits).
Module	– MbE – GbE √ 2.5G/10G
Parameter	<HEX> Set a control field value in the 1-octet <HEX> format.
Default	#H03

Capturing commands (CAPTure)

The commands related to the capturing function are explained below.

Command	:CAPTure:STARt
Description	Starts capture.
Module	√ MbE √ GbE √ 2.5G/10G

Command	:CAPTure:TRIGger
Description	Generates a manual trigger.
Module	√ MbE √ GbE √ 2.5G/10G

Command	:CAPTure:STOP
Description	Stops capture.
Module	√ MbE √ GbE √ 2.5G/10G

Query	:CAPTure:STATe?
Response	{0 | 1 | 2 | 3}
Description	Queries the operation state of capture.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	{0 | 1 | 2 | 3}

The code number is returned as the processing state. The numbers mean the following:

- 0 Capture is stopped
- 1 Capturing
- 2 Capturing (after triggered)
- 3 Analyzing captured data

Section 6 Details of Device Messages

Query	:CAPTure:TIME:STARt?
Response	"<DATETIME>"
Description	Queries the start time of capture.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<DATETIME> A string that indicates the date and the time. This is expressed in the following format: <date><space><time> <date> The format is yyyy/mm/dd. These refer to "year", "month", and "date", respectively. The value ranges from 2000/01/01 to 2098/12/31. <time> The format is hh:mm:ss.sss. These refer to "time", "minutes", and "seconds", respectively. This is expressed on a 24-hour basis. The value ranges from 00:00:00.000 to 23:59:59.999. Example: "2003/08/15 13:22:51.01"

Query	:CAPTure:TIME:ELAPsed?
Response	<NR1>
Description	Queries the elapsed time since the start of capture.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> An integer value that indicates the elapsed time of a measurement. It takes values from 0 to 315360000 (second).

Query	:CAPTure:TIME:STOP?
Response	"<DATETIME>"
Description	Queries the stop time of capture.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<DATETIME> A string that indicates the date and the time. This is expressed in the following format: <date><space><time> <date> The format is yyyy/mm/dd. These refer to "year", "month", and "date", respectively. The value ranges from 2000/01/01 to 2098/12/31. <time> The format is hh:mm:ss.sss. These refer to "hours", "minutes", and "seconds", respectively. This is expressed on a 24-hour basis. The value ranges from 00:00:00.000 to 23:59:59.999. Example: "2003/08/15 13:22:51.01"

Query	:CAPTure:BUFFer:TRIGger?
Response	<NR1>
Description	Queries a trigger position.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> The frame position number when the beginning frame in the capture memory is 1 is returned. When there is no capture data or when no trigger exists, 0 is returned.

Section 6 Details of Device Messages

Query :CAPTure:BUFFer:NFRames?

Response <NR1>

Description Queries the total number of frames in the capture memory.

Module √ MbE √ GbE √ 2.5G/10G

Parameter <NR1>

The total number of frames in the capture memory is returned in the form of a string. When there is no capture data, 0 is returned.

Query :CAPTure:BUFFer:FRAME:DATA? <capture_frame_number>

Response <HEX>

Description Queries the contents of frame data.

Module √ MbE √ GbE √ 2.5G/10G

Parameter <capture_frame_number>

An extension of a capture frame. It is a value of a serial number (<NR1>) given to the frame data in the capture memory.

<HEX>

The captured frame data is returned in <HEX> format.

Query :CAPTure:BUFFer:FRAME:LENGth? <capture_frame_number>

Response <NR1>

Description Queries the frame size of the frame data.

Module √ MbE √ GbE √ 2.5G/10G

Parameter <capture_frame_number>

An extension of a capture frame. It is a value of a serial number (<NR1>) given to the frame data in the capture memory.

<NR1>

An integer value that indicates the frame size.

Query	:CAPTure:BUFFer:FRAMe:TIMestamp? <capture_frame_number>
Response	<NR2>
Description	Queries a timestamp value of the frame data.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<capture_frame_number>
	<p>An extension of a capture frame. It is a value of a serial number (<NR1>) given to the frame data in the capture memory.</p> <p><NR2></p> <p>The time when the frame arrives (Hour, minute, second, millisecond, microsecond, nanosecond) is returned in a few minutes (0 to 86399.999999999).</p> <p>The returned value by this command is UTC (Coordinated Universal Time). On the other hand, the time displayed on the screen is that converted to the time zone set on Windows.</p>
Command	:CAPTure:FILTer:ENABle <BOOLEAN>
Query	:CAPTure:FILTer:ENABle?
Response	<BOOLEAN>
Description	Sets the capture filter to enable or disable.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<BOOLEAN>
	<p>To enable the capture filter, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.</p>
Default	0 (disable)

Section 6 Details of Device Messages

Command	:CAPTure:FILTer:ERRor {DONT_CARE | NOT_MATCH | MATCH}
Query	:CAPTure:FILTer:ERRor?
Response	{DONT_CARE | NOT_MATCH | MATCH}
Description	Sets a filter to the preset error type (Don't care/Not Match/Match).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	{DONT_CARE | NOT_MATCH | MATCH} Select one of the following: DONT_CARE Don't care NOT_MATCH Not match MATCH Match
Default	DONT_CARE (Don't care)

Command	:CAPTure:FILTer:PATtern1 {DONT_CARE | NOT_MATCH | MATCH}
Query	:CAPTure:FILTer:PATtern1?
Response	{DONT_CARE | NOT_MATCH | MATCH}
Description	Sets a filter to the preset pattern 1 (Don't care/Not Match/Match).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	{DONT_CARE | NOT_MATCH | MATCH} Select one of the following: DONT_CARE Don't care NOT_MATCH Not match MATCH Match
Default	DONT_CARE (Don't care)

Command	:CAPTure:FILTer:PATtern2 {DONT_CARE | NOT_MATCH | MATCH}
Query	:CAPTure:FILTer:PATtern2?
Response	{DONT_CARE | NOT_MATCH | MATCH}
Description	Sets a filter to the preset pattern 2 (Don't care/Not Match/Match).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	{DONT_CARE | NOT_MATCH | MATCH} Select one of the following: DONT_CARE Don't care NOT_MATCH Not match MATCH Match
Default	DONT_CARE (Don't care)

Command	:CAPTure:FILTer:PATtern3 {DONT_CARE | NOT_MATCH | MATCH}
Query	:CAPTure:FILTer:PATtern3?
Response	{DONT_CARE | NOT_MATCH | MATCH}
Description	Sets a filter to the preset pattern 3 (Don't care/Not Match/Match).
Module	– MbE √ GbE – 2.5G/10G
Parameter	{DONT_CARE | NOT_MATCH | MATCH} Select one of the following: DONT_CARE Don't care NOT_MATCH Not match MATCH Match
Default	DONT_CARE (Don't care)

Section 6 Details of Device Messages

Command	:CAPTure:FILTer:PATtern4 {DONT_CARE | NOT_MATCH | MATCH}
Query	:CAPTure:FILTer:PATtern4?
Response	{DONT_CARE | NOT_MATCH | MATCH}
Description	Sets a filter to the preset pattern 4 (Don't care/Not Match/Match).
Module	– MbE √ GbE – 2.5G/10G
Parameter	{DONT_CARE | NOT_MATCH | MATCH} Select one of the following: DONT_CARE Don't care NOT_MATCH Not match MATCH Match
Default	DONT_CARE (Don't care)

Command	:CAPTure:FILTer:SA {DONT_CARE | NOT_MATCH | MATCH}
Query	:CAPTure:FILTer:SA?
Response	{DONT_CARE | NOT_MATCH | MATCH}
Description	Sets a filter to the preset source address pattern (Don't care/Not Match/Match). *1 For 10M/100M Ethernet module and 1G Ethernet module, "destination address" means MAC address. For 2.5/10 G module, "destination address" means IP address when Mapping is for PPP/Cisco HDLC/MAPOS, and means MAC address when Mapping is for GFP/LAPS/LEX. *2 In case of MU120121A/22A module, uses :CAPTure:FILTer:PATtern* commnad. Because :CAPTure:FILTer:SA command is left only to keep the version compatibility. (Since version 5.0)
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	{DONT_CARE | NOT_MATCH | MATCH} Select one of the following: DONT_CARE Don't care NOT_MATCH Not match MATCH Match
Default	DONT_CARE (Don't care)

Command	:CAPTure:FILTer:DA {DONT_CARE | NOT_MATCH | MATCH}
Query	:CAPTure:FILTer:DA?
Response	{DONT_CARE | NOT_MATCH | MATCH}
Description	<p>Sets a filter to the destination address pattern (Don't care/Not match/Match).</p> <p>*1 For 10M/100M Ethernet module and 1G Ethernet module, "destination address" means MAC address. For 2.5/10 G module, "destination address" means IP address when Mapping is for PPP/Cisco HDLC/MAPOS, and means MAC address when Mapping is for GFP/LAPS/LEX.</p> <p>*2 In case of MU120121A/22A module, uses :CAPTure:FILTer:PATtern* commnad. Because :CAPTure:FILTer:DA command is left only to keep the version compatibility. (Since version 5.0)</p>
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p>{DONT_CARE | NOT_MATCH | MATCH}</p> <p>Select one of the following:</p> <p>DONT_CARE Don't care</p> <p>NOT_MATCH Not match</p> <p>MATCH Match</p>
Default	DONT_CARE (Don't care)

Section 6 Details of Device Messages

Command	:CAPTure:TRIGger:DA {DONT_CARE | NOT_MATCH | MATCH}
Query	:CAPTure:TRIGger:DA?
Response	{DONT_CARE | NOT_MATCH | MATCH}
Description	<p>Sets a trigger for the preset destination address pattern (Don't care/Not Match/Match).</p> <p>*1 For 10M/100M Ethernet module and 1G Ethernet module, "destination address" means MAC address. For 2.5/10 G module, "destination address" means IP address when Mapping is for PPP/Cisco HDLC/MAPOS, and means MAC address when Mapping is for GFP/LAPS/LEX.</p> <p>*2 In case of MU120121A/22A module, uses :CAPTure:TRIGger:PATtern* commnad. Because :CAPTure:TRIGger:DA command is left only to keep the version compatibility. (Since version 5.0)</p>
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p>{DONT_CARE | NOT_MATCH | MATCH}</p> <p>Select one of the following:</p> <p>DONT_CARE Don't care</p> <p>NOT_MATCH Not match</p> <p>MATCH Match</p>
Default	DONT_CARE (Don't care)

Command	:CAPTure:TRIGger:PATtern1 {DONT_CARE | NOT_MATCH | MATCH}
Query	:CAPTure:TRIGger:PATtern1?
Response	{DONT_CARE | NOT_MATCH | MATCH}
Description	Sets a trigger for the preset pattern 1 (Don't care/Not Match/Match).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p>{DONT_CARE | NOT_MATCH | MATCH}</p> <p>Select one of the following:</p> <p>DONT_CARE Don't care</p> <p>NOT_MATCH Not match</p> <p>MATCH Match</p>
Default	DONT_CARE (Don't care)

Command	:CAPTure:TRIGger:PATtern2 {DONT_CARE | NOT_MATCH | MATCH}
Query	:CAPTure:TRIGger:PATtern2?
Response	{DONT_CARE | NOT_MATCH | MATCH}
Description	Sets a trigger for the preset pattern 2 (Don't care/Not Match/Match).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	{DONT_CARE | NOT_MATCH | MATCH} Select one of the following: DONT_CARE Don't care NOT_MATCH Not match MATCH Match
Default	DONT_CARE (Don't care)

Command	:CAPTure:TRIGger:PATtern3 {DONT_CARE | NOT_MATCH | MATCH}
Query	:CAPTure:TRIGger:PATtern3?
Response	{DONT_CARE | NOT_MATCH | MATCH}
Description	Sets a trigger for the preset pattern 3 (Don't care/Not Match/Match).
Module	– MbE √ GbE – 2.5G/10G
Parameter	{DONT_CARE | NOT_MATCH | MATCH} Select one of the following: DONT_CARE Don't care NOT_MATCH Not match MATCH Match
Default	DONT_CARE (Don't care)

Section 6 Details of Device Messages

Command	:CAPTure:TRIGger:PATtern4 {DONT_CARE | NOT_MATCH | MATCH}
Query	:CAPTure:TRIGger:PATtern4?
Response	{DONT_CARE | NOT_MATCH | MATCH}
Description	Sets a trigger for the preset pattern 4 (Don't care/Not Match/Match).
Module	– MbE √GbE – 2.5G/10G
Parameter	{DONT_CARE | NOT_MATCH | MATCH} Select one of the following: DONT_CARE Don't care NOT_MATCH Not match MATCH Match
Default	DONT_CARE (Don't care)

Command	:CAPTure:TRIGger:POSition {TOP | MIDDLE | BOTTOM}
Query	:CAPTure:TRIGger:POSition?
Response	{TOP | MIDDLE | BOTTOM}
Description	Sets a trigger frame position in the capture memory.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	{TOP | MIDDLE | BOTTOM} Select one of the following: TOP Trigger position is at the top of the capture data. MIDDLE Trigger position is at the center of the capture data. BOTTOM Trigger position is at the end of the capture data.
Default	TOP

Command	:CAPTure:TRIGger:SA {DONT_CARE | NOT_MATCH | MATCH}
Query	:CAPTure:TRIGger:SA?
Response	{DONT_CARE | NOT_MATCH | MATCH}
Description	<p>Sets a trigger for the preset source address pattern (Don't care/Not Match/Match).</p> <p>*1 For 10M/100M Ethernet module and 1G Ethernet module, "destination address" means MAC address. For 2.5/10 G module, "destination address" means IP address when Mapping is for PPP/Cisco HDLC/MAPOS, and means MAC address when Mapping is for GFP/LAPS/LEX.</p> <p>*2 In case of MU120121A/22A module, uses :CAPTure:TRIGger:PATtern* commnad. Because :CAPTure:TRIGger:SA command is left only to keep the version compatibility. (Since version 5.0)</p>
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p>{DONT_CARE | NOT_MATCH | MATCH}</p> <p>Select one of the following:</p> <p>DONT_CARE Don't care</p> <p>NOT_MATCH Not match</p> <p>MATCH Match</p>
Default	DONT_CARE (Don't care)

Command	:CAPTure:TRIGger:ERRor {DONT_CARE | NOT_MATCH | MATCH}
Query	:CAPTure:TRIGger:ERRor?
Response	{DONT_CARE | NOT_MATCH | MATCH}
Description	Sets a trigger for the preset error type (Don't care/Not Match/Match).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p>{DONT_CARE | NOT_MATCH | MATCH}</p> <p>Select one of the following:</p> <p>DONT_CARE Don't care</p> <p>NOT_MATCH Not match</p> <p>MATCH Match</p>
Default	DONT_CARE (Don't care)

Section 6 Details of Device Messages

Command	:CAPTure:TRIGger:ENABle <BOOLEAN>
Query	:CAPTure:TRIGger:ENABle?
Response	<BOOLEAN>
Description	Sets the capture trigger to enable or disable.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<BOOLEAN> To enable the capture trigger, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	0 (disable)

Command	:CAPTure:TRIGger:EXTernal:ENABle <BOOLEAN>
Query	:CAPTure:TRIGger:EXTernal:ENABle?
Response	<BOOLEAN>
Description	Sets an entry from an external trigger to enable or disable as a trigger item.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<BOOLEAN> To use an entry from an external trigger as a trigger item, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	0 (disable)

Command	:CAPTure:TRIGger:LATency:ENABle <BOOLEAN>
Query	:CAPTure:TRIGger:LATency:ENABle?
Response	<BOOLEAN>
Description	Sets a trigger when the latency of the received frame exceeds the set value to enable or disable.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<BOOLEAN> To enable a trigger, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	0 (disable)

Command	:CAPTure:TRIGger:LATency:THReshold <NR1>
Query	:CAPTure:TRIGger:LATency:THReshold?
Response	<NR1>
Description	Sets a threshold of a trigger by latency.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 1 to 59999999999 (ns).
Default	100000000 (100 ms)

Command	:CAPTure:TRIGger:TRAFfic:ENABle <BOOLEAN>
Query	:CAPTure:TRIGger:TRAFfic:ENABle?
Response	<BOOLEAN>
Description	Sets a trigger when a traffic value exceeds the specified value to enable or disable.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<BOOLEAN> To enable a trigger when a traffic value exceeds the specified value, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	0 (disable)

Section 6 Details of Device Messages

Command	:CAPTure:TRIGger:TRAFfic:THReshold <NR1>
Query	:CAPTure:TRIGger:TRAFfic:THReshold?
Response	<NR1>
Description	Sets a threshold of a trigger by traffic.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value of the traffic rate (1 to 100 (%)).
Default	90

Latency measurement commands (LATency)

The commands related to the latency measurement function are explained below.

* This function cannot be used with the MU150101A.

Command	:LATency:STOP
Description	Stops a latency measurement.
Module	√ MbE √ GbE √ 2.5G/10G

Command	:LATency:START
Description	Starts a latency measurement.
Module	√ MbE √ GbE √ 2.5G/10G

Query	:LATency:STATe?
Response	{0 | 1 | 2}
Description	Queries the measurement status.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	{0 | 1 | 2}

The code number is returned as the processing status. Meanings of the numbers are shown below:

- 0 Measurement is stopped.
- 1 Measuring
- 2 Starting/Halting a measurement

Section 6 Details of Device Messages

Query	:LATency:TIME:START?
Response	"<DATETIME>"
Description	Queries the start time of a measurement.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<DATETIME> A string that indicates the date and the time. This is expressed in the following format: <date><space><time> <date> The format is yyyy/mm/dd. These refer to "year", "month", and "date", respectively. The value ranges from 2000/01/01 to 2098/12/31. <time> The format is hh:mm:ss.sss. These refer to "hours", "minutes", and "seconds", respectively. This is expressed on a 24-hour basis. The value ranges from 00:00:00.000 to 23:59:59.999. Example: "2003/08/15 13:22:51.01"

Query	:LATency:TIME:ELAPsed?
Response	<NR1>
Description	Queries the elapsed time of a measurement.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> An integer value that indicates the elapsed time of a measurement. It takes values from 0 to 315360000 (second).

Query	:LATency:TIME:STOP?
Response	"<DATETIME>"
Description	Queries the stop time of a measurement.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<DATETIME> A string that indicates the date and the time. This is expressed in the following format: <date><space><time> <date> The format is yyyy/mm/dd. These refer to "year", "month", and "date", respectively. The value ranges from 2000/01/01 to 2098/12/31. <time> The format is hh:mm:ss.sss. These refer to "hours", "minutes", and "seconds", respectively. This is expressed on a 24-hour basis. The value ranges from 00:00:00.000 to 23:59:59.999. Example: "2003/08/15 13:22:51.01"

Query	:LATency:CURRent?
Response	<NR2>
Description	Queries the result of a latency measurement (current latency value).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR2> The result of a latency measurement (–1799.999999999 to 1800.0 seconds) is returned. When the measured result is invalid, –8888.0 is returned.

Section 6 Details of Device Messages

Query	:LATency:AVERage?
Response	<NR2>
Description	Queries the result of a latency measurement (average value).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR2> The result of a latency measurement (–1799.999999999 to 1800.0 seconds) is returned. When the measured result is invalid, –9999.0 is returned.

Query	:LATency:MAX?
Response	<NR2>
Description	Queries the result (maximum value) of the latency measurement.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR2> The result of a latency measurement (–1799.999999999 to 1800.0 seconds) is returned. When the measured result is invalid, –9999.0 is returned.

Query	:LATency:FRAMes?
Response	<NR1>
Description	Queries the number of received frames.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> The number of received frames.

Query	:LATency:MIN?
Response	<NR2>
Description	Queries the result (minimum value) of the latency measurement.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR2> The result of a latency measurement (–1799.999999999 to 1800.0 seconds) is returned.

Time Variation measurement commands (VARiation)

The commands related to the Variation measurement function are explained below.

Command	:VARiation:START
Description	Starts a measurement.
Module	√ MbE √ GbE √ 2.5G/10G

Command	:VARiation:STOP
Description	Stops a measurement.
Module	√ MbE √ GbE √ 2.5G/10G

Query	:VARiation:STATe?
Response	{0 | 1 | 2}
Description	Queries the measurement status.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	{0 | 1 | 2}

The code number is returned as the processing status. Meanings of the numbers are shown below:

- 0 Measurement is stopped.
 - 1 Measuring
 - 2 Starting/Halting a measurement
-

Section 6 Details of Device Messages

Query	:VARiation:TIME:ELAPsed?
Response	<NR1>
Description	Queries the elapsed time of a measurement.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1>
	An integer value that indicates the elapsed time of a measurement. It takes values from 0 to 315360000 (second).

Query	:VARiation:TIME:STARt?
Response	"<DATETIME>"
Description	Queries the start time of a measurement.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<DATETIME>
	A string that indicates the date and the time. This is expressed in the following format: <date><space><time> <date> The format is yyyy/mm/dd. These refer to "year", "month", and "date", respectively. The value ranges from 2000/01/01 to 2098/12/31. <time> The format is hh:mm:ss.sss. These refer to "hours", "minutes", and "seconds", respectively. This is expressed on a 24-hour basis. The value ranges from 00:00:00.000 to 23:59:59.999. Example: "2003/08/15 13:22:51.01"

Query	:VARIation:TIME:STOP?
Response	"<DATETIME>"
Description	Queries the stop time of a measurement.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<DATETIME> A string that indicates the date and the time. This is expressed in the following format: <date><space><time> <date> The format is yyyy/mm/dd. These refer to "year", "month", and "date", respectively. The value ranges from 2000/01/01 to 2098/12/31. <time> The format is hh:mm:ss.sss. These refer to "hours", "minutes", and "seconds", respectively. This is expressed on a 24-hour basis. The value ranges from 00:00:00.000 to 23:59:59.999. Example: "2003/08/15 13:22:51.01"

Command	:VARIation:RESolution <resolution>
Query	:VARIation:RESolution?
Response	<resolution>
Description	Sets the resolution of the x-axis (time) on a histogram.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<resolution> Select the resolution of the x-axis from the followings: R1US 1 us R10US 10 us R100US 100 us R1MS 1 ms R10MS 10 ms R100MS 100 ms R1S 1 s
Default	R1MS (1 ms)

Section 6 Details of Device Messages

Query	:VARIation:DATA?
Response	<number_of_frames>,<number_of_frames>...
Description	Queries the measured result.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<number_of_frames>,<number_of_frames>... Result data of the variation measurement. 32 pieces of the count data of a histogram are returned in increasing order of frame arrival variation time. The first and last data are values of the counter out of the range. <number of frames> Count data of the histogram. (<NR1>, 64 bits)

Command	:VARIation:OFFSet:NUMBer <NR1>
Query	:VARIation:OFFSet:NUMBer?
Response	<NR1>
Description	Sets graph display offset
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Sets graph display offset Minimum: 0 Maximum: RangeMax/Resolution - NumberOfCounter Default: 0 NumberOfCounter: 30 RangeMax: 180 s (at Frame Arrival Time Variation), 3 s (at Latency Variation)

Command	:VARIation:TYPE {LATENCY | ARRIVALTIME}
Query	:VARIation:TYPE?
Response	{LATENCY | ARRIVALTIME}
Description	Sets Variation measurement item (Arrival Time or Latency
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	{LATENCY | ARRIVALTIME} * Latency cannot be selected for modules other than MU120121A/22A/31A/32A/38A.

Command	:VARIation:FILTer:ENABle <BOOLEAN>
Query	:VARIation:FILTer:ENABle?
Response	<BOOLEAN>
Description	Sets whether or not to use filter at Variation measurement
Module	– MbE √ GbE – 2.5G/10G
Parameter	<BOOLEAN>
Command	:VARIation:FILTer:PATTerN2 {DONT_CARE | NOT_MATCH | MATCH}
Query	:VARIation:FILTer:PATTerN2?
Response	{DONT_CARE | NOT_MATCH | MATCH}
Description	Specifies filter conditions (Match/Not Match/Don't Care) used for Pattern 2
Module	– MbE √ GbE – 2.5G/10G
Parameter	{DONT_CARE | NOT_MATCH | MATCH}
Command	:VARIation:FILTer:PATTerN3 {DONT_CARE | NOT_MATCH | MATCH}
Query	:VARIation:FILTer:PATTerN3?
Response	{DONT_CARE | NOT_MATCH | MATCH}
Description	Specifies filter conditions (Match/Not Match/Don't Care) used for Pattern 3
Module	– MbE √ GbE – 2.5G/10G
Parameter	{DONT_CARE | NOT_MATCH | MATCH}
Command	:VARIation:FILTer:PATTerN4 {DONT_CARE | NOT_MATCH | MATCH}
Query	:VARIation:FILTer:PATTerN4?
Response	{DONT_CARE | NOT_MATCH | MATCH}
Description	Specifies filter conditions (Match/Not Match/Don't Care) used for Pattern 4
Module	– MbE √ GbE – 2.5G/10G
Parameter	{DONT_CARE | NOT_MATCH | MATCH}

Section 6 Details of Device Messages

Command	:VARiation:FILTer:ERRor {DONT_CARE | NOT_MATCH | MATCH}
Query	:VARiation:FILTer:ERRor?
Response	{DONT_CARE | NOT_MATCH | MATCH}
Description	Specifies filter conditions (Match/Not Match/Don't Care) used for error type
Module	– MbE √ GbE – 2.5G/10G
Parameter	{DONT_CARE | NOT_MATCH | MATCH}

Protocol support commands (PROTocol)

The commands related to the support functions for the following protocols are explained below.

- LDP(*)
- RSVP(*)
- IGMP
- MLD(*)
- OSPF(*)
- BGP4(*)
- IGAP(*)

* This function cannot be used with the MU150101A.

Command	:PROTocol:LDP:ENABle <BOOLEAN>
Query	:PROTocol:LDP:ENABle?
Response	<BOOLEAN>
Description	<p>Sets the LDP/CR-LDP protocol function to enable or disable.</p> <p>* The MPLS (LDP/CR-LDP) option is required for using the MPLS (LDP/CR-LDP) function.</p> <p>* PORT:LDP settings must be set to 1 (enable) in order to execute this command.</p>
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<p><BOOLEAN></p> <p>To enable the LDP/CR-LDP protocol function, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.</p>
Default	0 (disable)

Section 6 Details of Device Messages

Command	:PROTOcol:LDP:OPTion <option>
Query	:PROTOcol:LDP:OPTion?
Response	<option>
Description	Sets the option information of the LDP protocol function.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<p><option></p> <p>Set in the following format:</p> <p>{LDP CRLDP},<hello_adjacency>,<hello_hold_time>,<t>,<r>,<keepalive_time>,<max_pdu_length>,<path_vector_limit>,<a>,<d>,<hop_count>,<start_label_number></p> <p>Each parameter is described below:</p> <p>{LDP CRLDP}</p> <p>Set the Emulation Mode of LDP protocol function.</p> <p><hello_adjacency></p> <p>Set the IPv4 Address for Hello Adjacency (<IP_ADDRESS>).</p> <p><hello_hold_time></p> <p>Set the Hello Hold Time(s) value in the 2-octet integer (<NR1>). ([RFC 3036]3.5.2. Hello Message)</p> <p><t></p> <p>T bit (Targeted Hello). To transmit the Targeted Hello, specify 1. To transmit the Link Hello, specify 0 (<BOOLEAN>). ([RFC 3036] 3.5.2. Hello Message)</p> <p><r></p> <p>R bit (Request Send Targeted Hellos). To ask the reception side for periodic transmission of Hello, specify 1 (<BOOLEAN>) ([RFC 3036] 3.5.2. Hello Message)</p> <p><keepalive_time></p> <p>Set the Keepalive Time(s) value in the 2-octet integer (<NR1>). ([RFC 3036] 3.5.3. Initialization Message)</p> <p><max_pdu_length></p> <p>Set the Max PDU Length value in the 2-octet integer (<NR1>). ([RFC 3036] 3.5.3. Initialization Message)</p> <p><path_vector_limit></p> <p>Set the Path Vector Limit value in the 1-octet integer (<NR1>). ([RFC 3036] 3.5.3. Initialization Message)</p>

<a>

A bit (Label Advertisement Discipline). Set the Label advertisement type. To set Downstream Unsolicited advertisement, specify 0. To set Downstream On Demand, specify 1 (<BOOLEAN>). ([RFC 3036] 3.5.3. Initialization Message)

<d>

D bit (Loop Detection). To enable Loop Detection, specify 1. To disable, specify 0 (<BOOLEAN>). ([RFC 3036] 3.5.3. Initialization Message)

<hop_count>

Set whether to enable the Hop Count option when Loop Detection is enabled (<BOOLEAN>).

<start_label_number>

Set the start label number for automatic label creation (<NR1>).

Section 6 Details of Device Messages

Command	:PROTocol:LDP:NODE:ADD <parent_node_id>,<node_id>,<node_information>
Description	Adds a node.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<p><parent_node_id></p> <p>Specify the ID (from –1 to 32767) for the parent node to be connected. For that of the route node, specify –1 (<NR1>).</p> <p><node_id></p> <p>Specify the ID (from 0 to 32767) for the node to be added. Note that 0 must be specified for that of the route node (<NR1>).</p> <p><node_information></p> <p>Set in the following format:</p> <p><type>,{<ip_address> <as_number> <lsp_id>,<router_id>}</p> <p>Each parameter is described below:</p> <p><type></p> <p>Select the node type from IPV4, AS or LSPID (<CHAR>).</p> <p>For IPV4, set the IPv4 address.</p> <p>For AS, set the AS number.</p> <p>For LSPID, set the Local LSP-ID and Ingress LSR Router ID.</p> <p><ip_address></p> <p>Set in the 4-octet <HEX> format. (Example: 192.168.1.3 is expressed as #HC0A80103.)</p> <p><as_number></p> <p>Set a value from 0 to 65535 (<NR1>).</p> <p><lsp_id></p> <p>Set a value from 0 to 65535 (<NR1>).</p> <p><router_id></p> <p>Set in the 4-octet <HEX> format.</p>

Command	:PROTocol:LDP:NODE:DELeTe <node_id>
Description	Deletes the specified node.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<node_id> Specify the ID (from 0 to 32767) for the node to be edited (<NR1>).

Command	:PROTocol:LDP:NODE:DELeTe:ALL
Description	Deletes all nodes.
Module	√ MbE √ GbE – 2.5G/10G

Command	:PROTocol:LDP:NODE:FEC:DELeTe:ALL <node_id>
Description	Deletes all FEC information on the specified node.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<node_id> Specify the ID (from 0 to 32767) for the node to be edited (<NR1>).

Section 6 Details of Device Messages

Command	:PROToCol:LDP:NODE:FEC:ADD <node_id>,<fec_id>,<fec_information>
Description	Adds FEC information to the specified node.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<p><node_id></p> <p>Specify the ID (from 0 to 32767) for the node to be edited (<NR1>).</p> <p><fec_id></p> <p>Specify the ID for the FEC information to be added (<NR1>).</p> <p><fec_information></p> <p>Set in the following format:</p> <p><type>,<network_id>[,<prefix_from>,<prefix_thru>],<hop_count></p> <p>Each parameter is described below:</p> <p><type></p> <p>Set the FEC type in IPV4_PREFIX or IPV4_HOST (<CHAR>).</p> <p>When IPV4_PREFIX (IPv4 Address Prefix) is specified, set <network_id>,<prefix_from>,<prefix_thru> and <hop_count>.</p> <p>When IPV4_HOST (IPv4 Host Address) is specified, set <network_id> and <hop_count>.</p> <p><network_id></p> <p>Set the address for the address family specified for <type> (<IP_ADDRESS>).</p> <p><prefix_from>,<prefix_thru></p> <p>Set the range for automatic prefix creation (<NR1>).</p> <p><hop_count></p> <p>Set the Hop Count value (<NR1>).</p>

Command	:PROTOcol:LDP:NODE:FEC:DELeTe <node_id>,<fec_id>
Description	Deletes the specified FEC information.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<node_id> Specify the ID (from 0 to 32767) for the node to be edited (<NR1>). <fec_id> Specify the ID for the FEC information to be edited (<NR1>).

Command	:PROTOcol:LDP:NODE:ROUTE:DELeTe:ALL <node_id>
Description	Deletes all explicit route information on the specified node.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<node_id> Specify the ID (from 0 to 32767) for the node to be edited (<NR1>).

Command	:PROTOcol:LDP:NODE:ROUTE:DELeTe <node_id>,<route_id>
Description	Deletes the specified explicit route information.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<node_id> Specify the ID (from 0 to 32767) for the node to be edited (<NR1>). <route_id> Specify the ID (Local CR-LSP ID) for the path information to be edited (<NR1>).

Section 6 Details of Device Messages

Command	:PROTOcol:LDP:NODE:ROUTE:ADD <node_id>,<route_id>,<explicit_route_information>
Description	Adds the explicit route information to the specified node.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<p><node_id></p> <p>Specify the ID (from 0 to 32767) for the node to be edited (<NR1>).</p> <p><route_id ></p> <p>Specify the ID (Local CR-LSP ID) for the path information to be added (<NR1>).</p> <p><explicit_route_information></p> <p>Set in the following format: <number_of_node>[,<l_bit>,<type>,{<ip_address>,<prefix> <as_number> <lsp_id>,<router_id>}]...</p> <p>Each parameter is described below:</p> <p><number_of_node></p> <p>Set the number of nodes (0 to 255) to be specified as the explicit route (<NR1>).</p> <p><l_bit></p> <p>Select one from STRICT and LOOSE (<CHAR>).</p> <p><type></p> <p>Select the node type from IPV4, IPV6, AS or LSPID (<CHAR>). For IPV4 and IPV6, set <ip_address> and <prefix>. For AS, set <as_number>. For LDPID, set <lsp_id> and <router_id>.</p> <p><ip_address></p> <p>For the IPv4 address, set in the 4-octet format. For the IPv6 address, set in the 16-octet <HEX> format. (Example: 192.168.1.3 is expressed as #HC0A80103.)</p> <p><prefix></p> <p>For the IPv4 address, set a value from 0 to 32. For the IPv6 address, set a value from 0 to 128 (<NR1>).</p> <p><as_number></p> <p>Set a value from 0 to 65535 (<NR1>).</p> <p><lsp_id></p> <p>Set a value from 0 to 65535 (<NR1>).</p> <p><router_id></p> <p>Set in the 4-octet <HEX> format.</p>

Command	:PROTocol:LDP:NODE <node_id>,<node_information>
Query	:PROTocol:LDP:NODE? <node_id>
Response	<node_information>
Description	Edits information on the specified node.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<p><node_id></p> <p>Specify the ID (from 0 to 32767) for the node to be edited (<NR1>).</p> <p><node_information></p> <p>Set in the following format:</p> <p><type>,{<ip_address> <as_number> <lsp_id>,<router_id>}</p> <p>Each parameter is described below:</p> <p><type></p> <p>Select the node type from IPV4, AS or LSPID (<CHAR>).</p> <p>For IPV4, set the IPv4 address.</p> <p>For AS, set the AS number.</p> <p>For LSPID, set the Local LSP-ID and Ingress LSR Router ID.</p> <p><ip_address></p> <p>Set in the 4-octet <HEX> format. (Example: 192.168.1.3 is expressed as #HC0A80103.)</p> <p><as_number></p> <p>Set a value from 0 to 65535 (<NR1>).</p> <p><lsp_id></p> <p>Set a value from 0 to 65535 (<NR1>).</p> <p><router_id></p> <p>Set in the 4-octet <HEX> format.</p>

Section 6 Details of Device Messages

Command	:PROTocol:LDP:NODE:FEC <node_id>,<fec_id>,<fec_information>
Query	:PROTocol:LDP:NODE:FEC? <node_id>,<fec_id>
Response	<fec_information>
Description	Edits the specified FEC information.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<p><node_id></p> <p>Specify the ID (from 0 to 32767) for the node to be edited (<NR1>).</p> <p><fec_id></p> <p>Specify the ID for the FEC information to be edited (<NR1>).</p> <p><fec_information></p> <p>Set in the following format:</p> <p><type>,<network_id>[,<prefix_from>,<prefix_thru>],<hop_count></p> <p>Each parameter is described below:</p> <p><type></p> <p>Set the FEC type in IPV4_PREFIX or IPV4_HOST (<CHAR>).</p> <p>When IPV4_PREFIX (IPv4 Address Prefix) is specified, set <network_id>,<prefix_from>,<prefix_thru> and <hop_count>.</p> <p>When IPV4_HOST (IPv4 Host Address) is specified, set <network_id> and <hop_count>.</p> <p><network_id></p> <p>Set the address for the address family specified for <type> (<IP_ADDRESS>).</p> <p><prefix_from>,<prefix_thru></p> <p>Set the range for automatic prefix creation (<NR1>).</p> <p><hop_count></p> <p>Set the Hop Count value (<NR1>).</p>

Command	:PROTocol:LDP:NODE:ROUTe <node_id>,<route_id>,<explicit_route_information>
Query	:PROTocol:LDP:NODE:ROUTe? <node_id>,<route_id>
Response	<explicit_route_information>
Description	Edits the specified explicit route information.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<p><node_id></p> <p>Specify the ID (from 0 to 32767) for the node to be edited (<NR1>).</p> <p><route_id></p> <p>Specify the ID (Local CR-LSP ID) for the path information to be edited (<NR1>).</p> <p><explicit_route_information></p> <p>Set in the following format:</p> <p><number_of_node>[,<l_bit>,<type>,{<ip_address>,<prefix> <as_number> <lsp_id>,<router_id>}]...</p> <p>Each parameter is described below:</p> <p><number_of_node></p> <p>Set the number of nodes (0 to 255) to be specified as the explicit route (<NR1>).</p> <p><l_bit></p> <p>SELECT ONE FROM STRICT AND LOOSE (<CHAR>).</p> <p><type></p> <p>Select the node type from IPV4, AS or LSPID (<CHAR>).</p> <p>For IPV4 and IPV6, set <ip_address> and <prefix>.</p> <p>For AS, set <as_number>.</p> <p>For LDPID, set <lsp_id> and <router_id>.</p> <p><ip_address></p> <p>For the IPv4 address, set in the 4-octet format. For the IPv6 address, set in the 16-octet <HEX> format. (Example: 192.168.1.3 is expressed as #HC0A80103.)</p> <p><prefix></p> <p>For the IPv4 address, set a value from 0 to 32. For the IPv6 address, set a value from 0 to 128 (<NR1>).</p> <p><as_number></p> <p>Set a value from 0 to 65535 (<NR1>).</p> <p><lsp_id></p> <p>Set a value from 0 to 65535 (<NR1>).</p> <p><router_id></p> <p>Set in the 4-octet <HEX> format.</p>

Section 6 Details of Device Messages

Command	:PROTocol:RSVP:ENABLE <BOOLEAN>
Query	:PROTocol:RSVP:ENABLE?
Response	<BOOLEAN>
Description	Sets the RSVP protocol function to enable or disable. * The MPLS (RSVP) option is required for using the MPLS (RSVP) function. * :PORT:RSVP settings must be set to 1 (enable) in order to execute this command.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<BOOLEAN> To enable the RSVP protocol function, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	0 (disable)

Command	:PROTocol:RSVP:OPTion <option>
Query	:PROTocol:RSVP:OPTion?
Response	<option>
Description	Sets the option information for the RSVP protocol function.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<option> Set in the following format: <ip_address>,<prefix>,<enable_hello>,<hello_interval> Each parameter is described below: <ip_address> IP address for the DUT. Set in the 4-octet <HEX> format. (Example: 192.168.1.3 is expressed as #HC0A80103.) <prefix> Set a value from 0 to 32 (<NR1>). <enable_hello> To enable the Hello message, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query (<BOOLEAN>). <hello_interval> Set the Hello message interval (<NR1>).

Command	:PROTocol:RSVP:NODE:ADD <parent_node_id>,<node_id>,<node_information>
Description	Adds/deletes a node.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<p><parent_node_id></p> <p>Specify the ID (from –1 to 32767) for the parent node to be connected. For that of the route node, specify –1 (<NR1>).</p> <p><node_id></p> <p>Specify the ID (from 0 to 32767) for the node to be added. Note that 0 must be specified for that of the route node (<NR1>).</p> <p><node_information></p> <p>Set in the following format:</p> <p><type>,{<ip_address> <as_number> <lsp_id>,<router_id>}</p> <p>Each parameter is described below:</p> <p><type></p> <p>Select the node type from IPV4, AS or LSPID (<CHAR>).</p> <p>For IPV4, set the IPv4 address.</p> <p>For AS, set the AS number.</p> <p>For LSPID, set the Local LSP-ID and Ingress LSR Router ID.</p> <p><ip_address></p> <p>Set in the 4-octet <HEX> format. (Example: 192.168.1.3 is expressed as #HC0A80103.)</p> <p><as_number></p> <p>Set a value from 0 to 65535 (<NR1>).</p> <p><lsp_id></p> <p>Set a value from 0 to 65535 (<NR1>).</p> <p><router_id></p> <p>Set in the 4-octet <HEX> format.</p>

Section 6 Details of Device Messages

Command :PROTOcol:RSVP:NODE:DELeTe <node_id>
Description Deletes the specified node.
Module √ MbE √ GbE – 2.5G/10G
Parameter <node_id>
Specify the ID (from 0 to 32767) for the node to be edited (<NR1>).

Command :PROTOcol:RSVP:NODE:DELeTe:ALL
Description Deletes all nodes.
Module √ MbE √ GbE – 2.5G/10G

Command :PROTOcol:RSVP:NODE:EDGE:PATH:DELeTe:ALL <node_id>
Description Deletes all path information on the specified node.
Module √ MbE √ GbE – 2.5G/10G
Parameter <node_id>
Specify the ID (from 0 to 32767) for the node to be edited (<NR1>).

Command :PROTOcol:RSVP:NODE:EDGE:PATH:DELeTe <node_id>,<tunnel_id>
Description Deletes the path information on the specified node.
Module √ MbE √ GbE – 2.5G/10G
Parameter <node_id>
Specify the ID (from 0 to 32767) for the node to be edited (<NR1>).
<tunnel_id>
Specify the ID (Tunnel ID) for the path information to be edited (from 0 to 65535, <NR1>).

Command	:PROToCol:RSVP:NODE:EDGE:PATH:ADD <node_id>,<tunnel_id>,<path_information>
Description	Adds/sets path information to the specified node.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<p><node_id></p> <p>Specify the ID (from 0 to 32767) for the node to be edited (<NR1>).</p> <p><tunnel_id></p> <p>Specify the ID (Tunnel ID) for the path information to be edited (from 0 to 65535, <NR1>).</p> <p><path_information></p> <p>Set in the following format:</p> <p><tunnel_end_point_address>,<l3pid>,<lsp_id>,<r>,,<p>,<min>,<max>,<record_route>,<ttl>,<session_attribute_enable>[,<setup_priority>,<holding_priority>,<flags>,<session_name>",<resource_affinities_enable>[,<resource_affinities>]],<explicit_route_enable>[,<number_of_node>[,<l_bit>,<type>,{<ip_address>,<prefix> <as_number>}]]...</p> <p>Each parameter is described below:</p> <p><tunnel_end_point_address></p> <p>Set the IPv4 Tunnel End Point Address (<IP_ADDRESS>).</p> <p><l3pid></p> <p>Set the Layer3 protocol number (ETHER TYPES) in the 2-octet <HEX> format.</p> <p><lsp_id></p> <p>Set the LSP ID (<NR1>).</p> <p>----- SENDER_TSPEC object parameter [RFC 2205][RFC 2210][RFC 2215] -----</p> <p><r>,,<p></p> <p>Set Token Bucket Rate(byte/s), Token Bucket Size(byte) and Peak Data Rate(byte/s) (32-bit <NR2> format).</p> <p><min>,<max></p> <p>Set Minimum Policed Unit (byte), Maximum Packet Size (byte) (32-bit <NR1> format).</p> <p>----- Record Route -----</p> <p><record_route></p> <p>To enable Record Route, set {ON 1} (ON or 1). Otherwise, set {OFF 0} (OFF or 0) (<BOOLEAN>).</p> <p>----- TTL -----</p> <p><ttl></p> <p>Set the value of TTL.</p>

----- SESSION_ATTRIBUTE object parameter [RFC 3209] -----

<session_attribute_enable>

Set the SESSION_ATTRIBUTE object parameter to enable or disable (<BOOLEAN>).

<setup_priority>, <holding_priority>

Set a value from 0 to 7 (<NR1>).

<flags>

Set each flag value in the order of <local_protection_desired>, <label_recording_desired> and then <se_style_desired> in <BOOLEAN> format.

"<session_name>"

Set the session name as a 0- to 254-octet character string.

<resource_affinities_enable>

Select whether to set Resource affinities (<BOOLEAN>).

<resource_affinities>

Set in the order of <exclude_any>, <include_any> and then <include_all> (32-bit <NR1> format).

----- EXPLICIT_ROUTE object (ERO) parameter [RFC 3209] -----

<explicit_route_enable>

Set EXPLICIT_ROUTE object parameter to enable or disable (<BOOLEAN>).

<number_of_node>

Set the number of nodes (0 to 255) to be specified as the explicit route (<NR1>).

<l_bit>

Select one from STRICT and LOOSE (<CHAR>).

<type>

Select the node type from IPV4 or AS (<CHAR>).

For IPV4, set <ip_address> and <prefix>.

For AS, set <as_number>.

<ip_address>

Set in the 4-octet <HEX> format. (Example: 192.168.1.3 is expressed as #HC0A80103.)

<prefix>

Set a value from 0 to 32 (<NR1>).

<as_number>

Set a value from 0 to 65535 (<NR1>).

Command	:PROTocol:RSVP:NODE <node_id>,<node_information>
Query	:PROTocol:RSVP:NODE? <node_id>
Response	<node_information>
Description	Edits the specified node information.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<p><node_id></p> <p>Specify the ID (from 0 to 32767) for the node to be edited (<NR1>).</p> <p><node_information></p> <p>Set in the following format:</p> <p><type>,{<ip_address> <as_number> <lsp_id>,<router_id>}</p> <p>Each parameter is described below:</p> <p><type></p> <p>Select the node type from IPV4, AS or LSPID (<CHAR>).</p> <p>For IPV4, set the IPv4 address.</p> <p>For AS, set the AS number.</p> <p>For LSPID, set the Local LSP-ID and Ingress LSR Router ID.</p> <p><ip_address></p> <p>Set in the 4-octet <HEX> format. (Example: 192.168.1.3 is expressed as #HC0A80103.)</p> <p><as_number></p> <p>Set a value from 0 to 65535 (<NR1>).</p> <p><lsp_id></p> <p>Set a value from 0 to 65535 (<NR1>).</p> <p><router_id></p> <p>Set in the 4-octet <HEX> format.</p>

Section 6 Details of Device Messages

Command	:PROTocol:RSVP:NODE:EDGE <node_id>,<edge_information>
Query	:PROTocol:RSVP:NODE:EDGE? <node_id>
Response	<edge_information>
Description	Sets/queries information on the specified node when it is an edge router.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<node_id> Specify the ID (from 0 to 32767) for the node to be edited (<NR1>). <edge_information> Set in the following format: <rsvp_confirmation>,<style>,<timer_k>,<refresh_period> Each parameter is described below: <rsvp_confirmation> To enable RSVP Confirmation, set {ON 1} (ON or 1). Otherwise, set {OFF 0} (OFF or 0). 1 or 0 is returned as the response data for the query (<BOOLEAN>). <style> Set FF or SE (<CHAR>). <timer_k> Set the value of K (timer factor). <refresh_period> Set the value of the refresh timer.

Command	:PROTocol:RSVP:NODE:EDGE:PATH <node_id>,<tunnel_id>,<path_information>
Query	:PROTocol:RSVP:NODE:EDGE:PATH? <node_id>,<tunnel_id>
Response	<path_information>
Description	Edits the path information for the specified node.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<p><node_id></p> <p>Specify the ID (from 0 to 32767) for the node to be edited (<NR1>).</p> <p><tunnel_id></p> <p>Specify the ID (Tunnel ID) for the path information to be edited (from 0 to 65535, <NR1>).</p> <p><path_information></p> <p>Set in the following format:</p> <p><tunnel_end_point_address>,<l3pid>,<lsp_id>,<r>,,<p>,<min>,<max>,<record_route>,<ttl>,<session_attribute_enable>[,<setup_priority>,<holding_priority>,<flags>,"<session_name>",<resource_affinities_enable>[,<resource_affinities>]] ,<explicit_route_enable>[,<number_of_node>[,<l_bit>,<type>,{<ip_address>,<prefix> <as_number>}]]...</p> <p>Each parameter is described below:</p> <p><tunnel_end_point_address></p> <p>Set IPv4 Tunnel End Point Address (<IP_ADDRESS>).</p> <p><l3pid></p> <p>Set the Layer3 protocol number (ETHER TYPES) in the 2-octet <HEX> format.</p> <p><lsp_id></p> <p>Set the LSP ID (<NR1>).</p> <p>----- SENDER_TSPEC object parameter [RFC 2205][RFC 2210][RFC 2215] -----</p> <p><r>,,<p></p> <p>Set Token Bucket Rate(byte/s), Token Bucket Size(byte) and Peak Data Rate(byte/s) (32-bit <NR2> format).</p> <p><min>,<max></p> <p>Set Minimum Policed Unit(byte), Maximum Packet Size(byte) (32-bit <NR1> format).</p> <p>----- Record Route -----</p>

<record_route>

To enable Record Route, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0) (<BOOLEAN>).

----- TTL -----

<ttl>

Set the value of TTL.

----- SESSION_ATTRIBUTE object parameter [RFC 3209] -----

<session_attribute_enable>

Set SESSION_ATTRIBUTE object parameter to enable or disable (<BOOLEAN>).

<setup_priority>,<holding_priority>

Set a value from 0 to 7 (<NR1>).

<flags>

Set each flag value in the order of <local_protection_desired>, <label_recording_desired> and then <se_style_desired> in <BOOLEAN> format.

"<session_name>"

Set the session name as a 0- to 254-octet character string.

<resource_affinities_enable>

Select whether to set Resource affinities (<BOOLEAN>).

<resource_affinities>

Set in the order of <exclude_any>, <include_any> and then <include_all> (32-bit <NR1> format).

----- EXPLICIT_ROUTE object (ERO) parameter [RFC 3209] -----

<explicit_route_enable>

Set EXPLICIT_ROUTE object parameter to enable or disable (<BOOLEAN>).

<number_of_node>

Set the number of nodes (0 to 255) to be specified as the explicit route (<NR1>).

<l_bit>

Select one from STRICT and LOOSE (<CHAR>).

<type>

Select the node type from IPV4 or AS (<CHAR>).

For IPV4, set <ip_address> and <prefix>.

For AS, set <as_number>.

<ip_address>

Set in the 4-octet <HEX> format. (Example: 192.168.1.3 is expressed as #HC0A80103.)

<prefix>

Set a value from 0 to 32 (<NR1>).

<as_number>

Set a value from 0 to 65535 (<NR1>).

Section 6 Details of Device Messages

Command	:PROTocol:IGMP:ENABle <BOOLEAN>
Query	:PROTocol:IGMP:ENABle?
Response	<BOOLEAN>
Description	Sets the report transmission function of IGMP to enable or disable. * Before executing this command, the IGMP function must be enabled by executing the :PORT:PROTocol:IGMP:ENABle command.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<BOOLEAN> To enable the report transmission function of IGMP, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	0 (disable)

Command	:PROTocol:IGMP:VERSion {VER1 | VER2}
Query	:PROTocol:IGMP:VERSion?
Response	{VER1 | VER2}
Description	Sets the IGMP version. * This command is available for the MU120101A/02A/03A/04A/05A/06A/19A/20A/03B/04B only.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	{VER1 | VER2} Select either of the following: VER1 Version1 VER2 Version2
Default	VER1 (Version1)

Command	:PROTocol:IGMP:MGADdress:COUNT <NR1>
Query	:PROTocol:IGMP:MGADdress:COUNT?
Response	<NR1>
Description	Sets a group address count. * This command is available for the MU120101A/02A/03A/04A/05A/06A/19A/20A/03B/04B only.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 1 to 255.
Default	1
Command	:PROTocol:IGMP:MGADdress:FROM <IP_ADDRESS>
Query	:PROTocol:IGMP:MGADdress:FROM?
Response	<IP_ADDRESS>
Description	Sets the first group address in a group address range. * This command is available for the MU120101A/02A/03A/04A/05A/06A/19A/20A/03B/04B only.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<IP_ADDRESS> Set a value of the group address in the following 4-octet <HEX> format: Example: 192.168.1.3 is expressed as #HC0A80103.
Default	#H00000000 (0.0.0.0)
Command	:PROTocol:IGMP:REPort:MODE {ONE_QUERIED | ALL_QUERIED | ALL}
Query	:PROTocol:IGMP:REPort:MODE?
Response	{ONE_QUERIED | ALL_QUERIED | ALL}
Description	Sets the report transmission mode. * This command is available for the MU120101A/02A/03A/04A/05A/06A/19A/20A/03B/04B only.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	{ONE_QUERIED | ALL_QUERIED | ALL} Select one of the following: ONE_QUERIED Report To One When Queried

Section 6 Details of Device Messages

	ALL_QUERIED	Report To All When Queried
	ALL	Report To All Unsolicited
Default	ONE_QUERIED (Report To One When Queried)	

Command	:PROTocol:IGMP:REPort:FREQuency <NR1>
Query	:PROTocol:IGMP:REPort:FREQuency?
Response	<NR1>
Description	<p>Sets a report frequency.</p> <p>* This is valid when the report transmission mode is Report To All Unsolicited.</p> <p>* This command is available for the MU120101A/02A/03A/04A/05A/06A/19A/20A/03B/04B only.</p>
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p><NR1></p> <p>Set a value from 10 to 600 (s).</p>
Default	10

Command	:PROTocol:IGMP:RALert:ENABle <BOOLEAN>
Query	:PROTocol:IGMP:RALert:ENABle?
Response	<BOOLEAN>
Description	<p>Sets a router alert to enable or disable (whether to add the IP Router Alert Option to the IP header or not).</p> <p>* This command is available for the MU120101A/02A/03A/04A/05A/06A/19A/20A/03B/04B only.</p>
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p><BOOLEAN></p> <p>To set a router alert to be sent, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.</p>
Default	0 (disable)

Section 6 Details of Device Messages

Command	:PROTocol:IGMP:UADDRESS:COUNT <NR1>
Query	:PROTocol:IGMP:UADDRESS:COUNT?
Response	<NR1>
Description	Sets a client address count. * This command is available for the MU120101A/02A/03A/04A/05A/06A/19A/20A/03B/04B only.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 1 to 255.
Default	1

Command	:PROTocol:IGMP:UADDRESS:FROM <IP_ADDRESS>
Query	:PROTocol:IGMP:UADDRESS:FROM?
Response	<IP_ADDRESS>
Description	Sets the first virtual host address in a virtual host address range. * This command is available for the MU120101A/02A/03A/04A/05A/06A/19A/20A/03B/04B only.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<IP_ADDRESS> Set a value of the virtual host address in the following 4-octet <HEX> format: Example: 192.168.1.3 is expressed as #HC0A80103.
Default	#H00000000 (0.0.0.0)

Query	:PROTocol:IGMP:MGADdress:TO?
Response	<IP_ADDRESS>
Description	Queries the last group address in a group address range. * This command is available for the MU120101A/02A/03A/04A/05A/06A/19A/20A/03B/04B only.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<IP_ADDRESS> A value of the group address is returned in the following 4-octet <HEX> format: Example: 192.168.1.3 is expressed as #HC0A80103.

Query	:PROTocol:IGMP:UADdress:TO?
Response	<IP_ADDRESS>
Description	Queries the last virtual host address in a virtual host address range. * This command is available for the MU120101A/02A/03A/04A/05A/06A/19A/20A/03B/04B only.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<IP_ADDRESS> A value of the virtual host address is returned in the following 4-octet <HEX> format: Example: 192.168.1.3 is expressed as #HC0A80103.

Section 6 Details of Device Messages

Command	:PROTOcol:MLD:ENABle <BOOLEAN>
Query	:PROTOcol:MLD:ENABle?
Response	<BOOLEAN>
Description	Sets the MLD protocol function to enable or disable. * :PORT:PROTOcol:MLD:ENABle settings must be set to 1 (enable) in order to execute this command
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<BOOLEAN> To enable the MLD protocol function, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	0 (disable)

Command	:PROTOcol:OSPF:UPDate
Description	Updates the changes of setting information.
Module	√ MbE √ GbE – 2.5G/10G

Command	:PROTocol:OSPF:ENABle <BOOLEAN>
Query	:PROTocol:OSPF:ENABle?
Response	<BOOLEAN>
Description	<p>Sets the OSPF protocol to enable or disable.</p> <ul style="list-style-type: none">* The OSPF option is required for using the OSPF function.* :PORT:OSPF settings must be set to 1 (enable) in order to execute this command.* Valid only for MU150101A module.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<p><BOOLEAN></p> <p>To enable the OSPF protocol, specify {ON | 1} (ON or 1). Otherwise, specify {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.</p>
Default	0 (disable)

Query	:PROTocol:OSPF:STATe?						
Response	<state>[,<state>]...						
Description	Queries virtual router state.						
Module	√ MbE √ GbE – 2.5G/10G						
Parameter	<p><state>[,<state>]...</p> <p>The code number is returned as the link state for 200 virtual routers. The numbers mean the following:</p> <table><tr><td>0</td><td>Down</td></tr><tr><td>1</td><td>2-Way</td></tr><tr><td>2</td><td>Full</td></tr></table>	0	Down	1	2-Way	2	Full
0	Down						
1	2-Way						
2	Full						

Section 6 Details of Device Messages

Command	:PROTocol:OSPF:TABLE:ENABLE <BOOLEAN>[,<BOOLEAN>]...
Query	:PROTocol:OSPF:TABLE:ENABLE?
Response	<BOOLEAN>[,<BOOLEAN>]...
Description	Sets virtual router settings to enable or disable.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<p><BOOLEAN>[,<BOOLEAN>]...</p> <p>Set 200 virtual router settings to enable or disable. To enable virtual router settings, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query (<BOOLEAN>).</p> <p>When a value less than 200 is specified for <BOOLEAN>, the specified numbers of virtual routers from the top are enabled. The remaining virtual routers are disabled.</p>

Command	:PROToCol:OSPF:TABLE:ITEM:INTErface <entry_id>,<Interface Setting>
Query	:PROToCol:OSPF:TABLE:ITEM:INTErface? <entry_id>
Response	<Interface Setting>
Description	Sets the interface information for the selected virtual router.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<p><entry_id> Specify the virtual router number (from 1 to 200) (<NR1>).</p> <p><Interface Setting> This is expressed in the following format: <IP Address>,<Router ID>,<Area ID>,"<Authentication>",<Network Mask>,<Hello Interval>,<Options>,<Router Dead Interval></p> <p><IP Address> IP address for the virtual router. Set in the following 4-octet <HEX> format: Example: 192.168.1.3 is expressed as #HC0A80103.</p> <p><Router ID> Set in the 4-octet <HEX> format.</p> <p><Area ID> Set in the 4-octet <HEX> format.</p> <p><Authentication> When setting the Simple Password, specify it in 1 to 8-octet character string. When setting no password, specify "".</p> <p><Network Mask> Set in the 4-octet <HEX> format.</p> <p><Hello Interval> Set a value from 0 to 65534 (sec.) (2 bytes).</p> <p><Options> Set option information of the virtual router in the 8-bit <BINARY> format defined as follows. Unused bits are ignored.</p> <div><div>+-----+</div><div>#B | * | * | DC | EA | N/P | MC | E | * |</div><div>+-----+</div></div><p><Router Dead Interval> Set a value from 0 to 4,294,967,295 (sec.) (4 bytes).</p>

Section 6 Details of Device Messages

Command	:PROTocol:OSPF:TABLE:ITEM:LSA <entry_id>,<lsa_id>,<LS Type>,<LSA Setting>
Query	:PROTocol:OSPF:TABLE:ITEM:LSA? <entry_id>,<lsa_id>
Response	<LS Type>,<LSA Setting>
Description	Sets and reads the LSA information of the selected virtual router.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<entry_id>

Specify the virtual router number (from 1 to 200) (<NR1>).

<lsa_id>

Specify the LSA information number (<NR1>).

<LS Type>

Set the LSA type (1, 2, 3, 4, 5, 7).

Type	Description
1	Router-LSA
2	Network-LSA
3	Summary-LSA (IP network)
4	Summary-LSA (ASBR)
5	AS-external-LSA
7	NSSA external-LSA

The setting information format varies as follows according to the value set for <LS Type>:

When Type 1 Router-LSA is set:

<Link State ID>,<Advertising Router ID>,<Options>,<bit V>,<bit E>,<bit B>,<Type>,<Number of Link ID>,<Link ID>,<Prefix Length of Link ID>,<Number of Link Data>,<Link Data>,<Prefix Length of Link Data>,<metric>

When Type 2 Network-LSA is set:

<Link State ID>,<Advertising Router ID>,<Options>,<Network Mask>,<Attached Router ID>[,<Attached Router ID>]...

When Type 3 Summary-LSA (IP network) is set:

<Link State ID>,<Advertising Router ID>,<Options>,<Network Mask>,<metric>

When Type 4 Summary-LSA (ASBR) is set:

<Link State ID>,<Advertising Router ID>,<Options>,<metric>

When Type 5 AS-external-LSA is set:

<Link State ID>,<Advertising Router ID>,<Options>,<Network Mask>,<bit E>,<metric>,<Number of Addresses>,<Address>,<Prefix Length>,<External Route Tag>

When Type 7 NSSA external-LSA is set:

<Link State ID>,<Advertising Router ID>,<Options>,<Network Mask>,<bit E>,<metric>,<Number of Addresses>,<Address>,<Prefix Length>,<External Route Tag>

Each parameter is described below:

[LSA header information]

<Link State ID>

Set in the following 4-octet <HEX> format:

Example: 192.168.1.3 is expressed as #HC0A80103.

<Advertising Router ID>

Set in the following 4-octet <HEX> format:

Example: 192.168.1.3 is expressed as #HC0A80103.

<Options>

Set option information of the virtual router in the 8-bit <BINARY> format defined as follows. Unused bits are ignored.

```

+-----+
#B | * | * | DC | EA | N/P | MC | E | * |
+-----+
```

[LSA setting information]

<bit V>,<bit E>,<bit B>

Set 0 or 1.

<Type>

Set the link type for the virtual router (1, 2, 3, 4).

Type	Description
1	Point-to-point connection to another router
2	Connection to a transit network
3	Connection to a stub network
4	Virtual link

<Number of Link ID>

Specify the number of the Link IDs to be generated. Set a value from 1 to 256.

<Link ID>

Set in the following 4-octet <HEX> format:

Example: 192.168.1.3 is expressed as #HC0A80103.

Type1: Neighbor Router ID

Type2: DR Interface address

Type3: IP network number

Type4: Neighbor Router ID

<Prefix Length of Link ID>

Set a value from 1 to 32.

<Number of Link Data>

Specify the number of the link data to be generated. Set a value from 1 to 256.

<Link Data>

Set in the following 4-octet <HEX> format:

Example: 192.168.1.3 is expressed as #HC0A80103.

Type1: IP address for the router interface

Type2: IP address for the router interface

Type3: Subnet mask of the network

Type4: IP address for the router interface

<Prefix Length of Link Data>

Set a value from 1 to 32.

<metric>

Set a value from 1 to 65535.

<Network Mask>

Set in the following 4-octet <HEX> format:

Example: 192.168.1.3 is expressed as #HC0A80103.

<Attached Router ID>

Set in the following 4-octet <HEX> format:

Example: 192.168.1.3 is expressed as #HC0A80103.

<Number of Addresses>

The number of the Forwarding addresses to be generated.

<Address>

The value for the Forwarding address.

Set in the following 4-octet <HEX> format:

Example: 192.168.1.3 is expressed as #HC0A80103.

<Prefix Length>

The Prefix Length of the Forwarding address.

Set a value from 1 to 32.

<External Route Tag>

Set a value from 0 to 4,294,967,295 (4 bytes).

Section 6 Details of Device Messages

Command :PROTOcol:OSPF:TABLE:ITEM:LSA:ADD <entry_id>,<LS Type>,<LSA Setting>

Description Adds LSA information to the selected virtual router.

Module √ MbE √ GbE – 2.5G/10G

Parameter <entry_id>

Specify the virtual router number (from 1 to 200) (<NR1>).

<LS Type>

Set the LSA type (1, 2, 3, 4, 5, 7).

Type	Description
1	Router-LSA
2	Network-LSA
3	Summary-LSA (IP network)
4	Summary-LSA (ASBR)
5	AS-external-LSA
7	NSSA external-LSA

The setting information format varies as follows according to the value set for <LS Type>:

When Type 1 Router-LSA is set:

<Link State ID>,<Advertising Router ID>,<Options>,<bit V>,<bit E>,<bit B>,<Type>,<Number of Link ID>,<Link ID>,<Prefix Length of Link ID>,<Number of Link Data>,<Link Data>,<Prefix Length of Link Data>,<metric>

When Type 2 Network-LSA is set:

<Link State ID>,<Advertising Router ID>,<Options>,<Network Mask>,<Attached Router ID>[,<Attached Router ID>]...

When Type 3 Summary-LSA (IP network) is set:

<Link State ID>,<Advertising Router ID>,<Options>,<Network Mask>,<metric>

When Type 4 Summary-LSA (ASBR) is set:

<Link State ID>,<Advertising Router ID>,<Options>,<metric>

When Type 5 AS-external-LSA is set:

<Link State ID>,<Advertising Router ID>,<Options>,<Network Mask>,<bit E>,<metric>,<Number of Addresses>,<Address>,<Prefix Length>,<External Route Tag>

When Type 7 NSSA external-LSA is set:

<Link State ID>,<Advertising Router ID>,<Options>,<Network Mask>,<bit E>,<metric>,<Number of Addresses>,<Address>,<Prefix Length>,<External Route Tag>

Each parameter is described below:

[LSA header information]

<Link State ID>

Set in the following 4-octet <HEX> format:

Example: 192.168.1.3 is expressed as #HC0A80103.

<Advertising Router ID>

Set in the following 4-octet <HEX> format:

Example: 192.168.1.3 is expressed as #HC0A80103.

<Options>

Set option information of the virtual router in the 8-bit <BINARY> format defined as follows. Unused bits are ignored.

```

+-----+
#B | * | * | DC | EA | N/P | MC | E | * |
+-----+
```

[LSA setting information]

<bit V>,<bit E>,<bit B>

Set 0 or 1.

<Type>

Set the link type for the virtual router (1, 2, 3, 4).

Type	Description
1	Point-to-point connection to another router
2	Connection to a transit network
3	Connection to a stub network
4	Virtual link

<Number of Link ID>

Specify the number of the Link IDs to be generated. Set a value from 1 to 256.

<Link ID>

Set in the following 4-octet <HEX> format:

Example: 192.168.1.3 is expressed as #HC0A80103.

Type1:Neighbor Router ID

Type2:DR Interface address

Type3:IP network number

Type4:Neighbor Router ID

<Prefix Length of Link ID>

Set a value from 1 to 32.

<Number of Link Data>

Specify the number of the link data to be generated. Set a value from 1 to 256.

<Link Data>

Set in the following 4-octet <HEX> format:

Example: 192.168.1.3 is expressed as #HC0A80103.

Type1: IP address for the router interface

Type2: IP address for the router interface

Type3: Subnet mask of the network

Type4: IP address for the router interface

<Prefix Length of Link Data>

Set a value from 1 to 32.

<metric>

Set a value from 1 to 65535.

<Network Mask>

Set in the following 4-octet <HEX> format:

Example: 192.168.1.3 is expressed as #HC0A80103.

<Attached Router ID>

Set in the following 4-octet <HEX> format:

Example: 192.168.1.3 is expressed as #HC0A80103.

<Number of Addresses>

The number of the Forwarding addresses to be generated.

<Address>

The value for the Forwarding address.

Set in the following 4-octet <HEX> format:

Example: 192.168.1.3 is expressed as #HC0A80103.

<Prefix Length>

The Prefix Length of the Forwarding address

Set a value from 1 to 32.

<External Route Tag>

Set a value from 0 to 4,294,967,295 (4 bytes).

Command :PROTocol:OSPF:TABLE:ITEM:LSA:DELeTe <entry_id>,<lsa_id>

Description Deletes the LSA information on the specified virtual router.

Module √ MbE √ GbE – 2.5G/10G

Parameter <entry_id>
Specify the virtual router number (from 1 to 200) (<NR1>).
<lsa_id>
Specify the LSA information number (<NR1>).

Command :PROTocol:OSPF:TABLE:ITEM:LSA:DELeTe:ALL <entry_id>

Description Deletes all LSA information for the selected virtual router.

Module √ MbE √ GbE – 2.5G/10G

Parameter <entry_id>
Specify the virtual router number (from 1 to 200) (<NR1>).

Command :PROTocol:BGP4:ENABle <BOOLEAN>

Query :PROTocol:BGP4:ENABle?

Response <BOOLEAN>

Description Sets the BGP4 service to enable or disable.

Module √ MbE √ GbE √ 2.5G/10G

Parameter <BOOLEAN>
To enable the BGP4 service, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.

Default 0 (disable)

Command :PROTocol:BGP4:OPEN:RINTerval <NR1>

Query :PROTocol:BGP4:OPEN:RINTerval?

Response <NR1>

Description Sets a retry interval (second) for establishing a BGP-4 session.

Module √ MbE √ GbE √ 2.5G/10G

Parameter <NR1>
Set a value from 0 to 180 (s).

Default 10

Command	:PROTocol:BGP4:OPEN:RETRies <NR1>
Query	:PROTocol:BGP4:OPEN:RETRies?
Response	<NR1>
Description	Sets the number of retries to establish a BGP-4 session.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 10 (retries).

Command	:PROTocol:BGP4:TABLE:ID <bgp4_entry_number>
Query	:PROTocol:BGP4:TABLE:ID?
Response	<bgp4_entry_number>
Description	Sets the number of an entry to be edited.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<bgp4_entry_number> Set the number of an entry to be edited. This is a value of a serial number given to the virtual BGP speaker information that is sent through the BRP-4 protocol support function. It is used for setting individual virtual BGP speaker information. The setting ranges are shown below: MU120101A/02A/03A/04A/05A/06A: 1 to 8 MU120111A/12A/18A/18B/18C/19A/20A: 1 to 200

Command	:PROTocol:BGP4:TABLE:ITEM:ENABle <BOOLEAN>
Query	:PROTocol:BGP4:TABLE:ITEM:ENABle?
Response	<BOOLEAN>
Description	Sets the selected entry to enable or disable.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<BOOLEAN> To enable the selected entry, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.

Section 6 Details of Device Messages

Command :PROTocol:BGP4:TABLE:ITEM:CONFig:ANUMber <NR1>

Query :PROTocol:BGP4:TABLE:ITEM:CONFig:ANUMber?

Response <NR1>

Description Sets the AS number of a virtual router.

Module √ MbE √ GbE √ 2.5G/10G

Parameter <NR1>

Set a value from 0 to 65535.

Command :PROTocol:BGP4:TABLE:ITEM:CONFig:DIADdress <IP_ADDRESS>

Query :PROTocol:BGP4:TABLE:ITEM:CONFig:DIADdress?

Response <IP_ADDRESS>

Description Sets an IP address of the target router.

Module √ MbE √ GbE √ 2.5G/10G

Parameter <IP_ADDRESS>

Set an IP address value of the target router in the following 4-octet <HEX> format.

Example: 192.168.1.3 is expressed as #HC0A80103.

Default #H00000000 (0.0.0.0)

Command :PROTocol:BGP4:TABLE:ITEM:CONFig:KFRequency <NR1>

Query :PROTocol:BGP4:TABLE:ITEM:CONFig:KFRequency?

Response <NR1>

Description Sets KEEPALIVE retransmission frequency (second).

Module √ MbE √ GbE √ 2.5G/10G

Parameter <NR1>

Set a value from 0 to 600 (s). 0 indicates transmission is not performed.

Command	:PROTocol:BGP4:TABLE:ITEM:CONFig:UFRequency <NR1>
Query	:PROTocol:BGP4:TABLE:ITEM:CONFig:UFRequency?
Response	<NR1>
Description	Sets UPDATE retransmission frequency (second).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 600 (s). 0 indicates a transmission immediately after connection.

Command	:PROTocol:BGP4:TABLE:ITEM:CONFig:IADDRESS <IP_ADDRESS>
Query	:PROTocol:BGP4:TABLE:ITEM:CONFig:IADDRESS?
Response	<IP_ADDRESS>
Description	Sets an IP address of the virtual router.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<IP_ADDRESS> Set an IP address value of the virtual router in the following 4-octet <HEX> format. Example: 192.168.1.3 is expressed as #HC0A80103.
Default	#H00000000 (0.0.0.0)

Command	:PROTocol:BGP4:TABLE:ITEM:CONFig:LFLap:DTIME <NR1>
Query	:PROTocol:BGP4:TABLE:ITEM:CONFig:LFLap:DTIME?
Response	<NR1>
Description	Sets the drop time of a link flap (second).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 10 to 600 (s).
Default	10

Section 6 Details of Device Messages

Command	:PROTOcol:BGP4:TABLE:ITEM:CONFig:LFLap:ENABle <BOOLEAN>
Query	:PROTOcol:BGP4:TABLE:ITEM:CONFig:LFLap:ENABle?
Response	<BOOLEAN>
Description	Sets a link flap to enable or disable.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<BOOLEAN> To enable a link flap, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	0 (disable)

Command	:PROTOcol:BGP4:TABLE:ITEM:CONFig:LFLap:FTDRop <NR1>
Query	:PROTOcol:BGP4:TABLE:ITEM:CONFig:LFLap:FTDRop?
Response	<NR1>
Description	Sets the time to establish a link flap (second).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 10 to 600 (s).
Default	10

Command	:PROTOcol:BGP4:TABLE:ITEM:RATTriButes:AGGRegator:ANUMber <NR1>
Query	:PROTOcol:BGP4:TABLE:ITEM:RATTriButes:AGGRegator:ANUMber?
Response	<NR1>
Description	Sets the a AS number of AGGREGATOR.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 65535.

Command	:PROTocol:BGP4:TABLE:ITEM:RATTributes:AGGRegator:IADdress <IP_ADDRESS>
Query	:PROTocol:BGP4:TABLE:ITEM:RATTributes:AGGRegator:IADdress?
Response	<IP_ADDRESS>
Description	Sets an IP address of AGGREGATOR.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<IP_ADDRESS> Set an IP address value of AGGREGATOR in the following 4-octet <HEX> format: Example: 192.168.1.3 is expressed as #HC0A80103.
Default	#H00000000 (0.0.0.0)

Command	:PROTocol:BGP4:TABLE:ITEM:RATTributes:AGGRegator:ENABLE <BOOLEAN>
Query	:PROTocol:BGP4:TABLE:ITEM:RATTributes:AGGRegator:ENABLE?
Response	<BOOLEAN>
Description	Sets AGGREGATOR to enable or disable.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<BOOLEAN> To add AGGREGATOR, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	0 (disable)

Command	:PROTocol:BGP4:TABLE:ITEM:RATTributes:APATH:ACONfed:SEQuence:ENABLE <BOOLEAN>
Query	:PROTocol:BGP4:TABLE:ITEM:RATTributes:APATH:ACONfed:SEQuence:ENABLE?
Response	<BOOLEAN>
Description	Sets AS_CONFED_SEQUENCE to enable or disable.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<BOOLEAN> To add AS_CONFED_SEQUENCE, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	0 (disable)

Section 6 Details of Device Messages

Command	:PROToCol:BGP4:TABLE:ITEM:RATTributes:APATH:ACONfed:SEQuence:ANUMber <number of data>[,<as_number>]...
Query	:PROToCol:BGP4:TABLE:ITEM:RATTributes:APATH:ACONfed:SEQuence:ANUMber?
Response	<number of data>[,<as_number>]...
Description	Sets the AS number of AS_CONFED_SEQUENCE.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<number of data>[,<as_number>]... Sets and reads 0 to 32 pieces of data in the AS numbers list that is used in the BGP-4 protocol support function. <number of data> The number of AS numbers that are preset or to be set (0 to 32). <as_number> AS number. It takes values from 0 to 65535 (16 bits). (<NR1>)

Command	:PROToCol:BGP4:TABLE:ITEM:RATTributes:APATH:ACONfed:SET:ENABle <BOOLEAN>
Query	:PROToCol:BGP4:TABLE:ITEM:RATTributes:APATH:ACONfed:SET:ENABle?
Response	<BOOLEAN>
Description	Sets AS_CONFED_SET to enable or disable.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<BOOLEAN> To add AS_CONFED_SET, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	0 (disable)

Command	:PROTOcol:BGP4:TABLE:ITEM:RATtributes:APATH:ACONfed:SET:ANUMber <number of data>[,<as_number>]...
Query	:PROTOcol:BGP4:TABLE:ITEM:RATtributes:APATH:ACONfed:SET:ANUMber?
Response	<number of data>[,<as_number>]...
Description	Sets the AS number of AS_CONFED_SET.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<number of data>[,<as_number>]... Sets and reads 0 to 32 pieces of data in the AS numbers list that is used in the BGP-4 protocol support function. <number of data> The number of AS numbers that are preset or to be set (0 to 32). <as_number> AS number. It takes values from 0 to 65535 (16 bits). (<NR1>)
Command	:PROTOcol:BGP4:TABLE:ITEM:RATtributes:APATH:ASEquence:ENABle <BOOLEAN>
Query	:PROTOcol:BGP4:TABLE:ITEM:RATtributes:APATH:ASEquence:ENABle?
Response	<BOOLEAN>
Description	Sets AS_SEQUENCE to enable or disable.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<BOOLEAN> To add AS_SEQUENCE, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	0 (disable)

Section 6 Details of Device Messages

Command	:PROTOcol:BGP4:TABLE:ITEM:RATtributes:APATH:ASEquence:ANUMber <number of data>[,<as_number>]...
Query	:PROTOcol:BGP4:TABLE:ITEM:RATtributes:APATH:ASEquence:ANUMber?
Response	<number of data>[,<as_number>]...
Description	Sets the AS number of AS_SEQUENCE.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<number of data>[,<as_number>]... Sets and reads 0 to 32 pieces of data in the AS numbers list that is used in the BGP-4 protocol support function. <number of data> The number of AS numbers that are preset or to be set (0 to 32). <as_number> AS number. It takes values from 0 to 65535 (16 bits). (<NR1>)

Command	:PROTOcol:BGP4:TABLE:ITEM:RATtributes:APATH:ASET:ENABLE <BOOLEAN>
Query	:PROTOcol:BGP4:TABLE:ITEM:RATtributes:APATH:ASET:ENABLE?
Response	<BOOLEAN>
Description	Sets AS_SET to enable or disable.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<BOOLEAN> To add AS_SET, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	0 (disable)

Command	:PROTOcol:BGP4:TABLE:ITEM:RATtributes:APATH:ASET:ANUMber <number of data>[,<as_number>]...
Query	:PROTOcol:BGP4:TABLE:ITEM:RATtributes:APATH:ASET:ANUMber?
Response	<number of data>[,<as_number>]...
Description	Sets the AS number of AS_SET.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<number of data>[,<as_number>]...

Sets and reads 0 to 32 pieces of data in the AS numbers list that is used in the BGP-4 protocol support function.

<number of data>

The number of AS numbers that are preset or to be set (0 to 32).

<as_number>

AS number. It takes values from 0 to 65535 (16 bits). (<NR1>)

Command	:PROTOcol:BGP4:TABLE:ITEM:RATtributes:AAGGregate:ENABLE <BOOLEAN>
Query	:PROTOcol:BGP4:TABLE:ITEM:RATtributes:AAGGregate:ENABLE?
Response	<BOOLEAN>
Description	Sets ATOMIC_AGGREGATE to enable or disable.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<BOOLEAN>
	To add ATOMIC_AGGREGATE, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	0 (disable)

Section 6 Details of Device Messages

Command	:PROToCol:BGP4:TABLE:ITEM:RATtributes:CLISt:VALue <number of data>[,<cluster_list>]...
Query	:PROToCol:BGP4:TABLE:ITEM:RATtributes:CLISt:VALue?
Response	<number of data>[,<cluster_list>]...
Description	Sets an attribute value of CLUSTER_LIST.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<number of data>[,<cluster_list>]... Sets and reads 0 to 32 of CLUSTER_LISTs that are used in the BGP-4 protocol support function. <number of data> The number of CLUSTER_LISTs that are preset or to be set (0 to 32). <cluster_list> A value of CLUSTER_LIST. It takes values from 0 to 4294967295 (32 bits). (<NR1>)

Command	:PROToCol:BGP4:TABLE:ITEM:RATtributes:CLISt:ENABle <BOOLEAN>
Query	:PROToCol:BGP4:TABLE:ITEM:RATtributes:CLISt:ENABle?
Response	<BOOLEAN>
Description	Sets CLUSTER_LIST to enable or disable.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<BOOLEAN> To add CLUSTER_LIST, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	0 (disable)

Command	:PROTOcol:BGP4:TABLE:ITEM:RATTributes:COMMunities:ENABLE <BOOLEAN>
Query	:PROTOcol:BGP4:TABLE:ITEM:RATTributes:COMMunities:ENABLE?
Response	<BOOLEAN>
Description	Sets COMMUNITIES to enable or disable.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<BOOLEAN> To add COMMUNITIES, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	0 (disable)

Command	:PROTOcol:BGP4:TABLE:ITEM:RATTributes:COMMunities:VALue <number of data>[,<communities>]...
Query	:PROTOcol:BGP4:TABLE:ITEM:RATTributes:COMMunities:VALue?
Response	<number of data>[,<communities>]...
Description	Sets an attribute value of COMMUNITIES.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<number of data>[,<communities>]... Sets and reads 0 to 32 pieces of data in the community values list that is used in the BGP-4 protocol support function. <number of data> The number of community values that are preset or to be set (0 to 32). <communities> Community value. It takes values from 0 to 4294967295 (32 bits). (<NR1>)

Command	:PROTOcol:BGP4:TABLE:ITEM:RATTributes:LPreF:VALue <NR1>
Query	:PROTOcol:BGP4:TABLE:ITEM:RATTributes:LPreF:VALue?
Response	<NR1>
Description	Sets an attribute value of LOCAL_PREF.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 4294967295.

Section 6 Details of Device Messages

Command	:PROToCol:BGP4:TABLE:ITEM:RATTributes:LPRef:ENABle <BOOLEAN>
Query	:PROToCol:BGP4:TABLE:ITEM:RATTributes:LPRef:ENABLE?
Response	<BOOLEAN>
Description	Sets LOCAL_PREF to enable or disable.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<BOOLEAN> To add LOCAL_PREF, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	0 (disable)

Command	:PROToCol:BGP4:TABLE:ITEM:RATTributes:MEDisc:ENABle <BOOLEAN>
Query	:PROToCol:BGP4:TABLE:ITEM:RATTributes:MEDisc:ENABLE?
Response	<BOOLEAN>
Description	Sets MULTI_EXIT_DISK to enable or disable.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<BOOLEAN> To add MULTI_EXIT_DISK, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	0 (disable)

Command	:PROToCol:BGP4:TABLE:ITEM:RATTributes:MEDisc:VALue <NR1>
Query	:PROToCol:BGP4:TABLE:ITEM:RATTributes:MEDisc:VALue?
Response	<NR1>
Description	Sets an attribute value of MULTI_EXIT_DISC.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 4294967295.

Command	:PROToCol:BGP4:TABLE:ITEM:RATTributes:NHOP:ENABle <BOOLEAN>
Query	:PROToCol:BGP4:TABLE:ITEM:RATTributes:NHOP:ENABle?
Response	<BOOLEAN>
Description	Sets NEXT_HOP to enable or disable.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<BOOLEAN> To add NEXT_HOP, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	0 (disable)

Command	:PROToCol:BGP4:TABLE:ITEM:RATTributes:NHOP:IADDrESS <IP_ADDRESS>
Query	:PROToCol:BGP4:TABLE:ITEM:RATTributes:NHOP:IADDrESS?
Response	<IP_ADDRESS>
Description	Sets an IP address of the NEXT_HOP router.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<IP_ADDRESS> Set an IP address value of the NEXT_HOP router in the following 4-octet <HEX> format: Example: 192.168.1.3 is expressed as #HC0A80103.
Default	#H00000000 (0.0.0.0)

Section 6 Details of Device Messages

Command	:PROTOcol:BGP4:TABLE:ITEM:RATTRIBUTES:ORIGIN:VALUE {IGP | EGP | INCOMPLETE}
Query	:PROTOcol:BGP4:TABLE:ITEM:RATTRIBUTES:ORIGIN:VALUE?
Response	{IGP | EGP | INCOMPLETE}
Description	Sets an attribute value of ORIGIN.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	{IGP | EGP | INCOMPLETE} Select an attribute value from the followings: IGP EGP INCOMPLETE
Default	IGP

Command	:PROTOCOL:BGP4:TABLE:ITEM:RATTRIBUTES:ORIGIN:ENABLE <BOOLEAN>
Query	:PROTOCOL:BGP4:TABLE:ITEM:RATTRIBUTES:ORIGIN:ENABLE?
Response	<BOOLEAN>
Description	Sets ORIGIN to enable or disable.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<BOOLEAN> To add ORIGIN, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	0 (disable)

Command	:PROTOCOL:BGP4:TABLE:ITEM:RATTRIBUTES:OID:ENABLE <BOOLEAN>
Query	:PROTOCOL:BGP4:TABLE:ITEM:RATTRIBUTES:OID:ENABLE?
Response	<BOOLEAN>
Description	Sets ORIGINATOR_ID to enable or disable.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<BOOLEAN> To add ORIGINATOR_ID, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	0 (disable)

Command	:PROTOCOL:BGP4:TABLE:ITEM:RATTRIBUTES:OID:IADDRESS <IP_ADDRESS>
Query	:PROTOCOL:BGP4:TABLE:ITEM:RATTRIBUTES:OID:IADDRESS?
Response	<IP_ADDRESS>
Description	Sets an IP address of ORIGINATOR_ID.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<IP_ADDRESS> Set an IP address value of ORIGINATOR_ID in the following 4-octet <HEX> format: Example: 192.168.1.3 is expressed as #HC0A80103.
Default	#H00000000 (0.0.0.0)

Section 6 Details of Device Messages

Command	:PROTocol:BGP4:TABLE:ITEM:RCONfig:NROutes <NR1>
Query	:PROTocol:BGP4:TABLE:ITEM:RCONfig:NROutes?
Response	<NR1>
Description	Sets the number of IP prefixes to be generated. * This command is not used with the MU120118A/18B/18C/19A/20A modules. In those cases, the number of prefix to be generated is determined according to the set range for prefix (1, 2, 4, ... 2^{32}).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 100.

Command	:PROTocol:BGP4:TABLE:ITEM:RCONfig:PTO <NR1>
Query	:PROTocol:BGP4:TABLE:ITEM:RCONfig:PTO?
Response	<NR1>
Description	Sets an end bit mask that specifies the range of IP prefixes to be generated.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 1 to 32.
Default	24

Command	:PROTocol:BGP4:TABLE:ITEM:RCONfig:PFRom <NR1>
Query	:PROTocol:BGP4:TABLE:ITEM:RCONfig:PFRom?
Response	<NR1>
Description	Sets a start bit mask that specifies the range of IP prefixes to be generated.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 1 to 32.
Default	16

Command	:PROToCol:BGP4:TABLE:ITEM:RCONfig:NNUmber <IP_ADDRESS>
Query	:PROToCol:BGP4:TABLE:ITEM:RCONfig:NNUmber?
Response	<IP_ADDRESS>
Description	Sets the reference IP address for a virtual IP prefix.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<IP_ADDRESS> Set a value of the reference IP address in the following 4-octet <HEX> format: Example: 192.168.1.3 is expressed as #HC0A80103.
Default	#H00000000 (0.0.0.0)

Command	:PROToCol:BGP4:TABLE:ITEM:RCONfig:PPPacket <NR1>
Query	:PROToCol:BGP4:TABLE:ITEM:RCONfig:PPPacket?
Response	<NR1>
Description	Sets the number of prefixes that can be contained in a packet.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 20 to 100 (prefix).
Default	100

Command	:PROToCol:BGP4:TABLE:ITEM:RCONfig:RFLap:DTIME <NR1>
Query	:PROToCol:BGP4:TABLE:ITEM:RCONfig:RFLap:DTIME?
Response	<NR1>
Description	Route flap setting. Sets the drop time until the canceled route is sent as NLRI.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 10 to 600 (s).
Default	10

Section 6 Details of Device Messages

Command	:PROTocol:BGP4:TABLE:ITEM:RCONfig:RFLap:FTDRop <NR1>
Query	:PROTocol:BGP4:TABLE:ITEM:RCONfig:RFLap:FTDRop?
Response	<NR1>
Description	Route flap setting. Sets the drop time until the route sent as NLRI is canceled.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 10 to 600 (s).
Default	10

Command	:PROTocol:BGP4:TABLE:ITEM:RCONfig:RFLap:ENABLE <BOOLEAN>
Query	:PROTocol:BGP4:TABLE:ITEM:RCONfig:RFLap:ENABLE?
Response	<BOOLEAN>
Description	Sets a route flap to enable or disable.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<BOOLEAN> To enable a route flap, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	0 (disable)

Command	:PROTocol:IGAP:ENABLE <BOOLEAN>
Query	:PROTocol:IGAP:ENABLE?
Response	<BOOLEAN>
Description	Sets the report transmission of IGAP to enable or disable. * This command is enabled only when the IGAP Protocol option is installed. * :PORT:IGAP settings must be set to 1 (enable) in order to execute this command.
Module	√ MbE √ GbE – 2.5G/10G
Default	0 (disable)

Command	:PROTocol:IGAP:REPort:TYPE {PAP}
Query	:PROTocol:IGAP:REPort:TYPE?
Response	<PAP>
Description	Sets the report type. * This command is enabled only when the IGAP Protocol option is installed.
Module	√ MbE √ GbE – 2.5G/10G
Default	PAP

Command	:PROTocol:IGAP:RALert:ENABLE <BOOLEAN>
Query	:PROTocol:IGAP:RALert:ENABLE?
Response	<BOOLEAN>
Description	Sets a router alert to enable or disable (whether to add the IP Router Alert Option to the IP header or not). * This command is enabled only when the IGAP Protocol option is installed.
Module	√ MbE √ GbE – 2.5G/10G
Default	0 (disable)

Command	:PROTocol:IGAP:MGADdress:COUNT <NR1>
Query	:PROTocol:IGAP:MGADdress:COUNT?
Response	<NR1>
Description	Sets a multicast group address count. * This command is enabled only when the IGAP Protocol option is installed.
Module	√ MbE √ GbE – 2.5G/10G
Default	1

Section 6 Details of Device Messages

Command	:PROTocol:IGAP:MGADdress:FROM <IP_ADDRESS>
Query	:PROTocol:IGAP:MGADdress:FROM?
Response	<IP_ADDRESS>
Description	Sets the first group address in a group address range. * This command is enabled only when the IGAP Protocol option is installed.
Module	√ MbE √ GbE – 2.5G/10G
Default	#HE0000000 (224.0.0.0)

Query	:PROTocol:IGAP:MGADdress:TO?
Response	<IP_ADDRESS>
Description	Queries the last group address in a group address range. * This command is enabled only when the IGAP Protocol option is installed.
Module	√ MbE √ GbE – 2.5G/10G

Command	:PROTocol:IGAP:UADdress:COUNT <NR1>
Query	:PROTocol:IGAP:UADdress:COUNT?
Response	<NR1>
Description	Sets a client address count. * This command is enabled only when the IGAP Protocol option is installed. * Valid only for MU1501010A module.
Module	√ MbE √ GbE – 2.5G/10G
Default	1

Command	:PROTocol:IGAP:UADdress:FROM <IP_ADDRESS>
Query	:PROTocol:IGAP:UADdress:FROM?
Response	<IP_ADDRESS>
Description	Sets the first virtual host address in a virtual host address range. * This command is enabled only when the IGAP Protocol option is installed.
Module	√ MbE √ GbE – 2.5G/10G
Default	#H00000000 (0.0.0.0)

Query	:PROTocol:IGAP:UADdress:TO?
Response	<IP_ADDRESS>
Description	Queries the last virtual host address in a virtual host address range. * This command is enabled only when the IGAP Protocol option is installed.
Module	√ MbE √ GbE – 2.5G/10G

Section 6 Details of Device Messages

Command	:PROTocol:IGAP:TAUTH <NR1>
Query	:PROTocol:IGAP:TAUTH?
Response	<NR1>
Description	Sets a T_auth value (10 to 100 seconds). * This command is enabled only when the IGAP Protocol option is installed.
Module	√ MbE √ GbE – 2.5G/10G
Default	10

Command	:PROTocol:IGAP:RVARIABLE <NR1>
Query	:PROTocol:IGAP:RVARIABLE?
Response	<NR1>
Description	Sets a Robustness (1 to 10 times). * This command is enabled only when the IGAP Protocol option is installed.
Module	√ MbE √ GbE – 2.5G/10G
Default	2

Command	:PROTocol:IGAP:PAP:UACCount:TYPE {ALL0 | ALL1 | PROG}
Query	:PROTocol:IGAP:PAP:UACCount:TYPE?
Response	<ALL0,ALL1,PROG>
Description	Sets the User account type for PAP. * This command is enabled only when the IGAP Protocol option is installed.
Module	√ MbE √ GbE – 2.5G/10G
Default	ALL0

Command	:PROTOCOL:IGAP:PAP:UACCount:VALue <HEX>
Query	:PROTOCOL:IGAP:PAP:UACCount:VALue?
Response	<HEX>
Description	Sets a value of the user account (16 bytes). * This command is enabled only when the IGAP Protocol option is installed.
Module	√ MbE √ GbE – 2.5G/10G
Default	#H00000000000000000000000000000000 (16 bytes)
Command	:PROTOCOL:IGAP:PAP:MESSAge:TYPE {ALL0 | ALL1 | PROG}
Query	:PROTOCOL:IGAP:PAP:MESSAge:TYPE?
Response	<ALL0,ALL1,PROG>
Description	Sets the Message type for PAP. * This command is enabled only when the IGAP Protocol option is installed.
Module	√ MbE √ GbE – 2.5G/10G
Default	ALL0
Command	:PROTOCOL:IGAP:PAP:MESSAge:VALue <NR1>,<HEX>
Query	:PROTOCOL:IGAP:PAP:MESSAge:VALue? <NR1>
Response	<HEX>
Description	Message (64 bytes) field is set up. The combination number of Unicast address range and the multicast address range is set up in NR1. Notes: 1. This command becomes effective only when "Message Type" is "Programmable". 2. The maximum of NR1 becomes 16. * This command is enabled only when the IGAP Protocol option is installed.
Module	√ MbE √ GbE – 2.5G/10G
Default	#0=H000000000000000000000000....0000 (64 bytes)

Section 6 Details of Device Messages

Command	:PROTocol:IGAP:REPort:MODE {ALL_QUERIED | ALL | NONE}
Query	:PROTocol:IGAP:REPort:MODE?
Response	<ALL_QUERIED,ALL,NONE>
Description	Sets the report transmission mode. * This command is enabled only when the IGAP Protocol option is installed.
Module	√ MbE √ GbE – 2.5G/10G
Default	ALL_QUERIED

Command	:PROTocol:IGAP:REPort:FREQuency <NR1>
Query	:PROTocol:IGAP:REPort:FREQuency?
Response	<NR1>
Description	Sets the report frequency.

Note:

1. It can use only when report transmission mode is set up in Report To Unsolicited.

Stets a value from 10 to 600 (s).

* This command is enabled only when the IGAP Protocol option is installed.

Module	√ MbE √ GbE – 2.5G/10G
Default	10

Command	:PROTocol:IGAP:LEAVE:MODE {NONE | INTERVAL}
Query	:PROTocol:IGAP:LEAVE:MODE?
Response	<NONE,INTERVAL>
Description	Sets the leave method mode.

Note:

It is used only when multicast group address count and client address count are set up in 8.

* This command is enabled only when the IGAP Protocol option is installed.

Module	√ MbE √ GbE – 2.5G/10G
Default	NONE

Command	:PROTocol:IGAP:LEAVE:INTERval <NR1>
Query	:PROTocol:IGAP:LEAVE:INTERval?
Response	<NR1>
Description	Sets the transmit leave with interval.

Note:

1. This command is valid if the multicast group address count and the client address count are set to 8.
2. This command is valid if the leave method is set to INTERVAL.

The setting range is from 10 to 600 (s).

* This command is enabled only when the IGAP Protocol option is installed.

Module	√ MbE √ GbE – 2.5G/10G
Default	60

Command	:PROTocol:IGAP:PAP:UACCount:INCRement <BOOLEAN>
Query	:PROTocol:IGAP:PAP:UACCount:INCRement?
Response	<BOOLEAN>
Description	UserAccount's increment mode setup data is set up.

Notes:

1. This command transmits the UserAccount data that has been incremented up to a maximum of 255 times according to the UniCastGroup setting.
2. Type of UserAccount becomes possible only with Programmable as to the setup.

* This command is enabled only when the IGAP Protocol option is installed.

Module	√ MbE √ GbE – 2.5G/10G
Default	0 (disable)

Section 6 Details of Device Messages

Command	:PROTOcol:IGAP:LEAVE:RESumption <NR1>
Query	:PROTOcol:IGAP:LEAVE:RESumption?
Response	<NR1>
Description	The re-opening time until the next Report is sent out after Leave sending out is set up.

Notes:

1. This command becomes effective when "Leave method" is set up in INTERVAL.

0 to 60 seconds are set up. Report is sent out for 0 second at the time of the designation in an extreme short time.

* This command is enabled only when the IGAP Protocol option is installed.

Module	√ MbE √ GbE – 2.5G/10G
Default	1

Command	:PROTOcol:IGAP:LEAVE:TRIALs <NR1>
Query	:PROTOcol:IGAP:LEAVE:TRIALs?
Response	<NR1>
Description	The number of trials of the Leave sending out emulation is set up. Emulation is suspended after the trial number of times end.

Notes:

1. This command becomes effective when Leave method is set up in INTERVAL.

0 to 1000 are set up. It tries until an operator suspends IGAP emulation when 0 is set up.

* This command is enabled only when the IGAP Protocol option is installed.

Module	√ MbE √ GbE – 2.5G/10G
Default	0

Command	:PROTocol:MLDA:ENABle <BOOLEAN>
Query	:PROTocol:MLDA:ENABle?
Response	<BOOLEAN>
Description	<p>Sets the MLDA protocol function to enable or disable.</p> <ul style="list-style-type: none"> * The IPv6 option and MLDA option are required to use the MLDA function. * :PORT:MLDA must be set to "1" (enable) to execute this command.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<p><BOOLEAN></p> <p>To enable the MLDA protocol function, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.</p>
Default	0 (disable)

Command	:PROTocol:PIM:ENABle <BOOLEAN>
Query	:PROTocol:PIM:ENABle?
Response	<BOOLEAN>
Description	<p>Sets the PIM-SMv2 protocol function to enable or disable.</p> <ul style="list-style-type: none"> * The PIM-SMv2 option is required to use the PIM-SMv2 function. * :PORT:PIM must be set to "1" (enable) to execute this command.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<p><BOOLEAN></p> <p>To enable the PIM-SMv2 protocol function, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.</p>
Default	0 (disable)

Section 6 Details of Device Messages

Command	:PROTOcol:BGPPlus:ENABle <BOOLEAN>
Query	:PROTOcol:BGPPlus:ENABle?
Response	<BOOLEAN>
Description	Sets the BGP4+ protocol function to enable or disable. * The IPv6 option and BGP4+ option are required to use the BGP4+ function. * :PORT:BGPPlus must be set to "1" (enable) to execute this command.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<BOOLEAN> To enable the BGP4+ protocol function, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	0 (disable)

Command	:PROTOcol:OSPF3:ENABle <BOOLEAN>
Query	:PROTOcol:OSPF3:ENABle?
Response	<BOOLEAN>
Description	Sets the OSPFv3 protocol function to enable or disable. * The IPv6 option and OSPFv3 option are required to use the OSPFv3 function. * :PORT:OSPF3 must be set to "1" (enable) to execute this command.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<BOOLEAN> To enable the OSPFv3 protocol function, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	0 (disable)

Automatic measurement commands (AUTomatic)

The commands related to the following automatic measurement functions are explained below.

- Throughput measurement
- Latency measurement
- Frame loss measurement
- Back-to-Back Frames measurement
- System recovery measurement
- Reset measurement

* This function cannot be used with the MU150101A.

Command	:AUTomatic:START
Description	Starts the automatic test.
Module	√ MbE √ GbE √ 2.5G/10G

Command	:AUTomatic:STOP
Description	Stops the ongoing auto measurement.
Module	√ MbE √ GbE √ 2.5G/10G

Query	:AUTomatic:STATE?
Response	{0 | 1 | 2 | 3 | 4 | 5 | 6 | 7}
Description	Queries an item of the ongoing automatic test.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	{0 | 1 | 2 | 3 | 4 | 5 | 6 | 7}

The code number is returned as the processing state. Meanings of the numbers are shown below:

- 0 Measurement is stopped.
- 1 Measuring (Throughput)
- 2 Measuring (Latency)
- 3 Measuring (Frame loss rate)
- 4 Measuring (Back-to-back frames)
- 5 Measuring (System recovery)
- 6 Measuring (Reset)
- 7 Starting/Halting a measurement

Section 6 Details of Device Messages

Command	:AUTomatic:PROTOcol {MAC | IP}
Query	:AUTomatic:PROTOcol?
Response	{MAC | IP}
Description	Sets the protocol (MAC/IP) for Automatic test. * This item is fixed to IP when using a 2.5G/10G Module.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	{MAC | IP} Select either of the following: MAC Performs Automatic test using Ethernet MAC address. IP Performs Automatic test using IP address.
Default	IP

Command	:AUTomatic:PROTOcol:IP {IPV4 | IPV6}
Query	:AUTomatic:PROTOcol:IP?
Response	{IPV4 | IPV6}
Description	Selects between IPv4/IPv6.
Module	√ MbE √ GbE √ 2.5G/10G
Default	IPV4

Command	:AUTomatic:ORIENTATION {UNI | BI}
Query	:AUTomatic:ORIENTATION?
Response	{UNI | BI}
Description	Sets Traffic Orientation for Automatic measurement. * This item is fixed to Bidirectional when Traffic Distribution is set to Fully Meshed.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	{UNI | BI} Select Traffic distribution [RFC2285 3.2] type from the followings: UNI Unidirectional traffic (one-way) BI Bidirectional traffic
Default	UNI

Command	:AUTomatic:DISTribution:MTYPE {PEAKLOADING ROUNDROBIN}				
Query	:AUTomatic:DISTribution:MTYPE?				
Response	{PEAKLOADING ROUNDROBIN}				
Description	<p>Sets frame transmission method during Automatic measurement.</p> <p>* This item is operative when Traffic Distribution is set to Partially Meshed (many-to-many) or Fully Meshed.</p>				
Module	√ MbE √ GbE √ 2.5G/10G				
Parameter	<p>{PEAKLOADING ROUNDROBIN}</p> <p>Select frame transmission method from the followings:</p> <table> <tr> <td>PEAKLOADING</td><td>Peak Loading method [RFC2544 16.]</td></tr> <tr> <td>ROUNDROBIN</td><td>Round Robin method [RFC2889 5.1.3]</td></tr> </table>	PEAKLOADING	Peak Loading method [RFC2544 16.]	ROUNDROBIN	Round Robin method [RFC2889 5.1.3]
PEAKLOADING	Peak Loading method [RFC2544 16.]				
ROUNDROBIN	Round Robin method [RFC2889 5.1.3]				
Default	PEAKLOADING				

Command	:AUTomatic:DISTribution {NON_MESHED PARTIALLY FULLY}						
Query	:AUTomatic:DISTribution?						
Response	{NON_MESHED PARTIALLY FULLY}						
Description	<p>Sets Traffic Distribution for Automatic measurement.</p> <p>* When Fully Meshed is selected, or changed from Fully Meshed to Non-Meshed/Partially Meshed, the port information used in Automatic measurement is cleared.</p>						
Module	√ MbE √ GbE √ 2.5G/10G						
Parameter	<p>{NON_MESHED PARTIALLY FULLY}</p> <p>Select Traffic distribution [RFC2285 3.3] type from the followings:</p> <table> <tr> <td>NON_MESHED</td><td>Non-Meshed(one-to-one)</td></tr> <tr> <td>PARTIALLY</td><td>Partially Meshed (one-to-many/many-to-one/many-to-many)</td></tr> <tr> <td>FULLY</td><td>Fully Meshed</td></tr> </table>	NON_MESHED	Non-Meshed(one-to-one)	PARTIALLY	Partially Meshed (one-to-many/many-to-one/many-to-many)	FULLY	Fully Meshed
NON_MESHED	Non-Meshed(one-to-one)						
PARTIALLY	Partially Meshed (one-to-many/many-to-one/many-to-many)						
FULLY	Fully Meshed						
Default	NON_MESHED						

Section 6 Details of Device Messages

Command	:AUTomatic:PGROUP:ADD:A <port>[,<port>]...
Description	Adds a port to Port Group (A) used for Automatic measurement.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p><port></p> <p>This is expressed in the following format:</p> <p>"UNIT<unit id>:<module id>:<port id>"</p> <p><unit id></p> <p>Specifies the unit where a port belongs using the value indicating the order that the application was connected to the unit.</p> <p><module id></p> <p>Specifies the module where a port belongs using the number for a slot in which the module is to be inserted.</p> <p><port id></p> <p>Specifies port location using the physical location number for a port allocated in a module.</p> <p>Example: To specify the third and fourth ports in the module at Slot 2 of Unit 1:</p> <p>"UNIT1:2:3","UNIT1:2:4"</p>

Command	:AUTomatic:PGROUP:ADD:B <port>[,<port>]...
Description	Adds a port to Port Group (B) used for Automatic measurement.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p><port></p> <p>This is expressed in the following format:</p> <p>"UNIT<unit id>:<module id>:<port id>"</p> <p><unit id></p> <p>Specifies the unit where a port belongs using the value indicating the order that the application was connected to the unit.</p> <p><module id></p> <p>Specifies the module where a port belongs using the number for a slot in which the module is to be inserted.</p> <p><port id></p> <p>Specifies port location using the physical location number for a port allocated in a module.</p> <p>Example: To specify the third and fourth ports in the module at Slot 2 of Unit 1:</p> <p>"UNIT1:2:3","UNIT1:2:4"</p>

Section 6 Details of Device Messages

Command	:AUTomatic:PGROUP:DELETE:A {<port>[,<port>]... | ALL}
Description	Deletes a port from Port Group (A) used for Automatic measurement.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	ALL Clears all registered ports. <port> This is expressed in the following format: "UNIT<unit id>:<module id>:<port id>" <unit id> Specifies the unit where a port belongs using the value indicating the order that the application was connected to the unit. <module id> Specifies the module where a port belongs using the number for a slot in which the module is to be inserted. <port id> Specifies port location using the physical location number for a port allocated in a module. Example: To specify the third and fourth ports in the module at Slot 2 of Unit 1: "UNIT1:2:3","UNIT1:2:4"

Command	:AUTomatic:PGROUP:DELETE:B {<port>[,<port>]... | ALL}
Description	Deletes a port from Port Group (B) used for Automatic measurement.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	ALL Clears all registered ports. <port> This is expressed in the following format: "UNIT<unit id>:<module id>:<port id>" <unit id> Specifies the unit where a port belongs using the value indicating the order that the application was connected to the unit. <module id> Specifies the module where a port belongs using the number for a slot in which the module is to be inserted. <port id> Specifies port location using the physical location number for a port allocated in a module. Example: To specify the third and fourth ports in the module at Slot 2 of Unit 1: "UNIT1:2:3","UNIT1:2:4"

Section 6 Details of Device Messages

Query	:AUTomatic:PGRoup:B?
Response	{"" | <port>[,<port>]...}
Description	Queries a port registered to Port Group (B) used for Automatic measurement.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p>"" indicates that no port is registered.</p> <p><port></p> <p>This is expressed in the following format:</p> <p>"UNIT<unit id>:<module id>:<port id>"</p> <p><unit id></p> <p>Specifies the unit where a port belongs using the value indicating the order that the application was connected to the unit.</p> <p><module id></p> <p>Specifies the module where a port belongs using the number for a slot in which the module is to be inserted.</p> <p><port id></p> <p>Specifies port location using the physical location number for a port allocated in a module.</p> <p>Example: To specify the third and fourth ports in the module at Slot 2 of Unit 1:</p> <p>"UNIT1:2:3","UNIT1:2:4"</p>
Default	""

Query	:AUTomatic:PGRoup:A?
Response	{"" | <port>[,<port>]...}
Description	Queries a port registered to Port Group (A) used for Automatic measurement.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p>"" indicates that no port is registered.</p> <p><port></p> <p> This is expressed in the following format:</p> <p> "UNIT<unit id>:<module id>:<port id>"</p> <p><unit id></p> <p> Specifies the unit where a port belongs using the value indicating the order that the application was connected to the unit.</p> <p><module id></p> <p> Specifies the module where a port belongs using the number for a slot in which the module is to be inserted.</p> <p><port id></p> <p> Specifies port location using physical location number for a port allocated in a module.</p> <p> Example: To specify the third and fourth ports in the module at Slot 2 of Unit 1:</p> <p> "UNIT1:2:3","UNIT1:2:4"</p>
Default	""

Section 6 Details of Device Messages

Command	:AUTomatic:TIMestamp {LAST_BIT | FIRST_BIT}
Query	:AUTomatic:TIMestamp?
Response	{LAST_BIT | FIRST_BIT}
Description	Specifies the time stamp addition method when time stamp is added to transmission stream. This setting affects Latency calculation.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	{LAST_BIT | FIRST_BIT} Selected in the followings. LAST_BIT For store and forward devices (*1) FIRST_BIT For bit forwarding devices (cut through devices) (*2) *1: On this setting, time from the data last-bit input to the data first-bit output is calculated at Latency measurement. *2: On this setting, time from the data first-bit input to the data first-bit output is calculated at Latency measurement.
Default	LAST_BIT (For store and forward devices)

Command	:AUTomatic:FSIZE:TYPE {DEFAULT | CUSTOM | STEP}
Query	:AUTomatic:FSIZE:TYPE?
Response	{DEFAULT | CUSTOM | STEP}
Description	Selects the setting type of frame size to be measured.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	{DEFAULT | CUSTOM | STEP} Select one of the following: DEFAULT Specific frame size is used (6 types including 64, 128, 512, 1024, 1280, and 1518 bytes) CUSTOM Frame sizes are defined individually (maximum 25 types). STEP The frame size is determined by minimum, maximum and step values.
Default	DEFAULT

Command	:AUTomatic:FSIZE:CUSTom:VALue <frame_size>[,<frame_size>]...
Query	:AUTomatic:FSIZE:CUSTom:VALue?
Response	<frame_size>[,<frame_size>]...
Description	Sets a user-defined frame size.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<frame_size>[,<frame_size>]... Specifies and reads 1 to 25 types of user-defined frame sizes that are used in the automatic measurement. <frame_size> Frame size. It takes values from 64 to 65535 (octet).(<NR1>)

Command	:AUTomatic:FSIZE:STEP:MINimum <NR1>
Query	:AUTomatic:FSIZE:STEP:MINimum?
Response	<NR1>
Description	Sets a minimum value when the setting type of frame size is Step.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 64 to 65535 (octet).
Default	64

Command	:AUTomatic:FSIZE:STEP:STEP <NR1>
Query	:AUTomatic:FSIZE:STEP:STEP?
Response	<NR1>
Description	Sets an increment when the setting type of frame size is Step.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 1 to 65471 (octet).
Default	1

Section 6 Details of Device Messages

Command	:AUTomatic:FSIZe:STEP:COUNT <NR1>
Query	:AUTomatic:FSIZe:STEP:COUNT?
Response	<NR1>
Description	Sets the number of frame sizes when the setting type of frame size is Step.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 1 to 25.
Default	1

Query	:AUTomatic:FSIZe:CUSTom:NFSIZE?
Response	<NR1>
Description	Queries the number of user-defined frame sizes.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> A value from 1 to 25 is returned.
Default	1

Command	:AUTomatic:LEARning:TYPE {NEVER | ONCE | EVERY}
Query	:AUTomatic:LEARning:TYPE?
Response	{NEVER | ONCE | EVERY}
Description	Sets the address learning mode.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	{NEVER | ONCE | EVERY} Select one of the following: NEVER Address learning is not performed. ONCE Learns only from the initial trial of the first test item. EVERY Learns from every trial of each test item.
Default	ONCE

Command	:AUTomatic:LEARning:RETRies <NR1>
Query	:AUTomatic:LEARning:RETRies?
Response	<NR1>
Description	Sets the number of retries of a learning frame.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 1 to 999 (retries).
Default	1

Command	:AUTomatic:PPAirs:ADD "<source_port>",<destination_port>"
Description	This command becomes unusable. Refer to Appendix B for the details.

Command	:AUTomatic:PPAirs:DELeTe "<source_port>",<destination_port>"
Description	This command becomes unusable. Refer to Appendix B for the details.

Query	:AUTomatic:PPAirs:CURRent?
Response	"<source_port>",<destination_port>"
Description	This command becomes unusable. Refer to Appendix B for the details.

Query	:AUTomatic:PPAirs:NPPair?
Response	<NR1>
Description	This command becomes unusable. Refer to Appendix B for the details.

Query	:AUTomatic:PPAirs:ITEM? <port_pair_number>
Response	"<source_port>",<destination_port>"
Description	This command becomes unusable. Refer to Appendix B for the details.

Section 6 Details of Device Messages

Command	:AUTomatic:TFRame:IP <BOOLEAN>
Query	:AUTomatic:TFRame:IP?
Response	<BOOLEAN>
Description	This command becomes unusable. Refer to Appendix B for the details.

Command	:AUTomatic:TFRame:PATtern {ALL0 | ALL1}
Query	:AUTomatic:TFRame:PATtern?
Response	{ALL0 | ALL1}
Description	This command becomes unusable. Refer to Appendix B for the details.

Query	:AUTomatic:THRoughput:TIME:START?
Response	"<DATETIME>"
Description	Queries the start time of the throughput measurement.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<DATETIME> A string that indicates the date and the time. This is expressed in the following format: <date><space><time> <date> The format is yyyy/mm/dd. These refer to "year", "month", and "date", respectively. The value ranges from 2000/01/01 to 2098/12/31. <time> The format is hh:mm:ss.sss. These refer to "hours", "minutes", and "seconds", respectively. This is expressed on a 24-hour basis. The value ranges from 00:00:00.000 to 23:59:59.999. Example: "2003/08/15 13:22:51.01"

Query	:AUTomatic:THRoughput:TIME:STOP?
Response	"<DATETIME>"
Description	Queries the stop time of the throughput measurement.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<DATETIME> A string that indicates the date and the time. This is expressed in the following format: <date><space><time> <date> The format is yyyy/mm/dd. These refer to "year", "month", and "date", respectively. The value ranges from 2000/01/01 to 2098/12/31. <time> The format is hh:mm:ss.sss. These refer to "hours", "minutes", and "seconds", respectively. This is expressed on a 24-hour basis. The value ranges from 00:00:00.000 to 23:59:59.999. Example: "2003/08/15 13:22:51.01"

Command	:AUTomatic:THRoughput:DURation <NR1>
Query	:AUTomatic:THRoughput:DURation?
Response	<NR1>
Description	Sets a duration of the throughput measurement (second).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 1 to 999 (s).
Default	10

Section 6 Details of Device Messages

Command	:AUTomatic:THRoughput:ENABle <BOOLEAN>
Query	:AUTomatic:THRoughput:ENABle?
Response	<BOOLEAN>
Description	Sets the throughput test to enable or disable.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<BOOLEAN> To perform the throughput test, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	0 (disable)

Command	:AUTomatic:THRoughput:NTRials <NR1>
Query	:AUTomatic:THRoughput:NTRials?
Response	<NR1>
Description	Sets the number of trials of the throughput test.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 1 to 50 (trials).
Default	1

Command	:AUTomatic:THRoughput:RATE:MIN <NR2>
Query	:AUTomatic:THRoughput:RATE:MIN?
Response	<NR2>
Description	Sets the minimum rate used in the throughput test.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR2> Set a value from 0.01 to 100.00 (%).
Default	0.10

Command	:AUTomatic:THRoughput:RATE:MAX <NR2>
Query	:AUTomatic:THRoughput:RATE:MAX?
Response	<NR2>
Description	Sets the maximum rate used in the throughput test.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR2> Set a value from 0.01 to 100.00 (%).
Default	100.00

Command	:AUTomatic:THRoughput:RATE:INITial <NR2>
Query	:AUTomatic:THRoughput:RATE:INITial?
Response	<NR2>
Description	Sets the initial rate used in the throughput test.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR2> Set a value from 0.01 to 100.00 (%).
Default	100.00

Command	:AUTomatic:THRoughput:RATE:RESolution <NR2>
Query	:AUTomatic:THRoughput:RATE:RESolution?
Response	<NR2>
Description	Sets the required resolution for the result of the throughput test.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR2> Set a value from 0.01 to 100.00 (%).
Default	0.50

Section 6 Details of Device Messages

Command	:AUTomatic:THRoughput:LTOLerance <NR2>
Query	:AUTomatic:THRoughput:LTOLerance?
Response	<NR2>
Description	Sets the Loss Tolerance value for Throughput measurement.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR2> Set a value from 0.0000 to 100.0000 (%).
Default	0.0000

Command	:AUTomatic:THRoughput:BSIZe <NR1>
Query	:AUTomatic:THRoughput:BSIZe?
Response	<NR1>
Description	Sets the Burst Size value for Throughput measurement.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 1 to 1000 (frame).
Default	1

Query	:AUTomatic:THRoughput:DATA? <test_number>,<unit>								
Response	<frame_size>,<average>,<result>[,<result>]...								
Description	<p>Queries the result of the throughput measurement.</p> <p>* Usage of this command is changed by the version up. Refer to Appendix B for the details.</p>								
Module	√ MbE √ GbE √ 2.5G/10G								
Parameter	<p><test_number></p> <p>Specify the number (integer value) of a test performed for the specified port pair.</p> <p><unit></p> <p>Specify the unit of the measurement. Select one of the following:</p> <table><tr><td>RATE</td><td>%</td></tr><tr><td>FRAME</td><td>frame/s</td></tr><tr><td>BYTE</td><td>byte/s</td></tr><tr><td>BIT</td><td>bit/s</td></tr></table> <p><frame_size></p> <p>Frame size used in the test. (<NR1>, unit: octet) If there is no measured result, -1 is returned for <frame_size>.</p> <p><average></p> <p>Average value of the measured result. If there is no measured result for the reason such as abnormal termination, -9999 (unit: fame/s, byte/s, or bit/s) or -9999.0 (unit: %) is returned for <average>.</p> <p><result></p> <p>Measured result. The results exist in numbers as much as Number of Trials. If there is no expected result for the reason such as abnormal termination, -9999 (unit: fame/s, byte/s, or bit/s) or -9999.0 (unit: %) is returned for <result>.</p>	RATE	%	FRAME	frame/s	BYTE	byte/s	BIT	bit/s
RATE	%								
FRAME	frame/s								
BYTE	byte/s								
BIT	bit/s								

Section 6 Details of Device Messages

Query	:AUTomatic:LATency:TIME:STOP?
Response	"<DATETIME>"
Description	Queries the stop time of the latency measurement.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p><DATETIME></p> <p>A string that indicates the date and the time. This is expressed in the following format:</p> <p><date><space><time></p> <p><date></p> <p>The format is yyyy/mm/dd. These refer to "year", "month", and "date", respectively.</p> <p>The value ranges from 2000/01/01 to 2098/12/31.</p> <p><time></p> <p>The format is hh:mm:ss.sss. These refer to "hours", "minutes", and "seconds", respectively. This is expressed on a 24-hour basis.</p> <p>The value ranges from 00:00:00.000 to 23:59:59.999.</p> <p>Example: "2003/08/15 13:22:51.01"</p>

Query	:AUTomatic:LATency:TIME:START?
Response	"<DATETIME>"
Description	Queries the start time of the latency measurement.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<DATETIME> A string that indicates the date and the time. This is expressed in the following format: <date><space><time> <date> The format is yyyy/mm/dd. These refer to "year", "month", and "date", respectively. The value ranges from 2000/01/01 to 2098/12/31. <time> The format is hh:mm:ss.sss. These refer to "hours", "minutes", and "seconds", respectively. This is expressed on a 24-hour basis. The value ranges from 00:00:00.000 to 23:59:59.999. Example: "2003/08/15 13:22:51.01"

Command	:AUTomatic:LATency:DURation <NR1>
Query	:AUTomatic:LATency:DURation?
Response	<NR1>
Description	Sets a duration of the latency test (second).
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 2 to 999 (s).
Default	120

Section 6 Details of Device Messages

Command :AUTomatic:LATency:NTRials <NR1>

Query :AUTomatic:LATency:NTRials?

Response <NR1>

Description Sets the number of trials of the latency test.

Module √ MbE √ GbE √ 2.5G/10G

Parameter <NR1>

Set a value from 1 to 50 (trials).

Default 1

Command :AUTomatic:LATency:ENABLE <BOOLEAN>

Query :AUTomatic:LATency:ENABLE?

Response <BOOLEAN>

Description Sets the latency test to enable or disable.

Module √ MbE √ GbE √ 2.5G/10G

Parameter <BOOLEAN>

To perform the latency test, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.

Default 0 (disable)

Command :AUTomatic:LATency:RATE:STEP <NR2>

Query :AUTomatic:LATency:RATE:STEP?

Response <NR2>

Description Sets an increment of a transmission frame rate for the latency test.

Module √ MbE √ GbE √ 2.5G/10G

Parameter <NR2>

Set a value from 0.01 to 100.00 (%).

Default 10.00

Command	:AUTomatic:LATency:RATE:COUNT <NR1>
Query	:AUTomatic:LATency:RATE:COUNT?
Response	<NR1>
Description	Sets the number of transmission frame rates (step counts from the initial rate) used in the latency test.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value of counts (1 to 16).
Default	6

Command	:AUTomatic:LATency:RATE:THROUGHput <BOOLEAN>
Query	:AUTomatic:LATency:RATE:THROUGHput?
Response	<BOOLEAN>
Description	Sets the result of Throughput to enable or disable in the latency test.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<BOOLEAN> To use the result of Throughput in the latency test, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	1 (enable)

Command	:AUTomatic:LATency:RATE:INITial <NR2>
Query	:AUTomatic:LATency:RATE:INITial?
Response	<NR2>
Description	Sets the initial value of a transmission frame rate for the latency test.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR2> Set a value from 0.01 to 100.00 (%).
Default	50.00

Section 6 Details of Device Messages

Command	:AUTomatic:LATency:BSIZe <NR1>
Query	:AUTomatic:LATency:BSIZe?
Response	<NR1>
Description	Sets the Burst Size value for Latency measurement.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 1 to 1000 (frame).
Default	1

Query	:AUTomatic:LATency:DATA? <test_number>
Response	<frame_size>,<frame_rate>,<average>,<result>[,<result>]...
Description	Queries the result of the latency measurement. * Usage of this command is changed by the version up. Refer to Appendix B for the details.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<test_number> Specify the number (integer value) of a test performed for the specified port pair. <frame_size> Frame size used in the test. (<NR1>, unit: octet) If there is no measured result, -1 is returned for <frame_size>. <frame_rate> Frame rate used in the test. (<NR2>, unit: %) If there is no measured result, -1.0 is returned for <frame_rate>. <average> Average value of the measured result. If there is no measured result for the reason such as abnormal termination, -9999.0 is returned for<average>. <result> Measured result. The results exist in numbers as much as Number of Trials. If there is no expected result for the reason such as abnormal termination, -9999.0 is returned for<result>. When the measured result is invalid, -8888.0 is returned.

Query	:AUTomatic:FLRate:TIME:STARt?
Response	"<DATETIME>"
Description	Queries the start time of the frame loss rate measurement.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p><DATETIME></p> <p>A string that indicates the date and the time. This is expressed in the following format:</p> <p><date><space><time></p> <p><date></p> <p>The format is yyyy/mm/dd. These refer to "year", "month", and "date", respectively.</p> <p>The value ranges from 2000/01/01 to 2098/12/31.</p> <p><time></p> <p>The format is hh:mm:ss.sss. These refer to "hours", "minutes", and "seconds", respectively. This is expressed on a 24-hour basis.</p> <p>The value ranges from 00:00:00.000 to 23:59:59.999.</p> <p>Example: "2003/08/15 13:22:51.01"</p>

Section 6 Details of Device Messages

Query	:AUTomatic:FLRate:TIME:STOP?
Response	"<DATETIME>"
Description	Queries the stop time of the frame loss rate measurement.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<DATETIME> A string that indicates the date and the time. This is expressed in the following format: <date><space><time> <date> The format is yyyy/mm/dd. These refer to "year", "month", and "date", respectively. The value ranges from 2000/01/01 to 2098/12/31. <time> The format is hh:mm:ss.sss. These refer to "hours", "minutes", and "seconds", respectively. This is expressed on a 24-hour basis. The value ranges from 00:00:00.000 to 23:59:59.999. Example: "2003/08/15 13:22:51.01"

Command	:AUTomatic:FLRate:ENABle <BOOLEAN>
Query	:AUTomatic:FLRate:ENABle?
Response	<BOOLEAN>
Description	Sets the frame loss rate test to enable or disable.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<BOOLEAN> To enable the frame loss rate test, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	0 (disable)

Command	:AUTomatic:FLRate:DURation <NR1>
Query	:AUTomatic:FLRate:DURation?
Response	<NR1>
Description	Sets a duration of the frame loss rate test.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 2 to 999 (s).
Default	10

Command	:AUTomatic:FLRate:NTRials <NR1>
Query	:AUTomatic:FLRate:NTRials?
Response	<NR1>
Description	Sets the number of trials of the frame loss rate test.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 1 to 50 (trials).
Default	1

Command	:AUTomatic:FLRate:RATE:COUNT <NR1>
Query	:AUTomatic:FLRate:RATE:COUNT?
Response	<NR1>
Description	This command becomes unusable. Refer to Appendix B for the details.

Section 6 Details of Device Messages

Command	:AUTomatic:FLRate:RATE:STEP <NR1>
Query	:AUTomatic:FLRate:RATE:STEP?
Response	<NR1>
Description	Sets an increment of a transmission frame rate for the frame loss rate test. * Usage of this command is changed by the version up. Refer to Appendix B for the details.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 1 to 100 (%).
Default	10

Command	:AUTomatic:FLRate:RATE:INITial <NR1>
Query	:AUTomatic:FLRate:RATE:INITial?
Response	<NR1>
Description	Sets the initial value of a transmission frame rate for the frame loss rate test. * Usage of this command is changed by the version up. Refer to Appendix B for the details.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 1 to 100 (%).
Default	100

Command	:AUTomatic:FLRate:BSIZE <NR1>
Query	:AUTomatic:FLRate:BSIZE?
Response	<NR1>
Description	Sets the Burst Size value for Frame loss rate measurement.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 1 to 1000 (frame).
Default	1

Query	:AUTomatic:FLRate:DATA? <test_number>
Response	<frame_size>,<frame_rate>,<average>,<result>[,<result>]...
Description	<p>Queries the result of the frame loss rate measurement.</p> <p>* Usage of this command is changed by the version up. Refer to Appendix B for the details.</p>
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p><test_number></p> <p>Specify the number (integer value) of a test performed for the specified port pair.</p> <p><frame_size></p> <p>Frame size used in the test. (<NR1>, unit: octet) If there is no measured result, -1 is returned for <frame_size>.</p> <p><frame_rate></p> <p>Frame rate used in the test. (<NR2>, unit: %) If there is no measured result, -1.0 is returned for <frame_rate>.</p> <p><average></p> <p>Average value of the measured result. If there is no measured result for the reason such as abnormal termination, -9999.0 is returned for<average>.</p> <p><result></p> <p>Measured result. The results exist in numbers as much as Number of Trials. If there is no expected result for the reason such as abnormal termination, -9999.0 is returned for<result>.</p>

Section 6 Details of Device Messages

Query	:AUTomatic:BTBFrames:TIME:START?
Response	"<DATETIME>"
Description	Queries the start time of the back-to-back frames measurement.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p><DATETIME></p> <p>A string that indicates the date and the time. This is expressed in the following format:</p> <p><date><space><time></p> <p><date></p> <p>The format is yyyy/mm/dd. These refer to "year", "month", and "date", respectively.</p> <p>The value ranges from 2000/01/01 to 2098/12/31.</p> <p><time></p> <p>The format is hh:mm:ss.sss. These refer to "hours", "minutes", and "seconds", respectively. This is expressed on a 24-hour basis.</p> <p>The value ranges from 00:00:00.000 to 23:59:59.999.</p> <p>Example: "2003/08/15 13:22:51.01"</p>

Query	:AUTomatic:BTBFrames:TIME:STOP?
Response	"<DATETIME>"
Description	Queries the stop time of the back-to-back frames measurement.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<DATETIME> A string that indicates the date and the time. This is expressed in the following format: <date><space><time> <date> The format is yyyy/mm/dd. These refer to "year", "month", and "date", respectively. The value ranges from 2000/01/01 to 2098/12/31. <time> The format is hh:mm:ss.sss. These refer to "hours", "minutes", and "seconds", respectively. This is expressed on a 24-hour basis. The value ranges from 00:00:00.000 to 23:59:59.999. Example: "2003/08/15 13:22:51.01"

Command	:AUTomatic:BTBFrames:NTRials <NR1>
Query	:AUTomatic:BTBFrames:NTRials?
Response	<NR1>
Description	Sets the number of trials of the back-to-back frames test.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 1 to 50 (trials).
Default	50

Section 6 Details of Device Messages

Command	:AUTomatic:BTBFrames:ENABle <BOOLEAN>
Query	:AUTomatic:BTBFrames:ENABle?
Response	<BOOLEAN>
Description	Sets the back-to-back frames test to enable or disable.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<BOOLEAN> To enable the back-to-back frames test, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	0 (disable)

Command	:AUTomatic:BTBFrames:DURation <NR1>
Query	:AUTomatic:BTBFrames:DURation?
Response	<NR1>
Description	Sets a duration of the back-to-back frames test.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 2 to 999 (s).
Default	2

Command	:AUTomatic:BTBFrames:RATE:TYPE {NORMAL | PROGRAM}
Query	:AUTomatic:BTBFrames:RATE:TYPE?
Response	{NORMAL | PROGRAM}
Description	Sets the type to specify a transmission rate in the back-to-back frames measurement.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	{NORMAL | PROGRAM} Select either of the following: NORMAL Measures with 100% of the transmission rate. PROGRAM A value specified with another command is used as a transmission rate.
Default	NORMAL

Command	:AUTomatic:BTBFrames:RATE:STEP <NR2>
Query	:AUTomatic:BTBFrames:RATE:STEP?
Response	<NR2>
Description	Sets an increment of a transmission frame rate for the back-to-back frames test.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR2> Set a value from 0.01 to 100.00 (%).
Default	10.00

Command	:AUTomatic:BTBFrames:RATE:COUNt <NR1>
Query	:AUTomatic:BTBFrames:RATE:COUNt?
Response	<NR1>
Description	Sets the number of transmission frame rates (step counts from the initial rate) used in the back-to-back frames test.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value of counts (1 to 16).
Default	1

Command	:AUTomatic:BTBFrames:RATE:INITial <NR2>
Query	:AUTomatic:BTBFrames:RATE:INITial?
Response	<NR2>
Description	Sets the initial value of a transmission frame rate for the back-to-back frames test.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR2> Set a value from 0.00 to 100.00 (%),
Default	100.00

Section 6 Details of Device Messages

Command	:AUTomatic:BTBFrames:BSIZE <NR1>
Query	:AUTomatic:BTBFrames:BSIZE?
Response	<NR1>
Description	Sets the Burst Size value for Back-to-back frames measurement.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 1 to 1000 (frame).
Default	1

Command	:AUTomatic:BTBFrames:LTOLerance <NR2>
Query	:AUTomatic:BTBFrames:LTOLerance?
Response	<NR2>
Description	Sets the Loss Tolerance value for Back-to-back frames measurement.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR2> Set a value from 0.0000 to 100.0000 (%).
Default	0.0000

Query	:AUTomatic:BTBFrames:DATA? <test_number>
Response	<frame_size>,<frame_rate>,<average>,<result>[,<result>]...
Description	<p>Queries the result of the back-to-back frames measurement (the number of frames).</p> <p>* Usage of this command is changed by the version up. Refer to Appendix B for the details.</p>
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p><test_number></p> <p>Specify the number (integer value) of the test that is performed for the specified port pair.</p> <p><frame_size></p> <p>Frame size used in the test. (<NR1>, unit: octet) If there is no measured result, -1 is returned for <frame_size>.</p> <p><frame_rate></p> <p>Frame rate used in the test. (<NR2>, unit: %) If there is no measured result, -1.0 is returned for <frame_rate>.</p> <p><average></p> <p>Average value of the measured result. If there is no measured result for the reason such as abnormal termination, -9999 is returned for <average>.</p> <p><result></p> <p>Measured result. The results exist in numbers as much as Number of Trials. If there is no expected result for the reason such as abnormal termination, -9999 is returned for <result>.</p>

Section 6 Details of Device Messages

Query	:AUTomatic:SRECovery:TIME:STOP?
Response	"<DATETIME>"
Description	Queries the stop time of the system recovery measurement.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<DATETIME> A string that indicates the date and the time. This is expressed in the following format: <date><space><time> <date> The format is yyyy/mm/dd. These refer to "year", "month", and "date", respectively. The value ranges from 2000/01/01 to 2098/12/31. <time> The format is hh:mm:ss.sss. These refer to "hours", "minutes", and "seconds", respectively. This is expressed on a 24-hour basis. The value ranges from 00:00:00.000 to 23:59:59.999. Example: "2003/08/15 13:22:51.01"

Query	:AUTomatic:SRECovery:TIME:START?
Response	"<DATETIME>"
Description	Queries the start time of the system recovery measurement.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<DATETIME> A string that indicates the date and the time. This is expressed in the following format: <date><space><time> <date> The format is yyyy/mm/dd. These refer to "year", "month", and "date", respectively. The value ranges from 2000/01/01 to 2098/12/31. <time> The format is hh:mm:ss.sss. These refer to "hours", "minutes", and "seconds", respectively. This is expressed on a 24-hour basis. The value ranges from 00:00:00.000 to 23:59:59.999. Example: "2003/08/15 13:22:51.01"

Command	:AUTomatic:SRECovery:NTRials <NR1>
Query	:AUTomatic:SRECovery:NTRials?
Response	<NR1>
Description	Sets the number of trials of the system recovery test.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 1 to 50 (trials).
Default	1

Command	:AUTomatic:SRECovery:DURation <NR1>
Query	:AUTomatic:SRECovery:DURation?
Response	<NR1>
Description	Sets a duration of the system recovery test.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 2 to 999 (s).
Default	10

Command	:AUTomatic:SRECovery:TTime <NR1>
Query	:AUTomatic:SRECovery:TTime?
Response	<NR1>
Description	Sets a value of the threshold time in the system recovery measurement.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 0 to 999 (s).
Default	1

Section 6 Details of Device Messages

Command	:AUTomatic:SRECover:ENABle <BOOLEAN>
Query	:AUTomatic:SRECover:ENABle?
Response	<BOOLEAN>
Description	Sets the system recovery test to enable or disable.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<BOOLEAN> To perform the system recovery test, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	0 (disable)

Command	:AUTomatic:SRECover:RATE:MODerate:VALue <NR2>
Query	:AUTomatic:SRECover:RATE:MODerate:VALue?
Response	<NR2>
Description	Sets the ratio of a moderate load rate to an overload rate.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR2> Set a value from 0.01 to 100.00 (%).
Default	50.00

Command	:AUTomatic:SRECOVERY:RATE:OVERload:TYPE {NORMAL | PROGRAM}
Query	:AUTomatic:SRECOVERY:RATE:OVERload:TYPE?
Response	{NORMAL | PROGRAM}
Description	Sets the type to specify an overload rate of the system recovery measurement. * When PROGRAM is set, a value of an overload rate is specified with :AUTomatic:SRECOVERY:RATE:OVERload:VALue.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	{NORMAL | PROGRAM} Select either of the following: NORMAL: A value of 110% of the throughput rate is used as an overload rate. PROGRAM: A value specified with another command is used as an overload rate.
Default	NORMAL

Command	:AUTomatic:SRECOVERY:RATE:OVERload:VALue <NR2>
Query	:AUTomatic:SRECOVERY:RATE:OVERload:VALue?
Response	<NR2>
Description	Sets a value of an overload rate in the system recovery test.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR2> Set a value from 0.00 to 100.00 (%).
Default	100.00

Command	:AUTomatic:SRECOVERY:BSIZE <NR1>
Query	:AUTomatic:SRECOVERY:BSIZE?
Response	<NR1>
Description	Sets the Burst Size value for System recovery measurement.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 1 to 1000 (frame).
Default	1

Section 6 Details of Device Messages

Query	:AUTomatic:SRECover:DATA? <test_number>
Response	<frame_size>,<average>,<result>[,<result>]...
Description	<p>Queries the result of the system recovery measurement.</p> <p>* Usage of this command is changed by the version up. Refer to Appendix B for the details.</p>
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p><test_number></p> <p>Specify the number of a test (integer value) performed for the specified port pair.</p> <p><frame_size></p> <p>Frame size used in the test. (<NR1>, unit: octet) If there is no measured result, -1 is returned for <frame_size>.</p> <p><average></p> <p>Average value of the measured result. If there is no measured result for the reason such as abnormal termination, -9999.0 is returned for<average>.</p> <p><result></p> <p>Measured result. The results exist in numbers as much as Number of Trials. If there is no expected result for the reason such as abnormal termination, -9999.0 is returned for<result>.</p>

Query	:AUTomatic:RESet:TIME:STOP?
Response	"<DATETIME>"
Description	Queries the stop time of the reset measurement.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p><DATETIME></p> <p>A string that indicates the date and the time. This is expressed in the following format:</p> <p><date><space><time></p> <p><date></p> <p>The format is yyyy/mm/dd. These refer to "year", "month", and "date", respectively.</p> <p>The value ranges from 2000/01/01 to 2098/12/31.</p> <p><time></p> <p>The format is hh:mm:ss.sss. These refer to "hours", "minutes", and "seconds", respectively. This is expressed on a 24-hour basis.</p> <p>The value ranges from 00:00:00.000 to 23:59:59.999.</p> <p>Example: "2003/08/15 13:22:51.01"</p>

Section 6 Details of Device Messages

Query	:AUTomatic:RESet:TIME:STARt?
Response	"<DATETIME>"
Description	Queries the start time of the reset measurement.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<DATETIME> A string that indicates the date and the time. This is expressed in the following format: <date><space><time> <date> The format is yyyy/mm/dd. These refer to "year", "month", and "date", respectively. The value ranges from 2000/01/01 to 2098/12/31. <time> The format is hh:mm:ss.sss. These refer to "hours", "minutes", and "seconds", respectively. This is expressed on a 24-hour basis. The value ranges from 00:00:00.000 to 23:59:59.999. Example: "2003/08/15 13:22:51.01"

Command	:AUTomatic:RESet:ENABle <BOOLEAN>
Query	:AUTomatic:RESet:ENABle?
Response	<BOOLEAN>
Description	Sets the reset test to enable or disable.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<BOOLEAN> To perform the reset test, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	0 (disable)

Command	:AUTomatic:RESet:PPAir "<source_port>",<destination_port>"
Query	:AUTomatic:RESet:PPAir?
Response	"<source_port>",<destination_port>"
Description	Sets a port pair for which the reset measurement is performed.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p><source_port></p> <p>Location information of the source port.</p> <p><destination_port></p> <p>Location information of the destination port.</p> <p><source_port>,<destination_port> is expressed in the following format.</p> <p>"UNIT<unit id>:<module id>:<port id>"</p> <p><unit id></p> <p>A value of the order in which the application connects to the unit, which specifies the unit that the port belongs to.</p> <p><module id></p> <p>The number of a slot into which the module is inserted, which specifies the module that the port belongs to.</p> <p><port id></p> <p>The physical location number of a port located on the module, which specifies the port location.</p> <p>Example: To specify the port location - "UNIT1:1:1"</p>
Default	"" , ""

Section 6 Details of Device Messages

Command	:AUTomatic:RESet:RATE <NR2>
Query	:AUTomatic:RESet:RATE?
Response	<NR2>
Description	Sets a transmission frame rate for the reset test.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR2> Set a value from 0.01 to 100.00 (%).
Default	100.00

Command	:AUTomatic:RESet:BSIZE <NR1>
Query	:AUTomatic:RESet:BSIZE?
Response	<NR1>
Description	Sets the Burst Size value for Reset measurement.
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<NR1> Set a value from 1 to 1000 (frame).
Default	1

Query	:AUTomatic:RESet:DATA? <test_number>
Response	<frame_size>,<result>
Description	<p>Queries the result of the reset measurement.</p> <p>* Usage of this command is changed by the version up. Refer to Appendix B for the details.</p>
Module	√ MbE √ GbE √ 2.5G/10G
Parameter	<p><test_number></p> <p>Specify the number (integer value) of a test performed for the specified port pair.</p> <p><frame_size></p> <p>Frame size used in the test. (<NR1>, unit: octet) If there is no measured result, -1 is returned for <frame_size>.</p> <p><result></p> <p>Measured result. If there is no measured result for the reason such as abnormal termination, -9999.0 is returned.</p>
Command	:AUTomatic:VLAN:PGROUP:A <BOOLEAN>
Query	:AUTomatic:VLAN:PGROUP:A?
Response	<BOOLEAN>
Description	Sets whether or not to attach VLAN tag to Frame sent from A-group port
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<BOOLEAN>

Section 6 Details of Device Messages

Command	:AUTomatic:VLAN:PGROUP:B <BOOLEAN>
Query	:AUTomatic:VLAN:PGROUP:B?
Response	<BOOLEAN>
Description	Sets whether or not to attach VLAN tag to Frame sent from A-group port
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<BOOLEAN>

Command	:AUTomatic:VLAN:VID <NR1>
Query	:AUTomatic:VLAN:VID?
Response	<NR1>
Description	Specifies VLAN ID set at VLAN tag
Module	√ MbE √ GbE – 2.5G/10G
Parameter	{0 to 4095}

RFC2889 test function commands (RFC2889)

The commands related to the following RFC 2889 test functions are explained below.

* This function cannot be used with the MU150101A.

Command	:RFC2889:STARt
Description	Starts measurement.
Module	√ MbE √ GbE – 2.5G/10G

Command	:RFC2889:STOP
Description	Stops measurement.
Module	√ MbE √ GbE – 2.5G/10G

Command	:RFC2889:STATe?
Response	{0 | 1}
Description	Queries the measurement status.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	{0 | 1}

The code number is returned as the processing status. Meanings of the numbers are shown below:

0	Measurement is stopped.
1	Measuring

Command	:RFC2889:FSIZe <frame size>[,<frame size>]...
Query	:RFC2889:FSIZe?
Response	<frame size>[,<frame size>]...
Description	Sets the frame size to be used for measurement.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<frame size>[,<frame size>]...

Set 1 to 25 types of the frame size to be used for measurement. The range for <frame size> value varies depending on the module to be used for test.

Default	64,128,256,512,1024,1280,1518
---------	-------------------------------

Section 6 Details of Device Messages

Command	:RFC2889:TYPE <test>
Query	:RFC2889:TYPE?
Response	<test>
Description	Selects the RFC2889 test type.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<test> Select the test type to be executed from the followings: FULL Fully meshed throughput, frame loss and forwarding rates MANY Partially meshed one-to-many/many-to-one MULTI Partially meshed multiple devices UNI Partially meshed unidirectional traffic CONGESTION Congestion Control PRESSURE Forward Pressure and Maximum Forwarding Rate CACHING Address caching capacity LEARNING Address learning rate ERROR Errored frames filtering BROADCAST Broadcast frame Forwarding and Latency
Default	FULL (Fully meshed throughput, frame loss and forwarding rates)

Command	:RFC2889:FMEShed:TDURation <NR1>
Query	:RFC2889:FMEShed:TDURation?
Response	<NR1>
Description	Sets the Trial Duration value for the Fully Meshed Throughput, Frame Loss and Forwarding Rates tests.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<NR1> Set a value from 1 to 300 (s).
Default	30

Command	:RFC2889:FMEShed:APPort <NR1>
Query	:RFC2889:FMEShed:APPort?
Response	<NR1>
Description	Sets the Addresses per port value for Fully Meshed Throughput, Frame Loss and Forwarding Rates tests.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<NR1> Set a power of 2 (1, 2, 4, 8, ...). The maximum value is 16777216 (addresses).
Default	1

Command	:RFC2889:FMEShed:BSIZE <NR1>
Query	:RFC2889:FMEShed:BSIZE?
Response	<NR1>
Description	Sets the Burst Size for Fully Meshed Throughput, Frame Loss and Forwarding Rates tests.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<NR1> Set a value from 1 to 930 (frames).
Default	1

Command	:RFC2889:FMEShed:IFG <NR1>
Query	:RFC2889:FMEShed:IFG?
Response	<NR1>
Description	Sets the IFG value for Fully Meshed Throughput, Frame Loss and Forwarding Rates tests.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<NR1> Set the IFG value in byte units. The IFG time equivalent to 1 byte is 800 ns (10 M), 80 ns (100 M), 8 ns (1 G) or 0.8 ns (10 G). A value from 10 to 10,000 (bytes) can be set.
Default	12

Section 6 Details of Device Messages

Command	:RFC2889:FMEShed:ILOad <NR2>
Query	:RFC2889:FMEShed:ILOad?
Response	<NR2>
Description	Sets the Iload value for Fully Meshed Throughput, Frame Loss and Forwarding Rates tests.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<NR2> Set a value from 0.01 to 100.00 (%).
Default	100.00

Command	:RFC2889:FMEShed:TPORt {"" | <port>[,<port>]...}
Query	:RFC2889:FMEShed:TPORt?
Response	{"" | <port>[,<port>]...}
Description	Set the port to be used for Fully Meshed Throughput, Frame Loss and Forwarding Rates tests.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	"" indicates that no port is registered. <port> Expressed in the following format: "UNIT<unit id>:<module id>:<port id>" <unit id> Specify the unit where a port belongs using the value indicating the order that the application was connected to the unit. <module id> Specify the module where a port belongs using the number for a slot in which the module is to be inserted. <port id> Specify port location using physical location number for a port allocated in a module. Example: To specify the third and fourth ports in the module at Slot 2 of Unit 1: "UNIT1:2:3","UNIT1:2:4"
Default	""

Command	:RFC2889:FMEShed:RESult? <type>,<unit>
Response	<result>[,<result>]...
Description	Queries the result of the Fully Meshed Throughput, Frame Loss and Forwarding Rates tests.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<type> <p>Select the desired result data type from the followings:</p> <p>THROUGHPUT</p> <p>FRMOL</p> <p>MOL</p> <p>MFR</p> <p>OLOAD</p> <unit> <p>Specify the unit for measured results. Select one of the following:</p> <p>FPS frame/s</p> <p>BPS bit/s</p> <p>BYTE byte/s</p> <p>PCT %</p> <result> <p>Measured result. The measured results for multiple frame sizes set in Frame Size setting are returned. If there is no result for the reason such as abnormal termination, –9999 (unit: fame/s, byte/s, or bit/s) or –9999.0 (unit: %) is returned for <result>.</p>

Command	:RFC2889:OTMany:TDURation <NR1>
Query	:RFC2889:OTMany:TDURation?
Response	<NR1>
Description	Sets the Trial Duration value for Partially Meshed One-to-Many/Many-to-One test.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<NR1> <p>Set a value from 1 to 300 (s).</p>
Default	30

Section 6 Details of Device Messages

Command	:RFC2889:OTMany:TDIRrection <direction>
Query	:RFC2889:OTMany:TDIRrection?
Response	<direction>
Description	Sets the traffic direction (One-to-Many, Many-to-One or Bi-directional) for Partially Meshed One-to-Many/Many-to-One test.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<direction> Select one of the following: ONE_TO_MANY One-to-Many traffic MANY_TO_ONE Many-to-One traffic BI Bi-directional traffic
Default	ONE_TO_MANY

Command	:RFC2889:OTMany:IFG <NR1>
Query	:RFC2889:OTMany:IFG?
Response	<NR1>
Description	Sets the IFG value for Partially Meshed One-to-Many/Many-to-One test.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<NR1> Set the IFG value in byte units. The IFG time equivalent to 1 byte is 800 ns (10 M), 80 ns (100 M), 8 ns (1 G) or 0.8 ns (10 G). A value from 10 to 10,000 (bytes) can be set.
Default	12

Command	:RFC2889:OTMany:ILoad <NR2>
Query	:RFC2889:OTMany:ILoad?
Response	<NR2>
Description	Sets the Iload value for Partially Meshed One-to-Many/Many-to-One test.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<NR2> Set a value from 0.01 to 100.00 (%).
Default	100.00

Command	:RFC2889:OTMany:BSIZE <NR1>
Query	:RFC2889:OTMany:BSIZE?
Response	<NR1>
Description	Sets the Burst Size for Partially Meshed One-to-Many/Many-to-One test.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<NR1> Set a value from 1 to 930 (frames).
Default	1

Command	:RFC2889:OTMany:APPort <NR1>
Query	:RFC2889:OTMany:APPort?
Response	<NR1>
Description	Sets the Addresses per port value for Partially Meshed One-to-Many/Many-to-One test.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<NR1> Set a power of 2 (1, 2, 4, 8, ...). The maximum value is 16777216 (addresses).
Default	1

Section 6 Details of Device Messages

Command	:RFC2889:OTMany:TPORT:ONE {"" | <port>}
Query	:RFC2889:OTMany:TPORT:ONE?
Response	{"" | <port>}
Description	Specifies single port on the One side for Partially Meshed One-to-Many/Many-to-One test.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<p>"" indicates that no port is registered.</p> <p><port></p> <p>Expressed in the following format:</p><p>{"" | "UNIT<unit id>:<module id>:<port id>"}</p> <p><unit id></p> <p>Specify the unit where a port belongs using the value indicating the order that the application was connected to the unit.</p> <p><module id></p> <p>Specify the module where a port belongs using the number for a slot in which the module is to be inserted.</p> <p><port id></p> <p>Specify port location using physical location number for a port allocated in a module.</p> <p>Example:</p> <p>To specify the third port in the module at Slot 2 of Unit 1:</p> <p>"UNIT1:2:3"</p>
Default	""

Command	:RFC2889:OTMany:TPORT:MANY {"" | <port>[,<port>]...}
Query	:RFC2889:OTMany:TPORT:MANY?
Response	{"" | <port>[,<port>]...}
Description	Specifies multiple ports on the Many side for Partially Meshed One-to-Many/Many-to-One test.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<p>"" indicates that no port is registered.</p> <p><port></p> <p>Expressed in the following format:</p> <p>"UNIT<unit id>:<module id>:<port id>"</p> <p><unit id></p> <p>Specify the unit where a port belongs using the value indicating the order that the application was connected to the unit.</p> <p><module id></p> <p>Specify the module where a port belongs using the number for a slot in which the module is to be inserted.</p> <p><port id></p> <p>Specify port location using physical location number for a port allocated in a module.</p> <p>Example:</p> <p>To specify the third and fourth ports in the module at Slot 2 of Unit 1:</p> <p>"UNIT1:2:3","UNIT1:2:4"</p>
Default	""

Section 6 Details of Device Messages

Query	:RFC2889:OTMany:RESult? <type>,<unit>
Response	<result>[,<result>]...
Description	Queries the result of the Partially Meshed One-to-Many/Many-to-One test.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<type> Select the desired result data type from the followings: THROUGHPUT FRMOL MOL MFR OLOAD <unit> Specify the unit for measured results. Select one of the following: FPS frame/s BPS bit/s BYTE byte/s PCT % <result> Measured result. The measured results for multiple frame sizes set in Frame Size setting are returned. If there is no result for the reason such as abnormal termination, –9999 (unit: fame/s, byte/s or bit/s) or –9999.0 (unit: %) is returned for <result>.

Command	:RFC2889:MULTiple:IFG <NR1>
Query	:RFC2889:MULTiple:IFG?
Response	<NR1>
Description	Sets the IFG value for Partially meshed multiple devices test.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<NR1> Set the IFG value in byte units. The IFG time equivalent to 1 byte is 800 ns (10 M), 80 ns (100 M), 8 ns (1 G) or 0.8 ns (10 G). A value from 10 to 10,000 (bytes) can be set.
Default	12

Command	:RFC2889:MULTiple:ILOad <NR2>
Query	:RFC2889:MULTiple:ILOad?
Response	<NR2>
Description	Sets the Iload value for Partially meshed multiple devices test.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<NR2> Set a value from 0.01 to 100.00 (%).
Default	100.00

Command	:RFC2889:MULTiple:BSIZe <NR1>
Query	:RFC2889:MULTiple:BSIZe?
Response	<NR1>
Description	Sets the Burst Size for Partially meshed multiple devices test.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<NR1> Set a value from 1 to 930 (frames).
Default	1

Command	:RFC2889:MULTiple:APPort <NR1>
Query	:RFC2889:MULTiple:APPort?
Response	<NR1>
Description	Sets the Addresses per port value for Partially meshed multiple devices test.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<NR1> Set a power of 2 (1, 2, 4, 8, ...). The maximum value is 16777216 (addresses).
Default	1

Section 6 Details of Device Messages

Command :RFC2889:MULTiple:TDURation <NR1>

Query :RFC2889:MULTiple:TDURation?

Response <NR1>

Description Sets the Trial Duration value for Partially meshed multiple devices test.

Module √ MbE √ GbE – 2.5G/10G

Parameter <NR1>

Set a value from 1 to 300 (s).

Default 30

Command :RFC2889:MULTiple:LTRaffic <BOOLEAN>

Query :RFC2889:MULTiple:LTRaffic?

Response <BOOLEAN>

Description Sets whether to generate Local Traffic during Partially meshed multiple devices test.

Module √ MbE √ GbE – 2.5G/10G

Parameter <BOOLEAN>

To enable Local Traffic, specify {ON | 1} (ON or 1). To disable Local Traffic, specify {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.

Default 0 (disable)

Command	:RFC2889:MULTiple:TPORt:FIRSt {"" | <port>[,<port>]...}
Query	:RFC2889:MULTiple:TPORt:FIRSt?
Response	{"" | <port>[,<port>]...}
Description	Specifies (multiple) transmission/reception port 1 for Partially meshed multiple devices test.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<p>"" indicates that no port is registered.</p> <p><port></p> <p>Expressed in the following format:</p> <p>"UNIT<unit id>:<module id>:<port id>"</p> <p><unit id></p> <p>Specify the unit where a port belongs using the value indicating the order that the application was connected to the unit.</p> <p><module id></p> <p>Specify the module where a port belongs using the number for a slot in which the module is to be inserted.</p> <p><port id></p> <p>Specify port location using physical location number for a port allocated in a module.</p> <p>Example:</p> <p>To specify the third and fourth ports in the module at Slot 2 of Unit 1:</p> <p>"UNIT1:2:3","UNIT1:2:4"</p>
Default	""

Section 6 Details of Device Messages

Command	:RFC2889:MULTiple:TPORt:SECond {"" | <port>[,<port>]...}
Query	:RFC2889:MULTiple:TPORt:SECond?
Response	{"" | <port>[,<port>]...}
Description	Specifies (multiple) transmission/reception port 2 for Partially meshed multiple devices test.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<p>"" indicates that no port is registered.</p> <p><port></p> <p>Expressed in the following format:</p> <p>"UNIT<unit id>:<module id>:<port id>"</p> <p><unit id></p> <p>Specify the unit where a port belongs using the value indicating the order that the application was connected to the unit.</p> <p><module id></p> <p>Specify the module where a port belongs using the number for a slot in which the module is to be inserted.</p> <p><port id></p> <p>Specify port location using physical location number for a port allocated in a module.</p> <p>Example:</p> <p>To specify the third and fourth ports in the module at Slot 2 of Unit 1:</p> <p>"UNIT1:2:3","UNIT1:2:4"</p>
Default	""

Query	:RFC2889:MULTiple:RESult? <type>,<unit>
Response	<result>[,<result>]...
Description	Queries the result of the Partially meshed multiple devices test.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<type> <p>Select the desired result data type from the followings:</p> THROUGHPUT FRMOL MOL MFR OLOAD
	<unit> <p>Specify the unit for measured results. Select one of the following:</p> FPS frame/s BPS bit/s BYTE byte/s PCT %
	<result> <p>Measured result. The measured results for multiple frame sizes set in Frame Size setting are returned. If there is no result for the reason such as abnormal termination, –9999 (unit: fame/s, byte/s, or bit/s) or –9999.0 (unit: %) is returned for <result>.</p>
Command	:RFC2889:UTRaffic:BSIZE <NR1>
Query	:RFC2889:UTRaffic:BSIZE?
Response	<NR1>
Description	Sets the Burst Size for Partially meshed unidirectional traffic test.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<NR1> <p>Set a value from 1 to 930 (frames).</p>
Default	1

Section 6 Details of Device Messages

Command	:RFC2889:UTRAffic:APPort <NR1>
Query	:RFC2889:UTRAffic:APPort?
Response	<NR1>
Description	Sets the Addresses per port value for Partially meshed unidirectional traffic test.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<NR1> Set a power of 2 (1, 2, 4, 8, ...). The maximum value is 16777216 (addresses).
Default	1

Command	:RFC2889:UTRAffic:ILoad <NR2>
Query	:RFC2889:UTRAffic:ILoad?
Response	<NR2>
Description	Sets the ILoad value for Partially meshed unidirectional traffic test.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<NR2> Set a value from 0.01 to 100.00 (%).
Default	100.00

Command	:RFC2889:UTRAffic:IFG <NR1>
Query	:RFC2889:UTRAffic:IFG?
Response	<NR1>
Description	Sets the IFG value for Partially meshed unidirectional traffic test.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<NR1> Set the IFG value in byte units. The IFG time equivalent to 1 byte is 800 ns (10 M), 80 ns (100 M), 8 ns (1 G) or 0.8 ns (10 G). A value from 10 to 10,000 (bytes) can be set.
Default	12

Command	:RFC2889:UTRAffic:TDURation <NR1>
Query	:RFC2889:UTRAffic:TDURation?
Response	<NR1>
Description	Sets the Trial Duration value for Partially meshed unidirectional traffic test.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<NR1> Set a value from 1 to 300 (s).
Default	30
Command	:RFC2889:UTRAffic:TPORt:RECeive {"" | <port>[,<port>]...}
Query	:RFC2889:UTRAffic:TPORt:RECeive?
Response	{"" | <port>[,<port>]...}
Description	Specifies (multiple) reception ports for Partially meshed unidirectional traffic test.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	"" indicates that no port is registered. <port> Expressed in the following format: "UNIT<unit id>:<module id>:<port id>" <unit id> Specify the unit where a port belongs using the value indicating the order that the application was connected to the unit. <module id> Specify the module where a port belongs using the number for a slot in which the module is to be inserted. <port id> Specify port location using physical location number for a port allocated in a module. Example: To specify the third and fourth ports in the module at Slot 2 of Unit 1: "UNIT1:2:3","UNIT1:2:4"
Default	""

Section 6 Details of Device Messages

Command	:RFC2889:UTRAffic:TPORT:SOURce {"" | <port>[,<port>]...}
Query	:RFC2889:UTRAffic:TPORT:SOURce?
Response	{"" | <port>[,<port>]...}
Description	Specifies (multiple) transmission ports for Partially meshed unidirectional traffic test.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<p>"" indicates that no port is registered.</p> <p><port></p> <p>Expressed in the following format:</p> <p>"UNIT<unit id>:<module id>:<port id>"</p> <p><unit id></p> <p>Specify the unit where a port belongs using the value indicating the order that the application was connected to the unit.</p> <p><module id></p> <p>Specify the module where a port belongs using the number for a slot in which the module is to be inserted.</p> <p><port id></p> <p>Specify port location using physical location number for a port allocated in a module.</p> <p>Example:</p> <p>To specify the third and fourth ports in the module at Slot 2 of Unit 1:</p> <p>"UNIT1:2:3","UNIT1:2:4"</p>
Default	""

Query	:RFC2889:UTRaffic:RESult? <type>,<unit>
Response	<result>[,<result>]...
Description	Queries the result of the Partially meshed unidirectional traffic test.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<type> <p>Select the desired result data type from the followings:</p> <p>THROUGHPUT</p> <p>FRMOL</p> <p>MOL</p> <p>MFR</p> <p>OLOAD</p> <unit> <p>Specify the unit for measured results. Select one of the following:</p> <p>FPS frame/s</p> <p>BPS bit/s</p> <p>BYTE byte/s</p> <p>PCT %</p> <result> <p>Measured result. The measured results for multiple frame sizes set in Frame Size setting are returned. If there is no result for the reason such as abnormal termination, –9999 (unit: fame/s, byte/s, or bit/s) or –9999.0 (unit: %) is returned for <result>.</p>
Command	:RFC2889:CCONtrol:IFG <NR1>
Query	:RFC2889:CCONtrol:IFG?
Response	<NR1>
Description	Sets the IFG value for Congestion Control test.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<NR1> <p>Set the IFG value in byte units. The IFG time equivalent to 1 byte is 800 ns (10 M), 80 ns (100 M), 8 ns (1 G) or 0.8 ns (10 G). A value from 10 to 10,000 (bytes) can be set.</p>
Default	12

Section 6 Details of Device Messages

Command	:RFC2889:CCONtrol:TDURation <NR1>
Query	:RFC2889:CCONtrol:TDURation?
Response	<NR1>
Description	Sets the Trial Duration for Congestion Control test.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<NR1> Set a value from 1 to 300 (s).
Default	30

Command	:RFC2889:CCONtrol:APPort <NR1>
Query	:RFC2889:CCONtrol:APPort?
Response	<NR1>
Description	Sets the Addresses per port value for Congestion Control test.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<NR1> Set a power of 2 (1, 2, 4, 8, ...). The maximum value is 16777216 (addresses).
Default	1

Command	:RFC2889:CCONtrol:BSIZE <NR1>
Query	:RFC2889:CCONtrol:BSIZE?
Response	<NR1>
Description	Sets the Burst Size for Congestion Control test.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<NR1> Set a value from 1 to 930 (frames).
Default	1

Command	:RFC2889:CCONtrol:TPORt:RECeive:CONGested {"" | <port>}
Query	:RFC2889:CCONtrol:TPORt:RECeive:CONGested?
Response	{"" | <port>}
Description	Specifies the congested receive port for Congestion Control test.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<p>"" indicates that no port is registered.</p> <p><port></p> <p>Expressed in the following format:</p><p>{"" | "UNIT<unit id>:<module id>:<port id>"}</p> <p><unit id></p> <p>Specify the unit where a port belongs using the value indicating the order that the application was connected to the unit.</p> <p><module id></p> <p>Specify the module where a port belongs using the number for a slot in which the module is to be inserted.</p> <p><port id></p> <p>Specify port location using physical location number for a port allocated in a module.</p> <p>Example:</p> <p>To specify the third port in the module at Slot 2 of Unit 1:</p> <p>"UNIT1:2:3"</p>
Default	""

Section 6 Details of Device Messages

Command	:RFC2889:CCONtrol:TPORt:SOURce:FIRSt {"" | <port>}
Query	:RFC2889:CCONtrol:TPORt:SOURce:FIRSt?
Response	{"" | <port>}
Description	Specifies transmission port 1 (transmits to two reception ports) for Congestion Control test.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<p>"" indicates that no port is registered.</p> <p><port></p> <p>Expressed in the following format:</p><p>{"" | "UNIT<unit id>:<module id>:<port id>"}</p> <p><unit id></p> <p>Specify the unit where a port belongs using the value indicating the order that the application was connected to the unit.</p> <p><module id></p> <p>Specify the module where a port belongs using the number for a slot in which the module is to be inserted.</p> <p><port id></p> <p>Specify port location using physical location number for a port allocated in a module.</p> <p>Example:</p> <p>To specify the third port in the module at Slot 2 of Unit 1:</p> <p>"UNIT1:2:3"</p>
Default	""

Command	:RFC2889:CCONtrol:TPORt:SOURce:SECond {"" | <port>}
Query	:RFC2889:CCONtrol:TPORt:SOURce:SECond?
Response	{"" | <port>}
Description	Sets transmission port 2 (transmits to the congested receive port) for Congestion Control test.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<p>"" indicates that no port is registered.</p> <p><port></p> <p>Expressed in the following format:</p><p>{"" | "UNIT<unit id>:<module id>:<port id>"}</p> <p><unit id></p> <p>Specify the unit where a port belongs using the value indicating the order that the application was connected to the unit.</p> <p><module id></p> <p>Specify the module where a port belongs using the number for a slot in which the module is to be inserted.</p> <p><port id></p> <p>Specify port location using physical location number for a port allocated in a module.</p> <p>Example:</p> <p>To specify the third port in the module at Slot 2 of Unit 1:</p> <p>"UNIT1:2:3"</p>
Default	""

Section 6 Details of Device Messages

Command	:RFC2889:CCONtrol:TPORt:RECeive:UNCongested {"" | <port>}
Query	:RFC2889:CCONtrol:TPORt:RECeive:UNCongested?
Response	{"" | <port>}
Description	Specifies the uncongested receive port for Congestion Control test.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<p>"" indicates that no port is registered.</p> <p><port></p> <p>Expressed in the following format:</p><p>{"" | "UNIT<unit id>:<module id>:<port id>"}</p> <p><unit id></p> <p>Specify the unit where a port belongs using the value indicating the order that the application was connected to the unit.</p> <p><module id></p> <p>Specify the module where a port belongs using the number for a slot in which the module is to be inserted.</p> <p><port id></p> <p>Specify port location using physical location number for a port allocated in a module.</p> <p>Example:</p> <p>To specify the third port in the module at Slot 2 of Unit 1:</p> <p>"UNIT1:2:3"</p>
Default	""

Query	:RFC2889:CCONtrol:RESult?
Response	<result>[,<result>]...
Description	Queries the result of the Congestion Control test.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<result> Measured result. One of the following is returned as the measured result for multiple frame sizes set in Frame Size setting. <div> <div>NONE</div> <div>There is no result for the frame size with the reason such as abnormal termination.</div> </div> <div> <div>HOLB</div> <div>Head of Line Blocking</div> </div> <div> <div>BACKPRESSURE</div> <div>Back Pressure</div> </div> <div> <div>BOTH</div> <div>HOLB and Back Pressure</div> </div> <div> <div>NOCONGESTION</div> <div>No Congestion Control</div> </div>

Command	:RFC2889:FPPressure:SSIZe <NR1>
Query	:RFC2889:FPPressure:SSIZe?
Response	<NR1>
Description	Sets the Step Size (the minimum resolution for incrementing Iload) for Forward Pressure and Maximum Forwarding Rate test.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<NR1> Set a value from 1 to 4294967295 (fps). However the setting range varies depending on the module to be used.

Command	:RFC2889:FPPressure:TDURation <NR1>
Query	:RFC2889:FPPressure:TDURation?
Response	<NR1>
Description	Sets the Trial Duration value for Forward Pressure and Maximum Forwarding Rate test.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<NR1> Set a value from 1 to 300 (s).
Default	30

Section 6 Details of Device Messages

Command	:RFC2889:FPressure:TPOrt:FIRSt {"" | <port>}
Query	:RFC2889:FPressure:TPOrt:FIRSt?
Response	{"" | <port>}
Description	Specifies the port that transmits test frames (port 1) during Forward Pressure and Maximum Forwarding Rate test.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<p>"" indicates that no port is registered.</p> <p><port></p> <p>Expressed in the following format:</p><p>{"" | "UNIT<unit id>:<module id>:<port id>"}</p> <p><unit id></p> <p>Specify the unit where a port belongs using the value indicating the order that the application was connected to the unit.</p> <p><module id></p> <p>Specify the module where a port belongs using the number for a slot in which the module is to be inserted.</p> <p><port id></p> <p>Specify port location using physical location number for a port allocated in a module.</p> <p>Example:</p> <p>To specify the third port in the module at Slot 2 of Unit 1:</p> <p>"UNIT1:2:3"</p>
Default	""

Command	:RFC2889:FPRessure:TPOrt:SECond {"" | <port>}
Query	:RFC2889:FPRessure:TPOrt:SECond?
Response	{"" | <port>}
Description	Specifies the port that receives test frames (port 2) during Forward Pressure and Maximum Forwarding Rate test.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<p>"" indicates that no port is registered.</p> <p><port></p> <p>Expressed in the following format:</p> <p>{"" | "UNIT<unit id>:<module id>:<port id>"}</p> <p><unit id></p> <p>Specify the unit where a port belongs using the value indicating the order that the application was connected to the unit.</p> <p><module id></p> <p>Specify the module where a port belongs using the number for a slot in which the module is to be inserted.</p> <p><port id></p> <p>Specify port location using physical location number for a port allocated in a module.</p> <p>Example:</p> <p>To specify the third port in the module at Slot 2 of Unit 1:</p> <p>"UNIT1:2:3"</p>
Default	""

Section 6 Details of Device Messages

Query	:RFC2889:FPPressure:RESult? <type>
Response	<result>[,<result>]...
Description	Queries the result of the Forward Pressure and Maximum Forwarding Rate test.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<type> Select the desired result data type from the followings: Maximum forwarding rate measurement results: MFR MFR (fps) ILOAD ILoad at MFR (fps) OLOAD OLoad at MFR (fps) Minimum Interframe Gap (88 bits) measurement results: FR FR (fps) MOL Medium's maximum theoretical utilization (fps) <result> Measured result. The measured results for multiple frame sizes set in Frame Size setting are returned. If there is no result for the frame size with the reason such as abnormal termination, –9999 is returned for <result>.

Command	:RFC2889:ACACHing:ADDresses:INITial <NR1>
Query	:RFC2889:ACACHing:ADDresses:INITial?
Response	<NR1>
Description	Sets the Initial Addresses (number of addresses at the beginning of a test) for Address Caching Capacity test.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<NR1> Set a value from 1 to 16777216 (address).

Command	:RFC2889:ACACHing:ALRate <NR1>
Query	:RFC2889:ACACHing:ALRate?
Response	<NR1>
Description	Sets the Addresses Learning Rate (transmission rate for the learning frame) for Address Caching Capacity test.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<NR1> Set a value from 1 to 4294967295 (fps). However the setting range varies depending on the module to be used.
Default	50

Command	:RFC2889:ACACHing:ATIME <NR1>
Query	:RFC2889:ACACHing:ATIME?
Response	<NR1>
Description	Sets the Age Time for Address Caching Capacity test.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<NR1> Set a value from 1 to 65535 (s).
Default	300

Section 6 Details of Device Messages

Command	:RFC2889:ACACHing:TPOrt:MPORt {"" | <port>}
Query	:RFC2889:ACACHing:TPOrt:MPORt?
Response	{"" | <port>}
Description	Specifies the Monitoring port (Mport) to detect Flood or Mis-forward frames during Address Caching Capacity test.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<p>"" indicates that no port is registered.</p> <p><port></p> <p>Expressed in the following format:</p><p>{"" | "UNIT<unit id>:<module id>:<port id>"}</p> <p><unit id></p> <p>Specify the unit where a port belongs using the value indicating the order that the application was connected to the unit.</p> <p><module id></p> <p>Specify the module where a port belongs using the number for a slot in which the module is to be inserted.</p> <p><port id></p> <p>Specify port location using physical location number for a port allocated in a module.</p> <p>Example:</p> <p>To specify the third port in the module at Slot 2 of Unit 1:</p> <p>"UNIT1:2:3"</p>
Default	""

Command	:RFC2889:ACACHing:TPORt:TPORt {"" | <port>}
Query	:RFC2889:ACACHing:TPORt:TPORt?
Response	{"" | <port>}
Description	Specifies the Test port (Tport) that receives learning frames during Address Caching Capacity test.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<p>"" indicates that no port is registered.</p> <p><port></p> <p>Expressed in the following format:</p> <p>{"" | "UNIT<unit id>:<module id>:<port id>"}</p> <p><unit id></p> <p>Specify the unit where a port belongs using the value indicating the order that the application was connected to the unit.</p> <p><module id></p> <p>Specify the module where a port belongs using the number for a slot in which the module is to be inserted.</p> <p><port id></p> <p>Specify port location using physical location number for a port allocated in a module.</p> <p>Example:</p> <p>To specify the third port in the module at Slot 2 of Unit 1:</p> <p>"UNIT1:2:3"</p>
Default	""

Section 6 Details of Device Messages

Command	:RFC2889:ACACHing:TPORt:LPORt {"" | <port>}
Query	:RFC2889:ACACHing:TPORt:LPORt?
Response	{"" | <port>}
Description	Specifies the Learning port (Lport) that transmits learning frames during Address Caching Capacity test.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	"" indicates that no port is registered. <port> Expressed in the following format: {"" | "UNIT<unit id>:<module id>:<port id>"} <unit id> Specify the unit where a port belongs using the value indicating the order that the application was connected to the unit. <module id> Specify the module where a port belongs using the number for a slot in which the module is to be inserted. <port id> Specify port location using physical location number for a port allocated in a module. Example: To specify the third port in the module at Slot 2 of Unit 1: "UNIT1:2:3"
Default	""

Query	:RFC2889:ACACHing:RESult?
Response	<result>
Description	Queries the result of the Address Caching Capacity test.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<result> The Address Caching Capacity value (addresses per port). If there is no result for the reason such as abnormal termination, –9999 is returned for <result>.

Command	:RFC2889:ALearning:NADresses <NR1>
Query	:RFC2889:ALearning:NADresses?
Response	<NR1>
Description	Sets the Number of Addresses (number of addresses that the DUT/SUT can learn) for Address Learning Rate test.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<NR1> Set a value from 1 to 16777216 (address).

Command	:RFC2889:ALearning:RATE:INITial <NR1>
Query	:RFC2889:ALearning:RATE:INITial?
Response	<NR1>
Description	Sets the Initial Addresses Learning Rate (transmission rate of learning frames at the beginning of a test) for Address Learning Rate test.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<NR1> Set a value from 1 to 4294967295 (fps). However the setting range varies depending on the module to be used.
Default	50

Command	:RFC2889:ALearning:ATIME <NR1>
Query	:RFC2889:ALearning:ATIME?
Response	<NR1>
Description	Sets the Age Time for Address Learning Rate test.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<NR1> Set a value from 1 to 65535 (s).
Default	300

Section 6 Details of Device Messages

Command	:RFC2889:ALearning:TPORt:TPORt {"" | <port>}
Query	:RFC2889:ALearning:TPORt:TPORt?
Response	{"" | <port>}
Description	Specifies the Test port (Tport) that receives learning frames during Address Learning Rate test.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<p>"" indicates that no port is registered.</p> <p><port></p> <p>Expressed in the following format:</p><p>{"" | "UNIT<unit id>:<module id>:<port id>"}</p> <p><unit id></p> <p>Specify the unit where a port belongs using the value indicating the order that the application was connected to the unit.</p> <p><module id></p> <p>Specify the module where a port belongs using the number for a slot in which the module is to be inserted.</p> <p><port id></p> <p>Specify port location using physical location number for a port allocated in a module.</p> <p>Example:</p> <p>To specify the third port in the module at Slot 2 of Unit 1:</p> <p>"UNIT1:2:3"</p>
Default	""

Command	:RFC2889:ALearning:TPORT:MPORT {"" | <port>}
Query	:RFC2889:ALearning:TPORT:MPORT?
Response	{"" | <port>}
Description	Specifies the Monitoring port (Mport) to detect Flood or Mis-forward frames during Address Learning Rate test.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<p>"" indicates that no port is registered.</p> <p><port></p> <p>Expressed in the following format:</p> <p>{"" | "UNIT<unit id>:<module id>:<port id>"}</p> <p><unit id></p> <p>Specify the unit where a port belongs using the value indicating the order that the application was connected to the unit.</p> <p><module id></p> <p>Specify the module where a port belongs using the number for a slot in which the module is to be inserted.</p> <p><port id></p> <p>Specify port location using physical location number for a port allocated in a module.</p> <p>Example:</p> <p>To specify the third port in the module at Slot 2 of Unit 1:</p> <p>"UNIT1:2:3"</p>
Default	""

Section 6 Details of Device Messages

Command	:RFC2889:ALearning:TPORt:LPORT {"" | <port>}
Query	:RFC2889:ALearning:TPORt:LPORT?
Response	{"" | <port>}
Description	Specifies the Learning port (Lport) that transmits learning frames during Address Learning Rate test.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	"" indicates that no port is registered. <port> Expressed in the following format: {"" | "UNIT<unit id>:<module id>:<port id>"} <unit id> Specify the unit where a port belongs using the value indicating the order that the application was connected to the unit. <module id> Specify the module where a port belongs using the number for a slot in which the module is to be inserted. <port id> Specify port location using physical location number for a port allocated in a module. Example: To specify the third port in the module at Slot 2 of Unit 1: "UNIT1:2:3"
Default	""

Query	:RFC2889:ALearning:RESult?
Response	<result>
Description	Queries the result of the Address Learning Rate test.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<result> The Address Learning Rate value (fps). If there is no result for the reason such as abnormal termination, –9999 is returned for <result>.

Command	:RFC2889:EFRames:TDURation <NR1>
Query	:RFC2889:EFRames:TDURation?
Response	<NR1>
Description	Sets the trial time (Trial Duration) value for Errored frames filtering test.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<NR1> Set a value from 1 to 300 (s).
Default	30

Command	:RFC2889:EFRames:ILOad <NR2>
Query	:RFC2889:EFRames:ILOad?
Response	<NR2>
Description	Sets the Iload value for Errored frames filtering test.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<NR2> Set a value from 0.01 to 100.00 (%).
Default	100.00

Section 6 Details of Device Messages

Command	:RFC2889:EFRames:TPORt:SECond {"" | <port>}
Query	:RFC2889:EFRames:TPORt:SECond?
Response	{"" | <port>}
Description	Specifies the reception port for Errored frames filtering test.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<p>"" indicates that no port is registered.</p> <p><port></p> <p>Expressed in the following format:</p><p>{"" | "UNIT<unit id>:<module id>:<port id>"}</p> <p><unit id></p> <p>Specify the unit where a port belongs using the value indicating the order that the application was connected to the unit.</p> <p><module id></p> <p>Specify the module where a port belongs using the number for a slot in which the module is to be inserted.</p> <p><port id></p> <p>Specify port location using physical location number for a port allocated in a module.</p> <p>Example:</p> <p>To specify the third port in the module at Slot 2 of Unit 1:</p> <p>"UNIT1:2:3"</p>
Default	""

Command	:RFC2889:EFRames:TPORt:FIRSt {"" | <port>}
Query	:RFC2889:EFRames:TPORt:FIRSt?
Response	{"" | <port>}
Description	Specifies the transmission port for Errored frames filtering test.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<p>"" indicates that no port is registered.</p> <p><port></p> <p>Expressed in the following format:</p> <p>{"" | "UNIT<unit id>:<module id>:<port id>"}</p> <p><unit id></p> <p>Specify the unit where a port belongs using the value indicating the order that the application was connected to the unit.</p> <p><module id></p> <p>Specify the module where a port belongs using the number for a slot in which the module is to be inserted.</p> <p><port id></p> <p>Specify port location using physical location number for a port allocated in a module.</p> <p>Example:</p> <p>To specify the third port in the module at Slot 2 of Unit 1:</p> <p>"UNIT1:2:3"</p>
Default	""

Section 6 Details of Device Messages

Query	:RFC2889:EFrames:REsult? <type>
Response	<result>
Description	Queries the result for the Errored frames filtering test.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<type> Select the desired result data type from the followings: OVERSIZE Oversize UNDERSIZE Undersize FCS CRC Errors DRIBBLE Dribble Bit Errors ALIGNMENT Alignment Errors <result> The frame count value at the reception port is returned. If there is no result for the reason such as abnormal termination, –9999 is returned for <result>.

Command	:RFC2889:BROadcast:ILOad <NR2>
Query	:RFC2889:BROadcast:ILOad?
Response	<NR2>
Description	Sets the ILoad value for Broadcast frame Forwarding and Latency test.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<NR2> Set a value from 0.01 to 100.00 (%).
Default	100.00

Command	:RFC2889:BRoadcast:TDURation <NR1>
Query	:RFC2889:BRoadcast:TDURation?
Response	<NR1>
Description	Sets the trial time (Trial Duration) value for Broadcast frame Forwarding and Latency test.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<NR1> Set a value from 1 to 300 (s).
Default	30

Command	:RFC2889:BRoadcast:APPort <NR1>
Query	:RFC2889:BRoadcast:APPort?
Response	<NR1>
Description	Sets the Addresses per port value for Broadcast frame Forwarding and Latency test.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<NR1> Set a power of 2 (1, 2, 4, 8, ...). The maximum value is 16777216 (addresses).
Default	1

Section 6 Details of Device Messages

Command	:RFC2889:BRoadcast:TPORt:SOURce {"" | <port>}
Query	:RFC2889:BRoadcast:TPORt:SOURce?
Response	{"" | <port>}
Description	Specifies the transmission port for Broadcast frame Forwarding and Latency test.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<p>"" indicates that no port is registered.</p> <p><port></p> <p>Expressed in the following format:</p><p>{"" | "UNIT<unit id>:<module id>:<port id>"}</p> <p><unit id></p> <p>Specify the unit where a port belongs using the value indicating the order that the application was connected to the unit.</p> <p><module id></p> <p>Specify the module where a port belongs using the number for a slot in which the module is to be inserted.</p> <p><port id></p> <p>Specify port location using physical location number for a port allocated in a module.</p> <p>Example:</p> <p>To specify the third port in the module at Slot 2 of Unit 1:</p> <p>"UNIT1:2:3"</p>
Default	""

Command	:RFC2889:BRoadcast:TPORT:RECeive {"" | <port>[,<port>]...}
Query	:RFC2889:BRoadcast:TPORT:RECeive?
Response	{"" | <port>[,<port>]...}
Description	Specifies (multiple) reception ports for Broadcast frame Forwarding and Latency test.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<p>"" indicates that no port is registered.</p> <p><port></p> <p>Expressed in the following format: "UNIT<unit id>:<module id>:<port id>"</p> <p><unit id></p> <p>Specify the unit where a port belongs using the value indicating the order that the application was connected to the unit.</p> <p><module id></p> <p>Specify the module where a port belongs using the number for a slot in which the module is to be inserted.</p> <p><port id></p> <p>Specify port location using physical location number for a port allocated in a module.</p> <p>Example: To specify the third and fourth ports in the module at Slot 2 of Unit 1: "UNIT1:2:3","UNIT1:2:4"</p>
Default	""

Section 6 Details of Device Messages

Query	:RFC2889:BRoadcast:RESult? <type>[,<unit>]
Response	<result>[,<result>]...
Description	Queries the result of the Broadcast frame Forwarding and Latency test.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<type> Select the desired result data type from the followings: Throughput measurement results (frame/s, bit/s, byte/s, %) THROUGHPUT FRMOL MOL MFR OLOAD Latency measurement results (s) LATENCY <unit> Set the unit for Throughput measurement result. Select one of the following: FPS frame/s BPS bit/s BYTE byte/s PCT % <result> Measured result. The measured results for multiple frame sizes set in Frame Size setting are returned. If there is no result for the reason such as abnormal termination, –9999 (unit: fame/s, byte/s or bit/s) or –9999.0 (unit: % or s) is returned for <result>.

Command	:RFC2889:FMEShed:VLAN:TPORt <BOOLEAN>
Query	:RFC2889:FMEShed:VLAN:TPORt?
Response	<BOOLEAN>
Description	Sets whether or not to attach VLAN tag to Frame sent from Test Port.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<BOOLEAN>

Command	:RFC2889:FMEShed:VLAN:VID <NR1>
Query	:RFC2889:FMEShed:VLAN:VID?
Response	<NR1>
Description	Specifies VLAN ID set at VLAN tag.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	{0 to 4095}

Command	:RFC2889:OTMany:VLAN:TPOrt:ONE <BOOLEAN>
Query	:RFC2889:OTMany:VLAN:TPOrt:ONE?
Response	<BOOLEAN>
Description	Sets whether or not to attach VLAN tag to Frame sent from One port.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<BOOLEAN>

Command	:RFC2889:OTMany:VLAN:TPOrt:MANY <BOOLEAN>
Query	:RFC2889:OTMany:VLAN:TPOrt:MANY?
Response	<BOOLEAN>
Description	Sets whether or not to attach VLAN tag to Frame sent from Many port.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<BOOLEAN>

Command	:RFC2889:OTMany:VLAN:VID <NR1>
Query	:RFC2889:OTMany:VLAN:VID?
Response	<NR1>
Description	Specifies VLAN ID set at VLAN tag.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	{0 to 4095}

Section 6 Details of Device Messages

Command	:RFC2889:MULTiple:VLAN:TPORt:FIRSt <BOOLEAN>
Query	:RFC2889:MULTiple:VLAN:TPORt:FIRSt?
Response	<BOOLEAN>
Description	Sets whether or not to attach VAN tag to Frame sent from First port.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<BOOLEAN>

Command	:RFC2889:MULTiple:VLAN:TPORt:SECond <BOOLEAN>
Query	:RFC2889:MULTiple:VLAN:TPORt:SECond?
Response	<BOOLEAN>
Description	Sets whether or not to attach VLAN tag to Frame sent from Second port.
Module	√ MbE √ GbE – 2.5G/10G

Command	:RFC2889:MULTiple:VLAN:VID <NR1>
Query	:RFC2889:MULTiple:VLAN:VID?
Response	<NR1>
Description	Specifies VLAN ID set at VLAN tag.
Module	√ MbE √ GbE – 2.5G/10G

Command	:RFC2889:UTRaffic:VLAN:TPORt:SOURce <BOOLEAN>
Query	:RFC2889:UTRaffic:VLAN:TPORt:SOURce?
Response	<BOOLEAN>
Description	Sets whether or not to attach VLAN tag to Frame sent from Source port.
Module	√ MbE √ GbE – 2.5G/10G

Command	:RFC2889:UTRAffic:VLAN:TPORt:RECeive <BOOLEAN>
Query	:RFC2889:UTRAffic:VLAN:TPORt:RECeive?
Response	<BOOLEAN>
Description	Sets whether or not to attach VLAN tag to Receive port.
Module	√ MbE √ GbE – 2.5G/10G

Command	:RFC2889:UTRAffic:VLAN:VID <NR1>
Query	:RFC2889:UTRAffic:VLAN:VID?
Response	<NR1>
Description	Specifies VLAN ID set at VLAN tag.
Module	√ MbE √ GbE – 2.5G/10G

Command	:RFC2889:CCONtrol:VLAN:TPORt:SOURce:FIRSt <BOOLEAN>
Query	:RFC2889:CCONtrol:VLAN:TPORt:SOURce:FIRSt?
Response	<BOOLEAN>
Description	Sets whether or not to attach VLAN tag to Frame set from First port.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<BOOLEAN>

Command	:RFC2889:CCONtrol:VLAN:TPORt:SOURce:SECond <BOOLEAN>
Query	:RFC2889:CCONtrol:VLAN:TPORt:SOURce:SECond?
Response	<BOOLEAN>
Description	Sets whether or not to attach VLAN tag to Frame sent from Second port.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<BOOLEAN>

Section 6 Details of Device Messages

Command	:RFC2889:CCONtrol:VLAN:TPORt:RECeive:UNCongested <BOOLEAN>
Query	:RFC2889:CCONtrol:VLAN:TPORt:RECeive:UNCongested?
Response	<BOOLEAN>
Description	Sets whether or not to attach VLAN tag to Frame from Uncongested port.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<BOOLEAN>

Command	:RFC2889:CCONtrol:VLAN:TPORt:RECeive:CONGested <BOOLEAN>
Query	:RFC2889:CCONtrol:VLAN:TPORt:RECeive:CONGested?
Response	<BOOLEAN>
Description	Sets whether or not to attach VLAN tag to Frame sent from Congested port.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<BOOLEAN>

Command	:RFC2889:CCONtrol:VLAN:VID <NR1>
Query	:RFC2889:CCONtrol:VLAN:VID?
Response	<NR1>
Description	Specifies VLAN ID set at VLAN tag.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	{0 to 4095}

Command	:RFC2889:FPRessure:VLAN:TPORt:FIRSt <BOOLEAN>
Query	:RFC2889:FPRessure:VLAN:TPORt:FIRSt?
Response	<BOOLEAN>
Description	Sets whether or not to attach VLAN tag to Frame sent from First port.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<BOOLEAN>

Command	:RFC2889:FPRessure:VLAN:TPORt:SECond <BOOLEAN>
Query	:RFC2889:FPRessure:VLAN:TPORt:SECond?
Response	<BOOLEAN>
Description	Sets whether or not to attach VLAN tag to Frame sent from Second port.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<BOOLEAN>

Command	:RFC2889:FPRessure:VLAN:VID <NR1>
Query	:RFC2889:CCONtrol:VLAN:VID?
Response	<NR1>
Description	Specifies VLAN ID set at VLAN tag.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	{0 to 4095}

Command	:RFC2889:ACACHing:VLAN:TPORt:TPORt <BOOLEAN>
Query	:RFC2889:ACACHing:VLAN:TPORt:TPORt?
Response	<BOOLEAN>
Description	Sets whether or not to attach VLAN tag to Frame sent from Tport.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<BOOLEAN>

Command	:RFC2889:ACACHing:VLAN:TPORt:LPORt <BOOLEAN>
Query	:RFC2889:ACACHing:VLAN:TPORt:LPORt?
Response	<BOOLEAN>
Description	Sets whether or not to attach VLAN tag to Frame sent from Lport.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<BOOLEAN>

Section 6 Details of Device Messages

Command	:RFC2889:ACACHing:VLAN:TPORt:MPORT <BOOLEAN>
Query	:RFC2889:ACACHing:VLAN:TPORt:MPORT?
Response	<BOOLEAN>
Description	Sets whether or not to attach VLAN tag to Frame sent from Mport.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<BOOLEAN>

Command	:RFC2889:ACACHing:VLAN:VID <NR1>
Query	:RFC2889:ACACHing:VLAN:VID?
Response	<NR1>
Description	Specifies VLAN ID set at VLAN tag.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	{0 to 4095}

Command	:RFC2889:ALEarning:VLAN:TPORt:TPORt <BOOLEAN>
Query	:RFC2889:ALEarning:VLAN:TPORt:TPORt?
Response	<BOOLEAN>
Description	Sets whether or not to attach VLAN tag to Frame sent from Tport.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<BOOLEAN>

Command	:RFC2889:ALEarning:VLAN:TPORt:LPORT <BOOLEAN>
Query	:RFC2889:ALEarning:VLAN:TPORt:LPORT?
Response	<BOOLEAN>
Description	Sets whether or not to attach VLAN tag to Frame sent from Lport.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<BOOLEAN>

Command	:RFC2889:ALEarning:VLAN:TPORt:MPOrt <BOOLEAN>
Query	:RFC2889:ALEarning:VLAN:TPORt:MPOrt?
Response	<BOOLEAN>
Description	Sets whether or not to attach VLAN tag to Frame sent from Mport.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<BOOLEAN>

Command	:RFC2889:ALEarning:VLAN:VID <NR1>
Query	:RFC2889:ALEarning:VLAN:VID?
Response	<NR1>
Description	Specifies VLAN ID set at VLAN tag.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	{0 to 4095}

Command	:RFC2889:EFrames:VLAN:TPORt:FIRSt <BOOLEAN>
Query	:RFC2889:EFrames:VLAN:TPORt:FIRSt?
Response	<BOOLEAN>
Description	Sets whether or not to attach VLAN tag to Frame sent from First port.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<BOOLEAN>

Command	:RFC2889:EFrames:VLAN:TPORt:SECond <BOOLEAN>
Query	:RFC2889:EFrames:VLAN:TPORt:SECond?
Response	<BOOLEAN>
Description	Sets whether or not to attach VLAN tag to Frame sent from Second port.
Module	√ MbE √ GbE – 2.5G/10G
Parameter	<BOOLEAN>

Section 6 Details of Device Messages

Command :RFC2889:EFRames:VLAN:VID <NR1>
Query :RFC2889:EFRames:VLAN:VID?
Response <NR1>
Description Specifies VLAN ID set at VLAN tag.
Module √ MbE √ GbE – 2.5G/10G
Parameter {0 to 4095}

Command :RFC2889:BROadcast:VLAN:TPOrt:SOURce <BOOLEAN>
Query :RFC2889:BROadcast:VLAN:TPOrt:SOURce?
Response <BOOLEAN>
Description Sets whether or not to attach VLAN tag to Frame sent from Source port.
Module √ MbE √ GbE – 2.5G/10G
Parameter <BOOLEAN>

Command :RFC2889:BROadcast:VLAN:TPOrt:RECeive <BOOLEAN>
Query :RFC2889:BROadcast:VLAN:TPOrt:RECeive?
Response <BOOLEAN>
Description Sets whether or not to attach VLAN tag to Frame sent from Receive port.
Module √ MbE √ GbE – 2.5G/10G

Command :RFC2889:BROadcast:VLAN:VID <NR1>
Query :RFC2889:BROadcast:VLAN:VID?
Response <NR1>
Description Specifies VLAN ID set at VLAN tag.
Module √ MbE √ GbE – 2.5G/10G

Auto Negotiation Analysis function commands (ANEGotiation)

The commands related to the auto negotiation analysis function are explained below.

Command	:ANEGotiation:CAPTure:STOP
Description	<p>Stops capturing of physical data.</p> <ul style="list-style-type: none">* For the MU 120112A/22A (SFP), physical data capturing is stopped for all ports of the specified module. For the MU120132A, capturing is stopped for the specified port.* This command can be used only when the auto negotiation option is installed and the FPGA version of the module supports the auto negotiation function.* For the MU120112A, this command is available only in the auto negotiation mode.
Module	– MbE √ GbE – 2.5G/10G

Command	:ANEGotiation:CAPTure:START [<NR1>]
Description	<p>Starts capturing of physical data.</p> <ul style="list-style-type: none">* This command can be used only when the auto negotiation option is installed.* The MU120112A can be used only when the FPGA version of the module supports the auto negotiation function.
Module	– MbE √ GbE – 2.5G/10G
Parameter	<p><NR1></p> <p>When this parameter is not specified by this command, capture of the port specified by the :PORT:ID command starts.</p> <p>When the parameter is specified, the capture is set as follows: (However, the MU120131A/132A cannot be specified.)</p> <ol style="list-style-type: none">1 Captures Port1 only.2 Captures Port2 only.3 Captures Port1 and Port2.

Section 6 Details of Device Messages

Query	:ANEGotiation:CAPTure:STATe? [<port_no>]
Response	[<port_no>,<status>]
Description	<p>Queries the operation status of physical data capture.</p> <ul style="list-style-type: none">* This query can be used only when the auto negotiation option is installed and the FPGA version of the module supports the auto negotiation function.* The MU120112A can be used only when the FPGA version of the module supports the auto negotiation function.
Module	– MbE √ GbE – 2.5G/10G
Parameter	<p><port_no></p> <p>When a parameter is not specified by this command, the operation status of the port captured by the :PORT:ID command is returned.</p> <p>When the parameter is specified, the capture is set as follows:</p> <p>(However, the MU120131A/132A cannot be specified.)</p> <p>Specify the port number to be inquired. (<NR1>)</p> <ol style="list-style-type: none">1 Port12 Port2 <p><status></p> <p>The code number (<NR1> format) is returned as the processing state. The numbers mean the following:</p> <ol style="list-style-type: none">0 Capture is stopped.1 Waiting a trigger2 Capturing3 Starting/Halting capture

Query	:ANEGotiation:CAPTure:TIME:STARt?
Response	"<DATETIME>"
Description	<p>Queries the start time of physical data capture.</p> <p>* This query can be used only when the auto negotiation option is installed and the FPGA version of the module supports the auto negotiation function.</p>
Module	– MbE √ GbE – 2.5G/10G
Parameter	<p><DATETIME></p> <p>A string that indicates the date and the time. This is expressed in the following format:</p> <p><date><space><time></p> <p><date></p> <p>The format is yyyy/mm/dd. These refer to "year", "month", and "date", respectively.</p> <p>The value ranges from 2000/01/01 to 2098/12/31.</p> <p><time></p> <p>The format is hh:mm:ss.sss. These refer to "hours", "minutes", and "seconds", respectively. This is expressed on a 24-hour basis.</p> <p>The value ranges from 00:00:00.000 to 23:59:59.999.</p> <p>Example: "2002/01/20 13:22:05.01"</p>

Query	:ANEGotiation:CAPTure:TIME:ELAPsed?
Response	<NR1>
Description	<p>Queries the elapsed time since the start of the physical data capture.</p> <p>* This query can be used only when the auto negotiation option is installed and the FPGA version of the module supports the auto negotiation function.</p>
Module	– MbE √ GbE – 2.5G/10G
Parameter	<p><NR1></p> <p>An integer value that indicates the elapsed time of a measurement. It takes values from 0 to 315360000 (second).</p>

Section 6 Details of Device Messages

Query	:ANEGotiation:CAPTure:TIME:STOP?
Response	"<DATETIME>"
Description	<p>Queries the stop time of physical data capture.</p> <p>* This query can be used only when the auto negotiation option is installed and the FPGA version of the module supports the auto negotiation function.</p>
Module	– MbE √ GbE – 2.5G/10G
Parameter	<p><DATETIME></p> <p>A string that indicates the date and the time. This is expressed in the following format:</p> <p><date><space><time></p> <p><date></p> <p>The format is yyyy/mm/dd. These refer to "year", "month", and "date", respectively.</p> <p>The value ranges from 2000/01/01 to 2098/12/31.</p> <p><time></p> <p>The format is hh:mm:ss.sss. These refer to "hours", "minutes", and "seconds", respectively. This is expressed on a 24-hour basis.</p> <p>The value ranges from 00:00:00.000 to 23:59:59.999.</p> <p>Example: "2002/01/20 13:22:05.01"</p>

Command	:ANEGotiation:CAPTure:TRIGger:PATtern <control_bit>,<HEX>
Query	:ANEGotiation:CAPTure:TRIGger:PATtern?
Response	<control_bit>,<HEX>
Description	<p>Sets the trigger pattern of physical data capture in a fixed 2-byte length.</p> <ul style="list-style-type: none"> * These command and query can be used only when the auto negotiation option is installed and the FPGA version of the module supports the auto negotiation function. * Before sending this command or query, a port to be controlled must be specified in advance by executing the :PORT:ID command.
Module	– MbE √ GbE – 2.5G/10G
Parameter	<p><control_bit></p> <p>Set control bits in 2 bits. When specifying Kxx.x, set 1 (integer). When specifying Dxx.x, set 0 (integer). Set the control bit for the first byte to the first digit, and likewise, the second byte to the second digit. Example: 10</p> <p><HEX></p> <p>Set a 2-byte data pattern in <HEX> format (hexadecimal). Example: #H0000</p>
Default	<control_bit>=00,<HEX>=#H0000
Command	:ANEGotiation:CAPTure:TRIGger:ENABLE <BOOLEAN>
Query	:ANEGotiation:CAPTure:TRIGger:ENABLE?
Response	<BOOLEAN>
Description	<p>Sets the physical data capture trigger to enable or disable.</p> <ul style="list-style-type: none"> * These command and query can be used only when the auto negotiation option is installed and the FPGA version of the module supports the auto negotiation function.
Module	– MbE √ GbE – 2.5G/10G
Parameter	<p><BOOLEAN></p> <p>To enable the capture trigger, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.</p>
Default	0 (disable)

Section 6 Details of Device Messages

Query	:ANEGotiation:CAPTure:BUFFer:NDATA?
Response	<NR1>
Description	<p>Queries the total number of data in the physical data capture memory.</p> <p>* This query can be used only when the auto negotiation option is installed and the FPGA version of the module supports the auto negotiation function.</p>
Module	– MbE √ GbE – 2.5G/10G
Parameter	<p><NR1></p> <p>Returns the number of event data in the physical data capture memory in integers. A value ranging from 0 to 2048 is returned. When there is no capture data, 0 is returned. One event data is 8 bytes in length.</p>
Query	:ANEGotiation:CAPTure:BUFFer:DATA?
	<port_no>,<capture_start_frame_number>,<capture_stop_frame_number>
Response	<p><port_no>,<capture_start_frame_number>,<time_stamp>,<control>,<rdp>,<HEX>[,<port_no>,<capture_start_frame_number>+1,<time_stamp>,<control>,<rdp>,<HEX>, ..., <port_no>,<capture_stop_frame_number>,<time_stamp>,<control>,<rdp>,<HEX>]</p>
Description	<p>Queries the contents of the captured physical data for the specified range of the specified port.</p> <p>* This query can be used only when the auto negotiation option is installed and the FPGA version of the module supports the auto negotiation function.</p>
Module	– MbE √ GbE – 2.5G/10G
Parameter	<p><port_no> (<NR1>)</p> <p>Indicates the number of the port from which physical data is captured. If this value is 1, for example, the data is captured from Port1.</p> <p><capture_start_frame_number></p> <p>Specify the number of the capture event data in which the query starts. It is the value of a serial number (<NR1>) given to the event data in the capture memory.</p> <p><capture_stop_frame_number></p> <p>Specify the number of the capture event data in which the query stops. It is the value of a serial number (<NR1>) given to the event data in the capture memory. When 0 is specified, responses to this query are continuously returned until the last capture data.</p> <p><time_stamp></p> <p>The time when the event data arrives (minute, second, millisecond, microsecond, nanosecond) is returned in a unit of seconds (0 to 86399.999999999) (<NR2>).</p>

<control>

The control bit of the captured frame data is returned in <BINARY> format. The data is fixed to 8-bit length.

Example: #B10000000

<rdp>

The RD parity of the captured frame data is returned in <BINARY> format. The data is fixed to 8-bit length.

Example: #B10101011

<HEX>

The captured data is returned in <HEX> format. The data is fixed to 8-byte length.

Example: #H1122334455667788

Command	:ANEGotiation:TRANsmit:STOP
Description	<p>Stops transmission of physical data.</p> <ul style="list-style-type: none"> * This command can be used only when the auto negotiation option is installed and the FPGA version of the module supports the auto negotiation function. * Before sending this command, a port to be controlled must be specified in advance by executing the :PORT:ID command.
Module	– MbE √ GbE – 2.5G/10G

Command	:ANEGotiation:TRANsmit:STARt
Description	<p>Starts transmission of physical data.</p> <ul style="list-style-type: none"> * This command can be used only when the auto negotiation option is installed and the FPGA version of the module supports the auto negotiation function. * Before sending this command, a port to be controlled must be specified in advance by executing the :PORT:ID command. * When the stream data is transmitted or protocol emulation is under execution at the corresponding port, the error code 3150 will be returned.
Module	– MbE √ GbE – 2.5G/10G

Section 6 Details of Device Messages

Command	:ANEGotiation:TRANsmit:TABLE:AClear
Description	<p>Clears all the registered transmission data. After clearing, the settings for each data are restored to their default values.</p> <ul style="list-style-type: none">* This command can be used only when the auto negotiation option is installed and the FPGA version of the module supports the auto negotiation function.* Before sending this command, a port to be controlled must be specified in advance by executing the :PORT:ID command.
Module	– MbE √ GbE – 2.5G/10G

Query	:ANEGotiation:TRANsmit:STATe?
Response	<NR1>
Description	<p>Queries the operation status of the physical data transmission.</p> <ul style="list-style-type: none">* This query can be used only when the auto negotiation option is installed and the FPGA version of the module supports the auto negotiation function.* Before sending this command, a port to be controlled must be specified in advance by executing the :PORT:ID command.
Module	– MbE √ GbE – 2.5G/10G
Parameter	<p><NR1></p> <p>The operation status of physical data transmission is returned by one of the following integer numbers.</p> <ul style="list-style-type: none">0 Transmission is stopped.1 Transmitting2 Starting/Halting of transmission

Query	:ANEGotiation:TRANsmit:TIME:STOP?
Response	<DATETIME>
Description	<p>Queries the stop time of physical data transmission.</p> <ul style="list-style-type: none">* This query can be used only when the auto negotiation option is installed and the FPGA version of the module supports the auto negotiation function.* Before sending this query, a port to be controlled must be specified in advance by executing the :PORT:ID command.
Module	– MbE √ GbE – 2.5G/10G
Parameter	<p><DATETIME></p> <p>A string that indicates the date and the time. This is expressed in the following format:</p> <p><date><space><time></p> <p><date></p> <p>The format is yyyy/mm/dd. These refer to "year", "month", and "date", respectively.</p> <p>The value ranges from 2000/01/01 to 2098/12/31.</p> <p><time></p> <p>The format is hh:mm:ss.sss. These refer to "hours", "minutes", and "seconds", respectively. This is expressed on a 24-hour basis.</p> <p>The value ranges from 00:00:00.000 to 23:59:59.999.</p> <p>Example: “2002/01/20 13:22:05.01”</p>

Section 6 Details of Device Messages

Query	:ANEGotiation:TRANsmit:TIME:START?
Response	<DATETIME>
Description	<p>Queries the start time of physical data transmission.</p> <ul style="list-style-type: none">* This query can be used only when the auto negotiation option is installed and the FPGA version of the module supports the auto negotiation function.* Before sending this query, a port to be controlled must be specified in advance by executing the :PORT:ID command.
Module	– MbE √ GbE – 2.5G/10G
Parameter	<p><DATETIME></p> <p>A string that indicates the date and the time. This is expressed in the following format:</p> <p><date><space><time></p> <p><date></p> <p>The format is yyyy/mm/dd. These refer to "year", "month", and "date", respectively.</p> <p>The value ranges from 2000/01/01 to 2098/12/31.</p> <p><time></p> <p>The format is hh:mm:ss.sss. These refer to "hours", "minutes", and "seconds", respectively. This is expressed on a 24-hour basis.</p> <p>The value ranges from 00:00:00.000 to 23:59:59.999.</p> <p>Example: "2002/01/20 13:22:05.01"</p>

Query	:ANEGotiation:TRANsmit:TIME:ELAPsed?
Response	<NR1>
Description	<p>Queries the elapsed time since the start of the physical data transmission.</p> <ul style="list-style-type: none">* This query can be used only when the auto negotiation option is installed and the FPGA version of the module supports the auto negotiation function.* Before sending this query, a port to be controlled must be specified in advance by executing the :PORT:ID command.
Module	– MbE √ GbE – 2.5G/10G
Parameter	<p><NR1></p> <p>An integer value that indicates the elapsed time of a measurement. It takes values from 0 to 315360000 (second).</p>

Command	:ANEGotiation:TRANsmit:TABLE:DATA:ENABLE <data_number>,<enable>
Query	:ANEGotiation:TRANsmit:TABLE:DATA:ENABLE?
Response	<data_number>,<enable>
Description	<p>Enables/disables transmission of data of a specified data number. When the data is set to be enabled, it will be transmitted. 1 (enabled) or 0 (disabled) for the data of the specified data number is returned as the response data for the query.</p> <ul style="list-style-type: none"> * These command and query can be used only when the auto negotiation option is installed and the FPGA version of the module supports the auto negotiation function. * Before sending this command or query, a port to be controlled must be specified in advance by executing the :PORT:ID command.
Module	– MbE √ GbE – 2.5G/10G
Parameter	<p><data_number></p> <p>Up to 256 physical transmission data can be registered for each port. The data number is a serial number (<NR1> format) given to each registered physical transmission data to identify it. The serial numbers range from 1 to 256. The registered physical transmission data is sequentially transmitted from the serial number 1, according to the setting (enable/disable) of each registered data.</p> <p><enable></p> <p>Specify whether to register the data to be transmitted or not (<BOOLEAN>).</p> <ul style="list-style-type: none"> 1 Enables the data to be physical transmission data. 0 Disables the data to be physical transmission data. <p>Data for which <enable> is set to 0 will not be transmitted.</p>
Default	<data_number>=Each data number,<enable>=1

Section 6 Details of Device Messages

Command	:ANEGotiation:TRANsmit:TABLE:DATA <data_number>,<control_bit>,<HEX>,<type>,<jump_id>,<snd_time>								
Query	:ANEGotiation:TRANsmit:TABLE:DATA?								
Response	<data_number>,<control_bit>,<HEX>,<type>,<jump_id>,<snd_time>								
Description	<p>Sets the transmission data of the specified number. The set data of the specified number is returned as the response data for the query.</p> <ul style="list-style-type: none">* These command and query can be used only when the auto negotiation option is installed and the FPGA version of the module supports the auto negotiation function.* Before sending this command or query, a port to be controlled must be specified in advance by executing the :PORT:ID command.								
Module	– MbE √ GbE – 2.5G/10G								
Parameter	<p><data_number></p> <p>Up to 256 physical transmission data can be registered for each port. The data number is a serial number given to each registered physical transmission data to identify it. The serial numbers range from 1 to 256. The registered physical transmission data is sequentially transmitted from the serial number 1, according to the setting of each registered data.</p> <p><control_bit></p> <p>Set control bits. When specifying Kxx.x, set 1 (integer). When specifying Dxx.x, set 0 (integer).</p> <p><HEX></p> <p>Set a 1-byte data pattern in <HEX> format.</p> <p><type></p> <p>Specify the data transmission type from the following:</p> <table><tr><td>NEXT:</td><td>Transmits the data once and then the following data.</td></tr><tr><td>STOP:</td><td>Transmits the data once and then stops transmission.</td></tr><tr><td>JUMP:</td><td>Transmits the data once and then jumps to the data ID specified in <jump_id>.</td></tr><tr><td>JUMP_TIME:</td><td>Transmits the data once, jumps to the data ID specified in <jump_id>, and then repeats this loop for the period specified in <snd_time>.</td></tr></table>	NEXT:	Transmits the data once and then the following data.	STOP:	Transmits the data once and then stops transmission.	JUMP:	Transmits the data once and then jumps to the data ID specified in <jump_id>.	JUMP_TIME:	Transmits the data once, jumps to the data ID specified in <jump_id>, and then repeats this loop for the period specified in <snd_time>.
NEXT:	Transmits the data once and then the following data.								
STOP:	Transmits the data once and then stops transmission.								
JUMP:	Transmits the data once and then jumps to the data ID specified in <jump_id>.								
JUMP_TIME:	Transmits the data once, jumps to the data ID specified in <jump_id>, and then repeats this loop for the period specified in <snd_time>.								

<jump_id>

This parameter must be added when JUMP or JUMP_TIME is specified for <type>. Specify the data ID to which transmission jumps after transmitting the data of the specified number.

When <type> is set to other than JUMP and JUMP_TIME, it is not necessary to specify this parameter.

<snd_time>

This parameter must be added when JUMP_TIME is specified for <type>. Specify the period (time) in ms units during which transmission continuously jumps to the data ID specified by <jump_id> after transmitting the data of the specified number. An integer value ranging from 1 to 255 can be set [ms].

When <type> is set to other than JUMP_TIME, it is not necessary to specify this parameter.

Default 1,1,#H11,NEXT,,(<data_number>=Each data number,<control_bit>=0,<HEX>=#H00,<type>=NEXT,<jump_id>=1,<snd_time>=1)

Query :ANEGotiation:TRANsmit:TABLE:NDAa?

Response <NR1>

Description Queries the number of the transmission data set as enable.

- * This query can be used only when the auto negotiation option is installed and the FPGA version of the module supports the auto negotiation function.
- * Before sending this query, a port to be controlled must be specified in advance by executing the :PORT:ID command.

Module – MbE √ GbE – 2.5G/10G

Parameter <NR1>

Returns the number of transmission data set as enable in integers.

Link Fault Signaling function commands (LFS)

The commands related to the Link Fault Signaling function are explained below.

Command	:LFS:CAPTure:STOP
Description	<p>Stops capturing of physical data.</p> <ul style="list-style-type: none">* For the MU 120118A/B/C, physical data capturing is stopped for all ports of the specified module. For the MU120138A, capturing is stopped for the specified port.* This command is available if the LFS option is installed. The LFS option is a main unit option for the MU120118A/B/C, and is a module option for the MU120138A.
Module	– MbE √ GbE – 2.5G/10G

Command	:LFS:CAPTure:START [<NR1>]
Description	<p>Starts capturing of physical data.</p> <ul style="list-style-type: none">* This command is available if the LFS option is installed. The LFS option is a main unit option for the MU120118A/B/C, and is a module option for the MU120138A.
Module	– MbE √ GbE – 2.5G/10G
Parameter	<p><NR1></p> <p>If this parameter is omitted, physical data is captured from the port specified by the :PORT:ID command. The target port according to the setting of this parameter is as follows. (Note that this parameter cannot be specified for the MU120138A.)</p> <ul style="list-style-type: none">1 Captures Port1 only.2 Captures Port2 only.3 Captures Port1 and Port2. <p>*: Cannot be specified for the MU120118C.</p>

Query	:LFS:CAPTure:STATe? [<port_no>]
Response	<status>
Description	<p>Queries the operation status of physical data capture.</p> <p>* This command is available if the LFS option is installed. The LFS option is a main unit option for the MU120118A/B/C, and is a module option for the MU120138A.</p>
Module	– MbE √ GbE – 2.5G/10G
Parameter	<p><port_no></p> <p>If this parameter is omitted, the operation status of physical data capturing for the port specified by the :PORT:ID command is returned.</p> <p>Specify the port number to be inquired. (Note that this parameter cannot be specified for the MU120138A.)</p> <p>1 Port1 2 Port2</p> <p><status></p> <p>The code number (<NR1> format) is returned as the processing state. The numbers mean the following:</p> <p>0 Capture is stopped. 1 Waiting a trigger 2 Capturing 3 Starting/Halting capture</p>
Query	:LFS:CAPTure:BUFFer:NDATa?
Response	<NR1>
Description	<p>Queries the total number of data in the physical data capture memory.</p> <p>* This command is available if the LFS option is installed. The LFS option is a main unit option for the MU120118A/B/C, and is a module option for the MU120138A.</p>
Module	– MbE √ GbE – 2.5G/10G
Parameter	<p><NR1></p> <p>Returns the total number of event data in the physical data capture memory as an integer. The maximum returned value is 512 for the MU120118A/B/C, and 4,096 for the MU120138A. If there is no captured data, “0” is returned. One event data is 4-bit long for RXC and is 4-byte long for RXD.</p>

Section 6 Details of Device Messages

Query	:LFS:CAPTure:TIME:STARt?
Response	<DATETIME>
Description	<p>Queries the start time of physical data capture.</p> <p>* This command is available if the LFS option is installed. The LFS option is a main unit option for the MU120118A/B/C, and is a module option for the MU120138A.</p>
Module	– MbE √ GbE – 2.5G/10G
Parameter	<p><DATETIME></p> <p>A string that indicates the date and the time. This is expressed in the following format:</p> <p><date><space><time></p> <p><date></p> <p>The format is yyyy/mm/dd. These refer to "year", "month", and "date", respectively.</p> <p>The value ranges from 2000/01/01 to 2098/12/31.</p> <p><time></p> <p>The format is hh:mm:ss.sss. These refer to "hours", "minutes", and "seconds", respectively. This is expressed on a 24-hour basis.</p> <p>The value ranges from 00:00:00.000 to 23:59:59.999.</p> <p>Example: “2002/01/20 13:22:05.01”</p>

Query	:LFS:CAPTure:TIME:STOP?
Response	<DATETIME>
Description	<p>Queries the stop time of physical data capture.</p> <p>* This command is available if the LFS option is installed. The LFS option is a main unit option for the MU120118A/B/C, and is a module option for the MU120138A.</p>
Module	– MbE √ GbE – 2.5G/10G
Parameter	<p><DATETIME></p> <p>A string that indicates the date and the time. This is expressed in the following format:</p> <p><date><space><time></p> <p><date></p> <p>The format is yyyy/mm/dd. These refer to "year", "month", and "date", respectively.</p> <p>The value ranges from 2000/01/01 to 2098/12/31.</p> <p><time></p> <p>The format is hh:mm:ss.sss. These refer to "hours", "minutes", and "seconds", respectively. This is expressed on a 24-hour basis.</p> <p>The value ranges from 00:00:00.000 to 23:59:59.999.</p> <p>Example: "2002/01/20 13:22:05.01"</p>
Command	:LFS:CAPTure:TRIGger:ENABle <BOOLEAN>
Query	:LFS:CAPTure:TRIGger:ENABle?
Response	<BOOLEAN>
Description	<p>Sets the physical data capture trigger to enable or disable.</p> <p>* This command is available if the LFS option is installed. The LFS option is a main unit option for the MU120118A/B/C, and is a module option for the MU120138A.</p>
Module	– MbE √ GbE – 2.5G/10G
Parameter	<p><BOOLEAN></p> <p>To enable the capture trigger, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.</p>
Default	0 (disable)

Section 6 Details of Device Messages

Command	:LFS:CAPTure:TRIGger:PATtern <txc>,<txd>
Query	:LFS:CAPTure:TRIGger:PATtern?
Response	<txc>,<txd>
Description	<p>Sets the pattern for the physical data capture trigger pattern Lane0 through Lane3.</p> <p>* This command is available if the LFS option is installed. The LFS option is a main unit option for the MU120118A/B/C, and is a module option for the MU120138A.</p>
Module	– MbE √ GbE – 2.5G/10G
Parameter	<p><txc></p> <p>Specify the 4 bits of TXC[0-3] in binary. Example: #B1000</p> <p><txd></p> <p>Specify the 4-byte data of TXD[0-3] in hexadecimal. Example: #H9c000002</p>
Default	<txc>=#B0000,<txd>=#H00000000

Query	:LFS:CAPTure:BUFFer:DATA? <capture_start_frame_number>,<capture_stop_frame_number>
Response	<capture_start_frame_number>,<port_no>,<RXC>, <RXD>[,<capture_start_frame_number>+1,<port_no>,<RXC>,<RXD>, ..., <capture_stop_frame_number>,<port_no>,<RXC>,<RXD>]
Description	Queries the contents of the physical data. * This command is available if the LFS option is installed.
Module	– MbE √ GbE – 2.5G/10G
Parameter	<capture_start_frame_number> Specify the number of the capture event data in which the query starts. It is the value of a serial number (MU120118A/B/C: 1 to 512, MU120138A: 1 to 4096) given to the event data in the capture memory. <capture_stop_frame_number> Specify the number of the capture event data in which the query stops. It is the value of a serial number (MU120118A/B/C: 1 to 512, MU120138A: 1 to 4096) given to the event data in the capture memory. When 0 is specified, responses to this query are continuously returned until the last capture data. <port_no> The port number at which the data is captured (<NR1>). 1 Indicates the data captured at Port1. 2 Indicates the data captured at Port2. <RXC> Returns the 4-bit values of RXC[Lane0 through Lane3] (<BINARY>). Example: #B0101 ("0" following "B" corresponds to Lane0.) <RXD> Returns the 4-byte capture data of RXD[Lane0 through Lane3] in <HEX> format. Example: #H00112233 ("00" following "H" corresponds to Lane0.)

Section 6 Details of Device Messages

Command :LFS:TRANsmit:STOP

Description Stops transmission of physical data.

* This command is available if the LFS option is installed. The LFS option is a main unit option for the MU120118A/B/C, and is a module option for the MU120138A.

Module – MbE √ GbE – 2.5G/10G

Command :LFS:TRANsmit:START

Description Starts transmission of physical data.

* This command is available if the LFS option is installed. The LFS option is a main unit option for the MU120118A/B/C, and is a module option for the MU120138A.

Module – MbE √ GbE – 2.5G/10G

Query :LFS:TRANsmit:STATe?

Response <status>

Description Queries the operation status of the physical data transmission.

* This command is available if the LFS option is installed. The LFS option is a main unit option for the MU120118A/B/C, and is a module option for the MU120138A.

Module – MbE √ GbE – 2.5G/10G

Parameter <status>

The operation status of physical data transmission is returned by one of the following integer numbers.

0 Transmission is stopped.

1 Transmitting

2 Starting/Halting of transmission

Query	:LFS:TRANsmit:TIME:STOP?
Response	<DATETIME>
Description	<p>Queries the stop time of physical data transmission.</p> <p>* This command is available if the LFS option is installed. The LFS option is a main unit option for the MU120118A/B/C, and is a module option for the MU120138A.</p>
Module	– MbE √ GbE – 2.5G/10G
Parameter	<p><DATETIME></p> <p>A string that indicates the date and the time. This is expressed in the following format:</p> <p><date><space><time></p> <p><date></p> <p>The format is yyyy/mm/dd. These refer to "year", "month", and "date", respectively.</p> <p>The value ranges from 2000/01/01 to 2098/12/31.</p> <p><time></p> <p>The format is hh:mm:ss.sss. These refer to "hours", "minutes", and "seconds", respectively. This is expressed on a 24-hour basis.</p> <p>The value ranges from 00:00:00.000 to 23:59:59.999.</p> <p>Example: “2002/01/20 13:22:05.01”</p>

Section 6 Details of Device Messages

Query	:LFS:TRANsmit:TIME:STARt?
Response	<DATETIME>
Description	<p>Queries the start time of physical data transmission.</p> <p>* This command is available if the LFS option is installed. The LFS option is a main unit option for the MU120118A/B/C, and is a module option for the MU120138A.</p>
Module	– MbE √ GbE – 2.5G/10G
Parameter	<p><DATETIME></p> <p>A string that indicates the date and the time. This is expressed in the following format:</p> <p><date><space><time></p> <p><date></p> <p>The format is yyyy/mm/dd. These refer to "year", "month", and "date", respectively.</p> <p>The value ranges from 2000/01/01 to 2098/12/31.</p> <p><time></p> <p>The format is hh:mm:ss.sss. These refer to "hours", "minutes", and "seconds", respectively. This is expressed on a 24-hour basis.</p> <p>The value ranges from 00:00:00.000 to 23:59:59.999.</p> <p>Example: “2002/01/20 13:22:05.01”</p>

Command	:LFS:TRANsmit:DATA <type>,<txc>,<txd>
Query	:LFS:TRANsmit:DATA?
Response	<type>,<txc>,<txd>
Description	<p>Sets the data to be transmitted.</p> <p>The set data is returned as the response data for the query.</p> <p>* This command is available if the LFS option is installed. The LFS option is a main unit option for the MU120118A/B/C, and is a module option for the MU120138A.</p>
Module	– MbE √ GbE – 2.5G/10G
Parameter	<p><type></p> <p>Select the signal to be output from the followings:</p> <p>1→Remote Fault Signal: TXC[0-3]=1000 bin, TXD[0-3]=9c000002 hex</p> <p>2→Local Fault Signal: TXC[0-3]=1000 bin, TXD[0-3]=9c000001 hex</p> <p>3→Edit Signal: A value set in the <txc> and <txd> fields described below.</p> <p><txc></p> <p>Specify the 3-bit TXC[1-3] of the output signal in binary. TXC[0] bit is fixed to 1.</p> <p>Example: #B000</p> <p><txd></p> <p>Specify the 3-byte data TXD[1-3] of the output signal in hexadecimal. TXD[0] data is fixed to 9c.</p> <p>Example: #H000002</p>
Default	1,#B000,#H000000

Physical I/F commands (PHYSical)

The commands related to the Physical I/F function are explained below.

* Valid only for MU150101A module.

Command	:PHYSical:IF:INTerface <type>
Query	:PHYSical:IF:INTerface?
Response	<type>
Description	Selects an interface wavelength of the output signal.
	*Use the :{SDH | SONet}:PMETer:DATA? command for power meter value queries.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<type> Select an optical wavelength from the followings: OPT1 1.31um Optical I/F OPT2 1.55um Optical I/F
Default	OPT1

Command	:PHYSical:IF:ATTenuation <NR2>
Query	:PHYSical:IF:ATTenuation?
Response	<NR2>
Description	Sets an attenuator value of the output signal.
	*Use the :{SDH | SONet}:PMETer:DATA? command for power meter value queries.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<NR2> Set a value from 0.0 to 30.0.
Default	10.0

Command	:PHYSical:IF:WAVelength <wavelength>
Query	:PHYSical:IF:WAVelength?
Response	<wavelength>
Description	Selects a wavelength of the input signal. *Use the :{SDH | SONet}:PMETer:DATA? command for power meter value queries.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<wavelength> Select a wavelength from the followings: O: O (1260 to 1360) nm S: S (1460 to 1530) nm C: C (1530 to 1565) nm L: L (1565 to 1625) nm
Default	C (C (1530 to 1565) nm)

Command	:PHYSical:IF:FREQuency?
Query	<freq>,<ppm>
Response	Queries the input signal frequency. The measurement frequency and frequency deviation are returned.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<freq>,<ppm> The measurement frequency and frequency deviation are returned. <freq> Returns the measurement frequency. (<NR2>) When the measurement value is smaller than the range, –9999999999.9 is returned. When the measurement value is greater than the range, 9999999999.9 is returned. <ppm> Returns the frequency deviation (difference with nominal frequency in percentage) (<NR2>) When the measurement value is smaller than the range, –9999.9 is returned. When the measurement value is greater than the range, 9999.9 is returned.

LCAS commands (LCAS)

The commands related to the LCAS function are explained below.

* Valid only for MU150101A module.

Command	:LCAS:NEGotiation <BOOLEAN>
Query	:LCAS:NEGotiation?
Response	<BOOLEAN>
Description	Enables/disables the negotiation function or Auto function for CTRL, MST, and RS-Ack of the received signal. * This becomes Auto in Through and Monitor modes.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<BOOLEAN> To enable the negotiation function or Auto function when LCAS is ON, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	0 (disable)

Command	:LCAS:SCOPE <type>
Query	:LCAS:SCOPE?
Response	<type>
Description	Sets measurement target. The measurement target is VCG member when VCG is set. The measurement target is member except Idle when Provision is set.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<type> The measurement target is selected from VCG or Provision. VCG VCG Provision Provision
Default	Provision

Command	:LCAS:PLCT <NR1>
Query	:LCAS:PLCT?
Response	<NR1>
Description	Sets the alarm detection condition of PLCT.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<NR1> The value from 1 to 64 is set. The maximum value is the setting value of Tx Provision Size.
Default	1

Command	:LCAS:PLCR <NR1>
Query	:LCAS:PLCR?
Response	<NR1>
Description	Sets the alarm detection condition of PLCR.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<NR1> The value from 1 to 64 is set. The maximum value is the setting value of Rx Provision Size.
Default	1

Command	:LCAS:MST:SETTing:MST:TYPE <type>
Query	:LCAS:MST:SETTing:MST:TYPE?
Response	<type>
Description	Selects whether to set the MST value of a transmitted signal to values conforming to received signal settings or values set by MST Preset.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<type> Select the transmitted signal MST values from among the following. ADJUST Adjustment to Rx Setting PRESET Preset Value
Default	ADJUST

Section 6 Details of Device Messages

Command	:LCAS:MST:SETTing:MST:DATA {OK | FAIL},{OK | FAIL},.....
Query	:LCAS:MST:SETTing:MST:DATA?
Response	{OK | FAIL},{OK | FAIL},.....
Description	Sets the MST value of a transmitted signal.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<p>{OK | FAIL},{OK | FAIL},.....</p> <p>Set the MST value for the required numbers.</p> <p>In the number, it includes also in the member which becomes invalid when it Negotiation ON or Adjustment to Rx Setting is selected, and the barrier setting is possible valid/invalid (However, a set value is not transmitted when it is invalid). The number is different according to the Rx Multiplexing setting as follows.</p> <p>When there are excess and deficiencies of the number, it becomes an error, and nothing is set.</p> <p>VC4-Xv(STS3c-Xv),VC3-Xv(STS1-Xv) : 256</p> <p>VC12-Xv(VT2-Xv),VC11-Xv(VT1.5-Xv) : 64</p> <p>Error code of parameter number shortage -109,"Missing parameter"</p> <p>Error code of parameter number excessive -108,"Parameter not allowed"</p>
Default	FAIL

Command	:LCAS:RESPonse:WTIMer:MULTIframe <NR1>
Query	:LCAS:RESPonse:WTIMer:MULTIframe?
Response	<NR1>
Description	<p>Sets the response time of the measuring instrument to received signal data changes (SQ, CTRL, MST) in multiframe unit.</p> <p>When the specified time has elapsed, SQ, STRL, and MST in the transmitted signal are changed, RS-Ack is inverted, and member settings of the transmitted signal are changed. This setting is commonly applied to all channels.</p>
Module	– MbE – GbE √ 2.5G/10G
Parameter	<p><NR1></p> <p>Set the number of multi-frames from 0 to 8000.</p>
Default	0

Query	:LCAS:RESPonse:WTIMER:TIME?
Response	<NR2>
Description	Queries the response time of the measuring instrument to received signal data changes (SQ, CTRL, MST).
Module	– MbE – GbE √ 2.5G/10G
Parameter	<NR2> The response time set with Wait Timer is returned in seconds (s).
Command	:LCAS:RESPonse:TX:CTRL:SETTing <type>
Query	:LCAS:RESPonse:TX:CTRL:SETTing?
Response	<type>
Description	Sets the Tx CTRL value when MST Fail is received.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<type> Select the Tx CTRL value when MST Fail is received from the followings: NOCHANGE No Change DNU → DNU
Default	NOCHANGE
Command	:LCAS:RESPonse:RXCH:SETTing "<member>","<member>",...
Query	:LCAS:RESPonse:RXCH:SETTing?
Response	"<member>","<member>",...
Description	Sets a specified Rx CH to a valid VCAT member.
Module	– MbE – GbE √ 2.5G/10G
Parameter	"<member>","<member>",... Sets up to 84 Rx channels to be enabled with character strings. The mode of expression of the CH hierarchy follows Appendix D "Basic Rules for Channel Expression in Virtual Concatenation." Set "None" to disable all Rx channels.

Section 6 Details of Device Messages

Query	:LCAS:SUMMARY:SOURCE:ALL?						
Response	<VCGAlarms>,<VCGAlarmsHistory>,<XMT>,<XPT>,<XAT>,<RsAckRx>, "<ch>","..."<ch>"						
Description	Queries a monitor data of the Source side of LCAS Summary.						
Module	– MbE – GbE √ 2.5G/10G						
Parameter	<p><VCG Alarms>,<VCG Alarms History>,<XMT>,<XPT>,<XAT>,<RsAckRx>, "<ch>","..."<ch>" = <NR1>,<NR1>,<NR1>,<NR1>,<NR1>,<NR1>,<STRING>,...<STRING></p> <p><VCG Alarms> The detection of VCG Alarm is shown.(<NR1>) The following value is allotted to each item of VCG Alarm, and those addition is output. (0 when not detected.)</p> <table> <tr> <td>Item</td><td>Item value(decimal)</td></tr> <tr> <td>PLCT</td><td>2</td></tr> <tr> <td>TLCT</td><td>4</td></tr> </table> <p><VCG Alarms History> The detection of VCG Alarm in the past is shown. (<NR1>) The content is the same as <VCG Alarms>.</p> <p><XMT> A set value of Tx VCG Size is output. (<NR1>)</p> <p><XPT> The total of Provisioned Member is output. (<NR1>)</p> <p><XAT> The total of Member whose State is NORM is output. (<NR1>)</p> <p><RsAckRx> The number of received Rs-Ack is output. (<NR1>)</p> <p>"<ch>" Information for 1CH is output by the character string. (<STRING>) It is output continuously for a few minutes of the object channel can. The content is as follows: "<ch>=" <CH>,<State>,<SQ Tx>,<CTRL Tx>,<MST Rx>,<DD Tx(ms)> <CH> CH is returned by the character string. (<STRING>) It follows Appendix D "Basic Rules for Channel Expression in Virtual Concatenation."</p>	Item	Item value(decimal)	PLCT	2	TLCT	4
Item	Item value(decimal)						
PLCT	2						
TLCT	4						

<State>

The value of following State returns. (<CHARA>)

NORM	NORM
DNU	DNU
ADD	ADD
IDLE	IDLE
Not VCG	Not VCG

<SQ Tx>

The value of SQ returns. (<NR1>)

<CTRL Tx>

The value of following CTRL returns. (<CHARA>)

NORM	NORM
EOS	EOS
DNU	DNU
ADD	ADD
IDLE	IDLE

<MST Rx>

The monitor value of following MST returns. (<CHARA>)

OK	OK
FAIL	Fail

<DD Tx>

The value of Differential Delay returns. (<NR2>)

Section 6 Details of Device Messages

Query	:LCAS:SUMMARY:SINK:ALL?										
Response	<VCGAlarms>,<XMR>,<XPR>,<XAR>,<RsAckTx>,"<ch>","..."<ch>"										
Description	Queries a monitor data of the Sink side of LCAS Summary.										
Module	– MbE – GbE √ 2.5G/10G										
Parameter	<p><VCG Alarms>,<VCG Alarms History>,<XMR>,<XPR>,<XAR>,<RsAckTx>,"<ch>","..."<ch>"</p> <p>= <NR1>,<NR1>,<NR1>,<NR1>,<NR1>,<NR1>,<STRING>,..<STRING></p> <p><VCG Alarms></p> <p>The detection of VCG Alarm is shown.(<NR1>)</p> <p>The following value is allotted to each item of VCG Alarm, and those addition is output.</p> <p>(0 when not detected.)</p> <table> <tr> <td>Item</td><td>Item value (decimal)</td></tr> <tr> <td>PLCR</td><td>8</td></tr> <tr> <td>TLCR</td><td>16</td></tr> <tr> <td>MND</td><td>1</td></tr> <tr> <td>SQNC</td><td>32</td></tr> </table> <p><VCG Alarms History></p> <p>The detection of VCG Alarm in the past is shown. (<NR1>)</p> <p>The content is the same as <VCG Alarms>.</p> <p><XMR></p> <p>A set value of Rx VCG Size is output. (<NR1>)</p> <p><XPR></p> <p>The total of Provisioned Member is output. (<NR1>)</p> <p><XAR></p> <p>The total of Member whose State is OK is output. (<NR1>)</p> <p><RsAckTx></p> <p>The number of transmitted Rs-Ack is output. (<NR1>)</p> <p>"<ch>"</p> <p>Information for 1CH is output by the character string. (<STRING>)</p> <p>It is output continuously for a few minutes of the object channel can. The content is as follows:</p> <p>"<ch>"= <CH>,<State>,<SQ Rx>,<CTRL Rx>,<DD Rx(ms)>,<Alarm/Error>,<Alarm/Error History></p> <p><CH></p> <p>CH is returned by the character string. (<STRING>)</p> <p>It follows Appendix D "Basic Rules for Channel Expression in Virtual Concatenation."</p>	Item	Item value (decimal)	PLCR	8	TLCR	16	MND	1	SQNC	32
Item	Item value (decimal)										
PLCR	8										
TLCR	16										
MND	1										
SQNC	32										

<State>

The monitor value of following State returns. (<CHARA>)

OK	OK
FAIL	FAIL
IDLE	IDLE
NOTVCG	Not VCG
NONLCAS	Non-LCAS
-	Other

<SQ Rx>

The monitor value of SQ returns. (<NR1>)

<CTRL Rx>

The monitor value of following CTRL returns. (<CHARA>)

NORM	NORM
EOS	EOS
DNU	DNU
ADD	ADD
IDLE	IDLE
-	Other

<DD Rx>

The monitor value of Differential Delay returns. (<NR2>)

<Alarm/Error>

The detection of VCG Alarm/Error is shown. (<NR1>)

The following value is allotted to each item of VCG Alarm, and those addition is output.

(0 when not detected.)

Item	Item value (decimal)
LOM	1
SQM	16
GID	32

<Alarm/Error History>

The detection of VCG Alarm/Error in the past is shown. (<NR1>)

The content is the same as <Alarm/Error>.

Command :LCAS:SUMMary:SOURce:RSACK:RESet

Description Sets 0, after reset Rs-Ack Rx.

Module – MbE – GbE √ 2.5G/10G

Section 6 Details of Device Messages

Command :LCAS:SUMMARY:SINK:RSACK:RESET

Description Sets 0, after reset Rs-Ack Tx.

Module – MbE – GbE √ 2.5G/10G

Command :LCAS:GENERATOR:STOP

Description Stops transmission of the set LCAS sequence.

Module – MbE – GbE √ 2.5G/10G

Command :LCAS:GENERATOR:START

Description Starts transmission of the set LCAS sequence.

Module – MbE – GbE √ 2.5G/10G

Query :LCAS:GENERATOR:STATE?

Response {0 | 1 | 2}

Description Queries the operating status of the LCAS sequence transmission function.

Module – MbE – GbE √ 2.5G/10G

Parameter {0 | 1 | 2}

The code number is returned as the processing status. Meanings of the numbers are shown below:

0: Transmission is stopped.

1: Transmission is underway.

2: Starting/halting transmission

Query :LCAS:GENERATOR:TIME:ELAPSED?

Response <NR1>

Description Queries the elapsed time after the start of LCAS sequence transmission.

Module – MbE – GbE √ 2.5G/10G

Parameter <NR1>

An integer value that indicates the elapsed time of measurement. It takes values from 0 to 315360000 (second).

Query	:LCAS:GENerator:TIME:START?
Response	"<DATETIME>"
Description	Queries the LCAS sequence transmission start time.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<DATETIME> A character string that indicates the date and the time. This is expressed in the following format: <date><space><time> <date> The format is yyyy/mm/dd. These refer to "years", "months", and "days", respectively. The value ranges from 2000/01/01 to 2098/12/31. <time> The format is hh:mm:ss.sss. These refer to "hours", "minutes", and "seconds", respectively. This is expressed on a 24-hour basis. The value ranges from 00:00:00.000 to 23:59:59.999. Example: "2004/08/15 13:22:51.001"

Query	:LCAS:GENerator:TIME:STOP?
Response	"<DATETIME>"
Description	Queries the LCAS sequence transmission stop time.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<DATETIME> A character string that indicates the date and the time. This is expressed in the following format: <date><space><time> <date> The format is yyyy/mm/dd. These refer to "years", "months", and "days", respectively. The value ranges from 2000/01/01 to 2098/12/31. <time> The format is hh:mm:ss.sss. These refer to "hours", "minutes", and "seconds", respectively. This is expressed on a 24-hour basis. The value ranges from 00:00:00.000 to 23:59:59.999. Example: "2004/08/15 13:22:51.001"

Section 6 Details of Device Messages

Command	:LCAS:GENerator:TOUT:MULTiframe <NR1>
Query	:LCAS:GENerator:TOUT:MULTiframe?
Response	<NR1>
Description	Sets the wait time from when a command is transmitted to when a response is returned from Sink in multiframe unit.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<NR1> Set the number of multi-frames from 1 to 32000.
Default	8000

Query	:LCAS:GENerator:TOUT:TIME?
Response	<NR2>
Description	Queries the wait time from when a command is transmitted to when a response is returned from Sink.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<NR2> The wait time set with Time Out is returned in seconds (sec).

Command	:LCAS:GENerator:TABLE:ADD
Description	Adds new sequence data.
Module	– MbE – GbE √ 2.5G/10G

Command	:LCAS:GENerator:TABLE:DELeTe <sequence_id>
Description	Deletes sequence data.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<sequence_id> This is an identifier of a transmission sequence, which is a value of a serial number given to each sequence on the sequence table. It is used for setting a sequence. * The range varies with the number of preset sequences.

Command	:LCAS:GENerator:TABLE:COPY <sequence_id>
Description	Copies sequence data.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<sequence_id> This is an identifier of a transmission sequence, which is a value of a serial number given to each sequence on the sequence table. It is used for setting a sequence. * The range varies with the number of preset sequences.

Command	:LCAS:GENerator:TABLE:CUT <sequence_id>
Description	Cuts specified number sequence data.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<sequence_id> This is an identifier of a transmission sequence, which is a value of a serial number given to each sequence on the sequence table. It is used for setting a sequence. * The range varies with the number of preset sequences.

Command	:LCAS:GENerator:TABLE:PASTe <sequence_id>
Description	Pastes sequence data.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<sequence_id> This is an identifier of a transmission sequence, which is a value of a serial number given to each sequence on the sequence table. Sequence data is inserted to the position before the number specified here.

Command	:LCAS:GENerator:TABLE:AClear
Description	Clears all sequence data.
Module	– MbE – GbE √ 2.5G/10G

Section 6 Details of Device Messages

Command :LCAS:GENerator:TABLE:AENable

Description Enables all set sequences.

Module – MbE – GbE √ 2.5G/10G

Command :LCAS:GENerator:TABLE:ADISable

Description Disables all set sequences.

Module – MbE – GbE √ 2.5G/10G

Query :LCAS:GENerator:TABLE:NSEquences?

Response <NR1>

Description Queries the number of set sequence data.

Module – MbE – GbE √ 2.5G/10G

Parameter <NR1>

A value from 0 to 64 is returned.

Query :LCAS:GENerator:TABLE:RESult:DATA?

Response {<number>,"<sequence time>","<result>"},...

Description Queries results for transmitted commands.

Module – MbE – GbE √ 2.5G/10G

Parameter {<number>,"<sequence time>","<result>"},...

The results of the transmitted commands are returned for the number of sequences.

<number>

Returns the execution sequence ID number. (<NR1>)

<sequence time>

The elapsed time by sending the command is returned by the character string. (<STRING>)

The format is X:XX:XX.XXX (X is from 0 to 9, hour:time:second (The second is fixed the third decimal place)).

When 2:59:59.999 is exceeded, it becomes "> 2:59:59.999".

<result>

The result is returned by the character string of the same format as the Result on the screen. (<STRING>)

Command	:LCAS:GENerator:TABLE:ID <id>
Query	:LCAS:GENerator:TABLE:ID?
Response	<id>
Description	Sets sequence numbers to be edited.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<id> Specifies sequence numbers to be edited. This is an identifier of a transmission sequence, which is a value of a serial number given to each sequence on the sequence table. It is used for setting a sequence. Although a value can be set from 1 to 64, the actual setting range is subject to the number of defined sequences.

Command	:LCAS:GENerator:TABLE:ITEM:ENABLE <BOOLEAN>
Query	:LCAS:GENerator:TABLE:ITEM:ENABLE?
Response	<BOOLEAN>
Description	Enables/disables this sequence.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<BOOLEAN> To enable this sequence setting, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	1 (enable)

Command	:LCAS:GENerator:TABLE:ITEM:CONTROL:COMMAND <command>
Query	:LCAS:GENerator:TABLE:ITEM:CONTROL:COMMAND?
Response	<command>
Description	Sets the LCAS sequence command type.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<command> Select the LCAS sequence command type from the followings: <div style="display: flex; justify-content: space-between;"> <div>ADD</div> <div>ADD</div> </div> <div style="display: flex; justify-content: space-between;"> <div>REMOVE</div> <div>REMOVE</div> </div> <div style="display: flex; justify-content: space-between;"> <div>TMP_REMOVE</div> <div>Tmp.REMOVE</div> </div> <div style="display: flex; justify-content: space-between;"> <div>USER</div> <div>USER</div> </div>
Default	ADD

Section 6 Details of Device Messages

Command	:LCAS:GENerator:TABLE:ITEM:CONTRol:GAP <NR1>
Query	:LCAS:GENerator:TABLE:ITEM:CONTRol:GAP?
Response	<NR1>
Description	Sets the command interval up to the next LCAS sequence in multiframe unit.
Module	– MbE – GbE $\sqrt{2.5G/10G}$
Parameter	<NR1> Set the number of multiframes from 0 to 8000 (multiframe).
Default	0

Command	:LCAS:GENerator:TABLE:ITEM:CONTRol:SEND:TIME <NR1>
Query	:LCAS:GENerator:TABLE:ITEM:CONTRol:SEND:TIME?
Response	<NR1>
Description	Sets the number of the multiframes for transmitting setting data.
Module	– MbE – GbE $\sqrt{2.5G/10G}$
Parameter	<NR1> Set the number of multiframes from 1 to 8000 (multiframe).
Default	1

Command	:LCAS:GENerator:TABLE:ITEM:CONTrol:TARGet:CH <ch1>[,<ch2>,<ch3>]
Query	:LCAS:GENerator:TABLE:ITEM:CONTrol:TARGet:CH?
Response	<ch1>[,<ch2>,<ch3>]
Description	This command becomes unusable from version 4.02.
Command	:LCAS:GENerator:TABLE:ITEM:CONTrol:TARGet:CHS "<CH>",<CH>",...
Query	:LCAS:GENerator:TABLE:ITEM:CONTrol:TARGet:CHS?
Response	"<CH>",<CH>",...
Description	Selects multi CH positions where add LCAS sequence command.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<p>"<CH>",<CH>",...=<STRING>,<STRING>, ...</p> <p>The Target CH position a simultaneous plural it is selected.</p> <p>The CH hierarchy is delimited from a high-ranking hierarchy by the dot according to Tx Multiplexing as follows:</p> <p>"[ch1].[ch2].[ch3].[ch4]"</p> <p>When all CH that can be selected is selected, "All" is directed.</p> <p>The mode of expression of the CH hierarchy follows Appendix D “Basic Rules for Channel Expression in Virtual Concatenation.”</p> <p>There is neither doing the error end nor being normally partially set when CH that cannot be set to selected CH exists.</p> <p>CH that can be the selection it not selected enters the state of non-selection.</p>
Default	First CH within the range that can be set.
Command	:LCAS:GENerator:TABLE:ITEM:CONTrol:USER:RSack:ENABLE <BOOLEAN>
Query	:LCAS:GENerator:TABLE:ITEM:CONTrol:USER:RSack:ENABLE?
Response	<BOOLEAN>
Description	<p>Sets whether to invert RS-Ack values.</p> <p>All members are targets.</p>
Module	– MbE – GbE √ 2.5G/10G
Parameter	<p><BOOLEAN></p> <p>To invert RS-Ack values, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.</p>
Default	0 (disable)

Section 6 Details of Device Messages

Command	:LCAS:GENerator:TABLE:ITEM:CONTRol:USER:MST:ENABle <BOOLEAN>
Query	:LCAS:GENerator:TABLE:ITEM:CONTRol:USER:MST:ENABle?
Response	<BOOLEAN>
Description	Sets whether to change MST to the set value. All members are targets.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<BOOLEAN> To set MST to the set value, set {ON | 1} (ON or 1). Otherwise, set {OFF | 0} (OFF or 0). 1 or 0 is returned as the response data for the query.
Default	1 (enable)

Command	:LCAS:GENerator:TABLE:ITEM:CONTRol:USER:MST:DATA {OK | FAIL},{OK | FAIL},.....
Query	:LCAS:GENerator:TABLE:ITEM:CONTRol:USER:MST:DATA?
Response	{OK | FAIL},{OK | FAIL},.....
Description	Sets MST values.
Module	– MbE – GbE √ 2.5G/10G
Parameter	{OK | FAIL},{OK | FAIL},..... Set the MST value for the required numbers. The maximum number that can be set is the same as the maximum value of Provision.
Default	For the VCG Member set with Rx of Measurement CH, OK and Not Member are FAIL.

Command	:LCAS:GENerator:TABLE:ITEM:CONTRol:USER:MST:ALL:OK
Description	Sets all MST setting values to OK.
Module	– MbE – GbE √ 2.5G/10G

Command	:LCAS:GENerator:TABLE:ITEM:CONTRol:USER:MST:ALL:FAIL
Description	Sets all MST setting values to FAIL.
Module	– MbE – GbE √ 2.5G/10G

Query	:LCAS:MONitor:DATA? <NR1>														
Response	"<ch>",<setting_sq>,<gid>,<sq>,<ctrl>,<rs_ack>,<invert>														
Description	Queries LCAS monitor data of the specified number.														
Module	– MbE – GbE √ 2.5G/10G														
Parameter	<p><NR1></p> <p>Specify the query target number. Set a value from 1 to 84. Note that, however, the maximum value varies according to the Rx Bitrate, Multiplexing, and Route settings.</p> <p>"<ch>",<setting_sq>,<gid>,<sq>,<ctrl>,<rs_ack>,<invert></p> <p>Returns the channel number, setting SQ number, GID value, SQ value, CTRL value, RS-Ack value, and Invert value. Details of each response data are as shown below.</p> <p>"<ch>"</p> <p>Returns the character string of the channel set by Rx Multiplexing Setting. Delimited with dots from the upper layer as shown below: "[ch1].[ch2].[ch3].[ch4]"</p> <p><setting_sq></p> <p>Returns an SQ value set for Rx. (<NR1>) The maximum SQ value (255) is returned for a non-member channel or when LCAS Negotiation is ON.</p> <p><gid></p> <p>A GID value is returned in 4-digit hexadecimals (<HEX>)</p> <p><sq></p> <p>An SQ value is returned. (<NR1>) VC4-Xv (STS3c-Xv), VC3-Xv (STS1-Xv): 0 to 255 VC12-Xv (VT2-Xv), VC11-Xv (VT1.5-Xv): 0 to 63</p> <p><ctrl></p> <p>A CTRL value is returned. (<CHARA>)</p> <table> <tr><td>FIXED</td><td>FIXED</td></tr> <tr><td>ADD</td><td>ADD</td></tr> <tr><td>NORM</td><td>NORM</td></tr> <tr><td>EOS</td><td>EOS</td></tr> <tr><td>IDLE</td><td>IDLE</td></tr> <tr><td>DNU</td><td>DNU</td></tr> <tr><td>NONE</td><td>Other than above</td></tr> </table>	FIXED	FIXED	ADD	ADD	NORM	NORM	EOS	EOS	IDLE	IDLE	DNU	DNU	NONE	Other than above
FIXED	FIXED														
ADD	ADD														
NORM	NORM														
EOS	EOS														
IDLE	IDLE														
DNU	DNU														
NONE	Other than above														

Section 6 Details of Device Messages

<rs_ack>

An RS-Ack value is returned. (<BOOLEAN>)

0

1

<invert>

An Invert value is returned. (<BOOLEAN>)

0 LED goes off.

1 LED lights up.

Query	:LCAS:MONitor:ADATa?														
Response	{"<ch>",<setting_sq>,<gid>,<sq>,<ctrl>,<rs_ack>,<invert>}.....														
Description	<p>Queries all LCAS monitor data.</p> <p>The number of data varies according to the Rx Bitrate, Multiplexing, and Route settings.</p>														
Module	– MbE – GbE √ 2.5G/10G														
Parameter	<p>{"<ch>",<setting_sq>,<gid>,<sq>,<ctrl>,<rs_ack>,<invert>}.....</p> <p>Returns the channel number, setting SQ number, GID value, SQ value, CTRL value, RS-Ack value, and Invert value.</p> <p>Details of each response data are as shown below.</p> <p>"<ch>"</p> <p>Returns the character string of the channel set by Rx Multiplexing Setting. Delimited with dots from the upper layer as shown below: "[ch1].[ch2].[ch3].[ch4]"</p> <p><setting_sq></p> <p>Returns an SQ value set for Rx. (<NR1>)</p> <p>The maximum SQ value (255) is returned for a non-member channel or when LCAS Negotiation is ON.</p> <p><gid></p> <p>A GID value is returned in 4-digit hexadecimal (<HEX>)</p> <p><sq></p> <p>An SQ value is returned. (<NR1>)</p> <p>VC4-Xv (STS3c-Xv), VC3-Xv (STS1-Xv): 0 to 255 VC12-Xv (VT2-Xv), VC11-Xv (VT1.5-Xv): 0 to 63</p> <p><ctrl></p> <p>A CTRL value is returned. (<CHARA>)</p> <table> <tr><td>FIXED</td><td>FIXED</td></tr> <tr><td>ADD</td><td>ADD</td></tr> <tr><td>NORM</td><td>NORM</td></tr> <tr><td>EOS</td><td>EOS</td></tr> <tr><td>IDLE</td><td>IDLE</td></tr> <tr><td>DNU</td><td>DNU</td></tr> <tr><td>NONE</td><td>Other than above</td></tr> </table> <p><rs_ack></p> <p>An RS-Ack value is returned (<BOOLEAN>)</p> <p>0 1</p> <p><invert></p> <p>An Invert value is returned. (<BOOLEAN>)</p>	FIXED	FIXED	ADD	ADD	NORM	NORM	EOS	EOS	IDLE	IDLE	DNU	DNU	NONE	Other than above
FIXED	FIXED														
ADD	ADD														
NORM	NORM														
EOS	EOS														
IDLE	IDLE														
DNU	DNU														
NONE	Other than above														

Section 6 Details of Device Messages

0	LED goes off.
1	LED lights up.

Command	:LCAS:MONitor:MST:CH <ch1>[,<ch2>,<ch3>,<ch4>]
Query	:LCAS:MONitor:MST:CH?
Response	<ch1>[,<ch2>,<ch3>,<ch4>]
Description	Sets measurement Member CH of MST monitor.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<ch1>[,<ch2>,<ch3>,<ch4>] Sets measurement Member CH of MST monitor. The mode of expression of the CH hierarchy follows Appendix D "Basic Rules for Channel Expression in Virtual Concatenation."
Default	First CH within the range that can be set.

Query	:LCAS:MONitor:MST? <NR1>
Response	<mst>
Description	Queries the MST monitor data of CH which select by monitor.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<NR1> Specify the number of the member to be queried. The setting range varies according to the Tx Multiplexing settings as follows: VC4-Xv (STS3c-Xv), VC3-Xv (STS1-Xv): 0 to 255 VC12-Xv (VT2-Xv), VC11-Xv (VT1.5-Xv): 0 to 63 <mst> One of the following MST monitor data is returned: (<CHARA>) OK: OK FAIL: FAIL NONE: Other than above

Section 6 Details of Device Messages

Query	:LCAS:MONitor:AMST?
Response	{<number>,<mst>},...
Description	Queries all MST monitor data of CH which select by monitor.
Module	– MbE – GbE √ 2.5G/10G
Parameter	{<number>,<mst>},... Returns all MST monitor data of CH which select by monitor. <number> Returns a member number. (<NR1>) VC4-Xv (STS3c-Xv), VC3-Xv (STS1-Xv): 0 to 255 VC12-Xv (VT2-Xv), VC11-Xv (VT1.5-Xv): 0 to 63 <mst> One of the following MST monitor data is returned: (<CHARA>) OK OK FAIL FAIL NONE Other than above

Command	:LCAS:CAPTure:STARt
Description	Starts LCAS capture.
Module	– MbE – GbE √ 2.5G/10G

Command	:LCAS:CAPTure:STOP
Description	Stops LCAS capture.
Module	– MbE – GbE √ 2.5G/10G

Query	:LCAS:CAPTure:STATe?
Response	{0 | 1 | 2 | 3}
Description	Queries the operation status of capture.
Module	– MbE – GbE √ 2.5G/10G
Parameter	{0 | 1 | 2 | 3}
	<p>The code number is returned as the processing status. Meanings of the numbers are shown below:</p> <p>0: Capture is stopped.</p> <p>1: Waiting a trigger.</p> <p>2: Capturing.</p> <p>3: Starting/halting capture</p>

Command	:LCAS:CAPTure:CH <ch1>[,<ch2>,<ch3>,<ch4>]
Query	:LCAS:CAPTure:CH?
Response	<ch1>[,<ch2>,<ch3>,<ch4>]
Description	Sets a channel to capture.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<ch1>[,<ch2>,<ch3>,<ch4>]
	<p>Specify a channel to capture.</p> <p>The channel to be set differs according to the Rx Multiplexing setting as follows.</p> <p><ch1> Specify a channel of AUG/STS3c (*).</p> <p><ch2> Specify a channel of AU3/STS1 (1 to 3) or TUG3 (1 to 3).</p> <p><ch3> Specify a channel of TUG2/VTG (1 to 7).</p> <p><ch4> Specify a channel of TU12/VT2 (1 to 3) or TU11/VT1.5 (1 to 4).</p> <p>* Varies according to the bit rate.</p> <p>1 to 16 at 2488 Mbps</p> <p>1 to 4 at 622 Mbps</p> <p>1 at 156 Mbps</p>

Section 6 Details of Device Messages

Command	:LCAS:CAPTure:TRIGger:TARGet <type>
Query	:LCAS:CAPTure:TRIGger:TARGet?
Response	<type>
Description	Sets whether to set trigger target to received signal change or to set to external output (External Trigger).
Module	– MbE – GbE √ 2.5G/10G
Parameter	<type> Select a trigger item from the followings: CHANGE Change EXTERNAL External Trigger
Default	CHANGE

Command	:LCAS:CAPTure:TRIGger:CHANge <type>
Query	:LCAS:CAPTure:TRIGger:CHANge?
Response	<type>
Description	Select triggers type when received signal changes are set to trigger.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<type> Select a trigger item from the followings: SQ SQ change CTRL CTRL change MST MST change RS_ACK RS-Ack Invert
Default	CTRL

Command	:LCAS:CAPTure:TRIGger:CH <ch1>[,<ch2>,<ch3>,<ch4>]
Query	:LCAS:CAPTure:TRIGger:CH?
Response	<ch1>[,<ch2>,<ch3>,<ch4>]<type>
Description	Sets the channel number to be set to trigger.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<ch1>[,<ch2>,<ch3>,<ch4>] Specify the channel to be set to trigger. The channel to be set differs according to the Rx Multiplexing setting as follows. <ch1> Specify a channel of AUG/STS3c (*). <ch2> Specify a channel of AU3/STS1 (1 to 3) or TUG3 (1 to 3). <ch3> Specify a channel of TUG2/VTG (1 to 7). <ch4> Specify a channel of TU12/VT2 (1 to 3) or TU11/VT1.5 (1 to 4). * Varies according to the bit rate. 1 to 16 at 2488 Mbps 1 to 4 at 622 Mbps 1 at 156 Mbps

Command	:LCAS:CAPTure:TRIGger:POSition <NR1>
Query	:LCAS:CAPTure:TRIGger:POSition?
Response	<NR1>
Description	Sets the trigger position in capture data.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<NR1> Specify a trigger position using numbers of the captured sequence data (from 1 to 64). This is a value of a serial number given to each sequence data captured with LCAS Capture.
Default	1

Section 6 Details of Device Messages

Query	:LCAS:CAPTure:DATA:TRIGger?
Response	<NR1>
Description	Queries the trigger position of captured sequence data.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<NR1> This is the trigger position (from 1 to 64) in captured data. 0 is returned when there is not a trigger sequence.

Query	:LCAS:CAPTure:DATA:NSEquence?
Response	<NR1>
Description	Queries the number of captured sequence data.
Module	– MbE – GbE √ 2.5G/10G
Parameter	<NR1> Returns the number of the captured data (from 0 to 64).

Query	:LCAS:CAPTure:DATA? <number>																				
Response	<multiframe>,<sq>,<ctrl>,<rs_ack>,{<mst>,...}																				
Description	Queries the captured sequence data.																				
Module	– MbE – GbE √ 2.5G/10G																				
Parameter	<p><number></p> <p>Specify the capture result number. This is a value of a serial number given to each sequence data captured with LCAS Capture, an integer value from 1 to 64.</p> <p><multiframe>,<sq>,<ctrl>,<rs_ack>,{<mst>,...}</p> <p>This is LCAS capture sequence data.</p> <p><multiframe></p> <p>The number of multi-frames is returned using a value from 1 to 8000. (<NR1>)</p> <p><sq></p> <p>An SQ number is returned within the following range. (<NR1>)</p> <p>VC4-Xv (STS3c-Xv), VC3-Xv (STS1-Xv): 0 to 255</p> <p>VC12-Xv (VT2-Xv), VC11-Xv (VT1.5-Xv): 0 to 63</p> <p><ctrl></p> <p>A CTRL value is returned.</p> <table> <tr><td>FIXED</td><td>FIXED</td></tr> <tr><td>ADD</td><td>ADD</td></tr> <tr><td>NORM</td><td>NORM</td></tr> <tr><td>EOS</td><td>EOS</td></tr> <tr><td>IDLE</td><td>IDLE</td></tr> <tr><td>DNU</td><td>DNU</td></tr> <tr><td>NONE</td><td>Other than above</td></tr> </table> <p><rs_ack></p> <p>An RS-Ack value is returned. (<BOOLEAN>)</p> <p>0</p> <p>1</p> <p>{<mst>,...}</p> <p>MST0 data is returned (maximum: 64).</p> <p>The number becomes it as well as the maximum value of Provisioned Size.</p> <table> <tr><td>OK</td><td>OK</td></tr> <tr><td>FAIL</td><td>Fail</td></tr> <tr><td>NONE</td><td>Other than above</td></tr> </table>	FIXED	FIXED	ADD	ADD	NORM	NORM	EOS	EOS	IDLE	IDLE	DNU	DNU	NONE	Other than above	OK	OK	FAIL	Fail	NONE	Other than above
FIXED	FIXED																				
ADD	ADD																				
NORM	NORM																				
EOS	EOS																				
IDLE	IDLE																				
DNU	DNU																				
NONE	Other than above																				
OK	OK																				
FAIL	Fail																				
NONE	Other than above																				

Impairment function Command (IMPairment)

The commands related to the Impairment function are explained below.

Command	:IMPairment:DElay:DISTriBution {<uniform> | <normal> | <exponential> | <user_defined>}
Query	:IMPairment:DElay:DISTriBution?
Response	{<uniform> | <normal> | <exponential> | <user_defined>}
Description	<p>Sets Delay block delay distribution parameters.</p> <p>* This setting is enabled when VARIATION is specified by the :IMPairment:DElay:MODE command.</p>
Module	– MbE √ GbE – 2.5G/10G
Parameter	<p>{<uniform> | <normal> | <exponential> | <user_defined>}</p> <p><uniform> At uniform distribution. Specified as following format: UNIFORM,<min>,<max></p> <p><normal> At exponential distribution Specified as following format: NORMAL,<min>,<max>,<average>,<dev></p> <p><exponential> At exponential distribution Specified as following format: EXPONENTIAL,<min>,<max>,<lambda></p> <p><user_defined> At user-defined distribution Specified as following format: USER_DEFINED,<min>,<max>,<density>[,<density>]...</p> <p><min>,<max>,<average> Specifies minimum, maximum and average delay values (<NR2>). The actual setting range varies with the link speed. Setting specifies the value for 1000M. 1000 M 0.01 to 512.00 ms (step 0.01 ms) 100 M 0.1 to 5120.0 ms (step 0.1 ms) 10 M 0 to 51200 ms (step 1 ms)</p> <p><lambda> Specifies lambda value (0.01 to 2.00) (<NR2>).</p>

<dev>

Specifies standard deviation (1.00 to 100.00) (<NR2>).

<density>

Specifies generation density (0 to 1000) for each section at user defined distribution (<NR1>).

Specify as 1 to 100; All 0s cannot be set.

Default

UNIFORM,0.01,0.01

Section 6 Details of Device Messages

Command	:IMPairment:DElay:FIXed <NR2>
Query	:IMPairment:DElay:FIXed?
Response	<NR2>
Description	Sets Delay block fixed delay amount * This setting is enabled when FIXED is specified by the :IMPairment:DElay:MODE. * This command can be changed even in the IMPAIRMENT mode.
Module	– MbE √ GbE – 2.5G/10G
Parameter	<NR2> The delay is set as <NR2> format. The setting range depends on the value set by the :IMPairment:DElay:RANGe. RANGE_500 MS 0.01 to 512.00 ms (step 0.01 ms) RANGE_5 S 0.1 to 5120.0 ms (step 0.1 ms) RANGE_50 S 1 to 51200 ms (step 1.0 ms) * If the setting goes out-of-range when the Range setting is changed, the value is rounded down to the maximum value for the range.
Default	0.01

Command	:IMPairment:DElay:MODE {FIXED | VARIATION}
Query	:IMPairment:DElay:MODE?
Response	{FIXED | VARIATION}
Description	Sets Delay block operation mode (Fixed Delay/Delay Variation)
Module	– MbE √ GbE – 2.5G/10G
Parameter	{FIXED | VARIATION} FIXED can be specified at Fixed Delay, and VARIATION can be specified at Delay Variation.
Default	FIXED

Command	:IMPairment:DElay:RANGe {RANGE_500MS | RANGE_5S | RANGE_50S}
Query	:IMPairment:DElay:RANGe?
Response	{RANGE_500MS | RANGE_5S | RANGE_50S}
Description	Switches fixed delay range for Delay block. * This setting is enabled when FIXED is specified by the :IMPairment:DElay:MODE.
Module	– MbE √ GbE – 2.5G/10G
Parameter	{RANGE_500MS | RANGE_5S | RANGE_50S} Select any of the following: RANGE_500MS 500 ms (0.01 to 512.00 ms) RANGE_5S 5 s (0.1 to 5120.0 ms) RANGE_50S 50 s (1 to 51200 ms) * When changing the setting causes the fixed delay specified by :IMPairment:DElay:FIXed to go out of range, the value is rounded to the maximum value for the range.
Default	RANGE_500MS

Command	:IMPairment:ENABle <BOOLEAN>
Query	:IMPairment:ENABle?
Response	<BOOLEAN>
Description	Starts/stops IMPAIRMENT function. When this command is ON, operation of the enabled function block starts. Each block is enabled or disabled by the :IMPairment:ENABle:{FILTer | LOSS | OVERwrite | DELay | LERRor} setting. When the generation timing is Single, the operation start is performed by :IMPairment:ENABle:SINGLE. * This can only be used when using the IMPAIRMENTmode.
Module	– MbE √ GbE – 2.5G/10G
Default	0 (Off)

Section 6 Details of Device Messages

Command	:IMPairment:ENABle:DELay <BOOLEAN>
Query	:IMPairment:ENABle:DELay?
Response	<BOOLEAN>
Description	Enables/disables delay block * This can only be used when using the IMPAIRMENTmode.
Module	– MbE √ GbE – 2.5G/10G
Default	0 (Off)

Command	:IMPairment:ENABle:FILTer <BOOLEAN>
Query	:IMPairment:ENABle:FILTer?
Response	<BOOLEAN>
Description	Enables/disables filter block * This can only be used when using the IMPAIRMENTmode.
Module	– MbE √ GbE – 2.5G/10G
Default	0 (Off)

Command	:IMPairment:ENABle:LERRor <BOOLEAN>
Query	:IMPairment:ENABle:LERRor?
Response	<BOOLEAN>
Description	Enables/disables line error block * This can only be used when using the IMPAIRMENTmode.
Module	– MbE √ GbE – 2.5G/10G
Default	0 (Off)

Command	:IMPairment:ENABle:LOSS <BOOLEAN>
Query	:IMPairment:ENABle:LOSS?
Response	<BOOLEAN>
Description	Enables/disables frame loss block * This can only be used when using the IMPAIRMENTmode.
Module	– MbE √ GbE – 2.5G/10G
Default	0 (Off)

Command	:IMPairment:ENABle:OVERwrite <BOOLEAN>
Query	:IMPairment:ENABle:OVERwrite?
Response	<BOOLEAN>
Description	Enables/disables overwrite/error block * This can only be used when using the IMPAIRMENTmode.
Module	– MbE √ GbE – 2.5G/10G
Default	0 (Off)

Command	:IMPairment:ENABle:SINGle
Description	Starts Single generation operation. Single generation is enabled for any of the following: 1. When :IMPairment:ENABle:LOSS is 1 and :IMPairment:LOSS:TIMing is SINGLE 2. When :IMPairment:ENABle:OVERwrite is 1 and :IMPairment:OVERwrite:TIMing is SINGLE 3. When :IMPairment:ENABle:LERRor is 1 * This can only be used when using the IMPAIRMENTmode.
Module	– MbE √ GbE – 2.5G/10G

Section 6 Details of Device Messages

Command	:IMPairment:FILTer:CONDition <patt1>,<patt2>,<patt3>,<patt4>,<error>,<testframe>,{DISCARD MIX}
Query	:IMPairment:FILTer:CONDition?
Response	<patt1>,<patt2>,<patt3>,<patt4>,<error>,<testframe>,{DISCARD MIX}
Description	Sets Filter block. Sets whether or not to discard frames not matching filter conditions when setting Don't care/Not match/Match for each Filter block.
Module	– MbE √ GbE – 2.5G/10G
Parameter	<patt1>,<patt2>,<patt3>,<patt4>,<error>,<testframe>,{DISCARD MIX} <patt1>,<patt2>,<patt3>,<patt4> Specifies whether or not to match filter for patterns 1 to 4. Select any of the following: DONT_CARE Don't care NOT_MATCH Not match MATCH Match <error> Specifies whether or not to match filter for error type. Select any of the following: DONT_CARE Don't care NOT_MATCH Not match MATCH Match <testframe> Specifies whether or not to match filter for testframe. Select any of the following: DONT_CARE Don't care NOT_MATCH Not match MATCH Match {DISCARD MIX} Selects processing for frame not matching filter conditions. DISCARD Discard frame MIX Include in send frames without discarding
Default	DONT_CARE,DONT_CARE,DONT_CARE,DONT_CARE,DONT_CARE,DONT_CAR E,DISCARD

Command	:IMPairment:LERRor:TYPE {CODE | RD | BOTH}
Query	:IMPairment:LERRor:TYPE?
Response	{CODE | RD | BOTH}
Description	Sets type of Line Error inserted into Line Error block.
Module	– MbE √ GbE – 2.5G/10G
Parameter	<div>{CODE | RD | BOTH}</div> <div>Select any of the following:</div> <div>CODE 8B/10B Code Error</div> <div>RD RD Error</div> <div>BOTH 8B/10B Code & RD Error</div> <div>* Only CODE can be selected for RJ-45 ports.</div>
Default	CODE

Section 6 Details of Device Messages

Command	:IMPairment:LOSS:TIMing {ALL SINGLE,<burst> PERIODIC,<period>,<burst> RATE,<rate> POLICING,<policing rate>}										
Query	:IMPairment:LOSS:TIMing?										
Response	{ALL SINGLE,<burst> PERIODIC,<period>,<burst> RATE,<rate> POLICING,<policing rate>}										
Description	Sets frame loss generation timing for Frame Loss block.										
Module	– MbE √ GbE – 2.5G/10G										
Parameter	<p>{ALL SINGLE,<burst> PERIODIC,<period>,<burst> RATE,<rate> POLICING,<policing rate>}</p> <p>First, select any of the following frame loss generation types:</p> <table><tr><td>ALL</td><td>All</td></tr><tr><td>SINGLE</td><td>Single Burst</td></tr><tr><td>PERIODIC</td><td>Periodic Burst</td></tr><tr><td>RATE</td><td>Rate</td></tr><tr><td>POLICING</td><td>Policing Rate</td></tr></table> <p>*At RATE, the value can be changed while the IMPAIRMENT mode is operating.</p> <p>Next, set the following parameters for the frame loss generation type.</p> <p><period> Specifies frame loss generation period as frame count (1 to 1,000,000 frames).</p> <p><burst> Specifies continuous frame loss count per loss event (1 to 1,000,000 frames) (<NR1>). * The value specified for <burst> must be smaller than <period>.</p> <p><rate> Specifies frame loss generation rate (0.0000% to 100.0000%) (<NR2>).</p> <p><policing rate> Specifies policing rate (0 to 1,000,000 kbps) (<NR1>).</p>	ALL	All	SINGLE	Single Burst	PERIODIC	Periodic Burst	RATE	Rate	POLICING	Policing Rate
ALL	All										
SINGLE	Single Burst										
PERIODIC	Periodic Burst										
RATE	Rate										
POLICING	Policing Rate										
Default	RATE,0.0000										

Command	:IMPairment:OVERwrite:ETYPe {FCS IP_CHECKSUM TCP_CHECKSUM UDP_CHECKSUM}								
Query	:IMPairment:OVERwrite:ETYPe?								
Response	{FCS IP_CHECKSUM TCP_CHECKSUM UDP_CHECKSUM}								
Description	Sets type of errors inserted at Overwrite/Error. * This setting is enabled when ERROR is selected by the :IMPairment:OVERwrite:MODE command.								
Module	– MbE √ GbE – 2.5G/10G								
Parameter	{FCS IP_CHECKSUM TCP_CHECKSUM UDP_CHECKSUM} Select any of the following error types: <table> <tr> <td>FCS</td><td>FCS Error</td></tr> <tr> <td>IP_CHECKSUM</td><td>IPv4 Header Checksum Error</td></tr> <tr> <td>TCP_CHECKSUM</td><td>TCP Checksum Error</td></tr> <tr> <td>UDP_CHECKSUM</td><td>UDP Checksum Error</td></tr> </table>	FCS	FCS Error	IP_CHECKSUM	IPv4 Header Checksum Error	TCP_CHECKSUM	TCP Checksum Error	UDP_CHECKSUM	UDP Checksum Error
FCS	FCS Error								
IP_CHECKSUM	IPv4 Header Checksum Error								
TCP_CHECKSUM	TCP Checksum Error								
UDP_CHECKSUM	UDP Checksum Error								
Default	FCS								

Command	:IMPairment:OVERwrite:FIELD {CLEAR | <user defined condition>[,<user defined condition>]...}
Query	:IMPairment:OVERwrite:FIELD?
Response	{NONE | <user defined condition>[,<user defined condition>]...}
Description	Sets overwrite operation for Overwrite/Error block (specifies overwrite field). * This setting is enabled when OVERWRITE is selected with the :IMPairment:OVERwrite:MODE command.
Module	– MbE √ GbE – 2.5G/10G
Parameter	{CLEAR | <user defined condition>[,<user defined condition>]...} CLEAR Specified when clearing set <user defined condition>. * The clearing response is NONE. <user defined condition> Sets overwrite field conditions as following format: "<field name>",<base position>,<offset>,<length>,<format>,<overwrite_pattern> * A maximum of four conditions can be specified as <user_defined condition>. For details, see the :COUNter:FLOW:FIELD in the "Restrictions on filing conditions for MU120131A/32A".

<field name>	Sets name of overwrite field as maximum of 24 characters.
<base position>	Sets Base Position of overwrite field. For details, see Appendix G Base Position.
<offset>,<length>	Sets Offset and Length of overwrite field from Base Position. * Offset can be set from 0 to 524.280 bits (65,535 bytes) and Length can be set from 1 to 64 bits. For details, see :COUNter:FLOW:FIELD in the "Restrictions on filing conditions for MU120131A/32A".
<format>	Set any of the following as the overwrite value screen display format: DEC Decimal expression HEX Hexadecimal expression IPV4 IPv4 address expression IPV6 IPv6 address expression
<overwrite_pattern>	Sets overwrite values. Sets range specified by <length>. Any of <NR1>, BINARY>, <HEX> can be used as the set. format. The response format is <NR1>.

Default	NONE
---------	------

Command	:IMPairment:OVERwrite:MODE {OVERWRITE | ERROR}
Query	:IMPairment:OVERwrite:MODE?
Response	{OVERWRITE | ERROR}
Description	Sets operation mode (Overwrite/Error Insertion) for Overwrite/Error block.
Module	– MbE √ GbE – 2.5G/10G
Parameter	{OVERWRITE | ERROR} Specify OVERWRITE for overwrite, and ERROR for error insertion.
Default	OVERWRITE

Command	:IMPairment:OVERwrite:TIMing {ALL SINGLE,<burst> PERIODIC,<period>,<burst> RATE,<rate>}								
Query	:IMPairment:OVERwrite:TIMing?								
Response	{ALL SINGLE,<burst> PERIODIC,<period>,<burst> RATE,<rate>}								
Description	Sets timing for overwrite and error insertion for Overwrite/error block								
Module	– MbE √ GbE – 2.5G/10G								
Parameter	{ALL SINGLE,<burst> PERIODIC,<period>,<burst> RATE,<rate>} Select any of the following error timings: <table> <tr> <td>ALL</td><td>All</td></tr> <tr> <td>SINGLE</td><td>Single Burst</td></tr> <tr> <td>PERIODIC</td><td>Periodic Burst</td></tr> <tr> <td>RATE</td><td>Rate</td></tr> </table> <p>* At RATE, the value can be changed while the IMPAIRMENT mode is operating.</p> <p><period> Specifies error insertion period as frame count (1 to 1,000,000 frames) (<NR1>)</p> <p><burst> Specifies continuous error frame count per loss event (1 to 1,000,000 frames) (<NR1>). * The value specified for <burst> must be smaller than <period>.</p> <p><rate> Specifies error generation rate (0.0000% to 100.0000%) (<NR2>).</p>	ALL	All	SINGLE	Single Burst	PERIODIC	Periodic Burst	RATE	Rate
ALL	All								
SINGLE	Single Burst								
PERIODIC	Periodic Burst								
RATE	Rate								
Default	RATE,0.0000								

6.3 Error Messages

SCPI prescribes error response codes and messages as a response to the SCPI command “:SYSTem:ERRor?”. This section describes details on error messages supported by IP/EoS mode unique commands.

Codes corresponding to error range from -32768 to 32767 in integer value. The value of 0 indicates that there is no error or event occurred. A negative number indicates that a standard error that is reserved by SCPI has occurred. A positive number indicates that an error that is defined by MP1590B.

Section 7 Status Report

This section explains the configuration of the status register and bit definitions for MD1230B-unique status register.

The MD1230B status register configuration employs some SCPI standards.

- 7.1 MD1230B Status Register Configuration 7-2
- 7.2 IEEE488.2 Standard Status Registers 7-4
- 7.3 MD1230B-unique Status Registers..... 7-6
 - 7.3.1 QUEStionable Status Hierarchy..... 7-9
 - 7.3.2 OPERation Status Hierarchy 7-17
- 7.4 Reading, Writing, and Clearing Status Registers..... 7-22

7.1 MD1230B Status Register Configuration

MD1230B has the following status registers.

IEEE488.2 standard status registers.	Standard event status register Status byte register
MD1230B-unique status registers	QUEStionable status register TELEcom status register UNIT1 to 8 status registers MODUle1 to 5 status registers PORT1 to 8 status registers ERRor1 status register ERRor2 status register ALARm status register
	OPERation status register MEASure status register UNIT1 to 8 status registers MODUle1 to 5 status registers PORT1 to 8 status registers

Note:
Above notation “UNIT1 to 8” represents UNIT1, UNIT2, UNIT3, UNIT8.

Figure 7.1-1 shows the basic outline of the MD1230B status register configuration. (The bit positions and width are given later.)

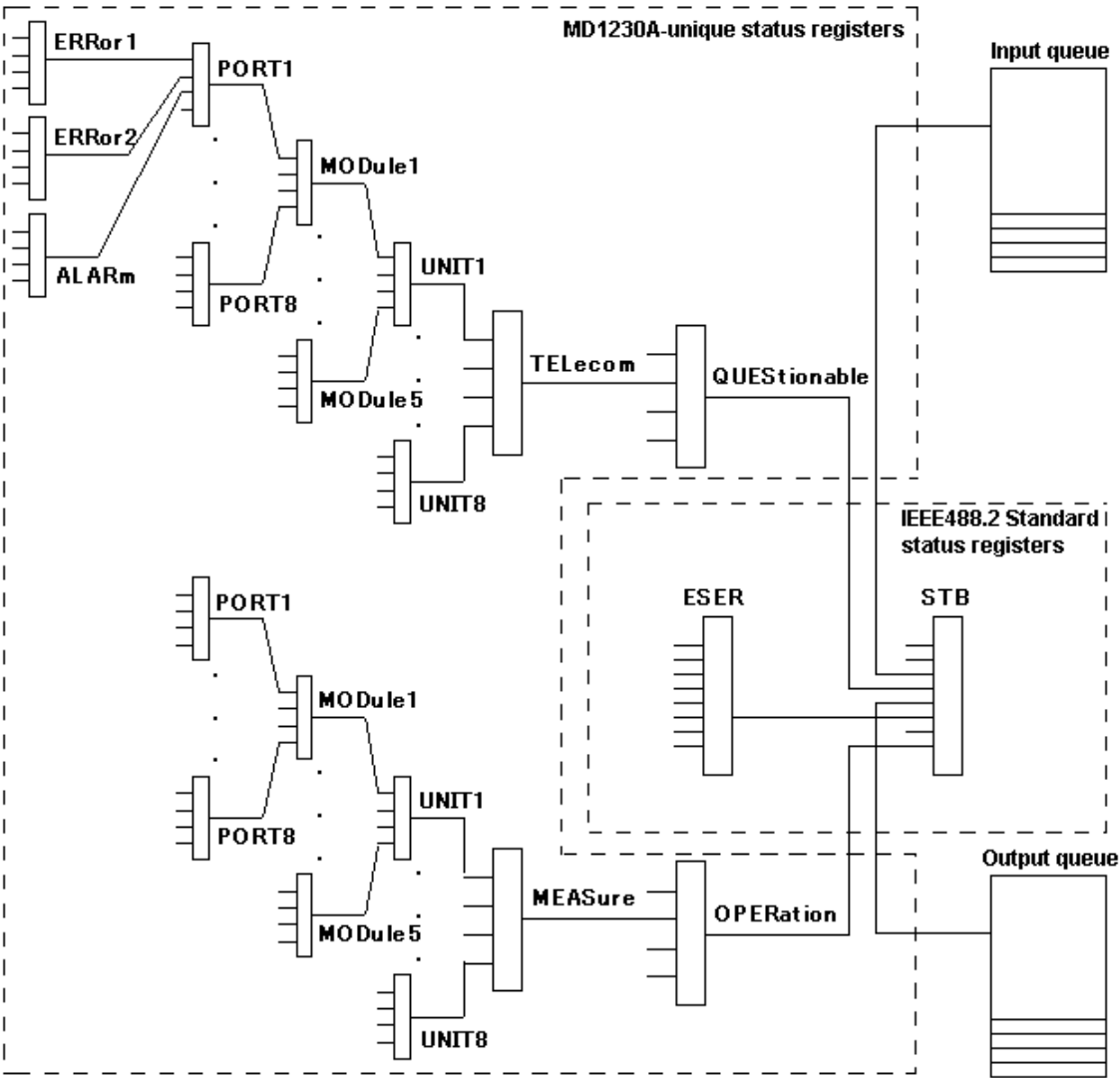


Figure 7.1-1 Status register configuration

- For IEEE488.2 Standard status registers, refer to Section 7.2 “IEEE488.2 Standard Status Registers.”
- For MD1230B-unique status registers, refer to Section 7.3 “MD1230B-Unique Status Registers.”

7.2 IEEE488.2 Standard Status Registers

IEEE488.2 standard defines the two status registers below.

Status register	Register that allows setting of RQS and seven summary message bits. This register is used in combination with the service request enable register. When the logical-OR operation result of the two registers is other than 0, SRQ goes On. RQS is reserved by the system at Bit 6 to notify the external controller that a service request exists.
Standard event status register	This register sets eight standard events encountered by the device. The logical-OR operation output bits are summarized as an ESB (Event Status Bit) summary message at status byte register Bit 5.

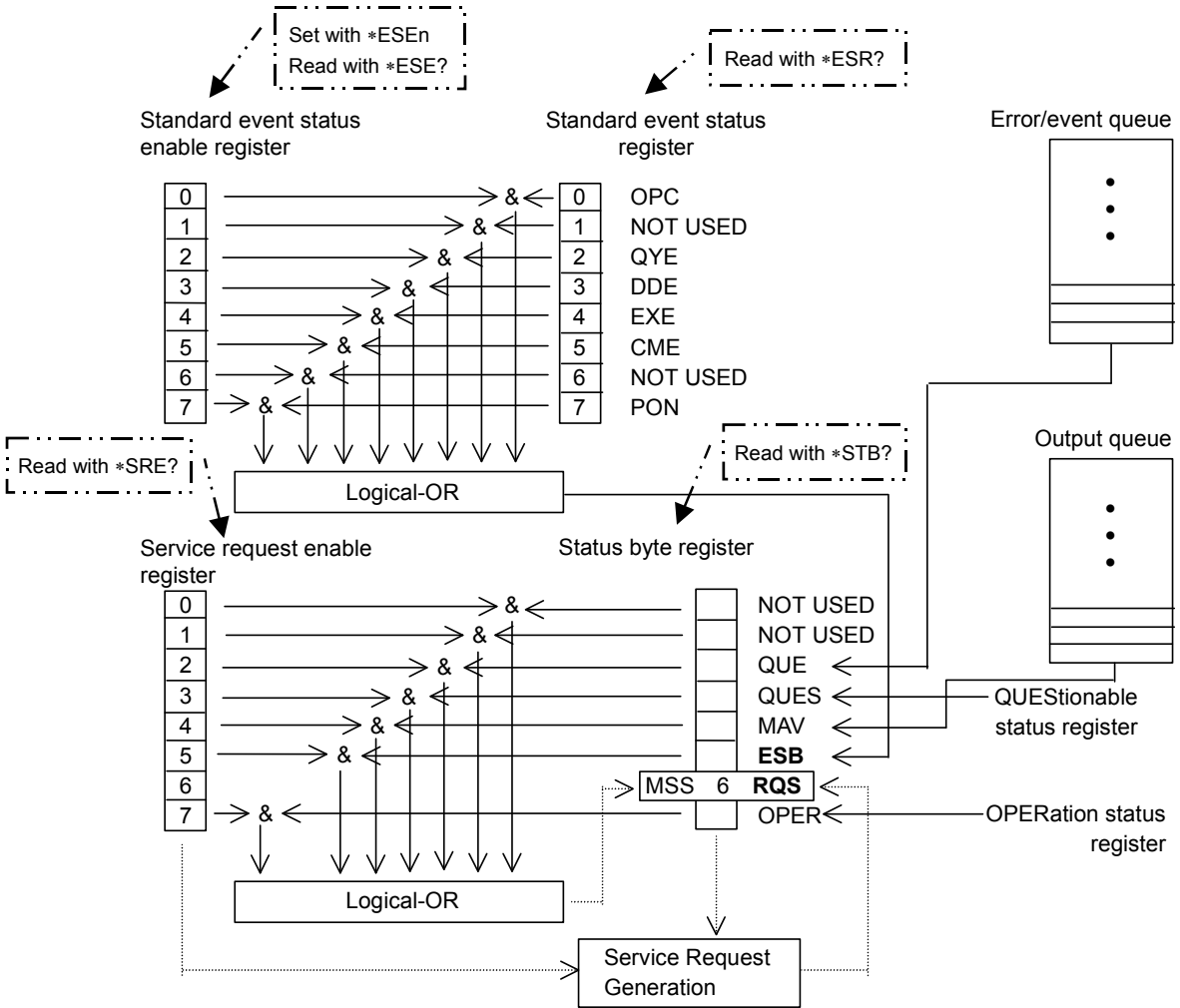


Figure 7.2-1 IEEE488.2 Standard register bit definitions

The bit definitions for the status byte registers and the standard event status byte registers described on the previous page are given below.

Status byte register bit definitions		
DB2	QUE (Error/Event QUEue)	Indicates that the error/event queues are not empty.
DB3	QUES (QUESTionable status register summary)	QUESTionable status register summary
DB4	MAV (Message Available)	Indicates that the output queue is not empty.
DB5	ESB (Event Summary Bit)	Standard event status register summary
DB6	RQS (ReQuest Service) MSS (Master Summary Status)	RQS message Indicates that the device has at least one cause to issue a service request.
DB7	OPER (OPERation status register summary)	OPERation status register summary

Standard event status register bit definitions		
DB0	OPC (Operation Complete)	Indicates that all the specified operations are completed.
DB3	DDE (Device-dependent Error)	Indicates that an error other than command or execution errors has occurred.
DB4	EXE (Execution Error)	Indicates that an execution error has occurred.
DB5	CME (Command Error)	Indicates that a command error has occurred.
DB7	PON (Power on)	Indicates that power has changed from Off to On.

7.3 MD1230B-unique Status Registers

The MD1230B-unique status registers are configured as shown in Figure 7.3-1. They can be classified to QUEStionable and OPERation hierarchies. These status register hierarchy details will be described later.

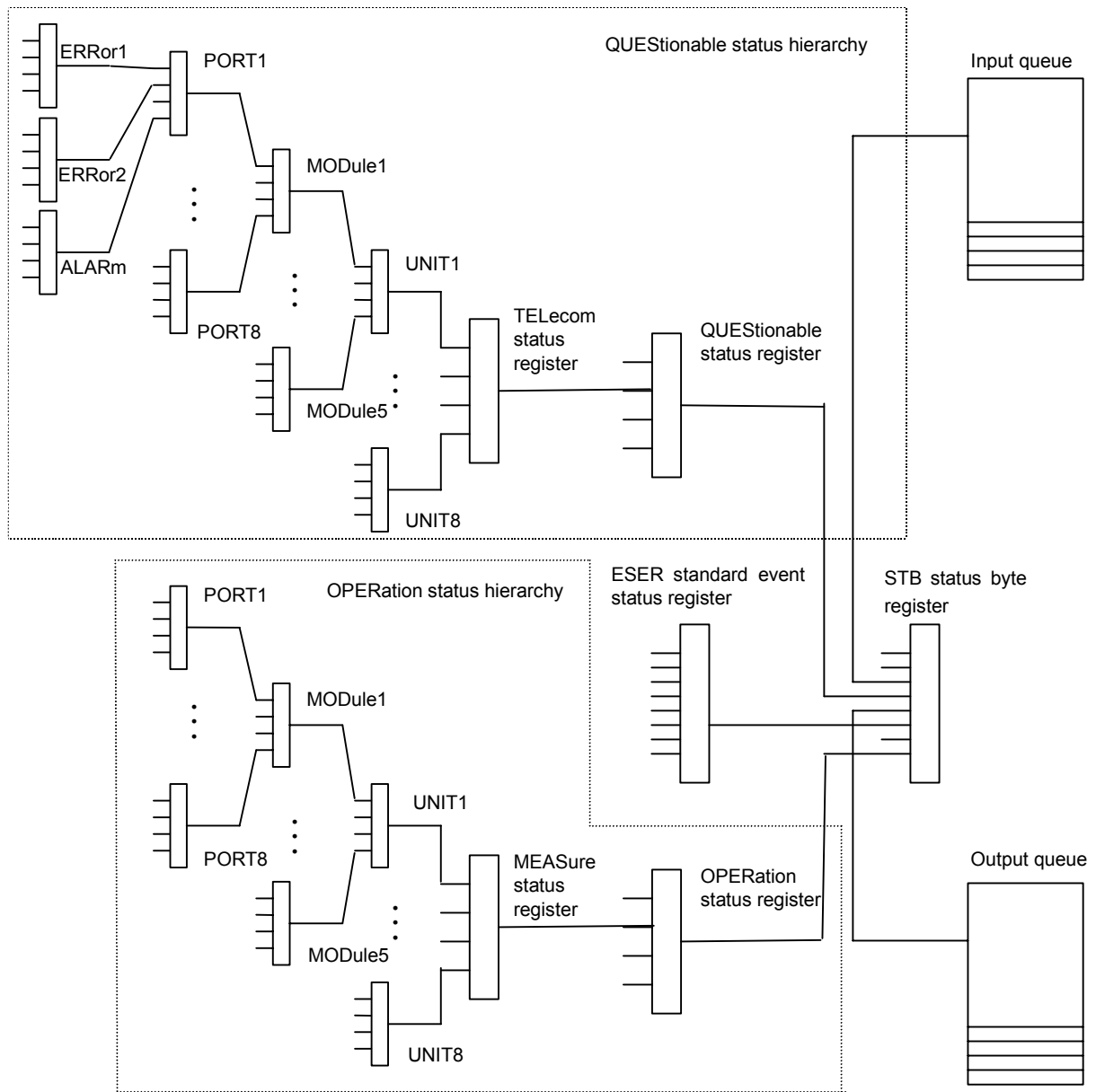



Figure 7.3-1 MD1230B-unique status register configuration

Note:

Figure 7.3-1 does not show all registers (some are omitted).

The status register hierarchies are described below.

QUEStionable status register hierarchy	Used to know that an error or alarm has occurred.
OPERation status register hierarchy	Used to know that the measurement status has changed.

 For the QUEStionable status register hierarchy, refer to Section 7.3.1 “QUEStionable Status Hierarchy.”


 For the OPERation status register hierarchy, refer to Section 7.3.2 “OPERation Status Hierarchy.”

Figure 7.3-2 shows the MD1230B-unique status register configuration.

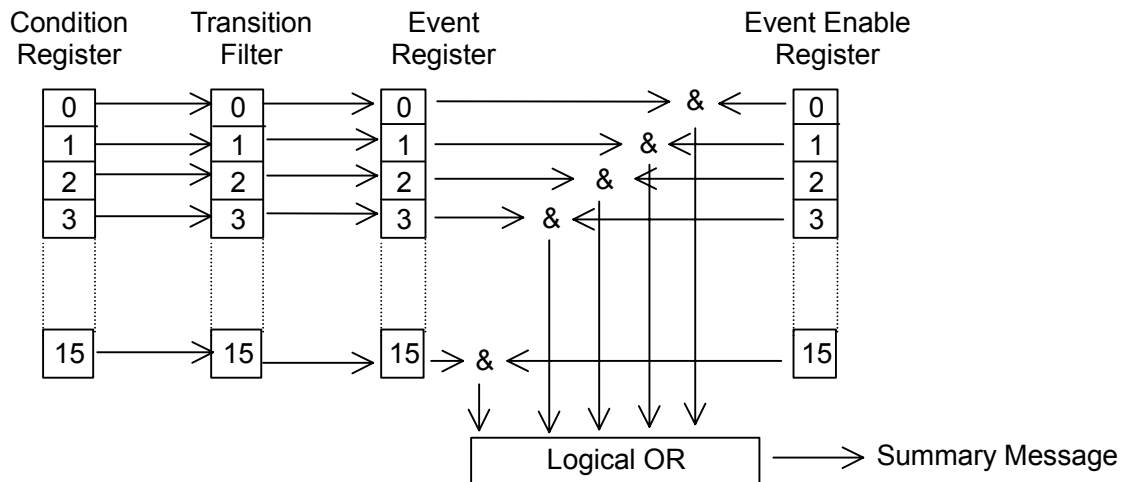


Figure 7.3-2 Status register configurations

Registers or filter	Description
Condition Register	Monitors the device status and changes in real-time depending on the status. Therefore, this register stores no status data.
Transition Filter	Sets the condition register contents in the event register. The transition filter operates in 3 ways according to the evaluation of how the condition register has changed: <ul style="list-style-type: none"> (1) Changing in positive direction: The event goes to true only when the related condition has changed from false to true. (2) Changing in negative direction: The event goes to true only when the related condition has changed from true to false. (3) Changing in both directions: The event goes true when the related condition has changed in either direction.
Event Register	Stores the transition filter output.
Event Enable Register	Selects the bits (that make the summary message true when set) of the event register.

7.3.1 QUEStionable Status Hierarchy

Figure 7.3-3 shows the QUEStionable status register bit definitions in detail.

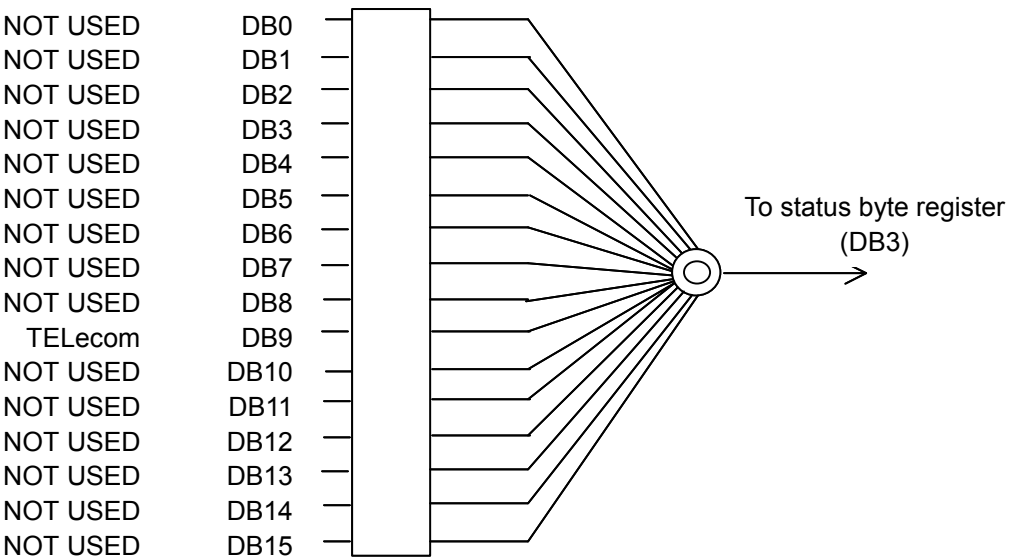


Figure 7.3-3 QUEStionable status register

QUEStionable status register bit definitions	
DB9	TELeom status register summary


 For status byte register, refer to Section 7.2 “IEEE488.2 Standard Status Registers.”

Figure 7.3-4 shows the TELecom status register bit definitions in detail.

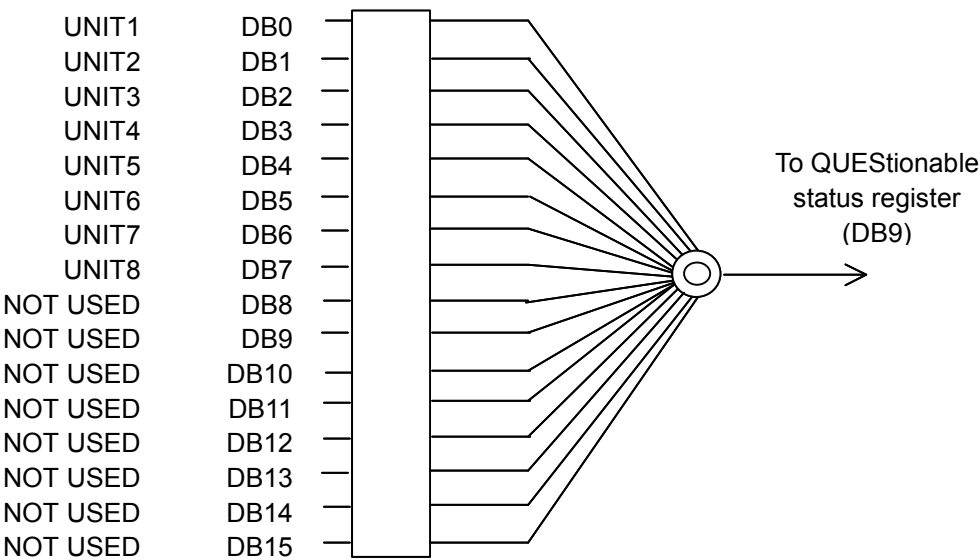


Figure 7.3-4 TELecom status bytes

TELecom status register bit definitions	
DB0	UNIT1 status register summary
DB1	UNIT2 status register summary
DB2	UNIT3 status register summary
DB3	UNIT4 status register summary
DB4	UNIT5 status register summary
DB5	UNIT6 status register summary
DB6	UNIT7 status register summary
DB7	UNIT8 status register summary

Figure 7.3-5 shows the UNIT1 to UNIT8 status register bit definitions in detail.

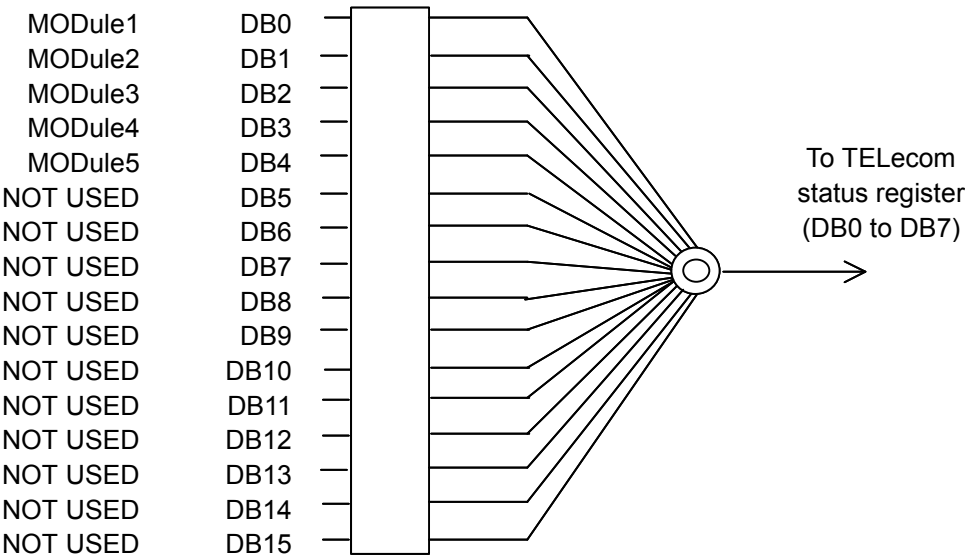


Figure 7.3-5 UNIT1 to UNIT8 status registers

UNIT1 to UNIT8 status register bit definitions	
DB0	MODule 1 status register summary
DB1	MODule 2 status register summary
DB2	MODule 3 status register summary
DB3	MODule 4 status register summary
DB4	MODule 5 status register summary

Figure 7.3-6 shows the Module1 to Module5 status register bit definitions in detail.

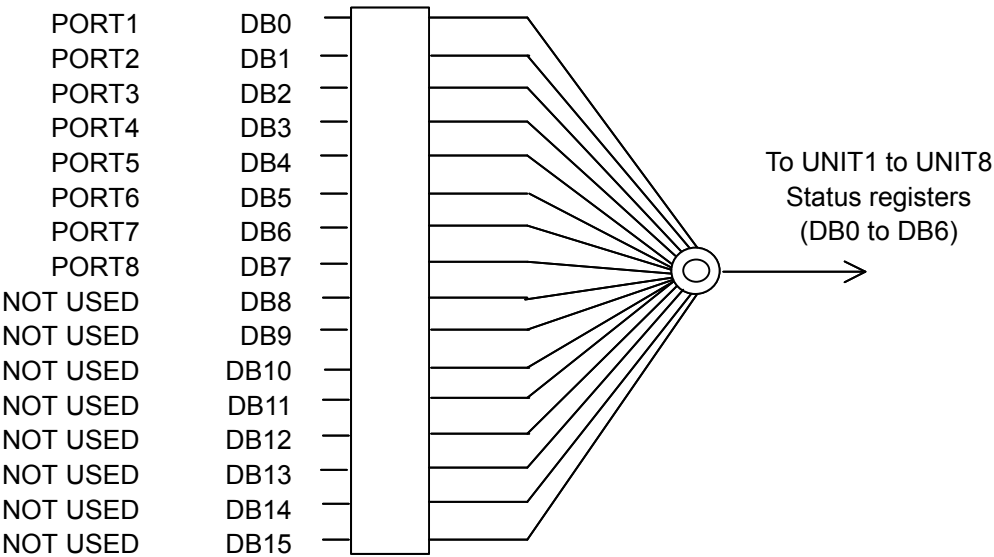


Figure 7.3-6 MODule1 to Module5 status registers

MODule1 to Module5 status register bit definitions	
DB0	PORT 1 status register summary
DB1	PORT 2 status register summary
DB2	PORT 3 status register summary
DB3	PORT 4 status register summary
DB4	PORT 5 status register summary
DB5	PORT 6 status register summary
DB6	PORT 7 status register summary
DB7	PORT 8 status register summary

Figure 7.3-7 shows the PORT1 to PORT8 status register bit definitions in detail.

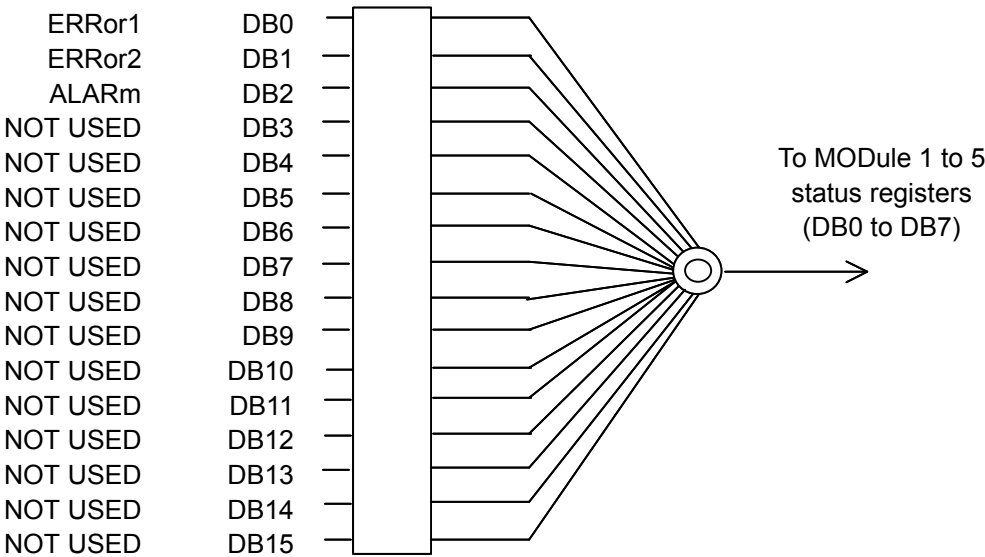


Figure 7.3-7 PORT1 to PORT8 status registers

PORT1 to PORT8 status register bit definitions	
DB0	ERRor1 status register summary
DB1	ERRor2 status register summary
DB2	ALARm status register summary

Figure 7.3-8 shows the ERRor1 status register bit definitions in detail.

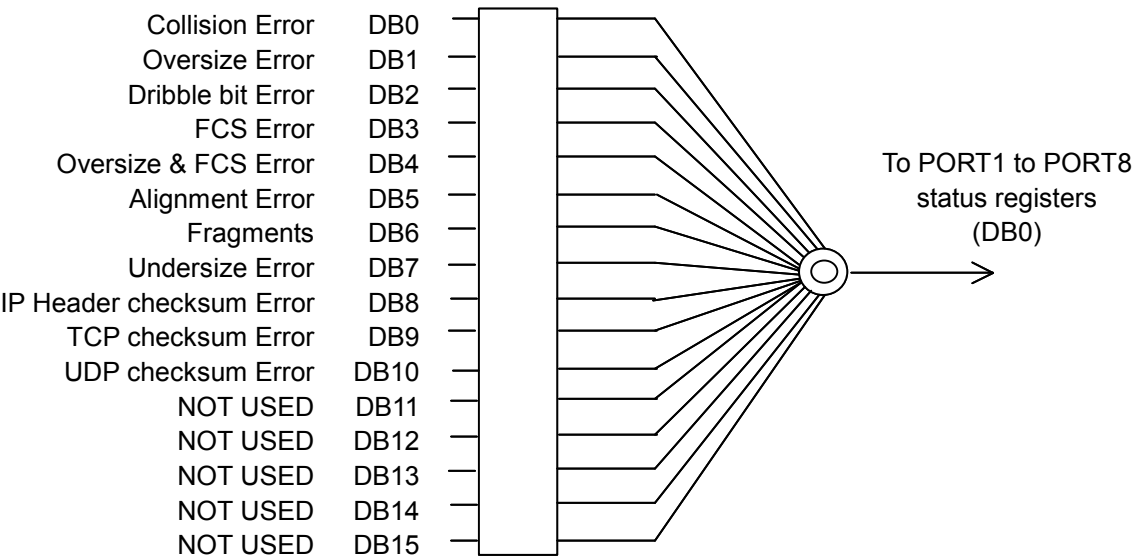


Figure 7.3-8 ERRor1 status register

ERRor1 status register bit definitions	
DB0	Indicates that a collision error has occurred.
DB1	Indicates that an oversize error has occurred.
DB2	Indicates that a dribble bit error has occurred.
DB3	Indicates that an FCS error has occurred.
DB4	Indicates that an oversize & FCS error has occurred
DB5	Indicates that an alignment error has occurred
DB6	Indicates that fragments have been generated.
DB7	Indicates that Undersize Error has occurred
DB8	Indicates that IP Header checksum Error has occurred
DB9	Indicates that TCP checksum Error has occurred
DB10	Indicates that UDP checksum Error has occurred

Figure 7.3-9 shows the ERRor2 status register bit definitions in detail.

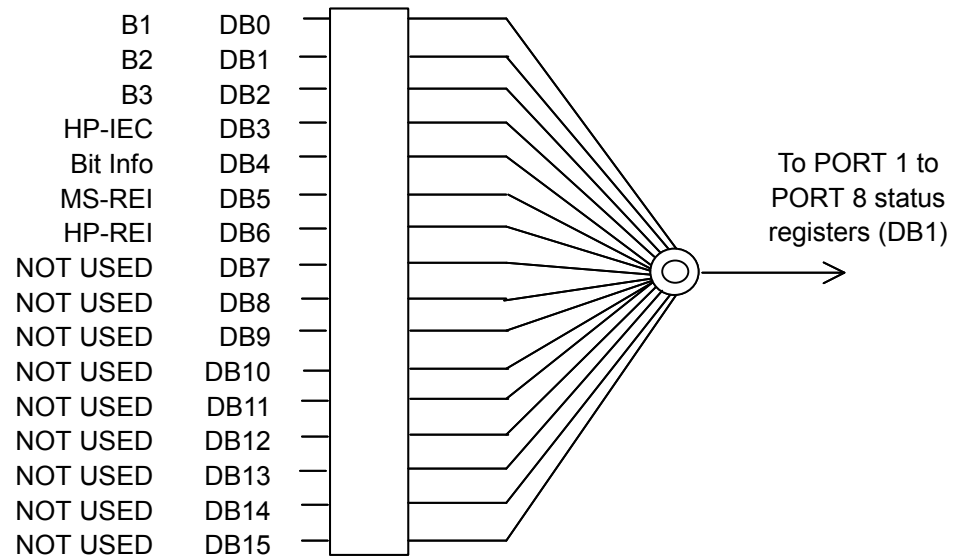


Figure 7.3-9 ERRor2 status register

ERRor2 status register bit definitions	
DB0	Indicates that B1 has occurred.
DB1	Indicates that B2 has occurred.
DB2	Indicates that B3 has occurred.
DB3	Indicates that HP-IEC has occurred.
DB4	Indicates that Bit Info has occurred.
DB5	Indicates that MS-REI has occurred.
DB6	Indicates that HP-REI has occurred.

Figure 7.3-10 shows the ALARm status register bit definitions in detail.

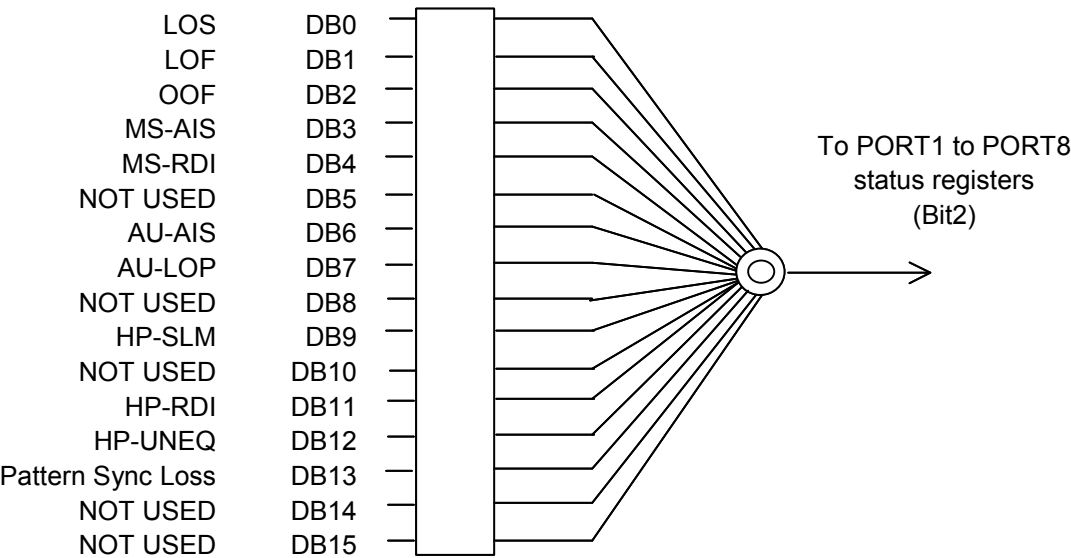


Figure 7.3-10 ALARm status register

ALARm status register bit definitions	
DB0	Indicates that LOS has occurred.
DB1	Indicates that LOF has occurred.
DB2	Indicates that OOF has occurred.
DB3	Indicates that MS-AIS has occurred.
DB4	Indicates that MS-RDI has occurred.
DB5	(Not used)
DB6	Indicates that AU-AIS has occurred.
DB7	Indicates that AU-LOP has occurred.
DB8	(Not used)
DB9	Indicates that HP-SLM has occurred.
DB10	(Not used)
DB11	Indicates that HP-RDI has occurred.
DB12	Indicates that HP-UNEQ has occurred.
DB13	Indicates that Pattern Sync Loss has occurred.

7.3.2 OPERation Status Hierarchy

Figure 7.3-11 shows the OPERation status register bit definitions in detail.

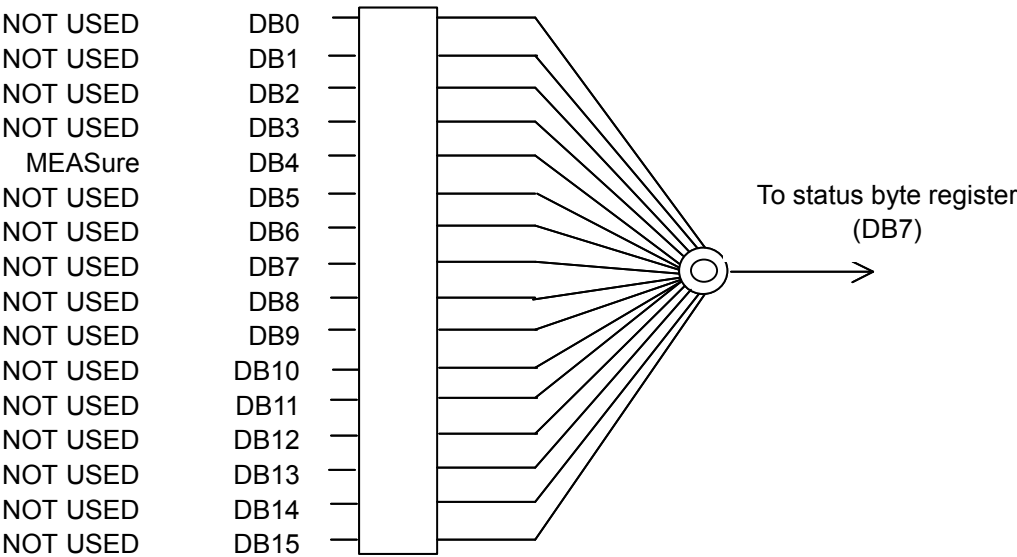


Figure 7.3-11 OPERation status register

OPERation status register bit definitions

ALARm status register bit definitions	
DB4	MEASure status register summary


 For status byte registers, refer to Section 7.2 “IEEE488.2 Standard Status Registers.”

Figure 7.3-12 shows the MEASure status register bit definitions in detail.

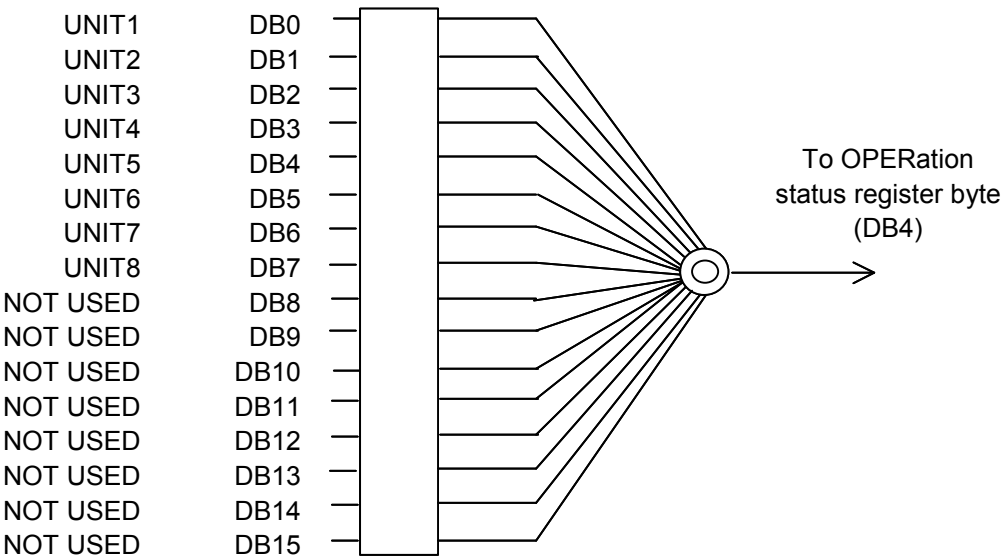


Figure 7.3-12 MEASure status register

MEASure status register bit definitions	
DB0	UNIT1 status register summary
DB1	UNIT2 status register summary
DB2	UNIT3 status register summary
DB3	UNIT4 status register summary
DB4	UNIT5 status register summary
DB5	UNIT6 status register summary
DB6	UNIT7 status register summary
DB7	UNIT8 status register summary

Figure 7.3-13 shows the UNIT1 to UNIT8 status register bit definitions in detail.

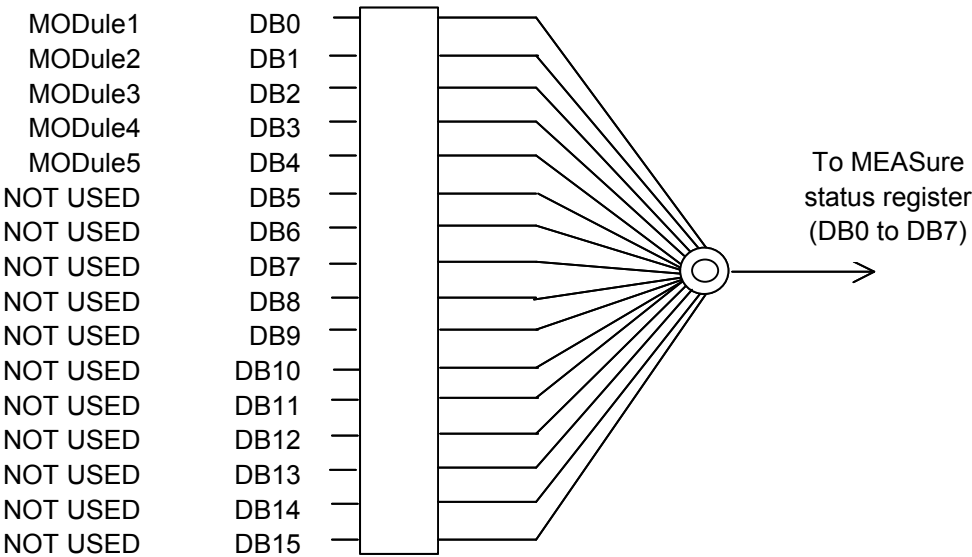


Figure 7.3-13 UNIT1 to UNIT8 status register

UNIT1 to UNIT8 status register bit definitions	
DB0	MODule 1 status register summary
DB1	MODule 2 status register summary
DB2	MODule 3 status register summary
DB3	MODule 4 status register summary
DB4	MODule 5 status register summary

Figure 7.3-14 shows the MODule1 to MODule5 status register bit definitions in detail.

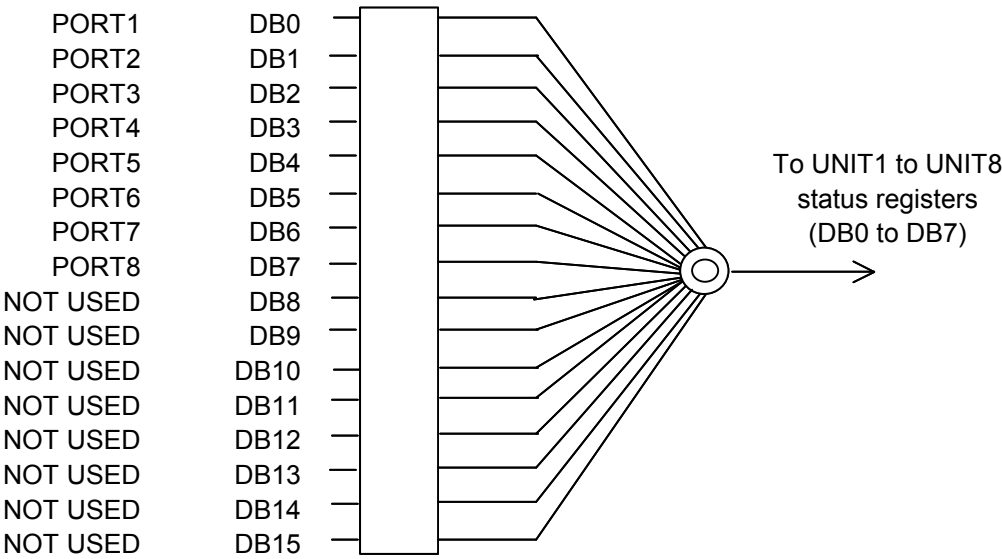


Figure 7.3-14 MODule1 to MODule5 status register

MODule1 to MODule5 status register bit definitions	
DB0	PORT 1 status register summary
DB1	PORT 2 status register summary
DB2	PORT 3 status register summary
DB3	PORT 4 status register summary
DB4	PORT 5 status register summary
DB5	PORT 6 status register summary
DB6	PORT 7 status register summary
DB7	PORT 8 status register summary

Figure 7.3-15 shows the PORT1 to 8 status register bit definitions in detail.

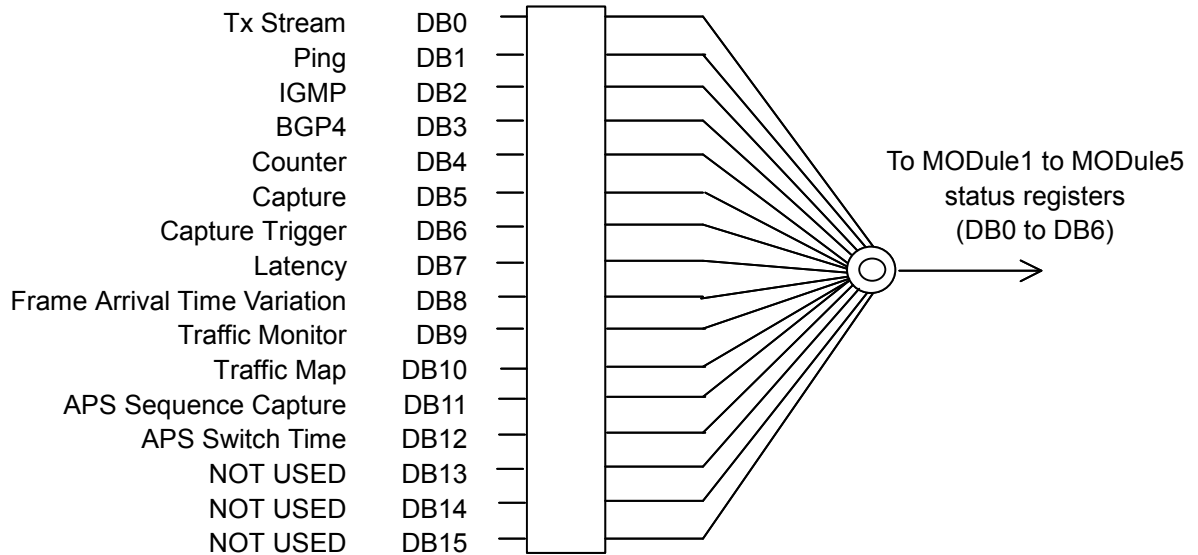


Figure 7.3-15 PORT1 to PORT8 status register

PORT1 to PORT8 status register bit definitions	
DB0	Remains On during Tx Stream transmission.
DB1	Remains On during Ping measurement.
DB2	Remains On during IGMP transmission.
DB3	Remains On during BGP4 message transmission.
DB4	Remains On during counter measurement.
DB5	Remains On during capture data reception.
DB6	Indicates that capture trigger has occurred.
DB7	Remains On during latency measurement.
DB8	Remains On during Frame Arrival Time Variation measurement.
DB9	Remains On during Traffic Monitor measurement.
DB10	Remains On during Traffic Map measurement.
DB11	Remains On during APS Sequence Capture measurement.
DB12	Remains On during APS Switch Time measurement.

7.4 Reading, Writing, and Clearing Status Registers

This section explains how to read, write, and clear the status registers.

(1) Reading and writing status registers

The table given below explains reading and writing of status registers. (“Impossible” means that writing is not possible.)

Registers		Reading	Writing
IEEE488.2 Standard status registers	Status byte register	Serial poll (using GPIB interface bus) Returns a 7-bit status byte and an RQS message bit. After reading, the status byte value remains unchanged. *STB? Returns the status byte register contents and a numeric value from the MSS summary message. After reading, the status byte value remains unchanged.	Impossible
	Service request enable register	*SRE? After reading, the status byte value remains unchanged.	*SRE
	Standard event status register	*ESR? After reading, the registered contents are cleared.	Impossible
	Standard event status enable register	*ESE? After reading, the register contents remain unchanged.	*ESE
MD1230A unique status registers	Event register	:STATus:...:EVENT? After reading, the register contents are cleared.	Impossible
	Enable register	:STATus:...:ENABLE? After reading, the register contents remain unchanged.	:STATus:...:ENABle
	Transition filter	:STATus:...:PTRansition? :STATus:...:NTRansition? After reading, the register contents remain unchanged.	:STATus:...:PTRansition :STATus:...:NTRansition
Error/event queue		:SYSTem:ERRor?	Impossible



For common commands, refer to Section 6 “Details of Device Messages.”

An example of status information acquisition using MD1230B-unique status registers is given below.

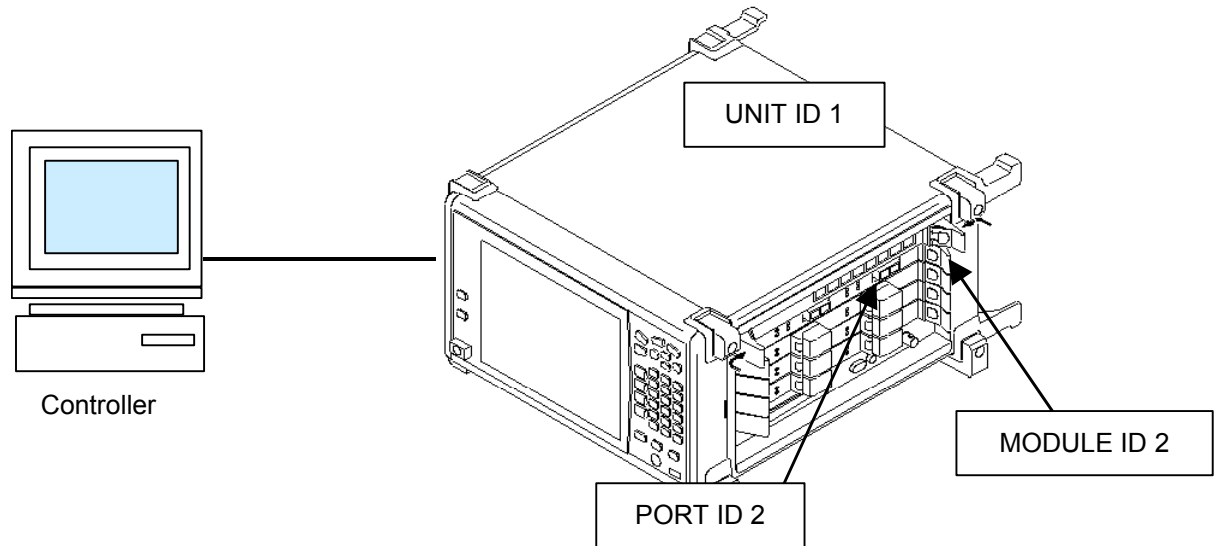



Figure 7.4-1 Example for status information acquisition

For the system shown in Figure 7.4-1, transmit the commands given in the table below to acquire the measurement status of PORT ID 2 in MODULE ID 2 mounted in UNIT ID 1, by remote control.


Transmission commands	Description
:STATus:OPERation:MEASure:UNIT1:MODule2:PORT2:PTRansition 255	Sets the system so that changes in the positive direction are evaluated.
:STATus:OPERation:MEASure:UNIT1:MODule2:PORT2:EVENT?	Inquires the Transition filter output.

The measurement status of the specified port can be checked by the above operations.

 For detailed bit definitions indicating the measurement status, refer to Section 7.3.2 “OPERation Status Hierarchy.”

Transmit the commands given in the table below to acquire the port error occurrence status in the system shown in Figure 7.4-1.

Transmission commands	Description
:STATus:QUESTionable:TELEcom:UNIT1:MODUle2:PORT2:ERRor1:PTRansition 255	Sets the system so that changes in the positive direction are evaluated.
:STATus:QUESTionable:TELEcom:UNIT1:MODUle2:PORT2:ERRor1:EVENT?	Inquires the Transition filter output.

 For detailed bit definitions for indicating error/alarm occurrence status, refer to Section 7.3.1 “QUESTionable Status Hierarchy.”

(2) Clearing and resetting status registers

The status registers may be reset to the states given in the table below by *RST, *CLS, powering On, STATus:PRESet, etc.

Registers		*RST	*CLS	Power On	STATus:PRESet	Other clear/reset procedures
IEEE488.2 Standard status registers	Status byte register	No changes	Cleared	Cleared	No changes	
	Service request enable register	No changes	No changes	Cleared	No changes	Executing *SRE 0
	Standard event status register	No changes	Cleared	Cleared	No changes	Cleared when reading event with *ESR?
	Standard event status enable register	No changes	No changes	Cleared	No changes	Executing *ESE 0
MD1230A unique status registers	Event register	No changes	Cleared	Cleared	No changes	Cleared when reading event with :STATus:...:EVENT?
	Enable register	No changes	No changes	Reset	Reset	Executing :STATus:...:ENABLe 0
	Transition filter	No changes	No changes	Reset	Reset	Executing :STATus:...:PTRansition 0 :STATus:...:NTRansition 0
Error/event queue		No changes	Cleared	Cleared	No changes	Reading all events with :SYSTem:ERRor?

Note:

The event register, enable register and Transition filter represent the event register, enable register and transition filter of each MD1230B-unique status register.

7.4 Reading, Writing, and Clearing Status Registers

Registers and filters influenced by :STATUS:PRESet are reset to the states given in the table below.

Registers	Enable/filter	Reset value
OPERational status register	Enable register	All 0
QUEStionable status register	PTRansition filter	All 1
	NTRansition filter	All 0

Appendix

Appendix A	ASCII Character Code List.....	A-1
Appendix B	Device Message Compatibility.....	B-1
Appendix C	Basic Operation of Device Messages.....	C-1
Appendix D	Basic Rules for Channel Expression in Virtual Concatenation.....	D-1
Appendix E	Path Monitor Item Correspondence Table....	E-1
Appendix F	Counter IDs	F-1
Appendix G	Base Position	G-1

Appendix A ASCII Character Code List

A. ASCII Character Code List

Character	Decimal	Hexa decimal	Character	Decimal	Hexa decimal	Character	Decimal	Hexa decimal	Character	Decimal	Hexa decimal
NUL	0	0x00	SP	32	0x20	@	64	0x40	`	96	0x60
SOH	1	0x01	!	33	0x21	A	65	0x41	a	97	0x61
STX	2	0x02	"	34	0x22	B	66	0x42	b	98	0x62
ETX	3	0x03	#	35	0x23	C	67	0x43	c	99	0x63
EOT	4	0x04	\$	36	0x24	D	68	0x44	d	100	0x64
ENQ	5	0x05	%	37	0x25	E	69	0x45	e	101	0x65
ACK	6	0x06	&	38	0x26	F	70	0x46	f	102	0x66
BEL	7	0x07	'	39	0x27	G	71	0x47	g	103	0x67
BS	8	0x08	(	40	0x28	H	72	0x48	h	104	0x68
HT	9	0x09	)	41	0x29	I	73	0x49	i	105	0x69
NL	10	0x0a	*	42	0x2a	J	74	0x4a	j	106	0x6a
VT	11	0x0b	+	43	0x2b	K	75	0x4b	k	107	0x6b
NP	12	0x0c	,	44	0x2c	L	76	0x4c	l	108	0x6c
CR	13	0x0d	-	45	0x2d	M	77	0x4d	m	109	0x6d
SO	14	0x0e	.	46	0x2e	N	78	0x4e	n	110	0x6e
SI	15	0x0f	/	47	0x2f	O	79	0x4f	o	111	0x6f
DLE	16	0x10	0	48	0x30	P	80	0x50	p	112	0x70
DC1	17	0x11	1	49	0x31	Q	81	0x51	q	113	0x71
DC2	18	0x12	2	50	0x32	R	82	0x52	r	114	0x72
DC3	19	0x13	3	51	0x33	S	83	0x53	s	115	0x73
DC4	20	0x14	4	52	0x34	T	84	0x54	t	116	0x74
NAK	21	0x15	5	53	0x35	U	85	0x55	u	117	0x75
SYN	22	0x16	6	54	0x36	V	86	0x56	v	118	0x76
ETB	23	0x17	7	55	0x37	W	87	0x57	w	119	0x77
CAN	24	0x18	8	56	0x38	X	88	0x58	x	120	0x78
EM	25	0x19	9	57	0x39	Y	89	0x59	y	121	0x79
SUB	26	0x1a	:	58	0x3a	Z	90	0x5a	z	122	0x7a
ESC	27	0x1b	;	59	0x3b	[	91	0x5b	{	123	0x7b
FS	28	0x1c		60	0x3c	¥	92	0x5c	|	124	0x7c
GS	29	0x1d	=	61	0x3d	]	93	0x5d	}	125	0x7d
RS	30	0x1e	>	62	0x3e	^	94	0x5e	~	126	0x7e
US	31	0x1f	?	63	0x3f	_	95	0x5f	DEL	127	0x7f

Appendix B Device Message Compatibility

B. Device Message Compatibility

This appendix describes the changes in the device message specifications caused by upgrading the software version.

Changes in Ver. 1.1

:COUNter:{SDH | SONet}:ERRor:HIEC? :COUNter:ERRor:OABCrC?	These command names have been changed as follows, respectively. :COUNter:{SDH | SONet}:ERRor:HPiEC? :COUNter:ERRor:OAFerror?
--	--

Changes in Ver. 1.2

The following commands have been added. :PORT:ETHernet:MFSize :TSTReam:TABLE:ITEM:FRAMe:MAPos:* :TSTReam:TABLE:ITEM:PROTOcol:IP:TLENGth:* :TSTReam:TABLE:ITEM:PROTOcol:IPV6:PLENGth:* :TSTReam:TABLE:ITEM:PROTOcol:UDP:LENGth:* :COUNter:{TRANsmitted | RECeived}:FRAMes:FPS? :COUNter:{TRANsmitted | RECeived}:PCT? :COUNter:{TRANsmitted | RECeived}:BPS? :COUNter:IP:{TRANsmitted | RECeived}:PACKets:PPS? :COUNter:UDEfined{1 | 2}:RECeived:PPS? :COUNter:QOS{0 | 1 | 2 | 3 | 4 | 5 | 6 | 7}:PPS? :AUTomatic:PROTOcol :AUTomatic:ORientation :AUTomatic:DISTriBution:* :AUTomatic:PGRoup:* :AUTomatic:*:LTOLerance :AUTomatic:*:BSIZE	
:AUTomatic:TFRame:IP :AUTomatic:TFRame:PATtern	These commands became unavailable due to changes in the setting method of Automatic measurement function. To perform settings for them, use :AUTomatic:PROTOcol.
:AUTomatic:PPAirs:ADD :AUTomatic:PPAirs:DELeTe :AUTomatic:PPAirs:CURREnt? :AUTomatic:PPAirs:NPPair? :AUTomatic:PPAirs:ITEM?	These commands became unavailable due to changes in the setting method of Automatic measurement function. To perform settings for them, use the following commands: :AUTomatic:ORientation :AUTomatic:DISTriBution :AUTomatic:DISTriBution:MTYPE :AUTomatic:PGRoup:ADD:A :AUTomatic:PGRoup:ADD:B :AUTomatic:PGRoup:DELeTe:A :AUTomatic:PGRoup:DELeTe:B :AUTomatic:PGRoup:A? :AUTomatic:PGRoup:B?

:AUTomatic:FLRate:RATE:COUNT	These commands became unavailable due to changes in the setting method of Frame loss measurement. To perform settings for them, use the following commands: :AUTomatic:FLRate:RATE:INITial :AUTomatic:FLRate:RATE:STEP
:AUTomatic:FLRate:RATE:INITial	The formats for program data and response data are changed from <NR2> to <NR1>. In addition, the setting range is changed from "0.00 to 100.00 (step: 0.01)" to "1 to 100 (step: 1)" and the default value is changed from 50.00 to 100.
:AUTomatic:FLRate:RATE:STEP	The formats for program data and response data are changed from <NR2> to <NR1>. In addition, the setting range is changed from "0.01 to 100.00 (step: 0.01)" to "1 to 100 (step: 1)" and the default value is changed from 10.00 to 10.
:AUTomatic:THROUGHput:DATA? :AUTomatic:LAteNcy:DATA? :AUTomatic:FLRate:DATA? :AUTomatic:BTBframes:DATA? :AUTomatic:SREcovery:DATA? :AUTomatic:RESet:DATA?	Program data <port_pair_number> is deleted due to changes in the result display contents for Automatic measurement function.

Changes in Ver. 2.0

<p>The following commands have been added.</p> <p>:PORT:MODE</p> <p>:PORT:UNFRamed:*</p> <p>:PORT:PPP:IPCP:STATe?</p> <p>:PORT:PPP:IPCP:ADDRess:SEND</p> <p>:PORT:PPP:NEGotiation:STATe?</p> <p>:PORT:ETHernet:MAPPING</p> <p>:PORT:ETHernet:MII:ANEGotiation:TIMEout:ENABLE</p> <p>:PORT:ETHernet:MDIO:*</p> <p>:UNFRamed:ERRor:*</p> <p>:TSTream:TABLE:ENABLE</p> <p>:TSTream:TABLE:DISable</p> <p>:TSTream:TABLE:FAIL:ID?</p> <p>:TSTream:TABLE:ITEM:ENABLE</p> <p>:TSTream:TABLE:ITEM:PROTOCOL:RIP:ENTRY:ENABLE</p> <p>:TSTream:TABLE:ITEM:PROTOCOL:RIP:ENTRY:ID</p> <p>:TSTream:TABLE:ITEM:PROTOCOL:UDP:CHECKsum:*</p> <p>:TSTream:TABLE:ITEM:PROTOCOL:ISIS:*</p> <p>:TSTream:TABLE:ITEM:PROTOCOL:{TCP | UDP}:INCRement</p> <p>:FILTer:PATtern{1 | 2}:OFFSet:BASE</p> <p>:COUNter:{TRANsmitted | RECeived}:TFrames?</p> <p>:COUNter:{TCP | UDP}:RECeived:PACKets:??</p> <p>:COUNter:UNFRame:*</p> <p>:COUNter:ERRor:SEquence?</p> <p>:COUNter:ERRor:PRBS:??</p>	
:PORT:{SDH | SONet}:BRATe?	The query response format is changed from <NR2> to {B156M | B622M}.
:PORT:PPP:NEGotiation:IPCP:ENABLE	This command name has been changed to :PORT:PPP:IPCP:ENABLE.

Changes in Ver. 2.1

The following commands have been added.

```
:PORT:IPV6:*  
:PORT:ICMPv6:*  
:TSTReam:TABLE:ITEM:PROTOcol:IPV6:NHEader:AUTO  
:TSTReam:TABLE:ITEM:PROTOcol:IPV6:EXTension:*  
:TSTReam:TABLE:ITEM:PROTOcol:ICMPv6:*  
:COUNTER:IPV6:{TRANsmitted | RECeived}:PACKets:*?  
:COUNTER:ICMPv6:*?  
:PROTOcol:MLD:*  
:PROTOcol:OSPF:*  
:PROTOcol:LDP:*  
:PROTOcol:RSVP:*  
:AUTomatic:PROTOcol:IP  
:PING:TYPE  
:RFC2889:*
```

Changes in Ver. 2.2

The following commands have been added.

```
:PORT:{SDH | SONet}:LBACK:ENABLE  
:PORT:CLOCK:*  
:TSTReam:TABLE:ITEM:PROTOcol:IGAP:*  
:PROTOcol:IGAP:*
```

Changes in Ver. 3.0

The following commands have been added.

```
:MODUle:FPGA:TYPE?
:PORT:PPP:FCS
:PORT:CONCate:TYPE
:PORT:GFP:*
:PORT:LAPS:*
:PORT:LEX:*
:GFP:*
:{SDH | SONet}:CONCate:MULTiplexing
:{SDH | SONet}:MEASch:*
:{SDH | SONet}:DUMMy:*
:{SDH | SONet}:OVERhead:PRESet:POINter:*
:{SDH | SONet}:OVERhead:MONitor:POH:MEMBer
:{SDH | SONet}:OVERhead:MONitor:POINter:MEMBer
:{SDH | SONet}:APS:*
:TSTReam:TABLE:ITEM:FRAME:GFP:*
:TSTReam:TABLE:ITEM:FRAME:LX86:*
:TSTReam:TABLE:ITEM:FRAME:LCONtrol:*
:TSTReam:TABLE:ITEM:ERRor:GFP:TYPE
:TSTReam:TABLE:ITEM:ERRor:LAPS:TYPE
:TSTReam:TABLE:ITEM:ERRor:LEX:*
:COUNter:GFP:*
:COUNter:ETHernet:{TRANsmitted | RECeived}:*?
:COUNter:ERRor:ETHernet:*?
:COUNter:LAPS:*?
:COUNter:{SDH | SONet}:ALARm:OOALignment?
:COUNter:{SDH | SONet}:ALARm:SQERror?
```

:TSTReam:TABLE:ITEM:FRAME:VLAN: CFI	The default value (CFI bit of VLAN) set by this command has been changed from 1 to 0.
--	---

Changes in Ver. 3.1

The following commands have been added.

```
:SYSTem:OPTion?
:UENTry:UNIT:OPTion?
:UENTry:UNIT:NUSers?
:UENTry:UNIT:GPS:SYNC
:UENTry:UNIT:INTerface:IP:*
:MODUle:OPTion?
:PORT:ETHernet:MII:ANEGotiation:LTIMer
:PORT:ETHernet:MDIO:LFS:REPLy
:COUNter:ETHernet:ALARm:*
:COUNter:{TRANsmitted | RECeived}:PCT2?
:COUNter:ETHernet:{TRANsmitted | RECeived}:PCT?
:ANEGotiation:*
:LFS:*
```

:TSReam:TABLE:ITEM:FRAME:GFP:HEADer:EXTentheader:EXTention:Pattern :TSReam:TABLE:ITEM:FRAME:GFP:HEADer:EXTentheader:EXTentionion:LENGTH :TSReam:TABLE:ITEM:FRAME:GFP:HEADer:EXTention:TYPE	These command names have been changed as follows, respectively. :TSReam:TABLE:ITEM:FRAME:GFP:HEADer:EXTension:Pattern :TSReam:TABLE:ITEM:FRAME:GFP:HEADer:EXTension:LENGTH :TSReam:TABLE:ITEM:FRAME:GFP:HEADer:EXTension:TYPE
--	--

Changes in Ver. 3.2

The following commands have been added. :TSReam:TABLE:ITEM:FRAME:DFIeld:HEADer:* :COUNter:CLEar

Changes in Ver. 3.3

The following commands have been added. :TSReam:TABLE:ITEM:FRAME:PIM:REGister:HEADer:* :TSReam:TABLE:ITEM:FRAME:LLC:DATA :TSReam:TABLE:ITEM:PROTOcol:ICMPv6:MLDA:DATA :TSReam:TABLE:ITEM:PROTOcol:BPDU:DATA :PROTOcol:PIM:ENABLE :PROTOcol:BGP4p:ENABLE :PROTOcol:OSPFv3:ENABLE :PROTOcol:MLDA:ENABLE	
:UENTry:UNIT:GPS:SYNC :SYSTem:MEMory:STATe? :SYSTem:HISTory:PFAil:DTIME?	These commands cannot be used for Ver. 3.3 or later.

Changes in Ver. 4.0

The following commands have been added. :PORT:PROTOcol:*.ENABLE :TSReam:TABLE:ITEM:PROTOcol:DATA :TSReam:TABLE:ITEM:PROTOcol:BPDU:TYPE :TSReam:TABLE:ITEM:PROTOcol:LACP:TYPE :TSReam:TABLE:ITEM:FRAME:ETHernet:PREamble:PROGram :TSReam:TABLE:ITEM:FRAME:DFIeld1:TFRame:* :TSReam:TABLE:ITEM:FRAME:VLAN:ID:NUMBER :TSReam:TABLE:ITEM:FRAME:VLAN:PATtern :TSReam:TABLE:ITEM:FRAME:VLAN:TPID :COUNter:GRAPH:SELect	
:TSReam:TABLE:ITEM:PROTOcol:BPDU:DATA :PROTOcol:BGP4p:ENABLE :PROTOcol:OSPFv3:ENABLE :GFP:HEADer:EXTension:PATtern:TYPE	These command names have been changed as follows, respectively. :TSReam:TABLE:ITEM:PROTOcol:DATA :PROTOcol:BGPPlus:ENABLE :PROTOcol:OSPF3:ENABLE :GFP:HEADer:EXTension:PATtern:TYPE

<code>:PORT:LEX:FCS</code> <code>:PORT:LAPS:FCS</code> <code>:MODULE:{SDH|SONet}:CLOCK:TYPE</code> <code>:MODULE:{SDH|SONet}:CLOCK:VARIABLE:ENABLE</code> <code>:MODULE:{SDH|SONet}:CLOCK:VARIABLE:VALUE</code> <code>:PORT:THROUGH:ENABLE</code>	These commands cannot be used for Ver. 4.0 or later. <code>:MODULE:{SDH|SONet}:CLOCK:TYPE</code> → Use <code>:PORT:CLOCK:TYPE</code> instead. <code>:MODULE:{SDH|SONet}:CLOCK:VARIABLE:ENABLE</code> → Use <code>:PORT:CLOCK:VARIABLE:ENABLE</code> instead. <code>:MODULE:{SDH|SONet}:CLOCK:VARIABLE:VALUE</code> → Use <code>:PORT:CLOCK:VARIABLE:VALUE</code> instead. <code>:PORT:THROUGH:ENABLE</code> → Use <code>:PORT:MODE</code> instead.
--	--

Changes in Ver. 4.1

The following commands have been added.

`:PORT:VLAN:*`
`:PORT:ETHERNET:MII:ANEGotiation:ADVERTISE:1GFull`
`:PORT:ETHERNET:MII:ANEGotiation:ADVERTISE:1GHalf`
`:COUNTER:FLOW:*`

Changes in Ver. 5.0

The following commands have been added.

`:PORT:OPTICAL:ENABLE`
`:PORT:ETHERNET:MII:AMDIX`
`:FILTER:PATTERN{3|4}:*`
`:COUNTER:UDEFINED{1|2}:PATTERN{3|4}`
`:COUNTER:FLOW:FILTER:PATTERN{3|4}`
`:CAPTURE:{FILTER|TRIGGER}:PATTERN{3|4}`
`:ETHERNET:ERROR:START`
`:COUNTER:LERROR:TYPE`

`:COUNTER:FLOW:FILTER:DA`
`:COUNTER:FLOW:FILTER:SA`

These commands exist only for version compatibility.
Usually, use the `:COUNTER:FLOW:FILTER:PATTERN*` command.

Changes in Ver. 6.0

The following commands have been added.

`:PORT:ETHERNET:MDIO:PCS:*`
`:COUNTER:WIS:*`

Changes in Ver. 7.0

<p>The following commands have been added.</p> <pre> :PORT:TEST:PATtern:TYPE :PORT:PREamble:ENABle :PORT:PREamble:EPON:ENABle :PORT:ETHernet:MII:ANEGotiation:TIMing :PORT:CLOCK:VARiable:SELect :PORT:CLOCK:VARiable:VALue:CLOCK{1 | 2} :PORT:LINK:ENABle :PORT:LINK:FLAP:* :PORT:POE:* :TSTReam:TABLE:ITEM:FRAMe:PROGram:ENABle :TSTReam:TABLE:ITEM:FRAMe:PROGram:PATtern :COUNter:DATA? :COUNter:PREamble? :COUNter:POE:ALARm? :COUNter:FREQuency:*? :COUNter:FLOW:FIELD:FID :COUNter:FLOW:FIELD:Nfid? :COUNter:FLOW:FIELD:REMAins? :COUNter:FLOW:FIELD:NCONdition? :VARiation:TYPE :VARiation:FILTer:* :GENTry:MEMBer? :GENTry:GROup:COUNter:DATA? :AUTomatic:VLAN:* :RFC2889*:VLAN:* </pre>	
<pre> :COUNter:DATA? :GENTry:GROup:COUNter:DATA? </pre>	<p>A command for obtaining counter values in batch was added to Ver. 7.0. All counter values can be obtained by using this command. Therefore, even if a counter is added later, no command to individually obtain the value from such a counter will be added to software later than Ver. 7.0.</p>
<pre> :PORT:OPTical:ENABle </pre>	<p>The :PORT:OPTical:ENABle command has been replaced with :PORT:LINK:ENABle. Note, however, that the response of :PORT:LINK:ENABle is “ON” or “OFF”, but that of :PORT:OPTical:ENABle is “1” or “0”.</p>

Appendix B Device Message Compatibility

:TSTReam:TABLE:ITEM:FRAME:ETHERnet:PREamble:PATtern :TSTReam:TABLE:ITEM:FRAME:ETHERnet:PREamble:PROGram :TSTReam:TABLE:ITEM:FRAME:ETHERnet:SFD	Starting in Ver. 7.0, the expression method for Preamble and SFD of the Tx Stream function is MSB first, not LSB first. Example: 55 (01010101) is now used in place of AA (10101010). D5 (11010101) is now used in place of AB (10101011). Due to this change, how to specify program data and response data differs between software earlier than Ver. 7.0 and Ver. 7.0 or later, as shown below. <table><tr><th rowspan="2">Command</th><th colspan="2">Default value of program data and response data</th></tr><tr><th>Earlier than Ver. 7.0</th><th>Ver. 7.0 or later</th></tr><tr><td>:TSTReam:TABLE:ITEM:FRAME:ETHERnet:PREamble:PATtern</td><td>#B10101010 (AA)</td><td>#B01010101 (55)</td></tr><tr><td>:TSTReam:TABLE:ITEM:FRAME:ETHERnet:PREamble:PROGram</td><td>6,#HAAAAA AAAAAAA</td><td>6,#H555555 555555</td></tr><tr><td>:TSTReam:TABLE:ITEM:FRAME:ETHERnet:SFD</td><td>#B10101011 (AB)</td><td>#B11010101 (D5)</td></tr></table>	Command	Default value of program data and response data		Earlier than Ver. 7.0	Ver. 7.0 or later	:TSTReam:TABLE:ITEM:FRAME:ETHERnet:PREamble:PATtern	#B10101010 (AA)	#B01010101 (55)	:TSTReam:TABLE:ITEM:FRAME:ETHERnet:PREamble:PROGram	6,#HAAAAA AAAAAAA	6,#H555555 555555	:TSTReam:TABLE:ITEM:FRAME:ETHERnet:SFD	#B10101011 (AB)	#B11010101 (D5)
Command	Default value of program data and response data														
	Earlier than Ver. 7.0	Ver. 7.0 or later													
:TSTReam:TABLE:ITEM:FRAME:ETHERnet:PREamble:PATtern	#B10101010 (AA)	#B01010101 (55)													
:TSTReam:TABLE:ITEM:FRAME:ETHERnet:PREamble:PROGram	6,#HAAAAA AAAAAAA	6,#H555555 555555													
:TSTReam:TABLE:ITEM:FRAME:ETHERnet:SFD	#B10101011 (AB)	#B11010101 (D5)													
:ATIME:STARt :ATIME:STOP :ATIME:RESolution :ATIME:TIME:ELAPsed? :ATIME:TIME:STARt? :ATIME:STATe? :ATIME:TIME:STOP? :ATIME:DATA? :UNFRamed:ERRor:TYPE :UNFRamed:ERRor:TIMing :UNFRamed:ERRor:TIMing:RATE :UNFRamed:ERRor:STOP :UNFRamed:ERRor:STARt :UNFRamed:ERRor:STATe?	These command names have been changed as follows, respectively. :VARiation:STARt :VARiation:STOP :VARiation:RESolution :VARiation:TIME:ELAPsed? :VARiation:TIME:STARt? :VARiation:STATe? :VARiation:TIME:STOP? :VARiation:DATA? :ERRor:TYPE :ERRor:TIMing :ERRor:TIMing:RATE :ERRor:STOP :ERRor:STARt :ERRor:STATe?														
:ATIME:AScale	This command cannot be used for Ver. 7.0 or later.														
:ATIME:OFFSet	This command can no longer be used due to the change of how the offset for variation measurement is specified. The equivalent setting can be specified by using :VARiation:OFFSet:NUMBER.														
:ETHERnet:ERRor:STARt	This command cannot be used for Ver. 7.0 or later, due to the change of the error insertion function, and has been replaced with the following command: ERRor:STARt														

:PROToCol:IGMP:MGADdress:COUNT :PROToCol:IGMP:MGADdress:FROM :PROToCol:IGMP:MGADdress:TO? :PROToCol:IGMP:REPort:FREQuency :PROToCol:IGMP:REPort:MODE :PROToCol:IGMP:RALert:ENABLE :PROToCol:IGMP:UADdress:COUNT :PROToCol:IGMP:UADdress:FROM :PROToCol:IGMP:UADdress:TO? :PROToCol:IGMP:VERSion	These commands can no long be used for modules other than MU120101A/02A/03A/04A/05A/06A/03B/04B/19A/20A due to enhancement of the IGMP/MLD functions in Ver. 7.0.
:PROToCol:MLD:MGADdress:COUNT :PROToCol:MLD:MGADdress:FROM :PROToCol:MLD:REPort:FREQuency :PROToCol:MLD:REPort:MODE :PROToCol:MLD:RALert:ENABLE :PROToCol:MLD:UADdress:COUNT :PROToCol:MLD:UADdress:FROM	These commands can no longer be used due to enhancement of IGMP/MLD functions in Ver. 7.0.

Changes in Ver. 7.1

The following commands have been added. :COUNter:ETHernet:LFAiled? :COUNter:TRANsmitted:PROToCol:FRAME? :COUNter:RECEived:PROToCol:FRAME?	
:COUNter:ETHernet:FCONtrol?	The name of the Flow Control counter has been changed to Mac Control for Ver. 7.1 or later. Due to this change, the command name has been changed to :COUNter:ETHernet:MCONtrol? (but the return value for both commands is the same).

Changes in Ver. 8.1

The following commands have been added. :IMPairment:* :PORT:ETHernet:EOAM:* :FILTer:PATTern{1 | 2 | 3 | 4}:BITMask	
:COUNter:DATA? :GENTry:GROup:COUNter:DATA?	The format of the <elapsed time> response data has been changed from a character string (a time enclosed by double quotation marks) to NR1 (a number that indicates the elapsed time).

Changes in Ver. 9.0

:TMAP:START :TMONitor:START :TMAP:STOP :TMONitor:STOP :TMAP:DATA? :TMONitor:DATA? :TMAP:TYPE :TMONitor:TYPE :TMAP:STATE? :TMONitor:STATE?	Because the Traffic Map and Traffic Monitor functions have been deleted from Ver. 9.0, the operations of commands have also been changed as follows.	
	Command	Operation for Ver. 9.0 or later
	:TMAP:START :TMONitor:START	Results in an error (110, This command was obsolete).
	:TMAP:STOP :TMONitor:STOP	Ignored (No error occurs but no processing is executed.)
	:TMAP:DATA? :TMONitor:DATA?	Always returns "0" (default).
	:TMAP:TYPE :TMONitor:TYPE	The setting command is ignored (and no error occurs). For the query command, the default value (IP) is always returned.
	:TMAP:STATE? :TMONitor:STATE?	Always returns "0" (stop).
:SYSTem:MEMory:LOAD :SYSTem:MEMory:SAVE	The program data SET_MDIO can no longer be used.	
:PORT:DEFault :PORT:CLOCK:OUTPut :PORT:CLOCK:VARiable:ENABle :UENTry:UNIT:DEFault :SYSTem:VERSion:CONTRoller? :SYSTem:VERSion:GUI? :SYSTem:VERSion:REMote? :SYSTem:VERSion:SNIFfer?	These commands can no longer be used.	
:PORT:ETHernet:MDIO:XENPak?	This command name has been changed to :PORT:ETHernet:MDIO:{TTPe | XENPak}?	

Changes in Ver. 9.4

The following commands have been added. :GENTry:TSTReam:START:SYNC

Other precautions

For Ver. 5.0 to 7.1, if the :GENTry:GROup:TSTReam:START command that starts stream transmission for a port group is executed, sometimes the response from the command CM1130:0308 is returned before stream transmission starts.

Appendix C Basic Operation of Device Messages

C. Basic Operation of Device Messages

Specifying ID

When performing MD1230B port operation (port settings, counter/stream transmission, etc.) by using device messages, the following 3 commands must be transmitted before transmitting port operation commands:

1. **:UENTry:ID <unit_number>**
2. **:MODule:ID <module_number>**
3. **:PORT:ID <port_number>**

The above 3 commands specifies the location of the port to be operated. The device messages transmitted after them are regarded to be for the specified port.

- The target unit for unit operation commands is that specified by 1. **:UENTry:ID** command.
- The target module for module operation commands is that specified by the **:UENTry:ID** command and 2. **:MODule:ID** command.
- In case that multiple settings are expressed in a table such as stream transmission data, transmit the setting edition command after transmitting a command that specifies an ID in the table (**:TSTream:TABLE:ID**, etc).

The location information specified by these ID commands are kept until turning the MD1230B off. (So it is not required to transmit the ID commands each time.)

Setting Tx Stream function

When performing the Tx Stream function setting, first specify the ID of the data to be set by the `:TSTReam:TABLE:ID` command. Then transmit a command that specifies the setting value. Lastly transmit the `:TSTReam:TABLE:WRITE` command to reflect the new setting. An example is shown below:

```
# Specify the target port
:UENTry:ID 1
:MODUle:ID 2
:PORT:ID 1
# Clear Tx Stream setting
:TSTReam:TABLE:AClear
# Add Tx Stream setting
:TSTReam:TABLE:ADD
# Edit Tx Stream setting
:TSTReam:TABLE:ID 1
:TSTReam:TABLE:ITEM:CONTRol:DISTriBution CONT
:TSTReam:TABLE:ITEM:PROTOcol:TYPE IPV4
:TSTReam:TABLE:ITEM:PROTOcol:IP:DA:TYPE STATIC
:TSTReam:TABLE:ITEM:PROTOcol:IP:DA:VALue #H01010101
:TSTReam:TABLE:WRITE
# Confirm the setting contents
:TSTReam:TABLE:ITEM:CONTRol:DISTriBution?
:TSTReam:TABLE:ITEM:PROTOcol:TYPE?
:TSTReam:TABLE:ITEM:PROTOcol:IP:DA:TYPE?
:TSTReam:TABLE:ITEM:PROTOcol:IP:DA:VALue?
# Start Tx Stream transmission
:TSTReam:START
```

Example of Tx Stream function setting

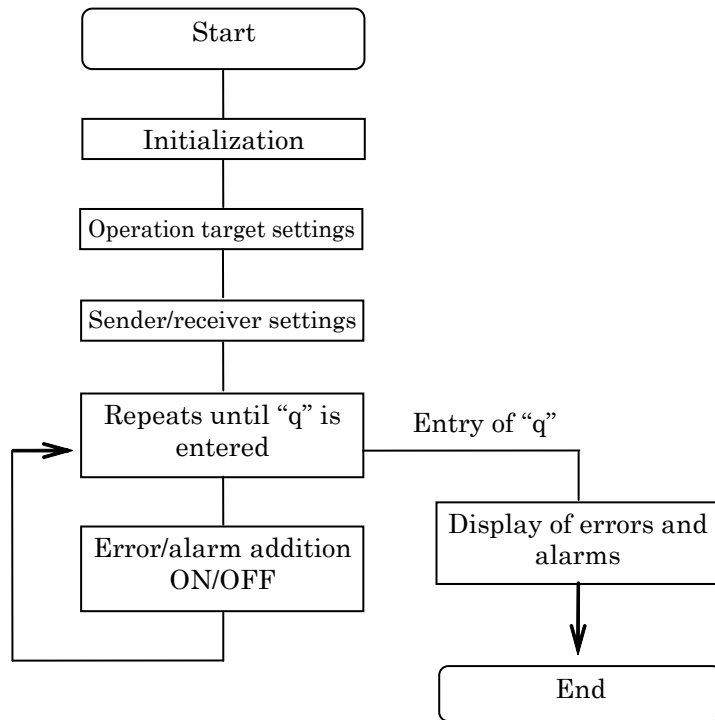
Programming Sample for MU150101A IP/EoS Mode

This section provides a programming sample to conduct counter measurement.

Measurement Conditions

- B2 errors, MS-AIS (AIS-L), and MS-RDI (RDI-L) measurement results that occurred during a measurement cycle are displayed.
- Error/Alarm addition is turned ON/OFF from the keyboard.
- Measurement continues until “q” is entered from the keyboard.

A simple program flowchart is shown below.



MU1230B Data Quality Analyzer Sample Program	
<p>Include of header file</p> <p>Define the constant to be used in the head.bas file.</p> <p>The following definitions are used in the Sample Program:</p> <p>Const STOP = 0 Indicates measurement is stopped.</p> <p>Const START = 1 Indicates measurement is being conducted.</p> <p>Const PROCESS = 2 Indicates measurement start/stop processing is in progress.</p> <p>Const TRUE = 1 Indicates the true state.</p>	
Rem \$Include: 'head.bas'	
Subroutine and function declaration	
Declare Sub init ()	
Declare Sub send (cmd\$)	
Declare Sub rcv (resp\$)	
Interface initialization (See init subroutine.)	
Call init	
Operation target settings	
Call send(":UENtry:ID 1")	'Unit ID:1
Call send(":MODule:ID 1")	'Module ID:1
Call send(":PORT:ID 1")	'Port ID:1
Sender/receiver settings	
Call send(":PORT:MODE NORMAL")	'Mode:Normal
Call send(":PORT:SONet:BRATe B2488M")	'Bitrate:2488M
Call send(":PORT:SONet:MAPPing MAPPED_GFP")	'Mapping:GFP
Call send(":PORT:CONCate:TYPE CONTIGUOUS")	'Concatenation Type:Contiguous
Call send(":SONet:CONCate:MULTiplexing STS_48C")	'Multiplexing:STS-48c
Call send(" SONetERRor:TYPE OFF")	'Error:OFF
Call send(" SONetALARm:TYPE OFF")	'Alarm:OFF
Initial value setting for variables	
char\$ = ""	'char\$: Variables for saving keys being pressed
Start of measurement	
Call send(":COUNter:START")	'Start of counter measurement
mend =START	'mend: Variable for judging end of measurement
Call send(":COUNter:TIME:START?")	'Read of measurement start time
Call rcv(tstart\$)	
Print "Start time", tstart\$	'Display of measurement start time
<p>Conducting counter measurement (B2 errors, MS-AIS(AIS-L), MS-RDI(RDI-L))</p> <p>Measurement is conducted continuously until "q" is entered from the keyboard.</p>	

While TRUE%

Measurement end judgement and character input

Measurement end judgement and error/alarm addition ON/OFF from keyboard input are executed.

t0 = TIMER

't0, t1: Variables for waiting time

t1 = t0

While mend = START

Counter measurement end judgement

The counter measurement status is read out in order to judge whether measurement is complete.

t1 = TIMER

'Waiting time

While t0 = t1

t1 = TIMER

Wend

t0 = t1

Call send(":COUNter:STATe?")

'Read of counter measurement status

Call rcv(st\$)

mend = VAL(st\$)

'Check of counter measurement status

Keyboard input

Error/alarm addition ON/OFF and counter measurement stop are executed by keyboard input. The following keys on the keyboard function as follows:

"e": Adds a B2 error at 1E-3 rate.

"a": Adds MS-AIS(AIS-L).

"r": Adds MS-RDI(RDI-L).

"s": Sets error/alarm addition OFF.

"q": Stops counter measurement.

char\$ = INKEY\$

Select Case char\$

'Key judgement

Case "e"

Call send(":SONet:ERRor:TYPE B2;TIMing RATE")

Call send(":SONet:ERRor:TIMing:RATE 1.0E-3")

Call send(":SONet:ERRor:START")

Case "a"

Call send(":SONet:ALARm:TYPE AIS_L;TIMing ALL;START")

Case "r"

Call send(":SONet:ALARm:TYPE RDI_L;TIMing ALL;START")

Case "s"

Call send(":SONet:ERRor:TYPE OFF")

Call send(":SONet:ALARm:TYPE OFF")

Case "q"

Call send(" :COUNter:STOP")

End Select

Wend

Wend

Measurement stop time, measurement elapsed time, and measurement results read
Measurement stop time, measurement elapsed time, and measurement results including B2 errors, MS-AIS (AIS-L), and MS-RDI (RDI-L) are read.

```
Call send(":COUNter:TIME:STOP?")      'Read of measurement stop time
Call rcv(tstop$)
Call send(":COUNter:TIME:ELAPsed?")    'Read of measurement elapsed time
Call rcv(telapsed$)
Call send(":COUNter:SONet}:ERRor:B2?") 'Read of error count of B2 error
Call rcv(mdBERR$)
Call send("COUNter:SONet:ALARm:AISL?") 'Read of alarm second for MS-AIS (AIS-L)
Call rcv(mdAIS$)
Call send(":COUNter:SONet:ALARm:RDIL?") 'Read of alarm second for MS-RDI (RDI-L)
Call rcv(mdRDI$)
```

Display of measurement results
Measurement stop time, measurement elapsed time, the error count of errors that occurred and the alarm second of alarms that occurred are displayed.

```
Print "Stop time", tstop$
Print "Elaplsed time", telapsed$
Print "   B2 Error", mdBERR$
Print "   AIS-L", mdAIS$
Print "   RDI-L", mdRDI$
```

End

Initialization of init interface, etc.
Create subroutines that execute the following processing according to the controller and interface in use.

<p> GPIB interface:</p> <p> RS-232C interface:</p> <p> Ethernet interface:</p>	<p>Execute bas initialization (IFC), message transfer initialization (DCL, SDC), and terminator setting using the subroutine.</p> <p>Set the data baud rate, parity, and transmitted character length settings of the controller, if necessary, using the subroutine.</p> <p>Set the port number, IP address, etc., if necessary, using the subroutine.</p>
--	---

Sub init

```
:
:
```

End Sub

send(cmd\$) Command transmission to measuring instrument
Argument cmd\$: Character string variable representing the command to be transmitted
Create a subroutine that transmits commands to the MD1230B according to the controller in use.

```
Sub send (cmd$)
:
:
End Sub
```

<p>rcv(resp\$) Data read from measuring instrument</p> <p>Argument resp\$: Character string variable that substitutes a return value from the measuring instrument.</p> <p>Create a subroutine that reads out data from the MD1230B according to the controller in use.</p>

```
Sub rcv (resp$)
:
:
End Sub
```

<Execution results>

Start time	"2004/09/01 10:15:06.00"
Stop time	"2004/09/01 10:30:10.00"
Elapsed time	904
B2 Error	1.2E-03
MS-AIS	350
MS-RDI	435

Appendix D Basic Rules for Channel Expression in Virtual Concatenation

D.	Basic Rules for Channel Expression in Virtual Concatenation	D-2
----	---	-----

D. Basic Rules for Channel Expression in Virtual Concatenation

1. How to describe channel in setting command

The number of parameters that can be specified to the lowest layer (i.e., the number of channels) varies since the number of layers differs depending on the Multiplexing setting.

The following shows the layers that are supported by each channel, in accordance with the Multiplexing setting and the number of parameters.

Multiplexing	<ch1>	<ch2>	<ch3>	<ch4>
-----	-----	-----	-----	-----
STS3c-Xv/VC4-Xv	STS3c/AUG	None	None	None
STS1c-Xv(STS1)/VC3-Xv(AU3)	STS3c/AUG	STS1/AU3	None	None
STS1c-Xv(STS3C)/VC3-Xv(AU4)	STS3c/AUG	TUG3	None	None
VT2-Xv(STS3C)/VC12-Xv(AU4)	STS3c/AUG	TUG3	VTG/TUG2	VT2/TU12
VT2-Xv(STS1)/VC12-Xv(AU3)	STS3c/AUG	STS1/AU3	VTG/TUG2	VT2/TU12
VT1.5-Xv(STS3C)/VC11-Xv(AU4)	STS3c/AUG	TUG3	VTG/TUG2	VT1.5/TU11
VT1.5-Xv(STS1)/VC11-Xv(AU3)	STS3c/AUG	STS1/AU3	VTG/TUG2	VT1.5/TU11

One of the following errors occurs if the number of channels differs:

For <NR1> format:

Excessive: -108:Parameter not allowed

Insufficient: -109:Missing parameter

For <STRING> format: -220:Parameter error

2. Setting range for channel parameter in setting command

The setting range for channel parameters varies depending on the bit rate and layer.

STS3c/AUG :

2488M : 1 to 16

622M : 1 to 4

156M : 1

STS3C/AU3 :

For any bit rate : 1 to 3

TUG3 :

For any bit rate : 1 to 3

VTG/TUG2 :

For any bit rate : 1 to 7

VT2/TU12 :

For any bit rate : 1 to 3

VT1.5/TU11 :

For any bit rate : 1 to 4

Note that the setting ranges shown above are absolute. The following error occurs if a parameter that exceeds the setting range is specified:

For <NR1> format: -222:Data out of range

For <STRING> format: -220:Parameter error

Even if the specified parameter is within the absolute setting range, -221:Setting conflict occurs (regardless whether the format is <NR1> or <STRING>) when the setting becomes impossible due to the restrictions of other conditions.

3. How to describe channel in query command

Multiplexing	<ch1>	<ch2>	<ch3>	<ch4>
STS3c-Xv/VC4-Xv	STS3c/AUG	None	None	None
STS1c-Xv(STS1)/VC3-Xv(AU3)	STS3c/AUG	STS1/AU3	None	None
STS1c-Xv(STS3C)/VC3-Xv(AU4)	STS3c/AUG	TUG3	None	None
VT2-Xv(STS3C)/VC12-Xv(AU4)	STS3c/AUG	TUG3	VTG/TUG2	VT2/TU12
VT2-Xv(STS1)/VC12-Xv(AU3)	STS3c/AUG	STS1/AU3	VTG/TUG2	VT2/TU12
VT1.5-Xv(STS3C)/VC11-Xv(AU4)	STS3c/AUG	TUG3	VTG/TUG2	VT1.5/TU11
VT1.5-Xv(STS1)/VC11-Xv(AU3)	STS3c/AUG	STS1/AU3	VTG/TUG2	VT1.5/TU11

Appendix E Path Monitor Item Correspondence Table

E.	Path Monitor Item Correspondence Table.....	E-2
----	---	-----

E. Path Monitor Item Correspondence Table

The tables below show the correspondence between the value and content of each item that is output in response to either of the following path monitor query commands.

:{SDH | SONet}:PATH:MONitor:DATA?

:{SDH | SONet}:PATH:MONitor:HISTory?

VCAT/LCAS		
Hexadecimal	Decimal	Item
0x00000001	1	LOA (MND)
0x00000002	2	PLCT
0x00000004	4	TLCT
0x00000008	8	PLCR
0x00000010	16	TLCR
0x00000020	32	SQNC

SDH/SONET Payload		
Hexadecimal	Decimal	Item
0x00000001	1	Pattern Sync. Loss
0x00000002	2	Bit Info.

GFP		
Hexadecimal	Decimal	Item
0x00000001	1	Server Signal Fail
0x00000002	2	Client Loss of Sync
0x00000004	4	Client Loss of Signal
0x00000008	8	cHEC Error
0x00000010	16	tHEC Error
0x00000020	32	eHEC Error
0x00000040	64	GFP FCS Error

PPP		
Hexadecimal	Decimal	Item
0x00000001	1	Aborted Frame
0x00000002	2	Fragments
0x00000004	4	Size or FCS Error
0x00000008	8	LAPS FCS Error

E Path Monitor Item Correspondence Table

Ethernet/IP		
Hexadecimal	Decimal	Item
0x00000001	1	Ethernet Fragments
0x00000002	2	Ethernet Size or FCS Error
0x00000004	4	IPv4 Header Checksum Error
0x00000008	8	TCP Checksum Error
0x00000010	16	UDP Checksum Error

AU Alarm/Error/PJC (for each CH)		
Hexadecimal	Decimal	Item
0x00000001	1	AU-AIS
0x00000002	2	AU-LOP
0x00000004	4	HP-RDI
0x00000008	8	HP-UNEQ
0x00000010	16	HP-SLM
0x00010000	65,536	HP-B3
0x00020000	131,072	HP-REI
0x01000000	16,777,216	AU NDF
0x02000000	33,554,432	AU +PJC
0x04000000	67,108,864	AU –PJC

TU Alarm/Error/PJC (for each CH)		
Hexadecimal	Decimal	Item
0x00000001	1	TU-AIS
0x00000002	2	TU-LOP
0x00000004	4	LP-RDI
0x00000008	8	LP-RFI
0x00000010	16	TU-LOM
0x00000020	32	LP-UNEQ
0x00000040	64	LP-SLM
0x00010000	65,536	LP-B3
0x00020000	131,072	BIP2
0x00040000	262,144	LP-REI
0x01000000	16,777,216	TU NDF
0x02000000	33,554,432	TU +PJC
0x04000000	67,108,864	TU –PJC

Appendix E Path Monitor Item Correspondence Table

VCAT/LCAS (for each CH)		
Hexadecimal	Decimal	Item
0x00000001	1	VCAT-LOM
0x00000002	2	OOM1 (HO)
0x00000004	4	OOM2 (HO)
0x00000008	8	OOM (LO)
0x00000010	16	SQM
0x00000020	32	GID
0x00000040	64	CRC8
0x00000080	128	CRC3

LCAS State		
Hexadecimal	Decimal	Item
0x00000001	1	OK
0x00000002	2	Fail
0x00000004	4	Idle
0x00000008	8	Unknown

Appendix F Counter IDs

F.	Counter IDs	F-2
----	-------------------	-----

F. Counter IDs

----- Transmit -----

91 Transmitted Bit Rate (bit/s)
90 Transmitted Bit Rate (%)
182 Transmitted Rate (%)
150 Transmitted Byte After Adaptation
42 Transmitted Bytes After Stuffing
3 Transmitted Bytes
1 Transmitted Frame
89 Transmitted Frame (fps)
184 Transmitted Ethernet Bit Rate (%)
172 Transmitted Ethernet Bytes
151 Transmitted Ethernet Frame
152 Transmitted Ethernet Frame (fps)
36 Transmitted IPv4 Packet
92 Transmitted IPv4 Packet (pps)
18 Transmitted ARP Reply
19 Transmitted ARP Request
20 Transmitted Ping Reply
21 Transmitted Ping Request
138 Transmitted IPv6 Packet
139 Transmitted IPv6 Packet (pps)
142 Transmitted ICMPv6 (NA)
143 Transmitted ICMPv6 (NS)
144 Transmitted ICMPv6 (Echo Reply)
145 Transmitted ICMPv6 (Echo Request)
107 Transmitted Test Frame
281 Transmitted Protocol Frame
178 Transmitted LF Signal
179 Transmitted RF Signal

----- Impairment -----

283 Impairment Filter Frame
284 Impairment Filter Byte
285 Unavoidably Dropped Frame
286 Lost Frame
287 Passage Delay (ms)

----- Receive -----

95 Received Bit Rate (bit/s)
94 Received Bit Rate (%)
183 Received Rate (%)

153	Received Byte Before Adaptation
41	Received Bytes Before Destuffing
4	Received Byte
2	Received Frame
93	Received Frame (fps)
11	Mac Control Frame
280	Link Failed
185	Received Ethernet Bit Rate (%)
173	Received Ethernet Byte
154	Received Ethernet Frame
155	Received Ethernet Frame (fps)
36	Received IPv4 Packet
96	Received IPv4 Packet (pps)
22	Received ARP Reply
23	Received ARP Request
24	Received Ping Reply
25	Received Ping Request
140	Received IPv6 Packet
141	Received IPv6 Packet (pps)
146	Received ICMPv6 (NA)
147	Received ICMPv6 (NS)
148	Received ICMPv6 (Echo Reply)
149	Received ICMPv6 (Echo Request)
108	Received UDP Packet
109	Received UDP Packet (pps)
110	Received TCP Packet
111	Received TCP Packet (pps)
16	Capture Trigger
17	Capture Filter
34	User Defined 1
97	User Defined 1 (pps)
35	User Defined 2
98	User Defined 2 (pps)
26	QoS 0
99	Qos 0 (pps)
27	QoS 1
100	Qos 1 (pps)
28	QoS 2
101	Qos 2 (pps)
29	QoS 3
102	Qos 3 (pps)
30	QoS 4
103	Qos 4 (pps)
31	QoS 5

104 Qos 5 (pps)
32 QoS 6
105 Qos 6 (pps)
33 QoS 7
106 Qos 7 (pps)
112 Received Test Frame
282 Received Protocol Frame

----- Ethernet OAM -----

288 LOC (ms)
289 AIS (ms)
290 RDI (ms)

----- Error -----

113 Sequence Error
114 PRBS Frame Error Count
115 PRBS Frame Error Rate
116 PRBS Bit Error Count
117 PRBS Bit Error Rate
40 UDP Checksum Error
39 TCP Checksum Error
38 IPv4 Header Checksum Error
7 Oversize
8 Oversize & FCS Error
6 Undersize
5 Fragments
9 FCS Error
156 Ethernet Oversize
157 Ethernet Oversize & FCS Error
158 Ethernet Undersize
159 Ethernet Fragments
160 Ethernet FCS Error

----- GFP Error/Alarm -----

161 Correctable cHEC Error
162 Uncorrectable cHEC Error
163 Correctable tHEC Error
164 Uncorrectable tHEC Error
165 eHEC Error
166 Uncorrectable eHEC Error
167 Server Signal Fail Interval
168 Client Loss of Sync Frame
169 Client Loss of Sync Interval
170 Client Loss of Signal Frame

171 Client Loss of Signal Interval

14 Dribble Bit Error

12 Alignment Error

43 Aborted Frame

----- Bulk Error -----

50 Bit Info. Count

57 Bit Info. Rate

----- Bulk Alarm -----

68 Pattern Sync. Loss Count

79 Pattern Sync. Loss Seconds

----- Ethernet Error -----

15 Collisions

13 Byte Alignment Error

10 Line Error

180 Received LF Signal

181 Received RF Signal

----- SDH/SONET Justification -----

80 NDF Count

84 NDF Rate

81 +PJC Count

85 +PJC Rate

82 -PJC Count

86 -PJC Rate

83 Consecutive Count

87 Consecutive Rate

88 PPM

----- SDH/SONET Error -----

49 MS-REI/REI-L Count

56 MS-REI/REI-L Rate

48 HP-REI/REI-P Count

55 HP-REI/REI-P Rate

47 HP-IEC Count

54 HP-IEC Rate

46 B3 Count

53 B3 Rate

45 B2 Count

52 B2 Rate

44 B1 Count

51 B1 Rate

-----Virtual Concatenation -----

176 SQ Error Count
177 SQ Error Seconds

----- SDH/SONET Alarm -----

67 HP-UNEQ/UNEQ-P Count
78 HP-UNEQ/UNEQ-P Seconds
66 HP-RDI/RDI-P Count
77 HP-RDI/RDI-P Seconds
65 HP-SLM/PLM-P Count
76 HP-SLM/PLM-P Seconds
64 AU-LOP/LOP-P Count
75 AU-LOP/LOP-P Seconds
63 AU-AIS/AIS-P Count
74 AU-AIS/AIS-P Seconds
62 MS-RDI/RDI-L Count
73 MS-RDI/RDI-L Seconds
61 MS-AIS/AIS-L Count
72 MS-AIS/AIS-L Seconds
59 OOF Count
70 OOF Seconds
60 LOF Count
71 LOF Seconds
58 LOS Count
69 LOS Seconds

-----Virtual Concatenation -----

174 Out of Alignment Count
175 Out of Alignment Seconds

----- Unframe Error -----

118 Bit Error Count
119 Bit Error Rate
120 Bit Error Count (Lane 0)
121 Bit Error Rate (Lane 0)
122 Bit Error Count (Lane 1)
123 Bit Error Rate (Lane 1)
124 Bit Error Count (Lane 2)
125 Bit Error Rate (Lane 2)
126 Bit Error Count (Lane 3)
127 Bit Error Rate (Lane 3)

----- Unframe Alarm -----

128 Pattern Sync. Loss Count
129 Pattern Sync. Loss Seconds
130 Pattern Sync. Loss Count (Lane 0)
131 Pattern Sync. Loss Seconds (Lane 0)
132 Pattern Sync. Loss Count (Lane 1)
133 Pattern Sync. Loss Seconds (Lane 1)
134 Pattern Sync. Loss Count (Lane 2)
135 Pattern Sync. Loss Seconds (Lane 2)
136 Pattern Sync. Loss Count (Lane 3)
137 Pattern Sync. Loss Seconds (Lane 3)

----- Flow Counter -----

258 Transmitted Bit Rate (Mbit/s)
259 Transmitted Rate (%)
260 Transmitted Byte
261 Transmitted Frame
262 Transmitted Frame (fps)
264 Received Bit Rate (Mbit/s)
265 Received Rate (%)
266 Received Byte
267 Received Frame
268 Received Frame (fps)
270 Sequence Error
271 Max Latency (us)
272 Min Latency (us)
273 Current Latency (us)
274 Avg Latency (us)

----- Frequency -----

275 Frequency (Hz)
276 Frequency Difference (Hz)
277 Frequency Difference (ppm)

----- POE -----

278 PoE Alarm (s)

----- Preamble -----

279 Preamble CRC Error

Appendix G Base Position

G. Base Position G-2

G. Base Position

The Base Position setting is specified as the counter capture filter setting (:FILTer:PATTerN{1|2|3|4}:OFFSet:BASE?), multiflow counter setting (:COUNter:FLOW:FIEld?), Impairment function Overwrite setting (:IMPairment:OVERwrite:FIEld?).

Base Position setting is not supported by the MU120101A/02A and the POS module (MU120103A/04A/05A/06A) (excluding EOS module).

The <position> keywords that can be specified at Base Position are listed below.

<position>	Explanation
PREAMBLE	Indicates preamble header (Top of Preamble) This can be selected when Port Setting – Preamble is ON. When the port setting Preamble is set to OFF while Top of Preamble is selected, the setting is initialized. This setting can be made for the MU120131A/32A Multiflow Counter but not for the MU12021A/22A Multiflow Counter. However, it cannot be used when Overwrite is specified at the Impairment function.
FRAME	Indicates frame header (Top of Frame)
VLAN1 VLAN2 VLAN3 VLAN4 VLAN5 VLAN6 VLAN7 VLAN8 VLAN9 VLAN10	Indicates header of VLAN tag of each stage (Top of VLAN Tag 1 to 10) This can only be used by the MU120121A/22A/31A/32A.
ETYPE8902	Indicates Ethernet OAM PDU header (after Ethernet Type field) (Top of Ethernet OAM PDU) This can be used when the Ethernet OAM option is installed.
IPV4	Indicates top of IPv4 header (Top of IPv4 Header)

<position>	Explanation
IPV6 IPV6_H IPV6_D IPV6_R IPV6_F IPV6_A IPV6_E	<p>Indicates top of IPv6 header and top of each expansion header</p> <p>IPV6 indicates the Top of IPv6 Header</p> <p>Others are indicated as follows:</p> <ul style="list-style-type: none"> •IPV6_H: Hop-by-hop Option Header (Next Header is 0) •IPV6_D: Destination Option Header (Next Header is 60) •IPV6_R: Routing Header (Next Header is 43) •IPV6_F: Fragment Header (Next Header is 44) •IPV6_A: Authentication Header (Next Header is 51) •IPV6_E: ESP Header (Next Header is 50) <p>This can be used when the IPv6 option is installed. However, IPV6_A, and IPV6_E cannot be used by the multiflow counter.</p>
UPPER	<p>Indicates top of header of IPv4/IPv6 higher-layer protocols (Top of IP Payload)</p> <p>When the IPv6 option is not installed, the IPv6 higher-layer header is not detected. In addition, this cannot be used by the multiflow counter.</p>
TCP UDP	<p>TCP indicates top of TCP Header and UDP indicates top of UDP header.</p> <p>This can be used only by the MU120121A/22A/31A/32A.</p>
FLOWID	<p>Indicates header of Test Frame Flow ID field</p> <p>When using the MU120121A/22A Multiflow Counter, Flow ID specification is performed by the Type setting and not by this setting.</p> <p>This can only be used by the MU120131A/32A.</p>

