DL950
ScopeCorder
Communication Interface

USER'S MANUAL

Thank you for purchasing the DL950 ScopeCorder. This Communication Interface User's Manual explains the following interface features and commands.
- Ethernet interface
- USB interface

List of Manuals

To ensure correct use, please read this manual thoroughly before operation.

After reading this manual, keep it in a safe place. The following manuals, including this one, are provided as manuals for the DL950. Please read all manuals.

Manual Title	Manual No.	Description
DL950 ScopeCorder Features Guide	IM DL950-01EN	The supplied CD contains the PDF file of this manual. The manual explains all the instrument's features other than the communication interface features. You can view the same information in the instrument's help files.
DL950 ScopeCorder User's Manual	IM DL950-02EN	The supplied CD contains the PDF file of this manual. The manual explains how to operate this instrument.
DL950 ScopeCorder Getting Started Guide	IM DL950-03EN	Provided as a printed manual. This guide explains the handling precautions, common operations, troubleshooting measures, and specifications of this instrument.
DL950 ScopeCorder Communication Interface User's Manual	IM DL950-17EN	This document. The supplied CD contains the PDF file of this manual. The manual explains the functions of the instrument's communication interface, how to configure it, and the commands.
Precautions Concerning the Modules	IM 701250-04E	The manual explains the precautions concerning the modules. This manual is included if you ordered modules.
DL950 ScopeCorder	IM DL950-92Z1	Document for China
Safety Instruction Manual	IM 00C01C01-01Z1	Safety manual (European languages)

The "EN," "E," "Z1," and "Z2" in the manual numbers are the language codes.

Contact information of Yokogawa offices worldwide is provided on the following sheet.

Document No.	Description
PIM 113-01Z2	List of worldwide contacts

Notes

- The contents of this manual are subject to change without prior notice as a result of continuing improvements to the instrument's performance and functionality. The figures given in this manual may differ from those that actually appear on your screen.
- Every effort has been made in the preparation of this manual to ensure the accuracy of its contents. However, should you have any questions or find any errors, please contact your nearest YOKOGAWA dealer.
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Revisions

- 1st Edition: February 2021
- 2nd Edition: October 2021
- 3rd Edition: May 2022

Ethernet Interface and USB Interface

To use the Ethernet communication features, your PC must have the following software:
- Communication library (TMCTL)

To use the USB communication features, your PC must have the following software:
- Communication library (TMCTL)
- YOKOGAWA USB driver (YTUSB)

You can download the above library and driver from the download page at the following website.
https://www.yokogawa.com/ymi/

How to Use This Manual

Structure of the Manual

This manual contains five chapters and an appendix.

Chapter 1   Ethernet Interface

Describes the features and specifications of the Ethernet interface.

Chapter 2   USB Interface

Describes the features and specifications of the USB interface.

Chapter 3   Programming Overview

Describes command syntax and other programming information.

Chapter 4   Commands

Describes every command individually.

Chapter 5   Status Reports

Describes the status byte, various registers, and queues.

Appendix

Provides a table of ASCII character codes and other reference materials.

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Conventions Used in This Manual

Notes and Cautions

The notes and cautions in this manual are categorized using the following symbols.

WARNING Calls attention to actions or conditions that could cause serious or fatal injury to the user, and precautions that can be taken to prevent such occurrences.

CAUTION Calls attention to actions or conditions that could cause light injury to the user or damage to the instrument or user's data, and precautions that can be taken to prevent such occurrences.

Note Calls attention to information that is important for the proper operation of the instrument.

Character Notations

Panel Key Names and Soft Key Names in Bold Characters
Indicate panel keys that are used in the procedure and soft keys and menu items that appear on the screen.

SHIFT+Panel Key
When SHIFT+panel key appears in a procedural explanation, it means to press the shift key so that it illuminates, and then to press the indicated panel key. A setup menu for the item written in purple below the key that you pressed appears on the screen.

Unit

k	Denotes 1000. Example: 100 kS/s (sample rate)
K	Denotes 1024. Example: 720 KB (file size)

Metasyntax

The following table contains the symbols that are used in the syntax discussed mainly in chapters 3 and 4. These symbols are referred to as BNF (Backus-Naur Form) symbols. For details on how to write data using these symbols, see pages 3-6 and 3-7.

Symbol	Description	Example	Example of Input
<>	A defined value	CHANnel<x>'s <x> = 1 to 4	CHANNEL2
{} |	Select an option in { } Exclusive OR	COUPling {AC|DC|DC50|GND}	COUPLING AC
[]	Can be omitted	TRIGger [:SIMPle]:SLOPe	TRIGger:SLOPe

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Chapter 5   Status Reports

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1.1   Component Names and Functions
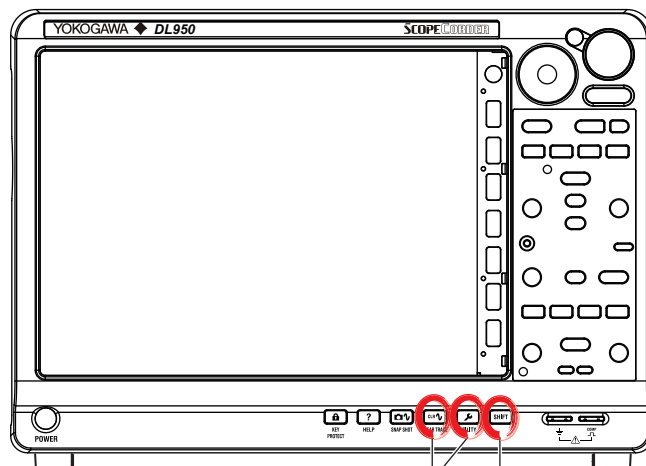
Front Panel

SHIFT key and CLEAR TRACE key
Press this key to switch to local mode.
In local mode, remote mode (remote control using communication commands) is cleared, and key operation becomes possible.
These keys are disabled when local lockout (see page 1-2) has been activated by a controller.

UTILITY key (page 1-5)
Press this key to set the communication interface and timeout value for remote control and to set the user name and password for user authentication.

Side Panel

10G Ethernet (10GE SFP+) port (option)
This port is for communicating with a controller (such as a PC) via 10 Gpbs Ethernet by installing an SFP+ module. For the installation and connection procedures, see page 1-4.
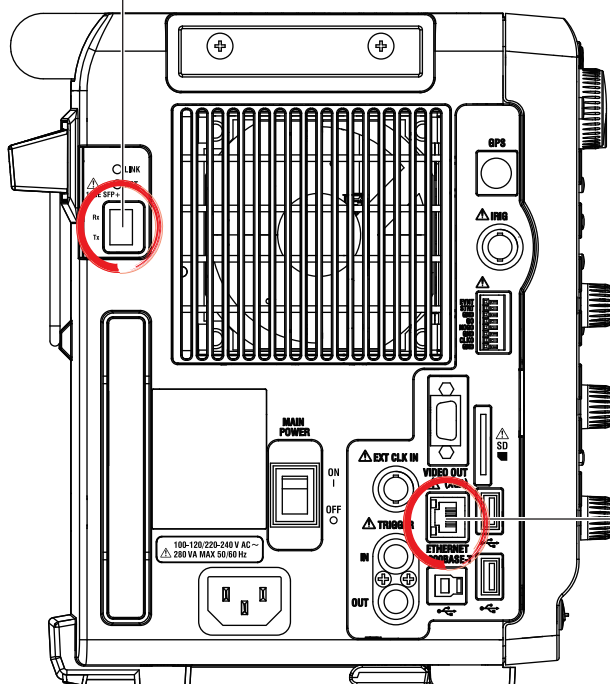
Ethernet (ETHERNET 100BASE-T) port
This port is for connecting the instrument to a controller (such as a PC) using an Ethernet cable. For details on how to connect the instrument to a controller, see page 1-4.

1.2 Ethernet Interface Features and Specifications

Ethernet Interface Features

This instrument has a standard Ethernet interface and an optional 10G Ethernet interface. The transmission and reception features are the same on both interfaces.

Reception Feature

You can use the reception feature to specify the same settings that you specify by using the front panel keys.

The instrument can receive output requests for measured and computed data, panel setup parameters, and error codes.

Transmission Feature

The instrument can transmit measured and computed data.

The instrument can transmit panel setup parameters and the status byte.

The instrument can transmit error codes when errors occur.

Ethernet Interface Specifications

Ethernet (standard)

Number of ports:	1
Electrical and mechanical specifications	IEEE802.3 compliant
Data rate:	1000 Mbps max.
Communication protocol:	TCP/IP
Connector:	RJ-45

10G Ethernet (option)

Number of ports:	1
Electrical and mechanical specifications	IEEE802.3 compliant
Data rate:	10 Gbps max.
Communication protocol:	TCP/IP
Connector:	SFP+

Data Transfer Rate

The following table contains approximate response times when outputting waveform data via Ethernet.

Model:	DL950
Controller:	PC: Corei7-10700 2.90 GHz, OS: Windows 10 Pro
Network adapter:	Intel PRO/1000 GT Desktop Adapter
Programming language:	Visual C++
Interface:	Ethernet (1000 Mbps max.)

Number of Data Points	Byte Data	Word Data	ASCII Data
100000	Approx. 20 ms	Approx. 20 ms	Approx. 2.2 s
1000000	Approx. 150 ms	Approx. 170 ms	Approx. 22 s

Switching between Remote and Local Modes

When Switching from Local to Remote Mode

The instrument switches to remote mode when it is in local mode and receives a `:COMMunicate:REMote ON` command from the PC.

- "REMOTE" appears in the top center of the screen.
- All keys except the **SHIFT+CLEAR TRACE** key are disabled.
- Settings entered in local mode are retained even when the instrument switches to remote mode.

When Switching from Remote to Local Mode

When the instrument is in remote mode and you press **SHIFT+CLEAR TRACE**, the instrument switches to local mode. However, this does not work if the instrument has received a `:COMMunicate:LOCKout ON` command from the PC. The instrument switches to local mode when it receives a `:COMMunicate:REMote OFF` command from the PC, regardless of the local lockout state.

• The REMOTE indicator in the top center of the screen disappears.
• Key operations are enabled.
• Settings entered in remote mode are retained even when the instrument switches to local mode.

Note

You can use either the standard Ethernet interface or the optional 10G Ethernet interface, but not both. Further, neither interface can be used simultaneously with the USB interface.

User Authentication Feature

To connect the instrument to a network as an FTP or Web server, you have to enter a user name and password in the Ethernet-communication-interface settings. To set the user name and password, access the instrument's UTILITY menu, the Network menu, and then the FTP/Web Server screen. For details, see section 20.3 or 20.4 in the *DL950 User's Manual*, IM DL950-02EN.

1.3 Connecting to the Ethernet Interface

Connection Procedure

Connect a UTP (Unshielded Twisted-Pair) or STP (Shielded Twisted-Pair) cable that is connected to a hub or router to the Ethernet port on the instrument's rear panel. Or, if you want to use 10G Ethernet (option), connect an SFP+ cable to the 10GSFP+ module installed in the 10G Ethernet port of the instrument.

Hub or router that supports the port (1000BASE-T or 10GBASE-R) that you want to use

PC
(controller)

DL950

**UTP or STP cable
(straight cable)
SFP+ cable when using 10G Ethernet (option)
(Straight cable)**

Ethernet (standard)

**Ethernet port
(1000BASE-T/100BASE-TX/10BASE-T)**

RJ-45 modular jack

10G Ethernet (option)

SFP+ port
(10GBASE-R)
(/C60 option)

10GSFP+ module
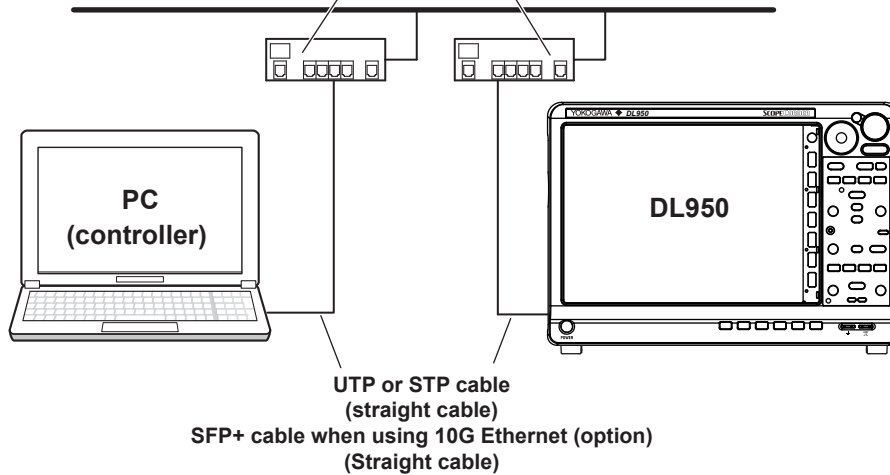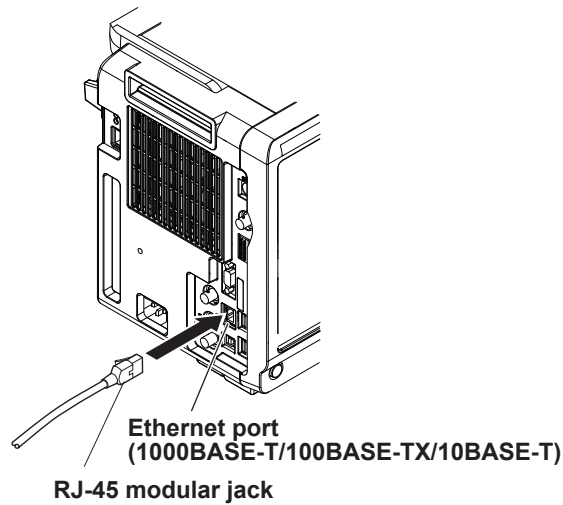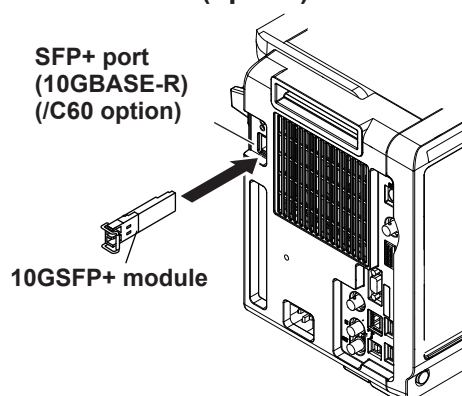
Precautions to Be Taken When Connecting Probes

Use a network cable that supports the data rate of your network.

Note

For details on how to connect the instrument to a network, see section 20.1, "Connecting the Instrument to a Network" in the *DL950 User's Manual*, IM DL950-02EN.

1.4 Configuring the Instrument Ethernet Settings

This section explains the following setting for remotely controlling the instrument via the Ethernet interface:

• Communication interface
• Network connection timeout setting

UTILITY Remote Ctrl Menu

Press **UTILITY** and then the **Remote Ctrl** soft key. The following menu appears. Set Interface to 1G or 10G (for the 10G interface).
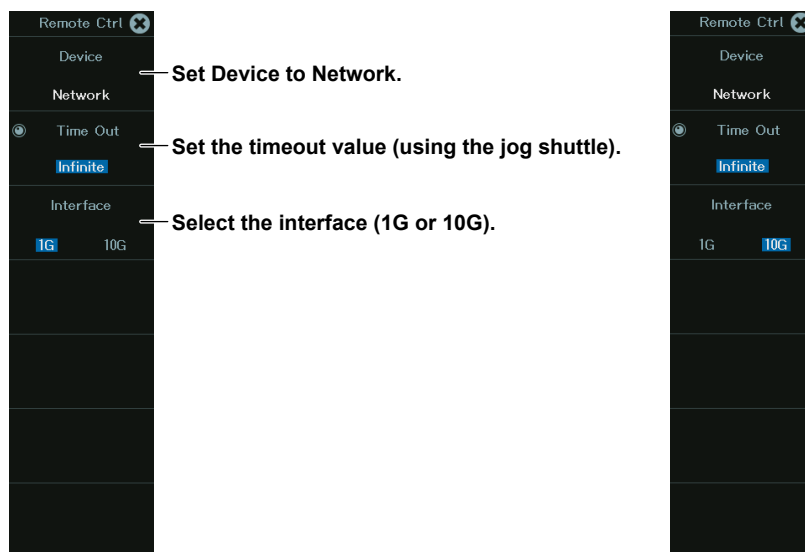
```
Remote Ctrl ✕                          Remote Ctrl ✕
   Device          ── Set Device to Network.      Device
  Network                                        Network
   Time Out        ── Set the timeout value          Time Out
  Infinite            (using the jog shuttle).     Infinite
  Interface        ── Select the interface          Interface
 1G    10G            (1G or 10G).                1G    10G
```

> **Note**
> Only use the selected communication interface. If you send commands simultaneously from another communication interface that has not been selected, the instrument will not execute the commands properly.

Configuring the TCP/IP Settings

To use the Ethernet interface, you must specify the following TCP/IP settings.

• The IP address
• Subnet mask
• Default gateway

For instructions on how to specify these settings, see section 20.2, "Configuring TCP/IP Settings" in the *DL950 User's Manual*, IM DL950-02EN.

2.1   Component Names and Functions
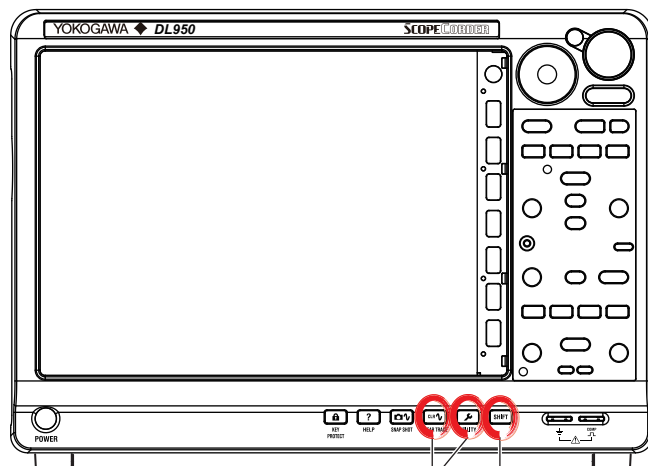
Front Panel

SHIFT key and CLEAR TRACE key
Press this key to switch to local mode.
In local mode, remote mode (remote control using communication commands) is cleared, and key operation becomes possible.
These keys are disabled when local lockout (see page 2-2) has been activated by a controller.

UTILITY key (page 2-4)
Press this key to set the communication interface for remote control and to enable remote control through the USB ports (when you want to use remote commands).

Side Panel
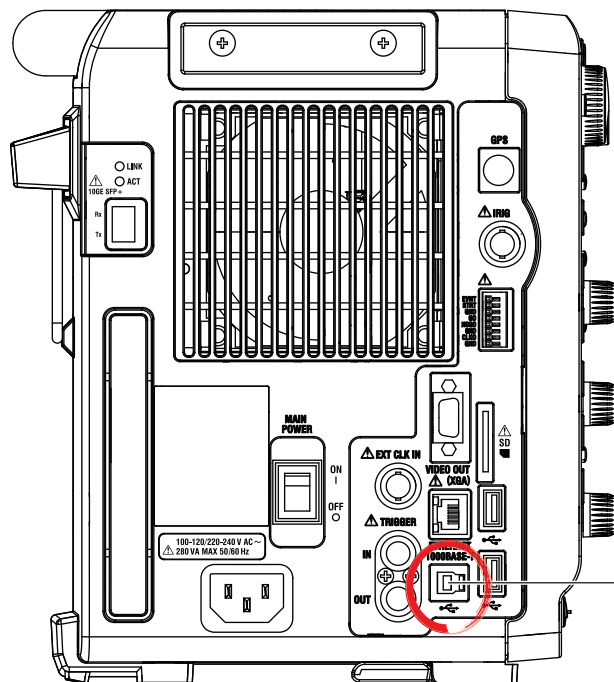
USB port
This port is for connecting the instrument to a controller (such as a PC) using a USB cable. For details on how to connect the instrument to a controller, see page 2-3.

2.2 USB Interface Features and Specifications

USB Interface Features

Reception Feature

You can use the reception feature to specify the same settings that you specify by using the front panel keys.

The instrument can receive output requests for measured and computed data, panel setup parameters, and error codes.

Transmission Feature

The instrument can transmit measured and computed data.

The instrument can transmit panel setup parameters and the status byte.

The instrument can transmit error codes when errors occur.

USB Interface Specifications

Electrical and mechanical specifications:	Complies with USB Rev.3.0
Connector:	Type B connector (receptacle)
Number of ports:	1
Power supply:	Self powered
System requirements:	A PC with a standard USB port, running Windows 8.1 or Windows 10. A separate device driver is required to enable the connection with the PC.

Data Transfer Rate

The following table contains approximate response times when outputting waveform.

Model: DL950
Controller: PC: Corei7-10700 2.90 GHz, OS: Windows 10 Pro
Programming language: Visual C++

Number of Data Points	Byte Data	Word Data	ASCII Data
100000	Approx. 15 ms	Approx. 15 ms	Approx. 2.1 s
1000000	Approx. 120 ms	Approx. 100 ms	Approx. 21 s

Switching between Remote and Local Modes

When Switching from Local to Remote Mode

The instrument switches to remote mode when it is in local mode and receives a `:COMMunicate:REMote ON` command from the PC.

- "REMOTE" appears in the top center of the screen.
- All keys except the **SHIFT+CLEAR TRACE** key are disabled.
- Settings entered in local mode are retained even when the instrument switches to remote mode.

When Switching from Remote to Local Mode

When the instrument is in remote mode and you press **SHIFT+CLEAR TRACE**, the instrument switches to local mode. However, this does not work if the instrument has received a `:COMMunicate:LOCKout ON` command from the PC. The instrument switches to local mode when it receives a `:COMMunicate:REMote OFF` command from the PC, regardless of the local lockout state.

- The REMOTE indicator in the top center of the screen disappears.
- Key operations are enabled.
- Settings entered in remote mode are retained even when the instrument switches to local mode.

Note

The USB interface cannot be used simultaneously with the Ethernet interface (including 10G Ethernet).

2.3   Connecting through the USB Interface

Precautions to Be Taken When Connecting Probes

- Be sure to insert the USB cable connectors firmly into the USB ports.
- If you are connecting multiple devices by using a USB hub, connect the instrument to the USB hub port that is closest to the port that the controller is connected to.
- Do not connect or remove USB cables from the time when the instrument is turned on until operation becomes available (approximately 20 to 30 seconds). If you do, the instrument may malfunction.

2

USB Interface

2.4 Configuring the Instrument's Settings (USB)

This section explains the following setting for controlling the instrument remotely through a USB interface:

- Communication interface

UTILITY Remote Ctrl Menu

Press **UTILITY** and then the **Remote Ctrl** soft key. The following menu appears.

Set Device to USB.

Set USB Function to TMC.
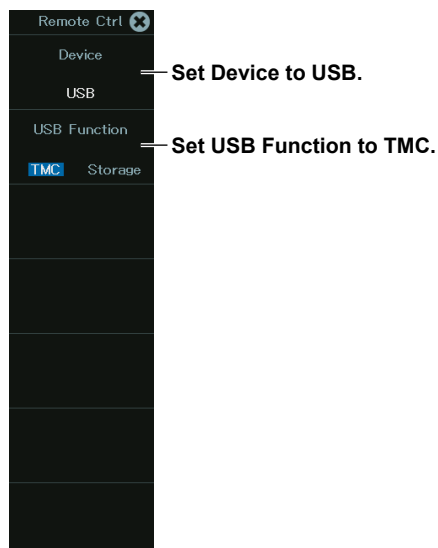
Note

- Only use the selected communication interface. If you send commands simultaneously from another communication interface that has not been selected, the instrument will not execute the commands properly.
- To remotely control the instrument through a USB port using communication commands, set USB Function, shown in the menu above, to TMC, and then install the YOKOGAWA USB driver (YTUSB) in the PC.
  For information about how to obtain the YOKOGAWA USB driver (YTUSB), contact your nearest YOKOGAWA dealer. You can also access the YOKOGAWA USB driver (YTUSB) download web page and download the driver.
  https://www.yokogawa.com/ymi/
- Do not use USB drivers (or software) supplied by other companies.

3.1   Messages

Messages

Messages are used to exchange information between the controller and the instrument. Messages that are sent from the controller to the instrument are called program messages, and messages that are sent from the instrument back to the controller are called response messages.

If a program message contains a command that requests a response (a query), the instrument returns a response message upon receiving the program message. The instrument returns a single response message in response to a single program message.

Program Messages

The program message format is shown below.

<Program message unit>
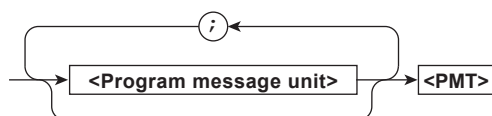
A program message consists of one or more program message units. Each unit corresponds to one command. The instrument executes the commands in the order that they are received.

Separate each program message unit with a semicolon.

For details on the program message syntax, see the next section.

Example :ACQuire:MODE NORMal;COUNt 1<PMT>
              Unit   **Unit**

<PMT>

This is a program message terminator. The following three types are available.

NL (new line):   Same as LF (line feed). One ASCII code "0AH."
^END: The END message as defined by IEEE 488.1
   (The data byte that is sent with the END message is the last data byte of the program message.)
NL^END: NL with an END message attached.
        (NL is not included in the program message.)

Program Message Unit Syntax

The program message unit syntax is shown below.

<Program header>
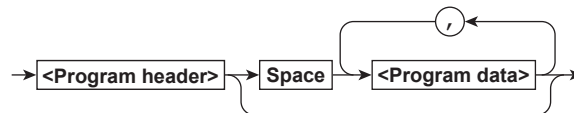
The program header indicates the command type. For details, see page 3-3.

<Program data>

Attach program data if there are conditions that are required to execute a command. Separate the program data from the header with a space (ASCII code 20H). If there are multiple sets of program data, separate each set with a comma.

For details, see page 3-6.

Example :ACQuire:MODE NORMal<PMT>
         Header   **Data**

Response Messages

The response message syntax is as follows:

<Response message unit>
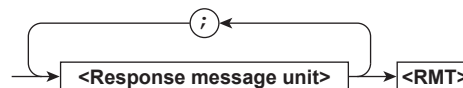
A response message consists of one or more response message units. Each unit corresponds to one response.

Separate each response message unit with a semicolon.

For details on the response message syntax, see the next page.

Example :ACQUIRE:MODE NORMAL;COUNT 1<RMT>
            Unit   **Unit**

<RMT>

RMT is a response message terminator. It is NL^END.

Response Message Unit Syntax

The response message unit syntax is shown below.

<Response header>
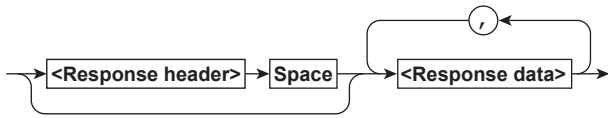
A response header sometimes precedes the response data. Separate the data from the header with a space. For details, see page 3-5.

<Response Data>

Response data contains the content of the response. If there are multiple sets of response data, separate each set with a comma. For details, see page 3-5.

Example

```
1.25E-02<RMT>   :ACQUIRE:MODE NORMAL<RMT>
     Data           Header       Data
```

If there are multiple queries in a program message, responses are returned in the same order that the queries were received in. In most cases, a single query returns a single response message unit, but there are a few queries that return multiple units. The first response message unit always corresponds to the first query, but the nth response unit may not necessarily correspond to the nth query. Therefore, if you want to make sure that every response is retrieved, divide the program messages into individual messages.

Notes on Sending and Receiving Messages

- If the controller sends a program message that does not contain a query, the controller can send the next program message at any time.
- If the controller sends a program message that contains a query, the controller must finish receiving the response message before it can send the next program message. If the controller sends the next program message before receiving the response message in its entirety, an error will occur. A response message that is not received in its entirety will be discarded.
- If the controller tries to receive a response message when there is none, an error will occur. If the controller tries to receive a response message before the transmission of the program message is complete, an error will occur.

- If the controller sends a program message containing multiple message units, but the message contains incomplete units, the instrument will try to execute the ones that are believed to be complete. However, these attempts may not always be successful. In addition, if such a message contains queries, the instrument may not necessary return responses.

Deadlock

The instrument can store at least 1024 bytes of messages in its transmit and receive buffers (the number of available bytes varies depending on the operating conditions). If both the transmit and receive buffers become full at the same time, the instrument will no longer be able to operate. This condition is called a deadlock. If this happens, you can resume operation by discarding response messages. Deadlock will not occur if the program message (including the <PMT>) is kept below 1024 bytes. Program messages that do not contain queries never cause deadlocks.

3.2   Commands

Commands

There are three types of commands (program headers) that a controller may send to the instrument. The commands differ in their program header formats.

Common Command Header

Commands that are defined in IEEE 488.2-1987 are called common commands. The common command header syntax is shown below. Be sure to include an asterisk (*) at the beginning of a common command.
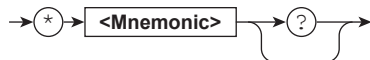
Common command example `*CLS`

Compound Header

Commands, other than common commands, that are specific to the instrument are classified and arranged in a hierarchy according to their functions. The compound header syntax is shown below. Be sure to use a colon to specify a lower hierarchical level.
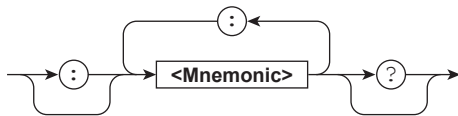
Compound header example: `:ACQuire:MODE`

Simple Header

These commands are functionally independent and are not contained within a hierarchy. The format of a simple header is shown below.

Simple header example: `START`

> **Note**
> A <mnemonic> is an alphanumeric character string.

When Concatenating Commands

- **Command Groups**

  A command group is a group of commands that have common compound headers arranged in a hierarchy. A command group may contain sub-groups.

  Example   Group of commands related to acquisition
  ```
  :ACQuire:AVERage:COUNt
  :ACQuire:MODE
  :ACQuire:AVERage:EWEight
  :ACQuire:CLOCk
  :ACQuire:RLENgth
  :ACQuire:COUNt
  ```

- **When Concatenating Commands of the Same Group**

  The instrument stores the hierarchical level of the command that is currently being executed and processes the next command on the assumption that it belongs to the same level. Therefore, the common header section can be omitted for commands that belong to the same group.

  Example   `:ACQuire:MODE NORMal;`
  `COUNt 1<PMT>`

- **When Concatenating Commands of Different Groups**

  If the subsequent command does not belong to the same group, place a colon in front of the header (this colon cannot be omitted).

  Example   `:ACQuire:MODE NORMal;:DISPlay:`
  `FORMat SINGle<PMT>`

- **When Concatenating Simple Headers**

  If a simple header follows another command, place a colon in front of the simple header (this colon cannot be omitted).

  Example   `:ACQuire:MODE NORMal;:`
  `STARt<PMT>`

- **When Concatenating Common Commands**

  Common commands that are defined in IEEE 488.2-1992 are independent of hierarchy. A colon is not needed before a common command.

  Example   `:ACQuire:MODE NORMal;*CLS;`
  `COUNt 1<PMT>`

- **When Separating Commands with <PMT>**

  If you separate two commands with a terminator, two program messages will be sent. Therefore, the common header must be specified for each command even when commands belonging to the same command group are being concatenated.

  Example :ACQuire:MODE NORMal<PMT>:
         ACQuire:COUNt 1<PMT>

Upper-level Query

An upper-level query is a query that is made by appending a question mark to a command higher in the group. The controller can receive all of the settings in a group collectively by executing a highest-level query. Some upper-level queries of a group, which may be comprised of more than three hierarchical levels, can cause the instrument to transmit all the lower level settings.

Example :CHANnel1?<PMT>

-> :CHANNEL1:DISPLAY ON;LABEL "CH1";
   COUPLING DC;POSITION 0.00;PROBE 10;
   VDIV 50.0E+00;BWIDTH FULL;
   OFFSET 0.0E+00;LSCALE:MODE 0

The response to an upper-level query can be sent back to the instrument as a program message. This enables the settings that were present when the upper-level query was made to be reproduced later on. However, some upper-level queries do not return setup parameters that are not currently in use. Exercise caution because not all of a group's information is necessarily returned in a response.

Header Interpretation Rules

The instrument interprets the header that it receives according to the rules below.

- Mnemonics are not case sensitive.

  Example   CURSor can be written as cursor
               or Cursor.

- The lower-case characters can be omitted.

  Example   CURSor can be written as CURSO or
               CURS.

- The question mark at the end of a header indicates that it is a query. You cannot omit the question mark.

  Example   The shortest abbreviation for
               CURSor? is CURS?.

- If the <x> (value) at the end of a mnemonic is omitted, it is interpreted as a 1.

  Example   If CHANnel<x> is written as CHAN, it
               means CHANnel1.

- Parts of commands and parameters enclosed in square brackets ([ ]) can be omitted.

  Example   TRIGger[:SIMPle]:LEVel can
               be written as TRIG:LEV.

  However, the last section enclosed in square brackets cannot be omitted in an upper-level query.

  Example   TRIGger? and TRIGger:SIMPle?
               are different queries.

3.3   Responses

Responses

When the controller sends a query with a question mark, the instrument returns a response message to the query. The instrument returns response messages in one of the following two forms.

- **Response with a Header and Data**
  Responses that can be used as program messages without any changes are returned with command headers attached.

  Example `:ACQUire:MODE?<PMT>`
       `-> :ACQUire:MODE NORMAL<RMT>`

- **Response with Only Data**
  Responses that cannot be used as program messages unless changes are made (query-only commands) are returned without headers. However, there are query-only commands whose responses the instrument will attach headers to.

  Example `:MEASure:CHANnel1:PTOPeak:`
       `VALue?<PMT>`
       `-> 10.0E+00<RMT>`

If You Want the Instrument to Return Responses without Headers

You can configure the instrument so that even responses that have both headers and data are returned without headers. Use the `COMMunicate:HEADer` command for this purpose.

Abbreviated Form

The instrument normally returns response headers with the lower-case section removed. You can configure the instrument so that full headers are returned. Use the `COMMunicate:VERBose` command for this purpose. The sections enclosed in square brackets ([ ]) are also omitted in the abbreviated form.

3.4 Data

Data

Data contains conditions and values that are written after the header. A space separates the data from the header. Data is classified as follows:

Data	Description
<Decimal>	A value expressed in decimal notation (Example: Probe attenuation for CH1 -> `CHANnel1:PROBe 100`)
<Voltage><Time> <Frequency><Current>	A physical value (Example: Time-axis range -> `TIMebase:TDIV 1US`)
<Register>	A register value expressed as binary, octal, decimal, or hexadecimal (Example: Extended event register value -> `STATUS:EESE #HFE`)
<Character Data>	Predefined character string (mnemonic). Select from the available strings in braces. (Example: Select the input coupling of CH1 -> `CHANnel1:COUPling {AC|DC|DC50|GND}`)
<Boolean>	Indicates on and off. Specify ON, OFF, or a value. (Example: Turn on the CH1 display -> `CHANnel1:DISPlay ON`)
<String Data>	User-defined string (Example: Comment attached to screen data output -> `HCOPy:COMMent "ABCDEF"`)
<Filename>	Indicates a file name. (Example: Save file name -> `FILE:SAVE:WAVeform: NAME "CASE1"`)
<Block Data>	Data that contains 8-bit values (Example: Response to acquired waveform data -> `#800000010ABCDEFGHIJ`)

<Decimal>

<Decimal> indicates a value expressed as a decimal number, as shown in the table below. Decimal values are written in the NR form as specified in ANSI X3.42-1975.

Symbol	Description	Examples		
<NR1>	Integer	125	-1	+1000
<NR2>	Fixed-point number	125.0	-.90	+001.
<NR3>	Floating-point number	125.0E+0	-9E-1	+.1E4
<NRf>	Any of the forms <NR1> to <NR3>			

- The instrument can receive decimal values that are sent from the controller in any of the forms <NR1> to <NR3>. This is expressed as <NRf>.
- The instrument returns a response to the controller in one of the forms from <NR1> to <NR3> depending on the query. The same form is used regardless of the size of the value.
- For the <NR3> form, the plus sign after the "E" can be omitted. You cannot omit the minus sign.

- If a value outside the range is entered, the value is adjusted to the closest value within the range.
- If a value has more significant digits than are available, the value will be rounded.

<Voltage>, <Time>, <Frequency>, <Current>

<Voltage>, <Time>, <Frequency>, and <Current> indicate decimal values that have physical significance. A <Multiplier> or <Unit> can be attached to the <NRf> form that was described earlier. Use one of the following syntaxes.

Syntax	Examples
<NRf><Multiplier><Unit>	5MV
<NRf><Unit>	5E-3V
<NRf><Multiplier>	5M
<NRf>	5E-3

<Multiplier>

Multipliers that you can use are indicated in the following table.

Symbol	Word	Multiplier
EX	Exa	10^{18}
PE	Peta	10^{15}
T	Tera	10^{12}
G	Giga	10^{9}
MA	Mega	10^{6}
K	Kilo	10^{3}
M	Milli	10^{-3}
U	Micro	10^{-6}
N	Nano	10^{-9}
P	Pico	10^{-12}
F	Femto	10^{-15}
A	Atto	10^{-18}

<Unit>

Units that you can use are indicated in the following table.

Symbol	Word	Description
V	Volt	Voltage
S	Second	Time
HZ	Hertz	Frequency
MHZ	Megahertz	Frequency
A	Ampere	Current

- <Multiplier> and <Unit> are not case sensitive.
- "U" is used to indicate micro ("μ").
- "MA" is used for Mega to distinguish it from Milli. Megahertz, which is expressed as "MHZ," is an exception. Therefore, "M (Milli)" cannot be used for frequencies.
- If both <Multiplier> and <Unit> are omitted, the default unit is used.
- Response messages are always expressed in the <NR3> form. Response messages are returned using the default unit without the <Multiplier> or <Unit>.

<Register>

<Register> indicates an integer, and can be expressed in hexadecimal, octal, or binary as well as a decimal number. This is used when each bit of the value has a particular meaning. Use one of the following syntaxes.

Syntax	Example
<NRf>	1
#H<Hexadecimal value made up of the digits 0 to 9 and A to F>	#H0F
#Q<Octal value made up of the digits 0 to 7>	#Q777
#B<Binary value made up of the digits 0 and 1>	#B001100

*   <Register> is not case sensitive.
*   Response messages are always expressed in the <NR1> form.

<Character Data>

<Character data> is a predefined character string (mnemonics). It is mainly used to indicate options and is chosen from the character strings given in { }. The data interpretation rules are the same as those described in "Header Interpretation Rules" on page 3-4.

Syntax	Example
{AC|DC|GND}	AC

*   As with the header, the COMMunicate:VERBose command can be used to select whether response messages are returned in the full form or in the abbreviated form.
*   The COMMunicate:HEADer setting does not affect <Character data>.

<Boolean>

<Boolean> is data that indicates ON or OFF. Use one of the following syntaxes.

Syntax	Example			
{ON|OFF|<NRf>}	ON	OFF	1	0

*   When <NRf> is expressed in the form, "OFF" is selected if the rounded integer value is 0, and "ON" is selected for all other cases.
*   A response message is always returned with a 1 if the value is ON and with a 0 if the value is OFF.

<String Data>

<String data> is not a specified character string like <Character data>. It is an arbitrary character string. The character string must be enclosed in single quotation marks (') or double quotation marks (").

Syntax	Example
<String Data>	'ABC' "IEEE488.2-1987"

*   If a character string contains a double quotation mark ("), the double quotation mark is expressed as two consecutive quotation marks (""). This rule also applies to single quotation marks.
*   A response message is always enclosed in double quotation marks (").
*   <String data> is any character string. Therefore, the instrument assumes that the remaining program message units are part of the character string if no closing single (') or double quotation mark (") is encountered. As a result, no error is detected if a quotation mark is omitted.

<Filename>

<Filename> is data that indicates a file name. Use one of the following syntaxes.

Syntax	Example
{<NRf>|<Character data>|<String data>}	1 CASE "CASE"

*   <NRf> is rounded to an 8-digit integer and converted to ASCII code. The result is the file name (example: 1 becomes "00000001"). Negative values are not allowed.
*   The first 12 characters of <character data> or the first 16 characters of <string data> are the file name.
*   Response messages are always expressed in the <string data> form.
*   For information about the number of characters in a file name expressed in the <string data> form, see the User's Manual.

<Block Data>

<Block data> contains 8-bit values. It is only used in response messages on the instrument. The syntax is as follows:

Syntax	Examples
#N<N-digit decimal number> <Data byte sequence>	#800000010ABCDEFGHIJ

*   #N
    Indicates that the data is <Block data>. N indicates the number of succeeding data bytes (digits) in ASCII code.
*   <N-digit decimal number>
    Indicates the number of bytes of data (example: 00000010 = 10 bytes).
*   <Data byte sequence>
    Expresses the actual data (example: ABCDEFGHIJ).
*   Data is comprised of 8-bit values (0 to 255). This means that the ASCII code "0AH," which stands for "NL," can also be included in the data. Hence, care must be taken when programming the controller.

3.5 Synchronization with the Controller

Overlap Commands and Sequential Commands

There are two types of commands: overlap and sequential. Most commands are sequential commands.

> **Note**
> Overlap commands are indicated as such in chapter 4.
> All other commands are sequential commands.

```
:CHANnel1:VDIV 5V;VDIV?<PMT>
```

If you specify V/div and send the above program message to query for the result, the instrument always returns the most recent setting (5 V in this case). This is because the next command is forced to wait until the processing of `CHANnel1:VDIV` is completed. This type of command is called a sequential command.

```
:FILE:LOAD:SETup:EXECute "CASE1";:
CHANnel:VDIV?<PMT>
```

On the other hand, for example, if you execute a file load, query for the V/div value, and send the above program message, `CHANnel1:VDIV?` is executed before the loading of the file is completed, and the returned V/div value is the value before the file is loaded. Overlapping refers to the act of executing the next command before the processing of the current command is completed, such as in the command `FILE:LOAD:SETup:EXECute "CASE1"`.

With overlap commands, the execution of the next command may start before the execution of the previous command is completed. You can prevent overlapping by using the following methods.

Synchronizing to Overlap Commands

You can use any of the following methods to synchronize to overlap commands and prevent overlapping.

- **Using the *WAI command**
  The `*WAI` command holds the subsequent commands until the overlap command is completed.

  ```
  :COMMunicate:OPSE #H0040;:FILE:LOAD:
  SETup:EXECute "CASE1";*WAI;:
  CHANnel1:VDIV?<PMT>
  ```

In the above example, the `COMMunicate:OPSE` command is used to select which command to apply `*WAI` to. Here, it is applied to the media access command. `*WAI` is executed before `CHANnel1:VDIV?`, so `CHANnel1:VDIV?` is not executed until the file loading is completed.

- **Using the COMMunicate:OVERlap command**
  The `COMMunicate:OVERlap` command enables (or disables) overlapping.

  ```
  :COMMunicate:OVERlap #HFFBF;:FILE:
  LOAD:SETup:EXECute "CASE1";:
  CHANnel1:VDIV?<PMT>
  ```

In the above example, `COMMunicate:OVERlap #HFFBF` enables overlapping for commands other than media access. Because overlapping of file loading is disabled, `FILE:LOAD:SETup:EXECute "CASE1"` operates in the same way as a sequential command. Thus, `CHANnel1:VDIV?` is not executed until the file loading is completed.

- **Using the *OPC command**
  The `*OPC` command sets the OPC bit, which is bit 0 in the standard event register (see page 5-4), to 1 when the overlapping is completed.

  ```
  :COMMunicate:OPSE #H0040;*ESE 1;
  *ESR?;*SRE 32;:FILE:LOAD:SETup:
  EXECute "CASE1";*OPC<PMT>
  (Read the response to *ESR?)
  (Wait for a service request)
  :CHANnel1:VDIV?<PMT>
  ```

In the above example, the `COMMunicate:OPSE` command is used to select which command to apply `*OPC` to. Here, it is applied to the media access command. `*ESE 1` and `*SRE 32` indicate that a service request is only generated when the OPC bit becomes 1. `*ESR?` clears the standard event register.
Thus, `CHANnel1:VDIV?` is not executed until the a service request is generated.

• **Using the *OPC? query**

The `*OPC?` query generates a response when an overlapping operation is completed.

```
:COMMunicate:OPSE #H0040;::FILE:LOAD:
SETup:EXECute "CASE1";*OPC?<PMT>
(Read the response to *OPC?)
:CHANnel1:VDIV?<PMT>
```

In the above example, the `COMMunicate:OPSE` command is used to select which command to apply `*OPC?` to. Here, it is applied to the media access command. Because `*OPC?` does not generate a response until the overlapping operation is completed, the file loading will have been completed by the time the response to `*OPC?` is read.

Synchronizing to Overlap Commands (Normal Commands)

Even with sequential commands, synchronization with non-communication events such as triggers is sometimes required.

```
:TRIGger:MODE SINGle;::STARt;:
WAVeform:SEND?<PMT>
```

For example, if you send the above program message to query for waveform data acquired in single trigger mode, the `WAVeform:SEND?` command may be executed regardless of whether or not the acquisition has been completed and may result in a command execution error.

If this happens, you must use one of the following methods to synchronize to the end of waveform acquisition.

• **Using the STATus:CONDition? Query**

`STATus:CONDition?` is used to query for the contents of the condition register (see page 5-5).

```
:TRIGger:MODE SINGle;::STARt<PMT>
:STATus:CONDition?<PMT>
(Read the response. If bit 0 is 1, return to the
previous command.)
:WAVeform:SEND?<PMT>
```

In the above example, you can determine whether or not waveform acquisition is in progress by reading bit 0 in the condition register. If the bit is 1, waveform acquisition is in progress. If the bit is 0, waveform acquisition is not in progress. Thus, `WAVeform:SEND?` is not executed until bit 0 in the condition register becomes 0.

• **Using the Extended Event Register (When service requests (SRQs) can be used) (When service requests (SRQs) can be used)**

The changes in the condition register can be reflected in the extended event register (see page 5-5).

```
:STATus:FILTer13 FALL,::STATus:
EESE #H1000;EESR?;*SRE 8;:
TRIGger:MODE SINGle;::STARt<PMT>
(Read the response to STATus:EESR?)
(Wait for a service request)
:WAVeform:SEND?<PMT>
```

In the above example, the `STATus:FILTer13 FALL` command sets the transition filter so that bit 12 (FILTer13) in the extended event is set to 1 when bit 12 (RUN) in the condition register changes from 1 to 0. The `STATus:EESE #H1000` command is used to only change the status byte based on bit 12 in the extended event register. The `STATus:EESR?` command is used to clear the extended event register. The `*SRE 8` command is used to generate service requests based only on the changes in the extended event register bits.
Thus, `WAVeform:SEND?` is not executed until a service request is generated.

• **Using the COMMunicate:WAIT Command**

The `COMMunicate:WAIT` command is used to wait for a specific event to occur.

```
:STATus:FILTer13 FALL;:
STATus:EESR?;:TRIGger:MODE SINGle;:
STARt<PMT>
(Read the response to STATus:EESR?)
:COMMunicate:WAIT #H1000;::
WAVeform:SEND?<PMT>
```

In the above example, the meanings of `STATus:FILTer13 FALL` and `STATus:EESR?` are the same as in the extended event register case described earlier. The `:COMMunicate:WAIT #H1000` command specifies that the program will wait for bit 12 (RUN) in the extended event register to be set to 1.
Thus, `WAVeform:SEND?` is not executed until bit 12 in the extended event register becomes 1.

3

Programming Overview

4.1   List of Commands

Command	Function	Page
ACQuire Group		
:ACQuire?	(Upper-level query) Queries all waveform acquisition settings.	4-42
:ACQuire:AVERage?	(Upper-level query) Queries all settings related to the averaging of FFT analysis.	4-42
:ACQuire:AVERage:COUNt	Sets or queries the number of waveform acquisitions to perform during averaging.	4-42
:ACQuire:AVERage:EWEight (Exponent Weight)	Sets or queries the attenuation constant of exponential averaging.	4-42
:ACQuire:CLOCk	Sets or queries the time base (internal or external clock).	4-42
:ACQuire:COUNt	Sets or queries the number of waveform acquisitions to perform in Normal mode.	4-42
:ACQuire:MODE	Sets or queries the waveform acquisition mode.	4-42
:ACQuire:PROTate	Sets or queries the pulse/rotate setting to use during external clock input.	4-42
:ACQuire:RECorder?	(Upper-level query) Queries all acquisition settings for recorder mode.	4-42
:ACQuire:RECorder:CONDition	Sets or queries the acquisition condition in recorder mode.	4-43
:ACQuire:RECorder:HOLD	Holds the waveform display in recorder mode.	4-43
:ACQuire:RECorder:RESume	Resumes the waveform display in recorder mode.	4-43
:ACQuire:RECorder:RLENgth	Sets or queries the external sampling record length in recorder mode.	4-43
:ACQuire:RECorder:SINTerval (Sampling Interval)	Sets or queries the sampling interval in recorder mode.	4-43
:ACQuire:RECorder:TIME	Sets or queries the record time in recorder mode.	4-43
:ACQuire:RLENgth	Sets or queries the record length.	4-43
:ACQuire:RTOut?	(Upper-level query) Queries all SSD recording settings.	4-43
:ACQuire:RTOut:ANAMing	Sets or queries the SSD-recording auto naming feature.	4-44
:ACQuire:RTOut:COMMent	Sets or queries the SSD recording comment.	4-44
:ACQuire:RTOut:DIVide:MODE	Sets or queries whether divided recording is enabled for SSD recording.	4-44
:ACQuire:RTOut:DIVide:NUMBer	Sets or queries the number of divisions when divided recording is performed during SSD recording.	4-44
:ACQuire:RTOut:FILename	Sets or queries the SSD-recording file name.	4-44
:ACQuire:RTOut:MODE	Sets or queries the SSD recording or flash acquisition operation.	4-44
:ACQuire:SMODe	Sets or queries the system mode (recorder mode or scope mode).	4-44
ANALysis Group		
:ANALysis<x>?	(Upper-level query) Queries all power math (power analysis or harmonic analysis) settings.	4-45
:ANALysis<x>:HARMonic?	(Upper-level query) Queries harmonic analysis setting of the power math feature.	4-45
:ANALysis<x>:HARMonic:GRAPh?	(Upper-level query) Queries all settings related to the harmonic analysis result display.	4-45
:ANALysis<x>:HARMonic:GRAPh:DITem?	(Upper-level query) Queries all analysis items settings of the harmonic analysis result display.	4-45
:ANALysis<x>:HARMonic:GRAPh:DITem:HDF	Sets or queries whether percentage content (HDF) is displayed in the harmonic analysis result display.	4-45
:ANALysis<x>:HARMonic:GRAPh:DITem:P	Sets or queries whether active power (P) is displayed in the harmonic analysis result display.	4-45
:ANALysis<x>:HARMonic:GRAPh:DITem:PHI	Sets or queries whether phase angle (φ) is displayed in the harmonic analysis result display.	4-45
:ANALysis<x>:HARMonic:GRAPh:DITem:RMS	Sets or queries whether rms values (RMS) is displayed in the harmonic analysis result display.	4-45
:ANALysis<x>:HARMonic:GRAPh:IZOom	Sets or queries the current zoom when the graph mode is set to Vector in the harmonic analysis result display (window settings).	4-46
:ANALysis<x>:HARMonic:GRAPh:LSTart	Sets or queries whether list starting harmonic is displayed in the harmonic analysis result display (window settings).	4-46
:ANALysis<x>:HARMonic:GRAPh:MAXorder	Sets or queries the maximum displayed harmonic in the harmonic analysis result display (window settings).	4-46
:ANALysis<x>:HARMonic:GRAPh:MODE	Sets or queries the graph mode in the harmonic analysis result display (window settings).	4-46

Command	Function	Page
`:ANALysis<x>:HARMonic:GRAPh:NUMeric`	Sets or queries whether numeric string is displayed when the graph mode is set to Vector in the harmonic analysis result display (window settings).	4-46
`:ANALysis<x>:HARMonic:GRAPh:POSition`	Sets or queries the graph position in the harmonic analysis result display (window settings).	4-46
`:ANALysis<x>:HARMonic:GRAPh:SCALe`	Sets or queries the vertical scale when the graph mode is set to Bar in the harmonic analysis result display (window settings).	4-47
`:ANALysis<x>:HARMonic:GRAPh:UZOom`	Sets or queries the voltage zoom when the graph mode is set to Vector in the harmonic analysis result display (window settings).	4-47
`:ANALysis<x>:HARMonic:LRMS?`	(Upper-level query) Queries all settings related to the harmonic analysis (for Line RMS mode).	4-47
`:ANALysis<x>:HARMonic:LRMS:<Parameter 1>:LABel`	Sets or queries the label of an analysis item in harmonic analysis (for Line RMS mode).	4-47
`:ANALysis<x>:HARMonic:LRMS:<Parameter 1>:SCALe`	Sets or queries the scale boundaries (upper and lower) of an analysis item in harmonic analysis (for Line RMS mode).	4-47
`:ANALysis<x>:HARMonic:LRMS:<Parameter 1>:STATe`	Sets or queries the on/off status of an analysis item in harmonic analysis (for Line RMS mode).	4-48
`:ANALysis<x>:HARMonic:LRMS:<Parameter 2>:SCALe`	Sets the scale boundaries (upper and lower) of an analysis item (RMS, Rhdf, and φ of all harmonics) in harmonic analysis (for Line RMS mode).	4-48
`:ANALysis<x>:HARMonic:LRMS:<Parameter 2>:STATe`	Sets the on/off status of an analysis item (RMS, Rhdf, and φ of all harmonics) in harmonic analysis (for Line RMS mode).	4-48
`:ANALysis<x>:HARMonic:LRMS:SOURce`	Sets or queries source channel in harmonic analysis (for Line RMS mode).	4-48
`:ANALysis<x>:HARMonic:LRMS:TERM?`	(Upper-level query) Queries all calculation period settings in harmonic analysis (for Line RMS mode).	4-48
`:ANALysis<x>:HARMonic:LRMS:TERM:ESFilter`	Sets or queries the edge source filter for the calculation period in harmonic analysis (for Line RMS mode).	4-48
`:ANALysis<x>:HARMonic:LRMS:TERM:HYSTeresis`	Sets or queries the hysteresis for the calculation period in harmonic analysis (for Line RMS mode).	4-49
`:ANALysis<x>:HARMonic:MODE`	Sets or queries the analysis mode in harmonic analysis settings.	4-49
`:ANALysis<x>:HARMonic:POWer?`	(Upper-level query) Queries all settings related to the harmonic analysis (for power mode).	4-49
`:ANALysis<x>:HARMonic:POWer:<Parameter 1>?`	(Upper-level query) Queries all analysis item settings in harmonic analysis (for Power mode).	4-49
`:ANALysis<x>:HARMonic:POWer:<Parameter 1>:LABel`	Sets or queries the label of an analysis item in harmonic analysis (for Power mode).	4-49
`:ANALysis<x>:HARMonic:POWer:<Parameter 1>:SCALe`	Sets or queries the scale boundaries (upper and lower) of an analysis item in harmonic analysis (for Power mode).	4-49
`:ANALysis<x>:HARMonic:POWer:<Parameter 1>:STATe`	Sets or queries the on/off status of an analysis item in harmonic analysis (for Power mode).	4-50
`:ANALysis<x>:HARMonic:POWer:<Parameter 2>:SCALe`	Sets the scale boundaries (upper and lower) of an analysis item (P, Phdf, and φ of all harmonics) in harmonic analysis (for Power mode).	4-50
`:ANALysis<x>:HARMonic:POWer:<Parameter 2>:STATe`	Sets the on/off status of an analysis item (P, Phdf, and φ of all harmonics) in harmonic analysis (for Power mode).	4-50
`:ANALysis<x>:HARMonic:POWer:SOURce?`	(Upper-level query) Queries all source channel settings in harmonic analysis (for Power mode).	4-50
`:ANALysis<x>:HARMonic:POWer:SOURce:I1`	Sets or queries source channel I1 in harmonic analysis (for Power mode).	4-50
`:ANALysis<x>:HARMonic:POWer:SOURce:I2`	Sets or queries source channel I2 in harmonic analysis (for Power mode).	4-50
`:ANALysis<x>:HARMonic:POWer:SOURce:I3`	Sets or queries source channel I3 in harmonic analysis (for Power mode).	4-51
`:ANALysis<x>:HARMonic:POWer:SOURce:U1`	Sets or queries source channel U1 in harmonic analysis (for Power mode).	4-51
`:ANALysis<x>:HARMonic:POWer:SOURce:U2`	Sets or queries source channel U2 in harmonic analysis (for Power mode).	4-51
`:ANALysis<x>:HARMonic:POWer:SOURce:U3`	Sets or queries source channel U3 in harmonic analysis (for Power mode).	4-51
`:ANALysis<x>:HARMonic:POWer:TERM?`	(Upper-level query) Queries all calculation period settings in harmonic analysis (for Power mode).	4-51
`:ANALysis<x>:HARMonic:POWer:TERM:ESFilter`	Sets or queries the edge source filter for the calculation period in harmonic analysis (for Power mode).	4-51
`:ANALysis<x>:HARMonic:POWer:TERM:HYSTeresis`	Sets or queries the hysteresis for the calculation period in harmonic analysis (for Power mode).	4-52

Command	Function	Page
:ANALysis<x>:HARMonic:POWer:TERM:ESOurce	Sets or queries the edge detection source for the calculation period in harmonic analysis (for Power mode).	4-52
:ANALysis<x>:HARMonic:POWer:WIRing	Sets or queries the wiring system in harmonic analysis (for Power mode).	4-52
:ANALysis<x>:HARMonic:PSCale	Sets or queries the φ (phase difference) scale in harmonic analysis (for Power mode).	4-52
:ANALysis<x>:MODE	Sets or queries the power math mode.	4-52
:ANALysis<x1>:POWer<x2>?	(Upper-level query) Queries all power analysis settings (Wiring System1 or Wiring System2) of power math.	4-52
:ANALysis<x1>:POWer<x2>:DSOutput? (Delta Star Output)	(Upper-level query) Queries all settings for delta-star transformation of power analysis.	4-52
:ANALysis<x1>:POWer<x2>:DSOutput:I1	Sets or queries the channel for outputting the I1 resulting from delta-star transformation of power analysis.	4-53
:ANALysis<x1>:POWer<x2>:DSOutput:I2	Sets or queries the channel for outputting the I2 resulting from delta-star transformation of power analysis.	4-53
:ANALysis<x1>:POWer<x2>:DSOutput:I3	Sets or queries the channel for outputting the I3 resulting from delta-star transformation of power analysis.	4-53
:ANALysis<x1>:POWer<x2>:DSOutput:IN	Sets or queries the channel for outputting the IN resulting from delta-star transformation of power analysis.	4-53
:ANALysis<x1>:POWer<x2>:DSOutput:U1	Sets or queries the channel for outputting the U1 resulting from delta-star transformation of power analysis.	4-54
:ANALysis<x1>:POWer<x2>:DSOutput:U2	Sets or queries the channel for outputting the U2 resulting from delta-star transformation of power analysis.	4-54
:ANALysis<x1>:POWer<x2>:DSOutput:U3	Sets or queries the channel for outputting the U3 resulting from delta-star transformation of power analysis.	4-54
:ANALysis<x1>:POWer<x2>:EFFiciency?	(Upper-level query) Queries all efficiency settings of power analysis (Wiring System1 or Wiring System2).	4-54
:ANALysis<x1>:POWer<x2>:EFFiciency:MODE	Sets or queries the efficiency mode of power analysis.	4-54
:ANALysis<x1>:POWer<x2>:EFFiciency:MOTor	Sets or queries the motor efficiency calculation method of power analysis.	4-55
:ANALysis<x1>:POWer<x2>:EFFiciency:RANgle	Sets or queries the rotation angle source for the motor efficiency calculation (rotation angle mode) of power analysis.	4-55
:ANALysis<x1>:POWer<x2>:EFFiciency:SCALing	Sets or queries the scaling for the motor efficiency calculation (rotation angle mode) of power analysis.	4-55
:ANALysis<x1>:POWer<x2>:EFFiciency:SPEed	Sets or queries the rotation speed source for the motor efficiency calculation (rotation speed mode) of power analysis.	4-55
:ANALysis<x1>:POWer<x2>:EFFiciency:SSCaling (Speed Scaling)	Sets or queries the scaling for the motor efficiency calculation (rotation speed mode) of power analysis.	4-56
:ANALysis<x1>:POWer<x2>:EFFiciency:TORQue	Sets or queries the torque source for the motor efficiency calculation of power analysis.	4-56
:ANALysis<x1>:POWer<x2>:INTegration?	(Upper-level query) Queries all integration settings of power analysis.	4-56
:ANALysis<x1>:POWer<x2>:INTegration:CALExecute	Calibrates the integration calculation of power analysis.	4-56
:ANALysis<x1>:POWer<x2>:INTegration:CONDition	Sets or queries the integration condition for the power analysis integration.	4-56
:ANALysis<x1>:POWer<x2>:INTegration:MRESet	Manually resets the integrated value of power analysis.	4-56
:ANALysis<x1>:POWer<x2>:INTegration:RCONdition	Sets or queries whether the integrated value is reset when the power analysis integration starts.	4-57
:ANALysis<x1>:POWer<x2>:INTegration:SCALing	Sets or queries the scaling for the power analysis integration.	4-57
:ANALysis<x1>:POWer<x2>:<Parameter>?	(Upper-level query) Queries all power analysis settings.	4-57
:ANALysis<x1>:POWer<x2>:<Parameter>:{PH1|PH2|PH3|SIGMa}?	(Upper-level query) Queries all settings related to a specific analysis item of power analysis.	4-57
:ANALysis<x1>:POWer<x2>:<Parameter>:{PH1|PH2|PH3|SIGMa}:LABel	Sets or queries the label of an analysis item in power analysis.	4-57
:ANALysis<x1>:POWer<x2>:<Parameter>:{PH1|PH2|PH3|SIGMa}:SCALe	Sets or queries the scale boundaries (upper and lower) of an analysis item in power analysis.	4-58
:ANALysis<x1>:POWer<x2>:<Parameter>:{PH1|PH2|PH3|SIGMa}:STATe	Sets or queries the on/off status of an analysis item in power analysis.	4-58

Command	Function	Page
`:ANALysis<x1>:POWer<x2>:LCCType` (Load Circuit Connection Type)	Sets or queries the load circuit connection type in power analysis.	4-58
`:ANALysis<x1>:POWer<x2>:PSCale`	Sets or queries the φ (phase difference) scale in power analysis.	4-59
`:ANALysis<x1>:POWer<x2>:QFORmula`	Sets or queries the reactive power formula type of power analysis.	4-59
`:ANALysis<x1>:POWer<x2>:RTYPe`	Sets or queries the RMS type of an analysis item in power analysis.	4-59
`:ANALysis<x1>:POWer<x2>:SOURce?`	(Upper-level query) Queries all source channel settings of power analysis.	4-59
`:ANALysis<x1>:POWer<x2>:SOURce:I1`	Sets or queries source channel I1 in power analysis.	4-59
`:ANALysis<x1>:POWer<x2>:SOURce:I2`	Sets or queries source channel I2 in power analysis.	4-59
`:ANALysis<x1>:POWer<x2>:SOURce:I3`	Sets or queries source channel I3 in power analysis.	4-59
`:ANALysis<x1>:POWer<x2>:SOURce:U1`	Sets or queries source channel U1 in power analysis.	4-60
`:ANALysis<x1>:POWer<x2>:SOURce:U2`	Sets or queries source channel U2 in power analysis.	4-60
`:ANALysis<x1>:POWer<x2>:SOURce:U3`	Sets or queries source channel U3 in power analysis.	4-60
`:ANALysis<x1>:POWer<x2>:TERM?`	(Upper-level query) Queries all calculation period settings of power analysis (Wiring System1 or Wiring System2).	4-60
`:ANALysis<x1>:POWer<x2>:TERM:ATIMer`	Sets or queries the update time of the calculation period in power analysis.	4-60
`:ANALysis<x1>:POWer<x2>:TERM:ESFilter`	Sets or queries the edge source filter for the calculation period in power analysis.	4-61
`:ANALysis<x1>:POWer<x2>:TERM:ESLope`	Sets or queries the source slope of the calculation period in power analysis.	4-61
`:ANALysis<x1>:POWer<x2>:TERM:ESOurce`	Sets or queries the edge detection source channel for the calculation period in power analysis.	4-61
`:ANALysis<x1>:POWer<x2>:TERM:HYSteresis`	Sets or queries the hysteresis for the calculation period in power analysis.	4-61
`:ANALysis<x1>:POWer<x2>:TERM:LEVel`	Sets or queries the source level of the calculation period in power analysis.	4-61
`:ANALysis<x1>:POWer<x2>:TERM:STOPpredict`	Sets or queries the stop prediction of the calculation period in power analysis.	4-62
`:ANALysis<x1>:POWer<x2>:TERM:TYPE`	Sets or queries the calculation period type in power analysis.	4-62
`:ANALysis<x1>:POWer<x2>:TERM:OCHannel` (Other Channel)	Sets or queries the channel number when the edge detection source for the calculation period is set to Other Channel in power analysis.	4-62
`:ANALysis<x1>:POWer<x2>:TERM:ZOSToppredict` (Zero Output after StopPredict)	Sets or queries whether output is set to zero after a power analysis stop prediction.	4-62
`:ANALysis<x1>:POWer<x2>:WIRing`	Sets or queries the wiring system in power analysis.	4-62

ASETup Group

`:ASETup:EXECute`	Executes auto setup.	4-63

CALibrate Group

`:CALibrate?`	(Upper-level query) Queries all calibration settings.	4-64
`:CALibrate[:EXECute]`	Executes calibration.	4-64
`:CALibrate:MODE`	Sets or queries the auto calibration mode.	4-64
`:CALibrate:SBOCancel?`	(Upper-level query) Queries all settings related to the collective execution of strain balancing on all channels and the collective execution of DC offset cancellation on all channels.	4-64
`:CALibrate:SBOCancel:CHANnel<x>` (Strain Balance & Offset Cancel)	Sets or queries whether the channel is included in the collective execution of strain balancing on channels or the collective execution of DC offset cancellation on all channels.	4-64
`:CALibrate:SBOCancel:CHANnel<x1>:SCHannel<x2>[:STATus]`	Sets or queries whether the channel is included in the collective execution of strain balancing on channels or the collective execution of DC offset cancellation on all channels.	4-64
`:CALibrate:SBOCancel:EXECute`	Executes strain balancing on channels collectively or DC offset cancellation on all channels collectively.	4-64

Command	Function	Page

CAPTure Group

Command	Function	Page
`:CAPTure?`	(Upper-level query) Queries all dual capture settings.	4-65
`:CAPTure:ACTion?`	(Upper-level query) Queries all dual-capture-action settings.	4-65
`:CAPTure:ACTion:BUZZer`	Sets or queries whether a beep is sounded as one of the capture actions.	4-65
`:CAPTure:ACTion:FOLDer`	Sets or queries whether a date folder is created when waveform data or screen capture data is saved to the storage device when an action is executed.	4-65
`:CAPTure:ACTion:MAIL?`	(Upper-level query) Queries all dual-capture-action e-mail transmission settings.	4-65
`:CAPTure:ACTion:MAIL:COUNt`	Sets or queries the upper limit of e-mail transmissions to perform as a capture action.	4-65
`:CAPTure:ACTion:MAIL:MODE`	Sets or queries whether e-mail is transmitted as a capture action.	4-65
`:CAPTure:ACTion:MSAVe (Measure Save)`	Sets or queries whether measured data is saved to a storage device as a capture action.	4-65
`:CAPTure:ACTion:SAVE?`	(Upper-level query) Queries all dual-capture-action data save settings.	4-65
`:CAPTure:ACTion:SAVE:ANAMing`	Sets or queries the auto file naming method.	4-66
`:CAPTure:ACTion:SAVE:CDIRectory`	Changes the current directory on the storage device where the screen capture is saved to as a capture action.	4-66
`:CAPTure:ACTion:SAVE[:MODE]`	Sets or queries whether captured data is saved to a storage device as a capture action.	4-66
`:CAPTure:ACTion:SAVE:NAME`	Sets or queries the file name that is used when captured data is saved to a storage device.	4-66
`:CAPTure:ACTion:SAVE:ASCii:MODE`	Sets or queries whether high-speed sampling waveform data is saved to the storage device in ASCII format as a dual capture action.	4-66
`:CAPTure:ACTion:SAVE:BINary:MODE`	Sets or queries whether high-speed sampling waveform data is saved to the storage device in binary format as a dual capture action.	4-66
`:CAPTure:ACTion:SAVE:MATLab:MODE`	Sets or queries whether high-speed sampling waveform data is saved to the storage device in MATLAB format as an dual capture action.	4-66
`:CAPTure:ACTion:SAVE:DBINary:MODE (DualCapture Binary)`	Sets or queries whether all low-speed and high-speed sampling waveform data is saved to the storage device in WDF format as an dual capture action.	4-66
`:CAPTure:ACTion:SAVE:DASCii:MODE (DualCapture Ascii)`	Sets or queries whether low-speed sampling waveform data is saved to the storage device in ASCII format as a dual capture action.	4-67
`:CAPTure:ACTion:SAVE:DMATlab:MODE (DualCapture MATLAB)`	Sets or queries whether low-speed sampling waveform data is saved to the storage device in MATLAB format as an dual capture action.	4-67
`:CAPTure:ANALysis<x>:FORMat`	Sets or queries the capture window display format of display group P and H (number of divisions in the vertical direction).	4-67
`:CAPTure:CAPNum? MAXimum`	Queries the largest number of the captured waveforms.	4-67
`:CAPTure:CAPNum? MINimum`	Queries the smallest number of the captured waveforms.	4-67
`:CAPTure:FORMat`	Sets or queries the display format of the high-speed sampling main window.	4-67
`:CAPTure:GROup<x>?`	(Upper-level query) Queries all settings related to the display group of the high-speed sampling main window.	4-67
`:CAPTure:GROup<x>:FORMat`	Sets or queries the number of divisions of the high-speed sampling main window.	4-67
`:CAPTure:GROup<x1>:TRACe<x2>`	Sets or queries the displayed waveform of the high-speed sampling main window.	4-67
`:CAPTure:LOW?`	(Upper-level query) Queries all settings related to the low-speed sampling main window.	4-68
`:CAPTure:LOW:GROup<x>?`	(Upper-level query) Queries all settings related to the display group of the low-speed sampling main window.	4-68
`:CAPTure:MCMode (Main Capture Mode)`	Sets or queries the main capture mode during dual capture.	4-68
`:CAPTure:MODE`	Sets or queries whether the dual capture mode is enabled.	4-68
`:CAPTure:RLENgth`	Sets or queries the dual capture length.	4-68
`:CAPTure:TDIV`	Sets or queries the dual capture T/div setting.	4-68
`:CAPTure:WINDow?`	(Upper-level query) Queries all settings related to the high-speed sampling display window.	4-68
`:CAPTure:WINDow:CAPNum`	Sets or queries the displayed history number of the high-speed sampling waveform.	4-68
`:CAPTure:WINDow:HIGH`	Sets or queries the ratio of the main waveform display area that is occupied by the high-speed sampling waveform.	4-69

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:CAPTure:WINDow:LAYout	Sets or queries the layout for when two analysis Windows are displayed for the high-speed sampling waveform.	4-69
:CAPTure:WINDow:LOW	Sets or queries the ratio of the waveform display area that is occupied by the low-speed sampling waveform.	4-69
:CAPTure:ZOOM?	(Upper-level query) Queries all settings related to the high-speed sampling zoom window.	4-69
:CAPTure:ZOOM:ANALysis<x>:FORMat	Sets or queries the number of divisions of power and harmonic groups on the high-speed sampling zoom window.	4-69
:CAPTure:ZOOM:GROup<x>?	(Upper-level query) Queries all settings related to the display group of the high-speed sampling zoom window.	4-69
:CAPTure:ZOOM:GROUp<x>:FORMat	Sets or queries the number of divisions of the high-speed sampling zoom window.	4-69
:CAPTure:ZOOM:MAG	Sets or queries the displayed time of the high-speed sampling zoom waveform.	4-69
:CAPTure:ZOOM:MODe	Sets or queries the display on/off state of the high-speed sampling zoom waveform.	4-69
:CAPTure:ZOOM:POSition	Sets or queries the horizontal position of the high-speed sampling zoom waveform.	4-70

CHANnel Group

Command	Function	Page
:CHANnel<x>?	(Upper-level query) Queries all vertical axis settings of a channel.	4-71
:CHANnel<x>:ACCL?	(Upper-level query) Queries all acceleration/voltage module settings.	4-71
:CHANnel<x>:ACCL:BIAS	Sets or queries whether the bias current supply to the acceleration sensors of an acceleration/voltage module is on.	4-71
:CHANnel<x>:ACCL:BWIDth	Sets or queries the filter when the input coupling of an acceleration/voltage module is set to acceleration.	4-71
:CHANnel<x>:ACCL:COUPling	Sets or queries the input coupling setting of an acceleration/voltage module.	4-71
:CHANnel<x>:ACCL:GAIN	Sets or queries the gain when the input coupling of an acceleration/voltage module is set to acceleration.	4-71
:CHANnel<x>:ACCL:POSition	Sets or queries the vertical position when the input coupling of an acceleration/voltage module is set to acceleration.	4-71
:CHANnel<x>:ACCL:SCALe	Sets or queries the upper and lower limits of the screen when the input coupling of an acceleration/voltage module is set to acceleration.	4-71
:CHANnel<x>:ACCL:SENSitivity	Sets or queries the sensitivity when the input coupling of an acceleration/voltage module is set to acceleration.	4-71
:CHANnel<x>:ACCL:UNIT	Sets or queries the unit when the input coupling of an acceleration/voltage module is set to acceleration.	4-72
:CHANnel<x>:ACCL:VARiable	Sets or queries the scale setting mode when the input coupling of an acceleration/voltage module is set to acceleration.	4-72
:CHANnel<x>:ACCL:ZOOM	Sets or queries the vertical zoom factor when the input coupling of an acceleration/voltage module is set to acceleration.	4-72
:CHANnel<x>:CAN?	(Upper-level query) Queries all settings of a module that can perform CAN bus monitoring.	4-72
:CHANnel<x>:CAN:OSOut?	(Upper-level query) Queries all settings related to one-shot output of a module that can perform CAN bus monitoring.	4-72
:CHANnel<x1>:CAN:OSOut:DATA<x2>	Sets or queries the value of one-shot output data frame.	4-72
:CHANnel<x>:CAN:OSOut:DLC (Data Length Code)	Sets or queries the byte size of the data area of one-shot output data frames.	4-72
:CHANnel<x>:CAN:OSOut:EXECute (One Shot Out)	Executes a one-shot output from a module that can monitor a CAN bus.	4-73
:CHANnel<x>:CAN:OSOut:FRAMe	Sets or queries the type (data/remote) of one-shot output frames.	4-73
:CHANnel<x>:CAN:OSOut:MFORmat (Message Format)	Sets or queries the message format (standard/extended) of one-shot output frames.	4-73
:CHANnel<x>:CAN:OSOut:MID (Message ID)	Sets or queries the message ID of one-shot output frames.	4-73
:CHANnel<x>:CAN:OSOut:MTYPe (Message Type)	Sets or queries the frame message type (CAN/CAN FD) of one-shot output data.	4-73
:CHANnel<x>:CAN:PORT?	(Upper-level query) Queries all settings related to the specified port of a module that can perform CAN bus monitoring.	4-73
:CHANnel<x>:CAN:PORT:BRATe	Sets or queries the bit rate of the specified CAN bus signal port.	4-74
:CHANnel<x>:CAN:PORT:BSNum (Bit Sample Number)	Sets or queries the number of sample points of the bit of the specified CAN bus signal port.	4-74
:CHANnel<x>:CAN:PORT:DBFormat	Sets or queries the start bit setting and notation of the specified CAN bus signal port.	4-74

Command	Function	Page
:CHANnel<x>:CAN:PORT:DBRate (Data Bit Rate)	Sets or queries the data bit rate (CAN FD) of the specified CAN bus signal port.	4-74
:CHANnel<x>:CAN:PORT:DSPoint (Data Sample Point)	Sets or queries the sample point (CAN FD) of the specified CAN bus signal port.	4-74
:CHANnel<x>:CAN:PORT:FDSTandard (FD Standard)	Sets or queries the protocol type (ISO/non ISO) of the specified CAN bus signal port.	4-75
:CHANnel<x>:CAN:PORT:LONLy	Sets or queries the listen only state of the specified port on a module that can monitor a CAN bus.	4-75
:CHANnel<x>:CAN:PORT:SJW (Sync Jump Width)	Sets or queries the resynchronization jump width (Sync Jump Width).	4-75
:CHANnel<x>:CAN:PORT:SPOint (Sample Point)	Sets or queries the number of bit sample points of the specified CAN bus signal port.	4-75
:CHANnel<x>:CAN:PORT:TERMinator	Sets or queries whether to turn on the 124 Ω terminator between CAN_H and CAN_L on the CAN bus line.	4-75
:CHANnel<x1>:CAN:SCHannel<x2>?	(Upper-level query) Queries all settings related to the specified sub channel of a module that can perform CAN bus monitoring.	4-75
:CHANnel<x1>:CAN:SCHannel<x2>:BCOunt (Byte Count)	Sets or queries the byte count of the specified sub channel on a module that can monitor a CAN bus.	4-76
:CHANnel<x1>:CAN:SCHannel<x2>:BICount (Bit Count)	Sets or queries the bit length of the specified sub channel on a module that can monitor a CAN bus.	4-76
:CHANnel<x1>:CAN:SCHannel<x2>:BLABel<x3>	Sets or queries the specified bit label when the data type of the specified sub channel on a module that can monitor a CAN bus is logic.	4-76
:CHANnel<x1>:CAN:SCHannel<x2>:BORDer (Byte Order)	Sets or queries the method (endian) to use to store in the internal memory the data of the specified sub channel on a module that can monitor a CAN bus.	4-76
:CHANnel<x1>:CAN:SCHannel<x2>:FACTor	Sets or queries the scaling constant (the value per bit) of the specified sub channel on a module that can monitor a CAN bus.	4-77
:CHANnel<x1>:CAN:SCHannel<x2>:INPut	Sets or queries the input ON/OFF state of the specified sub channel on a module that can monitor a CAN bus.	4-77
:CHANnel<x1>:CAN:SCHannel<x2>:LABel	Sets or queries the label name of the specified sub channel on a module that can monitor a CAN bus.	4-77
:CHANnel<x1>:CAN:SCHannel<x2>:MFORmat	Sets or queries the message format of the specified sub channel on a module that can monitor a CAN bus.	4-77
:CHANnel<x1>:CAN:SCHannel<x2>:MID	Sets or queries the message ID of the specified sub channel on a module that can monitor a CAN bus.	4-78
:CHANnel<x1>:CAN:SCHannel<x2>:OFFSet	Sets or queries the scaling constant (offset value) of the specified sub channel on a module that can monitor a CAN bus.	4-78
:CHANnel<x1>:CAN:SCHannel<x2>:POSition	Sets or queries the vertical position value of the specified sub channel on a module that can monitor a CAN bus.	4-78
:CHANnel<x1>:CAN:SCHannel<x2>:SBIT (Start Bit)	Sets or queries the bit number of the start position of the specified sub channel on a module that can monitor a CAN bus.	4-78
:CHANnel<x1>:CAN:SCHannel<x2>:SCALe	Sets or queries the display range (top and bottom edges) of the specified sub channel on a module that can monitor a CAN bus.	4-79
:CHANnel<x1>:CAN:SCHannel<x2>:UNIT	Sets or queries the data unit of the specified sub channel on a module that can monitor a CAN bus.	4-79
:CHANnel<x1>:CAN:SCHannel<x2>:VTYPe (Value Type)	Sets or queries the data type of the specified sub channel on a module that can monitor a CAN bus.	4-79
:CHANnel<x1>:CAN:SCHannel<x2>:ZOOM	Sets or queries the vertical zoom factor of CAN logic waveforms.	4-79
:CHANnel<x>:FREQ?	(Upper-level query) Queries all frequency module settings.	4-79
:CHANnel<x>:FREQ:INPut?	(Upper-level query) Queries all frequency module input settings.	4-80
:CHANnel<x>:FREQ:INPut:BWIDth	Sets or queries the input signal bandwidth limit of a frequency module.	4-80
:CHANnel<x>:FREQ:INPut:CELimination	Sets or queries the input signal chatter elimination of a frequency module.	4-80
:CHANnel<x>:FREQ:INPut:COUPling	Sets or queries the input coupling setting of a frequency module.	4-80
:CHANnel<x>:FREQ:INPut:HYSTeresis	Sets or queries the hysteresis of a frequency module.	4-80
:CHANnel<x>:FREQ:INPut:PRESet	Sets or queries the preset setting of a frequency module.	4-80
:CHANnel<x>:FREQ:INPut:PROBe	Sets or queries the probe attenuation of a frequency module.	4-80
:CHANnel<x>:FREQ:INPut:PULLup	Sets or queries whether pull-up is turned on for a frequency module.	4-80
:CHANnel<x>:FREQ:INPut:SLOPe	Sets or queries the input slope of a frequency module.	4-81
:CHANnel<x>:FREQ:INPut:THReshold	Sets or queries the threshold level of a frequency module.	4-81
:CHANnel<x>:FREQ:INPut:VRANge	Sets or queries the voltage range of a frequency module.	4-81

Command	Function	Page
`:CHANnel<x>:FREQ:LSCale?`	(Upper-level query) Queries all the linear scaling settings of a frequency module.	4-81
`:CHANnel<x>:FREQ:LSCale:AVALue`	Sets or queries the scaling coefficient A that is used during linear scaling on a frequency module.	4-81
`:CHANnel<x>:FREQ:LSCale:BVALue`	Sets or queries the scaling coefficient B that is used during linear scaling on a frequency module.	4-81
`:CHANnel<x>:FREQ:LSCale:GETMeasure`	Executes the measurement of the linear scaling P1X or P2X value of a frequency module.	4-81
`:CHANnel<x>:FREQ:LSCale:MODE`	Sets or queries the linear scale mode of a frequency module.	4-81
`:CHANnel<x>:FREQ:LSCale:{P1X|P1Y|P2X|P2Y}`	Sets or queries the linear scaling P1X, P1Y, P2X, or P2Y value of a frequency module.	4-82
`:CHANnel<x>:FREQ:LSCale:UNIT`	Sets or queries the linear scale unit of a frequency module.	4-82
`:CHANnel<x>:FREQ:OFFSet`	Sets or queries the offset of a frequency module.	4-82
`:CHANnel<x>:FREQ:POSition`	Sets or queries the vertical position for a frequency module.	4-82
`:CHANnel<x>:FREQ:SCALe`	Sets or queries the upper and lower limits of the screen for a frequency module.	4-82
`:CHANnel<x>:FREQ:SETup?`	(Upper-level query) Queries all frequency module FV settings.	4-82
`:CHANnel<x>:FREQ:SETup:CFRequency`	Sets or queries the center frequency of a frequency module.	4-82
`:CHANnel<x>:FREQ:SETup:DECeleration`	Sets or queries whether deceleration prediction is turned on for a frequency module.	4-83
`:CHANnel<x>:FREQ:SETup:DPULse`	Sets or queries the distance per pulse of a frequency module.	4-83
`:CHANnel<x>:FREQ:SETup:FILTer?`	(Upper-level query) Queries all frequency module filter settings.	4-83
`:CHANnel<x>:FREQ:SETup:FILTer:PAVerage?`	(Upper-level query) Queries all frequency module pulse average settings.	4-83
`:CHANnel<x>:FREQ:SETup:FILTer:PAVerage:MODE`	Sets or queries whether pulse averaging is turned on for a frequency module.	4-83
`:CHANnel<x>:FREQ:SETup:FILTer:PAVerage:VALue`	Sets or queries the number of pulses to average over for a frequency module.	4-83
`:CHANnel<x>:FREQ:SETup:FILTer:SMOothing?`	(Upper-level query) Queries all frequency module smoothing settings.	4-83
`:CHANnel<x>:FREQ:SETup:FILTer:SMOothing:MODE`	Sets or queries whether smoothing is turned on for a frequency module.	4-83
`:CHANnel<x>:FREQ:SETup:FILTer:SMOothing:VALue`	Sets or queries the moving average order of smoothing of a frequency module.	4-83
`:CHANnel<x>:FREQ:SETup:FUNCtion`	Sets or queries the measurement mode of a frequency module.	4-84
`:CHANnel<x>:FREQ:SETup:LRESet`	Sets or queries whether over-limit reset is turned on for a frequency module.	4-84
`:CHANnel<x>:FREQ:SETup:MPULse`	Sets or queries whether the measurement pulse is positive or negative for a frequency module.	4-84
`:CHANnel<x>:FREQ:SETup:PROTate`	Sets or queries the number of pulses per rotation of a frequency module.	4-84
`:CHANnel<x>:FREQ:SETup:RESet`	Resets the pulse count of a frequency module.	4-84
`:CHANnel<x>:FREQ:SETup:STOPpredict`	Sets or queries whether stop prediction is turned on for a frequency module.	4-84
`:CHANnel<x>:FREQ:SETup:TIMeout`	Sets or queries the duty timeout value of a frequency module.	4-84
`:CHANnel<x>:FREQ:SETup:TUNit`	Sets or queries the time unit when measuring velocity of a frequency module.	4-84
`:CHANnel<x>:FREQ:SETup:UNIT`	Sets or queries the pulse integration unit of a frequency module.	4-84
`:CHANnel<x>:FREQ:SETup:UPULse`	Sets or queries the unit/pulse setting of a frequency module.	4-85
`:CHANnel<x>:FREQ:SETup:VUNit`	Sets or queries the velocity unit of a frequency module.	4-85
`:CHANnel<x>:FREQ:VARiable`	Sets or queries the scale setting mode of a frequency module.	4-85
`:CHANnel<x>:FREQ:VDIV`	Sets or queries the Value/Div setting of a frequency module.	4-85
`:CHANnel<x>:FREQ:ZOOM`	Sets or queries the vertical zoom factor of a frequency module.	4-85
`:CHANnel<x>:INPut`	Sets or queries whether the channel is displayed.	4-85
`:CHANnel<x>:LABel`	Sets or queries the waveform label of a channel.	4-85
`:CHANnel<x>:LIN?`	(Upper-level query) Queries all settings of a module that can perform LIN bus monitoring.	4-85
`:CHANnel<x1>:LIN:FRAMe<x2>?`	(Upper-level query) Queries all LIN bus signal frame settings.	4-86
`:CHANnel<x1>:LIN:FRAMe<x2>:CHECksum`	Sets or queries the checksum mode of LIN bus signal frames.	4-86
`:CHANnel<x1>:LIN:FRAMe<x2>:DLENgth`	Sets or queries the data length of LIN bus signal frames.	4-86
`:CHANnel<x>:LIN:PORT?`	(Upper-level query) Queries all settings related to the specified port of a module that can perform LIN bus monitoring.	4-86
`:CHANnel<x>:LIN:PORT:BRATe`	Sets or queries the bit rate of the specified LIN bus signal port.	4-86

Command	Function	Page
`:CHANnel<x1>:LIN:SCHannel<x2>?`	(Upper-level query) Queries all settings related to the specified sub channel of a module that can perform LIN bus monitoring.	4-86
`:CHANnel<x1>:LIN:SCHannel<x2>:BICount (Bit Count)`	Sets or queries the bit length of the specified sub channel on a module that can monitor a LIN bus.	4-86
`:CHANnel<x1>:LIN:SCHannel<x2>:BLABel<x3>`	Sets or queries the specified bit label when the data type of the specified sub channel on a module that can monitor a LIN bus is logic.	4-86
`:CHANnel<x1>:LIN:SCHannel<x2>:BORDer (Byte Order)`	Sets or queries the method (endian) to use to store in the internal memory the data of the specified sub channel on a module that can monitor a LIN bus.	4-87
`:CHANnel<x1>:LIN:SCHannel<x2>:FACTor`	Sets or queries the scaling constant (the value per bit) of the specified sub channel on a module that can monitor a LIN bus.	4-87
`:CHANnel<x1>:LIN:SCHannel<x2>:ID`	Sets or queries the frame ID of the specified sub channel on a module that can monitor a LIN bus.	4-87
`:CHANnel<x1>:LIN:SCHannel<x2>:INPut`	Sets or queries the input ON/OFF state of the specified sub channel on a module that can monitor a LIN bus.	4-87
`:CHANnel<x1>:LIN:SCHannel<x2>:LABel`	Sets or queries the label name of the specified sub channel on a module that can monitor a LIN bus.	4-87
`:CHANnel<x1>:LIN:SCHannel<x2>:OFFSet`	Sets or queries the scaling constant (offset value) of the specified sub channel on a module that can monitor a LIN bus.	4-87
`:CHANnel<x1>:LIN:SCHannel<x2>:POSition`	Sets or queries the vertical position value of the specified sub channel on a module that can monitor a LIN bus.	4-88
`:CHANnel<x1>:LIN:SCHannel<x2>:SBIT (Start Bit)`	Sets or queries the bit number of the start position of the specified sub channel on a module that can monitor a LIN bus.	4-88
`:CHANnel<x1>:LIN:SCHannel<x2>:SCALe`	Sets or queries the display range (top and bottom edges) of the specified sub channel on a module that can monitor a LIN bus.	4-88
`:CHANnel<x1>:LIN:SCHannel<x2>:UNIT`	Sets or queries the data unit of the specified sub channel on a module that can monitor a LIN bus.	4-88
`:CHANnel<x1>:LIN:SCHannel<x2>:VTYPe (Value Type)`	Sets or queries the data type of the specified sub channel on a module that can monitor a LIN bus.	4-88
`:CHANnel<x1>:LIN:SCHannel<x2>:ZOOM`	Sets or queries the vertical zoom factor of LIN logic waveforms.	4-88
`:CHANnel<x>:LOGic?`	(Upper-level query) Queries all logic input module settings.	4-88
`:CHANnel<x>:LOGic:{BIT1|...|BIT8}?`	(Upper-level query) Queries all settings of each bit of a logic input module.	4-89
`:CHANnel<x>:LOGic:{BIT1|...|BIT8}:CELimination`	Sets or queries the chatter elimination for the specified bit of the specified logic channel.	4-89
`:CHANnel<x>:LOGic:{BIT1|...|BIT8}:DISPlay`	Sets or queries whether the display of each bit is turned on for the specified logic channel.	4-89
`:CHANnel<x>:LOGic:{BIT1|...|BIT8}:LABel`	Sets or queries the label of each bit for the specified logic channel.	4-89
`:CHANnel<x>:LOGic:BMAPping`	Sets or queries the bit display method of the specified logic channel.	4-89
`:CHANnel<x>:LOGic:DESKew`	Sets or queries the deskew value when a logic module is installed.	4-89
`:CHANnel<x>:LOGic:POSition`	Sets or queries the vertical position of the specified logic channel.	4-89
`:CHANnel<x>:LOGic:ZOOM`	Sets or queries the vertical zoom factor of a logic input module.	4-89
`:CHANnel<x>:MODUle?`	Queries the module of the specified channel.	4-90
`:CHANnel<x>:SENT?`	(Upper-level query) Queries all SENT monitor module settings.	4-90
`:CHANnel<x>:SENT:FORMat?`	(Upper-level query) Queries all SENT signal message format settings of an SENT monitor module.	4-90
`:CHANnel<x>:SENT:FORMat:CTICk (Clock Tick)`	Sets or queries the clock tick of a SENT signal.	4-90
`:CHANnel<x>:SENT:FORMat:CTYPe (CRC Type)`	Sets or queries the CRC type of a SENT signal.	4-90
`:CHANnel<x>:SENT:FORMat:DNIBbles (Data Nibbles)`	Sets or queries the number of data nibbles of a SENT signal.	4-90
`:CHANnel<x>:SENT:FORMat:HS12`	Sets or queries the on/off state of High Speed 12bit of the SENT port.	4-90
`:CHANnel<x>:SENT:FORMat:MULTiplex`	Sets or queries the on/off state of Fast Channel Multiplexing of the SENT port.	4-91
`:CHANnel<x>:SENT:FORMat:PPULse (Pause Pulse)`	Sets or queries whether pause pulses are to be included in FastCH messages of SENT signals.	4-91
`:CHANnel<x>:SENT:FORMat:SCHType (Slow CH Type)`	Sets or queries the Slow CH type of a SENT signal.	4-91
`:CHANnel<x>:SENT:ERRor?`	(Upper-level query) Queries all SENT monitor module error settings.	4-91
`:CHANnel<x>:SENT:ERRor:DETect?`	(Upper-level query) Queries all SENT monitor module error detection settings.	4-91

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:CHANnel<x>:SENT:ERRor:DETect:SCPulse (Successive Calibration Pulse)	Sets or queries whether successive calibration pulse errors of a SENT signal are to be detected.	4-91
:CHANnel<x>:SENT:ERRor:TRIGger?	(Upper-level query) Queries all error trigger channel settings of a SENT monitor module.	4-91
:CHANnel<x>:SENT:ERRor:TRIGger:FCRC (Fast Channel CRC)	Sets or queries whether fast channel CRC errors of a SENT signal are to be displayed in error trigger channels.	4-91
:CHANnel<x>:SENT:ERRor:TRIGger:NVALue (Nibble Value)	Sets or queries whether nibble value errors of a SENT signal are to be displayed in error trigger channels.	4-91
:CHANnel<x>:SENT:ERRor:TRIGger:PNUMber (Pulse Number)	Sets or queries whether pulse number errors of a SENT signal are to be displayed in error trigger channels.	4-92
:CHANnel<x>:SENT:ERRor:TRIGger:SCPulse (Succesive Calibration Pulse)	Sets or queries whether successive calibration pulse errors of a SENT signal are to be displayed in error trigger channels.	4-92
:CHANnel<x>:SENT:ERRor:TRIGger:SCRC (Slow Channel CRC)	Sets or queries whether slow channel CRC errors of a SENT signal are to be displayed in error trigger channels.	4-92
:CHANnel<x>:SENT:ERRor:COUNt?	(Upper-level query) Queries all error count channel settings of a SENT monitor module.	4-92
:CHANnel<x>:SENT:ERRor:COUNt:FCRC (Fast Channel CRC)	Sets or queries whether fast channel CRC errors of a SENT signal are to be integrated in error count channels.	4-92
:CHANnel<x>:SENT:ERRor:COUNt:MRESet:EXECute (Manual Reset)	Resets the error count channel value of a SENT signal.	4-92
:CHANnel<x>:SENT:ERRor:COUNt:NVALue (Nibble Value)	Sets or queries whether nibble value errors of a SENT signal are to be integrated in error count channels.	4-92
:CHANnel<x>:SENT:ERRor:COUNt:PNUMber (Pulse Number)	Sets or queries whether pulse number errors of a SENT signal are to be accumulated in error count channels.	4-93
:CHANnel<x>:SENT:ERRor:COUNt:SCPulse (Succesive Calibration Pulse)	Sets or queries whether successive calibration pulse errors of a SENT signal are to be integrated in error count channels.	4-93
:CHANnel<x>:SENT:ERRor:COUNt:SCRC (Slow Channel CRC)	Sets or queries whether slow channel CRC errors of a SENT signal are to be integrated in error count channels.	4-93
:CHANnel<x>:SENT:ERRor:COUNt:SRESet (Reset on Start)	Sets or queries whether the error count channel of a SENT signal is to be reset at start.	4-93
:CHANnel<x>:SENT:PROBe	Sets or queries the probe attenuation of a SENT signal channel.	4-93
:CHANnel<x1>:SENT:SCHannel<x2>?	(Upper-level query) Queries all SENT monitor module sub channel settings.	4-93
:CHANnel<x1>:SENT:SCHannel<x2>:BICount (Bit Count)	Sets or queries the bit length of SENT data.	4-93
:CHANnel<x1>:SENT:SCHannel<x2>:BIT<x3>:DISPlay	Sets or queries whether each bit of SENT data is to be displayed.	4-94
:CHANnel<x1>:SENT:SCHannel<x2>:BIT<x3>:LABel	Sets or queries the display label of each bit of SENT data.	4-94
:CHANnel<x1>:SENT:SCHannel<x2>:BORDer (Byte Order)	Sets or queries the endian (byte order) of SENT data.	4-94
:CHANnel<x1>:SENT:SCHannel<x2>:DTYPe	Sets or queries the data type of SENT data.	4-94
:CHANnel<x1>:SENT:SCHannel<x2>:FACTor	Sets or queries the scaling coefficient (value per bit) of SENT data.	4-95
:CHANnel<x1>:SENT:SCHannel<x2>:INPut	Sets or queries the input on/off state of SENT data.	4-95
:CHANnel<x1>:SENT:SCHannel<x2>:LABel	Sets or queries the display label of SENT data.	4-95
:CHANnel<x1>:SENT:SCHannel<x2>:OFFSet	Sets or queries the offset value of SENT data.	4-95
:CHANnel<x1>:SENT:SCHannel<x2>:POSition	Sets or queries the display position of SENT data.	4-95
:CHANnel<x1>:SENT:SCHannel<x2>:SBIT (Start Bit)	Sets or queries the extraction position of SENT data.	4-95
:CHANnel<x1>:SENT:SCHannel<x2>:SCALe	Sets or queries the display scale of SENT data.	4-96
:CHANnel<x1>:SENT:SCHannel<x2>:SID (Slow Channel ID)	Sets or queries the Slow CH ID or Fast CH FC of SENT data.	4-96
:CHANnel<x1>:SENT:SCHannel<x2>:UNIT	Sets or queries the unit string of SENT data.	4-96
:CHANnel<x1>:SENT:SCHannel<x2>:VTYPe (Value Type)	Sets or queries the data type of SENT data.	4-96

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`:CHANnel<x1>:SENT:SCHannel<x2>:ZOOM`	Sets or queries the vertical zoom factor of SENT data.	4-96
`:CHANnel<x>:SENT:TIMeout (Time out)`	Sets or queries the timeout value of SENT ports.	4-96
`:CHANnel<x1>:SRATe<x2> (Sample Rate)`	Sets or queries the channel's sample rate.	4-97
`:CHANnel<x>:STRain?`	(Upper-level query) Queries all strain module settings.	4-97
`:CHANnel<x>:STRain:BALance?`	Sets or queries whether balancing will be performed on a strain module.	4-97
`:CHANnel<x1>:STRain:BALance:CHAnnel<x2>`	Sets or queries the channels that balancing will be performed on for a strain module.	4-97
`:CHANnel<x>:STRain:BALance:EXECute`	Executes strain balancing on strain modules.	4-97
`:CHANnel<x>:STRain:BWIDth`	Sets or queries the filter of a strain module.	4-97
`:CHANnel<x>:STRain:EXCitation`	Sets or queries the bridge voltage of a strain module.	4-97
`:CHANnel<x>:STRain:GFACtor`	Sets or queries the gauge factor of a strain module.	4-97
`:CHANnel<x>:STRain:INVert`	Sets or queries whether the display is inverted (ON) or not (OFF) for a strain module.	4-97
`:CHANnel<x>:STRain:LSCale?`	(Upper-level query) Queries all the linear scaling settings of a strain module.	4-97
`:CHANnel<x>:STRain:LSCale:AVALue`	Sets or queries the scaling coefficient A that is used during linear scaling on a strain module.	4-98
`:CHANnel<x>:STRain:LSCale:BVALue`	Sets or queries the scaling coefficient B that is used during linear scaling on a strain module.	4-98
`:CHANnel<x>:STRain:LSCale:DISPlaytype?`	(Upper-level query) Queries all the linear scaling display format settings of a strain module.	4-98
`:CHANnel<x>:STRain:LSCale:DISPlaytype:DECimalnum`	Sets or queries the decimal place that is used during linear scaling when the display mode is set to Float for a strain module.	4-98
`:CHANnel<x>:STRain:LSCale:DISPlaytype:MODE`	Sets or queries the display mode that is used during linear scaling for a strain module.	4-98
`:CHANnel<x>:STRain:LSCale:DISPlaytype:SUBunit`	Sets or queries the unit prefix that is used during linear scaling when the display mode is set to Float for a strain module.	4-98
`:CHANnel<x>:STRain:LSCale:GETMeasure`	Executes the measurement of the linear scaling P1X or P2X value of a strain module.	4-99
`:CHANnel<x>:STRain:LSCale:MODE`	Sets or queries the linear scale mode of a strain module.	4-99
`:CHANnel<x>:STRain:LSCale:{P1X|P1Y|P2X|P2Y}`	Sets or queries the linear scaling P1X, P1Y, P2X, or P2Y value of a strain module.	4-99
`:CHANnel<x>:STRain:LSCale:SHUNt`	Executes shunt calibration.	4-99
`:CHANnel<x>:STRain:LSCale:UNIT`	Sets or queries the linear scale unit of a strain module.	4-99
`:CHANnel<x>:STRain:RANGe`	Sets or queries the measurement range of a strain module.	4-99
`:CHANnel<x>:STRain:SCALe`	Sets or queries the upper and lower limits of the screen for a strain module.	4-99
`:CHANnel<x>:STRain:UNIT`	Sets or queries the unit of a strain module.	4-99
`:CHANnel<x>:TEMPerature?`	(Upper-level query) Queries all settings of a module that can measure temperature.	4-99
`:CHANnel<x>:TEMPerature:BURNout`	Sets or queries whether burnout will be detected when temperature measurements are performed.	4-99
`:CHANnel<x>:TEMPerature:BWIDth`	Sets or queries the bandwidth limit that is used when temperature measurements are performed.	4-100
`:CHANnel<x>:TEMPerature:COUPling`	Sets or queries the input coupling setting of a module that can measure temperature.	4-100
`:CHANnel<x>:TEMPerature:DUPeriod (Data Update Period)`	Sets or queries the date update interval setting of a 16-CH temperature/voltage input module.	4-100
`:CHANnel<x>:TEMPerature:RJC`	Sets or queries the RJC that is used when temperature measurements are performed.	4-100
`:CHANnel<x>:TEMPerature:SCALe`	Sets or queries the upper and lower limits of the screen that are used when temperature measurements are performed.	4-100
`:CHANnel<x1>:TEMPerature:SCHannel<x2>?`	(Upper-level query) Queries all settings of a 16-CH temperature/voltage input module when measuring temperature.	4-100
`:CHANnel<x1>:TEMPerature:SCHannel<x2>:BURNout`	Sets or queries whether burnout will be detected when temperature measurements are performed on a 16-CH temperature/voltage input module.	4-100
`:CHANnel<x1>:TEMPerature:SCHannel<x2>:COUPling`	Sets or queries the input coupling setting of a 16-CH temperature/voltage input module.	4-101
`:CHANnel<x1>:TEMPerature:SCHannel<x2>:LABel`	Sets or queries the label setting of a 16-CH temperature/voltage input module.	4-101
`:CHANnel<x1>:TEMPerature:SCHannel<x2>:RJC`	Sets or queries the RJC when temperature measurements are performed on a 16-CH temperature/voltage input module.	4-101

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`:CHANnel<x1>:TEMPerature:SCHannel<x2>:SCALe`	Sets or queries the upper and lower limits on the screen when temperature measurements are performed on a 16-CH temperature/voltage input module.	4-101
`:CHANnel<x1>:TEMPerature:SCHannel<x2>:TYPE`	Sets or queries the thermocouple type to use when temperature measurements are performed on a 16-CH temperature/voltage input module.	4-101
`:CHANnel<x1>:TEMPerature:SCHannel<x2>:UNIT`	Sets or queries the unit when temperature measurements are performed on a 16-CH temperature/voltage input module.	4-102
`:CHANnel<x>:TEMPerature:TYPE`	Sets or queries the thermocouple type that is used when temperature measurements are performed.	4-102
`:CHANnel<x>:TEMPerature:UNIT`	Sets or queries the unit that is used when temperature measurements are performed.	4-102
`:CHANnel<x>:VOLTage?`	(Upper-level query) Queries all settings of a module that can measure analog voltage.	4-102
`:CHANnel<x>[:VOLTage]:BWIDth`	Sets or queries the bandwidth limit of a module that can measure analog voltage.	4-102
`:CHANnel<x>[:VOLTage]:COUPling`	Sets or queries the input coupling of a module that can measure analog voltage.	4-103
`:CHANnel<x>[:VOLTage]:DESKew`	Sets or queries the deskew value when a voltage module is installed.	4-103
`:CHANnel<x>[:VOLTage]:DOCancel?`	(Upper-level query) Queries all DC offset cancellation settings of a voltage measurement module.	4-103
`:CHANnel<x>[:VOLTage]:DOCancel:EXECute`	Executes DC offset canceling on a voltage measurement module.	4-103
`:CHANnel<x>[:VOLTage]:DOCancel:MODE`	Sets or queries the on/off status of DC offset canceling of voltage measurement modules.	4-103
`:CHANnel<x>[:VOLTage]:INVert`	Sets or queries whether the display is inverted (ON) or not (OFF) for a module that can measure analog voltage.	4-103
`:CHANnel<x>[:VOLTage]:LSCale?`	(Upper-level query) Queries all the linear scaling settings of a module that can measure analog voltage.	4-103
`:CHANnel<x>[:VOLTage]:LSCale:AVALue`	Sets or queries the scaling coefficient A that is used during linear scaling for a module that can measure analog voltage.	4-103
`:CHANnel<x>[:VOLTage]:LSCale:BVALue`	Sets or queries the offset value B that is used during linear scaling for a module that can measure analog voltage.	4-104
`:CHANnel<x>[:VOLTage]:LSCale:DISPlaytype?`	(Upper-level query) Queries all the linear scaling display format settings of a module that can measure analog voltage.	4-104
`:CHANnel<x>[:VOLTage]:LSCale:DISPlaytype:DECimalnum`	Sets or queries the decimal place that is used during linear scaling when the display mode is set to Float for a module that can perform analog voltage measurements.	4-104
`:CHANnel<x>[:VOLTage]:LSCale:DISPlaytype:MODE`	Sets or queries the display mode that is used during linear scaling for a module that can perform analog voltage measurements.	4-104
`:CHANnel<x>[:VOLTage]:LSCale:DISPlaytype:SUBunit`	Sets or queries the unit prefix that is used during linear scaling when the display mode is set to Float for a module that can perform analog voltage measurements.	4-104
`:CHANnel<x>[:VOLTage]:LSCale:GETMeasure`	Executes the measurement of the linear scaling P1X or P2X value of a module that can perform analog voltage measurements.	4-104
`:CHANnel<x>[:VOLTage]:LSCale:MODE`	Sets or queries the linear scale mode of a module that can perform analog voltage measurements.	4-104
`:CHANnel<x>[:VOLTage]:LSCale:{P1X|P1Y|P2X|P2Y}`	Sets or queries the linear scaling P1X, P1Y, P2X, or P2Y value of a module that can perform analog voltage measurements.	4-105
`:CHANnel<x>[:VOLTage]:LSCale:UNIT`	Sets or queries the linear scale unit of a module that can perform analog voltage measurements.	4-105
`:CHANnel<x>[:VOLTage]:OFFSet`	Sets or queries the offset voltage of a module that can measure analog voltage.	4-105
`:CHANnel<x>[:VOLTage]:POSition`	Sets or queries the vertical position for a module that can measure analog voltage.	4-105
`:CHANnel<x>[:VOLTage]:PROBe`	Sets or queries the probe type of a module that can measure analog voltage.	4-105
`:CHANnel<x>[:VOLTage]:SADJust (Skew Adjustment)`	Sets or queries the deskew value when a voltage module is installed.	4-105
`:CHANnel<x>[:VOLTage]:SCALe`	Sets or queries the upper and lower limits of the screen for a module that can measure analog voltage.	4-105
`:CHANnel<x1>[:VOLTage]:SCHannel<x2>?`	(Upper-level query) Queries all settings of a 16-CH temperature/voltage input or 4-CH module.	4-106
`:CHANnel<x1>[:VOLTage]:SCHannel<x2>:BWIDth`	Sets or queries the bandwidth limit of a 16-CH temperature/voltage input or 4-CH module.	4-106
`:CHANnel<x1>[:VOLTage]:SCHannel<x2>:COUPling`	Sets or queries the input coupling setting of a 16-CH temperature/voltage input or 4-CH module.	4-106

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`:CHANnel<x1>[:VOLTage]:SCHannel<x2>:DESKew`	Sets or queries the deskew value when a voltage module is installed.	4-106
`:CHANnel<x1>[:VOLTage]:SCHannel<x2>:DISPlay`	Sets or queries whether the 4-CH module is displayed.	4-106
`:CHANnel<x1>[:VOLTage]:SCHannel<x2>:DOCancel?`	(Upper-level query) Queries all DC offset cancellation settings of a 4-CH module.	4-106
`:CHANnel<x1>[:VOLTage]:SCHannel<x2>:DOCancel:EXECute`	Executes DC offset canceling on a 4-CH module.	4-106
`:CHANnel<x1>[:VOLTage]:SCHannel<x2>:DOCancel:MODE`	Sets or queries the on/off status of DC offset canceling of 4-CH modules.	4-107
`:CHANnel<x1>[:VOLTage]:SCHannel<x2>:INPut`	Sets or queries whether the input to the specified channel of a 4-CH module is enabled or disabled.	4-107
`:CHANnel<x1>[:VOLTage]:SCHannel<x2>:INVert`	Sets or queries whether the display is inverted (ON) or not (OFF) for a 16-CH temperature/voltage input or 4-CH module.	4-107
`:CHANnel<x1>[:VOLTage]:SCHannel<x2>:LABel`	Sets or queries the label string of the specified sub channel for a 16-CH temperature/voltage input or 4-CH module.	4-107
`:CHANnel<x1>[:VOLTage]:SCHannel<x2>:LSCale?`	(Upper-level query) Queries all the linear scaling settings of a 16-CH temperature/voltage input or 4-CH module.	4-107
`:CHANnel<x1>[:VOLTage]:SCHannel<x2>:LSCale:AVALue`	Sets or queries the scaling coefficient A that is used during linear scaling for a 16-CH temperature/voltage input or 4-CH module.	4-107
`:CHANnel<x1>[:VOLTage]:SCHannel<x2>:LSCale:BVALue`	Sets or queries the offset value B that is used during linear scaling for a 16-CH temperature/voltage input or 4-CH module.	4-108
`:CHANnel<x1>[:VOLTage]:SCHannel<x2>:LSCale:DISPlaytype?`	(Upper-level query) Queries all the linear scaling display format settings of a 16-CH temperature/voltage input or 4-CH module.	4-108
`:CHANnel<x1>[:VOLTage]:SCHannel<x2>:LSCale:DISPlaytype:DECimalnum`	Sets or queries the decimal place that is used during linear scaling when the display mode is set to Float for a 16-CH temperature/voltage input or 4-CH module.	4-108
`:CHANnel<x1>[:VOLTage]:SCHannel<x2>:LSCale:DISPlaytype:MODE`	Sets or queries the display mode that is used during linear scaling for a 16-CH temperature/voltage input or 4-CH module.	4-108
`:CHANnel<x1>[:VOLTage]:SCHannel<x2>:LSCale:DISPlaytype:SUBunit`	Sets or queries the unit prefix that is used during linear scaling when the display mode is set to Float for a 16-CH temperature/voltage input or 4-CH module.	4-108
`:CHANnel<x1>[:VOLTage]:SCHannel<x2>:LSCale:GETMeasure`	Executes the measurement of the linear scaling P1X or P2X value of a 16-CH temperature/voltage input module or 4-CH module.	4-109
`:CHANnel<x1>[:VOLTage]:SCHannel<x2>:LSCale:MODE`	Sets or queries the linear scale mode of a 16-CH temperature/voltage input or 4-CH module.	4-109
`:CHANnel<x1>[:VOLTage]:SCHannel<x2>:LSCale:{P1X|P1Y|P2X|P2Y}`	Sets or queries the linear scaling P1X, P1Y, P2X, or P2Y value of a 16-CH temperature/voltage input module or 4-CH module.	4-109
`:CHANnel<x1>[:VOLTage]:SCHannel<x2>:LSCale:UNIT`	Sets or queries the linear-scaling unit of a 16-CH temperature/voltage input or 4-CH module.	4-109
`:CHANnel<x1>[:VOLTage]:SCHannel<x2>:OFFSet`	Sets or queries the offset voltage of a 16-CH temperature/voltage input or 4-CH module.	4-110
`:CHANnel<x1>[:VOLTage]:SCHannel<x2>:POSition`	Sets or queries the vertical position for a 16-CH temperature/voltage input or 4-CH module.	4-110
`:CHANnel<x1>[:VOLTage]:SCHannel<x2>:PROBe`	Sets or queries the probe type of the 4-CH module.	4-110
`:CHANnel<x1>[:VOLTage]:SCHannel<x2>:SCALe`	Sets or queries the upper and lower limits of the screen for a 16-CH temperature/voltage input or 4-CH module.	4-110
`:CHANnel<x1>[:VOLTage]:SCHannel<x2>:SRATe<x3>`	Sets or queries the channel's sample rate.	4-111
`:CHANnel<x1>[:VOLTage]:SCHannel<x2>:TADJust`	Sets or queries the timing adjustment value when a voltage module is installed.	4-111
`:CHANnel<x1>[:VOLTage]:SCHannel<x2>:VARiable`	Sets or queries how the vertical scale is set for a 16-CH temperature/voltage input or 4-CH module.	4-111
`:CHANnel<x1>[:VOLTage]:SCHannel<x2>:VDIV`	Sets or queries the V/div setting of a 16-CH temperature/voltage input or 4-CH module.	4-111
`:CHANnel<x1>[:VOLTage]:SCHannel<x2>:VGAin`	Sets or queries the gain adjustment of a 4-CH module.	4-111
`:CHANnel<x1>[:VOLTage]:SCHannel<x2>:ZOOM`	Sets or queries the vertical zoom factor of a 16-CH temperature/voltage input or 4-CH module.	4-112
`:CHANnel<x>[:VOLTage]:VARiable`	Sets or queries how the vertical scale is set for a module that can measure analog voltage.	4-112
`:CHANnel<x>[:VOLTage]:VDIV`	Sets or queries the V/div setting of a module that can measure analog voltage.	4-112

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`:CHANnel<x>[:VOLTage]:ZOOM`	Sets or queries the vertical zoom factor of a module that can measure analog voltage.	4-113

CLEar Group

`:CLEar`	Clears traces.	4-114

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`:COMMunicate:LOCKout`	Sets/clears local lockout.	4-115
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`:COMMunicate:OPSR?`	Queries the operation pending status register.	4-115
`:COMMunicate:OVERlap`	Sets or queries the commands that operate as overlap commands.	4-115
`:COMMunicate:REMote`	Sets or queries whether the instrument is in remote or local mode. ON is remote mode.	4-115
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CURSor Group

`:CURSor?`	(Upper-level query) Queries all cursor measurement settings.	4-117
`:CURSor:FFT?`	(Upper-level query) Queries all FFT cursor settings.	4-117
`:CURSor:FFT:MARKer:M<x>?`	(Upper-level query) Queries all settings of an FFT cursor (marker cursor).	4-117
`:CURSor:FFT:MARKer:M<x>:DF<y>?`	(Upper-level query) Queries all ΔY display settings. ΔF is between the FFT cursors (marker cursors).	4-117
`:CURSor:FFT:MARKer:M<x>:DF<y>:STATe`	Sets or queries whether the ΔF value between the FFT cursors (marker cursors) is displayed.	4-117
`:CURSor:FFT:MARKer:M<x>:DF<y>:VALue?`	Queries the ΔF value between the FFT cursors (marker cursors).	4-117
`:CURSor:FFT:MARKer:M<x>:DY<y>?`	(Upper-level query) Queries all ΔY display settings. ΔY is between the FFT cursors (marker cursors).	4-117
`:CURSor:FFT:MARKer:M<x>:DY<y>:STATe`	Sets or queries whether the ΔY value between the FFT cursors (marker cursors) is displayed.	4-117
`:CURSor:FFT:MARKer:M<x>:DY<y>:VALue?`	Queries the ΔY value between the FFT cursors (marker cursors).	4-117
`:CURSor:FFT:MARKer:M<x>:POSition`	Sets or queries the position of an FFT cursor (marker cursor).	4-117
`:CURSor:FFT:MARKer:M<x>:TRACe`	Sets or queries the source waveform that you want to measure using the FFT cursor (marker cursor).	4-118
`:CURSor:FFT:MARKer:M<x>:F?`	(Upper-level query) Queries all frequency-axis settings of an FFT cursor (marker cursor).	4-118
`:CURSor:FFT:MARKer:M<x>:F:STATe`	Sets or queries whether the frequency-axis value of an FFT cursor (marker cursor) is displayed.	4-118
`:CURSor:FFT:MARKer:M<x>:F:VALue?`	Queries the frequency-axis value of an FFT cursor (marker cursor).	4-118
`:CURSor:FFT:MARKer:M<x>:Y?`	(Upper-level query) Queries all Y-axis settings of an FFT cursor (marker cursor).	4-118
`:CURSor:FFT:MARKer:M<x>:Y:STATe`	Sets or queries whether the Y-axis value of an FFT cursor (marker cursor) is displayed.	4-118
`:CURSor:FFT:MARKer:M<x>:Y:VALue?`	Queries the Y-axis value of an FFT cursor (marker cursor).	4-118
`:CURSor:FFT:MARKer:FORM`	Sets or queries the form of an FFT cursor (marker cursor).	4-118
`:CURSor:FFT:PEAK<x>?`	(Upper-level query) Queries all settings of an FFT cursor (peak cursor).	4-118
`:CURSor:FFT:PEAK<x>:F?`	(Upper-level query) Queries all frequency-axis settings of an FFT cursor (peak cursor).	4-118
`:CURSor:FFT:PEAK<x>:F:STATe`	Sets or queries whether the frequency-axis value of an FFT cursor (peak cursor) is displayed.	4-118
`:CURSor:FFT:PEAK<x>:F:VALue?`	Queries the frequency-axis value of an FFT cursor (peak cursor).	4-119

Command	Function	Page
`:CURSor:FFT:PEAK<x>:RANGe`	Sets or queries the FFT cursor (peak cursor) measurement range. If <x> = 1 to 4, FFTWindow1 is set or queried. If <x> = 5 to 8, FFTWindow2 is set or queried.	4-119
`:CURSor:FFT:PEAK<x>:Y?`	(Upper-level query) Queries all Y-axis settings of an FFT cursor (peak cursor).	4-119
`:CURSor:FFT:PEAK<x>:Y:STATe`	Sets or queries whether the Y-axis value of an FFT cursor (peak cursor) is displayed.	4-119
`:CURSor:FFT:PEAK<x>:Y:VALue?`	Queries the Y-axis value of an FFT cursor (peak cursor).	4-119
`:CURSor:FFT:TYPE`	Sets or queries the FFT cursor type.	4-119
`:CURSor[:TY]?`	(Upper-level query) Queries all cursor settings for the T-Y display.	4-119
`:CURSor[:TY]:CSELect`	Sets or queries the source waveform that T-Y display cursors are applied to when dual capture is enabled.	4-119
`:CURSor[:TY]:DEGRee?`	(Upper-level query) Queries all angle cursor settings for the T-Y display.	4-119
`:CURSor[:TY]:DEGRee:D<X>?`	(Upper-level query) Queries all angle (D<x>) settings for the angle cursors on the T-Y display.	4-119
`:CURSor[:TY]:DEGRee:D<X>:STATe`	Sets or queries whether the angle (D<x>) between the angle cursors on the T-Y display is displayed.	4-119
`:CURSor[:TY]:DEGRee:D<X>:VALue?`	Queries the angle (D<x>) between the angle cursors on the T-Y display.	4-120
`:CURSor[:TY]:DEGRee:DD?`	(Upper-level query) Queries all angle difference (Δd value) settings. The angle difference is between the angle cursors on the T-Y display.	4-120
`:CURSor[:TY]:DEGRee:DD:STATe`	Sets or queries whether the angle difference (Δd value) between the angle cursors on the T-Y display is displayed.	4-120
`:CURSor[:TY]:DEGRee:DD:VALue?`	Queries the angle difference (Δd value) between the angle cursors on the T-Y display.	4-120
`:CURSor[:TY]:DEGRee:DY?`	(Upper-level query) Queries all settings related to the ΔY value between the angle cursors on the T-Y display.	4-120
`:CURSor[:TY]:DEGRee:DY:STATe`	Sets or queries whether the ΔY value between the angle cursors on the T-Y display is displayed.	4-120
`:CURSor[:TY]:DEGRee:DY:VALue?`	Queries the ΔY value between the angle cursors on the T-Y display.	4-120
`:CURSor[:TY]:DEGRee:JUMP`	Moves the specified angle cursor to the center of the specified zoom window.	4-120
`:CURSor[:TY]:DEGRee:POSition<x>`	Sets or queries an angle cursor position on the T-Y display.	4-120
`:CURSor[:TY]:DEGRee:REFerence<x>`	Sets or queries the angle reference start (Ref1) or end (Ref2) point on the T-Y display.	4-120
`:CURSor[:TY]:DEGRee:RVALue`	Sets or queries an angle cursor's reference angle on the T-Y display.	4-120
`:CURSor[:TY]:DEGRee:TRACe`	Sets or queries the source waveform that you want to measure using the angle cursors on the T-Y display.	4-121
`:CURSor[:TY]:DEGRee:Y<x>?`	(Upper-level query) Queries all measured-value settings for an angle cursor on the T-Y display.	4-121
`:CURSor[:TY]:DEGRee:Y<x>:STATe`	Sets or queries whether the measurements of an angle cursor on the T-Y display is displayed.	4-121
`:CURSor[:TY]:DEGRee:Y<x>:VALue?`	Sets or queries the measured value of an angle cursor on the T-Y display.	4-121
`:CURSor[:TY]:HORizontal?`	(Upper-level query) Queries all H cursor settings for the T-Y display.	4-121
`:CURSor[:TY]:HORizontal:DY?`	(Upper-level query) Queries all settings related to the ΔY axis of the H cursor on the T-Y display.	4-121
`:CURSor[:TY]:HORizontal:DY:STATe`	Sets or queries whether the ΔY-axis value between the H cursors on the T-Y display is displayed.	4-121
`:CURSor[:TY]:HORizontal:DY:VALue?`	Queries the ΔY-axis value between the H cursors on the T-Y display.	4-121
`:CURSor[:TY]:HORizontal:POSition<x>`	Sets or queries a H cursor position on the T-Y display.	4-121
`:CURSor[:TY]:HORizontal:TRACe`	Sets or queries the source waveform that you want to measure using the H cursors on the T-Y display.	4-121
`:CURSor[:TY]:HORizontal:Y<x>?`	(Upper-level query) Queries all Y-axis-value settings for a H cursor on the T-Y display.	4-122
`:CURSor[:TY]:HORizontal:Y<x>:STATe`	Sets or queries whether the Y-axis value for a H cursor on the T-Y display is displayed.	4-122
`:CURSor[:TY]:HORizontal:Y<x>:VALue?`	Queries the Y-axis value of a H cursor on the T-Y display.	4-122
`:CURSor[:TY]:HVERtical:DYDx?`	(Upper-level query) Queries all settings related to ΔY/ΔX of the H & V cursor on the T-Y display.	4-122
`:CURSor[:TY]:HVERtical:DYDx:STATe`	Sets or queries whether ΔY/ΔX between the H & V cursors on the T-Y display is displayed.	4-122
`:CURSor[:TY]:HVERtical:DYDx:VALue?`	Queries ΔY/ΔX between the H & V cursors on the T-Y display.	4-122

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Commands

Command	Function	Page
`:CURSor[:TY]:MARKer?`	(Upper-level query) Queries all marker cursor settings for the T-Y display.	4-122
`:CURSor[:TY]:MARKer:M<x>?`	(Upper-level query) Queries all measurement item settings for a marker cursor on the T-Y display.	4-122
`:CURSor[:TY]:MARKer:M<x>:DX<y>?`	(Upper-level query) Queries all settings related to the ΔX value between the marker cursors on the T-Y display.	4-122
`:CURSor[:TY]:MARKer:M<x>:DX<y>:STATe`	Sets or queries whether the ΔX value between the marker cursors on the T-Y display is displayed.	4-122
`:CURSor[:TY]:MARKer:M<x>:DX<y>:VALue?`	Queries the ΔX value between the marker cursors on the T-Y display.	4-122
`:CURSor[:TY]:MARKer:M<x>:DY<y>?`	(Upper-level query) Queries all settings related to the ΔY value between the marker cursors on the T-Y display.	4-122
`:CURSor[:TY]:MARKer:M<x>:DY<y>:STATe`	Sets or queries whether the ΔY value between the marker cursors on the T-Y display is displayed.	4-123
`:CURSor[:TY]:MARKer:M<x>:DY<y>:VALue?`	Queries the ΔY value between the marker cursors on the T-Y display.	4-123
`:CURSor[:TY]:MARKer:M<x>:JUMP`	Moves the specified marker cursor to the center of the specified zoom window.	4-123
`:CURSor[:TY]:MARKer:M<x>:POSition`	Sets or queries a marker cursor position on the T-Y display.	4-123
`:CURSor[:TY]:MARKer:M<x>:TRACe`	Sets or queries the source waveform that you want to measure using the marker cursors on the T-Y display.	4-123
`:CURSor[:TY]:MARKer:M<x>:X?`	(Upper-level query) Queries all X-axis settings for a marker cursor on the T-Y display.	4-123
`:CURSor[:TY]:MARKer:M<x>:X:STATe`	Sets or queries whether the X-axis value for a marker cursor on the T-Y display is displayed.	4-123
`:CURSor[:TY]:MARKer:M<x>:X:VALue?`	Queries the X-axis value of a marker cursor on the T-Y display.	4-123
`:CURSor[:TY]:MARKer:M<x>:Y?`	(Upper-level query) Queries all Y-axis settings for a marker cursor on the T-Y display.	4-123
`:CURSor[:TY]:MARKer:M<x>:Y:STATe`	Sets or queries whether the Y-axis value for a marker cursor on the T-Y display is displayed.	4-124
`:CURSor[:TY]:MARKer:M<x>:Y:VALue?`	Queries the Y-axis value of a marker cursor on the T-Y display.	4-124
`:CURSor[:TY]:MARKer:FORM`	Sets or queries the form of the marker cursors on the T-Y display.	4-124
`:CURSor[:TY]:TYPE`	Sets or queries the cursor type on the T-Y display.	4-124
`:CURSor[:TY]:VERTical?`	(Upper-level query) Queries all V cursor settings for the T-Y display.	4-124
`:CURSor[:TY]:VERTical:DX?`	(Upper-level query) Queries all settings related to the ΔX value between the V cursors on the T-Y display.	4-124
`:CURSor[:TY]:VERTical:DX:STATe`	Sets or queries whether the ΔX value between the V cursors on the T-Y display is displayed.	4-124
`:CURSor[:TY]:VERTical:DX:VALue?`	Queries the ΔX value between the V cursors on the T-Y display.	4-124
`:CURSor[:TY]:VERTical:DY?`	(Upper-level query) Queries all settings related to the ΔY value between the V cursors on the T-Y display.	4-124
`:CURSor[:TY]:VERTical:DY:STATe`	Sets or queries whether the ΔY value between the V cursors on the T-Y display is displayed.	4-124
`:CURSor[:TY]:VERTical:DY:VALue?`	Queries the ΔY value between the V cursors on the T-Y display.	4-124
`:CURSor[:TY]:VERTical:JUMP`	Moves the specified V cursor to the center of the specified zoom window.	4-124
`:CURSor[:TY]:VERTical:PERDt?`	(Upper-level query) Queries all settings related to the 1/ΔT value between the Y cursors on the T-Y display.	4-124
`:CURSor[:TY]:VERTical:PERDt:STATe`	Sets or queries whether the 1/ΔT value between the V cursors on the T-Y display is displayed.	4-125
`:CURSor[:TY]:VERTical:PERDt:VALue?`	Queries the 1/ΔT value between the V cursors on the T-Y display.	4-125
`:CURSor[:TY]:VERTical:POSition<x>`	Sets or queries a V cursor position on the T-Y display.	4-125
`:CURSor[:TY]:VERTical:TRACe`	Sets or queries the source waveform that you want to measure using the V cursors on the T-Y display.	4-125
`:CURSor[:TY]:VERTical:X<x>?`	(Upper-level query) Queries all X-axis-value settings for a V cursor on the T-Y display.	4-125
`:CURSor[:TY]:VERTical:X<x>:STATe`	Sets or queries whether the X-axis value for a V cursor on the T-Y display is displayed.	4-125
`:CURSor[:TY]:VERTical:X<x>:VALue?`	Queries the X-axis value of a V cursor on the T-Y display.	4-125

Command	Function	Page
`:CURSor[:TY]:VERTical:Y<x>?`	(Upper-level query) Queries all Y-axis-value settings for a V cursor on the T-Y display.	4-125
`:CURSor[:TY]:VERTical:Y<x>:STA Te`	Sets or queries whether the Y-axis value for a V cursor on the T-Y display is displayed.	4-125
`:CURSor[:TY]:VERTical:Y<x>:VAL ue?`	Queries the Y-axis value (measured value) of a V cursor on the T-Y display.	4-126
`:CURSor:WAIT?`	While the instrument is waiting for the specified :CURSor command to finish, it will wait the time specified by the :CURSor:WAIT? timeout value until it begins processing the subsequent command.	4-126
`:CURSor:XY?`	(Upper-level query) Queries all cursor settings for the X-Y display.	4-126
`:CURSor:XY:HORizontal?`	(Upper-level query) Queries all H cursor settings for the X-Y display.	4-126
`:CURSor:XY:HORizontal:DY?`	(Upper-level query) Queries all settings related to the ΔY-axis-values of the H cursor on the X-Y display.	4-126
`:CURSor:XY:HORizontal:DY:STATe`	Sets or queries whether the ΔY-axis value between the H cursors on the X-Y display is displayed.	4-126
`:CURSor:XY:HORizontal:DY:VALue?`	Queries the ΔY-axis value between the H cursors on the X-Y display.	4-126
`:CURSor:XY:HORizontal:POSition <x>`	Sets or queries H cursor positions on the X-Y display.	4-126
`:CURSor:XY:HORizontal:TRACe`	Sets or queries the source waveform that you want to measure using the H cursors on the X-Y display.	4-126
`:CURSor:XY:HORizontal:Y<x>?`	(Upper-level query) Queries all Y-axis-value settings for a H cursor on the X-Y display.	4-126
`:CURSor:XY:HORizontal:Y<x>:STA Te`	Sets or queries whether the Y-axis value for an H cursor on the X-Y display is displayed.	4-126
`:CURSor:XY:HORizontal:Y<x>:VAL ue?`	Queries the Y-axis value of an H cursor on the X-Y display.	4-127
`:CURSor:XY:HVERtical?`	(Upper-level query) Queries all H & V cursor settings for the X-Y display.	4-127
`:CURSor:XY:HVERtical:DXDy?`	(Upper-level query) Queries all settings related to ΔX/ΔY of the H & V cursor on the X-Y display.	4-127
`:CURSor:XY:HVERtical:DXDy:STATe`	Sets or queries whether ΔX/ΔY between the H & V cursors on the X-Y display is displayed.	4-127
`:CURSor:XY:HVERtical:DXDy:VAL ue?`	Queries the ΔX/ΔY value between the H & V cursors on the X-Y display.	4-127
`:CURSor:XY:HVERtical:DYDx?`	(Upper-level query) Queries all settings related to ΔY/ΔX of the H & V cursor on the X-Y display.	4-127
`:CURSor:XY:HVERtical:DYDx:STATe`	Sets or queries whether ΔY/ΔX between the H & V cursors on the X-Y display is displayed.	4-127
`:CURSor:XY:HVERtical:DYDx:VAL ue?`	Queries ΔY/ΔX between the H & V cursors on the X-Y display.	4-127
`:CURSor:XY:MARKer:FORM`	Sets or queries the form of the marker cursors on the X-Y display.	4-127
`:CURSor:XY:MARKer:M<x>?`	(Upper-level query) Queries all marker cursor settings for the X-Y display.	4-127
`:CURSor:XY:MARKer:M<x>:DT<y>?`	(Upper-level query) Queries all settings related to ΔT between the specified marker cursors on the X-Y display.	4-127
`:CURSor:XY:MARKer:M<x>:DT<y>:ST ATe`	Sets or queries whether ΔT between the specified marker cursors on the X-Y display is displayed.	4-127
`:CURSor:XY:MARKer:M<x>:DT<y>:VA Lue?`	Queries the ΔT value between the specified marker cursors on the X-Y display.	4-127
`:CURSor:XY:MARKer:M<x>:POSition`	Sets or queries a marker cursor's time-axis-equivalent position on the X-Y display.	4-128
`:CURSor:XY:MARKer:M<x>:T?`	(Upper-level query) Queries all time value settings for a marker cursor on the X-Y display.	4-128
`:CURSor:XY:MARKer:M<x>:T:STATe`	Sets or queries whether the time value for a marker cursor on the X-Y display is displayed.	4-128
`:CURSor:XY:MARKer:M<x>:T:VALue?`	Queries the time value of a marker cursor on the X-Y display.	4-128
`:CURSor:XY:MARKer:M<x>:TRACe`	Sets or queries the source waveform that you want to measure using the marker cursors on the X-Y display.	4-128
`:CURSor:XY:MARKer:M<x>:X?`	(Upper-level query) Queries all X-axis-value settings for a marker cursor on the X-Y display.	4-128
`:CURSor:XY:MARKer:M<x>:X:STATe`	Sets or queries whether the X-axis value for a marker cursor on the X-Y display is displayed.	4-128
`:CURSor:XY:MARKer:M<x>:X:VALue?`	Queries the X-axis value of a marker cursor on the X-Y display.	4-128
`:CURSor:XY:MARKer:M<x>:Y?`	(Upper-level query) Queries all Y-axis-value settings for a marker cursor on the X-Y display.	4-128

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Command	Function	Page
`:CURSor:XY:MARKer:M<x>:Y:STATe`	Sets or queries whether the Y-axis value for a marker cursor on the X-Y display is displayed.	4-128
`:CURSor:XY:MARKer:M<x>:Y:VALue?`	Queries the Y-axis value of a marker cursor on the X-Y display.	4-128
`:CURSor:XY:TYPE`	Sets or queries the cursor type on the X-Y display.	4-129
`:CURSor:XY:VERTical?`	(Upper-level query) Queries all V cursor settings for the X-Y display.	4-129
`:CURSor:XY:VERTical:DX?`	(Upper-level query) Queries all settings related to the ΔX axis of the V cursor on the X-Y display.	4-129
`:CURSor:XY:VERTical:DX:STATe`	Sets or queries whether the ΔX-axis value between the V cursors on the X-Y display is displayed.	4-129
`:CURSor:XY:VERTical:DX:VALue?`	Queries the ΔX-axis value between the V cursors on the X-Y display.	4-129
`:CURSor:XY:VERTical:POSition<x>`	Sets or queries a V cursor position on the X-Y display.	4-129
`:CURSor:XY:VERTical:TRACe`	Sets or queries the source waveform that you want to measure using the V cursors on the X-Y display.	4-129
`:CURSor:XY:VERTical:X<x>?`	(Upper-level query) Queries all X-axis-value settings for a V cursor on the X-Y display.	4-129
`:CURSor:XY:VERTical:X<x>:STATe`	Sets or queries whether the X-axis value for a V cursor on the X-Y display is displayed.	4-129
`:CURSor:XY:VERTical:X<x>:VALue?`	Queries the X-axis value of a V cursor on the X-Y display.	4-129

DISPlay Group

Command	Function	Page
`:DISPlay?`	(Upper-level query) Queries all display settings.	4-130
`:DISPlay:ACCumulate?`	(Upper-level query) Queries all accumulated waveform display settings.	4-130
`:DISPlay:ACCumulate:MODE`	Sets or queries the accumulated waveform mode.	4-130
`:DISPlay:ACCumulate:PERSistence`	Sets or queries the number of times that waveforms are accumulated.	4-130
`:DISPlay:ACHannel`	Sets or queries the active channel number for controlling the instrument channel.	4-130
`:DISPlay:AGRoup (Auto Grouping)`	Automatically assigns the waveforms whose displays are turned on to display groups 1 to 4.	4-130
`:DISPlay:ANALysis<x>:FORMat`	Sets or queries the display format (the number of divisions in the vertical direction) of power analysis (G05) display group P and H.	4-130
`:DISPlay:CINFormation? (Channel Information)`	(Upper-level query) Queries all channel information display settings.	4-130
`:DISPlay:CINFormation:MODE`	Sets or queries whether the channel information display is displayed.	4-130
`:DISPlay:CINFormation:TYPE`	Sets or queries the contents of the channel information display.	4-130
`:DISPlay:CINFormation:WIDTh`	Sets or queries the width of the channel information display.	4-131
`:DISPlay:{CHANnel<x>[:SCHannel<x>]|MATH<x>}:COLor`	Sets or queries the waveform color.	4-131
`:DISPlay:COLor:BASecolor`	Sets or queries the base color of the screen.	4-131
`:DISPlay:DECimation`	Sets or queries the number of dots that are used on the dot display.	4-131
`:DISPlay:DMMode`	Sets the display group of the numeric monitor you want to display.	4-131
`:DISPlay:ESIZe (Extra Window Size)`	Sets or queries the extra window mode.	4-131
`:DISPlay:FGRid`	Sets or queries the fine grid on/off state.	4-131
`:DISPlay:FORMat`	Sets or queries the display format (the number of divisions in the vertical direction).	4-131
`:DISPlay:GRATicule`	Sets or queries the grid type.	4-132
`:DISPlay:GROup<x>?`	(Upper-level query) Queries all group display settings.	4-132
`:DISPlay:GROup<x>:ACLear (All Clear)`	Clears all the trace assignments of the specified display group.	4-132
`:DISPlay:GROUp<x>:FORMat`	Sets or queries the display format (the number of divisions in the vertical direction) of the specified display group.	4-132
`:DISPlay:GROUp<x1>:TRACe<x2>?`	(Upper-level query) Queries all source waveform settings for a display group.	4-132
`:DISPlay:GROup<x1>:TRACe<x2>:SOURce`	Sets or queries the source that is assigned to the specified source waveform of the specified display group.	4-132
`:DISPlay:GROup<x1>:TRACe<x2>:ZNUMber (Zone Number)`	Sets or queries the zone number that displays the specified source waveform of the specified display group.	4-132
`:DISPlay:INTENsity?`	(Upper-level query) Queries all intensity settings.	4-132
`:DISPlay:INTENsity:{CURSor|GRID|MARKer}`	Sets or queries the intensity of a display item.	4-132
`:DISPlay:INTerpolate`	Sets or queries the waveform interpolation method.	4-132
`:DISPlay:LINDicator (Level Indicator)`	Sets or queries whether the right indicator on the TY waveform display is displayed.	4-132
`:DISPlay:MAIN`	Sets or queries the ratio of the main waveform display area.	4-133

Command	Function	Page
:DISPlay:MAPPing	Sets or queries the waveform mapping mode for when the display format is set to an option other than 1.	4-133
:DISPlay:SDGRoup (Select Display Group)	Sets or queries the number of the display group that is displayed.	4-133
:DISPlay:SVALue (Scale Value)	Sets or queries whether scale values are displayed.	4-133
:DISPlay:TLABel (Trace Label)	Sets or queries whether waveform labels are displayed.	4-133
:DISPlay:WLAYout (Window Layout)	Sets or queries the layout for when two analysis Windows are displayed.	4-133

EVENt Group

Command	Function	Page
:EVENt?	(Upper-level query) Queries all event waveform settings.	4-134
:EVENt:MEVent:EXECute	Manually inserts an event.	4-134
:EVENt:MEVent:MODE (Manual Event)	Sets or queries whether the event waveform's manual events are displayed.	4-134

FFT Group

Command	Function	Page
:FFT?	(Upper-level query) Queries all FFT settings.	4-135
:FFT:CDISplay	Sets or queries whether two windows for FFT display are overlaid.	4-135
:FFT:WAVeform<x>?	(Upper-level query) Queries all FFT waveform settings.	4-135
:FFT:WAVeform<x>:MODE	Sets or queries whether an FFT waveform is displayed.	4-135
:FFT:WAVeform<x1>:SOURce<x2>	Sets or queries an FFT waveform's FFT source channel.	4-135
:FFT:WAVeform<x>:STYPe (Sub Type)	Sets or queries an FFT waveform's analysis sub type.	4-135
:FFT:WAVeform<x>:TYPE	Sets or queries an FFT waveform's analysis type.	4-135
:FFT:WAVeform<x>:UNIT	Sets or queries a unit string that is attached to FFT computation results.	4-135
:FFT:WAVeform<x>:VSCale?	(Upper-level query) Queries all FFT vertical scale settings.	4-135
:FFT:WAVeform<x>:VSCale:CENTer	Sets or queries the center value of an FFT waveform's vertical scale.	4-136
:FFT:WAVeform<x>:VSCale:MODE (Vertical Scale Mode)	Sets or queries an FFT waveform's vertical scale mode.	4-136
:FFT:WAVeform<x>:VSCale:SENSitivity	Sets or queries the sensitivity of an FFT waveform's vertical scale.	4-136
:FFT:WINDow<x>?	(Upper-level query) Queries all FFT window settings.	4-136
:FFT:WINDow<x>:AVERage?	(Upper-level query) Queries all FFT average settings.	4-136
:FFT:WINDow<x>:AVERage:COUNt	Sets or queries the average count for FFT average LIN.	4-136
:FFT:WINDow<x>:AVERage:EWEight	Sets or queries the attenuation constant of FFT average EXP.	4-136
:FFT:WINDow<x>:AVERage:MODE	Sets or queries the FFT averaging mode.	4-136
:FFT:WINDow<x>:AVERage:TYPE	Sets or queries the averaging domain.	4-137
:FFT:WINDow<x>:FORMat	Sets or queries the FFT display format (number of zones).	4-137
:FFT:WINDow<x>:HAXis	Sets or queries an FFT window's horizontal-axis display method.	4-137
:FFT:WINDow<x>:HORizontal?	(Upper-level query) Queries all horizontal axis settings of FFT analysis.	4-137
:FFT:WINDow<x>:HORizontal:CSPan?	(Upper-level query) Queries all settings related to the center value and span of the horizontal axis in FFT analysis.	4-137
:FFT:WINDow<x>:HORizontal:CSPan:CENTer	Sets or queries the center value of the horizontal axis in FFT analysis.	4-137
:FFT:WINDow<x>:HORizontal:CSPan:SPAN	Sets or queries the span of the horizontal axis in FFT analysis.	4-137
:FFT:WINDow<x>:HORizontal:LRIGht?	(Upper-level query) Queries all settings related to the left and right edges of the horizontal axis in FFT analysis.	4-137
:FFT:WINDow<x>:HORizontal:LRIGht:RANGe	Sets or queries the range of the left and right edges of the horizontal axis in FFT analysis.	4-137
:FFT:WINDow<x>:HORizontal:MODE	Sets or queries the horizontal axis mode of FFT analysis.	4-138
:FFT:WINDow<x>:MODE	Sets or queries whether the specified FFT window is displayed.	4-138
:FFT:WINDow<x>:POINt	Sets or queries the number of analysis source points of the FFT windows.	4-138
:FFT:WINDow<x>:STARt	Sets or queries the analysis-source start point of the FFT windows.	4-138
:FFT:WINDow<x>:WINDow?	(Upper-level query) Queries all FFT window function settings.	4-138
:FFT:WINDow<x>:WINDow:EXPonential?	(Upper-level query) Queries all FFT exponential window settings.	4-138
:FFT:WINDow<x>:WINDow:EXPonential:DRATe	Sets or queries the FFT exponential window's damping rate.	4-138
:FFT:WINDow<x1>:WINDow:EXPonential:FORCe<x2>	Sets or queries the FFT exponential window's Force1 or Force2 value.	4-138
:FFT:WINDow<x>:WINDow:TYPE	Sets or queries the computation window type for FFT analysis.	4-138

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Command	Function	Page

FILE group

Command	Function	Page
`:FILE?`	(Upper-level query) Queries all storage device settings.	4-139
`:FILE:COPY:ABORt`	Aborts file copying.	4-139
`:FILE:COPY:CDIRectory`	Changes the file copy destination directory.	4-139
`:FILE:COPY:DRIVe`	Changes the file copy destination drive.	4-139
`:FILE:COPY[:EXECute]`	Executes file copying. This is an overlap command.	4-139
`:FILE:COPY:PATH?`	Queries the file copy destination directory.	4-139
`:FILE:DDIRectory:CDIRectory` (Change Directory)	Changes the copy destination directory on the storage device.	4-139
`:FILE:DDIRectory:DRIVe`	Sets the storage device to copy to.	4-139
`:FILE:DDIRectory:MDIRectory` (Make Directory)	Creates a directory in the copy destination directory.	4-139
`:FILE:DDIRectory:PATH?`	Queries the copy destination directory.	4-139
`:FILE:DELete`	Deletes files. This is an overlap command.	4-139
`:FILE[:DIRectory]:CDIRectory` (Change Directory)	Changes the current directory on the storage device.	4-139
`:FILE[:DIRectory]:DRIVe`	Sets the storage device to perform file operations on.	4-140
`:FILE[:DIRectory]:FREE?`	Queries the free space on the storage device that is being operated on in bytes.	4-140
`:FILE[:DIRectory]:MDIRectory` (Make Directory)	Creates a directory in the current directory.	4-140
`:FILE[:DIRectory]:PATH?`	Queries the current directory.	4-140
`:FILE[:DIRectory]:SDRIVe`	Sets the file output destination for multi--unit synchronization.	4-140
`:FILE[:DIRectory]:SPATH?`	Queries the file output destination for multi--unit synchronization.	4-140
`:FILE:LOAD:BINary:ABORt`	Aborts the loading of binary data.	4-140
`:FILE:LOAD:{BINary|SETup|SNAP}[:EXECute]`	Executes the loading of various types of data. This is an overlap command.	4-140
`:FILE:MSAVe?`	(Upper-level query) Queries all SAVE key settings.	4-140
`:FILE:MSAVe:ASCii`	Sets or queries the on/off status for saving ASCII data using the SAVE key.	4-140
`:FILE:MSAVe:BINary`	Sets or queries the on/off status for saving binary data using the SAVE key.	4-140
`:FILE:MSAVe:DASCii`	Sets or queries the on/off status for saving low-speed sampling waveform ASCII data using the SAVE key during dual capture.	4-140
`:FILE:MSAVe:DBINary`	Sets or queries the on/off status for saving all binary data using the SAVE key during dual capture.	4-141
`:FILE:MSAVe:DMATlab`	Sets or queries the on/off status for saving low-speed sampling waveform MATLAB data using the SAVE key during dual capture.	4-141
`:FILE:MSAVe:EXECute`	Executes the same process as executing the SAVE key.	4-141
`:FILE:MSAVe:IMAGe`	Sets or queries the on/off status for saving image data using the SAVE key.	4-141
`:FILE:MSAVe:MATLab`	Sets or queries the on/off status for saving MATLAB data using the SAVE key.	4-141
`:FILE:SAVE?`	(Upper-level query) Queries all saved file name settings.	4-141
`:FILE:SAVE:ANAMing`	Sets or queries the auto naming mode for saving files.	4-141
`:FILE:SAVE:{ASCii|BINary}?`	(Upper-level query) Queries all the settings related to the saving of a specific type of file.	4-141
`:FILE:SAVE:{ASCii|BINary|MATLab|DASCii|DBINary|DMATlab}:ABORt`	Aborts the saving of a specific type of file.	4-141
`:FILE:SAVE:{ASCii|BINary|MATLab}:CRANge<x>`	Sets or queries the cursor position for when data is to be saved using a cursor range.	4-141
`:FILE:SAVE:{ASCii|FFT}:DPOint`	Sets or queries the type of decimal point that is used when saving data in ASCII format.	4-141
`:FILE:SAVE:{ASCii|BINary|MATLab|DASCii|DBINary|DMATlab|FFT|MEASure|SETup|SNAP}[:EXECute]`	Executes the saving of a specific type of file. This is an overlap command.	4-142
`:FILE:SAVE:{ASCii|BINary|MATLab}:HISTory`	Sets or queries what waveforms the history memory feature will save for a specific type of data.	4-142
`:FILE:SAVE:ASCii:INTerval`	Sets or queries the data removal interval that is used when saving data in ASCII format.	4-142
`:FILE:SAVE:{ASCii|BINary|MATLab|DASCii|DBINary|DMATlab}:RANGe`	Sets or queries the save range for a specific type of data.	4-142
`:FILE:SAVE:ASCii:SCHannel`	Sets or queries the writing method of sub channel data when saving data in ASCII format.	4-142

Command	Function	Page
`:FILE:SAVE:{ASCii|BINary|MATLab` `|DASCii|DBINary|DMATlab}:STRace` `:{CHANnel<x>[:SCHannel<x>]|MATH` `<x>}`	Sets or queries the waveform that will be saved for a specific type of data.	4-142
`:FILE:SAVE:{ASCii|MEASure}:TINF` `ormation`	Sets or queries whether time information is included when saving data in ASCII or CSV format.	4-142
`:FILE:SAVE:BINary:COMPression`	Sets or queries whether waveform data is compressed during saving.	4-142
`:FILE:SAVE:BINary:LINFormation`	Sets or queries whether GPS position information is included when saving data in binary format.	4-143
`:FILE:SAVE:COMMent`	Sets or queries the comment that will be saved.	4-143
`:FILE:SAVE:FFT:FINFormation`	Sets or queries whether frequency information is included when saving FFT waveforms in ASCII format.	4-143
`:FILE:SAVE:MATLab:ITEXt` `(Information Text)`	Sets or queries whether horizontal axis information is included in text format when saving data in MATLAB format.	4-143
`:FILE:SAVE:MATLab:SINFO`	Sets or queries whether sampling information is included when saving data in MATLAB format.	4-143
`:FILE:SAVE:MEASure:UNIT`	Sets or queries whether a unit is included in each cell when measured results are saved.	4-143
`:FILE:SAVE:NAME`	Sets or queries the name of the file that will be saved.	4-143
`:FILE:SAVE:SETup:DESTination`	Sets or queries the file merging of setup files.	4-143

GONogo Group

Command	Function	Page
`:GONogo?`	(Upper-level query) Queries all GO/NO-GO determination settings.	4-144
`:GONogo:ACONdition`	Sets or queries the GO/NO-GO determination-action condition.	4-144
`:GONogo:ACTion?`	(Upper-level query) Queries all settings for the action that is performed when the condition is met and the settings for the condition itself.	4-144
`:GONogo:ACTion:BUZZer`	Sets or queries whether a beep is sounded when the condition is met.	4-144
`:GONogo:ACTion:FOLDer`	Sets or queries whether a date folder is created when waveform data or screen capture data is saved to the storage device when conditions are met.	4-144
`:GONogo:ACTion:IMAGe?`	(Upper-level query) Queries all settings for the screen capture that is saved when the condition is met.	4-144
`:GONogo:ACTion:IMAGe:CDIRectory`	Changes the current directory where the screen capture is saved to when the condition is met.	4-144
`:GONogo:ACTion:IMAGe:DRIVe`	Sets or queries the medium that the screen capture is saved to when the condition is met.	4-144
`:GONogo:ACTion:IMAGe[:MODE]`	Sets or queries whether a screen capture is saved when the condition is met.	4-145
`:GONogo:ACTion:IMAGe:PATH?`	Queries the path on the storage device that screen captures are saved to when the condition is met.	4-145
`:GONogo:ACTion:MAIL?`	(Upper-level query) Queries all settings for sending e-mail when the condition is met.	4-145
`:GONogo:ACTion:MAIL:COUNt`	Sets or queries the number of times that e-mail is sent when the condition is met.	4-145
`:GONogo:ACTion:MAIL:MODE`	Sets or queries whether e-mail is sent when the condition is met.	4-145
`:GONogo:ACTion:MSAVe (Measure` `Save)`	Sets or queries whether measurement results are saved to the storage device when the condition is met.	4-145
`:GONogo:ACTion:SAVE?`	(Upper-level query) Queries all settings for saving waveform data when conditions are met.	4-145
`:GONogo:ACTion:SAVE:CDIRectory`	Changes the current directory on the storage device where waveform data is saved to when the condition is met.	4-145
`:GONogo:ACTion:SAVE:DRIVe`	Sets or queries the storage device that waveform data is saved to when the condition is met.	4-145
`:GONogo:ACTion:SAVE:ASCii:MODE`	Sets or queries whether waveform data is saved to the storage device in ASCII format when the condition is met.	4-146
`:GONogo:ACTion:SAVE:BINary:MODE`	Sets or queries whether waveform data is saved to the storage device in binary format when the execution condition is met.	4-146
`:GONogo:ACTion:SAVE:MATLab:MODE`	Sets or queries whether waveform data is saved to the storage device in MATLAB format when the condition is met.	4-146
`:GONogo:ACTion:SAVE[:MODE]`	Sets or queries whether waveform data is saved to the storage device when the condition is met.	4-146
`:GONogo:ACTion:SAVE:PATH?`	Queries the path on the storage device that waveform data is saved to when the condition is met.	4-146
`:GONogo:COUNt?`	Queries the number of GO/NO-GO determinations that were performed.	4-146
`:GONogo:LOGic`	Sets or queries the GO/NO-GO determination logic.	4-146
`:GONogo:MODE`	Sets or queries the GO/NO-GO determination mode.	4-146

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Command	Function	Page
`:GONogo:NGCount?`	Queries the GO/NO-GO determination NO-GO count.	4-146
`:GONogo:PARameter?`	(Upper-level query) Queries all parameter determination settings.	4-146
`:GONogo:PARameter:ITEM<x>?`	(Upper-level query) Queries all settings for the specified waveform parameter for parameter determination.	4-146
`:GONogo:PARameter:ITEM<x>:CAUSe?`	Queries whether the specified waveform parameter for parameter determination is the cause of a NO-GO judgment.	4-146
`:GONogo:PARameter:ITEM<x>:LOGic:BIT`	Sets or queries the bit when the the specified waveform parameter's source waveform for parameter determination is set to 720230 (logic module).	4-147
`:GONogo:PARameter:ITEM<x>:MODE`	Sets or queries the specified waveform parameter's reference condition for parameter determination.	4-147
`:GONogo:PARameter:ITEM<x>:TRACe`	Sets or queries the specified waveform parameter's source waveform for parameter determination.	4-147
`:GONogo:PARameter:ITEM<x>:TYPE?`	Queries, for parameter determination, the specified waveform parameter's measurement item and upper and lower limits.	4-147
`:GONogo:PARameter:ITEM<x>:TYPE:<Parameter>`	Sets or queries the upper and lower limits of the measurement item for the specified waveform parameter.	4-147
`:GONogo:PARameter:ITEM<x>:VALue?`	Queries the measured value of the specified waveform parameter.	4-147
`:GONogo:REMote`	Sets or queries the remote mode of GO/NO-GO determination.	4-147
`:GONogo:SEQuence`	Sets or queries the action mode of GO/NO-GO determination.	4-147
`:GONogo:TRANge`	Sets or queries the determination range of GO/NO-GO determination.	4-147
`:GONogo:WAIT?`	Waits for the completion of GO/NO-GO determination with a timeout.	4-148
`:GONogo:ZONE?`	(Upper-level query) Queries all waveform zone determination settings.	4-148
`:GONogo:ZONE:PATTern<x>?`	(Upper-level query) Queries all settings for the specified determination pattern for waveform zone determination.	4-148
`:GONogo:ZONE:PATTern<x>:CAUSe?`	Queries whether the specified determination pattern for waveform zone determination is the cause of a NO-GO judgment.	4-148
`:GONogo:ZONE:PATTern<x>:MODE`	Sets or queries the specified determination pattern's reference condition for waveform zone determination.	4-148
`:GONogo:ZONE:PATTern<x>:TRACe`	Sets or queries the specified determination pattern's determination waveform for waveform zone determination.	4-148
`:GONogo:ZONE:PATTern<x>:ZONE`	Sets or queries the specified determination pattern's source waveform zone data for waveform zone determination.	4-148

GPS Group

Command	Function	Page
`:GPS?`	(Upper-level query) Queries all GPS data acquisition settings.	4-149
`:GPS:ALTitude?`	(Upper-level query) Queries all GPS altitude data acquisition settings.	4-149
`:GPS:ALTitude:INPut`	Sets or queries whether the GPS altitude data channel is displayed.	4-149
`:GPS:ALTitude:LABel`	Sets or queries the label of the GPS altitude data channel.	4-149
`:GPS:ALTitude:SCALe`	Sets or queries the scale of the GPS altitude data channel.	4-149
`:GPS:DIRection?`	(Upper-level query) Queries all GPS direction data acquisition settings.	4-149
`:GPS:DIRection:INPut`	Sets or queries whether the GPS direction data channel is displayed.	4-149
`:GPS:DIRection:LABel`	Sets or queries the label of the GPS direction data channel.	4-149
`:GPS:DIRection:SCALe`	Sets or queries the scale of the GPS direction data channel.	4-150
`:GPS:LATitude?`	(Upper-level query) Queries all GPS latitude data acquisition settings.	4-150
`:GPS:LATitude:INPut`	Sets or queries whether the GPS latitude data channel is displayed.	4-150
`:GPS:LATitude:LABel`	Sets or queries the label of the GPS latitude data channel.	4-150
`:GPS:LATitude:SCALe`	Sets or queries the scale of the GPS latitude data channel.	4-150
`:GPS:LONGitude?`	(Upper-level query) Queries all GPS longitude data acquisition settings.	4-150
`:GPS:LONGitude:INPut`	Sets or queries whether the GPS longitude data channel is displayed.	4-150
`:GPS:LONGitude:LABel`	Sets or queries the label of the GPS longitude data channel.	4-151
`:GPS:LONGitude:SCALe`	Sets or queries the scale of the GPS longitude data channel.	4-151
`:GPS:MODE`	Sets or queries whether GPS data is acquired.	4-151
`:GPS:STATus?`	(Upper-level query) Queries all GPS status channel settings.	4-151
`:GPS:STATus:INPut`	Sets or queries whether the GPS status channel is displayed.	4-151
`:GPS:STATus:LABel`	Sets or queries the label of the GPS status channel.	4-151
`:GPS:STATus:SCALe`	Sets or queries the scale of the GPS status channel.	4-151
`:GPS:VELocity?`	(Upper-level query) Queries all GPS velocity data acquisition settings.	4-151
`:GPS:VELocity:INPut`	Sets or queries whether the GPS velocity data channel is displayed.	4-152
`:GPS:VELocity:LABel`	Sets or queries the label of the GPS velocity data channel.	4-152
`:GPS:VELocity:SCALe`	Sets or queries the scale of the GPS velocity data channel.	4-152

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HCOPy Group

Command	Function	Page
`:HCOPy?`	(Upper-level query) Queries all screen capture data output settings.	4-153
`:HCOPy:COMMent`	Sets or queries the screen comment.	4-153
`:HCOPy:DIRection`	Sets or queries the data output destination.	4-153
`:HCOPy:EXECute`	Executes data output.	4-153
`:HCOPy:EXTPrinter?`	(Upper-level query) Queries all USB printer output settings.	4-153
`:HCOPy:EXTPrinter:TONE`	Sets or queries the colors that will be used when printing from the HP Inkjet printer.	4-153
`:HCOPy:EXTPrinter:TYPE`	Sets or queries the USB printer output command type.	4-153
`:HCOPy:NETPrint?`	(Upper-level query) Queries all network printer output settings.	4-153
`:HCOPy:NETPrint:TONE`	Sets or queries whether data will be printed in color from the network printer.	4-153

HISTory Group

Command	Function	Page
`:HISTory?`	(Upper-level query) Queries all history feature settings.	4-154
`:HISTory:ABORt`	Aborts the history search.	4-154
`:HISTory:CLEar`	Clears the data of all history waveforms.	4-154
`:HISTory:DATE?`	Queries the trigger date of the data at the specified record number.	4-154
`:HISTory:DISPlay`	Sets or queries the history start and end numbers that will be displayed.	4-154
`:HISTory:DMODe (Display Mode)`	Sets or queries the history waveform display mode.	4-154
`:HISTory:EXECute`	Executes the history waveform search.	4-154
`:HISTory:PARameter?`	(Upper-level query) Queries all history-waveform parameter-search settings.	4-154
`:HISTory:PARameter:ITEM<x>?`	(Upper-level query) Queries all the specified parameter's settings for history-waveform parameter searches.	4-154
`:HISTory:PARameter:ITEM<x>:CONDition`	Sets or queries the specified parameter's reference condition for history-waveform parameter searches.	4-154
`:HISTory:PARameter:ITEM<x>:LOGic:BIT`	Sets or queries the bit when the specified parameter's source trace for history-waveform parameter searches is set to 720230 (logic module).	4-154
`:HISTory:PARameter:ITEM<x>:SOURce`	Sets or queries the specified parameter's source trace for history-waveform parameter searches.	4-155
`:HISTory:PARameter:ITEM<x>:TYPE?`	Queries, for history-waveform parameter searches, the specified parameter's automatically measured item and upper and lower limits.	4-155
`:HISTory:PARameter:ITEM<x>:TYPE:<Parameter>`	Sets or queries the specified parameter's upper and lower limits for history-waveform parameter searches.	4-155
`:HISTory:PARameter:LOGic`	Sets or queries the logic to apply to history waveform searches.	4-155
`:HISTory:PARameter:TRANge`	Sets or queries the determination range of history waveform parameter searches.	4-155
`:HISTory:RECord`	Sets or queries the source record.	4-155
`:HISTory:RECord? MINimum`	Queries the minimum record number.	4-155
`:HISTory:SMODe`	Sets or queries the history waveform search mode.	4-155
`:HISTory:TIME?`	Queries the time reference point of the data at the specified record number.	4-155
`:HISTory:ZONE?`	(Upper-level query) Queries all history waveform zone search settings.	4-156
`:HISTory:ZONE:EDIT<x>?`	(Upper-level query) Queries all settings for the specified search zone.	4-156
`:HISTory:ZONE:EDIT<x>:CONDition`	Sets or queries the specified search zone's search condition.	4-156
`:HISTory:ZONE:EDIT<x>:SOURce`	Sets or queries the specified search zone's source waveform.	4-156
`:HISTory:ZONE:LOGic`	Sets or queries the logic condition of history-waveform zone searches.	4-156

IMAGe Group

Command	Function	Page
`:IMAGe?`	(Upper-level query) Queries all screen capture data output settings.	4-157
`:IMAGe:BACKground`	Sets or queries the screen capture background (png).	4-157
`:IMAGe:COMMent`	Sets or queries the screen comment.	4-157
`:IMAGe:EXECute`	Saves the screen capture data.	4-157
`:IMAGe:FORMat`	Sets or queries the screen capture output format.	4-157
`:IMAGe:SAVE?`	(Upper-level query) Queries all file output settings.	4-157
`:IMAGe:SAVE:ANAMing`	Sets or queries the setting of the auto naming feature for saving files.	4-157
`:IMAGe:SAVE:CDIRectory`	Changes the output destination directory.	4-157
`:IMAGe:SAVE:DRIVe`	Sets the output destination medium.	4-157
`:IMAGe:SAVE:NAME`	Sets or queries the name of the file that will be saved.	4-157
`:IMAGe:SAVE:PATH?`	Queries the current directory.	4-157
`:IMAGe:SEND?`	Queries the screen capture data.	4-157

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Command	Function	Page
`:IMAGe:TONE`	Sets or queries the color tone of the screen capture data that will be saved.	4-157

INITialize Group

Command	Function	Page
`:INITialize:EXECute`	Initializes the settings.	4-158

LSTart Group

Command	Function	Page
`:LSTart (Log STart)`	Starts waveform acquisition immediately.	4-159
`:LSTart?`	Starts waveform acquisition immediately, and waits for acquisition to complete.	4-159

MATH Group

Command	Function	Page
`:MATH<x>?`	(Upper-level query) Queries all math settings.	4-160
`:MATH<x>:AVALue`	Sets or queries the basic Arithmetic scaling coefficient A.	4-160
`:MATH<x>:AVERage?`	(Upper-level query) Queries all averaging computation settings.	4-160
`:MATH<x>:AVERage:CCOunt`	Sets or queries the cycle count of cycle averaging.	4-160
`:MATH<x>:AVERage:COUNt`	Sets or queries the average count of linear averaging.	4-160
`:MATH<x>:AVERage:EWEight`	Sets or queries the attenuation constant of exponential averaging.	4-160
`:MATH<x>:AVERage:MODE`	Sets or queries the averaging mode.	4-160
`:MATH<x>:BINary?`	(Upper-level query) Queries all binary computation settings.	4-160
`:MATH<x>:BINary:{CHANnel<x>[:SCHannel<x>]|MATH<x>}[:THReshold]`	Sets or queries the threshold level of the specified channel for binary computations.	4-161
`:MATH<x>:BVALue`	Sets or queries the basic Arithmetic scaling coefficient B.	4-161
`:MATH<x>:CONStant<x>`	Sets or queries a constant for user-defined computation.	4-161
`:MATH<x>:CVALue`	Sets or queries the basic Arithmetic scaling coefficient B.	4-161
`:MATH<x>:DEFine`	Sets or queries an expression for user-defined computation.	4-161
`:MATH<x>:ESHift:{CHANnel<x>[:SCHannel<x>]|[MATH<x>}[:COUNt]`	Sets or queries the amount of phase shift in the Shift computation when an external clock is used.	4-161
`:MATH<x>:FILTer<x>?`	(Upper-level query) Queries all digital filter settings.	4-161
`:MATH<x>:FILTer<x>:BAND`	Sets or queries a digital filter band.	4-162
`:MATH<x>:FILTer<x>:CUToff<x>`	Sets or queries a cutoff frequency of a digital filter.	4-162
`:MATH<x>:FILTer<x>:TYPE`	Sets or queries the type of a digital filter.	4-162
`:MATH<x>:LABel`	Sets or queries a computed waveform label.	4-162
`:MATH<x>:MODE`	Sets or queries whether the instrument is in math mode.	4-162
`:MATH<x>:MREFerence`	Sets or queries the computation range.	4-162
`:MATH<x>:OPERation`	Sets or queries the computation type.	4-162
`:MATH<x>:SCALe?`	(Upper-level query) Queries all scaling settings.	4-162
`:MATH<x>:SCALe:MODE`	Sets or queries a scale mode.	4-162
`:MATH<x>:SCALe:VALue`	Sets or queries a set of upper and lower limits for manual scaling.	4-163
`:MATH<x>:SHIFt:{CHANnel<x>[:SCHannel<x>]|MATH<x>}[:TIME]`	Sets or queries the amount of phase shift in the Shift computation when the internal clock is used.	4-163
`:MATH<x>:SOURce<x>`	Sets or queries a sub channel's computation type.	4-163
`:MATH<x>:UNIT`	Sets or queries a unit that is attached to computation results.	4-163

MEASure Group

Command	Function	Page
`:MEASure?`	(Upper-level query) Queries all the settings for automated measurement of waveform parameters.	4-164
`:MEASure:AREA2:MODE`	Sets or queries the on/off state of the automated measurement feature of area 2.	4-164
`:MEASure:CHANnel<x1>:BIT<x2>?`	(Upper-level query) Queries all settings for the specified channel and specified bit.	4-164
`:MEASure:CHANnel<x1>:BIT<x2>:ALL`	Sets the specified bit of the specified channel to on or off at once.	4-164
`:MEASure:CHANnel<x1>:BIT<x2>:AREA2:ALL`	Sets the specified bit area 2 of the specified channel to on or off at once.	4-164
`:MEASure:CHANnel<x1>:BIT<x2>:AREA2:COPY`	Copies the on/off setting of the specified bit area 2 of the specified channel to another specified channel.	4-164
`:MEASure:CHANnel<x1>:BIT<x2>:AREA2:DELay?`	(Upper-level query) Queries all settings related to the delay of the specified bit area 2 of the specified channel on a logic module.	4-164
`:MEASure:CHANnel<x1>:BIT<x2>:AREA2:DELay:COUNt?`	Queries the statistics count of the delay of bit area 2 of the specified channel.	4-164

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`:MEASure:CHANnel<x1>:BIT<x2>:AREA2:DELay:{MAXimum|MEAN|MINimum|SDEViation}?`	Queries the statistical value of the delay of bit area 2 of the specified channel.	4-165
`:MEASure:CHANnel<x1>:BIT<x2>:AREA2:DELay:MEASure?`	(Upper-level query) Queries all settings related to the source waveform used to measure the delay of the specified bit area 2 of the specified channel on a logic module.	4-165
`:MEASure:CHANnel<x1>:BIT<x2>:AREA2:DELay:MEASure:COUNt`	Sets or queries the edge detection count of the source waveform used to measure the delay of bit area 2 of the specified channel.	4-165
`:MEASure:CHANnel<x1>:BIT<x2>:AREA2:DELay:MEASure:SLOPe`	Sets or queries the edge polarity of the source waveform used to measure the delay of bit area 2 of the specified channel.	4-165
`:MEASure:CHANnel<x1>:BIT<x2>:AREA2:DELay:REFerence?`	(Upper-level query) Queries all settings related to the reference waveform used to measure the delay of the specified bit area 2 of the specified channel on a logic module.	4-165
`:MEASure:CHANnel<x1>:BIT<x2>:AREA2:DELay:REFerence:COUNt`	Sets or queries the edge detection count of the reference waveform used to measure the delay of bit area 2 of the specified channel.	4-165
`:MEASure:CHANnel<x1>:BIT<x2>:AREA2:DELay:REFerence:LOGic:BIT`	Sets or queries the reference waveform bit used to measure the delay of bit area 2 of the specified channel.	4-166
`:MEASure:CHANnel<x1>:BIT<x2>:AREA2:DELay:REFerence:SLOPe`	Sets or queries the edge polarity of the reference waveform used to measure the delay of bit area 2 of the specified channel.	4-166
`:MEASure:CHANnel<x1>:BIT<x2>:AREA2:DELay:REFerence:SOURce`	Sets or queries whether to set the reference for measuring the delay of bit area 2 of the specified channel to a trigger point or to a waveform.	4-166
`:MEASure:CHANnel<x1>:BIT<x2>:AREA2:DELay:REFerence:TRACe`	Sets or queries the reference waveform trace used to measure the delay of bit area 2 of the specified channel.	4-166
`:MEASure:CHANnel<x1>:BIT<x2>:AREA2:DELay:STATe`	Sets or queries the display format of the delay of bit area 2 of the specified channel.	4-167
`:MEASure:CHANnel<x1>:BIT<x2>:AREA2:DELay:VALue?`	Queries the delay measurement result of bit area 2 of the specified channel.	4-167
`:MEASure:CHANnel<x1>:BIT<x2>:CDEStination`	Sets or queries whether the copy destination channel is on or off for when parameter measurement items are copied between channels and bits.	4-167
`:MEASure:CHANnel<x1>:BIT<x2>:COPY`	Copies the on/off setting of the specified bit of the specified channel to another specified channel.	4-167
`:MEASure:CHANnel<x1>:BIT<x2>:DELay?`	(Upper-level query) Queries all settings related to the delay of the specified bit of the specified channel on a logic module.	4-167
`:MEASure:CHANnel<x1>:BIT<x2>:DELay:COUNt?`	Queries the statistics count of the delay of the specified bit of the specified channel.	4-167
`:MEASure:CHANnel<x1>:BIT<x2>:DELay:{MAXimum|MEAN|MINimum|SDEViation}?`	Queries the statistical value of the delay of the specified bit of the specified channel.	4-167
`:MEASure:CHANnel<x1>:BIT<x2>:DELay:MEASure?`	(Upper-level query) Queries all settings related to the source waveform used to measure the delay of the specified bit of the specified channel on a logic module.	4-167
`:MEASure:CHANnel<x1>:BIT<x2>:DELay:MEASure:COUNt`	Sets or queries the edge detection count of the source waveform used to measure the delay of the specified bit of the specified channel.	4-168
`:MEASure:CHANnel<x1>:BIT<x2>:DELay:MEASure:SLOPe`	Sets or queries the edge polarity of the source waveform used to measure the delay of the specified bit of the specified channel.	4-168
`:MEASure:CHANnel<x1>:BIT<x2>:DELay:REFerence?`	(Upper-level query) Queries all settings related to the reference waveform used to measure the delay of the specified bit of the specified channel on a logic module.	4-168
`:MEASure:CHANnel<x1>:BIT<x2>:DELay:REFerence:COUNt`	Sets or queries the edge detection count of the reference waveform used to measure the delay of the specified bit of the specified channel.	4-168
`:MEASure:CHANnel<x1>:BIT<x2>:DELay:REFerence:LOGic:BIT`	Sets or queries the reference waveform bit used to measure the delay of the specified bit of the specified channel.	4-168
`:MEASure:CHANnel<x1>:BIT<x2>:DELay:REFerence:SLOPe`	Sets or queries the edge polarity of the reference waveform used to measure the delay of the specified bit of the specified channel.	4-169
`:MEASure:CHANnel<x1>:BIT<x2>:DELay:REFerence:SOURce`	Sets or queries whether to set the reference for measuring the delay of the specified bit of the specified channel to a trigger point or to a waveform.	4-169
`:MEASure:CHANnel<x1>:BIT<x2>:DELay:REFerence:TRACe`	Sets or queries the reference waveform trace used to measure the delay of the specified bit of the specified channel.	4-169
`:MEASure:CHANnel<x1>:BIT<x2>:DELay:STATe`	Sets or queries the display format of the delay of the specified bit of the specified channel.	4-169
`:MEASure:CHANnel<x1>:BIT<x2>:DELay:VALue?`	Queries the delay measurement result of the specified bit of the specified channel.	4-169
`:MEASure:CHANnel<x1>:BIT<x2>:<Parameter>?`	(Upper-level query) Queries all settings related to the waveform parameter of the specified bit of the specified channel on a logic module.	4-170

Command	Function	Page
`:MEASure:CHANnel<x1>:BIT<x2>:<P arameter>:COUNt?`	Queries the waveform parameter statistics count of the specified bit of the specified channel.	4-170
`:MEASure:CHANnel<x1>:BIT<x2>:<P arameter>:{MAXimum|MEAN|MINimum |SDEViation}?`	Queries the waveform parameter statistics value of the specified bit of the specified channel.	4-170
`:MEASure:CHANnel<x1>:BIT<x2>:<P arameter>:STATe`	Sets or queries the on/off state of the waveform parameter of the specified bit of the specified channel.	4-170
`:MEASure:CHANnel<x1>:BIT<x2>:<P arameter>:VALue?`	Queries the measured waveform parameter value of the specified bit of the specified channel.	4-170
`:MEASure:CHANnel<x1>:BIT<x2>:AR EA2:<Parameter>?`	(Upper-level query) Queries all settings related to the waveform parameter of the specified bit area 2 of the specified channel on a logic module.	4-170
`:MEASure:CHANnel<x1>:BIT<x2>:AR EA2:<Parameter>:COUNt?`	Queries the waveform parameter statistics count of bit area 2 of the specified channel.	4-171
`:MEASure:CHANnel<x1>:BIT<x2>:AR EA2:<Parameter>:{MAXimum|MEAN|M INimum|SDEViation}?`	Queries the waveform parameter statistics value of bit area 2 of the specified channel.	4-171
`:MEASure:CHANnel<x1>:BIT<x2>:AR EA2:<Parameter>:STATe`	Sets or queries the on/off state of the waveform parameter of bit area 2 of the specified channel.	4-171
`:MEASure:CHANnel<x1>:BIT<x2>:AR EA2:<Parameter>:VALue?`	Queries the measured waveform parameter value of bit area 2 of the specified channel.	4-171
`:MEASure:{CHANnel<x1>[:SCHannel <x2>]|MATH<x3>}?`	Sets or queries whether all the waveform parameters of the specified channel are ON or OFF.	4-171
`:MEASure:{CHANnel<x1>[:SCHannel <x2>]|MATH<x3>}:ALL`	Sets all the measurement items of the specified channel to ON or OFF.	4-171
`:MEASure:{CHANnel<x1>[:SCHannel <x2>]|MATH<x3>}:AREA2:ALL`	Sets all the measurement items of the specified channel area 2 to ON or OFF.	4-172
`:MEASure:{CHANnel<x1>[:SCHannel <x2>]|MATH<x3>}:AREA2:COPY`	Copies all the measurement item ON/OFF settings from the specified channel area 2 to another specified channel.	4-172
`:MEASure:{CHANnel<x1>[:SCHannel <x2>]|MATH<x3>}:AREA2:DELay?`	(Upper-level query) Queries all delay area 2 settings.	4-172
`:MEASure:{CHANnel<x1>[:SCHannel <x2>]|MATH<x3>}:AREA2:DELay:COU Nt?`	Queries the statistics count of the delay between channels area 2.	4-172
`:MEASure:{CHANnel<x1>[:SCHannel <x2>]|MATH<x3>}:AREA2:DELay:{MA Ximum|MEAN|MINimum|SDEViation}?`	Queries a statistic of the delay between channels area 2.	4-172
`:MEASure:{CHANnel<x1>[:SCHannel <x2>]|MATH<x3>}:AREA2:DELay:MEA Sure?`	(Upper-level query) Queries all the settings for a source waveform for measuring the delay between channels area 2 of a waveform.	4-172
`:MEASure:{CHANnel<x1>[:SCHannel <x2>]|MATH<x3>}:AREA2:DELay:MEA Sure:COUNt`	Sets or queries the number of edges at which delay between channels area 2 will be measured for a waveform.	4-172
`:MEASure:{CHANnel<x1>[:SCHannel <x2>]|MATH<x3>}:AREA2:DELay:MEA Sure:SLOPe`	Sets or queries a source waveform slope that will be used to measure delay between channels area 2 for a waveform.	4-173
`:MEASure:{CHANnel<x1>[:SCHannel <x2>]|MATH<x3>}:AREA2:DELay:REF erence?`	(Upper-level query) Queries all the settings for a reference waveform for measuring the delay between channels area 2 of a waveform.	4-173
`:MEASure:{CHANnel<x1>[:SCHannel <x2>]|MATH<x3>}:AREA2:DELay:REF erence:COUNt`	Sets or queries the edge detection count of the reference waveform used to measure the delay between channels area 2 for the specified waveform.	4-173
`:MEASure:{CHANnel<x1>[:SCHannel <x2>]|MATH<x3>}:AREA2:DELay:REF erence:LOGic:BIT`	Sets or queries the bit of the reference waveform trace used to measure the delay between channels area 2 for a waveform.	4-173
`:MEASure:{CHANnel<x1>[:SCHannel <x2>]|MATH<x3>}:AREA2:DELay:REF erence:SLOPe`	Sets or queries the edge detection slope count of the reference waveform used to measure the delay between channels area 2 for the specified waveform.	4-173
`:MEASure:{CHANnel<x1>[:SCHannel <x2>]|MATH<x3>}:AREA2:DELay:REF erence:SOURce`	Sets or queries whether to set the reference point for measuring the delay between channels area 2 for a waveform to a trigger point or to a waveform.	4-174
`:MEASure:{CHANnel<x1>[:SCHannel <x2>]|MATH<x3>}:AREA2:DELay:REF erence:TRACe`	Sets or queries the reference waveform trace used to measure the delay between channels area 2 for a waveform.	4-174

Command	Function	Page
`:MEASure:{CHANnel<x1>[:SCHannel<x2>]|MATH<x3>}:AREA2:DELay:STATe`	Sets or queries the display format of the delay area 2 of the specified waveform parameter.	4-174
`:MEASure:{CHANnel<x1>[:SCHannel<x2>]|MATH<x3>}:AREA2:DELay:VALue?`	Queries the measured value of the specified waveform parameter delay area 2.	4-174
`:MEASure:{CHANnel<x1>[:SCHannel<x2>]|MATH<x3>}:CDEStination` (Copy Destination)	Sets or queries whether the copy destination channel is ON or OFF for when parameter measurement items are copied between channels.	4-175
`:MEASure:{CHANnel<x1>[:SCHannel<x2>]|MATH<x3>}:COPY`	Copies all the measurement item ON/OFF settings from one specified channel to another specified channel.	4-175
`:MEASure:{CHANnel<x1>[:SCHannel<x2>]|MATH<x3>}:DELay?`	(Upper-level query) Queries all delay settings.	4-175
`:MEASure:{CHANnel<x1>[:SCHannel<x2>]|MATH<x3>}:DELay:COUNt?`	Queries the statistics count of the delay between channels.	4-175
`:MEASure:{CHANnel<x1>[:SCHannel<x2>]|MATH<x3>}:DELay:{MAXimum|MEAN|MINimum|SDEViation}?`	Queries a statistic of the delay between channels.	4-175
`:MEASure:{CHANnel<x1>[:SCHannel<x2>]|MATH<x3>}:DELay:MEASure?`	(Upper-level query) Queries all the settings for a source waveform for measuring the delay between channels of a waveform.	4-175
`:MEASure:{CHANnel<x1>[:SCHannel<x2>]|MATH<x3>}:DELay:MEASure:COUNt`	Sets or queries the number of edges at which delay between channels will be measured for a waveform.	4-175
`:MEASure:{CHANnel<x1>[:SCHannel<x2>]|MATH<x3>}:DELay:MEASure:SLOPe`	Sets or queries a source waveform slope that will be used to measure delay between channels for a waveform.	4-176
`:MEASure:{CHANnel<x1>[:SCHannel<x2>]|MATH<x3>}:DELay:REFerence?`	(Upper-level query) Queries all reference waveform settings used to measure the delay between channels for the specified waveform.	4-176
`:MEASure:{CHANnel<x1>[:SCHannel<x2>]|MATH<x3>}:DELay:REFerence:COUNt`	Sets or queries the edge detection count of the reference waveform used to measure the delay between channels for the specified waveform.	4-176
`:MEASure:{CHANnel<x1>[:SCHannel<x2>]|MATH<x3>}:DELay:REFerence:LOGic:BIT`	Sets or queries the bit of the reference waveform trace used to measure the delay between channels for a waveform.	4-176
`:MEASure:{CHANnel<x1>[:SCHannel<x2>]|MATH<x3>}:DELay:REFerence:SLOPe`	Sets or queries the edge detection slope count of the reference waveform used to measure the delay between channels for the specified waveform.	4-176
`:MEASure:{CHANnel<x1>[:SCHannel<x2>]|MATH<x3>}:DELay:REFerence:SOURce`	Sets or queries whether to set the reference point for measuring the delay between channels for a waveform to a trigger point or to a waveform.	4-177
`:MEASure:{CHANnel<x1>[:SCHannel<x2>]|MATH<x3>}:DELay:REFerence:TRACe`	Sets or queries the reference waveform trace used to measure the delay between channels for a waveform.	4-177
`:MEASure:{CHANnel<x1>[:SCHannel<x2>]|MATH<x3>}:DELay:STATe`	Sets or queries the display format of the delay of the specified waveform parameter.	4-177
`:MEASure:{CHANnel<x1>[:SCHannel<x2>]|MATH<x3>}:DELay:VALue?`	Queries a measured delay value of the specified waveform's parameter.	4-177
`:MEASure:{CHANnel<x1>[:SCHannel<x2>]|MATH<x3>}:DPRoximal?`	(Upper-level query) Queries all distal, mesial, and proximal settings.	4-177
`:MEASure:{CHANnel<x1>[:SCHannel<x2>]|MATH<x3>}:DPRoximal:MODE`	Sets or queries the distal, mesial, and proximal point mode setting.	4-178
`:MEASure:{CHANnel<x1>[:SCHannel<x2>]|MATH<x3>}:DPRoximal:PERCent`	Sets or queries the distal, mesial, and proximal points as percentages.	4-178
`:MEASure:{CHANnel<x1>[:SCHannel<x2>]|MATH<x3>}:DPRoximal:UNIT`	Sets or queries the distal, mesial, and proximal points as units.	4-178
`:MEASure:{CHANnel<x1>[:SCHannel<x2>]|MATH<x3>}:METHod`	Sets or queries the modes of a set of high and low points (rising-time and falling-time measurement references).	4-179
`:MEASure:{CHANnel<x1>[:SCHannel<x2>]|MATH<x3>}:<Parameter>?`	Queries the setting of a waveform parameter (measurement item).	4-179
`:MEASure:{CHANnel<x1>[:SCHannel<x2>]|MATH<x3>}:<Parameter>:COUNt?`	Queries the count of measured values for cyclic statistical processing of a waveform parameter.	4-179

Command	Function	Page
`:MEASure:{CHANnel<x1>[:SCHannel<x2>]|MATH<x3>}:<Parameter>:{MAXimum|MEAN|MINimum|SDEViation}?`	Queries a cyclic statistical processing value of a waveform parameter.	4-179
`:MEASure:{CHANnel<x1>[:SCHannel<x2>]|MATH<x3>}:<Parameter>:STATe`	Sets or queries whether the specified waveform's waveform parameter (measurement item) is ON or OFF.	4-179
`:MEASure:{CHANnel<x1>[:SCHannel<x2>]|MATH<x3>}:<Parameter>:VALue?`	Queries the measured value of a waveform parameter.	4-180
`:MEASure:{CHANnel<x1>[:SCHannel<x2>]|MATH<x3>}:AREA2:<Parameter>?`	Queries the setting of a waveform area 2 parameter (measurement item).	4-180
`:MEASure:{CHANnel<x1>[:SCHannel<x2>]|MATH<x3>}:AREA2:<Parameter>:COUNt?`	Queries the count of measured values for cyclic statistical processing of a waveform area 2 parameter.	4-180
`:MEASure:{CHANnel<x1>[:SCHannel<x2>]|MATH<x3>}:AREA2:<Parameter>:{MAXimum|MEAN|MINimum|SDEViation}?`	Queries a cyclic statistical processing value of a waveform area 2 parameter.	4-181
`:MEASure:{CHANnel<x1>[:SCHannel<x2>]|MATH<x3>}:AREA2:<Parameter>:STATe`	Sets or queries whether the specified waveform's waveform area 2 parameter (measurement item) is ON or OFF.	4-181
`:MEASure:{CHANnel<x1>[:SCHannel<x2>]|MATH<x3>}:AREA2:<Parameter>:VALue?`	Queries the measured value of a waveform area 2 parameter.	4-181
`:MEASure:CYCLe?`	(Upper-level query) Queries all cycle statistics settings.	4-181
`:MEASure:CYCLe:ABORt`	Aborts cyclic statistical processing.	4-182
`:MEASure:CYCLe:EXECute`	Executes cyclic statistical processing.	4-182
`:MEASure:CYCLe:LOGic:BIT`	Sets or queries the cycle trace bit of cycle statistics.	4-182
`:MEASure:CYCLe:TRACe`	Sets or queries the cycle trace of cycle statistics.	4-182
`:MEASure:HISTory:ABORt`	Aborts the statistical processing of history waveforms.	4-182
`:MEASure:HISTory:EXECute`	Executes the statistical processing of history waveforms.	4-182
`:MEASure:INDicator?`	(Upper-level query) Queries all parameter math indicator display settings.	4-182
`:MEASure:INDicator[:LOGic]:BIT`	Sets or queries the indicator display logic bit of parameter math.	4-182
`:MEASure:INDicator:PARameter`	Sets or queries the indicator display parameter of parameter math.	4-182
`:MEASure:INDicator:TRACe`	Sets or queries the indicator display trace of parameter math.	4-182
`:MEASure:MODE`	Sets or queries the measure mode.	4-183
`:MEASure:ONECycle`	Sets or queries whether one cycle mode is ON or OFF.	4-183
`:MEASure:TRANge (Time Range)`	Sets or queries the waveform parameter measurement range.	4-183
`:MEASure:WAIT?`	Waits for the completion of measurement with a timeout.	4-183
`:MEASure:{XY<x>}?`	(Upper-level query) Queries all the settings for automated measurement of XY waveform parameters.	4-183
`:MEASure:{XY<x>}:<Parameter>?`	Queries the setting of a waveform parameter (measurement item).	4-183
`:MEASure:{XY<x>}:<Parameter>:COUNt?`	Queries the count of measured values for cyclic statistical processing of a waveform parameter.	4-183
`:MEASure:{XY<x>}:<Parameter>:{MAXimum|MEAN|MINimum|SDEViation}?`	Queries a cyclic statistical processing value of a waveform parameter.	4-183
`:MEASure:{XY<x>}:<Parameter>:STATe`	Sets or queries whether the specified waveform's parameter is ON or OFF.	4-183
`:MEASure:{XY<x>}:<Parameter>:VALue?`	Queries the measured value of a waveform parameter.	4-184
`:MEASure:{XY<x>}:AREA2?`	(Upper-level query) Queries all settings related to area 2 of the specified waveform.	4-184
`:MEASure:{XY<x>}:AREA2:<Parameter>?`	Queries the setting of a waveform area 2 parameter (measurement item).	4-184
`:MEASure:{XY<x>}:AREA2:<Parameter>:COUNt?`	Queries the count of measured values for cyclic statistical processing of a waveform area 2 parameter.	4-184
`:MEASure:{XY<x>}:AREA2:<Parameter>:{MAXimum|MEAN|MINimum|SDEViation}?`	Queries a cyclic statistical processing value of a waveform area 2 parameter.	4-184
`:MEASure:{XY<x>}:AREA2:<Parameter>:STATe`	Sets or queries whether the specified waveform's area 2 waveform parameter (measurement item) is ON or OFF.	4-184

Command	Function	Page
:MEASure:{XY<x>}:AREA2:<Parameter>:VALue?	Queries the measured value of a waveform area 2 parameter.	4-185

MONitor Group

Command	Function	Page
:MONitor:ASENd?	Sends the numeric monitor data (in ASCII format) of all channels.	4-186
:MONitor:ASENd:CHANnel<x1>[:SCHannel<x2>]?	Sends the numeric monitor data (in ASCII format) of the specified channel.	4-186
:MONitor:BITS:CHANnel<x1>[:SCHannel<x2>]?	Queries the effective bit length of the specified channel's data.	4-186
:MONitor:BYTeorder	Sets or queries the transmission byte order for data formats that are 2 bytes or longer.	4-186
:MONitor:FORMat:CHANnel<x1>[:SCHannel<x2>]	Sets or queries the transmission data format.	4-186
:MONitor:GAIN:CHANnel<x1>[:SCHannel<x2>]?	Queries the gain that is used when the specified channel's numeric monitor data is converted to a physical value.	4-186
:MONitor:LATCh:ASENd?	Sends the numeric monitor data (in ASCII format) of all channels. The data that is present at the time when you execute the latch command is sent.	4-187
:MONitor:LATCh:ASENd:CHANnel<x1>[:SCHannel<x2>]?	Sends the numeric monitor data (in ASCII format) of the specified channel. The data that is present at the time when you execute the latch command is sent.	4-187
:MONitor:LATCh:EXECute	Latches the monitor data.	4-187
:MONitor:LATCh:SEND:{ALL|CHANnel<x1>[:SCHannel<x2>]}?	Sends numeric monitor data.	4-187
:MONitor:OFFSet:CHANnel<x1>[:SCHannel<x2>]?	Queries the offset that is used when the specified channel's numeric monitor data is converted to a physical value.	4-187
:MONitor:RANGe:CHANnel<x1>[:SCHannel<x2>]?	Queries the range that is used when the specified channel's numeric monitor data is converted to a physical value.	4-187
:MONitor:RODisplay? (Range Out Display)	Queries the over-range state of the input signal using a character string displayed on the instrument.	4-187
:MONitor:ROSTatus? (Range Out Status)	Queries the over-range state of the input signal.	4-187
:MONitor:SEND:ALL?	Sends the numeric monitor data (in binary format) of all channels.	4-187
:MONitor:SEND:CHANnel<x1>[:SCHannel<x2>]?	Sends the numeric monitor data (in binary format) of the specified channel.	4-188
:MONitor:VERBose	Set whether to include labels and units in the response to the MONitor:ASENd? command.	4-188

MTRigger Group

Command	Function	Page
:MTRigger	Manually triggers the instrument.	4-189

RECall Group

Command	Function	Page
:RECall:SETup<x>:EXECute	Recalls setup data from an internal memory area.	4-190

RMATh CHANnel Group

Command	Function	Page
:CHANnel<x>:RMATh?	(Upper-level query) Queries all real time math settings.	4-191
:CHANnel<x>:RMATh:AMINus:SCALe	Sets or queries the scale for angle difference calculation.	4-191
:CHANnel<x>:RMATh:APLus:SCALe	Sets or queries the scale for angle sum calculation.	4-191
:CHANnel<x>:RMATh:ATANgent:SCALe	Sets or queries the scale of the specified channel's arc tangent operation.	4-191
:CHANnel<x>:RMATh:ATANgent:QUADrant	Sets or queries the quadrant range for the arctangent calculation of the specified channel.	4-191
:CHANnel<x>:RMATh:AVALue	Sets or queries coefficient A of the currently specified real time math operation.	4-191
:CHANnel<x>:RMATh:BVALue	Sets or queries coefficient A of the currently specified real time math operation.	4-191
:CHANnel<x>:RMATh:BWIDth?	(Upper-level query) Queries all filter mode settings of a channel.	4-192
:CHANnel<x>:RMATh:BWIDth:BAND	Sets or queries the band of the specified channel's digital filter.	4-192
:CHANnel<x>:RMATh:BWIDth:CFRequency	Sets or queries the center frequency of the bandpass filter of the specified channel's digital filter.	4-192
:CHANnel<x>:RMATh:BWIDth:CUToff	Sets or queries the cutoff frequency of the specified channel's digital filter.	4-192
:CHANnel<x>:RMATh:BWIDth:INTerpo	Sets or queries the interpolation feature of the specified channel's digital filter.	4-193

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Commands

Command	Function	Page
`:CHANnel<x>:RMATh:BWIDth:MEAN?`	(Upper-level query) Queries all mean settings of the specified channel's digital filter.	4-193
`:CHANnel<x>:RMATh:BWIDth:MEAN:TAP`	Sets or queries the tap of the mean of the specified channel's digital filter.	4-193
`:CHANnel<x>:RMATh:BWIDth:MEAN:SAMPle(Base Sample)`	Sets or queries the sample of the mean of the specified channel's digital filter.	4-193
`:CHANnel<x>:RMATh:BWIDth:MODE`	Sets or queries the filter mode of the specified channel.	4-193
`:CHANnel<x>:RMATh:BWIDth:PBANd (Pass Band)`	Sets or queries the bandwidth of the bandpass filter of the specified channel's digital filter.	4-194
`:CHANnel<x>:RMATh:BWIDth:TYPE`	Sets or queries the digital filter type of the specified channel.	4-194
`:CHANnel<x>:RMATh:CANId?`	(Upper-level query) Queries all CAN ID settings.	4-194
`:CHANnel<x>:RMATh:CANId:BRATe (Bit Rate)`	Sets or queries the CAN ID bit rate of the specified channel.	4-194
`:CHANnel<x>:RMATh:CANId:MFORmat (Message Format)`	Sets or queries the CAN ID message format of the specified channel.	4-194
`:CHANnel<x>:RMATh:CANId:MID (Message ID)`	Sets or queries the CAN ID message ID of the specified channel.	4-195
`:CHANnel<x>:RMATh:CANId:SOURce`	Sets or queries the CAN ID source channel of the specified channel.	4-195
`:CHANnel<x>:RMATh:CVALue`	Sets or queries coefficient C of the currently specified real time math operation.	4-195
`:CHANnel<x>:RMATh:DA?`	(Upper-level query) Queries all logic signal and analog waveform conversion settings.	4-195
`:CHANnel<x>:RMATh:DA:BLENgth (Bit Length)`	Sets or queries the logic signal and analog waveform conversion bit length.	4-195
`:CHANnel<x1>:RMATh:DA:SOURce <x2>`	Sets or queries the math source waveform that you want to convert into an analog waveform.	4-195
`:CHANnel<x>:RMATh:DA:TYPE`	Sets or queries the logic signal and analog waveform conversion method (type).	4-196
`:CHANnel<x>:RMATh:DVALue`	Sets or queries coefficient D of the currently specified real time math operation.	4-196
`:CHANnel<x>:RMATh:EANGle:TARGet`	Sets or queries the electrical angle target channel.	4-196
`:CHANnel<x>:RMATh:ECOunt? (Edge Count)`	(Upper-level query) Queries all reset condition settings for the specified channel's edge count operation.	4-196
`:CHANnel<x>:RMATh:ECOunt:MRESet:EXECute (Manual Reset)`	Manually resets the count value of the edge count operation.	4-196
`:CHANnel<x>:RMATh:ECOunt:OLIMit`	Sets or queries the over limit value for edge count operation.	4-196
`:CHANnel<x>:RMATh:ECOunt:OVERange`	Sets or queries whether the edge count is reset when an over limit occurs for the specified channel's edge count operation.	4-196
`:CHANnel<x>:RMATh:ECOunt:SRESet (Start Reset)`	Sets or queries whether the edge count is reset when the edge count operation starts for the specified channel.	4-197
`:CHANnel<x>:RMATh:EVALue`	Sets or queries coefficient E of the currently specified real time math operation.	4-197
`:CHANnel<x>:RMATh:FREQ?`	(Upper-level query) Queries all the settings for the specified channel's frequency, period, torque, and edge count (excluding reset) operations.	4-197
`:CHANnel<x>:RMATh:FREQ:BIT`	Sets or queries the math source waveform (source bit) for when frequency, period, torque, or edge count is computed for a logic channel.	4-197
`:CHANnel<x>:RMATh:FREQ:DECeleration`	Sets or queries the on/off state of deceleration prediction for frequency, period, torque, and rotating speed operations.	4-197
`:CHANnel<x>:RMATh:FREQ:HYSTeresis`	Sets or queries the detection hysteresis for the specified channel's frequency, period, torque, and edge count operations.	4-197
`:CHANnel<x>:RMATh:FREQ:LEVel`	Sets or queries the detection level for the specified channel's frequency, period, torque, and edge count operations.	4-198
`:CHANnel<x>:RMATh:FREQ:PROTate (Pulse per Rotate)`	Sets or queries the number of pulses per rotation and rotating speed of a frequency operation.	4-198
`:CHANnel<x>:RMATh:FREQ:SCALe`	Sets or queries the unit of the specified channel's frequency operation.	4-198
`:CHANnel<x>:RMATh:FREQ:SLOPe`	Sets or queries the detection slope for the specified channel's frequency, period, torque, and edge count operations.	4-198
`:CHANnel<x1>:RMATh:FREQ:SOURce`	Sets or queries the math source waveform for the specified channel's frequency, period, torque, and edge count operations.	4-198
`:CHANnel<x>:RMATh:FREQ:STOPpredict`	Sets or queries the stop prediction for frequency, period, torque, and rotating speed operations.	4-198
`:CHANnel<x>:RMATh:IFILter?`	(Upper-level query) Queries all IIR filter settings of the specified channel.	4-198
`:CHANnel<x>:RMATh:IFILter:BAND`	Sets or queries the band of the IIR filter operation.	4-198

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:CHANnel<x>:RMATh:IFILter:CFRequency	Sets or queries the center frequency of the bandpass filter of the IIR filter operation.	4-199
:CHANnel<x>:RMATh:IFILter:CUToff	Sets or queries the cutoff frequency of the IIR filter operation.	4-199
:CHANnel<x>:RMATh:IFILter:INTerpo	Sets or queries whether interpolation is used with the IIR filter operation.	4-199
:CHANnel<x>:RMATh:IFILter:PBANd	Sets or queries the bandwidth of the bandpass filter of the IIR filter operation.	4-199
:CHANnel<x>:RMATh:INTegral?	(Upper-level query) Queries all integration settings.	4-199
:CHANnel<x>:RMATh:INTegral:MRESet:EXECute (Manual Reset)	Manually resets the integrated value of the specified channel.	4-199
:CHANnel<x>:RMATh:INTegral:OLIMit	Sets or queries the over limit value for integration.	4-200
:CHANnel<x>:RMATh:INTegral:OVERange	Sets or queries whether the integrated value is reset when an over limit occurs for the specified channel.	4-200
:CHANnel<x>:RMATh:INTegral:SRESet (Start Reset)	Sets or queries whether the integrated value is reset when integration starts for the specified channel.	4-200
:CHANnel<x>:RMATh:INTegral:ZRESet?	(Upper-level query) Queries all settings related to the integrated value being reset when the signal crosses zero in integration of the specified channel.	4-200
:CHANnel<x>:RMATh:INTegral:ZRESet:HYSTeresis	Sets or queries the hysteresis that is used for resetting the integrated value when the signal crosses zero for the specified channel.	4-200
:CHANnel<x>:RMATh:INTegral:ZRESet:MODE	Sets or queries whether the integrated value is reset when the signal crosses zero for the specified channel.	4-200
:CHANnel<x>:RMATh:INTegral:ZRESet:SLOPe	Sets or queries the slope that is used for resetting the integrated value when the signal crosses zero for the specified channel.	4-200
:CHANnel<x>:RMATh:KNOCkflt?	(Upper-level query) Queries all knocking filter settings of the specified channel.	4-201
:CHANnel<x>:RMATh:KNOCkflt:DIFFerential	Sets or queries the differentiation on/off status of the specified channel's knocking filter.	4-201
:CHANnel<x>:RMATh:KNOCkflt:ELEVel	Sets or queries the elimination level of the specified channel's knocking filter.	4-201
:CHANnel<x>:RMATh:LIIR	Sets or queries the filter applied to real time math results of the specified channel.	4-201
:CHANnel<x>:RMATh:LABel	Sets or queries the label for real-time math of the specified channel.	4-201
:CHANnel<x>:RMATh:MODE	Sets or queries the on/off state of real time math of the specified channel.	4-201
:CHANnel<x>:RMATh:OPERation	Sets or queries the real time math operation.	4-201
:CHANnel<x>:RMATh:PASub:SIGN	Sets or queries the sign of each term (source) of a polynomial.	4-202
:CHANnel<x>:RMATh:PINTegral?	(Upper-level query) Queries all effective power integration settings of the specified channel.	4-202
:CHANnel<x>:RMATh:PINTegral:MRESet:EXECute	Manually resets the effective power integration of the specified channel.	4-202
:CHANnel<x>:RMATh:PINTegral:OVERange	Sets or queries whether the integrated power value of the specified channel is reset when an over limit occurs during effective power integration.	4-202
:CHANnel<x>:RMATh:PINTegral:SCALe	Sets the reference time for the effective power integration of the specified channel.	4-202
:CHANnel<x>:RMATh:PINTegral:SRESet	Sets or queries whether the integrated value is reset when the effective power integration starts for the specified channel.	4-202
:CHANnel<x>:RMATh:POWer?	(Upper-level query) Queries all effective power calculation period settings of the specified channel.	4-202
:CHANnel<x>:RMATh:POWer:TERM:EBIT	Sets or queries the edge detection math source waveform (detection bit) for when the effective power calculation period's edge detection channel is a logic channel.	4-202
:CHANnel<x>:RMATh:POWer:TERM:EHYSteresis	Sets or queries the effective power calculation period's detection hysteresis of the specified channel.	4-203
:CHANnel<x>:RMATh:POWer:TERM:ELEVel	Sets or queries the effective power calculation period's detection level of the specified channel.	4-203
:CHANnel<x>:RMATh:POWer:TERM:ESLope	Sets or queries the effective power calculation period's detection slope of the specified channel.	4-203
:CHANnel<x>:RMATh:POWer:TERM:ESOurce	Sets or queries the effective power calculation period's edge detection math source waveform of the specified channel.	4-203
:CHANnel<x>:RMATh:PWM:PERiod	Sets or queries the period of the PWM operation.	4-203
:CHANnel<x>:RMATh:RANGle?	(Upper-level query) Queries all settings related to the angle-of-rotation, electrical angle, sine, and cosine operations of the specified channel.	4-203

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`:CHANnel<x>:RMATh:RANGle:APHase`	Sets or queries the phase A trace when setting the analog channels for angle-of-rotation, electrical-angle, sine, and cosine operations.	4-204
`:CHANnel<x>:RMATh:RANGle:BLENg th`	Sets or queries the bit length when the encode type is GRAY for an angle, electric angle, sine, or cosine operation.	4-204
`:CHANnel<x>:RMATh:RANGle:BPHase`	Sets or queries the phase B trace when setting the analog channels for angle-of-rotation, electrical-angle, sine, and cosine operations.	4-204
`:CHANnel<x>:RMATh:RANGle:CCONdi tion`	Sets or queries the resolution for the specified channel's angle-of-rotation, electrical angle, sine, cosine, and rotating speed operations.	4-204
`:CHANnel<x>:RMATh:RANGle:ETYPe (Edge Type)`	Sets or queries the encoding type for the specified channel's angle-of-rotation, electrical angle, sine, and cosine operations.	4-204
`:CHANnel<x1>:RMATh:RANGle:HYSTe resis<x2>`	Sets or queries the slope for the specified math source waveform for the specified channel's angle-of-rotation, electrical angle, sine, cosine, and rotating speed operations.	4-205
`:CHANnel<x1>:RMATh:RANGle:LEVel <x2>`	Sets or queries the detection level for the specified math source waveform for the specified channel's angle-of-rotation, electrical angle, sine, cosine, and rotating speed operations.	4-205
`:CHANnel<x>:RMATh:RANGle:LOGic?`	(Upper-level query) Queries all the math source waveform settings for the angle-of-rotation, electrical angle, sine, cosine, and rotating speed operations.	4-205
`:CHANnel<x>:RMATh:RANGle:LOGic: MODE`	Sets or queries the math source waveform mode for the specified channel's angle-of-rotation, electrical angle, sine, cosine, and rotating speed operations.	4-205
`:CHANnel<x1>:RMATh:RANGle:LOGic :SBIT<x2> (Source Bit)`	Sets or queries the source bit when the math source waveform mode for the specified channel's angle-of-rotation, electrical angle, sine, cosine, and rotating speed operations is logic.	4-205
`:CHANnel<x1>:RMATh:RANGle:LOGic :SOURce<x2>`	Sets or queries the math source waveform when the math source waveform mode for the specified channel's angle-of-rotation, electrical angle, sine, cosine, and rotating speed operations is logic.	4-206
`:CHANnel<x>:RMATh:RANGle:MRESet :EXECute`	Manually resets the angle of the specified channel's angle operations.	4-206
`:CHANnel<x>:RMATh:RANGle:MULTip ly`	Sets or queries the multiplication factor for angle math.	4-206
`:CHANnel<x>:RMATh:RANGle:NLOGic (Negative Logic)`	Sets or queries the on/off state of the negative logic for angle operations.	4-206
`:CHANnel<x>:RMATh:RANGle:OFFSet`	Sets or queries the offset angle for angle math.	4-206
`:CHANnel<x>:RMATh:RANGle:PPRota te (Pulse Per Rotate)`	Sets or queries the number of pulses per rotation for the specified channel's angle-of-rotation, electrical angle, sine, and cosine operations.	4-206
`:CHANnel<x>:RMATh:RANGle:PROTa te`	Sets or queries the number of counts per rotation for the specified channel's angle-of-rotation, electrical angle, sine, and cosine operations.	4-207
`:CHANnel<x>:RMATh:RANGle:REVer se`	Sets or queries whether the rotation direction is inverted for the specified channel's angle-of-rotation, electrical angle, sine, and cosine operations.	4-207
`:CHANnel<x>:RMATh:RANGle:RSOur ce (Resolver Source Ch)`	Sets or queries the math source waveform when the encoding type of the angle-of-rotation, sine, and cosine operations is RESolver.	4-207
`:CHANnel<x>:RMATh:RANGle:RTIMi ng (Reset Timing)`	Sets or queries the timing that will be used to reset the number of rotations for the specified channel's angle-of-rotation, electrical angle, sine, and cosine operations.	4-207
`:CHANnel<x>:RMATh:RANGle:SCALe`	Sets or queries the scale of the specified channel's angle-of-rotation and electrical angle operations.	4-207
`:CHANnel<x1>:RMATh:RANGle:SOURc e<x2>`	Sets or queries the math source waveform when the math source waveform mode for the specified channel's angle-of-rotation, electrical angle, sine, cosine, and rotating speed operations is not logic.	4-208
`:CHANnel<x1>:RMATh:RANGle:TIMin g<x2>`	Sets or queries the edge detection timing for the specified channel's angle-of-rotation, electrical angle, sine, cosine, and rotating speed operations.	4-208
`:CHANnel<x>:RMATh:RANGle:ZINVe rt`	Sets or queries whether the Z phase is inverted for the specified channel's angle-of-rotation, electrical angle, sine, and cosine operations.	4-208
`:CHANnel<x>:RMATh:RANGle:ZPHase`	Sets or queries the phase Z trace when setting the analog channels for angle-of-rotation, electrical-angle, sine, and cosine operations.	4-208
`:CHANnel<x>:RMATh:RESolver?`	(Upper-level query) Queries all resolver operation settings.	4-208
`:CHANnel<x>:RMATh:RESolver:PHA Se`	Sets or queries the angle combination of 3 phase resolver operation.	4-208
`:CHANnel<x>:RMATh:RESolver:OFFS et`	Sets or queries the offset angle of resolver operation.	4-209
`:CHANnel<x1>:RMATh:RESolver:SOU Rce<x2>`	Sets or queries the math source waveform of the resolver operation.	4-209

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:CHANnel<x>:RMATh:RESolver:MULTiply	Sets or queries the multiplication factor for resolver operation.	4-209
:CHANnel<x>:RMATh:RESolver:SMODe (Sample Mode)	Sets or queries the sample mode of the resolver operation.	4-209
:CHANnel<x>:RMATh:RESolver:HYSteresis	Sets or queries the hysteresis of the resolver operation when the sample mode is set to AUTO.	4-209
:CHANnel<x>:RMATh:RESolver:STIMe (Sampling Time)	Sets or queries the time from the excitation edge of the resolver operation when the sample mode is set to MANual.	4-210
:CHANnel<x>:RMATh:RESolver:TFILter	Sets or queries the tracking filter of the resolver operation.	4-210
:CHANnel<x>:RMATh:RESolver:SCALe	Sets or queries the scale of the resolver operation.	4-210
:CHANnel<x>:RMATh:RMS?	(Upper-level query) Queries all RMS calculation period settings of the specified channel.	4-210
:CHANnel<x>:RMATh:RMS:TERM:EBIT	Sets or queries the edge detection math source waveform (detection bit) for when the RMS value's calculation period is edge and the detection channel is logic.	4-210
:CHANnel<x>:RMATh:RMS:TERM:EHYSteresis	Sets or queries the detection hysteresis for when the RMS calculation period of the specified channel is set to edge.	4-210
:CHANnel<x>:RMATh:RMS:TERM:ELEVel	Sets or queries the detection level for when the RMS calculation period of the specified channel is set to edge.	4-211
:CHANnel<x>:RMATh:RMS:TERM:ESLope	Sets or queries the detection slope for when the RMS calculation period of the specified channel is set to edge.	4-211
:CHANnel<x>:RMATh:RMS:TERM:ESOurce	Sets or queries the edge detection math source waveform for when the RMS calculation period of the specified channel is set to edge.	4-211
:CHANnel<x>:RMATh:RMS:TERM:MODE	Sets or queries the RMS calculation period mode of the specified channel.	4-211
:CHANnel<x>:RMATh:RMS:TERM:TIME	Sets or queries the interval for when the RMS calculation period of the specified channel is set to time.	4-211
:CHANnel<x>:RMATh:RSPeed:SCALe	Sets or queries the scale for rotary speed calculation.	4-211
:CHANnel<x1>:RMATh:SC<x2>	Sets or queries source waveforms 1 to 3 of the currently specified real time math operation.	4-212
:CHANnel<x>:RMATh:SC4	Sets or queries source waveform 4 for the coefficient multiplied by addition or subtraction of sources operation of the specified real time math channel.	4-212
:CHANnel<x>:RMATh:SCALe	Sets or queries the scale boundaries for real-time math of the specified channel.	4-212
:CHANnel<x>:RMATh:SQRT1:SIGN	Sets or queries the sign for the specified channel's square root operation.	4-212
:CHANnel<x>:RMATh:UDCount?	(Upper-level query) Queries all up down count settings.	4-212
:CHANnel<x>:RMATh:UDCount:OLIMit	Sets or queries the over limit value for up down count.	4-212
:CHANnel<x>:RMATh:UDCount:OVERange	Sets or queries whether the up down count value is reset when an over limit occurs.	4-212
:CHANnel<x>:RMATh:UNIT	Sets or queries the unit string for real-time math of the specified channel.	4-212

SEARch Group

:SEARch?	(Upper-level query) Queries all search settings.	4-213
:SEARch:ABORt	Aborts the search.	4-213
:SEARch:EDGE?	(Upper-level query) Queries all edge search settings.	4-213
:SEARch:EDGE:COUNt	Sets or queries the edge search count.	4-213
:SEARch:EDGE:HYSTeresis	Sets or queries the edge search determination-level hysteresis.	4-213
:SEARch:EDGE:LEVEl	Sets or queries the edge search determination level.	4-213
:SEARch:EDGE:[LOGic:]BIT<x>	Sets or queries the edge polarity of the specified logic bit for edge searches.	4-213
:SEARch:EDGE:SLOPe	Sets or queries the edge polarity of edge search.	4-213
:SEARch:EDGE:SOURce	Sets or queries the trace to perform the edge search on.	4-213
:SEARch:EPOint (End Point)	Sets or queries the search end position.	4-214
:SEARch:EXECute	Executes the search.	4-214
:SEARch:EVENt?	(Upper-level query) Queries all event search settings.	4-214
:SEARch:EVENt:COUNt	Sets or queries the event search event number.	4-214
:SEARch:LSTate?	(Upper-level query) Queries all logic pattern search settings.	4-214
:SEARch:LSTate:BIT<x>	Sets or queries the level of the specified bit for logic pattern searches.	4-214
:SEARch:LSTate:COUNt	Sets or queries the logic pattern search count.	4-214
:SEARch:LSTate:SOURce	Sets or queries the trace to perform the logic pattern search on.	4-214

Command	Function	Page
:SEARch:MAG<x>	Sets or queries a zoom waveform magnification.	4-214
:SEARch:POSition<x>	Sets or queries the position of a zoom box.	4-214
:SEARch:SELect	Sets the search point that is displayed on the zoom window, and queries the zoom position of that search point.	4-214
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:SEARch:SPOint (Start Point)	Sets or queries the search start position.	4-215
:SEARch:TDIV<x>	Sets or queries a zoom waveform T/div value.	4-215
:SEARch:TIME:TIME	Sets or queries the time of the time search.	4-215
:SEARch:TWINdow (Target Window)	Sets or queries the window that search results will be displayed in.	4-215
:SEARch:TYPE	Sets or queries the search type.	4-215

SNAP Group

Command	Function	Page
:SNAP	Takes a snapshot.	4-216

SSTart Group

Command	Function	Page
:SSTart	Executes the single start operation.	4-217
:SSTart? {<NRf>}	Executes the single start operation and waits for its completion with a timeout.	4-217

STARt group

Command	Function	Page
:STARt	Starts waveform acquisition.	4-218

STATus Group

Command	Function	Page
:STATus?	(Upper-level query) Queries all the settings for the communication status feature.	4-219
:STATus:CONDition?	Queries the contents of the condition register.	4-219
:STATus:EESE	Sets or queries the extended event enable register.	4-219
:STATus:EESR?	Queries the contents of the extended event register and clears the register.	4-219
:STATus:ERRor?	Queries the error code and message of the last error that has occurred.	4-219
:STATus:FILTer<x>	Sets or queries the transition filter.	4-219
:STATus:QENable	Sets or queries whether messages other than errors will be stored to the error queue (ON) or not (OFF).	4-219
:STATus:QMESsage	Sets or queries whether message information will be attached to the response to the STAT:ERR? query (ON) or not (OFF).	4-219

STOP Group

Command	Function	Page
:STOP	Stops waveform acquisition.	4-220

STORe Group

Command	Function	Page
:STORe?	(Upper-level query) Queries all the information related to setup data in the internal memory.	4-221
:STORe:SETup<x>?	(Upper-level query) Queries information about the setup data in the specified location of the internal memory.	4-221
:STORe:SETup<x>:CLEar	Clears the setup data stored in the specified location of the internal memory.	4-221
:STORe:SETup<x>:COMMent	Sets or queries the comment for the setup data that is stored to the specified location in the internal memory.	4-221
:STORe:SETup<x>:DATE?	Queries the date and time of the setup data that is stored to the specified location in the internal memory.	4-221
:STORe:SETup<x>:EXECute	Saves setup data to the specified location in the internal memory.	4-221

SYSTem Group

Command	Function	Page
:SYSTem?	(Upper-level query) Queries all system settings.	4-222
:SYSTem:AFONt	Sets or queries the font size of analysis results.	4-222
:SYSTem:AMAXline	Sets or queries the maximum number of digits used to display analysis results.	4-222
:SYSTem:BEEP	Sets or queries the on/off state of the beep sound generated when an error occurs.	4-222
:SYSTem:BOOTmode	Sets or queries the startup mode.	4-222

Command	Function	Page
`:SYSTem:CHANnel<x>:SNUMber?` (Serial Number)	Queries the instrument number of the specified channel.	4-222
`:SYSTem:CLICk`	Sets or queries whether click sounds are produced.	4-222
`:SYSTem:CLOCk?`	(Upper-level query) Queries all date/time settings.	4-222
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`:SYSTem:CLOCk:FORMat`	Sets or queries the date format.	4-223
`:SYSTem:CLOCk:MODE`	Sets or queries whether the date and time are displayed.	4-223
`:SYSTem:CLOCk:SNTP?`	(Upper-level query) Queries all SNTP settings.	4-223
`:SYSTem:CLOCk:SNTP:EXECute`	Uses SNTP to set the date and time.	4-223
`:SYSTem:CLOCk:TIME`	Sets or queries the time.	4-223
`:SYSTem:CLOCk:TZONe` (Time Zone)	Sets or queries the time difference from UTC.	4-223
`:SYSTem:CRMode`	Sets or queries the mode for reading vertical, marker, and degree cursor values.	4-223
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`:SYSTem:FLASh:ERASe`	Initializes flash acquisition (FlashACQ).	4-223
`:SYSTem:FLASh:LIFe?`	Queries the life of the SSD used in flash acquisition.	4-223
`:SYSTem:HAFormat` (Horizontal Axis Format)	Sets or queries the horizontal axis display mode.	4-223
`:SYSTem:KEYProtect?`	(Upper-level query) Queries all key lock settings.	4-223
`:SYSTem:KEYProtect:EPASsword` (Enter Password)	Enters the password to release the key lock.	4-223
`:SYSTem:KEYProtect:MODE`	Sets or queries whether the keys are locked.	4-224
`:SYSTem:KEYProtect:RTYPe` (Release Type)	Sets or queries how to release the key lock.	4-224
`:SYSTem:KEYProtect:SPASsword` (Set Password)	Sets the password that is used to release the key lock.	4-224
`:SYSTem:KEYProtect:TYPE`	Sets or queries which keys will be locked.	4-224
`:SYSTem:KEYResponse`	Sets or queries the response time of the START/STOP key.	4-224
`:SYSTem:LANGuage`	Sets or queries the message language.	4-224
`:SYSTem:LCD?`	(Upper-level query) Queries all LCD settings.	4-224
`:SYSTem:LCD:AUTO?`	(Upper-level query) Queries all the settings for the feature that automatically turns off the backlight.	4-224
`:SYSTem:LCD:AUTO:MODE`	Sets or queries whether the feature that automatically turns off the backlight is on.	4-224
`:SYSTem:LCD:AUTO:TIME`	Sets or queries the amount of time until the backlight is turned off.	4-224
`:SYSTem:LCD:BRIGhtness`	Sets or queries the LCD brightness.	4-224
`:SYSTem:LCD:MODE`	Sets or queries whether the backlight is on.	4-225
`:SYSTem:LOGic?`	(Upper-level query) Queries all logic display settings.	4-225
`:SYSTem:LOGic:BORDer` (Bit Order)	Sets or queries the bit order that is used when you display logic module data as waveforms.	4-225
`:SYSTem:LOGic:CORDer` (Cursor Order)	Sets or queries the bit order that is used when you use cursors to display logic module data as bits.	4-225
`:SYSTem:LOGic:NFORmat` (Numerical Format)	Sets or queries the numeric display format of logic module data.	4-225
`:SYSTem:MLANguage`	Sets or queries the menu language.	4-225
`:SYSTem:OVERview`	Displays the system information.	4-225
`:SYSTem:PACTion`	Sets or queries whether the action mode is enabled at power-on.	4-225
`:SYSTem:PSTart`	Sets or queries whether waveform acquisition will start at power-on.	4-225
`:SYSTem:RCMode` (Remote Control Mode)	Sets or queries whether remote signals are used to stop measurements.	4-225
`:SYSTem:SCALefont`	Sets or queries the font size that is used for waveform labels and scale values.	4-225
`:SYSTem:SOITem` (Scale On Item)	Sets or queries which scales are displayed.	4-226
`:SYSTem:STORage:MEDia`	Sets or queries the medium that you want to format.	4-226
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`:SYSTem:SYNChronous:EXECute`	Executes the multi-unit synchronization.	4-226
`:SYSTem:SYNChronous:MODE`	Sets or queries the multi-unit synchronization.	4-226
`:SYSTem:SYNChronous:PSTAte?`	Queries the multi-unit synchronization state.	4-226
`:SYSTem:SYNChronous:TRIGger<x>`	Sets or queries the multi-unit synchronization trigger on/off state.	4-226
`:SYSTem:TPANel:MODE`	Sets or queries the touch panel on/off state.	4-226
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Commands

Command	Function	Page
`:SYSTem:TSYNchro:IEEE1588?`	(Upper-level query) Queries all IEEE1588 settings.	4-227
`:SYSTem:TSYNchro:IEEE1588:DMEChanism`	Sets or queries the IEEE1588 delay mechanism.	4-227
`:SYSTem:TSYNchro:IEEE1588:DNUMber`	Sets or queries the IEEE1588 domain number.	4-227
`:SYSTem:TSYNchro:IEEE1588:LSECond`	Sets or queries IEEE1588 leap second.	4-227
`:SYSTem:TSYNchro:IEEE1588:MSOUrce`	Sets or queries the IEEE1588 master source.	4-227
`:SYSTem:TSYNchro:IEEE1588:NLAYer`	Sets or queries the IEEE1588 network layer.	4-227
`:SYSTem:TSYNchro:IEEE1588:PRIority<x>`	Sets or queries the IEEE1588 priority.	4-227
`:SYSTem:TSYNchro:IEEE1588:SONLy`	Sets or queries IEEE1588 slave only.	4-228
`:SYSTem:TSYNchro:IRIG?`	(Upper-level query) Queries all IRIG time synchronization settings.	4-228
`:SYSTem:TSYNchro:IRIG:FORMat`	Sets or queries the IRIG format.	4-228
`:SYSTem:TSYNchro:IRIG:IMPedance`	Sets or queries the IRIG input impedance.	4-228
`:SYSTem:TSYNchro:IRIG:MODulation`	Sets or queries the IRIG modulation type.	4-228
`:SYSTem:TSYNchro:MODE`	Sets or queries the time synchronization mode.	4-228
`:SYSTem:TSYNchro:STATe?`	Queries the time synchronization state.	4-228
`:SYSTem:USBKeyboard`	Sets or queries the USB keyboard type.	4-228

TIMebase Group

Command	Function	Page
`:TIMebase?`	(Upper-level query) Queries all time base settings.	4-229
`:TIMebase:CHANnel<x>:SRATe?`	Queries the sample rate of the specified channel.	4-229
`:TIMebase:SOURce`	Sets or queries the time base.	4-229
`:TIMebase:SRATe`	Sets or queries the sample rate.	4-229
`:TIMebase:TDIV`	Sets or queries the T/div value.	4-229

TRIGger group

Command	Function	Page
`:TRIGger?`	(Upper-level query) Queries all trigger settings.	4-230
`:TRIGger:ABN? (A -> B(n))`	(Upper-level query) Queries all A->B(n) trigger settings.	4-230
`:TRIGger:ABN:COUNt`	Sets or queries the number of times condition B must be met for A->B(n) triggers.	4-230
`:TRIGger:ACTion?`	(Upper-level query) Queries all action settings.	4-230
`:TRIGger:ACTion:BUZZer`	Sets or queries whether a beep is sounded as an action.	4-230
`:TRIGger:ACTion:FOLDer`	Sets or queries whether a date folder is created when waveform data or screen capture data is saved to the storage device when an action is executed.	4-230
`:TRIGger:ACTion:IMAGe?`	(Upper-level query) Queries all settings for saving screen captures as an action.	4-230
`:TRIGger:ACTion:IMAGe:CDIRectory`	Sets or queries the current directory on the storage device where screen captures are saved to as an action.	4-230
`:TRIGger:ACTion:IMAGe:DRIVe`	Sets the storage device that screen captures are saved to as an action.	4-230
`:TRIGger:ACTion:IMAGe[:MODE]`	Sets or queries whether a screen capture is saved to the storage device as an action.	4-230
`:TRIGger:ACTion:IMAGe:PATH?`	Queries the path on the storage device where screen captures are saved to as an action.	4-231
`:TRIGger:ACTion:MAIL?`	(Upper-level query) Queries all settings for sending e-mail as an action.	4-231
`:TRIGger:ACTion:MAIL:COUNt`	Sets or queries the e-mail transmission limit for when e-mail is sent as an action.	4-231
`:TRIGger:ACTion:MAIL:MODE`	Sets or queries whether e-mail is sent as an action.	4-231
`:TRIGger:ACTion:MODE`	Sets or queries the action on/off state.	4-231
`:TRIGger:ACTion:MSAVe (Measure Save)`	Sets or queries whether measurement results are saved to the storage device as an action.	4-231
`:TRIGger:ACTion:SAVE?`	(Upper-level query) Queries all the settings related to saving data as an action.	4-231
`:TRIGger:ACTion:SAVE:ASCii:MODE`	Sets or queries whether waveform data is saved to the storage device in ASCII format as an action.	4-231
`:TRIGger:ACTion:SAVE:BINary:MODE`	Sets or queries whether waveform data is saved in binary format to the storage device as an action.	4-231

Command	Function	Page
`:TRIGger:ACTion:SAVE:CDIRectory`	Changes the current directory on the storage device that waveform data is saved to as an action.	4-231
`:TRIGger:ACTion:SAVE:DRIVe`	Sets the storage device that waveform data is saved to as an action.	4-231
`:TRIGger:ACTion:SAVE:MATLab:MODE`	Sets or queries whether waveform data is saved to the storage device in MATLAB format as an action.	4-232
`:TRIGger:ACTion:SAVE[:MODE]`	Sets or queries whether waveform data is saved to the storage device as an action.	4-232
`:TRIGger:ACTion:SAVE:PATH?`	Queries the path on the storage device that waveform data is saved to as an action.	4-232
`:TRIGger:ADB? (A Delay B)`	(Upper-level query) Queries all A Delay B trigger settings.	4-232
`:TRIGger:ADB:DELay`	Sets or queries the delay time for condition B for A Delay B triggers.	4-232
`:TRIGger:AND?`	(Upper-level query) Queries all AND trigger settings.	4-232
`:TRIGger:AND:CHANnel<x1>:BIT<x2>`	Sets or queries the state of the specified bit of the specified logic channel for AND triggers.	4-232
`:TRIGger:AND:CHANnel<x>[:CONDition]`	Sets or queries the state of the specified channel for AND triggers.	4-232
`:TRIGger:AND:CHANnel<x1>:SCHannel<x2>:BIT<x3>`	Sets or queries the state of the specified bit of the specified sub channel of the specified logic channel for AND triggers.	4-232
`:TRIGger:AND:CHANnel<x1>:SCHannel<x2>[:CONDition]`	Sets or queries the state of the specified sub channel for AND triggers.	4-233
`:TRIGger:ATRigger?`	(Upper-level query) Queries all condition A settings.	4-233
`:TRIGger:ATRigger:CHANnel<x1>:BIT<x2>`	Sets or queries the state of the specified bit of the specified logic channel of condition A.	4-233
`:TRIGger:ATRigger:CHANnel<x>[:CONDition]`	Sets or queries the state of the specified channel of condition A.	4-233
`:TRIGger:ATRigger:CHANnel<x1>:SCHannel<x2>:BIT<x3>`	Sets or queries the state of the specified bit of the specified sub channel of the specified logic channel of condition A.	4-233
`:TRIGger:ATRigger:CHANnel<x1>:SCHannel<x2>[:CONDition]`	Sets or queries the state of the specified sub channel of condition A.	4-233
`:TRIGger:ATRigger:CONDition`	Sets or queries the achievement condition of condition A.	4-233
`:TRIGger:BBETween?`	(Upper-level query) Queries all B Between trigger settings.	4-233
`:TRIGger:BBETween:TIME<x>`	Sets or queries a pulse width for B Between triggers.	4-234
`:TRIGger:BGTime?`	(Upper-level query) Queries all B>Time trigger settings.	4-234
`:TRIGger:BGTime:TIME`	Sets or queries the pulse width for B>Time triggers.	4-234
`:TRIGger:BLTime?`	(Upper-level query) Queries all B<Time trigger settings.	4-234
`:TRIGger:BLTime:TIME`	Sets or queries the pulse width for B<Time triggers.	4-234
`:TRIGger:BTOut?`	(Upper-level query) Queries all B TimeOut trigger settings.	4-234
`:TRIGger:BTOut:TIME`	Sets or queries the pulse width for B TimeOut triggers.	4-234
`:TRIGger:BTRigger?`	(Upper-level query) Queries all condition B settings.	4-234
`:TRIGger:BTRigger:CHANnel<x1>:BIT<x2>`	Sets or queries the state of the specified bit of the specified logic channel of condition B.	4-234
`:TRIGger:BTRigger:CHANnel<x>[:CONDition]`	Sets or queries the state of the specified channel of condition B.	4-234
`:TRIGger:BTRigger:CHANnel<x1>:SCHannel<x2>:BIT<x3>`	Sets or queries the state of the specified bit of the specified sub channel of the specified logic channel of condition B.	4-235
`:TRIGger:BTRigger:CHANnel<x1>:SCHannel<x2>[:CONDition]`	Sets or queries the state of the specified sub channel of condition B.	4-235
`:TRIGger:BTRigger:CONDition`	Sets or queries the achievement condition of condition B.	4-235
`:TRIGger:DELay`	Sets or queries the delay.	4-235
`:TRIGger:EOA?`	(Upper-level query) Queries all EdgeOnA settings.	4-235
`:TRIGger:EOA:CHANnel<x1>:BIT<x2>`	Sets or queries the state of the specified bit of the specified logic channel for EdgeOnA triggers.	4-235
`:TRIGger:EOA:CHANnel<x>[:CONDition]`	Sets or queries the state of the specified channel for EdgeOnA triggers.	4-235
`:TRIGger:EOA:CHANnel<x1>:SCHannel<x2>:BIT<x3>`	Sets or queries the state of the specified bit of the specified sub channel of the specified logic channel for EdgeOnA triggers.	4-236
`:TRIGger:EOA:CHANnel<x1>:SCHannel<x2>[:CONDition]`	Sets or queries the state of the specified sub channel for EdgeOn triggers.	4-236
`:TRIGger:EOA:CONDition`	Sets or queries the achievement condition for EdgeOnA triggers.	4-236
`:TRIGger:HOLDoff?`	(Upper-level query) Queries all hold-off settings.	4-236
`:TRIGger:HOLDoff:TIME`	Sets or queries the hold-off time.	4-236
`:TRIGger:MODE`	Sets or queries the trigger mode.	4-236
`:TRIGger:OR?`	(Upper-level query) Queries all OR trigger settings.	4-236

Command	Function	Page
`:TRIGger:OR:CHANnel<x1>:BIT<x2>`	Sets or queries the state of the specified bit of the specified logic channel for OR triggers.	4-236
`:TRIGger:OR:CHANnel<x>[:CONDition]`	Sets or queries the state of the specified channel for OR triggers.	4-236
`:TRIGger:OR:CHANnel<x1>:SCHannel<x2>:BIT<x3>`	Sets or queries the state of the specified bit of the specified sub channel of the specified logic channel for OR triggers.	4-236
`:TRIGger:OR:CHANnel<x1>:SCHannel<x2>[:CONDition]`	Sets or queries the state of the specified sub channel for OR triggers.	4-237
`:TRIGger:OR:EXTernal:TYPE`	Sets or queries the type of external trigger that is used with OR triggers.	4-237
`:TRIGger:OUT?`	(Upper-level query) Queries all trigger output settings.	4-237
`:TRIGger:OUT:TIME`	Sets or queries the H-pulse interval that is used when the trigger output terminal output type is 1 (Pulse).	4-237
`:TRIGger:OUT:TYPE`	Sets or queries the trigger output terminal output type.	4-237
`:TRIGger:POSition`	Sets or queries the trigger position.	4-237
`:TRIGger:RECorder:POSition`	Sets or queries the trigger position for recorder mode.	4-237
`:TRIGger:SCOunt (Single(N) Count)`	Sets or queries the number of times the trigger condition is to be met when the trigger mode is set to Single(N).	4-237
`:TRIGger:SIMPle?`	(Upper-level query) Queries all simple trigger settings.	4-238
`:TRIGger[:SIMPle]:EXTernal:SLOPe`	Sets or queries the external trigger slope.	4-238
`:TRIGger[:SIMPle]:HYSTeresis`	Sets or queries the hysteresis for simple triggers.	4-238
`:TRIGger[:SIMPle]:LEVel`	Sets or queries the trigger level of the channel specified by :TRIGger:SIMPle:SOURce for simple triggers .	4-238
`:TRIGger[:SIMPle]:LOGic?`	(Upper-level query) Queries all simple trigger (logic trigger) settings.	4-238
`:TRIGger[:SIMPle]:LOGic:BIT`	Sets or queries the bit that sets the trigger slope.	4-238
`:TRIGger[:SIMPle]:LOGic:SLOPe`	Sets or queries the slope for logic triggers.	4-238
`:TRIGger[:SIMPle]:SLOPe`	Sets or queries the trigger slope of the channel specified by :TRIGger:SIMPle:SOURce for simple triggers .	4-238
`:TRIGger:SIMPle:SOURce`	Sets or queries the source for simple triggers.	4-238
`:TRIGger:SOURce?`	(Upper-level query) Queries all the settings of the trigger source for enhanced triggers.	4-239
`:TRIGger:SOURce:CHANnel<x1>[:SCHannel<x2>]?`	(Upper-level query) Queries all the settings of the specified channel's trigger source for enhanced triggers.	4-239
`:TRIGger:SOURce:CHANnel<x1>[:SCHannel<x2>]:CENTer`	Sets or queries the window trigger center for enhanced triggers.	4-239
`:TRIGger:SOURce:CHANnel<x1>[:SCHannel<x2>]:HYSTeresis`	Sets or queries the specified channel's hysteresis for enhanced triggers.	4-239
`:TRIGger:SOURce:CHANnel<x1>[:SCHannel<x2>]:LEVel`	Sets or queries the specified channel's level for enhanced triggers.	4-239
`:TRIGger:SOURce:CHANnel<x1>[:SCHannel<x2>]:WIDTh`	Sets or queries the window trigger width for enhanced triggers.	4-239
`:TRIGger:SOURce:CHANnel<x>:WWIDth`	Sets or queries the width for wave window triggers.	4-239
`:TRIGger:SOUT?`	(Upper-level query) Queries all sample output settings.	4-239
`:TRIGger:SOUT:PRATe`	Sets or queries the pulse output rate of the sample output terminal.	4-240
`:TRIGger:SOUT:TYPE`	Sets or queries the sample output terminal output type.	4-240
`:TRIGger:TGTime?`	(Upper-level query) Queries all T>Time trigger settings.	4-240
`:TRIGger:TGTime:TIME`	Sets or queries the pulse width for T>Time triggers.	4-240
`:TRIGger:TIMer?`	(Upper-level query) Queries all time trigger settings.	4-240
`:TRIGger:TIMer:DATE`	Sets or queries the date for time triggers.	4-240
`:TRIGger:TIMer:INTerval`	Sets or queries the trigger interval for time triggers.	4-240
`:TRIGger:TIMer:TIME`	Sets or queries the time for time triggers.	4-240
`:TRIGger:TITime?`	(Upper-level query) Queries all T1<T<T2 trigger settings.	4-240
`:TRIGger:TITime:TIME<x>`	Sets or queries the pulse width for T1<T<T2 triggers.	4-240
`:TRIGger:TLTime?`	(Upper-level query) Queries all T<Time trigger settings.	4-240
`:TRIGger:TLTime:TIME`	Sets or queries the pulse width for T<Time triggers.	4-241
`:TRIGger:TOTime?`	(Upper-level query) Queries all T<T1,T2<T trigger settings.	4-241
`:TRIGger:TOTime:TIME<x>`	Sets or queries the pulse width for T<T1,T2<T triggers.	4-241
`:TRIGger:TYPE`	Sets or queries the trigger type.	4-241
`:TRIGger:WWINdow?`	(Upper-level query) Queries all wave window trigger settings.	4-241
`:TRIGger:WWINdow:CHANnel<x>[:CONDition]`	Sets or queries the state of the specified channel for wave window triggers.	4-241

Command	Function	Page
`:TRIGger:WWINdow:CHANnel<x1>:SCHannel<x2>`	Sets or queries the state of the specified channel for wave window triggers.	4-241
`:TRIGger:WWINdow:FREQuency`	Sets or queries the cycle frequency for wave window triggers.	4-241
`:TRIGger:WWINdow:REFCycle`	Sets or queries the reference cycle for wave window triggers.	4-242
`:TRIGger:WWINdow:SYNC?`	(Upper-level query) Queries all synchronization channel settings for wave window triggers.	4-242
`:TRIGger:WWINdow:SYNC:HYSTeresis`	Sets or queries the hysteresis of the synchronization channel for wave window triggers.	4-242
`:TRIGger:WWINdow:SYNC:LEVel`	Sets or queries the level of the synchronization channel for wave window triggers.	4-242
`:TRIGger:WWINdow:SYNC:TRACe`	Sets or queries the synchronization channel for wave window triggers.	4-242

WAVeform group

Command	Function	Page
`:WAVeform?`	(Upper-level query) Queries all waveform data output settings.	4-243
`:WAVeform:BITS?`	Queries the bit length of the waveform data specified by the :WAVeform:TRACe command.	4-243
`:WAVeform:BYTeorder`	Sets or queries the transmission byte order for data formats that are 2 bytes or longer.	4-243
`:WAVeform:CAPTure?`	(Upper-level query) Queries all capture data output settings.	4-243
`:WAVeform:CAPTure:DATE?`	Queries the year, month, and day of the trigger of the specified capture waveform.	4-243
`:WAVeform:CAPTure:END`	Sets or queries the end point to use when capturing waveform data.	4-243
`:WAVeform:CAPTure:LENGth?`	Queries the number of data points in the captured waveform.	4-243
`:WAVeform:CAPTure:RECord`	Sets or queries the record number to use when capturing waveform data.	4-243
`:WAVeform:CAPTure:RECord? MAXimum`	Queries the largest record number of the captured waveform.	4-243
`:WAVeform:CAPTure:RECord? MINimum`	Queries the smallest record number of the captured waveform.	4-243
`:WAVeform:CAPTure:SEND?`	Queries specified capture waveform data.	4-244
`:WAVeform:CAPTure:SRATe?`	Queries the sample rate of the capture waveform specified by the :WAVeform:TRACe command.	4-244
`:WAVeform:CAPTure:STARt`	Sets or queries the start point to use when capturing waveform data.	4-244
`:WAVeform:CAPTure:TIME?`	Queries the time of the trigger of the specified capture waveform.	4-244
`:WAVeform:CAPTure:TRIGger?`	Queries the trigger position (represented as a number of points) in the captured waveform.	4-244
`:WAVeform:DATaselect`	Queries whether to query the waveform specified by the :WAVeform:TRACe command using ACQ data or PP data.	4-244
`:WAVeform:END`	Sets or queries the end data point in the waveform specified by the :WAVeform:TRACe command (the main waveform).	4-244
`:WAVeform:FORMat`	Sets or queries the transmission data format.	4-244
`:WAVeform:LENGth?`	Queries the total number of data points in the waveform specified by the :WAVeform:TRACe command (the main waveform).	4-245
`:WAVeform:MODule?`	Queries the module of the waveform specified by the :WAVeform:TRACe command.	4-245
`:WAVeform:OFFSet?`	Queries the offset value used to convert the waveform data specified by the :WAVeform:TRACe command to physical values.	4-245
`:WAVeform:RANGe?`	Queries the measurement range used to convert the waveform data specified by the :WAVeform:TRACe command to physical values.	4-245
`:WAVeform:RECord`	Sets or queries the main waveform record number that WAVeform commands will be applied to.	4-245
`:WAVeform:RECord? MINimum`	Queries the smallest record number of the history (main waveform).	4-245
`:WAVeform:SEND?`	Queries the waveform data specified by the :WAVeform:TRACe command (main waveform data, raw data).	4-246
`:WAVeform:SIGN?`	Queries whether signs are included in the block data of the source waveform data specified by :WAVeform:TRACe when the data is queried.	4-247
`:WAVeform:SRATe? (Sample Rate)`	Queries the sample rate of the waveform specified by the :WAVeform:TRACe command.	4-247
`:WAVeform:STARt`	Sets or queries the start data point in the waveform specified by the :WAVeform:TRACe command (the main waveform).	4-247
`:WAVeform:TRACe`	Sets or queries the waveform that WAVeform commands will be applied to.	4-247
`:WAVeform:TRIGger?`	Queries the trigger position of the record specified by the :WAVeform:RECord command.	4-247
`:WAVeform:TYPE?`	Queries the acquisition mode of the source waveform.	4-247

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Commands

Command	Function	Page

XY group

Command	Function	Page
`:XY?`	(Upper-level query) Queries all X-Y display settings.	4-248
`:XY:CDISplay (Combine Display)`	Sets or queries whether to combine the displays of Window1 and Window2 on the X-Y waveform display.	4-248
`:XY:DOTConnect`	Sets or queries whether dot connect is ON or OFF for X-Y waveforms.	4-248
`:XY:DECimation`	Sets or queries the number of dots that X-Y waveforms use.	4-248
`:XY:MARKer`	Sets or queries whether X-Y pen markers are on.	4-248
`:XY:TCLear (Trace Clear On Start)`	Sets or queries whether the X-Y waveform trace-clear-on-start feature is on.	4-248
`:XY:WAVeform<x>?`	(Upper-level query) Queries all settings related to the specified X-Y waveform.	4-248
`:XY:WAVeform<x>:DISPlay`	Sets or queries whether the specified X-Y waveform is displayed.	4-248
`:XY:WAVeform<x1>:XTRace`	Sets or queries the channel that is assigned to the specified X-Y waveform's X-axis.	4-248
`:XY:WAVeform<x1>:YTRace`	Sets or queries the channel that is assigned to the specified X-Y waveform's Y-axis.	4-249
`:XY:WINDow<x>?`	(Upper-level query) Queries all settings related to the specified X-Y window.	4-249
`:XY:WINDow<x>:MODE`	Sets or queries whether the specified X-Y window is displayed.	4-249
`:XY:WINDow<x>:TRANge`	Sets or queries the T-Y waveform range to display in the X-Y window.	4-249

ZOOM Group

Command	Function	Page
`:ZOOM?`	(Upper-level query) Queries all zoom settings.	4-250
`:ZOOM:ANALysis<x1>:FORMat<x2>`	Sets or queries the display format (the number of divisions in the vertical direction) of zoomed waveforms of display group P and H.	4-250
`:ZOOM:ASCRoll?`	(Upper-level query) Queries all auto scroll settings.	4-250
`:ZOOM:ASCRoll:JUMP`	Moves the center position of the zoom box to the left or right edge of the main window.	4-250
`:ZOOM:ASCRoll:SPEed`	Sets or queries the auto scroll speed of the zoom box.	4-250
`:ZOOM:ASCRoll:STARt`	Starts auto scrolling.	4-250
`:ZOOM:ASCRoll:STOP`	Stops auto scrolling.	4-250
`:ZOOM:ASCRoll:TARGet`	Sets or queries the zoom window that will be auto scrolled.	4-250
`:ZOOM:FITMeasure`	Moves the range on which automated measurement of waveform parameters is performed to the zoom waveform display frame.	4-250
`:ZOOM:FORMat<x>`	Sets or queries the display format of the specified zoom waveform.	4-250
`:ZOOM:GROup<x>?`	(Upper-level query) Queries all settings related to the specified group display of zoom waveforms.	4-250
`:ZOOM:GROUp<x1>:FORMat<x2>`	Sets or queries the zoom waveform display format of the specified display group.	4-251
`:ZOOM:GROup<x1>:TRACe<x2>`	Sets or queries whether the specified source waveform of the specified group display of zoom waveforms is displayed.	4-251
`:ZOOM:MAG<x>`	Sets or queries the horizontal magnification of the specified zoom waveform.	4-251
`:ZOOM:MAIN`	Sets or queries the proportion of the main waveform display area that is used when zooming waveforms.	4-251
`:ZOOM:MODE<x>`	Sets or queries whether the specified zoom waveform is displayed.	4-251
`:ZOOM:MOVE`	Moves the zoom box to the latest position.	4-251
`:ZOOM:POSition<x>`	Sets or queries the zoom position of the specified zoom waveform.	4-251
`:ZOOM:TDIV<x>`	Sets or queries the T/div value of the specified zoom waveform.	4-251
`:ZOOM:WLAYout (Window Layout)`	Sets or queries the window layout that is used when waveforms are zoomed.	4-251
`:ZOOM:Z2Target`	Sets or queries the source window of Z2 when both Z1 and Z2 are displayed.	4-252

Common Command Group

Command	Function	Page
`*CAL?`	Executes calibration and queries the result.	4-253
`*CLS`	Clears the standard event register, extended event register, and error queue.	4-253
`*ESE`	Sets or queries the standard event enable register.	4-253
`*ESR?`	Queries and clears the standard event register.	4-253
`*IDN?`	Queries the instrument model.	4-253
`*OPC`	Sets bit 0 (the OPC bit) of the standard event register to 1 upon the completion of the specified overlap command.	4-253
`*OPC?`	Returns ASCII code 1 when the specified overlap command is completed.	4-253
`*OPT?`	Queries the installed options.	4-254
`*RST`	Initializes settings.	4-254

Command	Function	Page
`*SRE`	Sets or queries the service request enable register value.	4-254
`*STB?`	Queries the Status Byte Register value.	4-254
`*TST?`	Executes a self-test and queries the result. The self-test consists of tests of each kind of internal memory.	4-254
`*WAI`	Holds the execution of the subsequent command until the specified overlap command is completed.	4-254

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Commands

4.2 ACQuire Group

The commands in this group deal with waveform acquisition. You can make the same settings and queries that you can make by pressing ACQUIRE (DUAL CAPTURE) on the front panel.

:ACQuire?

Function   (Upper-level query) Queries all waveform
            acquisition settings.
Syntax   :ACQuire?

:ACQuire:AVERage?

Function   (Upper-level query) Queries all settings related to
            the averaging of FFT analysis.
Syntax   :ACQuire:AVERage?

:ACQuire:AVERage:COUNt

Function   Sets or queries the number of waveform
            acquisitions to perform during averaging.
Syntax   :ACQuire:AVERage:
            COUNt {<NRf>|INFinity}
            :ACQuire:AVERage:COUNt?
            <NRf> = 2 to 65536 (in 2^n steps)
Example   :ACQUIRE:AVERAGE:COUNT INFINITY
            :ACQUIRE:AVERAGE:COUNT?
            -> :ACQUIRE:AVERAGE:COUNT INFINITY
Description Default value: INFinity

:ACQuire:AVERage:EWEight (Exponent Weight)

Function   Sets or queries the attenuation constant of
            exponential averaging.
Syntax   :ACQuire:AVERage:EWEight {<NRf>}
            :ACQuire:AVERage:EWEight?
            <NRf> = 2 to 256 (in 2^n steps)
Example   :ACQUIRE:AVERAGE:EWEIGHT 16
            :ACQUIRE:AVERAGE:EWEIGHT?
            -> :ACQUIRE:AVERAGE:EWEIGHT 16
Description Default value: 16

:ACQuire:CLOCk

Function   Sets or queries the time base (internal or external
            clock).
Syntax   :ACQuire:CLOCk {INTernal|EXTernal}
            :ACQuire:CLOCk?
Example   :ACQUIRE:CLOCK INTERNAL
            :ACQUIRE:CLOCK?
            -> :ACQUIRE:CLOCK INTERNAL
Description Default value: INTernal

:ACQuire:COUNt

Function   Sets or queries the number of waveform
            acquisitions to perform in Normal mode.
Syntax   :ACQuire:COUNt {<NRf>|INFinity}
            :ACQuire:COUNt?
            <NRf> = 1 to 65536
Example   :ACQUIRE:COUNT INFINITY
            :ACQUIRE:COUNT?
            -> :ACQUIRE:COUNT INFINITY
Description Default value: INFinity

:ACQuire:MODE

Function   Sets or queries the waveform acquisition mode.
Syntax   :ACQuire:MODE {AVERage|ENVelope|
            NORMal}
            :ACQuire:MODE?
Example   :ACQUIRE:MODE NORMAL
            :ACQUIRE:MODE?
            -> :ACQUIRE:MODE NORMAL
Description Default value: NORMal

:ACQuire:PROTate

Function   Sets or queries the pulse/rotate setting to use
            during external clock input.
Syntax   :ACQuire:PROTate {<NRf>}
            :ACQuire:PROTate?
            <NRf> = 1 to 24000
Example   :ACQUIRE:PROTATE 100
            :ACQUIRE:PROTATE?
            -> :ACQUIRE:PROTATE 100
Description Default value: 1

:ACQuire:RECorder?

Function   (Upper-level query) Queries all acquisition
            settings for recorder mode.
Syntax   :ACQuire:RECorder?

:ACQuire:RECorder:CONDition

Function	Sets or queries the acquisition condition in recorder mode.
Syntax	:ACQuire:RECorder:CONDition {STARt|STOP|STRigger} :ACQuire:RECorder:CONDition?
Example	:ACQUIRE:RECORDER:CONDITION START :ACQUIRE:RECORDER:CONDITION? -> :ACQUIRE:RECORDER:CONDITION START
Description	Default value: STOP

:ACQuire:RECorder:HOLD

Function	Holds the waveform display in recorder mode.
Syntax	:ACQuire:RECorder:HOLD
Example	:ACQUIRE:RECORDER:HOLD

:ACQuire:RECorder:RESume

Function	Resumes the waveform display in recorder mode.
Syntax	:ACQuire:RECorder:RESume
Example	:ACQUIRE:RECORDER:RESUME

:ACQuire:RECorder:RLENgth

Function	Sets or queries the external sampling record length in recorder mode.

Syntax	:ACQuire:RECorder:RLENgth {<NRf>}
	:ACQuire:RECorder:RLENgth?
	<NRf> = 10 000 to 50 000 000 000
	Step
	(available universally)
	  10 000, 25 000, 50 000,
	  100 000, 250 000, 500 000
	  1 000 000, 2 500 000, 5 000 000,
	  10 000 000, 25 000 000, 50 000 000,
	  100 000 000, 250 000 000, 500 000 000,
	  1 000 000 000, 2 000 000 000, 4 000 000 000
	(during flash acquisition and SSD recording)
	  5 000 000 000, 10 000 000 000, 20 000 000 000
	(during SSD recording)
	  50 000 000 000

Example	:ACQUIRE:RECORDER:RLENGTH 1000000 :ACQUIRE:RECORDER:RLENGTH? -> :ACQUIRE:RECORDER:RLENGTH 1000000
Description	Default value: 10 000

:ACQuire:RECorder:SINTerval (Sampling Interval)

Function	Sets or queries the sampling interval in recorder mode.
Syntax	:ACQuire:RECorder:SINTerval {<Time>} :ACQuire:RECorder:SINTerval? <Time> = 10ns to 200ms
Example	:ACQUIRE:RECORDER:SINTERVAL 1us :ACQUIRE:RECORDER:SINTERVAL? -> :ACQUIRE:RECORDER:SINTERVAL 1us
Description	Default value: 10us

:ACQuire:RECorder:TIME

Function	Sets or queries the record time in recorder mode.
Syntax	:ACQuire:RECorder:TIME {<Day>, <Hour>, <Minute>, <Second>} :ACQuire:RECorder:TIME? <Day> = 0 to 20 <Hour> = 0 to 23 <Minute> = 0 to 59 <Second> = 0 to 59
Example	:ACQUIRE:RECORDER:TIME 0,0,1,30 :ACQUIRE:RECORDER:TIME? -> :ACQUIRE:RECORDER:TIME 0,0,1,30
Description	Default value: 10s (Memory recording) 10 s to 20 days (SSD recording) 10 s to 50 days

:ACQuire:RLENgth

Function	Sets or queries the record length.

Syntax	:ACQuire:RLENgth {<NRf>}
	:ACQuire:RLENgth?
	<NRf> = 10 000 to 50 000 000 000
	Step
	(available universally)
	  1 000 000, 2 500 000, 5 000 000,
	  10 000 000, 25 000 000, 50 000 000,
	  100 000 000, 250 000 000, 500 000 000,
	  1 000 000 000, 2 000 000 000, 4 000 000 000
	(during memory recording)
	  10 000, 25 000, 50 000,
	  100 000, 250 000, 500 000
	(during flash acquisition and SSD recording)
	  5 000 000 000, 10 000 000 000, 20 000 000 000
	(during SSD recording)
	  50 000 000 000

Example	:ACQUIRE:RLENGTH 10000 :ACQUIRE:RLENGTH? -> :ACQUIRE:RLENGTH 10000
Description	Default value: 10 000

:ACQuire:RTOut?

Function	(Upper-level query) Queries all SSD recording settings.
Syntax	:ACQuire:RTOut?

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`:ACQuire:RTOut:ANAMing`

Function   Sets or queries the SSD-recording auto naming
            feature.
Syntax   `:ACQuire:RTOut:ANAMing {DATE|`
            `NUMBering}`
            `:ACQuire:RTOut:ANAMing?`
Example   `:ACQUIRE:RTOUT:ANAMING DATE`
            `:ACQUIRE:RTOUT:ANAMING?`
            `-> :ACQUIRE:RTOUT:ANAMING DATE`
Description Default value: DATE

`:ACQuire:RTOut:COMMent`

Function   Sets or queries the SSD recording comment.
Syntax   `:ACQuire:RTOut:COMMent <String>`
            `:ACQuire:RTOut:COMMent?`
            `<String>` = Up to 160 characters
Example   `:ACQUIRE:RTOUT:COMMENT "ABC"`
            `:ACQUIRE:RTOUT:COMMENT?`
            `-> :ACQUIRE:RTOUT:COMMENT "ABC"`
Description Default value: All spaces

`:ACQuire:RTOut:DIVide:MODE`

Function   Sets or queries whether divided recording is
            enabled for SSD recording.
Syntax   `:ACQuire:RTOut:DIVide:`
            `MODE {<Boolean>}`
            `:ACQuire:RTOut:DIVide:MODE?`
Example   `:ACQUIRE:RTOUT:DIVIDE:MODE ON`
            `:ACQUIRE:RTOUT:DIVIDE:MODE?`
            `-> :ACQUIRE:RTOUT:DIVIDE:MODE 1`
Description Default value: OFF

`:ACQuire:RTOut:DIVide:NUMBer`

Function   Sets or queries the number of divisions when
            divided recording is performed during SSD
            recording.
Syntax   `:ACQuire:RTOut:DIVide:NUMBer {<NRf>}`
            `:ACQuire:RTOut:DIVide:NUMBer?`
            `<NRf>` = 10, 20, 50, 100
Example   `:ACQUIRE:RTOUT:DIVIDE:NUMBER 10`
            `:ACQUIRE:RTOUT:DIVIDE:NUMBER?`
            `-> :ACQUIRE:RTOUT:DIVIDE:NUMBER 10`
Description Default value: 10

`:ACQuire:RTOut:FILename`

Function   Sets or queries the SSD-recording file name.
Syntax   `:ACQuire:RTOut:FILename <String>`
            `:ACQuire:RTOut:FILename?`
            `<String>` = Up to 32 characters
Example   `:ACQUIRE:RTOUT:FILENAME "ABC"`
            `:ACQUIRE:RTOUT:FILENAME?`
            `-> :ACQUIRE:RTOUT:FILENAME "ABC"`

`:ACQuire:RTOut:MODE`

Function   Sets or queries the SSD recording or flash
            acquisition operation.
Syntax   `:ACQuire:RTOut:MODE {SSD|`
            `FACQuisition|OFF}`
            `:ACQuire:RTOut:MODE?`
Example   `:ACQUIRE:RTOUT:MODE OFF`
            `:ACQUIRE:RTOUT:MODE?`
            `-> :ACQUIRE:RTOUT:MODE OFF`
Description Default value: OFF

`:ACQuire:SMODe`

Function   Sets or queries the system mode (recorder mode
            or scope mode).
Syntax   `:ACQuire:SMODe {RECorder|SCOPe}`
            `:ACQuire:SMODe?`
Example   `:ACQUIRE:SMODE RECORDER`
            `:ACQUIRE:SMODE?`
            `-> :ACQUIRE:SMODE RECORDER`

4.3   ANALysis Group

The commands in this group deal with power math (power analysis or harmonic analysis). You can perform the same operations and make the same settings and queries that you can make by pressing SHIFT+HISTORY (ANALYSIS) on the front panel or by accessing the menus for channels RMATh13 to RMATh16.

:ANALysis<x>?
Function   (Upper-level query) Queries all power math (power analysis or harmonic analysis) settings.
Syntax   :ANALysis<x>?
            <x> = 1, 2
            <x> = 1: All power analysis settings
            <x> = 2: All harmonic analysis settings
Description This command is valid when the /G05 option is installed.

:ANALysis<x>:HARMonic?
Function   (Upper-level query) Queries harmonic analysis setting of the power math feature.
Syntax   :ANALysis<x>:HARMonic?
            <x> = 2
Description This command is valid when the /G05 option is installed.

:ANALysis<x>:HARMonic:GRAPh?
Function   (Upper-level query) Queries all settings related to the harmonic analysis result display.
Syntax   :ANALysis<x>:HARMonic:GRAPh?
            <x> = 2
Description This command is valid when the /G05 option is installed.

:ANALysis<x>:HARMonic:GRAPh:DITem?
Function   (Upper-level query) Queries all analysis items settings of the harmonic analysis result display.
Syntax   :ANALysis<x>:HARMonic:GRAPh:DITem?
            <x> = 2
Description This command is valid when the /G05 option is installed.

:ANALysis<x>:HARMonic:GRAPh:DITem:HDF
Function   Sets or queries whether percentage content (HDF) is displayed in the harmonic analysis result display.
Syntax   :ANALysis<x>:HARMonic:GRAPh:DITem:
            HDF {<Boolean>}
            :ANALysis<x>:HARMonic:GRAPh:DITem:
            HDF?
            <x> = 2
Example   :ANALYSIS2:HARMONIC:GRAPH:DITEM:
            HDF 1
            :ANALYSIS2:HARMONIC:GRAPH:DITEM:HDF?
            -> :ANALYSIS2:HARMONIC:GRAPH:DITEM:
            HDF 1
Description • This command is valid when the /G05 option is installed.
            • Default value: ON

:ANALysis<x>:HARMonic:GRAPh:DITem:P
Function   Sets or queries whether active power (P) is displayed in the harmonic analysis result display.
Syntax   :ANALysis<x>:HARMonic:GRAPh:DITem:
            P {<Boolean>}
            :ANALysis<x>:HARMonic:GRAPh:DITem:P?
            <x> = 2
Example   :ANALYSIS2:HARMONIC:GRAPH:DITEM:P 1
            :ANALYSIS2:HARMONIC:GRAPH:DITEM:P?
            -> :ANALYSIS2:HARMONIC:GRAPH:DITEM:
            P 1
Description • This command is valid when the /G05 option is installed.
            • Default value: ON

:ANALysis<x>:HARMonic:GRAPh:DITem:PHI
Function   Sets or queries whether phase angle (φ) is displayed in the harmonic analysis result display.
Syntax   :ANALysis<x>:HARMonic:GRAPh:DITem:
            PHI {<Boolean>}
            :ANALysis<x>:HARMonic:GRAPh:DITem:
            PHI?
            <x> = 2
Example   :ANALYSIS2:HARMONIC:GRAPH:DITEM:
            PHI 1
            :ANALYSIS2:HARMONIC:GRAPH:DITEM:PHI?
            -> :ANALYSIS2:HARMONIC:GRAPH:DITEM:
            PHI 1
Description • This command is valid when the /G05 option is installed.
            • Default value: ON

:ANALysis<x>:HARMonic:GRAPh:DITem:RMS
Function   Sets or queries whether rms values (RMS) is displayed in the harmonic analysis result display.
Syntax   :ANALysis<x>:HARMonic:GRAPh:DITem:
            RMS {<Boolean>}
            :ANALysis<x>:HARMonic:GRAPh:DITem:
            RMS?
            <x> = 2
Example   :ANALYSIS2:HARMONIC:GRAPH:DITEM:
            RMS 1
            :ANALYSIS2:HARMONIC:GRAPH:DITEM:RMS?
            -> :ANALYSIS2:HARMONIC:GRAPH:DITEM:
            RMS 1
Description • This command is valid when the /G05 option is installed.
            • Default value: ON

:ANALysis<x>:HARMonic:GRAPh:IZOom

Function   Sets or queries the current zoom when the graph mode is set to Vector in the harmonic analysis result display (window settings).

Syntax   :ANALysis<x>:HARMonic:GRAPh:
           IZOom {NRf}
           :ANALysis<x>:HARMonic:GRAPh:IZOom?
           <x> = 2
           <NRf> = 0.1, 0.111, 0.125, 0.143, 0.167, 0.2,
                   0.25, 0.33, 0.4, 0.5, 0.556, 0.625, 0.667,
                   0.714, 0.8, 0.833, 1, 1.11, 1.25, 1.33,
                   1.43, 1.67, 2, 2.22, 2.5, 3.33, 4, 5, 6.67,
                   8, 10, 12.5, 16.7, 20, 25, 40, 50, 100

Example   :ANALYSIS2:HARMONIC:GRAPH:IZOOM 2
           :ANALYSIS2:HARMONIC:GRAPH:IZOOM?
           -> :ANALYSIS2:HARMONIC:GRAPH:
              IZOOM 2.000

Description This command is valid when the /G05 option is installed.

:ANALysis<x>:HARMonic:GRAPh:LSTart

Function   Sets or queries whether list starting harmonic is displayed in the harmonic analysis result display (window settings).

Syntax   :ANALysis<x>:HARMonic:GRAPh:
           LSTart {<NRf>}
           :ANALysis<x>:HARMonic:GRAPh:LSTart?
           <x> = 2
           <NRf> = 1 to 40(/35)   (up to 40 for RMS,
           up to 35 for Power)

Example   :ANALYSIS2:HARMONIC:GRAPH:LSTART 2
           :ANALYSIS2:HARMONIC:GRAPH:LSTART?
           -> :ANALYSIS2:HARMONIC:GRAPH:
              LSTART 2

Description • This command is valid when the /G05 option is installed.
           • Default value: 1

:ANALysis<x>:HARMonic:GRAPh:MAXorder

Function   Sets or queries the maximum displayed harmonic in the harmonic analysis result display (window settings).

Syntax   :ANALysis<x>:HARMonic:GRAPh:
           MAXorder {<NRf>}
           :ANALysis<x>:HARMonic:GRAPh:MAXorder?
           <x> = 2
           <NRf> = 1 to 40(/35)   (up to 40 for RMS,
           up to 35 for Power)

Example   :ANALYSIS2:HARMONIC:GRAPH:
           MAXORDER 11
           :ANALYSIS2:HARMONIC:GRAPH:MAXORDER?
           -> :ANALYSIS2:HARMONIC:GRAPH:
              MAXORDER 11

Description • This command is valid when the /G05 option is installed.
           • Default value: 40

:ANALysis<x>:HARMonic:GRAPh:MODE

Function   Sets or queries the graph mode in the harmonic analysis result display (window settings).

Syntax   :ANALysis<x>:HARMonic:GRAPh:
           MODE {OFF|BAR|LIST|VECTor}
           :ANALysis<x>:HARMonic:GRAPh:MODE?
           <x> = 2

Example   :ANALYSIS2:HARMONIC:GRAPH:MODE BAR
           :ANALYSIS2:HARMONIC:GRAPH:MODE?
           -> :ANALYSIS2:HARMONIC:GRAPH:
              MODE BAR

Description • This command is valid when the /G05 option is installed.
           • Default value: OFF

:ANALysis<x>:HARMonic:GRAPh:NUMeric

Function   Sets or queries whether numeric string is displayed when the graph mode is set to Vector in the harmonic analysis result display (window settings).

Syntax   :ANALysis<x>:HARMonic:GRAPh:
           NUMeric {<Boolean>}
           :ANALysis<x>:HARMonic:GRAPh:NUMeric?
           <x> = 2

Description • This command is valid when the /G05 option is installed.
           • Default value: ON

:ANALysis<x>:HARMonic:GRAPh:POSition

Function   Sets or queries the graph position in the harmonic analysis result display (window settings).

Syntax   :ANALysis<x>:HARMonic:GRAPh:
           POSition {<NRf>}
           :ANALysis<x>:HARMonic:GRAPh:POSition?
           <x> = 2
           <NRf> = −5 to -5 (in steps of 10 divisions/display
           record length)

Example   :ANALYSIS2:HARMONIC:GRAPH:
           POSITION -2
           :ANALYSIS2:HARMONIC:GRAPH:POSITION?
           -> :ANALYSIS2:HARMONIC:GRAPH:
              POSITION -2.000000000000

Description • This command is valid when the /G05 option is installed.
           • Default value: 0.00div

:ANALysis\<x>:HARMonic:GRAPh:SCALe

Function   Sets or queries the vertical scale when the graph
            mode is set to Bar in the harmonic analysis result
            display (window settings).

Syntax   :ANALysis\<x>:HARMonic:GRAPh:
            SCALe {LINear|LOG}
            :ANALysis\<x>:HARMonic:GRAPh:SCALe?
            \<x> = 2

Example   :ANALYSIS2:HARMONIC:GRAPH:
            SCALE LINEAR
            :ANALYSIS2:HARMONIC:GRAPH:SCALE?
            -> :ANALYSIS2:HARMONIC:GRAPH:
               SCALE LINEAR

Description • This command is valid when the /G05 option is
              installed.
            • Default value: LOG

:ANALysis\<x>:HARMonic:GRAPh:UZOom

Function   Sets or queries the voltage zoom when the graph
            mode is set to Vector in the harmonic analysis
            result display (window settings).

Syntax   :ANALysis\<x>:HARMonic:GRAPh:
            UZOom {NRf}
            :ANALysis\<x>:HARMonic:GRAPh:UZOom?
            \<x> = 2
            \<NRf> = 0.1, 0.111, 0.125, 0.143, 0.167, 0.2,
                    0.25, 0.33, 0.4, 0.5, 0.556, 0.625, 0.667,
                    0.714, 0.8, 0.833, 1, 1.11, 1.25, 1.33,
                    1.43, 1.67, 2, 2.22, 2.5, 3.33, 4, 5, 6.67,
                    8, 10, 12.5, 16.7, 20, 25, 40, 50, 100

Example   :ANALYSIS2:HARMONIC:GRAPH:UZOOM 2
            :ANALYSIS2:HARMONIC:GRAPH:UZOOM?
            -> :ANALYSIS2:HARMONIC:GRAPH:
               UZOOM 2.000

Description This command is valid when the /G05 option is
            installed.

:ANALysis\<x>:HARMonic:LRMS?

Function   (Upper-level query) Queries all settings related to
            the harmonic analysis (for Line RMS mode).

Syntax   :ANALysis\<x>:HARMonic:LRMS?
            \<x> = 2

Description This command is valid when the /G05 option is
            installed.

:ANALysis\<x>:HARMonic:LRMS:\<Parameter 1>:LABel

Function   Sets or queries the label of an analysis item in
            harmonic analysis (for Line RMS mode).

Syntax   :ANALysis\<x>:HARMonic:LRMS:
            \<Parameter 1>:LABel {\<String>}
            :ANALysis\<x>:HARMonic:LRMS:
            \<Parameter 1>:LABel?
            \<x> = 2
            \<String> = Up to 16 characters

Example   :ANALYSIS2:HARMONIC:LRMS:RMSK3:
            LABEL "AAA"
            :ANALYSIS2:HARMONIC:LRMS:RMSK3:LAB
            EL?
            -> :ANALYSIS2:HARMONIC:LRMS:RMSK3:
               LABEL "AAA"

Description • For the analysis items, see "Parameter 1 list."
            • This command is valid when the /G05 option is
              installed.

\<Parameter 1> list
When the analysis mode is Line RMS

\<Parameter>		
RMSK\<x>	RMS Value (RMS)	\<x>1 to 40
RHDFK\<x>	RMS percentage content	\<x>1 to 40
PHIK\<x>	Phase angle	\<x>1 to 40
RMS		
THDIec	(Firmware version 3.2 and later)	
THDCsa	(Firmware version 3.2 and later)	
HDFIec	Same as THDIec	
HDFCsa	Same as THDCsa	

:ANALysis\<x>:HARMonic:LRMS:\<Parameter 1>:SCALe

Function   Sets or queries the scale boundaries (upper and
            lower) of an analysis item in harmonic analysis (for
            Line RMS mode).

Syntax   :ANALysis\<x>:HARMonic:LRMS:
            \<Parameter 1>:SCALe {\<NRf>,\<NRf>}
            :ANALysis\<x>:HARMonic:LRMS:
            \<Parameter 1>:SCALe?
            \<x1> = 2
            \<NRf> = -9.9999E+30 to +9.9999E+30

Example   :ANALYSIS2:HARMONIC:LRMS:RMSK3:
            SCALE 4,0
            :ANALYSIS2:HARMONIC:LRMS:RMSK3:
            SCALE?
            -> :ANALYSIS2:HARMONIC:LRMS:RMSK3:
               SCALE 4.00000E+00,0.00000E+00

Description • For the analysis items, see "Parameter 1 list."
            • This command is valid when the /G05 option is
              installed.
            • This command is valid when DIV/Scale is set
              to SPAN.

4

Commands

:ANALysis<x>:HARMonic:LRMS:<Parameter 1>:STATe

Function   Sets or queries the on/off status of an analysis item in harmonic analysis (for Line RMS mode).

Syntax   :ANALysis<x>:HARMonic:LRMS:
          <Parameter 1>:STATe {<Boolean>}
          :ANALysis<x>:HARMonic:LRMS:
          <Parameter 1>:STATe?
          <x> = 2

Example   :ANALYSIS2:HARMONIC:LRMS:RMSK3:
          STATE 1
          :ANALYSIS2:HARMONIC:LRMS:RMSK3:
          STATE?
          -> :ANALYSIS2:HARMONIC:LRMS:RMSK3:
             STATE 1

Description • For the analysis items, see "Parameter 1 list."
            • This command is valid when the /G05 option is installed.

:ANALysis<x>:HARMonic:LRMS:<Parameter 2>:SCALe

Function   Sets the scale boundaries (upper and lower) of an analysis item (RMS, Rhdf, and φ of all harmonics) in harmonic analysis (for Line RMS mode).

Syntax   :ANALysis<x>:HARMonic:LRMS:
          <Parameter 2>:SCALe {<NRf>,<NRf>}
          <x> = 2
          <NRf> = -9.9999E+30 to +9.9999E+30

Example   :ANALYSIS2:HARMONIC:LRMS:RMSALL:
          SCALE 10.0,-10.0

Description • For the analysis items, see "Parameter 2 list."
            • This command is valid when the /G05 option is installed.
            • This command is valid when DIV/Scale is set to SPAN.

<Parameter 2> list

When the analysis mode is Line RMS

<Parameter>	
RMSALL	RMS values of all harmonics
RHDFALL	Percentage content of all harmonics
PHIALL	Phase angle of all harmonics

:ANALysis<x>:HARMonic:LRMS:<Parameter 2>:STATe

Function   Sets the on/off status of an analysis item (RMS, Rhdf, and φ of all harmonics) in harmonic analysis (for Line RMS mode).

Syntax   :ANALysis<x>:HARMonic:LRMS:
          <Parameter 2>:STATe {<Boolean>}
          <x> = 2

Example   :ANALYSIS2:HARMONIC:LRMS:RMSALL:
          STATE 1

Description • For the analysis items, see "Parameter 2 list."
            • This command is valid when the /G05 option is installed.

:ANALysis<x>:HARMonic:LRMS:SOURce

Function   Sets or queries source channel in harmonic analysis (for Line RMS mode).

Syntax   :ANALysis<x>:HARMonic:LRMS:
          SOURce {<NRf>[,<NRf>]}
          :ANALysis<x>:HARMonic:LRMS:SOURce?
          <x> = 2
          <NRf> = 1 to 16

Example   :ANALYSIS2:HARMONIC:LRMS:SOURCE 1
          :ANALYSIS2:HARMONIC:LRMS:SOURCE?
          -> :ANALYSIS2:HARMONIC:LRMS:SOURCE 1

Description • This command is valid when the /G05 option is installed.
            • Sub channels are supported only on the 720254 or 720256 (4-CH module).

:ANALysis<x>:HARMonic:LRMS:TERM?

Function   (Upper-level query) Queries all calculation period settings in harmonic analysis (for Line RMS mode).

Syntax   :ANALysis<x>:HARMonic:LRMS:TERM?
          <x> = 2

Description This command is valid when the /G05 option is installed.

:ANALysis<x>:HARMonic:LRMS:TERM:ESFilter

Function   Sets or queries the edge source filter for the calculation period in harmonic analysis (for Line RMS mode).

Syntax   :ANALysis<x>:HARMonic:LRMS:TERM:
          ESFilter {OFF|<Frequency>}
          :ANALysis<x>:HARMonic:LRMS:TERM:
          ESFilter?
          <x> = 2
          <Frequency> = 62.5Hz, 125Hz, 250Hz, 500Hz,
                        1kHz, 2kHz, 4kHz, 8kHz, 16kHz,
                        32kHz, 64kHz, 128kHz

Example   :ANALYSIS2:HARMONIC:LRMS:TERM:
          ESFILTER 128KHZ
          :ANALYSIS2:HARMONIC:LRMS:TERM:
          ESFILTER?
          -> :ANALYSIS2:HARMONIC:LRMS:TERM:
             ESFILTER 128E+03

Description • This command is valid when the /G05 option is installed.
            • Default value: OFF

:ANALysis\<x\>:HARMonic:LRMS:TERM:HYSTeresis

Function   Sets or queries the hysteresis for the calculation period in harmonic analysis (for Line RMS mode).

Syntax   :ANALysis\<x\>:HARMonic:LRMS:TERM:
          HYSTeresis {HIGH|LOW|MIDDle}
          :ANALysis\<x\>:HARMonic:LRMS:TERM:
          HYSTeresis?
          \<x\> = 2

Example   :ANALYSIS2:HARMONIC:LRMS:TERM:
          HYSTERESIS HIGH
          :ANALYSIS2:HARMONIC:LRMS:TERM:
          HYSTERESIS?
          -> :ANALYSIS2:HARMONIC:LRMS:TERM:
             HYSTERESIS HIGH

Description   This command is valid when the /G05 option is installed.

:ANALysis\<x\>:HARMonic:MODE

Function   Sets or queries the analysis mode in harmonic analysis settings.

Syntax   :ANALysis\<x\>:HARMonic:
          MODE {POWer|LRMS}
          :ANALysis\<x\>:HARMonic:MODE?
          \<x\> = 2

Example   :ANALYSIS2:HARMONIC:MODE LRMS
          :ANALYSIS2:HARMONIC:MODE?
          -> :ANALYSIS2:HARMONIC:MODE LRMS

Description   • This command is valid when the /G05 option is installed.
              • Default value: LRMS

:ANALysis\<x\>:HARMonic:POWer?

Function   (Upper-level query) Queries all settings related to the harmonic analysis (for power mode).

Syntax   :ANALysis\<x\>:HARMonic:POWer?
          \<x\> = 2

Description   This command is valid when the /G05 option is installed.

:ANALysis\<x\>:HARMonic:POWer:\<Parameter 1\>?

Function   (Upper-level query) Queries all analysis item settings in harmonic analysis (for Power mode).

Syntax   :ANALysis\<x\>:HARMonic:POWer:
          \<Parameter 1\>?
          \<x\> = 2

Description   This command is valid when the /G05 option is installed.

:ANALysis\<x\>:HARMonic:POWer:\<Parameter 1\>:LABel

Function   Sets or queries the label of an analysis item in harmonic analysis (for Power mode).

Syntax   :ANALysis\<x\>:HARMonic:POWer:
          \<Parameter 1\>:LABel {\<String\>}
          :ANALysis\<x\>:HARMonic:POWer:
          \<Parameter 1\>:LABel?
          \<x\> = 2
          \<String\> = Up to 16 characters

Example   :ANALYSIS2:HARMONIC:POWER:PHDFK5:
          LABEL "Phdf(5)"
          :ANALYSIS2:HARMONIC:POWER:PHDFK5:
          LABEL?
          -> :ANALYSIS2:HARMONIC:POWER:PHDFK5:
             LABEL "Phdf(5)"

Description   • For the analysis items, see "Parameter 1 list."
              • This command is valid when the /G05 option is installed.

\<Parameter 1\> list
When analysis mode is set to Power

\<Parameter\>		
PK\<x\>	Active power	\<x\>1 to 35
PHDFK\<x\>	Active power percentage content	\<x\>1 to 35
PHIK\<x\>	Phase angle	\<x\>1 to 35
P	Total active powers	
S	Total reactive powers	
Q	Total apparent powers	
LAMBda	Power factor	
URMS\<x\>	1st harmonic rms voltage (for displaying vectors)	\<x\>1 to 3
IRMS\<x\>	1st harmonic rms current (for displaying vectors)	\<x\>1 to 3
PHI_U1U\<x\>	1st harmonic voltage phase angle (for displaying vectors)	\<x\>1 to 3
PHI_U1I\<x\>	1st harmonic current phase angle (for displaying vectors)	\<x\>1 to 3

:ANALysis\<x\>:HARMonic:POWer:\<Parameter 1\>:SCALe

Function   Sets or queries the scale boundaries (upper and lower) of an analysis item in harmonic analysis (for Power mode).

Syntax   :ANALysis\<x\>:HARMonic:POWer:
          \<Parameter 1\>:SCALe {\<NRf\>,\<NRf\>}
          :ANALysis\<x\>:HARMonic:POWer:
          \<Parameter 1\>:SCALe?
          \<x\> = 2
          \<NRf\> = -9.9999E+30 to +9.9999E+30

Example   :ANALYSIS2:HARMONIC:POWER:PK1:
          SCALE 400,0
          :ANALYSIS2:HARMONIC:POWER:PK1:SCALE?
          -> :ANALYSIS2:HARMONIC:POWER:PK1:
             SCALE 400.000E+00,0.00000E+00

Description   • For the analysis items, see "Parameter 1 list."
              • This command is valid when the /G05 option is installed.
              • This command is valid when DIV/Scale is set to SPAN.

4

Commands

:ANALysis<x>:HARMonic:POWer:<Parameter 1>:STATe

Function	Sets or queries the on/off status of an analysis item in harmonic analysis (for Power mode).
Syntax	:ANALysis<x>:HARMonic:POWer:<Parameter 1>:STATe {<Boolean>}
	:ANALysis<x>:HARMonic:POWer:<Parameter 1>:STATe?
	<x> = 1
Example	:ANALYSIS2:HARMONIC:POWER:PK1:STATE 1
	:ANALYSIS2:HARMONIC:POWER:PK1:STATE?
	-> :ANALYSIS2:HARMONIC:POWER:PK1:STATE 1
Description	• For the analysis items, see "Parameter 1 list."
	• This command is valid when the /G05 option is installed.

:ANALysis<x>:HARMonic:POWer:<Parameter 2>:SCALe

Function	Sets the scale boundaries (upper and lower) of an analysis item (P, Phdf, and φ of all harmonics) in harmonic analysis (for Power mode).
Syntax	:ANALysis<x>:HARMonic:POWer:<Parameter 2>:SCALe {<NRf>,<NRf>}
	<x> = 2
	<NRf> = -9.9999E+30 to +9.9999E+30
Example	:ANALYSIS2:HARMONIC:POWER:PALL:SCALE 10,-10
Description	• For the analysis items, see "Parameter 2 list."
	• This command is valid when the /G05 option is installed.
	• This command is valid when DIV/Scale is set to SPAN.

<Parameter 2> list

When analysis mode is set to Power

<Parameter>	
PALL	Active power of all harmonics
PHDFALL	Active power percentage content of all harmonics
PHIALL	Phase angle of all harmonics

:ANALysis<x>:HARMonic:POWer:<Parameter 2>:STATe

Function	Sets the on/off status of an analysis item (P, Phdf, and φ of all harmonics) in harmonic analysis (for Power mode).
Syntax	:ANALysis<x>:HARMonic:POWer:<Parameter 2>:STATe {<Boolean>}
	<x> = 2
Example	:ANALYSIS2:HARMONIC:POWER:PALL:STATE 1
Description	• For the analysis items, see "Parameter 2 list."
	• This command is valid when the /G05 option is installed.

:ANALysis<x>:HARMonic:POWer:SOURce?

Function	(Upper-level query) Queries all source channel settings in harmonic analysis (for Power mode).
Syntax	:ANALysis<x>:HARMonic:POWer:SOURce?
	<x> = 2
Description	This command is valid when the /G05 option is installed.

:ANALysis<x>:HARMonic:POWer:SOURce:I1

Function	Sets or queries source channel I1 in harmonic analysis (for Power mode).
Syntax	:ANALysis<x>:HARMonic:POWer:SOURce:I1 {<NRf>[,<NRf>]}
	:ANALysis<x>:HARMonic:POWer:SOURce:I1?
	<x> = 2
	<NRf> = 1 to 16
Example	:ANALYSIS2:HARMONIC:POWER:SOURCE:I1 2
	:ANALYSIS2:HARMONIC:POWER:SOURCE:I1?
	-> :ANALYSIS2:HARMONIC:POWER:SOURCE:I1 2
Description	• This command is valid when the /G05 option is installed.
	• Sub channels are supported only on the 720254 or 720256 (4-CH module).

:ANALysis<x>:HARMonic:POWer:SOURce:I2

Function	Sets or queries source channel I2 in harmonic analysis (for Power mode).
Syntax	:ANALysis<x>:HARMonic:POWer:SOURce:I2 <NRf>
	:ANALysis<x>:HARMonic:POWer:SOURce:I2?
	<x> = 2
	<NRf> = 1 to 16
Example	:ANALYSIS2:HARMONIC:POWER:SOURCE:I2 2
	:ANALYSIS2:HARMONIC:POWER:SOURCE:I2?
	-> :ANALYSIS2:HARMONIC:POWER:SOURCE:I2 2
Description	• This command is valid when the /G05 option is installed.
	• This is invalid when the wiring system is 1P2W.

:ANALysis<x>:HARMonic:POWer:SOURce :I3

Function   Sets or queries source channel I3 in harmonic analysis (for Power mode).

Syntax   :ANALysis<x>:HARMonic:POWer:SOURce: I3 <NRf>
:ANALysis<x>:HARMonic:POWer:SOURce: I3?
<x> = 2
<NRf> = 1 to 16

Example   :ANALYSIS2:HARMONIC:POWER:SOURCE: I3 2
:ANALYSIS2:HARMONIC:POWER:SOURCE:I3?
-> :ANALYSIS2:HARMONIC:POWER:SOURCE: I3 2

Description • This command is valid when the /G05 option is installed.
• This command is invalid when the wiring system is 1P2W, 1P3W, 3P3W, or 3P3W→3V3A.

:ANALysis<x>:HARMonic:POWer:SOURce :U1

Function   Sets or queries source channel U1 in harmonic analysis (for Power mode).

Syntax   :ANALysis<x>:HARMonic:POWer: SOURce:U1 <NRf>[,<NRf>]
:ANALysis<x>:HARMonic:POWer: SOURce:U1?
<x> = 2
<NRf> = 1 to 16

Example   :ANALYSIS2:HARMONIC:POWER: SOURCE:U1 1
:ANALYSIS2:HARMONIC:POWER:SOURCE:U1?
-> :ANALYSIS2:HARMONIC:POWER: SOURCE:U1 1

Description • This command is valid when the /G05 option is installed.
• Sub channels are supported only on the 720254 or 720256 (4-CH module).

:ANALysis<x>:HARMonic:POWer:SOURce :U2

Function   Sets or queries source channel U2 in harmonic analysis (for Power mode).

Syntax   :ANALysis<x>:HARMonic:POWer: SOURce:U2 <NRf>
:ANALysis<x>:HARMonic:POWer: SOURce:U2?
<x> = 2
<NRf> = 1 to 16

Example   :ANALYSIS2:HARMONIC:POWER: SOURCE:U2 1
:ANALYSIS2:HARMONIC:POWER:SOURCE:U2?
-> :ANALYSIS2:HARMONIC:POWER: SOURCE:U2 1

Description • This command is valid when the /G05 option is installed.
• This is invalid when the wiring system is 1P2W.

:ANALysis<x>:HARMonic:POWer:SOURce :U3

Function   Sets or queries source channel U3 in harmonic analysis (for Power mode).

Syntax   :ANALysis<x>:HARMonic:POWer: SOURce:U3 <NRf>
:ANALysis<x>:HARMonic:POWer: SOURce:U3?
<x> = 2
<NRf> = 1 to 16

Example   :ANALYSIS2:HARMONIC:POWER: SOURCE:U3 1
:ANALYSIS2:HARMONIC:POWER:SOURCE:U3?
-> :ANALYSIS2:HARMONIC:POWER: SOURCE:U3 1

Description • This command is valid when the /G05 option is installed.
• This command is invalid when the wiring system is 1P2W, 1P3W, 3P3W, or 3P3W→3V3A.

:ANALysis<x>:HARMonic:POWer:TERM?

Function   (Upper-level query) Queries all calculation period settings in harmonic analysis (for Power mode).

Syntax   :ANALysis<x>:HARMonic:POWer:TERM?

:ANALysis<x>:HARMonic:POWer:TERM:ESF ilter

Function   Sets or queries the edge source filter for the calculation period in harmonic analysis (for Power mode).

Syntax   :ANALysis<x>:HARMonic:POWer:TERM: ESFilter {OFF|<Frequency>}
:ANALysis<x>:HARMonic:POWer:TERM: ESFilter?
<x> = 2
<Frequency> = 62.5Hz, 125Hz, 250Hz, 500Hz, 1kHz, 2kHz, 4kHz, 8kHz, 16kHz, 32kHz, 64kHz, 128kHz

Example   :ANALYSIS2:HARMONIC:POWER:TERM: ESFILTER 128KHZ
:ANALYSIS2:HARMONIC:POWER:TERM: ESFILTER?
-> :ANALYSIS2:HARMONIC:POWER:TERM: ESFILTER 128E+03

Description • This command is valid when the /G05 option is installed.
• Default value: OFF

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Commands

:ANALysis\<x\>:HARMonic:POWer:TERM:HYSTeresis

Function   Sets or queries the hysteresis for the calculation period in harmonic analysis (for Power mode).

Syntax   :ANALysis\<x\>:HARMonic:POWer:TERM:
             HYSTeresis {HIGH|LOW|MIDDle}
             :ANALysis\<x\>:HARMonic:POWer:TERM:
             HYSTeresis?
             \<x\> = 2

Example   :ANALYSIS2:HARMONIC:POWER:TERM:
             HYSTERESIS LOW
             :ANALYSIS2:HARMONIC:POWER:TERM:
             HYSTERESIS?
             -> :ANALYSIS2:HARMONIC:POWER:TERM:
                HYSTERESIS LOW

Description • This command is valid when the /G05 option is installed.
             • Default value: LOW

:ANALysis\<x\>:HARMonic:POWer:TERM:ESOurce

Function   Sets or queries the edge detection source for the calculation period in harmonic analysis (for Power mode).

Syntax   :ANALysis\<x\>:HARMonic:POWer:TERM:
             ESOurce {U1|U2|U3|I1|I2|I3}
             :ANALysis\<x\>:HARMonic:POWer:TERM:
             ESOurce?
             \<x\> = 2

Example   :ANALYSIS2:HARMONIC:POWER:TERM:
             ESOURCE U1
             :ANALYSIS2:HARMONIC:POWER:TERM:
             ESOURCE?
             -> :ANALYSIS2:HARMONIC:
                POWER:TERM:ESOURCE U1

Description This command is valid when the /G05 option is installed.

:ANALysis\<x\>:HARMonic:POWer:WIRing

Function   Sets or queries the wiring system in harmonic analysis (for Power mode).

Syntax   :ANALysis\<x\>:HARMonic:POWer:
             WIRing {P1W2|P1W3|P3W3|V3A3|P3W4|
             V3AR3},{OFF|P3W3_V3A3|DT_ST|ST_DT}
             \<x\> = 2
             First parameter: wiring system
             Second parameter: delta math

Example   :ANALYSIS2:HARMONIC:POWER:
             WIRING P12W,OFF
             :ANALYSIS2:HARMONIC:POWER:WIRING?
             -> :ANALYSIS2:HARMONIC:POWER:
                WIRING P1W2,OFF

Description • Match the wiring system to the conversion source system of delta math.
             • This command is valid when the /G05 option is installed.

:ANALysis\<x\>:HARMonic:PSCale

Function   Sets or queries the φ (phase difference) scale in harmonic analysis (for Power mode).

Syntax   :ANALysis\<x\>:HARMonic:
             PSCale {DEGRee|RADian}
             :ANALysis\<x\>:HARMonic:PSCale?
             \<x\> = 2

Example   :ANALYSIS2:HARMONIC:PSCALE DEGREE
             :ANALYSIS2:HARMONIC:PSCALE?
             -> :ANALYSIS2:HARMONIC:PSCALE DEGREE

Description • This command is valid when the /G05 option is installed.
             • Default value: DEGREE

:ANALysis\<x\>:MODE

Function   Sets or queries the power math mode.

Syntax   :ANALysis\<x\>:MODE {OFF|POWer1|
             POWer2|HARMonic}
             :ANALysis\<x\>:MODE?
             \<x\> = 1, 2
             When \<x\> = 1
                 OFF: Power analysis is disabled.
                 POWer1: Power analysis is set to 1
                     Wiring System mode.
                 POWer2: Power analysis is set to 2
                     Wiring Systems mode.
             When \<x\> = 2
                 OFF: Harmonic analysis is disabled.
                 HARMonic: Harmonic analysis is enabled.

Example   :ANALYSIS1:MODE POWER1
             :ANALYSIS1:MODE?
             -> :ANALYSIS1:MODE POWER1

Description • This command is valid when the /G05 option is installed.
             • Default value: OFF

:ANALysis\<x1\>:POWer\<x2\>?

Function   (Upper-level query) Queries all power analysis settings (Wiring System1 or Wiring System2) of power math.

Syntax   :ANALysis\<x1\>:POWer\<x2\>?
             \<x1\> = 1
             \<x2\> = 1, 2
             When \<x2\> = 1: Wiring System1 settings
             When \<x2\> = 2: Wiring System2 settings

Description This command is valid when the /G05 option is installed.

:ANALysis\<x1\>:POWer\<x2\>:DSOutput? (Delta Star Output)

Function   (Upper-level query) Queries all settings for delta-star transformation of power analysis.

Syntax   :ANALysis\<x1\>:POWer\<x2\>:DSOutput?
             \<x1\> = 1
             \<x2\> = 1, 2

Description This command is valid when the /G05 option is installed.

:ANALysis\<x1>:POWer\<x2>:DSOutput:I1

Function   Sets or queries the channel for outputting the I1 resulting from delta-star transformation of power analysis.

Syntax   :ANALysis\<x1>:POWer\<x2>:DSOutput: I1 {OFF|\<NRf>}
:ANALysis\<x1>:POWer\<x2>:DSOutput:I1?
\<x1> = 1
\<x2> = 1, 2
\<NRf> = 17 to 32

Example   :ANALYSIS1:POWER1:DSOUTPUT:I1 17
:ANALYSIS1:POWER1:DSOUTPUT:I1?
-> :ANALYSIS1:POWER1:DSOUTPUT:I1 17

Description • This command is valid when the /G05 option is installed.
• If you specify an Rmath channel already assigned to the output resulting from another delta-star transformation, the previous output channel is turned off.
• Default value: OFF

:ANALysis\<x1>:POWer\<x2>:DSOutput:I2

Function   Sets or queries the channel for outputting the I2 resulting from delta-star transformation of power analysis.

Syntax   :ANALysis\<x1>:POWer\<x2>:DSOutput: I2 {OFF|\<NRf>}
:ANALysis\<x1>:POWer\<x2>:DSOutput:I2?
\<x1> = 1
\<x2> = 1, 2
\<NRf> = 17 to 32

Example   :ANALYSIS1:POWER1:DSOUTPUT:I2 17
:ANALYSIS1:POWER1:DSOUTPUT:I2?
-> :ANALYSIS1:POWER1:DSOUTPUT:I2 17

Description • This command is valid when the /G05 option is installed.
• If you specify an Rmath channel already assigned to the output resulting from another delta-star transformation, the previous output channel is turned off.
• Default value: OFF

:ANALysis\<x1>:POWer\<x2>:DSOutput:I3

Function   Sets or queries the channel for outputting the I3 resulting from delta-star transformation of power analysis.

Syntax   :ANALysis\<x1>:POWer\<x2>:DSOutput: I3 {OFF|\<NRf>}
:ANALysis\<x1>:POWer\<x2>:DSOutput:I3?
\<x1> = 1
\<x2> = 1, 2
\<NRf> = 17 to 32

Example   :ANALYSIS1:POWER1:DSOUTPUT:I3 17
:ANALYSIS1:POWER1:DSOUTPUT:I3?
-> :ANALYSIS1:POWER1:DSOUTPUT:I3 17

Description • This command is valid when the /G05 option is installed.
• If you specify an Rmath channel already assigned to the output resulting from another delta-star transformation, the previous output channel is turned off.
• Default value: OFF

:ANALysis\<x1>:POWer\<x2>:DSOutput:IN

Function   Sets or queries the channel for outputting the IN resulting from delta-star transformation of power analysis.

Syntax   :ANALysis\<x1>:POWer\<x2>:DSOutput: IN {OFF|\<NRf>}
:ANALysis\<x1>:POWer\<x2>:DSOutput:IN?
\<x1> = 1
\<x2> = 1, 2
\<NRf> = 17 to 32

Example   :ANALYSIS1:POWER1:DSOUTPUT:IN 17
:ANALYSIS1:POWER1:DSOUTPUT:IN?
-> :ANALYSIS1:POWER1:DSOUTPUT:IN 17

Description • This command is valid when the /G05 option is installed.
• If you specify an Rmath channel already assigned to the output resulting from another delta-star transformation, the previous output channel is turned off.
• Default value: OFF

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Commands

:ANALysis<x1>:POWer<x2>:DSOutput:U1

Function   Sets or queries the channel for outputting the U1 resulting from delta-star transformation of power analysis.

Syntax   :ANALysis<x1>:POWer<x2>:DSOutput: U1 {OFF|<NRf>}
:ANALysis<x1>:POWer<x2>:DSOutput:U1?
<x1> = 1
<x2> = 1, 2
<NRf> = 17 to 32

Example   :ANALYSIS1:POWER1:DSOUTPUT:U1 17
:ANALYSIS1:POWER1:DSOUTPUT:U1?
-> :ANALYSIS1:POWER1:DSOUTPUT:U1 17

Description • This command is valid when the /G05 option is installed.
• If you specify an Rmath channel already assigned to the output resulting from another delta-star transformation, the previous output channel is turned off.
• Default value: OFF

:ANALysis<x1>:POWer<x2>:DSOutput:U2

Function   Sets or queries the channel for outputting the U2 resulting from delta-star transformation of power analysis.

Syntax   :ANALysis<x1>:POWer<x2>:DSOutput: U2 {OFF|<NRf>}
:ANALysis<x1>:POWer<x2>:DSOutput:U2?
<x1> = 1
<x2> = 1, 2
<NRf> = 17 to 32

Example   :ANALYSIS1:POWER1:DSOUTPUT:U2 17
:ANALYSIS1:POWER1:DSOUTPUT:U2?
-> :ANALYSIS1:POWER1:DSOUTPUT:U2 17

Description • This command is valid when the /G05 option is installed.
• If you specify an Rmath channel already assigned to the output resulting from another delta-star transformation, the previous output channel is turned off.
• Default value: OFF

:ANALysis<x1>:POWer<x2>:DSOutput:U3

Function   Sets or queries the channel for outputting the U3 resulting from delta-star transformation of power analysis.

Syntax   :ANALysis<x1>:POWer<x2>:DSOutput: U3 {OFF|<NRf>}
:ANALysis<x1>:POWer<x2>:DSOutput:U3?
<x1> = 1
<x2> = 1, 2
<NRf> = 17 to 32

Example   :ANALYSIS1:POWER1:DSOUTPUT:U3 17
:ANALYSIS1:POWER1:DSOUTPUT:U3?
-> :ANALYSIS1:POWER1:DSOUTPUT:U3 17

Description • This command is valid when the /G05 option is installed.
• If you specify an Rmath channel already assigned to the output resulting from another delta-star transformation, the previous output channel is turned off.
• Default value: OFF

:ANALysis<x1>:POWer<x2>:EFFiciency?

Function   (Upper-level query) Queries all efficiency settings of power analysis (Wiring System1 or Wiring System2).

Syntax   :ANALysis<x1>:POWer<x2>:EFFiciency?
<x1> = 1
<x2> = 1, 2
When <x2> = 1: All efficiency settings of Wiring System1
When <x2> = 2: All efficiency settings of Wiring System2

Description   This command is valid when the /G05 option is installed.

:ANALysis<x1>:POWer<x2>:EFFiciency:MODE

Function   Sets or queries the efficiency mode of power analysis.

Syntax   :ANALysis<x1>:POWer<x2>:EFFiciency: MODE {OFF|POWer|MOTor}
:ANALysis<x1>:POWer<x2>:EFFiciency: MODE?
<x1> = 1
<x2> = 1, 2

Example   :ANALYSIS1:POWER1:EFFICIENCY: MODE MOTOR
:ANALYSIS1:POWER1:EFFICIENCY:MODE?
-> :ANALYSIS1:POWER1:EFFICIENCY: MODE MOTOR

Description • This command is valid when the /G05 option is installed.
• Default value: OFF

:ANALysis\<x1\>:POWer\<x2\>:EFFiciency:MOTor

Function   Sets or queries the motor efficiency calculation method of power analysis.

Syntax   :ANALysis\<x1\>:POWer\<x2\>:EFFiciency:
           MOTor {RANGle|SPEed}
           :ANALysis\<x1\>:POWer\<x2\>:EFFiciency:
           MOTor?
           \<x1\> = 1
           \<x2\> = 1, 2
           RANGle: Rotation angle
           SPEed: Rotation speed

Example   :ANALYSIS1:POWER1:EFFICIENCY:
           MOTOR RANGLE
           :ANALYSIS1:POWER1:EFFICIENCY:MOTOR?
           -> :ANALYSIS1:POWER1:EFFICIENCY:
              MOTOR RANGLE

Description • This command is valid when the /G05 option is
             installed.
           • Default value: RANGLE

:ANALysis\<x1\>:POWer\<x2\>:EFFiciency:RANgle

Function   Sets or queries the rotation angle source for the motor efficiency calculation (rotation angle mode) of power analysis.

Syntax   :ANALysis\<x1\>:POWer\<x2\>:EFFiciency:
           RANgle {\<NRf\>}
           :ANALysis\<x1\>:POWer\<x2\>:EFFiciency:
           RANgle?
           \<x1\> = 1
           \<x2\> = 1, 2
           \<NRf\> = 17 to 32

Example   :ANALYSIS1:POWER1:EFFICIENCY:
           RANGLE 17
           :ANALYSIS1:POWER1:EFFICIENCY:RANGLE?
           -> :ANALYSIS1:POWER1:EFFICIENCY:
              RANGLE 17

Description • This command is valid when the /G05 option is
             installed.
           • This key is valid when the Pm type is set to
             rotation angle.

:ANALysis\<x1\>:POWer\<x2\>:EFFiciency:SCALing

Function   Sets or queries the scaling for the motor efficiency calculation (rotation angle mode) of power analysis.

Syntax   :ANALysis\<x1\>:POWer\<x2\>:EFFiciency:
           SCALing {\<NRf\>}
           :ANALysis\<x1\>:POWer\<x2\>:EFFiciency:
           SCALing?
           \<x1\> = 1
           \<x2\> = 1, 2
           \<NRf\> = -9.999E+30 to +9.9999E+30

Example   :ANALYSIS1:POWER1:EFFICIENCY:
           SCALING 3.5
           :ANALYSIS1:POWER1:EFFICIENCY:
           SCALING?
           -> :ANALYSIS1:POWER1:EFFICIENCY:
              SCALING 3.50000E+00

Description • This command is valid when the /G05 option is
             installed.
           • This key is valid when the Pm type is set to
             rotation angle.

:ANALysis\<x1\>:POWer\<x2\>:EFFiciency:SPEed

Function   Sets or queries the rotation speed source for the motor efficiency calculation (rotation speed mode) of power analysis.

Syntax   :ANALysis\<x1\>:POWer\<x2\>:EFFiciency:
           SPEed {\<NRf\>[,\<NRf\>]}
           :ANALysis\<x1\>:POWer\<x2\>:EFFiciency:
           SPEed?
           \<x1\> = 1
           \<x2\> = 1, 2
           \<NRf\> = 1 to 32

Example   :ANALYSIS1:POWER1:EFFICIENCY:SPEED 1
           :ANALYSIS1:POWER1:EFFICIENCY:SPEED?
           -> :ANALYSIS1:POWER1:EFFICIENCY:
              SPEED 1

Description • This command is valid when the /G05 option is
             installed.
           • This key is valid when the Pm type is set to
             rotation speed.
           • Sub channels are supported only on the
             720254 or 720256 (4-CH module).

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Commands

:ANALysis<x1>:POWer<x2>:EFFiciency:S SCaling (Speed Scaling)

Function   Sets or queries the scaling for the motor efficiency calculation (rotation speed mode) of power analysis.

Syntax   :ANALysis<x1>:POWer<x2>:EFFiciency: SSCale {RPS|RPM}
:ANALysis<x1>:POWer<x2>:EFFiciency: SSCale?
<x1> = 1
<x2> = 1, 2

Example   :ANALYSIS1:POWER1:EFFICIENCY: SSCALE RPM
:ANALYSIS1:POWER1:EFFICIENCY:SSCALE?
-> :ANALYSIS1:POWER1:EFFICIENCY: SSCALE RPM

Description   This command is valid when the /G05 option is installed.

:ANALysis<x1>:POWer<x2>:EFFiciency:T ORQue

Function   Sets or queries the torque source for the motor efficiency calculation of power analysis.

Syntax   :ANALysis<x1>:POWer<x2>:EFFiciency: TORQue {<NRf>[,<NRf>]}
:ANALysis<x1>:POWer<x2>:EFFiciency: TORQue?
<x1> = 1
<x2> = 1, 2
<NRf> = 1 to 32

Example   :ANALYSIS1:POWER1:EFFICIENCY: TORQUE 9
:ANALYSIS1:POWER1:EFFICIENCY:TORQUE?
-> :ANALYSIS1:POWER1:EFFICIENCY: TORQUE 9

Description   • This command is valid when the /G05 option is installed.
• Sub channels are supported only on the 720254 or 720256 (4-CH module).

:ANALysis<x1>:POWer<x2>:INTegration?

Function   (Upper-level query) Queries all integration settings of power analysis.

Syntax   :ANALysis<x1>:POWer<x2>:INTegration?
<x1> = 1
<x2> = 1, 2
When <x2> = 1: All integration settings of Wiring System1
When <x2> = 2: All integration settings of Wiring System2

Description   This command is valid when the /G05 option is installed.

:ANALysis<x1>:POWer<x2>:INTegration: CALExecute

Function   Calibrates the integration calculation of power analysis.

Syntax   :ANALysis<x1>:POWer<x2>:INTegration: CALExecute
<x1> = 1
<x2> = 1, 2

Example   :ANALYSIS1:POWER1:INTEGRATION: CALEXECUTE

Description   This command is valid when the /G05 option is installed.

:ANALysis<x1>:POWer<x2>:INTegration: CONDition

Function   Sets or queries the integration condition for the power analysis integration.

Syntax   :ANALysis<x1>:POWer<x2>:INTegration: CONDition {ALLTimes|IACQuisition}
:ANALysis<x1>:POWer<x2>:INTegration: CONDition?
<x1> = 1
<x2> = 1, 2
ALLTimes: Integration at all times
IACQuisition: Integration only during measurement

Example   :ANALYSIS1:POWER1:INTEGRATION: CONDITION ALLTIMES
:ANALYSIS1:POWER1:INTEGRATION: CONDITION?
-> :ANALYSIS1:POWER1:INTEGRATION: CONDITION ALLTIMES

Description   • This command is valid when the /G05 option is installed.
• Default value: ALLTimes

:ANALysis<x1>:POWer<x2>:INTegration: MRESet

Function   Manually resets the integrated value of power analysis.

Syntax   :ANALysis<x1>:POWer<x2>:INTegration: MRESet
<x1> = 1
<x2> = 1, 2

Example   :ANALYSIS1:POWER1:INTEGRATION:MRESET

Description   This command is valid when the /G05 option is installed.

:ANALysis\<x1>:POWer\<x2>:INTegration:RCONdition

Function | Sets or queries whether the integrated value is reset when the power analysis integration starts.
Syntax | :ANALysis\<x1>:POWer\<x2>:INTegration:RCONdition {\<Boolean>}
:ANALysis\<x1>:POWer\<x2>:INTegration:RCONdition?
\<x1> = 1
\<x2> = 1, 2
Example | :ANALYSIS1:POWER1:INTEGRATION:RCONDITION 1
:ANALYSIS1:POWER1:INTEGRATION:RCONDITION?
-> :ANALYSIS1:POWER1:INTEGRATION:RCONDITION 1
Description | • This command is valid when the /G05 option is installed.
• Default value: ON

:ANALysis\<x1>:POWer\<x2>:INTegration:SCALing

Function | Sets or queries the scaling for the power analysis integration.
Syntax | :ANALysis\<x1>:POWer\<x2>:INTegration:SCALing {SECond|HOUR}
:ANALysis\<x1>:POWer\<x2>:INTegration:SCALing?
\<x1> = 1
\<x2> = 1, 2
Example | :ANALYSIS1:POWER1:INTEGRATION:SCALING SECOND
:ANALYSIS1:POWER1:INTEGRATION:SCALING?
-> :ANALYSIS1:POWER1:INTEGRATION:SCALING SECOND
Description | • This command is valid when the /G05 option is installed.
• Default value: HOUR

:ANALysis\<x1>:POWer\<x2>:\<Parameter>?

Function | (Upper-level query) Queries all power analysis settings.
Syntax | :ANALysis\<x1>:POWer\<x2>:\<Parameter>?
\<x1> = 1
\<x2> = 1, 2
Description | This command is valid when the /G05 option is installed.

:ANALysis\<x1>:POWer\<x2>:\<Parameter>:{PH1|PH2|PH3|SIGMa}?

Function | (Upper-level query) Queries all settings related to a specific analysis item of power analysis.
Syntax | :ANALysis\<x1>:POWer\<x2>:\<Parameter>?
\<x1> = 1
\<x2> = 1, 2
Description | This command is valid when the /G05 option is installed.

:ANALysis\<x1>:POWer\<x2>:\<Parameter>:{PH1|PH2|PH3|SIGMa}:LABel

Function | Sets or queries the label of an analysis item in power analysis.
Syntax | :ANALysis\<x1>:POWer\<x2>:\<Parameter>:{PH1|PH2|PH3|SIGMa}:LABel {\<String>}
:ANALysis\<x1>:POWer\<x2>:\<Parameter>:{PH1|PH2|PH3|SIGMa}:LABel?
\<x1> = 1
\<x2> = 1, 2
\<String> = Up to 16 characters
Example | :ANALYSIS1:POWER1:URMS:PH1:LABEL "AAA"
:ANALYSIS1:POWER1:URMS:PH1:LABEL?
-> :ANALYSIS1:POWER1:URMS:PH1:LABEL "AAA"
Description | • For the analysis items, see "Parameter list."
• This command is valid when the /G05 option is installed.

\<Parameter> When the analysis mode is set to 1 Wiring System

Parameter	Phases
URMS	{PH1|PH2|PH3|SIGMa}
IRMS	{PH1|PH2|PH3|SIGMa}
UDC	{PH1|PH2|PH3|SIGMa}
IDC	{PH1|PH2|PH3|SIGMa}
UAC	{PH1|PH2|PH3|SIGMa}
IAC	{PH1|PH2|PH3|SIGMa}
P (Active Power)	{PH1|PH2|PH3|SIGMa}
S (Apparent Power)	{PH1|PH2|PH3|SIGMa}
Q (Reactive Power)	{PH1|PH2|PH3|SIGMa}
LAMBda (Power Factor : λ)	{PH1|PH2|PH3|SIGMa}
PHI (PhaseDifference : Φ)	{PH1|PH2|PH3|SIGMa}
FU	{PH1|PH2|PH3}
FI	{PH1|PH2|PH3}
UPPK (U+pk)	{PH1|PH2|PH3}
UMPK (U-pk)	{PH1|PH2|PH3}
IPPK (I+pk)	{PH1|PH2|PH3}
IMPK (I-pk)	{PH1|PH2|PH3}
PPPK (P+pk)	{PH1|PH2|PH3}
PMPK (P-pk)	{PH1|PH2|PH3}
WH (WattHours : WP)	{PH1|PH2|PH3|SIGMa}
WHP (WattHours : WP+)	{PH1|PH2|PH3|SIGMa}
WHM (WattHours : WP-)	{PH1|PH2|PH3|SIGMa}
AH (AmpereHours : q)	{PH1|PH2|PH3|SIGMa}
AHP (AmpereHours : q+)	{PH1|PH2|PH3|SIGMa}
AHM (AmpereHours : q-)	{PH1|PH2|PH3|SIGMa}
WS (Volt-ampere hours)	{PH1|PH2|PH3|SIGMa}
WQ (Var hours)	{PH1|PH2|PH3|SIGMa}
Z (Impedance of the load circuit)	{PH1|PH2|PH3|SIGMa}
R (Resistance of the load circuit)	{PH1|PH2|PH3|SIGMa}
X (Reactance of the load circuit)	{PH1|PH2|PH3|SIGMa}
PM (Motor drive efficiency)	
ETA (Efficiency)	
UUBF (Three-phase voltage unbalance factor)	
IUBF (Three-phase current unbalance factor)	
IN (Neutral line current)	
TIME (Integration time)	

<Parameter> When the analysis mode is set to 2 Wiring Systems

URMS	{PH1|SIGMa}
IRMS	{PH1|SIGMa}
UDC	{PH1|SIGMa}
IDC	{PH1|SIGMa}
UAC	{PH1|SIGMa}
IAC	{PH1|SIGMa}
P (Active Power)	{PH1|SIGMa}
S (Apparent Power)	{PH1|SIGMa}
Q (Reactive Power)	{PH1|SIGMa}
LAMBda (Power Factor λ)	{PH1|SIGMa}
PHI (PhaseDifference : Φ)	{PH1|SIGMa}
FU	{PH1|PH2|PH3}
FI	{PH1|PH2|PH3}
UPPK (U+pk)	{PH1|PH2|PH3}
UMPK (U-pk)	{PH1|PH2|PH3}
IPPK (I+pk)	{PH1|PH2|PH3}
IMPK (I-pk)	{PH1|PH2|PH3}
PPPK (P+pk)	{PH1|PH2|PH3}
PMPK (P-pk)	{PH1|PH2|PH3}
WH (WattHours : WP)	{PH1|SIGMa}
WHP (WattHours : WP+)	{PH1|SIGMa}
WHM (WattHours : WP-)	{PH1|SIGMa}
AH (AmpereHours : q)	{PH1|SIGMa}
AHP (AmpereHours : q+)	{PH1|SIGMa}
AHM (AmpereHours : q-)	{PH1|SIGMa}
WS (Volt-ampere hours)	{PH1|SIGMa}
WQ (Var hours)	{PH1|SIGMa}
Z (Impedance of the load circuit)	{PH1|SIGMa}
R (Resistance of the load circuit)	{PH1|SIGMa}
X (Reactance of the load circuit)	{PH1|SIGMa}
PM (Motor output (drive efficiency))	
ETA (Efficiency)	
UUBF (Three-phase voltage unbalance factor)	
IUBF (Three-phase current unbalance factor)	
IN (Neutral line current)	
TIME (Integration time)	

:ANALysis<x1>:POWer<x2>:<Parameter>:{PH1|PH2|PH3|SIGMa}:SCALe

Function   Sets or queries the scale boundaries (upper and lower) of an analysis item in power analysis.

Syntax   :ANALysis<x1>:POWer<x2>:<Parameter>:
{PH1|PH2|PH3|SIGMa}:
SCALe {<NRf>,<NRf>}
:ANALysis<x1>:POWer<x2>:<Parameter>:
{PH1|PH2|PH3|SIGMa}:SCALe?
<x1> = 1
<x2> = 1, 2
<NRf> = -9.9999E+30 to +9.9999E+30

Example   :ANALYSIS1:POWER1:URMS:PH1:
SCALE 4,-4
:ANALYSIS1:POWER1:URMS:PH1:SCALE?
-> :ANALYSIS1:POWER1:URMS:PH1:
SCALE 4.00000E+00,-4.00000E+00

Description • For the analysis items, see "Parameter list."
• This command is valid when the /G05 option is installed.
• This command is valid when DIV/Scale is set to SPAN.

:ANALysis<x1>:POWer<x2>:<Parameter>:{PH1|PH2|PH3|SIGMa}:STATe

Function   Sets or queries the on/off status of an analysis item in power analysis.

Syntax   :ANALysis<x1>:POWer<x2>:<Parameter>:
{PH1|PH2|PH3|SIGMa}:
STATe {<Boolean>}
:ANALysis<x1>:POWer<x2>:<Parameter
{PH1|PH2|PH3|SIGMa}:STATe?
<x1> = 1
<x2> = 1, 2

Example   :ANALYSIS1:POWER1:URMS:PH1:STATE 1
:ANALYSIS1:POWER1:URMS:PH1:STATE?
-> :ANALYSIS1:POWER1:URMS:PH1:
STATE 1

Description • For the analysis items, see "Parameter list."
• This command is valid when the /G05 option is installed.

:ANALysis<x1>:POWer<x2>:LCCType (Load Circuit Connection Type)

Function   Sets or queries the load circuit connection type in power analysis.

Syntax   :ANALysis<x1>:POWer<x2>:
LCCType {SERies|PARallel}
:ANALysis<x1>:POWer<x2>:LCCType?
<x1> = 1
<x2> = 1, 2

Example   :ANALYSIS1:POWER2:LCCTYPE SERIES
:ANALYSIS1:POWER2:LCCTYPE?
-> :ANALYSIS1:POWER2:LCCTYPE SERIES

Description • This command is valid when the /G05 option is installed.
• Default value: SERies

:ANALysis<x1>:POWer<x2>:PSCale

Function   Sets or queries the φ (phase difference) scale in power analysis.

Syntax   :ANALysis<x1>:POWer<x2>:
            PSCale {DEGRee|RADian}
            :ANALysis<x1>:POWer<x2>:PSCale?
            <x1> = 1
            <x2> = 1, 2

Example   :ANALYSIS1:POWER1:PSCALE RADIAN
            :ANALYSIS1:POWER1:PSCALE?
            -> :ANALYSIS1:POWER1:PSCALE RADIAN

Description • This command is valid when the /G05 option is installed.
            • Default value: DEGRee

:ANALysis<x1>:POWer<x2>:QFORmula

Function   Sets or queries the reactive power formula type of power analysis.

Syntax   :ANALysis<x1>:POWer<x2>:
            QFORmula {TYPE1|TYPE2}
            :ANALysis<x1>:POWer<x2>:QFORmula?
            <x1> = 1
            <x2> = 1, 2

Example   :ANALYSIS1:POWER1:QFORMULA TYPE1
            :ANALYSIS1:POWER1:QFORMULA?
            -> :ANALYSIS1:POWER1:QFORMULA TYPE1

Description • This command is valid when the /G05 option is installed.
            • Default value: TYPE2

:ANALysis<x1>:POWer<x2>:RTYPe

Function   Sets or queries the RMS type of an analysis item in power analysis.

Syntax   :ANALysis<x1>:POWer<x2>:
            RTYPe {TRMS|RMEan}
            :ANALysis<x1>:POWer<x2>:RTYPe?
            <x1> = 1
            <x2> = 1, 2
            TRMS: True RMS (True RMS)
            RMEan: Rectified mean value calibrated to the rms value (Rect. Mean)

Example   :ANALYSIS1:POWER1:RTYPE RMEAN
            :ANALYSIS1:POWER1:RTYPE?
            -> :ANALYSIS1:POWER1:RTYPE RMEAN

Description • This command is valid when the /G05 option is installed.
            • Default value: TRMS

:ANALysis<x1>:POWer<x2>:SOURce?

Function   (Upper-level query) Queries all source channel settings of power analysis.

Syntax   :ANALysis<x1>:POWer<x2>:SOURce?
            <x1> = 1
            <x2> = 1, 2

Description This command is valid when the /G05 option is installed.

:ANALysis<x1>:POWer<x2>:SOURce:I1

Function   Sets or queries source channel I1 in power analysis.

Syntax   :ANALysis<x1>:POWer<x2>:
            SOURce:I1 {<NRf>[,<NRf>]}
            :ANALysis<x1>:POWer<x2>:SOURce:I1?
            <x1> = 1
            <x2> = 1, 2
            <NRf> = 1 to 16

Example   :ANALYSIS1:POWER1:SOURCE:I1 2
            :ANALYSIS1:POWER1:SOURCE:I1?
            -> :ANALYSIS1:POWER1:SOURCE:I1 2

Description • This command is valid when the /G05 option is installed.
            • Sub channels are supported only on the 720254 or 720256 (4-CH module).

:ANALysis<x1>:POWer<x2>:SOURce:I2

Function   Sets or queries source channel I2 in power analysis.

Syntax   :ANALysis<x1>:POWer<x2>:
            SOURce:I2 {<NRf>}
            :ANALysis<x1>:POWer<x2>:SOURce:I2?
            <x1> = 1
            <x2> = 1, 2
            <NRf> = 1 to 16

Example   :ANALYSIS1:POWER1:SOURCE:I2 2
            :ANALYSIS1:POWER1:SOURCE:I2?
            -> :ANALYSIS1:POWER1:SOURCE:I2 2

Description • This command is valid when the /G05 option is installed.
            • This is invalid when the wiring system is 1P2W.

:ANALysis<x1>:POWer<x2>:SOURce:I3

Function   Sets or queries source channel I3 in power analysis.

Syntax   :ANALysis<x1>:POWer<x2>:
            SOURce:I3 {<NRf>}
            :ANALysis<x1>:POWer<x2>:SOURce:I3?
            <x1> = 1
            <x2> = 1, 2
            <NRf> = 1 to 16

Example   :ANALYSIS1:POWER1:SOURCE:I3 2
            :ANALYSIS1:POWER1:SOURCE:I3?
            -> :ANALYSIS1:POWER1:SOURCE:I3 2

Description • This command is valid when the /G05 option is installed.
            • This command is invalid when the wiring system is 1P2W, 1P3W, 3P3W, or 3P3W→3V3A.

4

Commands

:ANALysis\<x1>:POWer\<x2>:SOURce:U1

Function   Sets or queries source channel U1 in power
            analysis.

Syntax   :ANALysis\<x1>:POWer\<x2>:
            SOURce:U1 {\<NRf>[,\<NRf>]}
            :ANALysis\<x1>:POWer\<x2>:SOURce:U1?
            \<x1> = 1
            \<x2> = 1, 2
            \<NRf> = 1 to 16

Example   :ANALYSIS1:POWER1:SOURCE:U1 1
            :ANALYSIS1:POWER1:SOURCE:U1?
            -> :ANALYSIS1:POWER1:SOURCE:U1 1

Description • This command is valid when the /G05 option is
              installed.
            • Sub channels are supported only on the
              720254 or 720256 (4-CH module).

:ANALysis\<x1>:POWer\<x2>:SOURce:U2

Function   Sets or queries source channel U2 in power
            analysis.

Syntax   :ANALysis\<x1>:POWer\<x2>:
            SOURce:U2 {\<NRf>}
            :ANALysis\<x1>:POWer\<x2>:SOURce:U2?
            \<x1> = 1
            \<x2> = 1, 2
            \<NRf> = 1 to 16

Example   :ANALYSIS1:POWER1:SOURCE:U2 1
            :ANALYSIS1:POWER1:SOURCE:U2?
            -> :ANALYSIS1:POWER1:SOURCE:U2 1

Description • This command is valid when the /G05 option is
              installed.
            • This is invalid when the wiring system is 1P2W.

:ANALysis\<x1>:POWer\<x2>:SOURce:U3

Function   Sets or queries source channel U3 in power
            analysis.

Syntax   :ANALysis\<x1>:POWer\<x2>:
            SOURce:U3 {\<NRf>}
            :ANALysis\<x1>:POWer\<x2>:SOURce:U3?
            \<x1> = 1
            \<x2> = 1, 2
            \<NRf> = 1 to 16

Example   :ANALYSIS1:POWER1:SOURCE:U3 1
            :ANALYSIS1:POWER1:SOURCE:U3?
            -> :ANALYSIS1:POWER1:SOURCE:U3 1

Description • This command is valid when the /G05 option is
              installed.
            • This command is invalid when the
              wiring system is 1P2W, 1P3W, 3P3W, or
              3P3W→3V3A.

:ANALysis\<x1>:POWer\<x2>:TERM?

Function   (Upper-level query) Queries all calculation period
            settings of power analysis (Wiring System1 or
            Wiring System2).

Syntax   :ANALysis\<x1>:POWer\<x2>:TERM?
            \<x1> = 1
            \<x2> = 1, 2
            When \<x2> = 1: Calculation period setting of
                            Wiring System1
            When \<x2> = 2: Calculation period setting of
                            Wiring System2

Description This command is valid when the /G05 option is
            installed.

:ANALysis\<x1>:POWer\<x2>:TERM:ATIMer

Function   Sets or queries the update time of the calculation
            period in power analysis.

Syntax   :ANALysis\<x1>:POWer\<x2>:
            ATIMer {\<Time>}
            :ANALysis\<x1>:POWer\<x2>:ATIMer?
            \<x1> = 1
            \<x2> = 1, 2
            \<NRf> = 100ns to 500ms

Example   :ANALYSIS1:POWER1:TERM:
            ATIMER 500E-3
            :ANALYSIS1:POWER1:TERM:ATIMER?
            -> :ANALYSIS1:POWER1:TERM:
               ATIMER 500.000E-3

Description • This command is valid when the /G05 option is
              installed.
            • This command is valid when the calculation
              period type is set to Auto Timer or AC+DC.
            • Default value: 20ms

:ANALysis<x1>:POWer<x2>:TERM:ESFilter

Function   Sets or queries the edge source filter for the calculation period in power analysis.

Syntax   :ANALysis<x1>:POWer<x2>:TERM:
            ESFilter {OFF|<Frequency>}
            :ANALysis<x1>:POWer<x2>:TERM:
            ESFilter?
            <x1> = 1
            <x2> = 1, 2
            <Frequency> = 62.5Hz, 125Hz, 250Hz, 500Hz,
                          1kHz, 2kHz, 4kHz, 8kHz, 16kHz,
                          32kHz, 64kHz, 128kHz

Example   :ANALYSIS1:POWER1:TERM:
            ESFILTER 128kHz
            :ANALYSIS1:POWER1:TERM:ESFILTER?
            -> :ANALYSIS1:POWER1:TERM:
               ESFILTER 128E+03

Description • This command is valid when the /G05 option is installed.
            • This command is invalid when the calculation period type is set to Auto Timer.
            • Default value: OFF

:ANALysis<x1>:POWer<x2>:TERM:ESLope

Function   Sets or queries the source slope of the calculation period in power analysis.

Syntax   :ANALysis<x1>:POWer<x2>:TERM:
            ESLope {RISE|FALL|BISLope}
            :ANALysis<x1>:POWer<x2>:TERM:ESLope?
            <x1> = 1
            <x2> = 1, 2

Example   :ANALYSIS1:POWER1:TERM:ESLOPE RISE
            :ANALYSIS1:POWER1:TERM:ESLOPE?
            -> :ANALYSIS1:POWER1:TERM:
               ESLOPE RISE

Description • This command is valid when the /G05 option is installed.
            • Default value: RISE

:ANALysis<x1>:POWer<x2>:TERM:ESOurce

Function   Sets or queries the edge detection source channel for the calculation period in power analysis.

Syntax   :ANALysis<x1>:POWer<x2>:TERM:
            ESOurce {<NRf>|U1|U2|U3|I1|I2|I3|
            OTHer}
            :ANALysis<x1>:POWer<x2>:TERM:
            ESOurce?
            <x1> = 1
            <x2> = 1, 2
            <NRf> = 17 to 32

Example   :ANALYSIS1:POWER1:TERM:ESOURCE U1
            :ANALYSIS1:POWER1:TERM:ESOURCE?
            -> :ANALYSIS1:POWER1:TERM:ESOURCE U1

Description • This command is valid when the /G05 option is installed.
            • The RMATh channels that you can specify are those with the input set to ON and the operator set to Rotary Angle or Resolver.
            • This command is invalid when the calculation period type is set to Auto Timer.

:ANALysis<x1>:POWer<x2>:TERM:HYSTeresis

Function   Sets or queries the hysteresis for the calculation period in power analysis.

Syntax   :ANALysis<x1>:POWer<x2>:TERM:
            HYSTeresis {HIGH|LOW|MIDDle}
            :ANALysis<x1>:POWer<x2>:TERM:
            HYSTeresis?
            <x1> = 1
            <x2> = 1, 2

Example   :ANALYSIS1:POWER1:TERM:
            HYSTERESIS MIDDLE
            :ANALYSIS1:POWER1:TERM:HYSTERESIS?
            -> :ANALYSIS1:POWER1:TERM:
               HYSTERESIS MIDDLE

Description • This command is valid when the /G05 option is installed.
            • This command is invalid when the calculation period type is set to Auto Timer.
            • Default value: LOW

:ANALysis<x1>:POWer<x2>:TERM:LEVel

Function   Sets or queries the source level of the calculation period in power analysis.

Syntax   :ANALysis<x1>:POWer<x2>:TERM:
            LEVel {<NRf>}
            :ANALysis<x1>:POWer<x2>:TERM:LEVel?
            <x1> = 1
            <x2> = 1, 2

Example   :ANALYSIS1:POWER1:TERM:LEVEL 0
            :ANALYSIS1:POWER1:TERM:LEVEL?
            -> :ANALYSIS1:POWER1:TERM:LEVEL 0.0

Description • This command is valid when the /G05 option is installed.
            • Default value: 0.0

:ANALysis\<x1\>:POWer\<x2\>:TERM:STOPpre dict

Function   Sets or queries the stop prediction of the calculation period in power analysis.

Syntax   :ANALysis\<x1\>:POWer\<x2\>:TERM: STOPpredict {\<NRf\>}
:ANALysis\<x1\>:POWer\<x2\>:TERM: STOPpredict?
\<x1\> = 1
\<x2\> = 1, 2
\<NRf\> = 2, 4, 8, 16

Example   :ANALYSIS1:POWER1:TERM:STOPPREDICT 8
:ANALYSIS1:POWER1:TERM:STOPPREDICT?
-> :ANALYSIS1:POWER1:TERM: STOPPREDICT 8

Description   • This command is valid when the /G05 option is installed.
• This command is valid when the calculation period type is set to AC or AC+DC.
• Default value: 2

:ANALysis\<x1\>:POWer\<x2\>:TERM:TYPE

Function   Sets or queries the calculation period type in power analysis.

Syntax   :ANALysis\<x1\>:POWer\<x2\>:TERM: TYPE {EDGE|ATIMer|AC_DC}
:ANALysis\<x1\>:POWer\<x2\>:TERM:TYPE?
\<x1\> = 1
\<x2\> = 1, 2

Example   :ANALYSIS1:POWER1:TERM:TYPE AC_DC
:ANALYSIS1:POWER1:TERM:TYPE?
-> :ANALYSIS1:POWER1:TERM:TYPE AC_DC

Description   • This command is valid when the /G05 option is installed.
• Default value: EDGE

:ANALysis\<x1\>:POWer\<x2\>:TERM:OCHann el (Other Channel)

Function   Sets or queries the channel number when the edge detection source for the calculation period is set to Other Channel in power analysis.

Syntax   :ANALysis\<x1\>:POWer\<x2\>:TERM: OCHannel {\<NRf\>[,\<NRf\>]}
:ANALysis\<x1\>:POWer\<x2\>:TERM: OCHannel?
\<x1\> = 1
\<x2\> = 1, 2
\<NRf\> = 1 to 16

Example   :ANALYSIS1:POWER1:TERM:OCHANNEL 1
:ANALYSIS1:POWER1:TERM:OCHANNEL?
-> :ANALYSIS1:POWER1:TERM: OCHANNEL 1

Description   • This command is valid when the /G05 option is installed.
• Sub channels are supported only on the 720254 or 720256 (4-CH module).
• This command is invalid when the calculation period type is set to Auto Timer.
• Default value: 0 (OFF)

:ANALysis\<x1\>:POWer\<x2\>:TERM:ZOSTopp redict
(Zero Output after StopPredict)

Function   Sets or queries whether output is set to zero after a power analysis stop prediction.

Syntax   :ANALysis\<x1\>:POWer\<x2\>:TERM: ZOSToppredict {\<Boolean\>}
:ANALysis\<x1\>:POWer\<x2\>:TERM: ZOSToppredict?
\<x1\> = 1
\<x2\> = 1, 2
\<NRf\> = 1 to 16

Example   :ANALYSIS1:POWER1:TERM: ZOSTOPPREDICT ON
:ANALYSIS1:POWER1:TERM: ZOSTOPPREDICT?
-> :ANALYSIS1:POWER1:TERM: ZOSTOPPREDICT 1

Description   • This command is valid when the calculation period type is AC_DC.
• Default value: 0 (OFF)

:ANALysis\<x1\>:POWer\<x2\>:WIRing

Function   Sets or queries the wiring system in power analysis.

Syntax   :ANALysis\<x1\>:POWer\<x2\>: WIRing {P1W2|P1W3|P3W3|V3A3|P3W4| V3AR3},{OFF|P3W3_V3A3|DT_ST|ST_DT}
:ANALysis\<x1\>:POWer\<x2\>:WIRing?
\<x1\> = 1
\<x2\> = 1, 2
First parameter: wiring system
Second parameter: delta math
OFF is valid on all wiring systems.
P3W3_V3A3 is valid for 3P3W.
DT_ST is valid for 3P3W, 3V3A and 3V3AR (delta to star conversion).
ST_DT is valid for 3P4W (star to delta conversion).

Example   :ANALYSIS1:POWER1:WIRING P3W3,OFF
:ANALYSIS1:POWER1:WIRING?
-> :ANALYSIS1:POWER1: WIRING P3W4,ST_DT

Description   • This command is valid when the /G05 option is installed.
• Default value: P1W2, OFF

4.4   ASETup Group

The commands in this group deal with auto setup. You can execute the same operation that you can by using the SETUP (CAL) key on the front panel.

:ASETup:EXECute
Function   Executes auto setup.
Syntax   :ASETup:EXECute

4.5 CALibrate Group

The commands in this group deal with calibration. You can perform the same operations and make the same settings and queries that you can by using the SHIFT+SETUP (CAL) keys on the front panel.

:CALibrate?
Function (Upper-level query) Queries all calibration settings.
Syntax :CALibrate?

:CALibrate[:EXECute]
Function Executes calibration.
Syntax :CALibrate[:EXECute]
Description • This command is different from the common command *CAL? in that this command does not return the results when the calibration is completed.
• This command cannot be executed while measuring in free run mode or during SSD recording.

:CALibrate:MODE
Function Sets or queries the auto calibration mode.
Syntax :CALibrate:MODE {AUTO|OFF}
:CALibrate:MODE?
Example :CALIBRATE:MODE AUTO
:CALIBRATE:MODE?
-> :CALIBRATE:MODE AUTO
Description Default value: AUTO

:CALibrate:SBOCancel?
Function (Upper-level query) Queries all settings related to the collective execution of strain balancing on all channels and the collective execution of DC offset cancellation on all channels.
Syntax :CALibrate:SBOCancel?

:CALibrate:SBOCancel:CHANnel<x>
(Strain Balance & Offset Cancel)
Function Sets or queries whether the channel is included in the collective execution of strain balancing on channels or the collective execution of DC offset cancellation on all channels.
Syntax :CALibrate:SBOCancel:
CHANnel<x> {<Boolean>}
:CALibrate:SBOCancel:CHANnel<x>?
<x> = 1 to 16 (but strain module or 701250, 701255, or 701251 module)
Example :CALIBRATE:SBOCANCEL:CHANNEL12 ON
:CALIBRATE:SBOCANCEL:CHANNEL12?
-> :CALIBRATE:SBOCANCEL:CHANNEL12 1
Description Default value: ON

:CALibrate:SBOCancel:CHANnel<x1>:
SCHannel<x2>[:STATus]
Function Sets or queries whether the channel is included in the collective execution of strain balancing on channels or the collective execution of DC offset cancellation on all channels.
Syntax :CALibrate:SBOCancel:CHANnel<x1>:
SCHannel<x2> {<Boolean>}
:CALibrate:SBOCancel:CHANnel<x1>:
SCHannel<x2>?
<x1> = 1 to 4 (but 720254 or 720256 module)
<x2> = 1, 2
Example :CALIBRATE:SBOCANCEL:CHANNEL1:
SCHANNEL1 ON
:CALIBRATE:SBOCANCEL:CHANNEL1:
SCHANNEL1?
-> :CALIBRATE:SBOCANCEL:CHANNEL1:
:SCHANNEL1 1
Description Default value: ON

:CALibrate:SBOCancel:EXECute
Function Executes strain balancing on channels collectively or DC offset cancellation on all channels collectively.
Syntax :CALibrate:SBOCancel:EXECute
Example :CALIBRATE:SBOCANCEL:EXECUTE

4.6 CAPTure Group

The commands in this group deal with the dual capture feature. You can make the same settings and queries that you can make by pressing SHIFT+ACQUIRE (DUAL CAPTURE) on the front panel.

:CAPTure?
Function	(Upper-level query) Queries all dual capture settings.
Syntax	:CAPTure?

:CAPTure:ACTion?
Function	(Upper-level query) Queries all dual-capture-action settings.
Syntax	:CAPTure:ACTion?

:CAPTure:ACTion:BUZZer
Function	Sets or queries whether a beep is sounded as one of the capture actions.
Syntax	:CAPTure:ACTion:BUZZer {<Boolean>}
	:CAPTure:ACTion:BUZZer?
Example	:CAPTURE:ACTION:BUZZER ON
	:CAPTURE:ACTION:BUZZER?
	-> :CAPTURE:ACTION:BUZZER 1
Description	• This setting is shared with the corresponding buzzer settings of other actions.
	• Default value: OFF

:CAPTure:ACTion:FOLDer
Function	Sets or queries whether a date folder is created when waveform data or screen capture data is saved to the storage device when an action is executed.
Syntax	:CAPTure:ACTion:FOLDer {<Boolean>}
	:CAPTure:ACTion:FOLDer?
Example	:CAPTURE:ACTION:FOLDER 1
	:CAPTURE:ACTION:FOLDER?
	-> :CAPTURE:ACTION:FOLDER 1
Description	Default value: 1

:CAPTure:ACTion:MAIL?
Function	(Upper-level query) Queries all dual-capture-action e-mail transmission settings.
Syntax	:CAPTure:ACTion:MAIL?

:CAPTure:ACTion:MAIL:COUNt
Function	Sets or queries the upper limit of e-mail transmissions to perform as a capture action.
Syntax	:CAPTure:ACTion:MAIL:COUNt {INFinity|<NRf>}
	:CAPTure:ACTion:MAIL:COUNt?
	<NRf> = 0 (= Infinite), 1 to 1000
Example	:CAPTURE:ACTION:MAIL:COUNT 100
	:CAPTURE:ACTION:MAIL:COUNT?
	-> :CAPTURE:ACTION:MAIL:COUNT 100
Description	• This setting is shared with the corresponding e-mail transmission settings of other actions.
	• Default value: 100

:CAPTure:ACTion:MAIL:MODE
Function	Sets or queries whether e-mail is transmitted as a capture action.
Syntax	:CAPTure:ACTion:MAIL:MODE {<Boolean>}
	:CAPTure:ACTion:MAIL:MODE?
Example	:CAPTURE:ACTION:MAIL:MODE ON
	:CAPTURE:ACTION:MAIL:MODE?
	-> :CAPTURE:ACTION:MAIL:MODE 1
Description	• This setting is shared with the corresponding e-mail transmission settings of other actions.
	• Default value: OFF

:CAPTure:ACTion:MSAVe (Measure Save)
Function	Sets or queries whether measured data is saved to a storage device as a capture action.
Syntax	:CAPTure:ACTion:MSAVe {<Boolean>}
	:CAPTure:ACTion:MSAVe?
Example	:CAPTURE:ACTION:MSAVE ON
	:CAPTURE:ACTION:MSAVE?
	-> :CAPTURE:ACTION:MSAVE 1
Description	Default value: OFF

:CAPTure:ACTion:SAVE?
Function	(Upper-level query) Queries all dual-capture-action data save settings.
Syntax	:CAPTure:ACTion:SAVE?

`:CAPTure:ACTion:SAVE:ANAMing`

Function	Sets or queries the auto file naming method.
Syntax	`:CAPTure:ACTion:SAVE:ANAMing {DATE|NUMBering}` `:CAPTure:ACTion:SAVE:ANAMing?`

Example	`:CAPTURE:ACTION:SAVE:ANAMING NUMBERING`
	`:CAPTURE:ACTION:SAVE:ANAMING?`
	`-> :CAPTURE:ACTION:SAVE:`
	`    ANAMING NUMBERING`

Description	• This setting is shared with the auto-naming settings of other actions. • Default value: NUMBering

`:CAPTure:ACTion:SAVE:CDIRectory`

Function	Changes the current directory on the storage device where the screen capture is saved to as a capture action.
Syntax	`:CAPTure:ACTion:SAVE:CDIRectory {<String>}`
Example	`:CAPTURE:ACTION:SAVE:CDIRECTORY "ABCD"`

`:CAPTure:ACTion:SAVE[:MODE]`

Function	Sets or queries whether captured data is saved to a storage device as a capture action.
Syntax	`:CAPTure:ACTion:SAVE[:MODE] {<Boolean>}` `:CAPTure:ACTion:SAVE:MODE?`

Example	`:CAPTURE:ACTION:SAVE:MODE ON`
	`:CAPTURE:ACTION:SAVE:MODE?`
	`-> :CAPTURE:ACTION:SAVE:MODE 1`

Description	• This setting is shared with the corresponding data-save settings of other actions. • Default value: OFF

`:CAPTure:ACTion:SAVE:NAME`

Function	Sets or queries the file name that is used when captured data is saved to a storage device.
Syntax	`:CAPTure:ACTion:SAVE:NAME <Filename>` `:CAPTure:ACTion:SAVE:NAME?`

Example	`:CAPTURE:ACTION:SAVE:NAME "ABC"`
	`:CAPTURE:ACTION:SAVE:NAME?`
	`-> :CAPTURE:ACTION:SAVE:NAME "ABC"`

Description	• This setting is shared with other file name settings. • Default value: All spaces

`:CAPTure:ACTion:SAVE:ASCii:MODE`

Function	Sets or queries whether high-speed sampling waveform data is saved to the storage device in ASCII format as a dual capture action.
Syntax	`:CAPTure:ACTion:SAVE:ASCii:MODE {<Boolean>}` `:CAPTure:ACTion:SAVE:ASCii:MODE?`

Example	`:CAPTURE:ACTION:SAVE:ASCII:MODE 1`
	`:CAPTURE:ACTION:SAVE:ASCII:MODE?`
	`-> :CAPTURE:ACTION:SAVE:ASCII:MODE 1`

Description	Default value: 0

`:CAPTure:ACTion:SAVE:BINary:MODE`

Function	Sets or queries whether high-speed sampling waveform data is saved to the storage device in binary format as a dual capture action.
Syntax	`:CAPTure:ACTion:SAVE:BINary:MODE {<Boolean>}` `:CAPTure:ACTion:SAVE:BINary:MODE?`

Example	`:CAPTURE:ACTION:SAVE:BINARY:MODE 1`
	`:CAPTURE:ACTION:SAVE:BINARY:MODE?`
	`-> :CAPTURE:ACTION:SAVE:BINARY:MODE 1`

Description	Default value: 1

`:CAPTure:ACTion:SAVE:MATLab:MODE`

Function	Sets or queries whether high-speed sampling waveform data is saved to the storage device in MATLAB format as an dual capture action.
Syntax	`:CAPTure:ACTion:SAVE:MATLab:MODE {<Boolean>}` `:CAPTure:ACTion:SAVE:MATLab:MODE?`

Example	`:CAPTURE:ACTION:SAVE:MATLAB:MODE 1`
	`:CAPTURE:ACTION:SAVE:MATLAB:MODE?`
	`-> :CAPTURE:ACTION:SAVE:MATLAB:MODE 1`

Description	Default value: 0

`:CAPTure:ACTion:SAVE:DBINary:MODE`
`(DualCapture Binary)`

Function	Sets or queries whether all low-speed and high-speed sampling waveform data is saved to the storage device in WDF format as an dual capture action.
Syntax	`:CAPTure:ACTion:SAVE:DBINary:MODE {<Boolean>}` `:CAPTure:ACTion:SAVE:DBINary:MODE?`

Example	`:CAPTURE:ACTION:SAVE:DBINARY:MODE 1`
	`:CAPTURE:ACTION:SAVE:DBINARY:MODE?`
	`-> :CAPTURE:ACTION:SAVE:DBINARY:MODE 1`

Description	Default value: 0

**:CAPTure:ACTion:SAVE:DASCii:MODE
(DualCapture Ascii)**

Function Sets or queries whether low-speed sampling
waveform data is saved to the storage device in
ASCII format as a dual capture action.

Syntax :CAPTure:ACTion:SAVE:DASCii:
MODE {<Boolean>}
:CAPTure:ACTion:SAVE:DASCii:MODE?

Example :CAPTURE:ACTION:SAVE:DASCII:MODE 1
:CAPTURE:ACTION:SAVE:DASCII:MODE?
-> :CAPTURE:ACTION:SAVE:DASCII:
MODE 1

Description Default value: 0

**:CAPTure:ACTion:SAVE:DMATlab:MODE
(DualCapture MATLAB)**

Function Sets or queries whether low-speed sampling
waveform data is saved to the storage device in
MATLAB format as an dual capture action.

Syntax :CAPTure:ACTion:SAVE:DMATlab:
MODE {<Boolean>}
:CAPTure:ACTion:SAVE:DMATlab:MODE?

Example :CAPTURE:ACTION:SAVE:DMATLAB:MODE 1
:CAPTURE:ACTION:SAVE:DMATLAB:MODE?
-> :CAPTURE:ACTION:SAVE:DMATLAB:
MODE 1

Description Default value: 0

:CAPTure:ANALysis<x>:FORMat

Function Sets or queries the capture window display format
of display group P and H (number of divisions in
the vertical direction).

Syntax :CAPTure:ANALysis<x>:FORMat {MAIN|
<NRf>}
:CAPTure:ANALysis<x>:FORMat?
<NRf> = 1, 2, 3, 4, 5, 6, 8, 12, 16
<X> = 1, 2
1: display group P, 2: display group H

Example :CAPTURE:ANALYSIS1:FORMAT 1
:CAPTURE:ANALYSIS1:FORMAT?
-> :CAPTURE:ANALYSIS1:FORMAT 4

Description • This command is valid when the /G05 option is
installed.
• Default value: MAIN

:CAPTure:CAPNum? MAXimum

Function Queries the largest number of the captured
waveforms.

Syntax :CAPTure:CAPNum? MAXimum

Description This command is valid when waveforms are
acquired with the capture mode set to On Start.

:CAPTure:CAPNum? MINimum

Function Queries the smallest number of the captured
waveforms.

Syntax :CAPTure:CAPNum? MINimum

Description This command is valid when waveforms are
acquired with the capture mode set to Auto.

:CAPTure:FORMat

Function Sets or queries the display format of the high-
speed sampling main window.

Syntax :CAPTure:FORMat {MAIN|<NRf>}
:CAPTure:FORMat?
<NRf> = 1, 2, 3, 4, 5, 6, 8, 12, 16

Example :CAPTURE:FORMAT MAIN
:CAPTURE:FORMAT?
-> :CAPTURE:FORMAT MAIN

Description • The following parameters can be used when
setting. {MAIN|SINGle|DUAL|TRIad|QUAD|OC
Tal|
DHEXa}
• MAIN is the format of the low-speed sampling
main window.
• Default value: MAIN

:CAPTure:GROup<x>?

Function (Upper-level query) Queries all settings related
to the display group of the high-speed sampling
main window.

Syntax :CAPTure:GROup<x>?

:CAPTure:GROup<x>:FORMat

Function Sets or queries the number of divisions of the
high-speed sampling main window.

Syntax :CAPTure:GROup<x>:FORMat {MAIN|
<NRf>}
:CAPTure:GROup<x>:FORMat?
<x> = 1 to 4
<NRf> = 1, 2, 3, 4, 5, 6, 8, 12, 16

Example :CAPTURE:GROUP1:FORMAT 4
:CAPTURE:GROUP1:FORMAT?
-> :CAPTURE:GROUP1:FORMAT 4

Description • When group 1 is Main, the number of divisions
is the number of divisions of the Main window
of low-speed sampling group 1.
• Default value: MAIN

:CAPTure:GROup<x1>:TRACe<x2>

Function Sets or queries the displayed waveform of the
high-speed sampling main window.

Syntax :CAPTure:GROup<x1>:
TRACe<x2> {<Boolean>}
:CAPTure:GROup<x1>:TRACe<x2>?
<x1> = 1 to 4
<x2> = 1 to 64

Example :CAPTURE:GROUP1:TRACE1 1
:CAPTURE:GROUP1:TRACE1?
-> :CAPTURE:GROUP1:TRACE1 1

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:CAPTure:LOW?

Function	(Upper-level query) Queries all settings related to the low-speed sampling main window.
Syntax	:CAPTure:LOW?

:CAPTure:LOW:GROup<x>?

Function	(Upper-level query) Queries all settings related to the display group of the low-speed sampling main window.
Syntax	:CAPTure:LOW:GROup<x>?

:CAPTure:MCMode (Main Capture Mode)

Function	Sets or queries the main capture mode during dual capture.
Syntax	:CAPTure:MCMode {AUTO|ONSTart} :CAPTure:MCMode?
Example	:CAPTURE:MCMODE AUTO :CAPTURE:MCMODE? -> :CAPTURE:MCMODE AUTO
Description	Default value: AUTO

:CAPTure:MODE

Function	Sets or queries whether the dual capture mode is enabled.
Syntax	:CAPTure:MODE {<Boolean>} :CAPTure:MODE?
Example	:CAPTURE:MODE ON :CAPTURE:MODE? -> :CAPTURE:MODE 1
Description	Default value: OFF

:CAPTure:RLENgth

Function	Sets or queries the dual capture length.
Syntax	:CAPTure:RLENgth {<NRf>} :CAPTure:RLENgth? <NRf> = 5000 to 500000 Step: 5000, 10000, 25000, 50000, 100000, 250000, 500000
Example	:CAPTURE:RLENGTH 10000 :CAPTURE:RLENGTH? -> :CAPTURE:RLENGTH 10000
Description	Default value: 10000

:CAPTure:TDIV

Function	Sets or queries the dual capture T/div setting.
Syntax	:CAPTure:TDIV {<Time>} :CAPTure:TDIV? <Time> = 1us to 60s
Example	:CAPTURE:TDIV 100.0E-06 :CAPTURE:TDIV? -> :CAPTURE:TDIV 100.0E-06
Description	Default value: 100us

:CAPTure:WINDow?

Function	(Upper-level query) Queries all settings related to the high-speed sampling display window.
Syntax	:CAPTure:WINDow?

:CAPTure:WINDow:CAPNum

Function	Sets or queries the displayed history number of the high-speed sampling waveform.
Syntax	:CAPTure:WINDow:CAPNum {<NRf>| MAXimum|MINimum} :CAPTure:WINDow:CAPNum? <NRf> = −5000 to 5000
Example	:CAPTURE:WINDOW:CAPNUM −1 :CAPTURE:WINDOW:CAPNUM? -> :CAPTURE:WINDOW:CAPNUM −1
Description	You can select the following numbers.

- When the capture mode is set to Auto
  Current, −1, −2, ...
  Current: Latest waveform
  −1: The waveform before the latest waveform
  −2: Two waveforms before the latest waveform
  If you specify MAXimum, the Current waveform is specified.
  If you specify MINimum, the number of the oldest waveform is specified.
- When the capture mode is set to On Start
  Current, 1, 2, ...
  Current: Latest waveform
  1: The oldest waveform
  2: The second oldest waveform
  If you specify MAXimum, the waveform that was captured before the Current waveform is specified.
  If you specify MINimum, the number of the oldest waveform is specified.

:CAPTure:WINDow:HIGH

Function   Sets or queries the ratio of the main waveform
            display area that is occupied by the high-speed
            sampling waveform.
Syntax   :CAPTure:WINDow:HIGH {20|50|OFF}
            :CAPTure:WINDow:HIGH?
Example   :CAPTURE:WINDOW:HIGH 20
            :CAPTURE:WINDOW:HIGH?
            -> :CAPTURE:WINDOW:HIGH 20
Description Default value: 50

:CAPTure:WINDow:LAYout

Function   Sets or queries the layout for when two analysis
            Windows are displayed for the high-speed
            sampling waveform.
Syntax   :CAPTure:WINDow:LAYout {VERTical|
            SIDE}
            :CAPTure:WINDow:LAYout?
Example   :CAPTURE:WINDOW:LAYOUT SIDE
            :CAPTURE:WINDOW:LAYOUT?
            -> :CAPTURE:WINDOW:LAYOUT SIDE
Description Default value: SIDE
LAY

:CAPTure:WINDow:LOW

Function   Sets or queries the ratio of the waveform display
            area that is occupied by the low-speed sampling
            waveform.
Syntax   :CAPTure:WINDow:LOW {20|50|100|OFF}
            :CAPTure:WINDow:LOW?
Example   :CAPTURE:WINDOW:LOW 20
            :CAPTURE:WINDOW:LOW?
            -> :CAPTURE:WINDOW:LOW 20
Description Default value: 50

:CAPTure:ZOOM?

Function   (Upper-level query) Queries all settings related to
            the high-speed sampling zoom window.
Syntax   :CAPTure:ZOOM?

:CAPTure:ZOOM:ANALysis<x>:FORMat

Function   Sets or queries the number of divisions of power
            and harmonic groups on the high-speed sampling
            zoom window.
Syntax   :CAPTure:ZOOM:ANALysis<x>:
            FORMat {MAIN|<NRf>}
            :CAPTure:ZOOM:ANALysis<x>:FORMat?
            <x> = 1, 2
            <NRf> = 1, 2, 3, 4, 6, 8, 12, 16
Example   :CAPTURE:ZOOM:ANALYSIS1:FORMAT 4
            :CAPTURE:ZOOM:ANALYSIS1:FORMAT?
            -> :CAPTURE:ZOOM:ANALYSIS1:FORMAT 4
Description • If MAIN is selected, the setting of the same
              group on the high-speed sampling main
              window is used.
            • Default value: MAIN

:CAPTure:ZOOM:GROup<x>?

Function   (Upper-level query) Queries all settings related
            to the display group of the high-speed sampling
            zoom window.
Syntax   :CAPTure:ZOOM:GROup<x>?

:CAPTure:ZOOM:GROup<x>:FORMat

Function   Sets or queries the number of divisions of the
            high-speed sampling zoom window.
Syntax   :CAPTure:ZOOM:GROup<x>:
            FORMat {MAIN|<NRf>}
            :CAPTure:ZOOM:GROup<x>:FORMat?
            <x> = 1 to 4
            <NRf> = 1, 2, 3, 4, 6, 8, 12, 16
Example   :CAPTURE:ZOOM:GROUP1:FORMAT 4
            :CAPTURE:ZOOM:GROUP1:FORMAT?
            -> :CAPTURE:ZOOM:GROUP1:FORMAT 4
Description • If MAIN is selected, the main waveform display
              setting on the high-speed sampling main
              window is used.
            • Default value: MAIN

:CAPTure:ZOOM:MAG

Function   Sets or queries the displayed time of the high-
            speed sampling zoom waveform.
Syntax   :CAPTure:ZOOM:MAG {<Time>}
            :CAPTure:ZOOM:MAG?
            <Time> = 1us to 60s
Example   :CAPTURE:ZOOM:MAG 100.0E-06
            :CAPTURE:ZOOM:MAG?
            -> :CAPTURE:ZOOM:MAG 100.0E-06
Description Default value: 100us

:CAPTure:ZOOM:MODe

Function   Sets or queries the display on/off state of the
            high-speed sampling zoom waveform.
Syntax   :CAPTure:ZOOM:MODe {<Boolean>}
            :CAPTure:ZOOM:MODe?
Example   :CAPTURE:ZOOM:MODe ON
            :CAPTURE:ZOOM:MODe?
            -> :CAPTURE:ZOOM:MODe 1
Description Default value: OFF

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:CAPTure:ZOOM:POSition

Function   Sets or queries the horizontal position of the high-speed sampling zoom waveform.

Syntax   :CAPTure:ZOOM:POSition {<NRf>}

          :CAPTure:ZOOM:POSition?

          <NRf> = –5 to 5div

Example   :CAPTURE:ZOOM:POSITION 0

          :CAPTURE:ZOOM:POSITION?

          -> :CAPTURE:ZOOM:

          POSITION 0.000000000000

Description   Default value: 0

4.7 CHANnel Group

The commands in this group deal with a channel's vertical axis. You can make the same settings and queries that you can by using the CH key on the front panel.

:CHANnel<x>?
Function   (Upper-level query) Queries all vertical axis settings of a channel.
Syntax   :CHANnel<x>?

:CHANnel<x>:ACCL?
Function   (Upper-level query) Queries all acceleration/voltage module settings.
Syntax   :CHANnel<x>:ACCL?
        <x> = 1 to 16

:CHANnel<x>:ACCL:BIAS
Function   Sets or queries whether the bias current supply to the acceleration sensors of an acceleration/voltage module is on.
Syntax   :CHANnel<x>:ACCL:BIAS {<Boolean>}
        :CHANnel<x>:ACCL:BIAS?
        <x> = 1 to 16
Example   :CHANNEL1:ACCL:BIAS ON
        :CHANNEL1:ACCL:BIAS?
        -> :CHANNEL1:ACCL:BIAS 1
Description   Default value: OFF

:CHANnel<x>:ACCL:BWIDth
Function   Sets or queries the filter when the input coupling of an acceleration/voltage module is set to acceleration.
Syntax   :CHANnel<x>:ACCL:BWIDth {FULL|AUTO|<Frequency>}
        :CHANnel<x>:ACCL:BWIDth?
        <x> = 1 to 16
        <Frequency> = 4kHz, 400Hz, 40Hz
Example   :CHANNEL1:ACCL:BWIDTH FULL
        :CHANNEL1:ACCL:BWIDTH?
        -> :CHANNEL1:ACCL:BWIDTH FULL
Description   Default value: FULL

:CHANnel<x>:ACCL:COUPling
Function   Sets or queries the input coupling setting of an acceleration/voltage module.
Syntax   :CHANnel<x>:ACCL:COUPling {AC|DC|ACCL|GND}
        :CHANnel<x>:ACCL:COUPling?
        <x> = 1 to 16
Example   :CHANNEL1:ACCL:COUPLING ACCL
        :CHANNEL1:ACCL:COUPLING?
        -> :CHANNEL1:ACCL:COUPLING ACCL
Description   Default value: DC

:CHANnel<x>:ACCL:GAIN
Function   Sets or queries the gain when the input coupling of an acceleration/voltage module is set to acceleration.
Syntax   :CHANnel<x>:ACCL:GAIN {<NRf>}
        :CHANnel<x>:ACCL:GAIN?
        <x> = 1 to 16
        <NRf> = 0.1, 0.2, 0.5, 1, 2, 5, 10, 20, 50, 100
Example   :CHANNEL1:ACCL:GAIN 1.0
        :CHANNEL1:ACCL:GAIN?
        -> :CHANNEL1:ACCL:GAIN 1.0
Description   Default value: 1

:CHANnel<x>:ACCL:POSition
Function   Sets or queries the vertical position when the input coupling of an acceleration/voltage module is set to acceleration.
Syntax   :CHANnel<x>:ACCL:POSition {<NRf>}
        :CHANnel<x>:ACCL:POSition?
        <x> = 1 to 16
        <NRf> = –5.00 to 5.00 (div, in 0.01 steps)
Example   :CHANNEL1:ACCL:POSITION 0.00
        :CHANNEL1:ACCL:POSITION?
        -> :CHANNEL1:ACCL:POSITION 0.00
Description   Default value: 0

:CHANnel<x>:ACCL:SCALe
Function   Sets or queries the upper and lower limits of the screen when the input coupling of an acceleration/voltage module is set to acceleration.
Syntax   :CHANnel<x>:ACCL:SCALe {<NRf>,<NRf>}
        :CHANnel<x>:ACCL:SCALe?
        <x> = 1 to 16
        <NRf> = 1000000 to –1000000
Example   :CHANNEL1:ACCL:
        SCALE 5000.00,-5000.00
        :CHANNEL1:ACCL:SCALE?
        -> :CHANNEL1:ACCL:
            SCALE 5000.00,-5000.00
Description   Default value: 5000.00 to -5000.00

:CHANnel<x>:ACCL:SENSitivity
Function   Sets or queries the sensitivity when the input coupling of an acceleration/voltage module is set to acceleration.
Syntax   :CHANnel<x>:ACCL:SENSitivity {<NRf>}
        :CHANnel<x>:ACCL:SENSitivity?
        <x> = 1 to 16
        <NRf> = 0.1 to 2000
Example   :CHANNEL1:ACCL:SENSITIVITY 1.00
        :CHANNEL1:ACCL:SENSITIVITY?
        -> :CHANNEL1:ACCL:SENSITIVITY 1.00
Description   Default value: 1.00

`:CHANnel<x>:ACCL:UNIT`

Function   Sets or queries the unit when the input coupling of an acceleration/voltage module is set to acceleration.

Syntax   `:CHANnel<x>:ACCL:UNIT {<String>}`
            `:CHANnel<x>:ACCL:UNIT?`
            <x> = 1 to 16
            <String> = Up to 4 characters

Example   `:CHANNEL1:ACCL:UNIT "m/s2"`
            `:CHANNEL1:ACCL:UNIT?`
            `-> :CHANNEL1:ACCL:UNIT "m/s2"`

Description Default value: m/s2

`:CHANnel<x>:ACCL:VARiable`

Function   Sets or queries the scale setting mode when the input coupling of an acceleration/voltage module is set to acceleration.

Syntax   `:CHANnel<x>:ACCL:VARiable {<Boolean>}`
            `:CHANnel<x>:ACCL:VARiable?`
            <x> = 1 to 16

Example   `:CHANNEL1:ACCL:VARIABLE 0`
            `:CHANNEL1:ACCL:VARIABLE?`
            `-> :CHANNEL1:ACCL:VARIABLE 0`

Description Default value: OFF

`:CHANnel<x>:ACCL:ZOOM`

Function   Sets or queries the vertical zoom factor when the input coupling of an acceleration/voltage module is set to acceleration.

Syntax   `:CHANnel<x>:ACCL:ZOOM {<NRf>}`
            `:CHANnel<x>:ACCL:ZOOM?`
            <x> = 1 to 16
            <NRf> = 0.5, 0.556, 0.625, 0.667, 0.714, 0.8, 0.833, 1, 1.11, 1.25, 1.33, 1.43, 1.67, 2, 2.22, 2.5, 3.33, 4, 5, 6.67, 8, 10, 12.5, 16.7, 20, 25, 40, 50

Example   `:CHANNEL1:ACCL:ZOOM 1.000`
            `:CHANNEL1:ACCL:ZOOM?`
            `-> :CHANNEL1:ACCL:ZOOM 1.000`

Description Default value: 1

`:CHANnel<x>:CAN?`

Function   (Upper-level query) Queries all settings of a module that can perform CAN bus monitoring.

Syntax   `:CHANnel<x>:CAN?`
            CAN Bus Monitor Module (720240),
            CAN/CAN FD Monitor Module (720242)
                <x> = 13 to 16
            CAN & LIN Bus Monitor Module (720241)
                <x> = 13, 15

`:CHANnel<x>:CAN:OSOut?`

Function   (Upper-level query) Queries all settings related to one-shot output of a module that can perform CAN bus monitoring.

Syntax   `:CHANnel<x>:CAN:OSOut?`
            CAN Bus Monitor Module (720240),
            CAN/CAN FD Monitor Module (720242)
                <x> = 13 to 16
            CAN & LIN Bus Monitor Module (720241)
                <x> = 13, 15

`:CHANnel<x1>:CAN:OSOut:DATA<x2>`

Function   Sets or queries the value of one-shot output data frame.

Syntax   `:CHANnel<x1>:CAN:OSOut:DATA<x2> {<String>}`
            `:CHANnel<x1>:CAN:OSOut:DATA<x2>?`
            CAN Bus Monitor Module (720240)
                <x1> = 13 to 16
                <x2> = 1 to 8
            CAN & LIN Bus Monitor Module (720241)
                <x1> = 13, 15
                <x2> = 1 to 8
            CAN/CAN FD Monitor Module (720242)
                <x1> = 13 to 16
                <x2> = 1 to 64
            <String> = "0" to "FF"

Example   `:CHANNEL13:CAN:OSOUT:DATA1 "FF"`
            `:CHANNEL13:CAN:OSOUT:DATA1?`
            `-> :CHANNEL13:CAN:OSOUT:DATA1 "FF"`

Description • If a string outside the range is specified, error 151, "Invalid string data," will occur.
            • Default value: 0

`:CHANnel<x>:CAN:OSOut:DLC`
`(Data Length Code)`

Function   Sets or queries the byte size of the data area of one-shot output data frames.

Syntax   `:CHANnel<x>:CAN:OSOut:DLC {<NRf>}`
            `:CHANnel<x>:CAN:OSOut:DLC?`
            CAN Bus Monitor Module (720240),
            CAN/CAN FD Monitor Module (720242)
                <x> = 13 to 16
            CAN & LIN Bus Monitor Module (720241)
                <x> = 13, 15
            <NRf> = 0 to 15

Example   `:CHANNEL13:CAN:OSOUT:DLC 15`
            `:CHANNEL13:CAN:OSOUT:DLC?`
            `-> :CHANNEL13:CAN:OSOUT:DLC 15`

Description Default value: 0

:CHANnel\<x>:CAN:OSOut:EXECute
(One Shot Out)
Function   Executes a one-shot output from a module that can monitor a CAN bus.
Syntax   :CHANnel\<x>:CAN:OSOut:EXECute
CAN Bus Monitor Module (720240),
CAN/CAN FD Monitor Module (720242)
   \<x> = 13 to 16
CAN & LIN Bus Monitor Module (720241)
   \<x> = 13, 15
Example   :CHANNEL13:CAN:OSOUT:EXECUTE

:CHANnel\<x>:CAN:OSOut:FRAMe
Function   Sets or queries the type (data/remote) of one-shot output frames.
Syntax   :CHANnel\<x>:CAN:OSOut:
FRAMe {DATA|REMote}
:CHANnel\<x>:CAN:OSOut:FRAMe?
CAN Bus Monitor Module (720240),
CAN/CAN FD Monitor Module (720242)
   \<x> = 13 to 16
CAN & LIN Bus Monitor Module (720241)
   \<x> = 13, 15
Example   :CHANNEL13:CAN:OSOUT:FRAME DATA
:CHANNEL13:CAN:OSOUT:FRAME?
-> :CHANNEL13:CAN:OSOUT:FRAME DATA
Description Default value: DATA

:CHANnel\<x>:CAN:OSOut:MFORmat
(Message Format)
Function   Sets or queries the message format (standard/extended) of one-shot output frames.
Syntax   :CHANnel\<x>:CAN:OSOut:
MFORmat {EXTended|STANdard}
:CHANnel\<x>:CAN:OSOut:MFORmat?
CAN Bus Monitor Module (720240),
CAN/CAN FD Monitor Module (720242)
   \<x> = 13 to 16
CAN & LIN Bus Monitor Module (720241)
   \<x> = 13, 15
Example   :CHANNEL13:CAN:OSOUT:
MFORMAT EXTENDED
:CHANNEL13:CAN:OSOUT:MFORMAT?
-> :CHANNEL13:CAN:OSOUT:
   MFORMAT EXTENDED
Description Default value: STANdard

:CHANnel\<x>:CAN:OSOut:MID
(Message ID)
Function   Sets or queries the message ID of one-shot output frames.
Syntax   :CHANnel\<x>:CAN:OSOut:MID {\<String>}
:CHANnel\<x>:CAN:OSOut:MID?
CAN Bus Monitor Module (720240),
CAN/CAN FD Monitor Module (720242)
   \<x> = 13 to 16
CAN & LIN Bus Monitor Module (720241)
   \<x> = 13, 15
When the :CHANnel\<x>:CAN:OSOut:MFORmat command is set to STANdard
   \<String> = "0" to "7FF"
When the :CHANnel\<x>:CAN:OSOut:MFORmat command is set to EXTended
   \<String> = "0" to "1FFFFFFF"
Example   :CHANNEL13:CAN:OSOUT:MID "7FF"
:CHANNEL13:CAN:OSOUT:MID?
-> :CHANNEL13:CAN:OSOUT:MID "7FF"
Description Default value: 0

:CHANnel\<x>:CAN:OSOut:MTYPe
(Message Type)
Function   Sets or queries the frame message type (CAN/CAN FD) of one-shot output data.
Syntax   :CHANnel\<x>:CAN:OSOut:
MTYPe {CANMessage|CANFdmessage}
:CHANnel\<x>:CAN:OSOut:MTYPe?
\<x> = 13 to 16
Example   :CHANNEL13:CAN:OSOUT:
MTYPE CANFDMESSAGE
:CHANNEL13:CAN:OSOUT:MTYPE?
-> :CHANNEL13:CAN:OSOUT:
   MTYPE CANFDMESSAGE
Description This command is valid when the CAN/CAN FD monitor module (720242) is installed.

:CHANnel\<x>:CAN:PORT?
Function   (Upper-level query) Queries all settings related to the specified port of a module that can perform CAN bus monitoring.
Syntax   :CHANnel\<x>:CAN:PORT?
CAN Bus Monitor Module (720240),
CAN/CAN FD Monitor Module (720242)
   \<x> = 13 to 16
CAN & LIN Bus Monitor Module (720241)
   \<x> = 13, 15

`:CHANnel<x>:CAN:PORT:BRATe`

Function   Sets or queries the bit rate of the specified CAN bus signal port.

Syntax   `:CHANnel<x>:CAN:PORT:BRATe {<NRf>}`
`:CHANnel<x>:CAN:PORT:BRATe?`
CAN Bus Monitor Module (720240),
CAN/CAN FD Monitor Module (720242)
   `<x>` = 13 to 16
CAN & LIN Bus Monitor Module (720241)
   `<x>` = 13, 15
`<NRf>` = 10000, 20000, 33300, 50000, 62500,
        66700, 83300, 100000, 125000,
        250000, 500000, 800000, 1000000

Example   `:CHANNEL13:CAN:PORT:BRATE 33300`
`:CHANNEL13:CAN:PORT:BRATE?`
`-> :CHANNEL13:CAN:PORT:BRATE 33300`

Description • When the CAN/CAN FD monitor module (720242) is installed, this command sets the bit rate of the CAN FD arbitration phase. To set the bit rate of the CAN FD data phase, use the :CHANnel<x>:CAN:PORT:DBRate command.
• Default value: 500000

`:CHANnel<x>:CAN:PORT:BSNum`
`(Bit Sample Number)`

Function   Sets or queries the number of sample points of the bit of the specified CAN bus signal port.

Syntax   `:CHANnel<x>:CAN:PORT:BSNum {<NRf>}`
`:CHANnel<x>:CAN:PORT:BSNum?`
CAN Bus Monitor Module (720240)
   `<x>` = 13 to 16
CAN & LIN Bus Monitor Module (720241)
   `<x>` = 13, 15
`<NRf>` = 1, 3

Example   `:CHANNEL13:CAN:PORT:BSNUM 1`
`:CHANNEL13:CAN:PORT:BSNUM?`
`-> :CHANNEL13:CAN:PORT:BSNUM 1`

Description • This command is valid when the CAN bus monitor module (720240) or CAN & LIN bus monitor module (720241) is installed.
• Default value: 1

`:CHANnel<x>:CAN:PORT:DBFormat`

Function   Sets or queries the start bit setting and notation of the specified CAN bus signal port.

Syntax   `:CHANnel<x>:CAN:PORT:`
`DBFormat {BACKward|LSBForward|`
`MSBForward}`
`:CHANnel<x>:CAN:PORT:DBFormat?`
`<x>` = 13 to 16

Example   `:CHANNEL13:CAN:PORT:`
`DBFORMAT BACKWARD`
`:CHANNEL13:CAN:PORT:DBFORMAT?`
`-> :CHANNEL13:CAN:PORT:`
     `DBFORMAT BACKWARD`

Description   This is a setting common to all channels.

`:CHANnel<x>:CAN:PORT:DBRate`
`(Data Bit Rate)`

Function   Sets or queries the data bit rate (CAN FD) of the specified CAN bus signal port.

Syntax   `:CHANnel<x>:CAN:PORT:DBRate {<NRf>}`
`:CHANnel<x>:CAN:PORT:DBRate?`
`<x>` = 1 to 16
`<NRf>` = 10000, 20000, 33300, 50000, 62500,
      66700, 83300, 100000, 125000,
      200000, 250000, 400000, 500000,
      800000, 1000000, 2000000, 3000000,
      4000000, 5000000

Example   `:CHANNEL13:CAN:PORT:DBRATE 10000`
`:CHANNEL13:CAN:PORT:DBRATE?`
`-> :CHANNEL13:CAN:PORT:DBRATE 10000`

Description • This command is valid when the CAN/CAN FD monitor module (720242) is installed.
• This command sets the bit rate of the CAN FD data phase. To set the bit rate of the CAN FD arbitration phase, use the :CHANnel<x>:CAN:PORT:BRATe command.

`:CHANnel<x>:CAN:PORT:DSPoint`
`(Data Sample Point)`

Function   Sets or queries the sample point (CAN FD) of the specified CAN bus signal port.

Syntax   `:CHANnel<x>:CAN:PORT:DSPoint {<NRf>}`
`:CHANnel<x>:CAN:PORT:DSPoint?`
`<x>` = 1 to 16
`<NRf>` = 65 to 90

Example   `:CHANNEL13:CAN:PORT:DSPOINT 65`
`:CHANNEL13:CAN:PORT:DSPOINT?`
`-> :CHANNEL13:CAN:PORT:DSPOINT 65`

Description • This command is valid when the CAN/CAN FD monitor module (720242) is installed.
• This command sets the sample point of the CAN FD data phase. To set the sample point of the CAN FD arbitration phase, use the :CHANnel<x>:CAN:PORT:SPOint command.

:CHANnel<x>:CAN:PORT:FDSTandard (FD Standard)

Function	Sets or queries the protocol type (ISO/non ISO) of the specified CAN bus signal port.
Syntax	:CHANnel<x>:CAN:PORT: FDSTandard {ISO|NISO} :CHANnel<x>:CAN:PORT:FDSTandard? <x> = 1 to 16
Example	:CHANNEL13:CAN:PORT:FDSTANDARD ISO :CHANNEL13:CAN:PORT:FDSTANDARD? -> :CHANNEL13:CAN:PORT: FDSTANDARD ISO
Description	This command is valid when the CAN/CAN FD monitor module (720242) is installed.

:CHANnel<x>:CAN:PORT:LONLy

Function	Sets or queries the listen only state of the specified port on a module that can monitor a CAN bus.
Syntax	:CHANnel<x>:CAN:PORT:LONLy {Boolean} :CHANnel<x>:CAN:PORT:LONLy? CAN Bus Monitor Module (720240), CAN/CAN FD Monitor Module (720242) <x> = 13 to 16 CAN & LIN Bus Monitor Module (720241) <x> = 13, 15
Example	:CHANNEL13:CAN:PORT:LONLY ON :CHANNEL13:CAN:PORT:LONLY? -> :CHANNEL13:CAN:PORT:LONLY 1
Description	Default value: 0

:CHANnel<x>:CAN:PORT:SJW (Sync Jump Width)

Function	Sets or queries the resynchronization jump width (Sync Jump Width).
Syntax	:CHANnel<x>:CAN:PORT:SJW {<NRf>} :CHANnel<x>:CAN:PORT:SJW? CAN Bus Monitor Module (720240) <x> = 13 to 16 CAN & LIN Bus Monitor Module (720241) <x> = 13, 15 <NRf> = 1 to 4
Example	:CHANNEL13:CAN:PORT:SJW 1 :CHANNEL13:CAN:PORT:SJW? -> :CHANNEL13:CAN:PORT:SJW 1
Description	• This command is valid when the CAN bus monitor module (720240) or CAN & LIN bus monitor module (720241) is installed. • When the sample point is set to 85%, <NRf> = 3 is used. • Default value: 2

:CHANnel<x>:CAN:PORT:SPOint (Sample Point)

Function	Sets or queries the number of bit sample points of the specified CAN bus signal port.
Syntax	:CHANnel<x>:CAN:PORT:SPOint {<NRf>} :CHANnel<x>:CAN:PORT:SPOint? CAN Bus Monitor Module (720240) <x> = 13 to 16 <NRf> = 71, 78, 85 CAN & LIN Bus Monitor Module (720241) <x> = 13, 15 <NRf> = 71, 78, 85 CAN FD Monitor Module (720242) <x> = 13 to 16 <NRf> = 65 to 90
Example	:CHANNEL13:CAN:PORT:SPOINT 71 :CHANNEL13:CAN:PORT:SPOINT? -> :CHANNEL13:CAN:PORT:SPOINT 71
Description	• When the CAN/CAN FD monitor module (720242) is installed, this command sets the sample point of the CAN FD arbitration phase. To set the sample point of the CAN FD data phase, use the :CHANnel<x>:CAN:PORT:DSPoint command. • Default value: 85

:CHANnel<x>:CAN:PORT:TERMinator

Function	Sets or queries whether to turn on the 124 Ω terminator between CAN_H and CAN_L on the CAN bus line.
Syntax	:CHANnel<x>:CAN:PORT: TERMinator {Boolean} :CHANnel<x>:CAN:PORT:TERMinator? CAN Bus Monitor Module (720240), CAN/CAN FD Monitor Module (720242) <x> = 13 to 16 CAN & LIN Bus Monitor Module (720241) <x> = 13, 15
Example	:CHANNEL13:CAN:PORT:TERMINATOR ON :CHANNEL13:CAN:PORT:TERMINATOR? -> :CHANNEL13:CAN:PORT:TERMINATOR 1
Description	Default value: 0

:CHANnel<x1>:CAN:SCHannel<x2>?

Function	(Upper-level query) Queries all settings related to the specified sub channel of a module that can perform CAN bus monitoring.
Syntax	:CHANnel<x1>:CAN:SCHannel<x2>? CAN Bus Monitor Module (720240), CAN/CAN FD Monitor Module (720242) <x1> = 13 to 16 CAN & LIN Bus Monitor Module (720241) <x1> = 13, 15 <x2> = 1 to 60

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:CHANnel<x1>:CAN:SCHannel<x2>:BCOunt (Byte Count)

Function   Sets or queries the byte count of the specified sub channel on a module that can monitor a CAN bus.

Syntax   :CHANnel<x1>:CAN:SCHannel<x2>:
           BCOunt {AUTO|<NRf>}
           :CHANnel<x1>:CAN:SCHannel<x2>:
           BCOunt?
           CAN bus monitor module (720240)
              <x1> = 13 to 16
              <x2> = 1 to 60
              <NRf> = 1 to 8
           CAN&LIN bus monitor module (720241)
              <x1> = 13 or 15
              <x2> = 1 to 60
              <NRf> = 1 to 8
           CAN FD monitor module (720242)
              <x1> = 13 to 16
              <x2> = 1 to 60
              <NRf> = 1 to 64

Example   :CHANNEL13:CAN:SCHANNEL1:BCOUNT 8
           :CHANNEL13:CAN:SCHANNEL1:BCOUNT?
           -> :CHANNEL13:CAN:SCHANNEL1:BCOUNT 8

Description Default value: AUTO

:CHANnel<x1>:CAN:SCHannel<x2>:BICount (Bit Count)

Function   Sets or queries the bit length of the specified sub channel on a module that can monitor a CAN bus.

Syntax   :CHANnel<x1>:CAN:SCHannel<x2>:
           BICount {<NRf>}
           :CHANnel<x1>:CAN:SCHannel<x2>:
           BICount?
           CAN Bus Monitor Module (720240),
           CAN/CAN FD Monitor Module (720242)
              <x1> = 13 to 16
           CAN & LIN Bus Monitor Module (720241)
              <x1> = 13, 15
           <x2> = 1 to 60
           <NRf> = 1 to 32

Example   :CHANNEL13:CAN:SCHANNEL1:BICOUNT 10
           :CHANNEL13:CAN:SCHANNEL1:BICOUNT?
           -> :CHANNEL13:CAN:SCHANNEL1:
              BICOUNT 10

Description Default value: 1

:CHANnel<x1>:CAN:SCHannel<x2>:BLABel <x3>

Function   Sets or queries the specified bit label when the data type of the specified sub channel on a module that can monitor a CAN bus is logic.

Syntax   :CHANnel<x1>:CAN:SCHannel<x2>:
           BLABel<x3> {<String>}
           :CHANnel<x1>:CAN:SCHannel<x2>:
           BLABel<x3>?
           CAN Bus Monitor Module (720240),
           CAN/CAN FD Monitor Module (720242)
              <x1> = 13 to 16
           CAN & LIN Bus Monitor Module (720241)
              <x1> = 13, 15
           <x2> = 1 to 60
           <x3> = 1 to 8
           <String> = Up to 16 characters

Example   :CHANNEL13:CAN:SCHANNEL1:
           BLABEL1 "AAA"
           :CHANNEL13:CAN:SCHANNEL1:BLABEL1?
           -> :CHANNEL13:CAN:SCHANNEL1:
              BLABEL1 "AAA"

Description • This command is valid when the data type (:CHANnel<x1>:CAN:SCHannel<x2>:VTYPe) is set to LOGic.
             • Default value: "Bit1" to "Bit8"

:CHANnel<x1>:CAN:SCHannel<x2>:BORDer (Byte Order)

Function   Sets or queries the method (endian) to use to store in the internal memory the data of the specified sub channel on a module that can monitor a CAN bus.

Syntax   :CHANnel<x1>:CAN:SCHannel<x2>:
           BORDer {BIG|LITTle}
           :CHANnel<x1>:CAN:SCHannel<x2>:
           BORDer?
           CAN Bus Monitor Module (720240),
           CAN/CAN FD Monitor Module (720242)
              <x1> = 13 to 16
           CAN & LIN Bus Monitor Module (720241)
              <x1> = 13, 15
           <x2> = 1 to 60

Example   :CHANNEL13:CAN:SCHANNEL1:BORDER BIG
           :CHANNEL13:CAN:SCHANNEL1:BORDER?
           -> :CHANNEL13:CAN:SCHANNEL1:
              BORDER BIG

Description Default value: BIG

:CHANnel<x1>:CAN:SCHannel<x2>:FACTor

Function	Sets or queries the scaling constant (the value per bit) of the specified sub channel on a module that can monitor a CAN bus.
Syntax	:CHANnel<x1>:CAN:SCHannel<x2>: FACTor {<NRf>}
	:CHANnel<x1>:CAN:SCHannel<x2>: FACTor?
	CAN Bus Monitor Module (720240),
	CAN/CAN FD Monitor Module (720242)
	<x1> = 13 to 16
	CAN & LIN Bus Monitor Module (720241)
	<x1> = 13, 15
	<x2> = 1 to 60
	<NRf> = −10.000E+30 to 10.000E+30
Example	:CHANNEL13:CAN:SCHANNEL1:FACTOR 5E15
	:CHANNEL13:CAN:SCHANNEL1:FACTOR?
	-> :CHANNEL13:CAN:SCHANNEL1: FACTOR 5.00000E+15
Description	• This command is valid when the data type (:CHANnel<x1>:CAN:SCHannel<x2>:VTYPe) is set to UNSigned or SIGNed.
	• Default value: 1

:CHANnel<x1>:CAN:SCHannel<x2>:INPut

Function	Sets or queries the input ON/OFF state of the specified sub channel on a module that can monitor a CAN bus.
Syntax	:CHANnel<x1>:CAN:SCHannel<x2>: INPut {<Boolean>}
	:CHANnel<x1>:CAN:SCHannel<x2>:INPut?
	CAN Bus Monitor Module (720240),
	CAN/CAN FD Monitor Module (720242)
	<x1> = 13 to 16
	CAN & LIN Bus Monitor Module (720241)
	<x1> = 13, 15
	<x2> = 1 to 60
Example	:CHANNEL13:CAN:SCHANNEL1:INPUT ON
	:CHANNEL13:CAN:SCHANNEL1:INPUT?
	-> :CHANNEL13:CAN:SCHANNEL1:INPUT 1
Description	Default value: OFF

:CHANnel<x1>:CAN:SCHannel<x2>:LABel

Function	Sets or queries the label name of the specified sub channel on a module that can monitor a CAN bus.
Syntax	:CHANnel<x1>:CAN:SCHannel<x2>: LABel {<String>}
	:CHANnel<x1>:CAN:SCHannel<x2>:LABel?
	CAN Bus Monitor Module (720240),
	CAN/CAN FD Monitor Module (720242)
	<x1> = 13 to 16
	CAN & LIN Bus Monitor Module (720241)
	<x1> = 13, 15
	<x2> = 1 to 60 (the upper limit varies depending on the module)
	<String> = Up to 16 characters
Example	:CHANNEL13:CAN:SCHANNEL1: LABEL "AAAA"
	:CHANNEL13:CAN:SCHANNEL1:LABEL?
	-> :CHANNEL13:CAN:SCHANNEL1: LABEL "AAAA"
Description	Default value: "CHX_Y"
	(X: channel number, Y: sub channel number)

:CHANnel<x1>:CAN:SCHannel<x2>:MFORmat

Function	Sets or queries the message format of the specified sub channel on a module that can monitor a CAN bus.
Syntax	:CHANnel<x1>:CAN:SCHannel<x2>: MFORmat {EXTended|STANdard}
	:CHANnel<x1>:CAN:SCHannel<x2>: MFORmat?
	CAN Bus Monitor Module (720240),
	CAN/CAN FD Monitor Module (720242)
	<x1> = 13 to 16
	CAN & LIN Bus Monitor Module (720241)
	<x1> = 13, 15
	<x2> = 1 to 60
Example	:CHANNEL13:CAN:SCHANNEL1: MFORMAT STANDARD
	:CHANNEL13:CAN:SCHANNEL1:MFORMAT?
	-> :CHANNEL13:CAN:SCHANNEL1: MFORMAT STANDARD
Description	Default value: STANdard

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Commands

:CHANnel<x1>:CAN:SCHannel<x2>:MID

Function   Sets or queries the message ID of the specified sub channel on a module that can monitor a CAN bus.

Syntax   :CHANnel<x1>:CAN:SCHannel<x2>: MID {<String>}
            :CHANnel<x1>:CAN:SCHannel<x2>:MID?
            CAN Bus Monitor Module (720240),
            CAN/CAN FD Monitor Module (720242)
                <x1> = 13 to 16
            CAN & LIN Bus Monitor Module (720241)
                <x1> = 13, 15
            <x2> = 1 to 60
            When the :CHANnel<x>:CAN:OSOut:MFORmat command is set to STANdard
                <String> = "0" to "7FF"
            When the :CHANnel<x>:CAN:OSOut:MFORmat command is set to EXTended
                <String> = "0" to "1FFFFFFF"

Example   :CHANNEL13:CAN:SCHANNEL1:MID "7FF"
            :CHANNEL13:CAN:SCHANNEL1:MID?
            -> :CHANNEL1:CAN:SCHANNEL1:MID "7FF"

Description If a string outside the range is specified, error 151, "Invalid string data," will occur.

:CHANnel<x1>:CAN:SCHannel<x2>:OFFSet

Function   Sets or queries the scaling constant (offset value) of the specified sub channel on a module that can monitor a CAN bus.

Syntax   :CHANnel<x1>:CAN:SCHannel<x2>: OFFSet {<NRf>}
            :CHANnel<x1>:CAN:SCHannel<x2>: OFFSet?
            CAN Bus Monitor Module (720240),
            CAN/CAN FD Monitor Module (720242)
                <x1> = 13 to 16
            CAN & LIN Bus Monitor Module (720241)
                <x1> = 13, 15
            <x2> = 1 to 60
            <NRf> = −10.000E+30 to 10.000E+30

Example   :CHANNEL13:CAN:SCHANNEL1:OFFSET 5E15
            :CHANNEL13:CAN:SCHANNEL1:OFFSET?
            -> :CHANNEL13:CAN:SCHANNEL1: OFFSET 5.00000E+15

Description This command is valid when the data type (:CHANnel<x1>:CAN:SCHannel<x2>:VTYPe) is set to UNSigned or SIGNed.

:CHANnel<x1>:CAN:SCHannel<x2>:POSition

Function   Sets or queries the vertical position value of the specified sub channel on a module that can monitor a CAN bus.

Syntax   :CHANnel<x1>:CAN:SCHannel<x2>: POSition {<NRf>}
            :CHANnel<x1>:CAN:SCHannel<x2>: POSition?
            CAN Bus Monitor Module (720240),
            CAN/CAN FD Monitor Module (720242)
                <x1> = 13 to 16
            CAN & LIN Bus Monitor Module (720241)
                <x1> = 13, 15
            <x2> = 1 to 60
            <NRf> = −5.00 to 5.00 (div, in 0.01 steps)

Example   :CHANNEL13:CAN:SCHANNEL1:POSITION 1
            :CHANNEL13:CAN:SCHANNEL1:POSITION?
            -> :CHANNEL13:CAN:SCHANNEL1: POSITION 1.00

Description Default value: 0.00

:CHANnel<x1>:CAN:SCHannel<x2>:SBIT (Start Bit)

Function   Sets or queries the bit number of the start position of the specified sub channel on a module that can monitor a CAN bus.

Syntax   :CHANnel<x1>:CAN:SCHannel<x2>: SBIT {<NRf>}
            :CHANnel<x1>: CAN:SCHannel<x2>:SBIT?
            CAN bus monitor module (720240)
                <x1> = 13 to 16
                <x2> = 1 to 60
                <NRf> = 0 to 63
            CAN&LIN bus monitor module (720241)
                <x1> = 13 or 15
                <x2> = 1 to 60
                <NRf> = 0 to 63
            CAN FD monitor module (720242)
                <x1> = 13 to 16
                <x2> = 1 to 60
                <NRf> = 0 to 511

Example   :CHANNEL13:CAN:SCHANNEL1:SBIT 10
            :CHANNEL13:CAN:SCHANNEL1:SBIT?
            -> :CHANNEL13:CAN:SCHANNEL1:SBIT 10

Description Default value: 0

:CHANnel<x1>:CAN:SCHannel<x2>:SCALe

Function   Sets or queries the display range (top and bottom edges) of the specified sub channel on a module that can monitor a CAN bus.

Syntax   :CHANnel<x1>:CAN:SCHannel<x2>: SCALe {AUTO|DEFault|<NRf>,<NRf>}
:CHANnel<x1>:CAN:SCHannel<x2>:SCALe?
CAN Bus Monitor Module (720240),
CAN/CAN FD Monitor Module (720242)
   <x1> = 13 to 16
CAN & LIN Bus Monitor Module (720241)
   <x1> = 13, 15
<x2> = 1 to 60
<NRf> = −10.0000E+30 to 10.0000E+30

Example   :CHANNEL13:CAN:SCHANNEL1:SCALE AUTO
:CHANNEL13:CAN:SCHANNEL1:SCALE?
-> :CHANNEL13:CAN:SCHANNEL1:
SCALE AUTO

Description • This command is valid when the data type (:CHANnel<x1>:CAN:SCHannel<x2>:VTYPe) is set to UNSigned, SIGNed, or FLOat.
    • Default value: 0.1

:CHANnel<x1>:CAN:SCHannel<x2>:UNIT

Function   Sets or queries the data unit of the specified sub channel on a module that can monitor a CAN bus.

Syntax   :CHANnel<x1>:CAN:SCHannel<x2>: UNIT {<String>}
:CHANnel<x1>:CAN:SCHannel<x2>:UNIT?
CAN Bus Monitor Module (720240),
CAN/CAN FD Monitor Module (720242)
   <x1> = 13 to 16
CAN & LIN Bus Monitor Module (720241)
   <x1> = 13, 15
<x2> = 1 to 60
<String> = Up to 16 characters

Example   :CHANNEL13:CAN:SCHANNEL1:UNIT "AAAA"
:CHANNEL13:CAN:SCHANNEL1:UNIT?
-> :CHANNEL13:CAN:SCHANNEL1:
UNIT "AAAA"

Description • This command is valid when the data type (:CHANnel<x1>:CAN:SCHannel<x2>:VTYPe) is set to UNSigned, SIGNed, or FLOat.
    • Default value: Empty string

:CHANnel<x1>:CAN:SCHannel<x2>:VTYPe (Value Type)

Function   Sets or queries the data type of the specified sub channel on a module that can monitor a CAN bus.

Syntax   :CHANnel<x1>:CAN:SCHannel<x2>: VTYPe {UNSigned|SIGNed|FLOat|LOGic}
:CHANnel<x1>:CAN:SCHannel<x2>:VTYPe?
CAN Bus Monitor Module (720240),
CAN/CAN FD Monitor Module (720242)
   <x1> = 13 to 16
CAN & LIN Bus Monitor Module (720241)
   <x1> = 13, 15
<x2> = 1 to 60

Example   :CHANNEL13:CAN:SCHANNEL1:
VTYPE SIGNED
:CHANNEL13:CAN:SCHANNEL1:VTYPE?
-> :CHANNEL13:CAN:SCHANNEL1:
VTYPE SIGNED

Description Default value: UNSigned

:CHANnel<x1>:CAN:SCHannel<x2>:ZOOM

Function   Sets or queries the vertical zoom factor of CAN logic waveforms.

Syntax   :CHANnel<x1>:CAN:SCHannel<x2>: ZOOM {<NRf>}
:CHANnel<x1>:CAN:SCHannel<x2>:ZOOM?
CAN Bus Monitor Module (720240),
CAN/CAN FD Monitor Module (720242)
   <x1> = 13 to 16
CAN & LIN Bus Monitor Module (720241)
   <x1> = 13, 15
<x2> = 1 to 60
<NRf> = 0.1, 0.111, 0.125, 0.143, 0.167, 0.2, 0.25, 0.33, 0.4, 0.5, 0.556, 0.625, 0.667, 0.714, 0.8, 0.833, 1, 1.11, 1.25, 1.33, 1.43, 1.67, 2, 2.22, 2.5, 3.33

Example   :CHANNEL13:CAN:SCHANNEL1:ZOOM 1
:CHANNEL13:CAN:SCHANNEL1:ZOOM?
-> :CHANNEL13:CAN:SCHANNEL1:ZOOM 1

Description This command is valid when the data type is logic.

:CHANnel<x>:FREQ?

Function   (Upper-level query) Queries all frequency module settings.

Syntax   :CHANnel<x>:FREQ?
<x> = 1 to 16

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:CHANnel<x>:FREQ:INPut?

Function (Upper-level query) Queries all frequency module input settings.

Syntax :CHANnel<x>:FREQ:INPut?

  <x> = 1 to 16

:CHANnel<x>:FREQ:INPut:BWIDth

Function Sets or queries the input signal bandwidth limit of a frequency module.

Syntax :CHANnel<x>:FREQ:INPut:
  BWIDth {FULL|<Frequency>}
  :CHANnel<x>:FREQ:INPut:BWIDth?

  <x> = 1 to 16

  <Frequency> = 100Hz, 1kHz, 10kHz, 100kHz

  If Preset is set to AC200V or AC100V, you cannot select FULL.

Example :CHANNEL1:FREQ:INPUT:BWIDTH FULL
  :CHANNEL1:FREQ:INPUT:BWIDTH?
  -> :CHANNEL1:FREQ:INPUT:BWIDTH FULL

Description Default value: FULL

:CHANnel<x>:FREQ:INPut:CELimination

Function Sets or queries the input signal chatter elimination of a frequency module.

Syntax :CHANnel<x>:FREQ:INPut:
  CELimination {<Time>}
  :CHANnel<x>:FREQ:INPut:CELimination?

  <x> = 1 to 16

  <Time> = 0 to 1000 ms

Example :CHANNEL1:FREQ:INPUT:
  CELIMINATION 0.000
  :CHANNEL1:FREQ:INPUT:
  CELIMINATION?
  -> :CHANNEL1:FREQ:INPUT:
    CELIMINATION 0.000

Description Default value: 0

:CHANnel<x>:FREQ:INPut:COUPling

Function Sets or queries the input coupling setting of a frequency module.

Syntax :CHANnel<x>:FREQ:INPut:
  COUPling {AC|DC}
  :CHANnel<x>:FREQ:INPut:COUPling?

  <x> = 1 to 16

Example :CHANNEL1:FREQ:INPUT:COUPLING DC
  :CHANNEL1:FREQ:INPUT:COUPLING?
  -> :CHANNEL1:FREQ:INPUT:COUPLING DC

Description Default value: DC

:CHANnel<x>:FREQ:INPut:HYSTeresis

Function Sets or queries the hysteresis of a frequency module.

Syntax :CHANnel<x>:FREQ:INPut:
  HYSTeresis {HIGH|LOW|MIDDle}
  :CHANnel<x>:FREQ:INPut:HYSTeresis?

  <x> = 1 to 16

Example :CHANNEL1:FREQ:INPUT:HYSTERESIS LOW
  :CHANNEL1:FREQ:INPUT:HYSTERESIS?
  -> :CHANNEL1:FREQ:INPUT:
    HYSTERESIS LOW

Description Default value: LOW

:CHANnel<x>:FREQ:INPut:PRESet

Function Sets or queries the preset setting of a frequency module.

Syntax :CHANnel<x>:FREQ:INPut:
  PRESet {AC100v|AC200v|EMPickup|
  LOG12v|LOG24v|LOG3v|LOG5v|PULLup|
  USER|ZERO}
  :CHANnel<x>:FREQ:INPut:PRESet?

  <x> = 1 to 16

Example :CHANNEL1:FREQ:INPUT:PRESET USER
  :CHANNEL1:FREQ:INPUT:PRESET?
  -> :CHANNEL1:FREQ:INPUT:PRESET USER

Description Default value: USER

:CHANnel<x>:FREQ:INPut:PROBe

Function Sets or queries the probe attenuation of a frequency module.

Syntax :CHANnel<x>:FREQ:INPut:PROBe {<NRf>}
  :CHANnel<x>:FREQ:INPut:PROBe?

  <x> = 1 to 16

  <NRf> = 1, 10

Example :CHANNEL1:FREQ:INPUT:PROBE 1
  :CHANNEL1:FREQ:INPUT:PROBE?
  -> :CHANNEL1:FREQ:INPUT:PROBE 1

Description Default value: 1

:CHANnel<x>:FREQ:INPut:PULLup

Function Sets or queries whether pull-up is turned on for a frequency module.

Syntax :CHANnel<x>:FREQ:INPut:
  PULLup {<Boolean>}
  :CHANnel<x>:FREQ:INPut:PULLup?

  <x> = 1 to 16

Example :CHANNEL1:FREQ:INPUT:PULLUP ON
  :CHANNEL1:FREQ:INPUT:PULLUP?
  -> :CHANNEL1:FREQ:INPUT:PULLUP 1

Description Default value: OFF

:CHANnel<x>:FREQ:INPut:SLOPe

Function   Sets or queries the input slope of a frequency module.

Syntax   :CHANnel<x>:FREQ:INPut:SLOPe {FALL|RISE}
            :CHANnel<x>:FREQ:INPut:SLOPe?
            <x> = 1 to 16

Example   :CHANNEL1:FREQ:INPUT:SLOPE RISE
            :CHANNEL1:FREQ:INPUT:SLOPE?
            -> :CHANNEL1:FREQ:INPUT:SLOPE RISE

Description Default value: RISE

:CHANnel<x>:FREQ:INPut:THReshold

Function   Sets or queries the threshold level of a frequency module.

Syntax   :CHANnel<x>:FREQ:INPut:THReshold {<Voltage>}
            :CHANnel<x>:FREQ:INPut:THReshold?
            <x> = 1 to 16
            <Voltage> = 100 to −100V

Example   :CHANNEL1:FREQ:INPUT:THRESHOLD 0.00000E+00
            :CHANNEL1:FREQ:INPUT:THRESHOLD?
            -> :CHANNEL1:FREQ:INPUT:THRESHOLD 0.00000E+00

Description Default value: 0

:CHANnel<x>:FREQ:INPut:VRANge

Function   Sets or queries the voltage range of a frequency module.

Syntax   :CHANnel<x>:FREQ:INPut:VRANge {<Voltage>}
            :CHANnel<x>:FREQ:INPut:VRANge?
            <x> = 1 to 16
            <Voltage> = 1 to −500V

Example   :CHANNEL1:FREQ:INPUT:VRANGE 10
            :CHANNEL1:FREQ:INPUT:VRANGE?
            -> :CHANNEL1:FREQ:INPUT:VRANGE 10

Description Default value: 10

:CHANnel<x>:FREQ:LSCale?

Function   (Upper-level query) Queries all the linear scaling settings of a frequency module.

Syntax   :CHANnel<x>:FREQ:LSCale?

:CHANnel<x>:FREQ:LSCale:AVALue

Function   Sets or queries the scaling coefficient A that is used during linear scaling on a frequency module.

Syntax   :CHANnel<x>:FREQ:LSCale:AVALue {<NRf>}
            :CHANnel<x>:FREQ:LSCale:AVALue?
            <x> = 1 to 16
            <NRf> = −9.9999E+30 to −1E−30,
                    1E−30 to 9.9999E+30

Example   :CHANNEL1:FREQ:LSCALE:AVALUE 25.0000E+00
            :CHANNEL1:FREQ:LSCALE:AVALUE?
            -> :CHANNEL1:FREQ:LSCALE:AVALUE 25.0000E+00

Description • The coefficient cannot be set to 0.
            • Default value: 25.0

:CHANnel<x>:FREQ:LSCale:BVALue

Function   Sets or queries the scaling coefficient B that is used during linear scaling on a frequency module.

Syntax   :CHANnel<x>:FREQ:LSCale:BVALue {<NRf>}
            :CHANnel<x>:FREQ:LSCale:BVALue?
            <x> = 1 to 16
            <NRf> = −9.9999E+30 to −1E−30,
                    1E−30 to 9.9999E+30

Example   :CHANNEL1:FREQ:LSCALE:BVALUE −25.0000E+00
            :CHANNEL1:FREQ:LSCALE:BVALUE?
            -> :CHANNEL1:FREQ:LSCALE:BVALUE −25.0000E+00

Description Default value: -25.0

:CHANnel<x>:FREQ:LSCale:GETMeasure

Function   Executes the measurement of the linear scaling P1X or P2X value of a frequency module.

Syntax   :CHANnel<x>:FREQ:LSCale:GETMeasure {P1X|P2X}
            <x> = 1 to 16

Example   :CHANnel1:FREQ:LSCale:GETMeasure P1X

:CHANnel<x>:FREQ:LSCale:MODE

Function   Sets or queries the linear scale mode of a frequency module.

Syntax   :CHANnel<x>:FREQ:LSCale:MODE {AXB|OFF|P12}
            :CHANnel<x>:FREQ:LSCale:MODE?
            <x> = 1 to 16

Example   :CHANNEL1:FREQ:LSCALE:MODE AXB
            :CHANNEL1:FREQ:LSCALE:MODE?
            -> :CHANNEL1:FREQ:LSCALE:MODE AXB

Description • When using the linear scale function, specify linearly scaled values for the scale values at the two ends when setting or querying.
            • Default value: OFF

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:CHANnel\<x>:FREQ:LSCale:{P1X|P1Y|P2X|P2Y}

Function   Sets or queries the linear scaling P1X, P1Y, P2X, or P2Y value of a frequency module.

Syntax   :CHANnel\<x>:FREQ:LSCale:{P1X|P1Y|P2X|P2Y} {\<NRf>}
:CHANnel\<x>:FREQ:LSCale:{P1X|P1Y|P2X|P2Y}?
\<x> = 1 to 16
\<NRf> = −9.9999E+30 to −1E−30, 0, 1E−30 to 9.9999E+30

Example   :CHANNEL1:FREQ:LSCALE:P1X 1.00000E+00
:CHANNEL1:FREQ:LSCALE:P1X?
-> :CHANNEL1:FREQ:LSCALE:P1X 1.00000E+00

Description   Default values: P1X: 1, P1Y: 0, P2X: 5, P2Y: 100

:CHANnel\<x>:FREQ:LSCale:UNIT

Function   Sets or queries the linear scale unit of a frequency module.

Syntax   :CHANnel\<x>:FREQ:LSCale:UNIT {\<String>}
:CHANnel\<x>:FREQ:LSCale:UNIT?
\<x> = 1 to 16
\<String> = Up to 4 characters

Example   :CHANNEL1:FREQ:LSCALE:UNIT "UU"
:CHANNEL1:FREQ:LSCALE:UNIT?
-> :CHANNEL1:FREQ:LSCALE:UNIT "UU"

Description   Default value: Empty string

:CHANnel\<x>:FREQ:OFFSet

Function   Sets or queries the offset of a frequency module.

Syntax   :CHANnel\<x>:FREQ:OFFSet {\<NRf>|\<Frequency>|\<Time>}
:CHANnel\<x>:FREQ:OFFSet?
\<x> = 1 to 16
\<NRf>, \<Frequency>, \<Time> = The selectable range varies depending on the range setting. See the Features Guide for this information.

Example   :CHANNEL5:FREQ:OFFSET 1
:CHANNEL5:FREQ:OFFSET?
-> :CHANNEL5:FREQ:OFFSET 0.000000E+00

Description   You cannot set the offset when measuring power frequency.

:CHANnel\<x>:FREQ:POSition

Function   Sets or queries the vertical position for a frequency module.

Syntax   :CHANnel\<x>:FREQ:POSition {\<NRf>}
:CHANnel\<x>:FREQ:POSition?
\<x> = 1 to 16
\<NRf> = −5.00 to 5.00 (div, in 0.01 steps)

Example   :CHANNEL5:FREQ:POSITION 1.00
:CHANNEL5:FREQ:POSITION?
-> :CHANNEL5:FREQ:POSITION 0.00

Description   Default value: 0

:CHANnel\<x>:FREQ:SCALe

Function   Sets or queries the upper and lower limits of the screen for a frequency module.

Syntax   :CHANnel\<x>:FREQ:SCALe {\<NRf>,\<NRf>|\<Frequency>\<Frequency>|\<Time>,\<Time>}
:CHANnel\<x>:FREQ:SCALe?
\<x> = 1 to 16
\<NRf>, \<Frequency>, \<Time> = The selectable range varies depending on the range setting.

Example   :CHANNEL5:FREQ:SCALE 5000,−5000
:CHANNEL5:FREQ:SCALE?
-> :CHANNEL5:FREQ:SCALE 5.000000E+03,−5.000000E+03

:CHANnel\<x>:FREQ:SETup?

Function   (Upper-level query) Queries all frequency module FV settings.

Syntax   :CHANnel\<x>:FREQ:SETup?
\<x> = 1 to 16

:CHANnel\<x>:FREQ:SETup:CFRequency

Function   Sets or queries the center frequency of a frequency module.

Syntax   :CHANnel\<x>:FREQ:SETup:CFRequency {\<Frequency>}
:CHANnel\<x>:FREQ:SETup:CFRequency?
\<x> = 1 to 16
\<Frequency> = 50Hz, 60Hz, 400Hz

Example   :CHANnel5:FREQ:SETup:CFRequency 60
:CHANnel5:FREQ:SETup:CFRequency?
-> :CHANnel\<x>:FREQ:SETup:CFRequency 60

Description   Default value: 50

:CHANnel<x>:FREQ:SETup:DECeleration
Function Sets or queries whether deceleration prediction is turned on for a frequency module.
Syntax :CHANnel<x>:FREQ:SETup:
DECeleration {<Boolean>}
:CHANnel<x>:FREQ:SETup:DECeleration?
<x> = 1 to 16
Example :CHANNEL5:FREQ:SETUP:DECELERATION ON
:CHANNEL5:FREQ:SETUP:DECELERATION?
-> :CHANNEL5:FREQ:SETUP:
DECELERATION 1
Description Default value: ON

:CHANnel<x>:FREQ:SETup:DPULse
Function Sets or queries the distance per pulse of a frequency module.
Syntax :CHANnel<x>:FREQ:SETup:
DPULse {<NRf>}
:CHANnel<x>:FREQ:SETup:DPULse?
<x> = 1 to 16
<NRf> = 9.9999E+30 to –9.9999E+30
Example :CHANNEL5:FREQ:SETUP:
DPULSE 1.00000E+00
:CHANNEL5:FREQ:SETUP:DPULSE?
-> :CHANNEL5:FREQ:SETUP:
DPULSE 1.00000E+00
Description Default value: 1.0

:CHANnel<x>:FREQ:SETup:FILTer?
Function (Upper-level query) Queries all frequency module filter settings.
Syntax :CHANnel<x>:FREQ:SETup:FILTer?

:CHANnel<x>:FREQ:SETup:FILTer:PAVerage?
Function (Upper-level query) Queries all frequency module pulse average settings.
Syntax :CHANnel<x>:FREQ:SETup:FILTer:
PAVerage?

:CHANnel<x>:FREQ:SETup:FILTer:PAVerage:MODE
Function Sets or queries whether pulse averaging is turned on for a frequency module.
Syntax :CHANnel<x>:FREQ:SETup:FILTer:
PAVerage:MODE {<Boolean>}
:CHANnel<x>:FREQ:SETup:FILTer:
PAVerage:MODE?
<x> = 1 to 16
Example :CHANNEL5:FREQ:SETUP:FILTER:
PAVERAGE:MODE ON
:CHANNEL5:FREQ:SETUP:FILTER:
PAVERAGE:MODE?
-> :CHANNEL5:FREQ:SETUP:FILTER:
PAVERAGE:MODE 1
Description Default value: OFF

:CHANnel<x>:FREQ:SETup:FILTer:PAVerage:VALue
Function Sets or queries the number of pulses to average over for a frequency module.
Syntax :CHANnel<x>:FREQ:SETup:FILTer:
PAVerage:VALue {<NRf>}
:CHANnel<x>:FREQ:SETup:FILTer:
PAVerage:VALue?
<x> = 1 to 16
<NRf> = 1 to 16096
Example :CHANNEL5:FREQ:SETUP:FILTER:
PAVERAGE:VALUE 2
:CHANNEL5:FREQ:SETUP:FILTER:
PAVERAGE:VALUE?
-> :CHANNEL5:FREQ:SETUP:FILTER:
PAVERAGE:VALUE 2
Description Default value: 2

:CHANnel<x>:FREQ:SETup:FILTer:SMOothing?
Function (Upper-level query) Queries all frequency module smoothing settings.
Syntax :CHANnel<x>:FREQ:SETup:FILTer:
SMOothing?

:CHANnel<x>:FREQ:SETup:FILTer:SMOothing:MODE
Function Sets or queries whether smoothing is turned on for a frequency module.
Syntax :CHANnel<x>:FREQ:SETup:FILTer:
SMOothing:MODE {<Boolean>}
:CHANnel<x>:FREQ:SETup:FILTer:
SMOothing:MODE?
<x> = 1 to 16
Example :CHANNEL5:FREQ:SETUP:FILTER:
SMOOTHING:MODE ON
:CHANNEL5:FREQ:SETUP:FILTER:
SMOOTHING:MODE?
-> :CHANNEL5:FREQ:SETUP:FILTER:
SMOOTHING:MODE 1
Description Default value: OFF

:CHANnel<x>:FREQ:SETup:FILTer:SMOothing:VALue
Function Sets or queries the moving average order of smoothing of a frequency module.
Syntax :CHANnel<x>:FREQ:SETup:FILTer:
SMOothing:VALue {<Time>}
:CHANnel<x>:FREQ:SETup:FILTer:
SMOothing:VALue?
<x> = 1 to 16
<Time> = 0ms to 1000.0ms
Example :CHANNEL5:FREQ:SETUP:FILTER:
SMOOTHING:VALUE 0.1
:CHANNEL5:FREQ:SETUP:FILTER:
SMOOTHING:VALUE?
-> :CHANNEL5:FREQ:SETUP:FILTER:
SMOOTHING:VALUE 0.1000
Description Default value: 0

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:CHANnel<x>:FREQ:SETup:FUNCtion

Function   Sets or queries the measurement mode of a
frequency module.

Syntax   :CHANnel<x>:FREQ:SETup:
FUNCtion {DUTY|FREQuency|PERiod|
PFReq|PINTeg|PWIDth|RPM|RPS|
VELocity}
:CHANnel<x>:FREQ:SETup:FUNCtion?
<x> = 1 to 16

Example   :CHANNEL5:FREQ:SETUP:
FUNCTION FREQUENCY
:CHANNEL5:FREQ:SETUP:
FUNCTION FREQUENCY?
-> :CHANNEL5:FREQ:SETUP:
    FUNCTION FREQUENCY

Description Default value: FREQuency

:CHANnel<x>:FREQ:SETup:LRESet

Function   Sets or queries whether over-limit reset is turned
on for a frequency module.

Syntax   :CHANnel<x>:FREQ:SETup:
LRESet {<Boolean>}
:CHANnel<x>:FREQ:SETup:LRESet?
<x> = 1 to 16

Example   :CHANNEL5:FREQ:SETUP:LRESET ON
:CHANNEL5:FREQ:SETUP:LRESET?
-> :CHANNEL5:FREQ:SETUP:LRESET 1

Description Default value: OFF

:CHANnel<x>:FREQ:SETup:MPULse

Function   Sets or queries whether the measurement pulse
is positive or negative for a frequency module.

Syntax   :CHANnel<x>:FREQ:SETup:
MPULse {POSitive|NEGative}
:CHANnel<x>:FREQ:SETup:MPULse?
<x> = 1 to 16

Example   :CHANNEL5:FREQ:SETUP:MPULSE POSITIVE
:CHANNEL5:FREQ:SETUP:MPULSE?
-> :CHANNEL5:FREQ:SETUP:
    MPULSE POSITIVE

Description Default value: POSitive

:CHANnel<x>:FREQ:SETup:PROTate

Function   Sets or queries the number of pulses per rotation
of a frequency module.

Syntax   :CHANnel<x>:FREQ:SETup:
PROTate {<NRf>}
:CHANnel<x>:FREQ:SETup:PROTate?
<x> = 1 to 16
<NRf> = 1 to 99999

Example   :CHANNEL5:FREQ:SETUP:PROTATE 100
:CHANNEL5:FREQ:SETUP:PROTATE?
-> :CHANNEL5:FREQ:SETUP:PROTATE 100

Description Default value: 1

:CHANnel<x>:FREQ:SETup:RESet

Function   Resets the pulse count of a frequency module.

Syntax   :CHANnel<x>:FREQ:SETup:RESet
<x> = 1 to 16

Example   :CHANNEL5:FREQ:SETUP:RESET

:CHANnel<x>:FREQ:SETup:STOPpredict

Function   Sets or queries whether stop prediction is turned
on for a frequency module.

Syntax   :CHANnel<x>:FREQ:SETup:
STOPpredict {<NRf>|OFF}
:CHANnel<x>:FREQ:SETup:STOPpredict?
<x> = 1 to 16
<NRf> = 1.5, 2, 3, 4, 5, 6, 7, 8, 9, 10

Example   :CHANNEL5:FREQ:SETUP:STOPPREDICT 10
:CHANNEL5:FREQ:SETUP:STOPPREDICT?
-> :CHANNEL5:FREQ:SETUP:
    STOPPREDICT 10

Description Default value: OFF

:CHANnel<x>:FREQ:SETup:TIMeout

Function   Sets or queries the duty timeout value of a
frequency module.

Syntax   :CHANnel<x>:FREQ:SETup:
TIMeout {<NRf>}
:CHANnel<x>:FREQ:SETup:TIMeout?
<x> = 1 to 16

Example   :CHANNEL1:FREQ:SETUP:TIMEOUT 10.001S
:CHANNEL1:FREQ:SETUP:TIMEOUT?
-> :CHANNEL1:FREQ:SETUP:
    TIMEOUT 10.00100

Description Default value: 10.00100 s

:CHANnel<x>:FREQ:SETup:TUNit

Function   Sets or queries the time unit when measuring
velocity of a frequency module.

Syntax   :CHANnel<x>:FREQ:SETup:TUNit {HOUR|
MIN|SEC}
:CHANnel<x>:FREQ:SETup:TUNit?
<x> = 1 to 16

Example   :CHANNEL5:FREQ:SETUP:TUNIT MIN
:CHANNEL5:FREQ:SETUP:TUNIT?
-> :CHANNEL5:FREQ:SETUP:TUNIT MIN

Description Default value: SEC

:CHANnel<x>:FREQ:SETup:UNIT

Function   Sets or queries the pulse integration unit of a
frequency module.

Syntax   :CHANnel<x>:FREQ:SETup:
UNIT {<String>}
:CHANnel<x>:FREQ:SETup:UNIT?
<x> = 1 to 16
<String> = Up to 4 characters

Example   :CHANNEL5:FREQ:SETUP:UNIT "ABC"
:CHANNEL5:FREQ:SETUP:UNIT?
-> :CHANNEL5:FREQ:SETUP:UNIT "ABC"

Description Default value: All spaces

:CHANnel<x>:FREQ:SETup:UPULse

Function Sets or queries the unit/pulse setting of a frequency module.

Syntax :CHANnel<x>:FREQ:SETup:
UPULse {<NRf>}
:CHANnel<x>:FREQ:SETup:UPULse?
<x> = 1 to 16
<NRf> = 9.9999E+30 to –9.9999E+30

Example :CHANNEL5:FREQ:SETUP:UPULSE 3
:CHANNEL5:FREQ:SETUP:UPULSE?
-> :CHANNEL5:FREQ:SETUP:UPULSE 3

Description Default value: 1

:CHANnel<x>:FREQ:SETup:VUNit

Function Sets or queries the velocity unit of a frequency module.

Syntax :CHANnel<x>:FREQ:SETup:
VUNit {<String>}
:CHANnel<x>:FREQ:SETup:VUNit?
<x> = 1 to 16
<String> = Up to 4 characters

Example :CHANNEL5:FREQ:SETUP:VUNIT "m/s"
:CHANNEL5:FREQ:SETUP:VUNIT?
-> :CHANNEL5:FREQ:SETUP:VUNIT "m/s"

Description Default value: m/s

:CHANnel<x>:FREQ:VARiable

Function Sets or queries the scale setting mode of a frequency module.

Syntax :CHANnel<x>:FREQ:
VARiable {<Boolean>}
:CHANnel<x>:FREQ:VARiable?
<x> = 1 to 4

Example :CHANNEL1:FREQ:VARIABLE 0
:CHANNEL1:FREQ:VARIABLE?
-> :CHANNEL1:FREQ:VARIABLE 0

Description Default value: Off

:CHANnel<x>:FREQ:VDIV

Function Sets or queries the Value/Div setting of a frequency module.

Syntax :CHANnel<x>:FREQ:VDIV {<NRf>|
<Frequency>|<Time>}
:CHANnel<x>:FREQ:VDIV?
<x> = 1 to 16
<NRf>, <Frequency>, <Time> = See the Features Guide for this information.

Example :CHANNEL5:FREQ:VDIV 20
:CHANNEL5:FREQ:VDIV?
-> :CHANNEL5:FREQ:VDIV 20

:CHANnel<x>:FREQ:ZOOM

Function Sets or queries the vertical zoom factor of a frequency module.

Syntax :CHANnel<x>:FREQ:ZOOM {<NRf>}
:CHANnel<x>:FREQ:ZOOM?
<x> = 1 to 16
<NRf> =   0.33, 0.4, 0.5, 0.556, 0.625,
0.667, 0.714, 0.8, 0.833, 1,
1.11, 1.25, 1.33, 1.43, 1.67, 2,
2.22, 2.5, 3.33, 4, 5, 6.67, 8,
10, 12.5, 16.7, 20, 25, 40, 50,
100

Example :CHANNEL5:FREQ:ZOOM 1
:CHANNEL5:FREQ:ZOOM?
-> :CHANNEL5:FREQ:ZOOM 1

Description Default value: 1

:CHANnel<x>:INPut

Function Sets or queries whether the channel is displayed.

Syntax :CHANnel<x>:INPut {<Boolean>}
:CHANnel<x>:INPut?
<x> = 1 to 32

Example :CHANNEL1:INPUT 1
:CHANNEL1:INPUT?
-> :CHANNEL1:INPUT 1

Description • An error will occur if there is no module inserted in the channel (slot).
When setting, error 113: Undefined header
When querying, error 420: Query UNTERMINATED
• Default value: ON

:CHANnel<x>:LABel

Function Sets or queries the waveform label of a channel.

Syntax :CHANnel<x>:LABel {<String>}
:CHANnel<x>:LABel?
<x> = 1 to 32
<String> = Up to 16 characters

Example :CHANNEL5:LABEL "ABC"
:CHANNEL5:LABEL?
-> :CHANNEL5:LABEL "ABC"

Description • The setting is invalid on modules with sub channels. It is valid on logic modules.
• Default value: A character string corresponding to the installed channel position

:CHANnel<x>:LIN?

Function (Upper-level query) Queries all settings of a module that can perform LIN bus monitoring.

Syntax :CHANnel<x>:LIN?
<x> = 14, 16

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Commands

`:CHANnel<x1>:LIN:FRAMe<x2>?`

Function (Upper-level query) Queries all LIN bus signal frame settings.

Syntax `:CHANnel<x1>:LIN:FRAMe<x2>?`

`<x1> = 14, 16`

`<x2> = 1 to 64`

Description When <x2> = 1, frame ID = 0. When <x2> = 64, frame ID = 63.

`:CHANnel<x1>:LIN:FRAMe<x2>:CHECksum`

Function Sets or queries the checksum mode of LIN bus signal frames.

Syntax `:CHANnel<x1>:LIN:FRAMe<x2>:`
`CHECksum {CLASsic|ENHanced}`
`:CHANnel<x1>:LIN:FRAMe<x2>:CHECksum?`

`<x1> = 14, 16`

`<x2> = 1 to 64`

Example `:CHANNEL14:LIN:FRAME0:`
`CHECKSUM CLASSIC`
`:CHANNEL14:LIN:FRAME0:CHECKSUM?`
`-> :CHANNEL14:LIN:FRAME0:`
`    CHECKSUM CLASSIC`

Description Default value: CLASsic

`:CHANnel<x1>:LIN:FRAMe<x2>:DLENgth`

Function Sets or queries the data length of LIN bus signal frames.

Syntax `:CHANnel<x1>:LIN:FRAMe<x2>:`
`DLENgth {<NRf>}`
`:CHANnel<x1>:LIN:FRAMe<x2>:DLENgth?`

`<x1> = 14, 16`

`<x2> = 1 to 64`

`<NRf> = 1 to 8`

Example `:CHANNEL14:LIN:FRAME1:DLENGTH 8`
`:CHANNEL14:LIN:FRAME1:DLENGTH?`
`-> :CHANNEL14:LIN:FRAME1:DLENGTH 8`

Description Default value: 1

`:CHANnel<x>:LIN:PORT?`

Function (Upper-level query) Queries all settings related to the specified port of a module that can perform LIN bus monitoring.

Syntax `:CHANnel<x>:LIN:PORT?`

`<x> = 14, 16`

`:CHANnel<x>:LIN:PORT:BRATe`

Function Sets or queries the bit rate of the specified LIN bus signal port.

Syntax `:CHANnel<x>:LIN:PORT:BRATe {<NRf>}`
`:CHANnel<x>:LIN:PORT:BRATe?`

`<x> = 14, 16`

`<NRf> = 2400, 9600, 19200`

Example `:CHANNEL14:LIN:PORT:BRATE 19200`
`:CHANNEL14:LIN:PORT:BRATE?`
`-> :CHANNEL14:LIN:PORT:BRATE 19200`

Description Default value: 19200

`:CHANnel<x1>:LIN:SCHannel<x2>?`

Function (Upper-level query) Queries all settings related to the specified sub channel of a module that can perform LIN bus monitoring.

Syntax `:CHANnel<x1>:LIN:SCHannel<x2>?`

`<x1> = 14, 16`

`<x2> = 1 to 60`

`:CHANnel<x1>:LIN:SCHannel<x2>:BICount (Bit Count)`

Function Sets or queries the bit length of the specified sub channel on a module that can monitor a LIN bus.

Syntax `:CHANnel<x1>:LIN:SCHannel<x2>:`
`BICount {<NRf>}`
`:CHANnel<x1>:LIN:SCHannel<x2>:`
`BICount?`

`<x1> = 14, 16`

`<x2> = 1 to 60`

`<NRf> = 1 to 8 (when ValueType is Logic), 2 to 32 (when ValueType is Unsigned or Signed)`

Example `:CHANNEL14:LIN:SCHANNEL1:BICOUNT 16`
`:CHANNEL14:LIN:SCHANNEL1:BICOUNT?`
`-> :CHANNEL14:LIN:SCHANNEL1:`
`    BICOUNT 16`

Description Default value: 8

`:CHANnel<x1>:LIN:SCHannel<x2>:BLABel<x3>`

Function Sets or queries the specified bit label when the data type of the specified sub channel on a module that can monitor a LIN bus is logic.

Syntax `:CHANnel<x1>:LIN:SCHannel<x2>:`
`BLABel<x3> {<String>}`
`:CHANnel<x1>:LIN:SCHannel<x2>:`
`BLABel<x3>?`

`<x1> = 14, 16`

`<x2> = 1 to 60`

`<x3> = 1 to 8`

`<String> = Up to 16 characters`

Example `:CHANNEL14:LIN:SCHANNEL1:`
`BLABEL "Bit1"`
`:CHANNEL14:LIN:SCHANNEL1:BLABEL?`
`-> :CHANNEL14:LIN:SCHANNEL1:`
`    BLABEL "Bit1"`

Description • This command is valid when the data type (:CHANnel<x1>:LIN:SCHannel<x2>:VTYPe) is set to LOGic.
• Default value: "Bit1" to "Bit8"

:CHANnel<x1>:LIN:SCHannel<x2>:BORDer (Byte Order)

Function	Sets or queries the method (endian) to use to store in the internal memory the data of the specified sub channel on a module that can monitor a LIN bus.
Syntax	:CHANnel<x1>:LIN:SCHannel<x2>: BORDer {BIG|LITTle} :CHANnel<x1>:LIN:SCHannel<x2>: BORDer? <x1> = 14, 16 <x2> = 1 to 60
Example	:CHANNEL14:LIN:SCHANNEL1: BORDER LITTLE :CHANNEL14:LIN:SCHANNEL1:BORDER? -> :CHANNEL14:LIN:SCHANNEL1: BORDER LITTLE
Description	Default value: LITTle

:CHANnel<x1>:LIN:SCHannel<x2>:FACTor

Function	Sets or queries the scaling constant (the value per bit) of the specified sub channel on a module that can monitor a LIN bus.
Syntax	:CHANnel<x1>:LIN:SCHannel<x2>: FACTor {<NRf>} :CHANnel<x1>:LIN:SCHannel<x2>: FACTor? <x1> = 14, 16 <x2> = 1 to 60 <NRf> = −9.9999E+30 to 9.9999E+30
Example	:CHANNEL14:LIN:SCHANNEL1:FACTOR 1.0 :CHANNEL14:LIN:SCHANNEL1:FACTOR? -> :CHANNEL14:LIN:SCHANNEL1: FACTOR 1.000E+00
Description	• This command is valid when the data type (:CHANnel<x1>:LIN:SCHannel<x2>:VTYPe) is set to UNSigned or SIGNed. • Default value: 1

:CHANnel<x1>:LIN:SCHannel<x2>:ID

Function	Sets or queries the frame ID of the specified sub channel on a module that can monitor a LIN bus.
Syntax	:CHANnel<x1>:LIN:SCHannel<x2>: ID {<String>} :CHANnel<x1>:LIN:SCHannel<x2>:ID? <x1> = 14, 16 <x2> = 1 to 60 <String> = "0" to "3F"
Example	:CHANNEL14:LIN:SCHANNEL1:ID "10" :CHANNEL14:LIN:SCHANNEL1:ID? -> :CHANNEL14:LIN:SCHANNEL1:ID "10"
Description	• If a string outside the range is specified, error 151, "Invalid string data," will occur. • Default value: "0"

:CHANnel<x1>:LIN:SCHannel<x2>:INPut

Function	Sets or queries the input ON/OFF state of the specified sub channel on a module that can monitor a LIN bus.
Syntax	:CHANnel<x1>:LIN:SCHannel<x2>: INPut {<Boolean>} :CHANnel<x1>:LIN:SCHannel<x2>:INPut? <x1> = 14, 16 <x2> = 1 to 60
Example	:CHANNEL14:LIN:SCHANNEL1:INPUT ON :CHANNEL14:LIN:SCHANNEL1:INPUT? -> :CHANNEL14:LIN:SCHANNEL1:INPUT 1
Description	Default value: Off

:CHANnel<x1>:LIN:SCHannel<x2>:LABel

Function	Sets or queries the label name of the specified sub channel on a module that can monitor a LIN bus.
Syntax	:CHANnel<x1>:LIN:SCHannel<x2>: LABel {<String>} :CHANnel<x1>:LIN:SCHannel<x2>:LABel? <x1> = 14, 16 <x2> = 1 to 60 <String> = Up to 16 characters
Example	:CHANNEL14:LIN:SCHANNEL1: LABLE "CH14_1" :CHANNEL14:LIN:SCHANNEL1:LABLE? -> :CHANNEL14:LIN:SCHANNEL1: LABLE "CH14_1"
Description	Default value: "CH<x1>_<x2>"

:CHANnel<x1>:LIN:SCHannel<x2>:OFFSet

Function	Sets or queries the scaling constant (offset value) of the specified sub channel on a module that can monitor a LIN bus.
Syntax	:CHANnel<x1>:LIN:SCHannel<x2>: OFFSet {<NRf>} :CHANnel<x1>:LIN:SCHannel<x2>: OFFSet? <x1> = 14, 16 <x2> = 1 to 60 <NRf> = −9.9999E+30 to 9.9999E+30
Example	:CHANNEL14:LIN:SCHANNEL1:OFFSET 1.0 :CHANNEL14:LIN:SCHANNEL1:OFFSET? -> :CHANNEL14:LIN:SCHANNEL1: OFFSET 1.000E+00
Description	• This command is valid when the data type (:CHANnel<x1>:LIN:SCHannel<x2>:VTYPe) is set to UNSigned or SIGNed. • Default value: 0

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:CHANnel<x1>:LIN:SCHannel<x2>:POSition

Function   Sets or queries the vertical position value of
            the specified sub channel on a module that can
            monitor a LIN bus.
Syntax   :CHANnel<x1>:LIN:SCHannel<x2>:
            POSition {<NRf>}
            :CHANnel<x1>:LIN:SCHannel<x2>:
            POSition?
            <x1> = 14, 16
            <x2> = 1 to 60
            <NRf> = –5.00 to 5.00 (div, in 0.01 steps)
Example   :CHANNEL14:LIN:SCHANNEL1:
            POSITION 1.0
            :CHANNEL14:LIN:SCHANNEL1:POSITION?
            -> :CHANNEL14:LIN:SCHANNEL1:
               POSITION 1.0
Description Default value: 0.00

:CHANnel<x1>:LIN:SCHannel<x2>:SBIT
(Start Bit)

Function   Sets or queries the bit number of the start position
            of the specified sub channel on a module that can
            monitor a LIN bus.
Syntax   :CHANnel<x1>:LIN:SCHannel<x2>:
            SBIT {<NRf>}
            :CHANnel<x1>:LIN:SCHannel<x2>:SBIT?
            <x1> = 14, 16
            <x2> = 1 to 60
            <NRf> = 0 to 63
Example   :CHANNEL14:LIN:SCHANNEL1:SBIT 0
            :CHANNEL14:LIN:SCHANNEL1:SBIT?
            -> :CHANNEL14:LIN:SCHANNEL1:SBIT 0
Description Default value: 0

:CHANnel<x1>:LIN:SCHannel<x2>:SCALe

Function   Sets or queries the display range (top and bottom
            edges) of the specified sub channel on a module
            that can monitor a LIN bus.
Syntax   :CHANnel<x1>:LIN:SCHannel<x2>:
            SCALe {AUTO|DEFault|<NRf>,<NRf>}
            :CHANnel<x1>:LIN:SCHannel<x2>:SCALe?
            <x1> = 14, 16
            <x2> = 1 to 60
            <NRf> = –10.0000E+30 to 10.0000E+30
Example   :CHANNEL14:LIN:SCHANNEL1:
            SCALE 10.0,–10.0
            :CHANNEL14:LIN:SCHANNEL1:SCALE?
            -> :CHANNEL14:LIN:SCHANNEL1:
               SCALE 1.000E+01,–1.000E+01
Description • This command is valid when the data type (:CH
              ANnel<x1>:LIN:SCHannel<x2>:VTYPe) is set
              to UNSigned or SIGNed.
            • Default value: 0.1

:CHANnel<x1>:LIN:SCHannel<x2>:UNIT

Function   Sets or queries the data unit of the specified sub
            channel on a module that can monitor a LIN bus.
Syntax   :CHANnel<x1>:LIN:SCHannel<x2>: UNIT
            {<String>}
            :CHANnel<x1>:LIN:SCHannel<x2>:UNIT?
            <x1> = 14, 16
            <x2> = 1 to 60
            <String> = Up to 16 characters
Example   :CHANNEL14:LIN:SCHANNEL1:UNIT "Unit"
            :CHANNEL14:LIN:SCHANNEL1:UNIT?
            -> :CHANNEL14:LIN:SCHANNEL1:
               UNIT "Unit"
Description • This command is valid when the data type (:CH
              ANnel<x1>:LIN:SCHannel<x2>:VTYPe) is set
              to UNSigned or SIGNed.
            • Default value: Empty string

:CHANnel<x1>:LIN:SCHannel<x2>:VTYPe
(Value Type)

Function   Sets or queries the data type of the specified sub
            channel on a module that can monitor a LIN bus.
Syntax   :CHANnel<x1>:LIN:SCHannel<x2>:
            VTYPe {UNSigned|SIGNed|LOGic}
            :CHANnel<x1>:LIN:SCHannel<x2>:VTYPe?
            <x1> = 14, 16
            <x2> = 1 to 60
Example   :CHANNEL14:LIN:SCHANNEL1:
            VTYPE UNSIGNED
            :CHANNEL14:LIN:SCHANNEL1:VTYPE?
            -> :CHANNEL14:LIN:SCHANNEL1:
               VTYPE UNSIGNED
Description Default value: UNSigned

:CHANnel<x1>:LIN:SCHannel<x2>:ZOOM

Function   Sets or queries the vertical zoom factor of LIN
            logic waveforms.
Syntax   :CHANnel<x1>:LIN:SCHannel<x2>:
            ZOOM {<NRf>}
            :CHANnel<x1>:LIN:SCHannel<x2>:ZOOM?
            <x1> = 14, 16
            <x2> = 1 to 60
            <NRf> = 0.1, 0.111, 0.125, 0.143, 0.167, 0.2,
                    0.25, 0.33, 0.4, 0.5, 0.556, 0.625, 0.667,
                    0.714, 0.8, 0.833, 1, 1.11, 1.25, 1.33,
                    1.43, 1.67, 2, 2.22, 2.5, 3.33
Example   :CHANNEL14:LIN:SCHANNEL1:ZOOM 2
            :CHANNEL14:LIN:SCHANNEL1:ZOOM?
            -> :CHANNEL14:LIN:SCHANNEL1:ZOOM 2
Description • This command is valid when the data type is
              logic.
            • Default value: 1

:CHANnel<x>:LOGic?

Function   (Upper-level query) Queries all logic input module
            settings.
Syntax   :CHANnel<x>:LOGic?
            <x> = 1 to 16

:CHANnel\<x>:LOGic: {BIT1|...|BIT8}?

Function	(Upper-level query) Queries all settings of each bit of a logic input module.
Syntax	:CHANnel\<x>:LOGic: {BIT1|...|BIT8}?

:CHANnel\<x>:LOGic: {BIT1|...|BIT8}:CELimination

Function	Sets or queries the chatter elimination for the specified bit of the specified logic channel.
Syntax	:CHANnel\<x>:LOGic: {BIT1|...| BIT8}:CELimination {OFF|\<Time>}
	:CHANnel\<x>:LOGic: {BIT1|...|BIT8}:CELimination?
	\<x> = 1 to 16
	\<Time> = 5ms, 10ms, 20ms, 50ms, 100ms
Example	:CHANNEL15:LOGIC:BIT8: CELIMINATION 0.01
	:CHANNEL15:LOGIC:BIT8:CELIMINATION?
	-> :CHANNEL15:LOGIC:BIT8: CELIMINATION 1.0000000E-02
Description	Default value: OFF

:CHANnel\<x>:LOGic: {BIT1|...|BIT8}:DISPlay

Function	Sets or queries whether the display of each bit is turned on for the specified logic channel.
Syntax	:CHANnel\<x>:LOGic: {BIT1|...| BIT8}:DISPlay {\<Boolean>}
	:CHANnel\<x>:LOGic: {BIT1|...| BIT8}:DISPlay?
	\<x> = 1 to 16
Example	:CHANNEL15:LOGIC:BIT1:DISPLAY ON
	:CHANNEL15:LOGIC:BIT1:DISPLAY?
	-> :CHANNEL15:LOGIC:BIT1:DISPLAY 1
Description	Default value: ON

:CHANnel\<x>:LOGic: {BIT1|...|BIT8}:LABel

Function	Sets or queries the label of each bit for the specified logic channel.
Syntax	:CHANnel\<x>:LOGic: {BIT1|...| BIT8}:LABel \<String>
	:CHANnel\<x>:LOGic: {BIT1|...| BIT8}:LABel?
	\<String> = Up to 16 characters
	\<x> = 1 to 16
Example	:CHANNEL15:LOGIC:BIT8:LABEL "ABC"
	:CHANNEL15:LOGIC:BIT8:LABEL?
	-> :CHANNEL15:LOGIC:BIT8:LABEL "ABC"
Description	Default value: "Bit1" to "Bit8"

:CHANnel\<x>:LOGic:BMAPping

Function	Sets or queries the bit display method of the specified logic channel.
Syntax	:CHANnel\<x>:LOGic: BMAPping {AUTO|FIXed}
	:CHANnel\<x>:LOGic:BMAPping?
	\<x> = 1 to 16
Example	:CHANNEL15:LOGIC:BMAPPING AUTO
	:CHANNEL15:LOGIC:BMAPPING?
	-> :CHANNEL15:LOGIC:BMAPPING AUTO
Description	Default value: AUTO

:CHANnel\<x>:LOGic:DESKew

Function	Sets or queries the deskew value when a logic module is installed.
Syntax	:CHANnel\<x>:LOGic:DESKew {\<NRf>}
	:CHANnel\<x>:LOGic:DESKew?
	\<x> = 1 to 16
Example	:CHANNEL1:LOGIC:DESKEW 0
	:CHANNEL1:LOGIC:DESKEW?
	-> :CHANNEL1:LOGIC:DESKEW 0.00E+00
Description	Default value: 0.00E+00

:CHANnel\<x>:LOGic:POSition

Function	Sets or queries the vertical position of the specified logic channel.
Syntax	:CHANnel\<x>:LOGic:POSition {\<NRf>}
	:CHANnel\<x>:LOGic:POSition?
	\<x> = 1 to 16
	\<NRf> = –5.00 to 5.00 (div, in 0.01 steps)
Example	:CHANNEL15:LOGIC:POSITION 1
	:CHANNEL15:LOGIC:POSITION?
	-> :CHANNEL15:LOGIC:POSITION 1.00
Description	Default value: 0

:CHANnel\<x>:LOGic:ZOOM

Function	Sets or queries the vertical zoom factor of a logic input module.
Syntax	:CHANnel\<x>:LOGic:ZOOM {\<NRf>}
	:CHANnel\<x>:LOGic:ZOOM?
	\<x> = 1 to 16
	\<NRf> = 0.1, 0.111, 0.125, 0.143, 0.167, 0.2, 0.25, 0.33, 0.4, 0.5, 0.556, 0.625, 0.667, 0.714, 0.8, 0.833, 1, 1.11, 1.25, 1.33, 1.43, 1.67, 2, 2.22, 2.5, 3.33
Example	:CHANNEL15:LOGIC:ZOOM 1
	:CHANNEL15:LOGIC:ZOOM?
	-> :CHANNEL15:LOGIC:ZOOM 1.000
Description	Default value: 1

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Commands

`:CHANnel<x>:MODUle?`

Function   Queries the module of the specified channel.

Syntax   `:CHANnel<x>:MODUle?`

    `<x>` = 1 to 32

Description   The values returned for each module are listed below.

NOMODULE	No module[1]
M701250	701250(HS10M12)
M701251	701251(HS1M16)
M701255	701255(NONISO_10M12)
M701261	701261(Voltage/Temp.)
M701262	701262(Voltage/Temp. with AAF)
M701265	701265(TEMP/HPV)
M701270	701270(STRAIN_NDIS)
M701271	701271(STRAIN_DSUB)
M701275	701275(ACCL/VOLT)
M701281	701281(FREQ)
M720211	720211(HS100M12)
M720212	720212(HS200M14)
M720221	720221(16CH TEMP/VOLT)
M720230	720230(LOGIC)
M720240	720240(CAN)
M720241	720241(CAN&LIN)
M720242	720242(CAN/CAN FD)
M720243	720243(SENT)
M720250	720250(HS10M12)
M720254	720254(4CH 1M16)
M720256	720256(4CH 10M16)
M720266	720266(TEMP/HPV)
M720268	720268(HV(AAF, RMS))
M720281	720281(FREQ)

1   If a 16-CH temperature/voltage input module is installed and you specify an even channel for `<x>`, this command will return "NOMODULE."

`:CHANnel<x>:SENT?`

Function   (Upper-level query) Queries all SENT monitor module settings.

Syntax   `:CHANnel<x>:SENT?`

    `<x>` = 9 to 16

`:CHANnel<x>:SENT:FORMat?`

Function   (Upper-level query) Queries all SENT signal message format settings of an SENT monitor module.

Syntax   `:CHANnel<x>:SENT:FORMAT?`

    `<x>` = 9 to 16

`:CHANnel<x>:SENT:FORMat:CTICk (Clock Tick)`

Function   Sets or queries the clock tick of a SENT signal.

Syntax   `:CHANnel<x>:SENT:FORMat:`
    `CTICk {<Time>}`
    `:CHANnel<x>:SENT:FORMat:CTICk?`
    `<x>` = 9 to 16
    `<Time>` = 1.00us to 100.0us (resolution: 0.01us)

Example   `:CHANNEL9:SENT:FORMAT:CTICK 3.00us`
    `:CHANNEL9:SENT:FORMAT:CTICK?`
    `-> :CHANNEL9:SENT:FORMAT:`
      `CTICK 3.00us`

Description   Default value: 3.00us

`:CHANnel<x>:SENT:FORMat:CTYPe (CRC Type)`

Function   Sets or queries the CRC type of a SENT signal.

Syntax   `:CHANnel<x1>:SENT:FORMat:`
    `CTYPe {LEGacy|RECommended}`
    `:CHANnel<x1>:SENT:FORMat:CTYPe?`
    `<x1>` = 9 to 16

Example   `:CHANNEL9:SENT:FORMAT:`
    `CTYPE RECOMMENDED`
    `:CHANNEL9:SENT:FORMAT:CTYPE?`
    `-> :CHANNEL9:SENT:FORMAT:`
      `CTYPE RECOMMENDED`

Description   Default value: RECommended

`:CHANnel<x>:SENT:FORMat:DNIBbles (Data Nibbles)`

Function   Sets or queries the number of data nibbles of a SENT signal.

Syntax   `:CHANnel<x>:SENT:FORMat:`
    `DNIBbles {<NRf>}`
    `:CHANnel<x>:SENT:FORMat:DNIBbles?`
    `<x>` = 9 to 16
    `<NRf>` = 1 to 8

Example   `:CHANNEL9:SENT:FORMAT:DNIBBLES 6`
    `:CHANNEL9:SENT:FORMAT:DNIBBLES?`
    `-> :CHANNEL9:SENT:FORMAT:DNIBBLES 6`

Description   Default value: 6

`:CHANnel<x>:SENT:FORMat:HS12`

Function   Sets or queries the on/off state of High Speed 12bit of the SENT port.

Syntax   `:CHANnel<x>:SENT:FORMat:`
    `HS12 {<Boolean>}`
    `:CHANnel<x>:SENT:FORMat:HS12?`
    `<x>` = 9 to 16

Example   `:CHANNEL9:SENT:FORMAT:HS12 ON`
    `:CHANNEL9:SENT:FORMAT:HS12?`
    `-> :CHANNEL9:SENT:FORMAT:HS12 ON`

Description   Default value: OFF

:CHANnel<x>:SENT:FORMat:MULTiplex

Function Sets or queries the on/off state of Fast Channel Multiplexing of the SENT port.

Syntax :CHANnel<x>:SENT:FORMat:
MULTiplex {<Boolean>}
:CHANnel<x>:SENT:FORMat:MULTiplex?
<x> = 9 to 16

Example :CHANNEL9:SENT:FORMAT:MULTIPLEX 1
:CHANNEL9:SENT:FORMAT:MULTIPLEX?
-> :CHANNEL9:SENT:FORMAT:MULTIPLEX 1

Description Default value: 0

**:CHANnel<x>:SENT:FORMat:PPULse
(Pause Pulse)**

Function Sets or queries whether pause pulses are to be included in FastCH messages of SENT signals.

Syntax :CHANnel<x>:SENT:FORMat:
PPULse {<Boolean>}
:CHANnel<x>:SENT:FORMat:PPULse?
<x> = 9 to 16

Example :CHANNEL9:SENT:FORMAT:PPULSE ON
:CHANNEL9:SENT:FORMAT:PPULSE?
-> :CHANNEL9:SENT:FORMAT:PPULSE ON

Description Default value: ON

**:CHANnel<x>:SENT:FORMat:SCHType
(Slow CH Type)**

Function Sets or queries the Slow CH type of a SENT signal.

Syntax :CHANnel<x>:SENT:FORMat:
SCHType {SHORt|ENH4|ENH8}
:CHANnel<x>:SENT:FORMat:SCHType?
<x> = 9 to 16
SHORt = Short (ID 4bit + Data 8bit) type
ENH4 = Enhanced (ID 4bit+Data 16bit) type
ENH8 = Enhanced (ID 8bit+Data 12bit) type

Example :CHANNEL9:SENT:FORMAT:SCHTYPE ENH8
:CHANNEL9:SENT:FORMAT:SCHTYPE?
-> :CHANNEL9:SENT:FORMAT:
SCHTYPE ENH8

Description Default value: ENH8

:CHANnel<x>:SENT:ERRor?

Function (Upper-level query) Queries all SENT monitor module error settings.

Syntax :CHANnel<x>:SENT:ERRor?
<x> = 9 to 16

:CHANnel<x>:SENT:ERRor:DETect?

Function (Upper-level query) Queries all SENT monitor module error detection settings.

Syntax :CHANnel<x>:SENT:ERRor:DETect?
<x> = 9 to 16

**:CHANnel<x>:SENT:ERRor:DETect:SCPul
se (Successive Calibration Pulse)**

Function Sets or queries whether successive calibration pulse errors of a SENT signal are to be detected.

Syntax :CHANnel<x>:SENT:ERRor:DETect:
SCPulse {<Boolean>}
:CHANnel<x>:SENT:ERRor:DETect:
SCPulse?
<x> = 9 to 16

Example :CHANNEL9:SENT:ERROR:DETECT:
SCPULSE ON
:CHANNEL9:SENT:ERROR:DETECT:SCPULSE?
-> :CHANNEL9:SENT:ERROR:DETECT:
SCPULSE ON

Description Default value: OFF

:CHANnel<x>:SENT:ERRor:TRIGger?

Function (Upper-level query) Queries all error trigger channel settings of a SENT monitor module.

Syntax :CHANnel<x>:SENT:ERRor:TRIGger?
<x> = 9 to 16

**:CHANnel<x>:SENT:ERRor:TRIGger:FCRC
(Fast Channel CRC)**

Function Sets or queries whether fast channel CRC errors of a SENT signal are to be displayed in error trigger channels.

Syntax :CHANnel<x>:SENT:ERRor:TRIGger:
FCRC {<Boolean>}
:CHANnel<x>:SENT:ERRor:TRIGger:
FCRC?
<x> = 9 to 16

Example :CHANNEL9:SENT:ERROR:TRIGGER:FCRC ON
:CHANNEL9:SENT:ERROR:TRIGGER:FCRC?
-> :CHANNEL9:SENT:ERROR:TRIGGER:
FCRC ON

Description Default value: ON

**:CHANnel<x>:SENT:ERRor:TRIGger:NVAL
ue (Nibble Value)**

Function Sets or queries whether nibble value errors of a SENT signal are to be displayed in error trigger channels.

Syntax :CHANnel<x>:SENT:ERRor:TRIGger:
NVALue {<Boolean>}
:CHANnel<x>:SENT:ERRor:TRIGger:
NVALue?
<x> = 9 to 16

Example :CHANNEL9:SENT:ERROR:TRIGGER:
NVALUE ON
:CHANNEL9:SENT:ERROR:TRIGGER:NVALUE?
-> :CHANNEL9:SENT:ERROR:TRIGGER:
NVALUE ON

Description Default value: ON

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Commands

:CHANnel\<x\>:SENT:ERRor:TRIGger:PNUMb er (Pulse Number)

Function   Sets or queries whether pulse number errors of a SENT signal are to be displayed in error trigger channels.

Syntax   :CHANnel\<x\>:SENT:ERRor:TRIGger:
PNUMber {\<Boolean\>}
:CHANnel\<x\>:SENT:ERRor:TRIGger:
PNUMber?
\<x\> = 9 to 16

Example   :CHANNEL9:SENT:ERROR:TRIGGER:
PNUMBER ON
:CHANNEL9:SENT:ERROR:TRIGGER:
PNUMBER?
-> :CHANNEL9:SENT:ERROR:TRIGGER:
PNUMBER ON

Description   Default value: ON

:CHANnel\<x\>:SENT:ERRor:TRIGger:SCPul se (Succesive Calibration Pulse)

Function   Sets or queries whether successive calibration pulse errors of a SENT signal are to be displayed in error trigger channels.

Syntax   :CHANnel\<x\>:SENT:ERRor:TRIGger:
SCPulse {\<Boolean\>}
:CHANnel\<x\>:SENT:ERRor:TRIGger:
SCPulse?
\<x\> = 9 to 16

Example   :CHANNEL9:SENT:ERROR:TRIGGER:
SCPULSE ON
:CHANNEL9:SENT:ERROR:TRIGGER:
SCPULSE?
-> :CHANNEL9:SENT:ERROR:TRIGGER:
SCPULSE ON

Description   Default value: ON

:CHANnel\<x\>:SENT:ERRor:TRIGger:SCRC (Slow Channel CRC)

Function   Sets or queries whether slow channel CRC errors of a SENT signal are to be displayed in error trigger channels.

Syntax   :CHANnel\<x\>:SENT:ERRor:TRIGger:
SCRC {\<Boolean\>}
:CHANnel\<x\>:SENT:ERRor:TRIGger:
SCRC?
\<x\> = 9 to 16

Example   :CHANNEL9:SENT:ERROR:TRIGGER:SCRC ON
:CHANNEL9:SENT:ERROR:TRIGGER:SCRC?
-> :CHANNEL9:SENT:ERROR:TRIGGER:
SCRC ON

Description   Default value: ON

:CHANnel\<x\>:SENT:ERRor:COUNt?

Function   (Upper-level query) Queries all error count channel settings of a SENT monitor module.

Syntax   :CHANnel\<x\>:SENT:ERRor:COUNt?
\<x\> = 9 to 16

:CHANnel\<x\>:SENT:ERRor:COUNt:FCRC (Fast Channel CRC)

Function   Sets or queries whether fast channel CRC errors of a SENT signal are to be integrated in error count channels.

Syntax   :CHANnel\<x\>:SENT:ERRor:COUNt:
FCRC {\<Boolean\>}
:CHANnel\<x\>:SENT:ERRor:COUNt:FCRC?
\<x\> = 9 to 16

Example   :CHANNEL9:SENT:ERROR:COUNT:FCRC ON
:CHANNEL9:SENT:ERROR:COUNT:FCRC?
-> :CHANNEL9:SENT:ERROR:COUNT:
FCRC ON

Description   Default value: ON

:CHANnel\<x\>:SENT:ERRor:COUNt:MRESet: EXECute (Manual Reset)

Function   Resets the error count channel value of a SENT signal.

Syntax   :CHANnel\<x\>:SENT:ERRor:COUNt:MRESet:
EXECute
\<x\> = 9 to 16

Example   :CHANNEL9:SENT:ERROR:COUNT:MRESET:
EXECUTE

:CHANnel\<x\>:SENT:ERRor:COUNt:NVALue (Nibble Value)

Function   Sets or queries whether nibble value errors of a SENT signal are to be integrated in error count channels.

Syntax   :CHANnel\<x\>:SENT:ERRor:COUNt:
NVALue {\<Boolean\>}
:CHANnel\<x\>:SENT:ERRor:COUNt:
NVALue?
\<x\> = 9 to 16

Example   :CHANNEL9:SENT:ERROR:COUNT:NVALUE ON
:CHANNEL9:SENT:ERROR:COUNT:NVALUE?
-> :CHANNEL9:SENT:ERROR:COUNT:
NVALUE ON

Description   Default value: ON

**:CHANnel<x>:SENT:ERRor:COUNt:PNUMber
(Pulse Number)**

Function   Sets or queries whether pulse number errors of a
SENT signal are to be accumulated in error count
channels.

Syntax   :CHANnel<x>:SENT:ERRor:COUNt:
PNUMber {<Boolean>}
:CHANnel<x>:SENT:ERRor:COUNt:
PNUMber?
<x> = 9 to 16

Example   :CHANNEL9:SENT:ERROR:TRIGGER:
PNUMBER ON
:CHANNEL9:SENT:ERROR:TRIGGER:
PNUMBER?
-> :CHANNEL9:SENT:ERROR:TRIGGER:
PNUMBER ON

Description Default value: ON

**:CHANnel<x>:SENT:ERRor:COUNt:SCPulse
(Succesive Calibration Pulse)**

Function   Sets or queries whether successive calibration
pulse errors of a SENT signal are to be integrated
in error count channels.

Syntax   :CHANnel<x>:SENT:ERRor:COUNt:
SCPulse {<Boolean>}
:CHANnel<x>:SENT:ERRor:COUNt:
SCPulse?
<x> = 9 to 16

Example   :CHANNEL9:SENT:ERROR:COUNT:
SCPULSE ON
:CHANNEL9:SENT:ERROR:COUNT:SCPULSE?
-> :CHANNEL9:SENT:ERROR:COUNT:
SCPULSE ON

Description Default value: ON

**:CHANnel<x>:SENT:ERRor:COUNt:SCRC
(Slow Channel CRC)**

Function   Sets or queries whether slow channel CRC errors
of a SENT signal are to be integrated in error
count channels.

Syntax   :CHANnel<x>:SENT:ERRor:COUNt:
SCRC {<Boolean>}
:CHANnel<x>:SENT:ERRor:COUNt:SCRC?
<x> = 9 to 16

Example   :CHANNEL9:SENT:ERROR:COUNT:SCRC ON
:CHANNEL9:SENT:ERROR:COUNT:SCRC?
-> :CHANNEL9:SENT:ERROR:COUNT:
SCRC ON

Description Default value: ON

**:CHANnel<x>:SENT:ERRor:COUNt:SRESet
(Reset on Start)**

Function   Sets or queries whether the error count channel
of a SENT signal is to be reset at start.

Syntax   :CHANnel<x>:SENT:ERRor:COUNt:
SRESet {<Boolean>}
:CHANnel<x>:SENT:ERRor:COUNt:
SRESet?
<x> = 9 to 16

Example   :CHANNEL9:SENT:ERROR:TRIGGER:
SRESET ON
:CHANNEL9:SENT:ERROR:TRIGGER:SRESET?
-> :CHANNEL9:SENT:ERROR:TRIGGER:
SRESET ON

Description Default value: ON

:CHANnel<x>:SENT:PROBe

Function   Sets or queries the probe attenuation of a SENT
signal channel.

Syntax   :CHANnel<x>:SENT:PROBe {<NRf>}
:CHANnel<x>:SENT:PROBe?
<x> = 9 to 16
<NRf> = 1, 10

Example   :CHANNEL9:SENT:PROBe 1
:CHANNEL9:SENT:PROBe?
-> :CHANNEL9:SENT:PROBe 1

Description Default value: 1

:CHANnel<x1>:SENT:SCHannel<x2>?

Function   (Upper-level query) Queries all SENT monitor
module sub channel settings.

Syntax   :CHANnel<x1>:SENT:SCHannel<x2>?
<x1> = 9 to 16
<x2> = 1 to 11

:CHANnel<x1>:SENT:SCHannel<x2>:BICount (Bit Count)

Function   Sets or queries the bit length of SENT data.

Syntax   :CHANnel<x1>:SENT:SCHannel<x2>:
BICount {<NRf>}
:CHANnel<x1>:SENT:SCHannel<x2>:
BICount?
<x1> = 9 to 16
<x2> = 1 to 3, 5 to 9
<NRf> = 1 to 32 (Fast CH)
1 to 8 (Slow CH (Short))
1 to 16 (Slow CH (Enhanced ID 4 bit +
Data 16 bit))
1 to 12 (Slow CH (Enhanced ID 8 bit +
Data 12 bit))

Example   :CHANNEL9:SENT:SCHANNEL1:BICOUNT 12
:CHANNEL9:SENT:SCHANNEL1:BICOUNT?
-> :CHANNEL9:SENT:SCHANNEL1:
BICOUNT 12

Description • This command can be used on a sub channel
whose data type is set to FastCH or SlowCH.
• Default value: 12

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Commands

:CHANnel<x1>:SENT:SCHannel<x2>:BIT<x3>:DISPlay

Function Sets or queries whether each bit of SENT data is to be displayed.

Syntax :CHANnel<x1>:SENT:SCHannel<x2>:
BIT<x3>:DISPlay {<Boolean>}
:CHANnel<x1>:SENT:SCHannel<x2>:
BIT<x3>:DISPlay?
<x1> = 9 to 16
<x2> = 4, 10
<x3> = 1 to 16 (S&C Channel)
      1 to 5 (Error Trigger)

Example :CHANNEL9:SENT:SCHANNEL1:BIT1:
DISPLAY ON
:CHANNEL9:SENT:SCHANNEL1:BIT1:
DISPLAY?
-> :CHANNEL9:SENT:SCHANNEL1:BIT1:
    DISPLAY ON

Description • This command can be used on a sub channel whose data type is set to S&C or Error Trigger.
• For error trigger, this is equivalent to a :CHANnel<x>:SENT:ERRor:TRIGger:***** command.
• Default value: ON

:CHANnel<x1>:SENT:SCHannel<x2>:BIT<x3>:LABel

Function Sets or queries the display label of each bit of SENT data.

Syntax :CHANnel<x1>:SENT:SCHannel<x2>:
BIT<x3>:LABel {<String>}
:CHANnel<x1>:SENT:SCHannel<x2>:
BIT<x3>:LABel?
<x1> = 9 to 16
<x2> = 4, 10
<x3> = 1 to 16 (S&C Channel)
      1 to 5 (Error Trigger)
<String> = Up to 16 characters

Example :CHANNEL9:SENT:SCHANNEL1:BIT1:
LABel "Bit0"
:CHANNEL9:SENT:SCHANNEL1:BIT1:LABel?
-> :CHANNEL9:SENT:SCHANNEL1:BIT1:
    LABel "Bit0"

Description • This command can be used on a sub channel whose data type is set to S&C or Error Trigger.
• For error trigger, the setup menu displayed on the instrument's panel does not contain a menu command that corresponds to this command.
• Default value: "Bit0","Bit1" (S&C),
          "Sync/
          CAL","NibbleNo","NibbleVa",
          "FACH_CRC","SLCH_CRC"
          (Error Trigger)

:CHANnel<x1>:SENT:SCHannel<x2>:BORDer (Byte Order)

Function Sets or queries the endian (byte order) of SENT data.

Syntax :CHANnel<x1>:SENT:SCHannel<x2>:
BORDer {BIG|LITTle}
:CHANnel<x1>:SENT:SCHannel<x2>:
BORDer?
<x1> = 9 to 16
<x2> = 1 to 3

Example :CHANNEL9:SENT:SCHANNEL1:BORDER BIG
:CHANNEL9:SENT:SCHANNEL1:BORDER?
-> :CHANNEL9:SENT:SCHANNEL1:
    BORDER BIG

Description • This command can be used on a sub channel whose data type is set to FastCH.
• Default value: BIG

:CHANnel<x1>:SENT:SCHannel<x2>:DTYPe

Function Sets or queries the data type of SENT data.

Syntax :CHANnel<x1>:SENT:SCHannel<x2>:
DTYPe {FACHannel|SLCHannel}
<x1> = 1 to 4
<x2> = 5 to 9
:CHANnel<x1>:SENT:SCHannel<x2>:
DTYPe?
<x1> = 1 to 16
<x2> = 1 to 11
Response parameter = {FACHannel|SLCHannel|SCALibration|ERTRigger|ERCount}
    FACHannel: Fast Channel
    SLCHannel: Slow Channel
    SCALibration: Status and
Calibration
    ERTRigger: Error Trigger
    ERCount: Error Counter

Example :CHANNEL1:SENT:SCHANNEL5:
DTYPE SLCHANNEL
:CHANNEL9:SENT:SCHANNEL5:DTYPE?
-> :CHANNEL9:SENT:SCHANNEL5:
    DTYPE SLCHANNEL

Description For queries, the following values are returned for each sub channel.
    Sub channels 1, 2, 3:   FACHannel
    Sub channel 4:   SCALibration
    Sub channels 5, 6, 7, 8, 9:
          SLCHannel, FACHannel
    Sub channel 10:   ERTRigger
    Sub channel 11:   ERCount

**:CHANnel<x1>:SENT:SCHannel<x2>:FACT
or**

Function   Sets or queries the scaling coefficient (value per
            bit) of SENT data.
Syntax   :CHANnel<x1>:SENT:SCHannel<x2>:
            FACTor {<NRf>}
            :CHANnel<x1>:SENT:SCHannel<x2>:
            FACTor?
            <x1> = 9 to 16
            <x2> = 1 to 3, 5 to 9
            <NRf> = −10.0E−30 to 10.0E+30
Example   :CHANNEL9:SENT:SCHANNEL1:FACTOR 1.0
            :CHANNEL9:SENT:SCHANNEL1:FACTOR?
            -> :CHANNEL9:SENT:SCHANNEL1:
               FACTOR 1.0
Description • This command can be used on a sub channel
              whose data type is set to FastCH or SlowCH.
            • Default value: 1.0

:CHANnel<x1>:SENT:SCHannel<x2>:INPut

Function   Sets or queries the input on/off state of SENT
            data.
Syntax   :CHANnel<x1>:SENT:SCHannel<x2>:
            INPut {<Boolean>}
            :CHANnel<x1>:SENT:SCHannel<x2>:
            INPut?
            <x1> = 9 to 16
            <x2> = 1 to 11
Example   :CHANNEL9:SENT:SCHANNEL1:INPUT ON
            :CHANNEL9:SENT:SCHANNEL1:INPUT?
            -> :CHANNEL9:SENT:SCHANNEL1:INPUT ON
Description Default value: ON

:CHANnel<x1>:SENT:SCHannel<x2>:LABel

Function   Sets or queries the display label of SENT data.
Syntax   :CHANnel<x1>:SENT:SCHannel<x2>:LABel
            {<String>}
            :CHANnel<x1>:SENT:SCHannel<x2>:
            LABel?
            <x1> = 9 to 16
            <x2> = 1 to 11
            <String> = Up to 16 characters
Example   :CHANNEL9:SENT:SCHANNEL1:
            LABEL "FastCH1"
            :CHANNEL9:SENT:SCHANNEL1:LABEL?
            -> :CHANNEL9:SENT:SCHANNEL1:
               LABEL "FastCH1"
Description Default value: "FastCH1" to "FastCH3" (FastCH),
            "SlowCH1" to "SlowCH5"
            (SlowCH), "S&C" (Status and
            Communication), "ErrTrig" (Error
            Trigger), "ErrCnt" (Error Counter)

**:CHANnel<x1>:SENT:SCHannel<x2>:OFFS
et**

Function   Sets or queries the offset value of SENT data.
Syntax   :CHANnel<x1>:SENT:SCHannel<x2>:
            OFFSet {<NRf>}
            :CHANnel<x1>:SENT:SCHannel<x2>:
            OFFSet?
            <x1> = 9 to 16
            <x2> = 1 to 3, 5 to 9
            <NRf> = −10.0E−30 to 10.0E+30
Example   :CHANNEL9:SENT:SCHANNEL1:OFFSET 0.0
            :CHANNEL9:SENT:SCHANNEL1:OFFSET?
            -> :CHANNEL9:SENT:SCHANNEL1:
               OFFSET 0.0
Description • This command can be used on a sub channel
              whose data type is set to FastCH or SlowCH.
            • Default value: 0.0

**:CHANnel<x1>:SENT:SCHannel<x2>:POSit
ion**

Function   Sets or queries the display position of SENT data.
Syntax   :CHANnel<x1>:SENT:SCHannel<x2>:
            POSition {<NRf>}
            :CHANnel<x1>:SENT:SCHannel<x2>:
            POSition?
            <x1> = 9 to 16
            <x2> = 1 to 11
            <NRf> = −5.00 to 5.00
Example   :CHANNEL9:SENT:SCHANNEL1:
            POSITION 0.0
            :CHANNEL9:SENT:SCHANNEL1:POSITION?
            -> :CHANNEL9:SENT:SCHANNEL1:
               POSITION 0.0
Description Default value: 0.0

**:CHANnel<x1>:SENT:SCHannel<x2>:SBIT
(Start Bit)**

Function   Sets or queries the extraction position of SENT
            data.
Syntax   :CHANnel<x1>:SENT:SCHannel<x2>:
            SBIT {<NRf>}
            :CHANnel<x1>:SENT:SCHannel<x2>:SBIT?
            <x1> = 9 to 16
            <x2> = 1 to 3, 5 to 9
            <NRf> = 0 to 31 (Fast CH)
                    0 to 7 (Slow CH (Short))
                    0 to 15 (Slow CH (Enhanced ID 4 bit +
                    Data 16 bit))
                    0 to 11 (Slow CH (Enhanced ID 8 bit +
                    Data 12 bit))
Example   :CHANNEL9:SENT:SCHANNEL1:SBIT 0
            :CHANNEL9:SENT:SCHANNEL1:SBIT?
            -> :CHANNEL9:SENT:SCHANNEL1:SBIT 0
Description • This command can be used on a sub channel
              whose data type is set to FastCH or SlowCH.
            • Default value: 0

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Commands

:CHANnel<x1>:SENT:SCHannel<x2>:SCALe

Function	Sets or queries the display scale of SENT data.
Syntax	:CHANnel<x1>:SENT:SCHannel<x2>:
	SCALe {AUTO|DEFault|<NRf>,<NRf>}
	:CHANnel<x1>:SENT:SCHannel<x2>:
	SCALe?
	<x1> = 9 to 16
	<x2> = 1 to 3, 5 to 9, 11
	<NRf> = –10.0E–30 to 10.0E+30
	AUTO = Executes auto input signal scaling
	DEFault = Executes default scaling
Example	:CHANNEL9:SENT:SCHANNEL1:
	SCALE -10.0, 10.0
	:CHANNEL9:SENT:SCHANNEL1:SCALE?
	-> :CHANNEL9:SENT:SCHANNEL1:
	SCALE -10.0,10.0
Description	• This command can be used on a sub channel whose data type is set to FastCH, SlowCH, or Error Count.
	• Default value: –100.0, 400.0

:CHANnel<x1>:SENT:SCHannel<x2>:SID
(Slow Channel ID)

Function	Sets or queries the Slow CH ID or Fast CH FC of SENT data.
Syntax	:CHANnel<x1>:SENT:SCHannel<x2>: SID
	{<String>}
	:CHANnel<x1>:SENT:SCHannel<x2>:SID?
	<x1> = 9 to 16
	<x2> = 5 to 9
	<String> = "0" to "F" (Short, Enhanced ID 4 bit + Data 16 bit)
	"00" to "FF" (Enhanced ID 8 bit + Data 12 bit)
Example	:CHANNEL9:SENT:SCHANNEL1:SID "00"
	:CHANNEL9:SENT:SCHANNEL1:SID?
	-> :CHANNEL9:SENT:SCHANNEL1:SID "00"
Description	• This command can be used on a sub channel whose data type is set to SlowCH or FastCH.
	• Default value: "00"

:CHANnel<x1>:SENT:SCHannel<x2>:UNIT

Function	Sets or queries the unit string of SENT data.
Syntax	:CHANnel<x1>:SENT:SCHannel<x2>: UNIT
	{<String>}
	:CHANnel<x1>:SENT:SCHannel<x2>:UNIT?
	<x1> = 9 to 16
	<x2> = 1 to 3, 5 to 9
	<String> = Up to 16 characters
Example	:CHANNEL9:SENT:SCHANNEL1:UNIT "Pa"
	:CHANNEL9:SENT:SCHANNEL1:UNIT?
	-> :CHANNEL9:SENT:SCHANNEL1:
	UNIT "Pa"
Description	• This command can be used on a sub channel whose data type is set to FastCH or SlowCH.
	• Default value: "" (none)

:CHANnel<x1>:SENT:SCHannel<x2>:VTYPe
(Value Type)

Function	Sets or queries the data type of SENT data.
Syntax	:CHANnel<x1>:SENT:SCHannel<x2>:
	VTYPe {UNSigned|SIGNed}
	:CHANnel<x1>:SENT:SCHannel<x2>:
	VTYPe?
	<x1> = 9 to 16
	<x2> = 1 to 3, 5 to 9
Example	:CHANNEL9:SENT:SCHANNEL1:
	VTYPE UNSIGNED
	:CHANNEL9:SENT:SCHANNEL1:VTYPE?
	-> :CHANNEL9:SENT:SCHANNEL1:
	VTYPE UNSIGNED
Description	• This command can be used on a sub channel whose data type is set to FastCH or SlowCH.
	• Default value: UNSigned

:CHANnel<x1>:SENT:SCHannel<x2>:ZOOM

Function	Sets or queries the vertical zoom factor of SENT data.
Syntax	:CHANnel<x1>:SENT:SCHannel<x2>:
	ZOOM {<NRf>}
	:CHANnel<x1>:SENT:SCHannel<x2>:ZOOM?
	<x1> = 9 to 16
	<x2> = 4, 10
	<NRf> = 0.1, 0.111, 0.125, 0.143, 0.167, 0.2,
	0.25, 0.33, 0.4, 0.5, 0.556, 0.625, 0.667,
	0.714, 0.8, 0.833, 1.0, 1.11, 1.25, 1.43,
	1.67, 2, 2.22, 2.5, 3.33
Example	:CHANNEL9:SENT:SCHANNEL1:ZOOM 1
	:CHANNEL9:SENT:SCHANNEL1:ZOOM?
	-> :CHANNEL9:SENT:SCHANNEL1:ZOOM 1
Description	• This command can be used on a sub channel whose data type is set to S&C or Error Trigger.
	• Default value: 1

:CHANnel<x>:SENT:TIMeout (Time out)

Function	Sets or queries the timeout value of SENT ports.
Syntax	:CHANnel<x1>:SENT:TIMeout {<Time>}
	:CHANnel<x>:SENT:TIMeout?
	<x> = 9 to 16
	<Time> = 100us to 2.0s (resolution: 100us)
Example	:CHANNEL9:SENT:TIMEOUT 2
	:CHANNEL9:SENT:TIMEOUT?
	-> :CHANNEL9:SENT:TIMEOUT 2
Description	Default value: 2

:CHANnel\<x1>:SRATe\<x2> (Sample Rate)
Function   Sets or queries the channel's sample rate.
Syntax   :CHANnel\<x1>:SRATe\<x2> {\<Frequency>}
            :CHANnel\<x1>:SRATe\<x2>?
            \<x1> = 1 to 32
            \<x1> = 1 (low-speed sample),
                   2 (high-speed sample)
            \<Frequency> = 1Hz, 2Hz, 5Hz, 10Hz, 20Hz, ...,
                          20MHz, 50MHz, 100MHz,
                          200MHz, 500MHz
Example   :CHANNEL1:SRATE1 1MHz
            :CHANNEL1:SRATE1?
            -> :CHANNEL1:SRATE1 1MHz
Description This command is valid on modules other than the
            4-CH module.

:CHANnel\<x>:STRain?
Function   (Upper-level query) Queries all strain module
            settings.
Syntax   :CHANnel\<x>:STRain?
            \<x> = 1 to 16

:CHANnel\<x>:STRain:BALance?
Function   Sets or queries whether balancing will be
            performed on a strain module.
Syntax   :CHANnel\<x>:STRain:BALance?
            \<x> = 1 to 16 (any channel with a strain module
                  installed)
Description Returns the status of all installed strain modules.

:CHANnel\<x1>:STRain:BALance:CHANnel\<x2>
Function   Sets or queries the channels that balancing will
            be performed on for a strain module.
Syntax   :CHANnel\<x1>:STRain:BALance:
            CHANnel\<x2> {\<Boolean>}
            :CHANnel\<x1>:STRain:BALance:
            CHANnel\<x2>?
            \<x1>, \<x2> = 1 to 16 (a channel with a strain
                        module installed)
Example   :CHANNEL11:STRAIN:BALANCE:
            CHANNEL1 ON
            :CHANNEL11:STRAIN:BALANCE:CHANNEL1?
            -> :CHANNEL11:STRAIN:BALANCE:
               CHANNEL1 1
Description Default value: ON

:CHANnel\<x>:STRain:BALance:EXECute
Function   Executes strain balancing on strain modules.
Syntax   :CHANnel\<x>:STRain:BALance:EXECute
            \<x> = 1 to 16 (any channel with a strain module
                  installed)
Description This command balances all channels that are
            switched on with the :CHANnel\<x1>:STRain:B
            ALance:CHANnel\<x2> command.

:CHANnel\<x>:STRain:BWIDth
Function   Sets or queries the filter of a strain module.
Syntax   :CHANnel\<x>:STRain:BWIDth {FULL|
            \<Frequency>}
            :CHANnel\<x>:STRain:BWIDth?
            \<x> = 1 to 16
            \<Frequency> = 10Hz, 100Hz, 1kHz
Example   :CHANNEL11:STRAIN:BWIDTH 10.00E+00
            :CHANNEL11:STRAIN:BWIDTH?
            -> :CHANNEL11:STRAIN:
               BWIDTH 10.00E+00
Description Default value: FULL

:CHANnel\<x>:STRain:EXCitation
Function   Sets or queries the bridge voltage of a strain
            module.
Syntax   :CHANnel\<x>:STRain:
            EXCitation {\<Voltage>}
            :CHANnel\<x>:STRain:EXCitation?
            \<x> = 1 to 16
            \<Voltage> = 2V, 5V, 10V
Example   :CHANNEL11:STRAIN:EXCITATION 5
            :CHANNEL11:STRAIN:EXCITATION?
            -> :CHANNEL11:STRAIN:EXCITATION 5
Description Default value: 2

:CHANnel\<x>:STRain:GFACtor
Function   Sets or queries the gauge factor of a strain
            module.
Syntax   :CHANnel\<x>:STRain:GFACtor {\<NRf>}
            :CHANnel\<x>:STRain:GFACtor?
            \<x> = 1 to 16
            \<NRf> = 1.90 to 2.20
Example   :CHANNEL11:STRAIN:GFACTOR 1.9
            :CHANNEL11:STRAIN:GFACTOR?
            -> :CHANNEL11:STRAIN:GFACTOR 1.90
Description Default value: 2.00

:CHANnel\<x>:STRain:INVert
Function   Sets or queries whether the display is inverted
            (ON) or not (OFF) for a strain module.
Syntax   :CHANnel\<x>:STRain:
            INVert {\<Boolean>}
            :CHANnel\<x>:STRain:INVert?
            \<x> = 1 to 16
Example   :CHANNEL11:STRAIN:INVERT ON
            :CHANNEL11:STRAIN:INVERT?
            -> :CHANNEL11:STRAIN:INVERT 1
Description Default value: OFF

:CHANnel\<x>:STRain:LSCale?
Function   (Upper-level query) Queries all the linear scaling
            settings of a strain module.
Syntax   :CHANnel\<x>:STRain:LSCale?

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Commands

:CHANnel\<x>:STRain:LSCale:AVALue

Function   Sets or queries the scaling coefficient A that is used during linear scaling on a strain module.

Syntax   :CHANnel\<x>:STRain:LSCale:
AVALue {\<NRf>}
:CHANnel\<x>:STRain:LSCale:AVALue?
\<x> = 1 to 16
\<NRf> = −9.9999E+30 to −1E−30,
          1E−30 to 9.9999E+30

Example :CHANNEL1:STRAIN:LSCALE:
AVALUE 25.0000E+00
:CHANNEL1:STRAIN:LSCALE:AVALUE?
-> :CHANNEL1:STRAIN:LSCALE:
    AVALUE 25.0000E+00

Description • The coefficient cannot be set to 0.
            • Default value: 25.0

:CHANnel\<x>:STRain:LSCale:BVALue

Function   Sets or queries the scaling coefficient B that is used during linear scaling on a strain module.

Syntax   :CHANnel\<x>:STRain:LSCale:
BVALue {\<NRf>}
:CHANnel\<x>:STRain:LSCale:BVALue?
\<x> = 1 to 16
\<NRf> = −9.9999E+30 to −1E−30,
          1E−30 to 9.9999E+30

Example :CHANNEL1:STRAIN:LSCALE:
BVALUE 25.0000E+00
:CHANNEL1:STRAIN:LSCALE:BVALUE?
-> :CHANNEL1:STRAIN:LSCALE:
    BVALUE 25.0000E+00

Description • The coefficient cannot be set to 0.
            • Default value: -25.0

:CHANnel\<x>:STRain:LSCale:DISPlaytype?

Function   (Upper-level query) Queries all the linear scaling display format settings of a strain module.

Syntax   :CHANnel\<x>:STRain:LSCale:
DISPlaytype?

:CHANnel\<x>:STRain:LSCale:DISPlaytype:DECimalnum

Function   Sets or queries the decimal place that is used during linear scaling when the display mode is set to Float for a strain module.

Syntax   :CHANnel\<x>:STRain:LSCale:
DISPlaytype:DECimalnum {\<NRf>|AUTO}
:CHANnel\<x>:STRain:LSCale:
DISPlaytype:DECimalnum?
\<x> = 1 to 16
\<NRf> = 0 to 3

Example :CHANNEL1:STRAIN:LSCALE:DISPLAYTYPE:
DECIMALNUM AUTO
:CHANNEL1:STRAIN:LSCALE:DISPLAYTYPE:
DECIMALNUM?
-> :CHANNEL1:STRAIN:LSCALE:
    DISPLAYTYPE:DECIMALNUM AUTO

Description Default value: AUTO

:CHANnel\<x>:STRain:LSCale:DISPlaytype:MODE

Function   Sets or queries the display mode that is used during linear scaling for a strain module.

Syntax   :CHANnel\<x>:STRain:LSCale:
DISPlaytype:MODE {EXPonent|FLOating}
:CHANnel\<x>:STRain:LSCale:
DISPlaytype:MODE?
\<x> = 1 to 16

Example :CHANNEL1:STRAIN:LSCALE:DISPLAYTYPE:
MODE EXPONENT
:CHANNEL1:STRAIN:LSCALE:DISPLAYTYPE:
MODE?
-> :CHANNEL1:STRAIN:LSCALE:
    DISPLAYTYPE:MODE EXPONENT

Description Default value: EXP

:CHANnel\<x>:STRain:LSCale:DISPlaytype:SUBunit

Function   Sets or queries the unit prefix that is used during linear scaling when the display mode is set to Float for a strain module.

Syntax   :CHANnel\<x>:STRain:LSCale:
DISPlaytype:SUBunit {AUTO|NONE|PICO|
NANO|MICRo|MILI|KILO|MEGA|GIGA|TERA}
:CHANnel\<x>:STRain:LSCale:
DISPlaytype:SUBunit?
\<x> = 1 to 16

Example :CHANNEL1:STRAIN:LSCALE:DISPLAYTYPE:
SUBUNIT AUTO
:CHANNEL1:STRAIN:LSCALE:DISPLAYTYPE:
SUBUNIT?
-> :CHANNEL1:STRAIN:LSCALE:
    DISPLAYTYPE:SUBUNIT AUTO

Description Default value: AUTO

:CHANnel<x>:STRain:LSCale:GETMeasure

Function Executes the measurement of the linear scaling P1X or P2X value of a strain module.

Syntax :CHANnel<x>:STRain:LSCale: GETMeasure {P1X|P2X}
   <x> = 1 to 16

Example :CHANnel1:STRAIN:LSCale: GETMeasure P1X

:CHANnel<x>:STRain:LSCale:MODE

Function Sets or queries the linear scale mode of a strain module.

Syntax :CHANnel<x>:STRain:LSCale:MODE {AXB| OFF|P12|SHUNt}
   :CHANnel<x>:STRain:LSCale:MODE?
   SHUNt can only be set when the installed module is a 701271.

Example :CHANNEL11:STRAIN:LSCALE:MODE OFF
   :CHANNEL11:STRAIN:LSCALE:MODE?
   -> :CHANNEL11:STRAIN:LSCALE:MODE OFF

Description Default value: OFF

:CHANnel<x>:STRain:LSCale:{P1X|P1Y|P 2X|P2Y}

Function Sets or queries the linear scaling P1X, P1Y, P2X, or P2Y value of a strain module.

Syntax :CHANnel<x>:STRain:LSCale:{P1X|P1Y| P2X|P2Y} {<NRf>}
   :CHANnel<x>:STRain:LSCale:{P1X|P1Y| P2X|P2Y}?
   <x> = 1 to 16
   <NRf> = −9.9999E+30 to −1E−30, 0, 1E−30 to 9.9999E+30

Example :CHANNEL1:STRAIN:LSCALE: P1X 1.00000E+00
   :CHANNEL1:STRAIN:LSCALE:P1X?
   -> :CHANNEL1:STRAIN:LSCALE: P1X 1.00000E+00

Description Default values: P1X: 1, P1Y: 0, P2X: 5, P2Y: 100

:CHANnel<x>:STRain:LSCale:SHUNt

Function Executes shunt calibration.

Syntax :CHANnel<x>:STRain:LSCale:SHUNt
   <x> = 1 to 16

:CHANnel<x>:STRain:LSCale:UNIT

Function Sets or queries the linear scale unit of a strain module.

Syntax :CHANnel<x>:STRain:LSCale: UNIT {<String>}
   :CHANnel<x>:STRain:LSCale:UNIT?
   <x> = 1 to 16
   <String> = Up to 4 characters

Example :CHANNEL1:STRAIN:LSCALE:UNIT "UU"
   :CHANNEL1:STRAIN:LSCALE:UNIT?
   -> :CHANNEL1:STRAIN:LSCALE:UNIT "UU"

Description Default value: Empty string

:CHANnel<x>:STRain:RANGe

Function Sets or queries the measurement range of a strain module.

Syntax :CHANnel<x>:STRain:RANGe {<NRf>}
   :CHANnel<x>:STRain:RANGe?
   <x> = 1 to 16
   <NRf> = 0.25, 0.5, 1, 2.5, 5, 10 (when the unit is mV or V), 500, 1000, 2000, 5000, 10000, 20000 (when the unit is µSTR)

Example :CHANNEL11:STRAIN:RANGE 20000
   :CHANNEL11:STRAIN:RANGE?
   -> :CHANNEL11:STRAIN:RANGE 20000

Description Default value: 20000 but 10 when the unit is mV/V

:CHANnel<x>:STRain:SCALe

Function Sets or queries the upper and lower limits of the screen for a strain module.

Syntax :CHANnel<x>:STRain: SCALe {<NRf>,<NRf>}
   :CHANnel<x>:STRain:SCALe?
   <x> = 1 to 16
   <NRf> = −15.0000 to 15.0000 (when the unit is mV/V)
     −30000 to 30000 (when the unit is µSTR)
     −9.9999E+30 to 9.9999E+30 (for linear scaling)

Example :CHANNEL5:STRAIN:SCALE 5000,−5000
   :CHANNEL5:STRAIN:SCALE?
   -> :CHANNEL5:STRAIN: SCALE 5.000000E+03,−5.000000E+03

Description Default value: 20000, −20000 but 10.000, −10.000 when the unit is mV/V

:CHANnel<x>:STRain:UNIT

Function Sets or queries the unit of a strain module.

Syntax :CHANnel<x>:STRain:UNIT {MV|USTR}
   :CHANnel<x>:STRain:UNIT?
   <x> = 1 to 16

Example :CHANNEL11:STRAIN:UNIT USTR
   :CHANNEL11:STRAIN:UNIT?
   -> :CHANNEL11:STRAIN:UNIT USTR

Description Default value: USTR

:CHANnel<x>:TEMPerature?

Function (Upper-level query) Queries all settings of a module that can measure temperature.

Syntax :CHANnel<x>:TEMPerature?

:CHANnel<x>:TEMPerature:BURNout

Function Sets or queries whether burnout will be detected when temperature measurements are performed.

Syntax :CHANnel<x>:TEMPerature: BURNout {<Boolean>}
   :CHANnel<x>:TEMPerature:BURNout?
   <x> = 1 to 16

Example :CHANNEL9:TEMPERATURE:BURNOUT ON
   :CHANNEL9:TEMPERATURE:BURNOUT?
   -> :CHANNEL9:TEMPERATURE:BURNOUT 1

Description Default value: OFF

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Commands

:CHANnel<x>:TEMPerature:BWIDth

Function   Sets or queries the bandwidth limit that is used when temperature measurements are performed.

Syntax   :CHANnel<x>:TEMPerature:
BWIDth {FULL|<Frequency>}
:CHANnel<x>:TEMPerature:BWIDth?
<x> = 1 to 16
<Frequency> = 2, 8, 30 (Hz) (for the 701261, 701262, 701265)
<Frequency> = 0.1, 1, 8 (Hz) (for the 720266)

Example   :CHANNEL9:TEMPERATURE:BWIDTH FULL
:CHANNEL9:TEMPERATURE:BWIDTH?
-> :CHANNEL9:TEMPERATURE:BWIDTH FULL

Description   Default value: FULL

:CHANnel<x>:TEMPerature:COUPling

Function   Sets or queries the input coupling setting of a module that can measure temperature.

Syntax   (For the 701265 or 720266)
:CHANnel<x>:TEMPerature:
COUPling {DC|TC|GND}
(For the 701261 or 701262)
:CHANnel<x>:TEMPerature:
COUPling {AC|DC|TC|GND}
:CHANnel<x>:TEMPerature:COUPling?
<x> = 1 to 16

Example   :CHANNEL9:TEMPERATURE:COUPLING TC
:CHANNEL9:TEMPERATURE:COUPLING?
-> :CHANNEL9:TEMPERATURE:COUPLING TC

Description   Default value: DC

**:CHANnel<x>:TEMPerature:DUPeriod
(Data Update Period)**

Function   Sets or queries the date update interval setting of a 16-CH temperature/voltage input module.

Syntax   :CHANnel<x>:TEMPerature:
DUPeriod {<Time>}
:CHANnel<x>:TEMPerature:DUPeriod?
<x> = 1 to 16
<Time>: 100ms, 300ms, 1s, 3s

Example   :CHANNEL9:TEMPERATURE:DUPERIOD 100ms
:CHANNEL9:TEMPERATURE:DUPERIOD?
-> :CHANNEL9:TEMPERATURE:
DUPERIOD 1.000E-01

Description   • This command is valid for the 16-CH temperature/voltage input module.
• Default value: 100ms

:CHANnel<x>:TEMPerature:RJC

Function   Sets or queries the RJC that is used when temperature measurements are performed.

Syntax   :CHANnel<x>:TEMPerature:
RJC {<Boolean>}
:CHANnel<x>:TEMPerature:RJC?
<x> = 1 to 16

Example   :CHANNEL9:TEMPERATURE:RJC 1
:CHANNEL9:TEMPERATURE:RJC?
-> :CHANNEL9:TEMPERATURE:RJC 1

Description   Default value: ON

:CHANnel<x>:TEMPerature:SCALe

Function   Sets or queries the upper and lower limits of the screen that are used when temperature measurements are performed.

Syntax   :CHANnel<x>:TEMPerature:
SCALe {<NRf>,<NRf>}
:CHANnel<x>:TEMPerature:SCALe?
<x> = 1 to 4
<NRf> = −5432 to 5432 (in 0.1 steps)

Example   :CHANNEL9:TEMPERATURE:
SCALE 1300.0,−200.0
:CHANNEL9:TEMPERATURE:SCALE?
-> :CHANNEL9:TEMPERATURE:
SCALE 1300.0,−200.0

Description   Default value: 1300,−200

**:CHANnel<x1>:TEMPerature:SCHannel
<x2>?**

Function   (Upper-level query) Queries all settings of a 16-CH temperature/voltage input module when measuring temperature.

Syntax   :CHANnel<x1>:TEMPerature:
SCHannel<x2>?
<x1> = 1, 3, 5, 7, 9, 11, 13, 15
<x2> = 1 to 16

Description   This command is valid when the input coupling is set to TC. Otherwise, error 113 will occur.

**:CHANnel<x1>:TEMPerature:SCHannel<x2
>:BURNout**

Function   Sets or queries whether burnout will be detected when temperature measurements are performed on a 16-CH temperature/voltage input module.

Syntax   :CHANnel<x1>:TEMPerature:
SCHannel<x2>:BURNout {<Boolean>}
:CHANnel<x1>:TEMPerature:
SCHannel<x2>:BURNout?
<x1> = 1, 3, 5, 7, 9, 11, 13, 15
<x2> = 1 to 16

Example   :CHANNEL9:TEMPERATURE:SCHANNEL1:
BURNOUT ON
:CHANNEL9:TEMPERATURE:SCHANNEL1:
BURNOUT?
-> :CHANNEL9:TEMPERATURE:SCHANNEL1:
BURNOUT 1

Description   • This command is valid when the input coupling is set to TC. Otherwise, error 113 will occur.
• Default value: OFF

:CHANnel<x1>:TEMPerature:SCHannel<x2>:COUPling

Function	Sets or queries the input coupling setting of a 16-CH temperature/voltage input module.
Syntax	:CHANnel<x1>:TEMPerature: SCHannel<x2>:COUPling {DC|TC|GND| OFF} :CHANnel<x1>:TEMPerature: SCHannel<x2>:COUPling? <x1> = 1, 3, 5, 7, 9, 11, 13, 15 <x2> = 1 to 16
Example	:CHANNEL9:TEMPERATURE:SCHANNEL1: COUPLING TC :CHANNEL9:TEMPERATURE:SCHANNEL1: COUPLING? -> :CHANNEL9:TEMPERATURE:SCHANNEL1: COUPLING TC
Description	Default value: DC

:CHANnel<x1>:TEMPerature:SCHannel<x2>:LABel

Function	Sets or queries the label setting of a 16-CH temperature/voltage input module.
Syntax	:CHANnel<x1>:TEMPerature: SCHannel<x2>:LABel {<String>} :CHANnel<x1>:TEMPerature: SCHannel<x2>:LABel? <x1> = 1, 3, 5, 7, 9, 11, 13, 15 <x2> = 1 to 16
Example	:CHANNEL9:TEMPERATURE:SCHANNEL1: LABEL "CH9_1" :CHANNEL9:TEMPERATURE:SCHANNEL1: LABEL? -> :CHANNEL9:TEMPERATURE:SCHANNEL1: LABEL "CH9_1"
Description	• This command is valid when the input coupling is set to TC. Otherwise, error 113 will occur. • Default value: channel number_sub channel number (depends on the installation location)

:CHANnel<x1>:TEMPerature:SCHannel<x2>:RJC

Function	Sets or queries the RJC when temperature measurements are performed on a 16-CH temperature/voltage input module.
Syntax	:CHANnel<x1>:TEMPerature: SCHannel<x2>:RJC {<Boolean>} :CHANnel<x1>:TEMPerature: SCHannel<x2>:RJC? <x1> = 1, 3, 5, 7, 9, 11, 13, 15 <x2> = 1 to 16
Example	:CHANNEL9:TEMPERATURE:SCHANNEL1: RJC 1 :CHANNEL9:TEMPERATURE:SCHANNEL1:RJC? -> :CHANNEL9:TEMPERATURE:SCHANNEL1: RJC 1
Description	• This command is valid when the input coupling is set to TC. Otherwise, error 113 will occur. • Default value: ON

:CHANnel<x1>:TEMPerature:SCHannel<x2>:SCALe

Function	Sets or queries the upper and lower limits on the screen when temperature measurements are performed on a 16-CH temperature/voltage input module.
Syntax	:CHANnel<x1>:TEMPerature: SCHannel<x2>:SCALe {<NRf>,<NRf>} :CHANnel<x1>:TEMPerature: SCHannel<x2>:SCALe? <x1> = 1, 3, 5, 7, 9, 11, 13, 15 <x2> = 1 to 16 <NRf> = –5432 to 5432 (in 0.1 steps)
Example	:CHANNEL9:TEMPERATURE:SCHANNEL1: SCALE 1300.0,–200.0 :CHANNEL9:TEMPERATURE:SCHANNEL1: SCALE? -> :CHANNEL9:TEMPERATURE:SCHANNEL1: SCALE 1300.0,–200.0
Description	• This command is valid when the input coupling is set to TC. Otherwise, error 113 will occur. • Default value: 1300,–200

:CHANnel<x1>:TEMPerature:SCHannel<x2>:TYPE

Function	Sets or queries the thermocouple type to use when temperature measurements are performed on a 16-CH temperature/voltage input module.
Syntax	:CHANnel<x1>:TEMPerature: SCHannel<x2>:TYPE {K|E|J|T|L|U|N|R| S|B|W|Au7fe} :CHANnel<x1>:TEMPerature: SCHannel<x2>:TYPE? <x1> = 1, 3, 5, 7, 9, 11, 13, 15 <x2> = 1 to 16
Example	:CHANNEL9:TEMPERATURE:SCHANNEL1: TYPE K :CHANNEL9:TEMPERATURE:SCHANNEL1: TYPE? -> :CHANNEL9:TEMPERATURE:SCHANNEL1: TYPE K
Description	• This command is valid when the input coupling is set to TC. Otherwise, error 113 will occur. • Default value: K

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Commands

:CHANnel<x1>:TEMPerature:SCHannel<x2>:UNIT

Function	Sets or queries the unit when temperature measurements are performed on a 16-CH temperature/voltage input module.
Syntax	:CHANnel<x1>:TEMPerature: SCHannel<x2>:UNIT {C|F|K} :CHANnel<x1>:TEMPerature: SCHannel<x2>:UNIT? <x1> = 1, 3, 5, 7, 9, 11, 13, 15 <x2> = 1 to 16
Example	:CHANNEL9:TEMPERATURE:SCHANNEL1: UNIT C :CHANNEL9:TEMPERATURE:SCHANNEL1: UNIT? -> :CHANNEL9:TEMPERATURE:SCHANNEL1: UNIT C
Description	• This command is valid when the input coupling is set to TC. Otherwise, error 113 will occur. • Default value: C

:CHANnel<x>:TEMPerature:TYPE

Function	Sets or queries the thermocouple type that is used when temperature measurements are performed.
Syntax	:CHANnel<x>:TEMPerature: TYPE {K|E|J|T|L|U|N|R|S|B|W|Au7fe} :CHANnel<x>:TEMPerature:TYPE? <x> = 1 to 16
Example	:CHANNEL9:TEMPERATURE:TYPE K :CHANNEL9:TEMPERATURE:TYPE? -> :CHANNEL9:TEMPERATURE:TYPE K
Description	Default value: K

:CHANnel<x>:TEMPerature:UNIT

Function	Sets or queries the unit that is used when temperature measurements are performed.
Syntax	:CHANnel<x>:TEMPerature:UNIT {C|F|K} :CHANnel<x>:TEMPerature:UNIT? <x> = 1 to 16
Example	:CHANNEL9:TEMPERATURE:UNIT C :CHANNEL9:TEMPERATURE:UNIT? -> :CHANNEL9:TEMPERATURE:UNIT C
Description	Default value: C

:CHANnel<x>:VOLTage?

Function	(Upper-level query) Queries all settings of a module that can measure analog voltage.
Syntax	:CHANnel<x>:VOLTage?

:CHANnel<x>[:VOLTage]:BWIDth

Function	Sets or queries the bandwidth limit of a module that can measure analog voltage.
Syntax	:CHANnel<x>[:VOLTage]:BWIDth {FULL| <Frequency>} :CHANnel<x>[:VOLTage]:BWIDth? <x> = 1 to 16
Example	:CHANNEL2:VOLTAGE:BWIDTH FULL :CHANNEL2:VOLTAGE:BWIDTH? -> :CHANNEL2:VOLTAGE:BWIDTH FULL
Description	Default value: FULL

List of Frequency Settings by Voltage Module

Module	Frequency Setting
701250, 701255, 720250	500Hz, 5kHz, 50kHz, 500kHz
701251	400Hz, 4kHz, 40kHz
701261	(When the input coupling is not set to TC) 40Hz, 400Hz, 4kHz (When the input coupling is set to TC) 2Hz, 8Hz, 30Hz
701262	(When the input coupling is not set to TC) 40Hz, 400Hz, 4kHz, AUTO (When the input coupling is set to TC) 2Hz, 8Hz, 30Hz
701265	2Hz, 8Hz, 30Hz
701275	40Hz, 400Hz, 4kHz, AUTO
720211	10kHz, 20kHz, 40kHz, 80kHz, 160kHz, 320kHz, 640kHz, 1.28MHz, 2MHz
720212	10kHz, 20kHz, 40kHz, 80kHz, 160kHz, 320kHz, 640kHz, 1.28MHz, 2.56MHz, 5MHz
720254	6.25Hz, 12.5Hz, 25Hz, 50Hz, 100Hz, 200Hz, 400Hz, 800Hz, 1.6kHz, 3.2kHz, 6.4kHz, 12.8kHz, 40kHz
720256	62.5Hz, 125Hz, 250Hz, 500Hz, 1kHz, 2kHz, 4kHz, 8kHz, 16kHz, 32kHz, 64kHz, 128kHz, 400kHz, AUTO
720266	0.1Hz, 1Hz, 8Hz
720268	400Hz, 4kHz, 40kHz, AUTO

:CHANnel<x>[:VOLTage]:COUPling

Function   Sets or queries the input coupling of a module
            that can measure analog voltage.

Syntax   :CHANnel<x>[:VOLTage]:COUPling {AC|
            DC|GND|ACRMS|DCRMS|TC|ACCL}
            :CHANnel<x>[:VOLTage]:COUPling?
            <x> = 1 to 16

Example   :CHANNEL2:VOLTAGE:COUPLING DC
            :CHANNEL2:VOLTAGE:COUPLING?
            -> :CHANNEL2:VOLTAGE:COUPLING DC

Description • 701250/701251/701255/720211/720212/
              720250/720254/720256: {AC|DC|GND}
            • 701261/701262: {AC|DC|GND|TC}
            • 701265/720266: {DC|GND|TC}
            • 701275: {AC|DC|GND|ACCL}
            • 720268: {AC|DC|GND|ACRMS|DCRMS}
            • Default value: DC

:CHANnel<x>[:VOLTage]:DESKew

Function   Sets or queries the deskew value when a voltage
            module is installed.

Syntax   :CHANnel<x>[:VOLTage]:DESKew {<NRf>}
            :CHANnel<x>[:VOLTage]:DESKew?
            <x> = 1 to 16
            <NRf> = 1.0us to –1.0us

Example   :CHANNEL1:VOLTAGE:DESKEW 0
            :CHANNEL1:VOLTAGE:DESKEW?
            -> :CHANNEL1:VOLTAGE:DESKEW 0.00E+00

Description Default value: 0.00E+00

:CHANnel<x>[:VOLTage]:DOCancel?

Function   (Upper-level query) Queries all DC offset
            cancellation settings of a voltage measurement
            module.

Syntax   :CHANnel<x>[:VOLTage]:DOCancel?
            <x> = 1 to 16

:CHANnel<x>[:VOLTage]:DOCancel:EXECute

Function   Executes DC offset canceling on a voltage
            measurement module.

Syntax   :CHANnel<x>[:VOLTage]:DOCancel:
            EXECute
            <x> = 1 to 16

Example   :CHANNEL2:VOLTAGE:DOCANCEL:EXECUTE

Description This command is valid when a 701250, 701251,
            701255, 720211, 720212, 720250, 720254, or
            720256 module is installed in the input coupling
            is set to DC.

:CHANnel<x>[:VOLTage]:DOCancel:MODE

Function   Sets or queries the on/off status of DC offset
            canceling of voltage measurement modules.

Syntax   :CHANnel<x>[:VOLTage]:DOCancel:
            MODE {<Boolean>}
            :CHANnel<x>[:VOLTage]:DOCancel:MODE?
            <x> = 1 to 16

Example   :CHANNEL2:VOLTAGE:DOCANCEL:MODE 1
            :CHANNEL2:VOLTAGE:DOCANCEL:MODE?
            -> :CHANNEL2:VOLTAGE:DOCANCEL:MODE 1

Description • This command is valid when a 701250,
              701251, 701255, 720211, 720212, 720250,
              720254, or 720256 module is installed in the
              input coupling is set to DC.
            • Default value: OFF

:CHANnel<x>[:VOLTage]:INVert

Function   Sets or queries whether the display is inverted
            (ON) or not (OFF) for a module that can measure
            analog voltage.

Syntax   :CHANnel<x>[:VOLTage]:
            INVert {<Boolean>}
            :CHANnel<x>[:VOLTage]:INVert?
            <x> = 1 to 16

Example   :CHANNEL2:VOLTAGE:INVERT ON
            :CHANNEL2:VOLTAGE:INVERT?
            -> :CHANNEL2:VOLTAGE:INVERT 1

Description Default value: OFF

:CHANnel<x>[:VOLTage]:LSCale?

Function   (Upper-level query) Queries all the linear scaling
            settings of a module that can measure analog
            voltage.

Syntax   :CHANnel<x>[:VOLTage]:LSCale?

:CHANnel<x>[:VOLTage]:LSCale:AVALue

Function   Sets or queries the scaling coefficient A that is
            used during linear scaling for a module that can
            measure analog voltage.

Syntax   :CHANnel<x>[:VOLTage]:LSCale:
            AVALue {<NRf>}
            :CHANnel<x>[:VOLTage]:LSCale:AVALue?
            <x> = 1 to 16
            <NRf> = −9.9999E+30 to −1E−30,
                    1E−30 to 9.9999E+30

Example   :CHANNEL2:VOLTAGE:LSCALE:
            AVALUE 25.0000E+00
            :CHANNEL2:VOLTAGE:LSCALE:AVALUE?
            -> :CHANNEL2:VOLTAGE:LSCALE:
               AVALUE 25.0000E+00

Description • The coefficient cannot be set to 0.
            • Default value: 25.0

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Commands

:CHANnel<x>[:VOLTage]:LSCale:BVALue

Function	Sets or queries the offset value B that is used during linear scaling for a module that can measure analog voltage.
Syntax	:CHANnel<x>[:VOLTage]:LSCale: BVALue {<NRf>} :CHANnel<x>[:VOLTage]:LSCale:BVALue? <x> = 1 to 16 <NRf> = −9.9999E+30 to −1E−30, 0, 1E−30 to 9.9999E+30
Example	:CHANNEL2:VOLTAGE:LSCALE: BVALUE −25.0000E+00 :CHANNEL2:VOLTAGE:LSCALE:BVALUE? -> :CHANNEL2:VOLTAGE:LSCALE: BVALUE 25.0000E+00
Description	Default value: -25.0

:CHANnel<x>[:VOLTage]:LSCale:DISPlaytype?

Function	(Upper-level query) Queries all the linear scaling display format settings of a module that can measure analog voltage.
Syntax	:CHANnel<x>[:VOLTage]:LSCale: DISPlaytype?

:CHANnel<x>[:VOLTage]:LSCale:DISPlaytype:DECimalnum

Function	Sets or queries the decimal place that is used during linear scaling when the display mode is set to Float for a module that can perform analog voltage measurements.
Syntax	:CHANnel<x>[:VOLTage]:LSCale: DISPlaytype:DECimalnum {<NRf>|AUTO} :CHANnel<x>[:VOLTage]:LSCale: DISPlaytype:DECimalnum? <x> = 1 to 16 <NRf> = 0 to 3
Example	:CHANNEL1:VOLTAGE:LSCALE: DISPLAYTYPE:DECIMALNUM AUTO :CHANNEL1:VOLTAGE:LSCALE: DISPLAYTYPE:DECIMALNUM? -> :CHANNEL1:VOLTAGE:LSCALE: DISPLAYTYPE:DECIMALNUM AUTO
Description	Default value: AUTO

:CHANnel<x>[:VOLTage]:LSCale:DISPlaytype:MODE

Function	Sets or queries the display mode that is used during linear scaling for a module that can perform analog voltage measurements.
Syntax	:CHANnel<x>[:VOLTage]:LSCale: DISPlaytype:MODE {EXPonent|FLOating} :CHANnel<x>[:VOLTage]:LSCale: DISPlaytype:MODE? <x> = 1 to 16
Example	:CHANNEL1:VOLTAGE:LSCALE: DISPLAYTYPE:MODE EXPONENT :CHANNEL1:VOLTAGE:LSCALE: DISPLAYTYPE:MODE? -> :CHANNEL1:VOLTAGE:LSCALE: DISPLAYTYPE:MODE EXPONENT
Description	Default value: EXP

:CHANnel<x>[:VOLTage]:LSCale:DISPlaytype:SUBunit

Function	Sets or queries the unit prefix that is used during linear scaling when the display mode is set to Float for a module that can perform analog voltage measurements.
Syntax	:CHANnel<x>[:VOLTage]:LSCale: DISPlaytype:SUBunit {AUTO|NONE|PICO| NANO|MICRo|MILI|KILO|MEGA|GIGA|TERA} :CHANnel<x>[:VOLTage]:LSCale: DISPlaytype:SUBunit? <x> = 1 to 16
Example	:CHANNEL1:VOLTAGE:LSCALE: DISPLAYTYPE:SUBUNIT AUTO :CHANNEL1:VOLTAGE:LSCALE: DISPLAYTYPE:SUBUNIT? -> :CHANNEL1:VOLTAGE:LSCALE: DISPLAYTYPE:SUBUNIT AUTO
Description	Default value: AUTO

:CHANnel<x>[:VOLTage]:LSCale:GETMeasure

Function	Executes the measurement of the linear scaling P1X or P2X value of a module that can perform analog voltage measurements.
Syntax	:CHANnel<x>[:VOLTage]:LSCale: GETMeasure {P1X|P2X} <x> = 1 to 16

:CHANnel<x>[:VOLTage]:LSCale:MODE

Function	Sets or queries the linear scale mode of a module that can perform analog voltage measurements.
Syntax	:CHANnel<x>[:VOLTage]:LSCale: MODE {AXB|OFF|P12} :CHANnel<x>[:VOLTage]:LSCale:MODE? <x> = 1 to 16
Example	:CHANNEL1:VOLTAGE:LSCALE:MODE AXB :CHANNEL1:VOLTAGE:LSCALE:MODE? -> :CHANNEL1:VOLTAGE:LSCALE:MODE OFF
Description	Default value: OFF

:CHANnel\<x\>[:VOLTage]:LSCale:{P1X|P1Y|P2X|P2Y}

Function   Sets or queries the linear scaling P1X, P1Y, P2X, or P2Y value of a module that can perform analog voltage measurements.

Syntax   :CHANnel\<x\>[:VOLTage]:LSCale:{P1X|P1Y|P2X|P2Y} {\<NRf\>}
:CHANnel\<x\>[:VOLTage]:LSCale:{P1X|P1Y|P2X|P2Y}?
\<x\> = 1 to 16
\<NRf\> = −9.9999E+30 to −1E−30, 0, 1E−30 to 9.9999E+30

Example   :CHANNEL1:VOLTAGE:LSCALE:P1X 1
:CHANNEL1:VOLTAGE:LSCALE:P1X?
-> :CHANNEL1:VOLTAGE:LSCALE:P1X 1

Description Default values: P1X: 1, P1Y: 0, P2X: 5, P2Y: 100

:CHANnel\<x\>[:VOLTage]:LSCale:UNIT

Function   Sets or queries the linear scale unit of a module that can perform analog voltage measurements.

Syntax   :CHANnel\<x\>[:VOLTage]:LSCale:UNIT {\<String\>}
:CHANnel\<x\>[:VOLTage]:LSCale:UNIT?
\<x\> = 1 to 16
\<String\> = Up to 4 characters

Example   :CHANNEL1:VOLTAGE:LSCALE:UNIT "UU"
:CHANNEL1:VOLTAGE:LSCALE:UNIT?
-> :CHANNEL1:VOLTAGE:LSCALE:UNIT "UU"

Description Default value: Empty string

:CHANnel\<x\>[:VOLTage]:OFFSet

Function   Sets or queries the offset voltage of a module that can measure analog voltage.

Syntax   :CHANnel\<x\>[:VOLTage]:OFFSet {\<Voltage\>|\<Current\>}
:CHANnel\<x\>[:VOLTage]:OFFSet?
\<x\> = 1 to 16
\<Voltage\>, \<Current\> = The selectable range varies depending on the range.

Example   :CHANNEL1:VOLTAGE:OFFSET 0
:CHANNEL1:VOLTAGE:OFFSET?
-> :CHANNEL1:VOLTAGE:OFFSET 1.00000E+00

Description Default value: 0

:CHANnel\<x\>[:VOLTage]:POSition

Function   Sets or queries the vertical position for a module that can measure analog voltage.

Syntax   :CHANnel\<x\>[:VOLTage]:POSition {\<NRf\>}
:CHANnel\<x\>[:VOLTage]:POSition?
\<x\> = 1 to 16
\<NRf\> = −5.00 to 5.00 (div, in 0.01 steps)

Example   :CHANNEL1:VOLTAGE:POSITION 1.00
:CHANNEL1:VOLTAGE:POSITION?
-> :CHANNEL1:VOLTAGE:POSITION 1.00

Description Default value: 0

:CHANnel\<x\>[:VOLTage]:PROBe

Function   Sets or queries the probe type of a module that can measure analog voltage.

Syntax   :CHANnel\<x\>[:VOLTage]:PROBe {\<NRf\>|C0_1|C0_2|C0_5|C1|C10|C100|C1000|C10000|C2|C20|C200|C250|C2000|C20000|C400|C5|C50|C500|C5000|C50000}
:CHANnel\<x\>[:VOLTage]:PROBe?
\<x\> = 1 to 16
\<NRf\> = 1, 2, 5, 10, 20, 50, 100, 200, 500, 1000, 2000, 5000, 10000, 20000, 50000

Example   :CHANNEL1:VOLTAGE:PROBE 10
:CHANNEL1:VOLTAGE:PROBE?
-> :CHANNEL1:VOLTAGE:PROBE 10

Description • You cannot use this command or query for the 701261, 701262, 701265, 720266, or 720268.
• Default value: 10

:CHANnel\<x\>[:VOLTage]:SADJust (Skew Adjustment)

Function   Sets or queries the deskew value when a voltage module is installed.

Syntax   :CHANnel\<x\>[:VOLTage]:SADJust {\<NRf\>}
:CHANnel\<x\>[:VOLTage]:SADJust?
\<x\> = 1 to 16
\<NRf\> = The selectable range varies depending on the module.

Example   :CHANNEL1:VOLTAGE:SADJUST 1.0E-6
:CHANNEL1:VOLTAGE:SADJUST?
-> :CHANNEL1:VOLTAGE:SADJUST 1.0E-6

:CHANnel\<x\>[:VOLTage]:SCALe

Function   Sets or queries the upper and lower limits of the screen for a module that can measure analog voltage.

Syntax   :CHANnel\<x\>[:VOLTage]:SCALe {\<Voltage\>,\<Voltage\>|\<Current\>,\<Current\>|\<NRf\>,\<NRf\>}
:CHANnel\<x\>[:VOLTage]:SCALe?
\<x\> = 1 to 16
\<Voltage\>, \<Current\>, \<NRf\> = The selectable range varies depending on the range.

Example   :CHANNEL1:VOLTAGE:SCALE 250,-250
:CHANNEL1:VOLTAGE:SCALE?
-> :CHANNEL1:VOLTAGE:SCALE 250.000E+00,-250.000E+00

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Commands

:CHANnel<x1>[:VOLTage]:SCHannel<x2>?

Function (Upper-level query) Queries all settings of a 16-CH temperature/voltage input or 4-CH module.

Syntax :CHANnel<x1>[:VOLTage]:SCHannel<x2>?
16-CH temperature/voltage input module
    <x1> = 1, 3, 5, 7, 9, 11, 13, 15
    <x2> = 1 to 16
4-CH module
    <x1> = 1 to 16
    <x2> = 1, 2

:CHANnel<x1>[:VOLTage]:SCHannel<x2>: BWIDth

Function Sets or queries the bandwidth limit of a 16-CH temperature/voltage input or 4-CH module.

Syntax :CHANnel<x1>[:VOLTage]:SCHannel<x2>:
BWIDth {FULL|<Frequency>}
:CHANnel<x1>[:VOLTage]:SCHannel<x2>:
BWIDth?
16-CH temperature/voltage input module
    <x1> = 1, 3, 5, 7, 9, 11, 13, 15
    <x2> = 1 to 16
4-CH module
    <x1> = 1 to 16
    <x2> = 1, 2
<Frequency> = 500Hz

Description • Error 113, "Undefined header," will occur if a module other than a 16-CH temperature/voltage input module or 4-CH module is installed in the slot that corresponds to the specified channel.
    • Default value: FULL

:CHANnel<x1>[:VOLTage]:SCHannel<x2>: COUPling

Function Sets or queries the input coupling setting of a 16-CH temperature/voltage input or 4-CH module.

Syntax :CHANnel<x1>[:VOLTage]:SCHannel<x2>:
COUPling {AC|DC|GND|OFF}
:CHANnel<x1>[:VOLTage]:SCHannel<x2>:
COUPling?
16ch temperature/voltage input module
    {DC|TC|GND|OFF}
    <x1> = 1, 3, 5, 7, 9, 11, 13, 15
    <x2> = 1 to 16
4CH module
    {AC|DC|GND}
    <x1> = 1 to 16
    <x2> = 1, 2

Description • Error 113, "Undefined header," will occur if a module other than a 16-CH temperature/voltage input module or 4-CH module is installed in the slot that corresponds to the specified channel.
    • You cannot use this command or menu operations to change the setting while measurements are being performed.
    • Default value: DC

:CHANnel<x1>[:VOLTage]:SCHannel<x2>: DESKew

Function Sets or queries the deskew value when a voltage module is installed.

Syntax :CHANnel<x1>[:VOLTage]:SCHannel<x2>:
DESKew {<NRf>}
:CHANnel<x1>[:VOLTage]:SCHannel<x2>:
DESKew?
<x1> = 1 to 16
<x2> = 1, 2
<NRf> = 1.0us to −1.0us

Example :CHANNEL1:VOLTAGE:SCHANNEL1:DESKEW 0
:CHANNEL1:VOLTAGE:SCHANNEL1:DESKEW?
-> :CHANNEL1:VOLTAGE:SCHANNEL1:
DESKEW 0.00E+00

Description • This command is valid only on modules with 10 MS/s or higher sample rates (720256).
    • Default value: 0.00E+00

:CHANnel<x1>[:VOLTage]:SCHannel<x2>: DISPlay

Function Sets or queries whether the 4-CH module is displayed.

Syntax :CHANnel<x1>[:VOLTage]:SCHannel<x2>:
DISPlay {<Boolean>}
:CHANnel<x1>[:VOLTage]:SCHannel<x2>:
DISPlay?
<x1> = 1 to 16
<x2> = 1, 2

Example :CHANNEL1:VOLTAGE:SCHANNEL2:
DISPLAY 1
:CHANNEL1:VOLTAGE:SCHANNEL2:DISPLAY?
-> :CHANNEL1:VOLTAGE:SCHANNEL2:
DISPLAY 1

Description Default value: ON

:CHANnel<x1>[:VOLTage]:SCHannel<x2>: DOCancel?

Function (Upper-level query) Queries all DC offset cancellation settings of a 4-CH module.

Syntax :CHANnel<x1>[:VOLTage]:SCHannel<x2>:
DOCancel?
<x1> = 1 to 16
<x2> = 1, 2

:CHANnel<x1>[:VOLTage]:SCHannel<x2>: DOCancel:EXECute

Function Executes DC offset canceling on a 4-CH module.

Syntax :CHANnel<x1>[:VOLTage]:SCHannel<x2>:
DOCancel:EXECute
<x1> = 1 to 16
<x2> = 1, 2

Description This command is valid when a 4-CH module is installed, the DC Offset & Gain Adjust utility setting is set to ON, and the input coupling is set to DC.

:CHANnel<x1>[:VOLTage]:SCHannel<x2>:DOCancel:MODE

Function	Sets or queries the on/off status of DC offset canceling of 4-CH modules.
Syntax	:CHANnel<x1>[:VOLTage]:SCHannel<x2>:DOCancel:MODE {<Boolean>} :CHANnel<x1>[:VOLTage]:SCHannel<x2>:DOCancel:MODE? <x1> = 1 to 16 <x2> = 1, 2
Description	This command is valid when a 4-CH module is installed, the DC Offset & Gain Adjust utility setting is set to ON, and the input coupling is set to DC.

:CHANnel<x1>[:VOLTage]:SCHannel<x2>:INPut

Function	Sets or queries whether the input to the specified channel of a 4-CH module is enabled or disabled.
Syntax	:CHANnel<x1>[:VOLTage]:SCHannel<x2>:INPut {<Boolean>} :CHANnel<x1>[:VOLTage]:SCHannel<x2>:INPut? <x1> = 1 to 16 <x2> = 1, 2
Example	:CHANNEL1:VOLTAGE:SCHANNEL1:INPUT 1 :CHANNEL1:VOLTAGE:SCHANNEL1:INPUT? -> :CHANNEL1:VOLTAGE:SCHANNEL1:INPUT 1
Description	• An error will occur if there is no module installed in the channel. When setting, error 113: Undefined header When querying, error 420: Query UNTERMINATED • Default value: ON

:CHANnel<x1>[:VOLTage]:SCHannel<x2>:INVert

Function	Sets or queries whether the display is inverted (ON) or not (OFF) for a 16-CH temperature/voltage input or 4-CH module.
Syntax	:CHANnel<x1>[:VOLTage]:SCHannel<x2>:INVert {<Boolean>} :CHANnel<x1>[:VOLTage]:SCHannel<x2>:INVert? 16-CH temperature/voltage input module <x1> = 1, 3, 5, 7, 9, 11, 13, 15 <x2> = 1 to 16 4-CH module <x1> = 1 to 16 <x2> = 1, 2
Description	• Error 113, "Undefined header," will occur if a module other than a 16-CH temperature/voltage input module or 4-CH module is installed in the slot that corresponds to the specified channel. • Default value: OFF

:CHANnel<x1>[:VOLTage]:SCHannel<x2>:LABel

Function	Sets or queries the label string of the specified sub channel for a 16-CH temperature/voltage input or 4-CH module.
Syntax	:CHANnel<x1>[:VOLTage]:SCHannel<x2>:LABel {<String>} :CHANnel<x1>[:VOLTage]:SCHannel<x2>:LABel? 16-CH temperature/voltage input module <x1> = 1, 3, 5, 7, 9, 11, 13, 15 <x2> = 1 to 16 4-CH module <x1> = 1 to 16 <x2> = 1, 2 <String> = Up to 16 characters
Description	Default value: channel number_sub channel number

:CHANnel<x1>[:VOLTage]:SCHannel<x2>:LSCale?

Function	(Upper-level query) Queries all the linear scaling settings of a 16-CH temperature/voltage input or 4-CH module.
Syntax	:CHANnel<x1>[:VOLTage]:SCHannel<x2>:LSCale? 16-CH temperature/voltage input module <x1> = 1, 3, 5, 7, 9, 11, 13, 15 <x2> = 1 to 16 4-CH module <x1> = 1 to 16 <x2> = 1, 2

:CHANnel<x1>[:VOLTage]:SCHannel<x2>:LSCale:AVALue

Function	Sets or queries the scaling coefficient A that is used during linear scaling for a 16-CH temperature/voltage input or 4-CH module.
Syntax	:CHANnel<x1>[:VOLTage]:SCHannel<x2>:LSCale:AVALue {<NRf>} :CHANnel<x1>[:VOLTage]:SCHannel<x2>:LSCale:AVALue? 16-CH temperature/voltage input module <x1> = 1, 3, 5, 7, 9, 11, 13, 15 <x2> = 1 to 16 4-CH module <x1> = 1 to 16 <x2> = 1, 2 <NRf> = −9.9999E+30 to −1E−30, 1E−30 to 9.9999E+30
Example	:CHANNEL3:VOLTAGE:SCHANNEL1:LSCALE:AVALUE 25 :CHANNEL3:VOLTAGE:SCHANNEL1:LSCALE:AVALUE? -> :CHANNEL3:VOLTAGE:SCHANNEL1:LSCALE:AVALUE 25.0000E+00
Description	• The coefficient cannot be set to 0. • Default value: 25.0

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:CHANnel<x1>[:VOLTage]:SCHannel<x2>: LSCale:BVALue

Function   Sets or queries the offset value B that is used during linear scaling for a 16-CH temperature/ voltage input or 4-CH module.

Syntax   :CHANnel<x1>[:VOLTage]:SCHannel<x2>: LSCale:BVALue {<NRf>}
:CHANnel<x1>[:VOLTage]:SCHannel<x2>: LSCale:BVALue?
16-CH temperature/voltage input module
<x1> = 1, 3, 5, 7, 9, 11, 13, 15
<x2> = 1 to 16
4-CH module
<x1> = 1 to 16
<x2> = 1, 2
<NRf> = −9.9999E+30 to −1E−30, 0, 1E−30 to 9.9999E+30

Example   :CHANNEL3:VOLTAGE:SCHANNEL1:LSCALE: BVALUE −25
:CHANNEL3:VOLTAGE:SCHANNEL1:LSCALE: BVALUE?
-> :CHANNEL3:VOLTAGE:SCHANNEL1: LSCALE:BVALUE −25.0000E+00

Description   Default value: -25.0

:CHANnel<x1>[:VOLTage]:SCHannel<x2>: LSCale:DISPlaytype?

Function   (Upper-level query) Queries all the linear scaling display format settings of a 16-CH temperature/ voltage input or 4-CH module.

Syntax   :CHANnel<x1>[:VOLTage]:SCHannel<x2>: LSCale:DISPlaytype?

:CHANnel<x1>[:VOLTage]:SCHannel<x2>: LSCale:DISPlaytype:DECimalnum

Function   Sets or queries the decimal place that is used during linear scaling when the display mode is set to Float for a 16-CH temperature/voltage input or 4-CH module.

Syntax   :CHANnel<x1>[:VOLTage]:SCHannel<x2>: LSCale:DISPlaytype: DECimalnum {<NRf>|AUTO}
:CHANnel<x1>[:VOLTage]:SCHannel<x2>: LSCale:DISPlaytype:DECimalnum?
16-CH temperature/voltage input module
<x1> = 1, 3, 5, 7, 9, 11, 13, 15
<x2> = 1 to 16
4-CH module
<x1> = 1 to 16
<x2> = 1, 2
<NRf> = 0 to 3

Example   :CHANNEL3:VOLTAGE:SCHANNEL1:LSCALE: DISPLAYTYPE:DECIMALNUM AUTO
:CHANNEL3:VOLTAGE:SCHANNEL1:LSCALE: DISPLAYTYPE:DECIMALNUM?
-> :CHANNEL1:VOLTAGE:SCHANNEL1: LSCALE:DISPLAYTYPE: DECIMALNUM AUTO

Description   Default value: AUTO

:CHANnel<x1>[:VOLTage]:SCHannel<x2>: LSCale:DISPlaytype:MODE

Function   Sets or queries the display mode that is used during linear scaling for a 16-CH temperature/ voltage input or 4-CH module.

Syntax   :CHANnel<x1>[:VOLTage]:SCHannel<x2>: LSCale:DISPlaytype: MODE {EXPonent|FLOating}
:CHANnel<x1>[:VOLTage]:SCHannel<x2>: LSCale:DISPlaytype:MODE?
16-CH temperature/voltage input module
<x1> = 1, 3, 5, 7, 9, 11, 13, 15
<x2> = 1 to 16
4-CH module
<x1> = 1 to 16
<x2> = 1, 2

Example   :CHANNEL3:VOLTAGE:SCHANNEL1:LSCALE: DISPLAYTYPE:MODE EXPONENT
:CHANNEL3:VOLTAGE:SCHANNEL1:LSCALE: DISPLAYTYPE:MODE?
-> :CHANNEL1:VOLTAGE:SCHANNEL1: LSCALE:DISPLAYTYPE:MODE EXPONENT

Description   Default value: EXP

:CHANnel<x1>[:VOLTage]:SCHannel<x2>: LSCale:DISPlaytype:SUBunit

Function   Sets or queries the unit prefix that is used during linear scaling when the display mode is set to Float for a 16-CH temperature/voltage input or 4-CH module.

Syntax   :CHANnel<x1>[:VOLTage]:SCHannel<x2>: LSCale:DISPlaytype:SUBunit {AUTO| NONE|PICO|NANO|MICRo|MILI|KILO|MEGA| GIGA|TERA}
:CHANnel<x1>[:VOLTage]:SCHannel<x2>: LSCale:DISPlaytype:SUBunit?
16-CH temperature/voltage input module
<x1> = 1, 3, 5, 7, 9, 11, 13, 15
<x2> = 1 to 16
4-CH module
<x1> = 1 to 16
<x2> = 1, 2

Example   :CHANNEL3:VOLTAGE:SCHANNEL1:LSCALE: DISPLAYTYPE:SUBUNIT AUTO
:CHANNEL3:VOLTAGE:SCHANNEL1:LSCALE: DISPLAYTYPE:SUBUNIT?
-> :CHANNEL3:VOLTAGE:SCHANNEL1: LSCALE:DISPLAYTYPE:SUBUNIT AUTO

Description   Default value: AUTO

**:CHANnel\<x1>[:VOLTage]:SCHannel\<x2>:
LSCale:GETMeasure**

Function   Executes the measurement of the linear scaling
P1X or P2X value of a 16-CH temperature/
voltage input module or 4-CH module.

Syntax   :CHANnel\<x1>[:VOLTage]:SCHannel\<x2>:
LSCale:GETMeasure {P1X|P2X}
16-CH temperature/voltage input module
    \<x1> = 1, 3, 5, 7, 9, 11, 13, 15
    \<x2> = 1 to 16
4-CH module
    \<x1> = 1 to 16
    \<x2> = 1, 2

**:CHANnel\<x1>[:VOLTage]:SCHannel\<x2>:
LSCale:MODE**

Function   Sets or queries the linear scale mode of a 16-CH
temperature/voltage input or 4-CH module.

Syntax   :CHANnel\<x1>[:VOLTage]:SCHannel\<x2>:
LSCale:MODE {AXB|OFF|P12}
:CHANnel\<x1>[:VOLTage]:SCHannel\<x2>:
LSCale:MODE?
16-CH temperature/voltage input module
    \<x1> = 1, 3, 5, 7, 9, 11, 13, 15
    \<x2> = 1 to 16
4-CH module
    \<x1> = 1 to 16
    \<x2> = 1, 2

Example   :CHANNEL3:VOLTAGE:SCHANNEL1:LSCALE:
MODE AXB
:CHANNEL3:VOLTAGE:SCHANNEL1:LSCALE:
MODE?
-> :CHANNEL3:VOLTAGE:SCHANNEL1:
    LSCALE:MODE OFF

Description   Default value: OFF

**:CHANnel\<x1>[:VOLTage]:SCHannel\<x2>:
LSCale:{P1X|P1Y|P2X|P2Y}**

Function   Sets or queries the linear scaling P1X, P1Y, P2X,
or P2Y value of a 16-CH temperature/voltage
input module or 4-CH module.

Syntax   :CHANnel\<x1>[:VOLTage]:SCHannel\<x2>:
LSCale:{P1X|P1Y|P2X|P2Y} {\<NRf>}
:CHANnel\<x1>[:VOLTage]:SCHannel\<x2>:
LSCale:{P1X|P1Y|P2X|P2Y}?
16-CH temperature/voltage input module
    \<x1> = 1, 3, 5, 7, 9, 11, 13, 15
    \<x2> = 1 to 16
4-CH module
    \<x1> = 1 to 16
    \<x2> = 1, 2
\<NRf> = $-9.9999E+30$ to $-1E-30$, 0, $1E-30$ to
    $9.9999E+30$

Example   :CHANNEL3:VOLTAGE:SCHANNEL1:LSCALE:
P1X 1
:CHANNEL3:VOLTAGE:SCHANNEL1:LSCALE:
P1X?
-> :CHANNEL1:VOLTAGE:SCHANNEL1:
    LSCALE:P1X 1

Description   Default values: P1X: 1, P1Y: 0, P2X: 5, P2Y: 100

**:CHANnel\<x1>[:VOLTage]:SCHannel\<x2>:
LSCale:UNIT**

Function   Sets or queries the linear-scaling unit of a 16-CH
temperature/voltage input or 4-CH module.

Syntax   :CHANnel\<x1>[:VOLTage]:SCHannel\<x2>:
LSCale:UNIT {\<String>}
:CHANnel\<x1>[:VOLTage]:SCHannel\<x2>:
LSCale:UNIT?
16-CH temperature/voltage input module
    \<x1> = 1, 3, 5, 7, 9, 11, 13, 15
    \<x2> = 1 to 16
4-CH module
    \<x1> = 1 to 16
    \<x2> = 1, 2
\<String> = Up to 4 characters

Example   :CHANNEL1:VOLTAGE:LSCALE:UNIT "UU"
:CHANNEL1:VOLTAGE:LSCALE:UNIT?
-> :CHANNEL1:VOLTAGE:LSCALE:
    UNIT "UU"

Description   Default value: All spaces

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:CHANnel<x1>[:VOLTage]:SCHannel<x2>: OFFSet

Function	Sets or queries the offset voltage of a 16-CH temperature/voltage input or 4-CH module.
Syntax	:CHANnel<x1>[:VOLTage]:SCHannel<x2>: OFFSet {<Voltage>}
	:CHANnel<x1>[:VOLTage]:SCHannel<x2>: OFFSet?
	16-CH temperature/voltage input module
	<x1> = 1, 3, 5, 7, 9, 11, 13, 15
	<x2> = 1 to 16
	4-CH module
	<x1> = 1 to 16
	<x2> = 1, 2
	<Voltage> = The selectable range varies depending on the range.
Description	• Error 113, "Undefined header," will occur if a module other than a 16-CH temperature/ voltage input module or 4-CH module is installed in the slot that corresponds to the specified channel.
	• Default value: 0

:CHANnel<x1>[:VOLTage]:SCHannel<x2>: POSition

Function	Sets or queries the vertical position for a 16-CH temperature/voltage input or 4-CH module.
Syntax	:CHANnel<x1>[:VOLTage]:SCHannel<x2>: POSition {<NRf>}
	:CHANnel<x1>[:VOLTage]:SCHannel<x2>: POSition?
	16-CH temperature/voltage input module
	<x1> = 1, 3, 5, 7, 9, 11, 13, 15
	<x2> = 1 to 16
	4-CH module
	<x1> = 1 to 16
	<x2> = 1, 2
	<NRf> = –5.00 to 5.00 (div, in 0.01 steps)
Description	• Error 113, "Undefined header," will occur if a module other than a 16-CH temperature/ voltage input module or 4-CH module is installed in the slot that corresponds to the specified channel.
	• Default value: 0

:CHANnel<x1>[:VOLTage]:SCHannel<x2>: PROBe

Function	Sets or queries the probe type of the 4-CH module.
Syntax	:CHANnel<x1>[:VOLTage]:SCHannel<x2>: PROBe {<NRf>|C0_1|C0_2|C0_5|C1|C10| C100|C1000|C10000|C2|C20|C200|C250| C2000|C20000|C400|C5|C50|C500|C5000| C50000}
	:CHANnel<x1>[:VOLTage]:SCHannel<x2>: PROBe?
	<x1> = 1 to 16
	<x2> = 1, 2
	<NRf> = 1, 2, 5, 10, 20, 50, 100, 200, 500, 1000, 2000, 5000, 10000, 20000, 50000
Example	:CHANNEL1:VOLTAGE:SCHANNEL2:PROBE 10
	:CHANNEL1:VOLTAGE:SCHANNEL2:PROBE?
	-> :CHANNEL1:VOLTAGE:SCHANNEL2: PROBE 10

:CHANnel<x1>[:VOLTage]:SCHannel<x2>: SCALe

Function	Sets or queries the upper and lower limits of the screen for a 16-CH temperature/voltage input or 4-CH module.
Syntax	:CHANnel<x1>[:VOLTage]:SCHannel<x2>: SCALe {<Voltage>,<Voltage>| <NRf>,<NRf>}
	:CHANnel<x1>[:VOLTage]:SCHannel<x2>: SCALe?
	16-CH temperature/voltage input module
	<x1> = 1, 3, 5, 7, 9, 11, 13, 15
	<x2> = 1 to 16
	4-CH module
	<x1> = 1 to 16
	<x2> = 1, 2
	<Voltage>, <NRf> = The selectable range varies depending on the range.
Description	• Error 113, "Undefined header," will occur if a module other than a 16-CH temperature/ voltage input module or 4-CH module is installed in the slot that corresponds to the specified channel.
	• Default value: 10,–10

:CHANnel\<x1>[:VOLTage]:SCHannel\<x2>: SRATe\<x3>

Function   Sets or queries the channel's sample rate.
Syntax   :CHANnel\<x1>[:VOLTage]:SCHannel\<x2>:
            SRATe\<x3> {\<Frequency>}
            :CHANnel\<x1>[:VOLTage]:SCHannel\<x2>:
            SRATe\<x3>?
            \<x1> = 1 to 32
            \<x3> = 1 (low-speed sample),
                   2 (high-speed sample)
            \<Frequency> = 1Hz, 2Hz, 5Hz, 10Hz, 20Hz, ...,
                          20MHz, 50MHz,100MHz,
                          200MHz, 500MHz
Example   :CHANNEL1:VOLTAGE:SCHANNEL1:
            SRATE1 1MHz
            :CHANNEL1:VOLTAGE:SCHANNEL1:SRATE1?
            -> :CHANNEL1:VOLTAGE:SCHANNEL1:
               SRATE1 1MHz
Description This command is valid on modules other than the
             4-CH module.

:CHANnel\<x1>[:VOLTage]:SCHannel\<x2>: TADJust

Function   Sets or queries the timing adjustment value when
            a voltage module is installed.
Syntax   :CHANnel\<x1>[:VOLTage]:SCHannel\<x2>:
            TADJust {\<NRf>}
            :CHANnel\<x1>[:VOLTage]:SCHannel\<x2>:
            TADJust?
            \<x1> = 1 to 16
            \<x2> = 1 to 16
            \<NRf> = The selectable range varies depending
                    on the module.
Example   :CHANNEL1:VOLTAGE:SCHANNEL1:
            TADJUST 0
            :CHANNEL1:VOLTAGE:SCHANNEL1:TADJUST?
            -> :CHANNEL1:VOLTAGE:SCHANNEL1:
               TADJUST 0.00E+00
Description Default value: 0.00E+00

:CHANnel\<x1>[:VOLTage]:SCHannel\<x2>: VARiable

Function   Sets or queries how the vertical scale is set
            for a 16-CH temperature/voltage input or 4-CH
            module.
Syntax   :CHANnel\<x1>[:VOLTage]:SCHannel\<x2>:
            VARiable {\<Boolean>}
            :CHANnel\<x1>[:VOLTage]:SCHannel\<x2>:
            VARiable?
            16-CH temperature/voltage input module
              \<x1> = 1, 3, 5, 7, 9, 11, 13, 15
              \<x2> = 1 to 16
            4-CH module
              \<x1> = 1 to 16
              \<x2> = 1, 2
Description • Error 113, "Undefined header," will occur if
               a module other than a 16-CH temperature/
               voltage input module or 4-CH module is
               installed in the slot that corresponds to the
               specified channel.
             • Default value: OFF

:CHANnel\<x1>[:VOLTage]:SCHannel\<x2>: VDIV

Function   Sets or queries the V/div setting of a 16-CH
            temperature/voltage input or 4-CH module.
Syntax   :CHANnel\<x1>[:VOLTage]:SCHannel\<x2>:
            VDIV {\<Voltage>}
            :CHANnel\<x1>[:VOLTage]:SCHannel\<x2>:
            VDIV?
            16-CH temperature/voltage input module
              \<x1> = 1, 3, 5, 7, 9, 11, 13, 15
              \<x2> = 1 to 16
              \<Voltage> = 1mV to 2V
            4-CH module
              \<x1> = 1 to 16
              \<x2> = 1, 2
              \<Voltage> = 10mV to 50V (720254) 5mV to
                          20V (720256)
Description • Error 113, "Undefined header," will occur if
               a module other than a 16-CH temperature/
               voltage input module or 4-CH module is
               installed in the slot that corresponds to the
               specified channel.
             • Default value: varies depending on the module

:CHANnel\<x1>[:VOLTage]:SCHannel\<x2>: VGAin

Function   Sets or queries the gain adjustment of a 4-CH
            module.
Syntax   :CHANnel\<x1>[:VOLTage]:SCHannel\<x2>:
            VGAin {\<NRf>}
            :CHANnel\<x1>[:VOLTage]:SCHannel\<x2>:
            VGAin?
            \<x1> = 1 to 16
            \<x2> = 1, 2
            \<NRf> = 0.9500 to 1.0500
Description • This command is valid when a 4-CH module is
               installed, the DC Offset & Gain Adjust setting is
               set to ON, and the input coupling is set to DC.
             • Default value: 1

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:CHANnel<x1>[:VOLTage]:SCHannel<x2>:ZOOM

Function   Sets or queries the vertical zoom factor of a 16-CH temperature/voltage input or 4-CH module.

Syntax   :CHANnel<x1>[:VOLTage]:SCHannel<x2>:ZOOM {<NRf>}
          :CHANnel<x1>[:VOLTage]:SCHannel<x2>:ZOOM?
          16-CH temperature/voltage input module
             <x1> = 1, 3, 5, 7, 9, 11, 13, 15
             <x2> = 1 to 16
          4-CH module
             <x1> = 1 to 16
             <x2> = 1, 2
          <NRf> = 0.1, 0.111, 0.125, 0.143, 0.167, 0.2, 0.25, 0.33, 0.4, 0.5, 0.556, 0.625, 0.667, 0.714, 0.8, 0.833, 1, 1.11, 1.25, 1.33, 1.43, 1.67, 2, 2.22, 2.5, 3.33, 4, 5, 6.67, 8, 10, 12.5, 16.7, 20, 25, 40, 50, 100

Description • Error 113, "Undefined header," will occur if a module other than a 16-CH temperature/voltage input module or 4-CH module is installed in the slot that corresponds to the specified channel.
            • Default value: 1

:CHANnel<x>[:VOLTage]:VARiable

Function   Sets or queries how the vertical scale is set for a module that can measure analog voltage.

Syntax   :CHANnel<x>[:VOLTage]:VARiable {<Boolean>}
          :CHANnel<x>[:VOLTage]:VARiable?
          <x> = 1 to 16

Example   :CHANNEL1:VOLTAGE:VARIABLE 0
           :CHANNEL1:VOLTAGE:VARIABLE?
           -> :CHANNEL1:VOLTAGE:VARIABLE 0

Description • On the DL950, the menu title is "V Scale." OFF corresponds to the "DIV" setting and ON corresponds to the "SPAN" setting. In recorder mode, this is fixed to 1 (ON).
            • Default value: OFF

:CHANnel<x>[:VOLTage]:VDIV

Function   Sets or queries the V/div setting of a module that can measure analog voltage.

Syntax   :CHANnel<x>[:VOLTage]:VDIV {<Voltage>|<Current>}
          :CHANnel<x>[:VOLTage]:VDIV?
          <x> = 1 to 16
          <Voltage> = See the table below.

Example   :CHANNEL1:VOLTAGE:VDIV 50
           :CHANNEL1:VOLTAGE:VDIV?
           -> :CHANNEL1:VOLTAGE:VDIV 50

Description

List of Selectable Ranges and Initial Values by Voltage Module (1:1 probe attenuation)

Module	VDIV Selectable Range (1-2-5 steps)	VDIV Default Value	Selectable Offset Range
701250, 701255, 720250	5mV to 20V	5V	The VDIV setting × ±5
701251	1mV to 20V		
701261, 701262, 720256	5mV to 20V		
701265	0.1mV to 10V		
701275	5mV to 10V	5V	
720211, 720212	10mV to 20V		
720254	10mV to 50V		
720266	0.1mV to 20V		
720268	20mV to 200V		
720221	1mV to 2V	200mV	

:CHANnel<x>[:VOLTage]:VGAin

Function   Sets or queries the gain adjustment of a voltage measurement module.

Syntax   :CHANnel<x>[:VOLTage]:VGAin {<NRf>}
          :CHANnel<x>[:VOLTage]:VGAin?
          <x> = 1 to 16
          <NRf> = 0.9500 to 1.0500

Example   :CHANNEL2:VOLTAGE:VGAIN 1.01
           :CHANNEL2:VOLTAGE:VGAIN?
           -> :CHANNEL2:VOLTAGE:VGAIN 1.01

Description • This command is valid when a 701250, 701251, 701255, 720211, 720212, 720250, 720254, or 720256 module is installed in the input coupling is set to DC.
            • Default value: 1.00

:CHANnel<x>[:VOLTage]:ZOOM

Function   Sets or queries the vertical zoom factor of a
            module that can measure analog voltage.

Syntax   :CHANnel<x>[:VOLTage]:ZOOM {<NRf>}
            :CHANnel<x>[:VOLTage]:ZOOM?
            <x> = 1 to 16
            <NRf> = 0.1, 0.111, 0.125, 0.143, 0.167, 0.2,
                    0.25, 0.33, 0.4, 0.5, 0.556, 0.625, 0.667,
                    0.714, 0.8, 0.833, 1, 1.11, 1.25, 1.33,
                    1.43, 1.67, 2, 2.22, 2.5, 3.33, 4, 5, 6.67,
                    8, 10, 12.5, 16.7, 20, 25, 40, 50, 100

Example   :CHANNEL1:VOLTAGE:ZOOM 1
            :CHANNEL1:VOLTAGE:ZOOM?
            -> :CHANNEL1:VOLTAGE:ZOOM 1

Description Default value: 1

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Commands

4.8　CLEar Group

The command in this group deals with executing the clear trace operation. You can execute the same operation that you can by using the CLEAR TRACE key on the front panel.

:CLEar

Function　　Clears traces.

Syntax　　`:CLEar`

4.9 COMMunicate Group

The commands in this group deal with communications. There are no front panel keys that correspond to the commands in this group.

:COMMunicate?
Function   (Upper-level query) Queries all communication settings.
Syntax   :COMMunicate?

:COMMunicate:HEADer
Function   Sets or queries whether headers are attached to query responses.
Syntax   :COMMunicate:HEADer {<Boolean>}
    :COMMunicate:HEADer?
Example   :COMMUNICATE:HEADER ON
    :COMMUNICATE:HEADER?
    -> :COMMUNICATE:HEADER 1
Description   Default value: ON (with headers)

:COMMunicate:LOCKout
Function   Sets/clears local lockout.
Syntax   :COMMunicate:LOCKout {<Boolean>}
    :COMMunicate:LOCKout?
Example   :COMMUNICATE:LOCKOUT ON
    :COMMUNICATE:LOCKOUT?
    -> :COMMUNICATE:LOCKOUT 1
Description   • This command is designed for use in USB and Ethernet communications.
    • Default value: 0

:COMMunicate:OPSE
Function   Sets or queries the overlap command that is used by the *OPC, *OPC?, and *WAI commands.
Syntax   :COMMunicate:OPSE <Register>
    :COMMunicate:OPSE?
    <Register> = 0 to 65535
    See the figure in the description of the :COMM:WAIT? command.
Example   :COMMUNICATE:OPSE 65535
    :COMMUNICATE:OPSE?
    -> :COMMUNICATE:OPSE 584
Description   Bits fixed to 0 are not set to 1, so the response to the query only indicates 1 for bits 3, 5, and 6.

:COMMunicate:OPSR?
Function   Queries the operation pending status register.
Syntax   :COMMunicate:OPSR?
Example   :COMMunicate:OPSR? -> 0

:COMMunicate:OVERlap
Function   Sets or queries the commands that operate as overlap commands.
Syntax   :COMMunicate:OVERlap <Register>
    :COMMunicate:OVERlap?
    <Register> = 0 to 65535
    See the figure in the description of the :COMM:WAIT? command.
Description   Bits fixed to 0 are not set to 1, so the response to the query only indicates 1 for bits 3, 5, and 6.

:COMMunicate:REMote
Function   Sets or queries whether the instrument is in remote or local mode. ON is remote mode.
Syntax   :COMMunicate:REMote {<Boolean>}
    :COMMunicate:REMote?
Example   :COMMUNICATE:REMOTE ON
    :COMMUNICATE:REMOTE?
    -> :COMMUNICATE:REMOTE 1
Description   • This command is designed for use in USB and Ethernet communications.
    • Default value: 0

:COMMunicate:VERBose
Function   Sets or queries whether query responses are returned in full or abbreviated form.
Syntax   :COMMunicate:VERBose {<Boolean>}
    :COMMunicate:VERBose?
Example   :COMMUNICATE:VERBOSE ON
    :COMMUNICATE:VERBOSE?
    -> :COMMUNICATE:VERBOSE 1
Description   • This setting is lost when the instrument is turned off.
    • Default value: OFF (abbreviated form)

:COMMunicate:WAIT
Function   Waits for a specified extended event to occur.
Syntax   :COMMunicate:WAIT <Register>
    <Register> = 0 to 65535 (extended event register)
Example   :COMMUNICATE:WAIT 65535

:COMMunicate:WAIT?

Function   Creates the response that is returned when a
            specified extended event occurs.

Syntax   :COMMunicate:WAIT? <Register>
            <Register> = 0 to 65535
                        (extended event register)

Example   :COMMUNICATE:WAIT? 65535 -> 1

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	0	0	0	0	0	0	0	0	ACS	0	0	CAL	0	0	0

When bit 3 (CAL) = 1: Calibration not complete
When bit 6 (ACS) = 1: Media access is
                        incomplete

4.10 CURSor Group

The commands in this group deal with cursor measurements. You can make the same settings and queries (of settings and measured values) that you can by using the CURSOR key on the front panel. If the selectable range of the time axis is "<NRf> = −5 to 5div," the selectable range varies depending on settings such as the record length. For details, see "Notes about Cursor Measurement" in chapter 10 of IM DL950-01EN.

:CURSor?
Function   (Upper-level query) Queries all cursor measurement settings.
Syntax   :CURSor?

:CURSor:FFT?
Function   (Upper-level query) Queries all FFT cursor settings.
Syntax   :CURSor:FFT?

:CURSor:FFT:MARKer:M<x>?
Function   (Upper-level query) Queries all settings of an FFT cursor (marker cursor).
Syntax   :CURSor:FFT:MARKer:M<x>?
            <x> = 1 to 4

:CURSor:FFT:MARKer:M<x>:DF<y>?
Function   (Upper-level query) Queries all ΔY display settings. ΔF is between the FFT cursors (marker cursors).
Syntax   :CURSor:FFT:MARKer:M<x>:DF<y>?
            <x> = 1 to 4, <y> = 1 to 4

:CURSor:FFT:MARKer:M<x>:DF<y>:STATe
Function   Sets or queries whether the ΔF value between the FFT cursors (marker cursors) is displayed.
Syntax   :CURSor:FFT:MARKer:M<x>:DF<y>:
            STATe {<Boolean>}
            :CURSor:FFT:MARKer:M<x>:DF<y>:STATe?
            <x> = 1 to 4, <y> = 1 to 4
Example   :CURSOR:FFT:MARKER:M1:DF2:STATE ON
            :CURSOR:FFT:MARKER:M1:DF2:STATE?
            -> :CURSOR:FFT:MARKER:M1:DF2:STATE 1
Description Default value: ON when <x> = 1, OFF otherwise

:CURSor:FFT:MARKer:M<x>:DF<y>:VALue?
Function   Queries the ΔF value between the FFT cursors (marker cursors).
Syntax   :CURSor:FFT:MARKer:M<x>:DF<y>:VALue?
            <x> = 1 to 4, <y> = 1 to 4
Example   :CURSOR:FFT:MARKER:M1:DF2:VALUE?
            -> :CURSOR:FFT:MARKER:M1:DF2:
               VALUE 100

:CURSor:FFT:MARKer:M<x>:DY<y>?
Function   (Upper-level query) Queries all ΔY display settings. ΔY is between the FFT cursors (marker cursors).
Syntax   :CURSor:FFT:MARKer:M<x>:DY<y>?
            <x> = 1 to 4, <y> = 1 to 4

:CURSor:FFT:MARKer:M<x>:DY<y>:STATe
Function   Sets or queries whether the ΔY value between the FFT cursors (marker cursors) is displayed.
Syntax   :CURSor:FFT:MARKer:M<x>:DY<y>:
            STATe {<Boolean>}
            :CURSor:FFT:MARKer:M<x>:DY<y>:STATe?
            <x> = 1 to 4, <y> = 1 to 4
Example   :CURSOR:FFT:MARKER:M1:DY2:STATE ON
            :CURSOR:FFT:MARKER:M1:DY2:STATE?
            -> :CURSOR:FFT:MARKER:M1:DY2:STATE 1
Description Default value: ON when <x> = 1, OFF otherwise

:CURSor:FFT:MARKer:M<x>:DY<y>:VALue?
Function   Queries the ΔY value between the FFT cursors (marker cursors).
Syntax   :CURSor:FFT:MARKer:M<x>:DY<y>:VALue?
            <x> = 1 to 4, <y> = 1 to 4
Example   :CURSOR:FFT:MARKER:M1:DY2:VALUE?
            -> :CURSOR:FFT:MARKER:M1:DY2:
               VALUE 3.9750000E+00

:CURSor:FFT:MARKer:M<x>:POSition
Function   Sets or queries the position of an FFT cursor (marker cursor).
Syntax   :CURSor:FFT:MARKer:M<x>:
            POSition {<NRf>}
            :CURSor:FFT:MARKer:M<x>:POSition?
            <x> = 1 to 4
            <NRf> = −5 to 5
Example   :CURSOR:FFT:MARKER:M1:POSITION −3.00
            :CURSOR:FFT:MARKER:M1:POSITION?
            -> :CURSOR:FFT:MARKER:M1:
               POSITION −3.00
Description Default value: <x> = 1: −3, <x> = 2: −1, <x> = 3: 1, <x> = 4: 3

`:CURSor:FFT:MARKer:M<x>:TRACe`

Function	Sets or queries the source waveform that you want to measure using the FFT cursor (marker cursor).

Syntax	`:CURSor:FFT:MARKer:M<x>:TRACe {OFF|FFT1|FFT2|FFT3|FFT4|FFT5|FFT6|FFT7||FFT8}`
	`:CURSor:FFT:MARKer:M<x>:TRACe?`
	`<x> = 1 to 4`

Example	`:CURSOR:FFT:MARKER:M1:TRACE FFT1`
	`:CURSOR:FFT:MARKER:M1:TRACE?`
	`-> :CURSOR:FFT:MARKER:M1:TRACE FFT1`

Description	Default value: FFT1

`:CURSor:FFT:MARKer:M<x>:F?`

Function	(Upper-level query) Queries all frequency-axis settings of an FFT cursor (marker cursor).
Syntax	`:CURSor:FFT:MARKer:M<x>:F?` `<x> = 1 to 4`

`:CURSor:FFT:MARKer:M<x>:F:STATe`

Function	Sets or queries whether the frequency-axis value of an FFT cursor (marker cursor) is displayed.

Syntax	`:CURSor:FFT:MARKer:M<x>:F:STATe {<Boolean>}`
	`:CURSor:FFT:MARKer:M<x>:F:STATe?`
	`<x> = 1 to 4`

Example	`:CURSOR:FFT:MARKER:M1:F:STATE ON`
	`:CURSOR:FFT:MARKER:M1:F:STATE?`
	`-> :CURSOR:FFT:MARKER:M1:F:STATE 1`

Description	Default value: ON

`:CURSor:FFT:MARKer:M<x>:F:VALue?`

Function	Queries the frequency-axis value of an FFT cursor (marker cursor).
Syntax	`:CURSor:FFT:MARKer:M<x>:F:VALue?` `<x> = 1 to 4`
Example	`:CURSOR:FFT:MARKER:M1:F:VALUE?` `-> :CURSOR:FFT:MARKER:M1:F:VALUE 100.00000E+03`

`:CURSor:FFT:MARKer:M<x>:Y?`

Function	(Upper-level query) Queries all Y-axis settings of an FFT cursor (marker cursor).
Syntax	`:CURSor:FFT:MARKer:M<x>:Y?` `<x> = 1 to 4`

`:CURSor:FFT:MARKer:M<x>:Y:STATe`

Function	Sets or queries whether the Y-axis value of an FFT cursor (marker cursor) is displayed.

Syntax	`:CURSor:FFT:MARKer:M<x>:Y:STATe {<Boolean>}`
	`:CURSor:FFT:MARKer:M<x>:Y:STATe?`
	`<x> = 1 to 4`

Example	`:CURSOR:FFT:MARKER:M1:Y:STATE ON`
	`:CURSOR:FFT:MARKER:M1:Y:STATE?`
	`-> :CURSOR:FFT:MARKER:M1:Y:STATE 1`

Description	Default value: ON

`:CURSor:FFT:MARKer:M<x>:Y:VALue?`

Function	Queries the Y-axis value of an FFT cursor (marker cursor).
Syntax	`:CURSor:FFT:MARKer:M<x>:Y:VALue?` `<x> = 1 to 4`
Example	`:CURSOR:FFT:MARKER:M1:Y:VALUE?` `-> :CURSOR:FFT:MARKER:M1:Y:VALUE -46.750000E+00`

`:CURSor:FFT:MARKer:FORM`

Function	Sets or queries the form of an FFT cursor (marker cursor).
Syntax	`:CURSor:FFT:MARKer:FORM {LINE|MARK}` `:CURSor:FFT:MARKer:FORM?`

Example	`:CURSOR:FFT:MARKER:FORM LINE`
	`:CURSOR:FFT:MARKER:FORM?`
	`-> :CURSOR:FFT:MARKER:FORM LINE`

Description	Default value: MARK

`:CURSor:FFT:PEAK<x>?`

Function	(Upper-level query) Queries all settings of an FFT cursor (peak cursor).
Syntax	`:CURSor:FFT:PEAK<x>?` `<x> = 1 to 8`

`:CURSor:FFT:PEAK<x>:F?`

Function	(Upper-level query) Queries all frequency-axis settings of an FFT cursor (peak cursor).
Syntax	`:CURSor:FFT:PEAK<x>:F?` `<x> = 1 to 8`

`:CURSor:FFT:PEAK<x>:F:STATe`

Function	Sets or queries whether the frequency-axis value of an FFT cursor (peak cursor) is displayed.

Syntax	`:CURSor:FFT:PEAK<x>:F:STATe {<Boolean>}`
	`:CURSor:FFT:PEAK<x>:F:STATe?`
	`<x> = 1 to 8`

Example	`:CURSOR:FFT:PEAK1:F:STATE ON`
	`:CURSOR:FFT:PEAK1:F:STATE?`
	`-> :CURSOR:FFT:PEAK1:F:STATE 1`

Description	Default value: ON

`:CURSor:FFT:PEAK<x>:F:VALue?`
Function   Queries the frequency-axis value of an FFT cursor (peak cursor).
Syntax   `:CURSor:FFT:PEAK<x>:F:VALue?`
        `<x> = 1 to 8`
Example   `:CURSOR:FFT:PEAK1:F:VALUE?`
        `-> :CURSOR:FFT:PEAK1:F:`
            `VALUE 2.0000000E+03`

`:CURSor:FFT:PEAK<x>:RANGe`
Function   Sets or queries the FFT cursor (peak cursor) measurement range.
        If <x> = 1 to 4, FFTWindow1 is set or queried.
        If <x> = 5 to 8, FFTWindow2 is set or queried.
Syntax   `:CURSor:FFT:PEAK<x>:RANGe {<NRf>,<NRf>}`
        `:CURSor:FFT:PEAK<x>:RANGe?`
        `<x> = 1 to 8`
        `<NRf> = −5.00div to 5.00div`
Example   `:CURSOR:FFT:PEAK1:RANGE −5.00,5.00`
        `:CURSOR:FFT:PEAK1:RANGE?`
        `-> :CURSOR:FFT:PEAK1:RANGE −5.00,5.00`
Description   Default value: Range1 is −5.00, Range2 is 5.00.

`:CURSor:FFT:PEAK<x>:Y?`
Function   (Upper-level query) Queries all Y-axis settings of an FFT cursor (peak cursor).
Syntax   `:CURSor:FFT:PEAK<x>:Y?`
        `<x> = 1 to 8`

`:CURSor:FFT:PEAK<x>:Y:STATe`
Function   Sets or queries whether the Y-axis value of an FFT cursor (peak cursor) is displayed.
Syntax   `:CURSor:FFT:PEAK<x>:Y:STATe {<Boolean>}`
        `:CURSor:FFT:PEAK<x>:Y:STATe?`
        `<x> = 1 to 8`
Example   `:CURSOR:FFT:PEAK2:Y:STATE ON`
        `:CURSOR:FFT:PEAK2:Y:STATE?`
        `-> :CURSOR:FFT:PEAK2:Y:STATE 1`
Description   Default value: ON

`:CURSor:FFT:PEAK<x>:Y:VALue?`
Function   Queries the Y-axis value of an FFT cursor (peak cursor).
Syntax   `:CURSor:FFT:PEAK<x>:Y:VALue?`
        `<x> = 1 to 8`
Example   `:CURSOR:FFT:PEAK2:Y:VALUE?`
        `-> :CURSOR:FFT:PEAK2:Y:`
            `VALUE 30.933333E+00`

`:CURSor:FFT:TYPE`
Function   Sets or queries the FFT cursor type.
Syntax   `:CURSor:FFT:TYPE {OFF|PEAK|MARKer}`
        `:CURSor:FFT:TYPE?`
Example   `:CURSOR:FFT:TYPE PEAK`
        `:CURSOR:FFT:TYPE?`
        `-> :CURSOR:FFT:TYPE PEAK`
Description   Default value: OFF

`:CURSor[:TY]?`
Function   (Upper-level query) Queries all cursor settings for the T-Y display.
Syntax   `:CURSor[:TY]?`

`:CURSor[:TY]:CSELect`
Function   Sets or queries the source waveform that T-Y display cursors are applied to when dual capture is enabled.
Syntax   `:CURSor[:TY]:CSELect {LOW|HIGH}`
        `:CURSor[:TY]:CSELect?`
Example   `:CURSOR:TY:CSELECT LOW`
        `:CURSOR:TY:CSELECT?`
        `-> :CURSOR:TY:CSELECT LOW`
Description   Default value: HIGH

`:CURSor[:TY]:DEGRee?`
Function   (Upper-level query) Queries all angle cursor settings for the T-Y display.
Syntax   `:CURSor[:TY]:DEGRee?`

`:CURSor[:TY]:DEGRee:D<X>?`
Function   (Upper-level query) Queries all angle (D<x>) settings for the angle cursors on the T-Y display.
Syntax   `:CURSor[:TY]:DEGRee:D<X>?`
        `<x> = 1, 2`
Example   `:CURSOR:TY:DEGREE:D1:STATE?`
        `-> :CURSOR:TY:DEGREE:D1:STATE 1`

`:CURSor[:TY]:DEGRee:D<X>:STATe`
Function   Sets or queries whether the angle (D<x>) between the angle cursors on the T-Y display is displayed.
Syntax   `:CURSor[:TY]:DEGRee:D<X>:STATe {<Boolean>}`
        `:CURSor[:TY]:DEGRee:D<X>:STATe?`
        `<x> = 1, 2`
Example   `:CURSOR:TY:DEGREE:D1:STATE ON`
        `:CURSOR:TY:DEGREE:D1:STATE?`
        `-> :CURSOR:TY:DEGREE:D1:STATE 1`
Description   Default value: ON

:CURSor[:TY]:DEGRee:D<X>:VALue?

Function   Queries the angle (D<x>) between the angle
             cursors on the T-Y display.
Syntax   :CURSor[:TY]:DEGRee:D<X>:VALue?
             <x> = 1, 2
Example   :CURSOR:TY:DEGREE:D1:VALUE?
             -> :CURSOR:TY:DEGREE:D1:
                  VALUE -179.55000E+00

:CURSor[:TY]:DEGRee:DD?

Function   (Upper-level query) Queries all angle difference
             (Δd value) settings. The angle difference is
             between the angle cursors on the T-Y display.
Syntax   :CURSor[:TY]:DEGRee:DD?

:CURSor[:TY]:DEGRee:DD:STATe

Function   Sets or queries whether the angle difference
             (Δd value) between the angle cursors on the T-Y
             display is displayed.
Syntax   :CURSor[:TY]:DEGRee:DD:
             STATe {<Boolean>}
             :CURSor[:TY]:DEGRee:DD:STATe?
Example   :CURSOR:TY:DEGREE:DD:STATE ON
             :CURSOR:TY:DEGREE:DD:STATE?
             -> :CURSOR:TY:DEGREE:DD:STATE 1
Description Default value: ON

:CURSor[:TY]:DEGRee:DD:VALue?

Function   Queries the angle difference (Δd value) between
             the angle cursors on the T-Y display.
Syntax   :CURSor[:TY]:DEGRee:DD:VALue?
Example   :CURSOR:TY:DEGREE:DD:VALUE?
             -> :CURSOR:TY:DEGREE:DD:
                  VALUE 719.55000E+00

:CURSor[:TY]:DEGRee:DY?

Function   (Upper-level query) Queries all settings related
             to the ΔY value between the angle cursors on the
             T-Y display.
Syntax   :CURSor[:TY]:DEGRee:DY?

:CURSor[:TY]:DEGRee:DY:STATe

Function   Sets or queries whether the ΔY value between
             the angle cursors on the T-Y display is displayed.
Syntax   :CURSor[:TY]:DEGRee:DY:
             STATe {<Boolean>}
             :CURSor[:TY]:DEGRee:DY:STATe?
Example   :CURSOR:TY:DEGREE:DY:STATE ON
             :CURSOR:TY:DEGREE:DY:STATE?
             -> :CURSOR:TY:DEGREE:DY:STATE 1
Description Default value: ON

:CURSor[:TY]:DEGRee:DY:VALue?

Function   Queries the ΔY value between the angle cursors
             on the T-Y display.
Syntax   :CURSor[:TY]:DEGRee:DY:VALue?
Example   :CURSOR:TY:DEGREE:DY:VALUE?
             -> :CURSOR:TY:DEGREE:DY:
                  VALUE 0.0000000E+00

:CURSor[:TY]:DEGRee:JUMP

Function   Moves the specified angle cursor to the center of
             the specified zoom window.
Syntax   :CURSor[:TY]:DEGRee:JUMP {C1_Z1|
             C1_Z2|C2_Z1|C2_Z2}
Example   :CURSOR:TY:DEGREE:JUMP C1_Z1
Description C1 and C2 are used to indicate Cursor1 and
             Cursor2.

:CURSor[:TY]:DEGRee:POSition<x>

Function   Sets or queries an angle cursor position on the
             T-Y display.
Syntax   :CURSor[:TY]:DEGRee:
             POSition<x> {<NRf>}
             :CURSor[:TY]:DEGRee:POSition<x>?
             <x> = 1, 2
             <NRf> = -5 to 5 (the resolution depends on the
                       measurement length)
Example   :CURSOR:TY:DEGREE:POSITION1 1
             :CURSOR:TY:DEGREE:POSITION1?
             -> :CURSOR:TY:DEGREE:
                  POSITION1 1.000000000000
Description Default value: -4 to 4

:CURSor[:TY]:DEGRee:REFerence<x>

Function   Sets or queries the angle reference start (Ref1)
             or end (Ref2) point on the T-Y display.
Syntax   :CURSor[:TY]:DEGRee:
             REFerence<x> {<NRf>}
             :CURSor[:TY]:DEGRee:REFerence<x>?
             <x> = 1, 2
             <NRf> = -5 to 5 (the resolution depends on the
             measurement length)
Example   :CURSOR:TY:DEGREE:REFERENCE1 -1
             :CURSOR:TY:DEGREE:REFERENCE1?
             -> :CURSOR:TY:DEGREE:
                  REFERENCE1 -1.000000000000
Description Default value: -2 to 2

:CURSor[:TY]:DEGRee:RVALue

Function   Sets or queries an angle cursor's reference angle
             on the T-Y display.
Syntax   :CURSor[:TY]:DEGRee:RVALue {<NRf>}
             :CURSor[:TY]:DEGRee:RVALue?
             <NRf> = 1 to 720 (in 1 steps)
Example   :CURSOR:TY:DEGREE:RVALUE 360
             :CURSOR:TY:DEGREE:RVALUE?
             -> :CURSOR:TY:DEGREE:RVALUE 360
Description Default value: 360

:CURSor[:TY]:DEGRee:TRACe

Function Sets or queries the source waveform that you want to measure using the angle cursors on the T-Y display.

Syntax :CURSor[:TY]:DEGRee:
TRACe {<NRf>[,<NRf>]|MATH<x>|ALL}
:CURSor[:TY]:DEGRee:TRACe?
<NRf> = 1 to 32
[,<NRf>] = 1 to 64 (only when it is necessary to specify the sub channel)
<x> = 1 to 8

Example :CURSOR:TY:DEGREE:TRACE 1
:CURSOR:TY:DEGREE:TRACE?
-> :CURSOR:TY:DEGREE:TRACE 1

Description Default value: Installed channel with the smallest channel number

:CURSor[:TY]:DEGRee:Y<x>?

Function (Upper-level query) Queries all measured-value settings for an angle cursor on the T-Y display.

Syntax :CURSor[:TY]:DEGRee:Y<x>?
<x> = 1, 2

:CURSor[:TY]:DEGRee:Y<x>:STATe

Function Sets or queries whether the measurements of an angle cursor on the T-Y display is displayed.

Syntax :CURSor[:TY]:DEGRee:Y<x>:
STATe {<Boolean>}
:CURSor[:TY]:DEGRee:Y<x>:STATe?
<x> = 1, 2

Example :CURSOR:TY:DEGREE:Y1:STATE 1
:CURSOR:TY:DEGREE:Y1:STATE?
-> :CURSOR:TY:DEGREE:Y1:STATE 1

Description Default value: ON

:CURSor[:TY]:DEGRee:Y<x>:VALue?

Function Sets or queries the measured value of an angle cursor on the T-Y display.

Syntax :CURSor[:TY]:DEGRee:Y<x>:VALue?
<x> = 1, 2

Example :CURSOR:TY:DEGREE:Y1:VALUE?
-> :CURSOR:TY:DEGREE:Y1:
VALUE 0.0000000E+00

Description • For Trace All, measured values are returned for 16 channels. "NAN" will be returned for channels the are not installed and channels that do not are not used in memory join.
• For modules with sub channels, measured values are returned for all sub channels. "NAN" will be returned for any sub channels whose input is turned off.
• For models with the /G03 option, even when a channel does not have a module installed, if RMath is on, the data of that channel is returned.

:CURSor[:TY]:HORizontal?

Function (Upper-level query) Queries all H cursor settings for the T-Y display.

Syntax :CURSor[:TY]:HORizontal?

:CURSor[:TY]:HORizontal:DY?

Function (Upper-level query) Queries all settings related to the ΔY axis of the H cursor on the T-Y display.

Syntax :CURSor[:TY]:HORizontal:DY?

:CURSor[:TY]:HORizontal:DY:STATe

Function Sets or queries whether the ΔY-axis value between the H cursors on the T-Y display is displayed.

Syntax :CURSor[:TY]:HORizontal:DY:
STATe {<Boolean>}
:CURSor[:TY]:HORizontal:DY:STATe?

Example :CURSOR:TY:HORIZONTAL:DY:STATE ON
:CURSOR:TY:HORIZONTAL:DY:STATE?
-> :CURSOR:TY:HORIZONTAL:DY:STATE 1

Description Default value: ON

:CURSor[:TY]:HORizontal:DY:VALue?

Function Queries the ΔY-axis value between the H cursors on the T-Y display.

Syntax :CURSor[:TY]:HORizontal:DY:VALue?

Example :CURSOR:TY:HORIZONTAL:DY:VALUE?
-> :CURSOR:TY:HORIZONTAL:DY:
VALUE 300.00000E+00

:CURSor[:TY]:HORizontal:POSition<x>

Function Sets or queries a H cursor position on the T-Y display.

Syntax :CURSor[:TY]:HORizontal:
POSition<x> {<NRf>}
:CURSor[:TY]:HORizontal:POSition<x>?
<x> = 1, 2
<NRf> = −5 to 5 (in 1/100 steps)

Example :CURSOR:TY:HORIZONTAL:POSITION2 −3
:CURSOR:TY:HORIZONTAL:POSITION2?
-> :CURSOR:TY:HORIZONTAL:
POSITION2 −3.00

Description Default value: −3 to 3

:CURSor[:TY]:HORizontal:TRACe

Function Sets or queries the source waveform that you want to measure using the H cursors on the T-Y display.

Syntax :CURSor[:TY]:HORizontal:
TRACe {<NRf>[,<NRf>]|MATH<x>}
:CURSor[:TY]:HORizontal:TRACe?
<NRf> = 1 to 32
[,<NRf>] = 1 to 64 (only when it is necessary to specify the sub channel)
<x> = 1 to 8

Example :CURSOR:TY:HORIZONTAL:TRACE 1
:CURSOR:TY:HORIZONTAL:TRACE?
-> :CURSOR:TY:HORIZONTAL:TRACE 1

Description Default value: Installed channel with the smallest channel number

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Commands

`:CURSor[:TY]:HORizontal:Y<x>?`

Function   (Upper-level query) Queries all Y-axis-value
            settings for a H cursor on the T-Y display.
Syntax   `:CURSor[:TY]:HORizontal:Y<x>?`
            `<x>` = 1, 2

`:CURSor[:TY]:HORizontal:Y<x>:STATe`

Function   Sets or queries whether the Y-axis value for a H
            cursor on the T-Y display is displayed.
Syntax   `:CURSor[:TY]:HORizontal:Y<x>:`
            `STATe {<Boolean>}`
            `:CURSor[:TY]:HORizontal:Y<x>:STATe?`
            `<x>` = 1, 2
Example   `:CURSOR:TY:HORIZONTAL:Y1:STATE ON`
            `:CURSOR:TY:HORIZONTAL:Y1:STATE?`
            `-> :CURSOR:TY:HORIZONTAL:Y1:STATE 1`
Description Default value: ON

`:CURSor[:TY]:HORizontal:Y<x>:VALue?`

Function   Queries the Y-axis value of a H cursor on the T-Y
            display.
Syntax   `:CURSor[:TY]:HORizontal:Y<x>:VALue?`
            `<x>` = 1, 2
Example   `:CURSOR:TY:HORIZONTAL:Y1:VALUE?`
            `-> :CURSOR:TY:HORIZONTAL:Y1:`
            `    VALUE 150.00000E+00`

`:CURSor[:TY]:HVERtical:DYDx?`

Function   (Upper-level query) Queries all settings related to
            ΔY/ΔX of the H & V cursor on the T-Y display.
Syntax   `:CURSor[:TY]:HVERtical:DYDx?`

`:CURSor[:TY]:HVERtical:DYDx:STATe`

Function   Sets or queries whether ΔY/ΔX between the H &
            V cursors on the T-Y display is displayed.
Syntax   `:CURSor[:TY]:HVERtical:DYDx:`
            `STATe {<Boolean>}`
            `:CURSor[:TY]:HVERtical:DYDx:STATe?`
Example   `:CURSOR:TY:HVERTICAL:DYDX:STATE ON`
            `:CURSOR:TY:HVERTICAL:DYDX:STATE?`
            `-> :CURSOR:TY:HVERTICAL:DYDX:STATE 1`
Description Default value: ON

`:CURSor[:TY]:HVERtical:DYDx:VALue?`

Function   Queries ΔY/ΔX between the H & V cursors on the
            T-Y display.
Syntax   `:CURSor[:TY]:HVERtical:DYDx:VALue?`
Example   `:CURSOR:TY:HVERTICAL:DYDX:`
            `VALUE 250.00000E+00`

`:CURSor[:TY]:MARKer?`

Function   (Upper-level query) Queries all marker cursor
            settings for the T-Y display.
Syntax   `:CURSor[:TY]:MARKer?`

`:CURSor[:TY]:MARKer:M<x>?`

Function   (Upper-level query) Queries all measurement
            item settings for a marker cursor on the T-Y
            display.
Syntax   `:CURSor[:TY]:MARKer:M<x>?`
            `<x>` = 1 to 4

`:CURSor[:TY]:MARKer:M<x>:DX<y>?`

Function   (Upper-level query) Queries all settings related to
            the ΔX value between the marker cursors on the
            T-Y display.
Syntax   `:CURSor[:TY]:MARKer:M<x>:DX<y>?`
            `<x>` = 1 to 4
            `<y>` = 1 to 4

`:CURSor[:TY]:MARKer:M<x>:DX<y>:STATe`

Function   Sets or queries whether the ΔX value between the
            marker cursors on the T-Y display is displayed.
Syntax   `:CURSor[:TY]:MARKer:M<x>:DX<y>:`
            `STATe {<Boolean>}`
            `:CURSor[:TY]:MARKer:M<x>:DX<y>:`
            `STATe?`
            `<x>` = 1 to 4
            `<y>` = 1 to 4
Example   `:CURSOR:TY:MARKER:M1:DX2:STATE ON`
            `:CURSOR:TY:MARKER:M1:DX2:STATE?`
            `-> :CURSOR:TY:MARKER:M1:DX2:STATE 1`
Description Default value: ON when `<x>` = 1, OFF otherwise

`:CURSor[:TY]:MARKer:M<x>:DX<y>:`
`VALue?`

Function   Queries the ΔX value between the marker cursors
            on the T-Y display.
Syntax   `:CURSor[:TY]:MARKer:M<x>:DX<y>:`
            `VALue?`
            `<x>` = 1 to 4
            `<y>` = 1 to 4
Example   `:CURSOR:TY:MARKER:M1:DX2:VALUE?`
            `-> :CURSOR:TY:MARKER:M1:DX2:`
            `    VALUE 2.0000000E-03`

`:CURSor[:TY]:MARKer:M<x>:DY<y>?`

Function   (Upper-level query) Queries all settings related to
            the ΔY value between the marker cursors on the
            T-Y display.
Syntax   `:CURSor[:TY]:MARKer:M<x>:DY<y>?`
            `<x>` = 1 to 4
            `<y>` = 1 to 4

:CURSor[:TY]:MARKer:M<x>:DY<y>:STATe

Function	Sets or queries whether the ΔY value between the marker cursors on the T-Y display is displayed.
Syntax	:CURSor[:TY]:MARKer:M<x>:DY<y>: STATe {<Boolean>}
	:CURSor[:TY]:MARKer:M<x>:DY<y>: STATe?
	<x> = 1 to 4
	<y> = 1 to 4
Example	:CURSOR:TY:MARKER:M1:DY2:STATE ON
	:CURSOR:TY:MARKER:M1:DY2:STATE?
	-> :CURSOR:TY:MARKER:M1:DY2:STATE 1
Description	Default value: ON when <x> = 1, OFF otherwise

:CURSor[:TY]:MARKer:M<x>:DY<y>: VALue?

Function	Queries the ΔY value between the marker cursors on the T-Y display.
Syntax	:CURSor[:TY]:MARKer:M<x>:DY<y>: VALue?
	<x> = 1 to 4
	<y> = 1 to 4
Example	:CURSOR:TY:MARKER:M1:DY2:VALUE?
	-> :CURSOR:TY:MARKER:M1:DY2: VALUE 0.0000000E+00

:CURSor[:TY]:MARKer:M<x>:JUMP

Function	Moves the specified marker cursor to the center of the specified zoom window.
Syntax	:CURSor[:TY]:MARKer:M<x>: JUMP {Z1|Z2}
	<x> = 1 to 4

:CURSor[:TY]:MARKer:M<x>:POSition

Function	Sets or queries a marker cursor position on the T-Y display.
Syntax	:CURSor[:TY]:MARKer:M<x>: POSition {<NRf>}
	:CURSor[:TY]:MARKer:M<x>:POSition?
	<x> = 1 to 4
	<NRf> = −5 to 5 (in 1/100 steps)
Example	:CURSOR:TY:MARKER:M1:POSITION −3
	:CURSOR:TY:MARKER:M1:POSITION?
	-> :CURSOR:TY:MARKER:M1: POSITION −3.000000000000
Description	Default value: <x> = 1: −3, <x> = 2: −1, <x> = 3: 1, <x> = 4: 3

:CURSor[:TY]:MARKer:M<x>:TRACe

Function	Sets or queries the source waveform that you want to measure using the marker cursors on the T-Y display.
Syntax	:CURSor[:TY]:MARKer:M<x>:TRACe {OFF| <NRf>[,<NRf>]|MATH<x>}
	:CURSor[:TY]:MARKer:M<x>:TRACe?
	<NRf> = 1 to 32
	[,<NRf>] = 1 to 64 (only when it is necessary to specify the sub channel)
	<x> = 1 to 8
Example	:CURSOR:TY:MARKER:M1:TRACE 1
	:CURSOR:TY:MARKER:M1:TRACE?
	-> :CURSOR:TY:MARKER:M1:TRACE 1
Description	Default values
	• <NRf> = Installed channel with the smallest channel number (channels are assigned in the order they are installed also for M2 and later). <NRf> = OFF when there are no installed modules.
	• If the channel with the smallest channel number has sub channels, [, <NRf>] = 1 (sub channel).

:CURSor[:TY]:MARKer:M<x>:X?

Function	(Upper-level query) Queries all X-axis settings for a marker cursor on the T-Y display.
Syntax	:CURSor[:TY]:MARKer:M<x>:X?
	<x> = 1 to 4

:CURSor[:TY]:MARKer:M<x>:X:STATe

Function	Sets or queries whether the X-axis value for a marker cursor on the T-Y display is displayed.
Syntax	:CURSor[:TY]:MARKer:M<x>:X: STATe {<Boolean>}
	:CURSor[:TY]:MARKer:M<x>:X:STATe?
	<x> = 1 to 4
Example	:CURSOR:TY:MARKER:M4:X:STATE ON
	:CURSOR:TY:MARKER:M4:X:STATE?
	-> :CURSOR:TY:MARKER:M4:X:STATE 1
Description	Default value: ON

:CURSor[:TY]:MARKer:M<x>:X:VALue?

Function	Queries the X-axis value of a marker cursor on the T-Y display.
Syntax	:CURSor[:TY]:MARKer:M<x>:X:VALue?
	<x> = 1 to 4
Example	:CURSOR:TY:MARKER:M4:X:VALUE?
	-> :CURSOR:TY:MARKER:M4:X: VALUE 3.0000000E−03

:CURSor[:TY]:MARKer:M<x>:Y?

Function	(Upper-level query) Queries all Y-axis settings for a marker cursor on the T-Y display.
Syntax	:CURSor[:TY]:MARKer:M<x>:Y?
	<x> = 1 to 4

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Commands

:CURSor[:TY]:MARKer:M<x>:Y:STATe

Function   Sets or queries whether the Y-axis value for a
            marker cursor on the T-Y display is displayed.
Syntax   :CURSor[:TY]:MARKer:M<x>:Y:
            STATe {<Boolean>}
            :CURSor[:TY]:MARKer:M<x>:Y:STATe?
            <x> = 1 to 4
Example   :CURSOR:TY:MARKER:M4:Y:STATE ON
            :CURSOR:TY:MARKER:M4:Y:STATE?
            -> :CURSOR:TY:MARKER:M4:Y:STATE 1
Description Default value: ON

:CURSor[:TY]:MARKer:M<x>:Y:VALue?

Function   Queries the Y-axis value of a marker cursor on
            the T-Y display.
Syntax   :CURSor[:TY]:MARKer:M<x>:Y:VALue?
            <x> = 1 to 4
Example   :CURSOR:TY:MARKER:M4:Y:VALUE?
            -> :CURSOR:TY:MARKER:M4:Y:
               VALUE 41.666667E-03

:CURSor[:TY]:MARKer:FORM

Function   Sets or queries the form of the marker cursors on
            the T-Y display.
Syntax   :CURSor[:TY]:MARKer:FORM {LINE|MARK}
            :CURSor[:TY]:MARKer:FORM?
Example   :CURSOR:TY:MARKER:FORM MARK
            :CURSOR:TY:MARKER:FORM?
            -> :CURSOR:TY:MARKER:FORM MARK
Description Default value: MARK

:CURSor[:TY]:TYPE

Function   Sets or queries the cursor type on the T-Y display.
Syntax   :CURSor[:TY]:TYPE {OFF|HORizontal|
            VERTical|MARKer|DEGRee|HAVertical}
            :CURSor[:TY]:TYPE?
Example   :CURSOR:TY:TYPE MARKER
            :CURSOR:TY:TYPE?
            -> :CURSOR:TY:TYPE MARKER
Description Default value: OFF

:CURSor[:TY]:VERTical?

Function   (Upper-level query) Queries all V cursor settings
            for the T-Y display.
Syntax   :CURSor[:TY]:VERTical?

:CURSor[:TY]:VERTical:DX?

Function   (Upper-level query) Queries all settings related to
            the ΔX value between the V cursors on the T-Y
            display.
Syntax   :CURSor[:TY]:VERTical:DX?

:CURSor[:TY]:VERTical:DX:STATe

Function   Sets or queries whether the ΔX value between
            the V cursors on the T-Y display is displayed.
Syntax   :CURSor[:TY]:VERTical:DX:
            STATe {<Boolean>}
            :CURSor[:TY]:VERTical:DX:STATe?
Example   :CURSOR:TY:VERTICAL:DX:STATE 1
            :CURSOR:TY:VERTICAL:DX:STATE?
            -> :CURSOR:TY:VERTICAL:DX:STATE 1
Description Default value: ON

:CURSor[:TY]:VERTical:DX:VALue?

Function   Queries the ΔX value between the V cursors on
            the T-Y display.
Syntax   :CURSor[:TY]:VERTical:DX:VALue?
Example   :CURSOR:TY:VERTICAL:DX:VALUE?
            -> :CURSOR:TY:VERTICAL:DX:
               VALUE 3.0000000E-03
Description • When the time base is internal clock, the return
              value is time in the time domain and frequency
              in the frequency domain.
            • When the time base is external clock, the
              return value is the number of points.

:CURSor[:TY]:VERTical:DY?

Function   (Upper-level query) Queries all settings related to
            the ΔY value between the V cursors on the T-Y
            display.
Syntax   :CURSor[:TY]:VERTical:DY?

:CURSor[:TY]:VERTical:DY:STATe

Function   Sets or queries whether the ΔY value between
            the V cursors on the T-Y display is displayed.
Syntax   :CURSor[:TY]:VERTical:DY:
            STATe {<Boolean>}
            :CURSor[:TY]:VERTical:DY:STATe?
Example   :CURSOR:TY:VERTICAL:DY:STATE ON
            :CURSOR:TY:VERTICAL:DY:STATE?
            -> :CURSOR:TY:VERTICAL:DY:STATE 1
Description Default value: ON

:CURSor[:TY]:VERTical:DY:VALue?

Function   Queries the ΔY value between the V cursors on
            the T-Y display.
Syntax   :CURSor[:TY]:VERTical:DY:VALue?

:CURSor[:TY]:VERTical:JUMP

Function   Moves the specified V cursor to the center of the
            specified zoom window.
Syntax   :CURSor[:TY]:VERTical:JUMP {C1_Z1|
            C1_Z2|C2_Z1|C2_Z2}

:CURSor[:TY]:VERTical:PERDt?

Function   (Upper-level query) Queries all settings related to
            the 1/ΔT value between the Y cursors on the T-Y
            display.
Syntax   :CURSor[:TY]:VERTical:PERDt?

:CURSor[:TY]:VERTical:PERDt:STATe

Function	Sets or queries whether the $1/\Delta T$ value between the V cursors on the T-Y display is displayed.
Syntax	:CURSor[:TY]:VERTical:PERDt: STATe {<Boolean>} :CURSor[:TY]:VERTical:PERDt:STATe?
Example	:CURSOR:TY:VERTICAL:PERDT:STATE ON :CURSOR:TY:VERTICAL:PERDT:STATE? -> :CURSOR:TY:VERTICAL:PERDT:STATE 1
Description	Default value: ON

:CURSor[:TY]:VERTical:PERDt:VALue?

Function	Queries the $1/\Delta T$ value between the V cursors on the T-Y display.
Syntax	:CURSor[:TY]:VERTical:PERDt:VALue?
Example	:CURSOR:TY:VERTICAL:PERDT:VALUE? -> :CURSOR:TY:VERTICAL:PERDT: VALUE 250.00000E+00
Description	If the source waveform is being measured in the frequency domain, "NAN" is returned.

:CURSor[:TY]:VERTical:POSition<x>

Function	Sets or queries a V cursor position on the T-Y display.
Syntax	:CURSor[:TY]:VERTical: POSition<x> {<NRf>} :CURSor[:TY]:VERTical:POSition<x>? <x> = 1, 2 <NRf> = −5 to 5 (the resolution depends on the measurement length)
Example	:CURSOR:TY:VERTICAL:POSITION2 4 :CURSOR:TY:VERTICAL:POSITION2? -> :CURSOR:TY:VERTICAL: POSITION2 4.000000000000
Description	Default value: −4 to 4

:CURSor[:TY]:VERTical:TRACe

Function	Sets or queries the source waveform that you want to measure using the V cursors on the T-Y display.
Syntax	:CURSor[:TY]:VERTical: TRACe {<NRf>[,<NRf>]|MATH<x>|ALL} :CURSor[:TY]:VERTical:TRACe? <NRf> = 1 to 32 [,<NRf>] = 1 to 64 (only when it is necessary to specify the sub channel) <x> = 1 to 8
Example	:CURSOR:TY:VERTICAL:TRACE 2 :CURSOR:TY:VERTICAL:TRACE? -> :CURSOR:TY:VERTICAL:TRACE 2
Description	Default value: Installed channel with the smallest channel number

:CURSor[:TY]:VERTical:X<x>?

Function	(Upper-level query) Queries all X-axis-value settings for a V cursor on the T-Y display.
Syntax	:CURSor[:TY]:VERTical:X<x>? <x> = 1, 2

:CURSor[:TY]:VERTical:X<x>:STATe

Function	Sets or queries whether the X-axis value for a V cursor on the T-Y display is displayed.
Syntax	:CURSor[:TY]:VERTical:X<x>: STATe {<Boolean>} :CURSor[:TY]:VERTical:X<x>:STATe? <x> = 1, 2
Example	:CURSOR:TY:VERTICAL:X1:STATE 1 :CURSOR:TY:VERTICAL:X1:STATE? -> :CURSOR:TY:VERTICAL:X1:STATE 1
Description	Default value: ON

:CURSor[:TY]:VERTical:X<x>:VALue?

Function	Queries the X-axis value of a V cursor on the T-Y display.
Syntax	:CURSor[:TY]:VERTical:X<x>:VALue? <x> = 1, 2
Example	:CURSOR:TY:VERTICAL:X1:VALUE? -> :CURSOR:TY:VERTICAL:X1: VALUE 0.0000000E+00
Description	• When the time base is internal clock, the return value is time in the time domain and frequency in the frequency domain. • When the time base is external clock, the number of points with the trigger point as the reference is returned in the time domain and the number of points with the head of the waveform as a reference is returned in the frequency domain.

:CURSor[:TY]:VERTical:Y<x>?

Function	(Upper-level query) Queries all Y-axis-value settings for a V cursor on the T-Y display.
Syntax	:CURSor[:TY]:VERTical:Y<x>? <x> = 1, 2

:CURSor[:TY]:VERTical:Y<x>:STATe

Function	Sets or queries whether the Y-axis value for a V cursor on the T-Y display is displayed.
Syntax	:CURSor[:TY]:VERTical:Y<x>: STATe {<Boolean>} :CURSor[:TY]:VERTical:Y<x>? <x> = 1, 2
Example	:CURSOR:TY:VERTICAL:Y1:STATE 1 :CURSOR:TY:VERTICAL:Y1:STATE? -> :CURSOR:TY:VERTICAL:Y1:STATE 1

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`:CURSor[:TY]:VERTical:Y<x>:VALue?`

Function	Queries the Y-axis value (measured value) of a V cursor on the T-Y display.
Syntax	`:CURSor[:TY]:VERTical:Y<x>:VALue?` `<x>` = 1, 2

Example	`:CURSOR:TY:VERTICAL:Y2:VALUE?`
	`-> :CURSOR:TY:VERTICAL:Y2:`
	`   VALUE -333.33333E-03`

Description	• For Trace All, measured values are returned for 16 channels. "NAN" will be returned for channels the are not installed and channels that do not are not used in memory join. • For modules with sub channels, measured values are returned for all sub channels. "NAN" will be returned for any sub channels whose input is turned off.

`:CURSor:WAIT?`

Function	While the instrument is waiting for the specified :CURSor command to finish, it will wait the time specified by the :CURSor:WAIT? timeout value until it begins processing the subsequent command.
Syntax	`:CURSor:WAIT? {<NRf>}` `<NRf>` = 1 to 36000 (timeout value, in units of 100 ms)
Example	`:CURSOR:WAIT? 100 -> 1`
Description	If the CURSor command that is being processed finishes within the specified timeout, this command will return 0. 1 is returned if the CURSor command does not finish within the specified timeout or if no CURSor command is being processed. Even if you make the timeout value long, 0 is returned as soon as the CURSor command finishes.

`:CURSor:XY?`

Function	(Upper-level query) Queries all cursor settings for the X-Y display.
Syntax	`:CURSor:XY?`

`:CURSor:XY:HORizontal?`

Function	(Upper-level query) Queries all H cursor settings for the X-Y display.
Syntax	`:CURSor:XY:HORizontal?`

`:CURSor:XY:HORizontal:DY?`

Function	(Upper-level query) Queries all settings related to the ΔY-axis-values of the H cursor on the X-Y display.
Syntax	`:CURSor:XY:HORizontal:DY?`

`:CURSor:XY:HORizontal:DY:STATe`

Function	Sets or queries whether the ΔY-axis value between the H cursors on the X-Y display is displayed.

Syntax	`:CURSor:XY:HORizontal:DY:`
	`STATe {<Boolean>}`
	`:CURSor:XY:HORizontal:DY:STATe?`

Example	`:CURSOR:XY:HORIZONTAL:DY:STATE ON`
	`:CURSOR:XY:HORIZONTAL:DY:STATE?`
	`-> :CURSOR:XY:HORIZONTAL:DY:STATE 1`

Description	Default value: ON

`:CURSor:XY:HORizontal:DY:VALue?`

Function	Queries the ΔY-axis value between the H cursors on the X-Y display.
Syntax	`:CURSor:XY:HORizontal:DY:VALue?`

Example	`:CURSOR:XY:HORIZONTAL:DY:VALUE?`
	`-> :CURSOR:XY:HORIZONTAL:DY:`
	`   VALUE 300.00000E+00`

`:CURSor:XY:HORizontal:POSition<x>`

Function	Sets or queries H cursor positions on the X-Y display.

Syntax	`:CURSor:XY:HORizontal:`
	`POSition<x> {<NRf>}`
	`:CURSor:XY:HORizontal:POSition<x>?`
	`<x>` = 1, 2
	`<NRf>` = −5 to 5 (in 1/100 steps)

Example	`:CURSOR:XY:HORIZONTAL:POSITION1 3`
	`:CURSOR:XY:HORIZONTAL:POSITION1?`
	`-> :CURSOR:XY:HORIZONTAL:`
	`   POSITION1 3.00`

Description	• Cursor position information is shared between cursors XY1 to XY4 and XY5 to XY8. • Default value: −3 to 3

`:CURSor:XY:HORizontal:TRACe`

Function	Sets or queries the source waveform that you want to measure using the H cursors on the X-Y display.

Syntax	`:CURSor:XY:HORizontal:TRACe {XY1|`
	`XY2|XY3|XY4|XY5|XY6|XY7|XY8}`
	`:CURSor:XY:HORizontal:TRACe?`

Example	`:CURSOR:XY:HORIZONTAL:TRACE XY2`
	`:CURSOR:XY:HORIZONTAL:TRACE?`
	`-> :CURSOR:XY:HORIZONTAL:TRACE XY2`

Description	Default value: XY1

`:CURSor:XY:HORizontal:Y<x>?`

Function	(Upper-level query) Queries all Y-axis-value settings for a H cursor on the X-Y display.
Syntax	`:CURSor:XY:HORizontal:Y<x>?`

`:CURSor:XY:HORizontal:Y<x>:STATe`

Function	Sets or queries whether the Y-axis value for an H cursor on the X-Y display is displayed.

Syntax	`:CURSor:XY:HORizontal:Y<x>:`
	`STATe {<Boolean>}`
	`:CURSor:XY:HORizontal:Y<x>:STATe?`
	`<x>` = 1, 2

Example	`:CURSOR:XY:HORIZONTAL:Y1:STATE ON`
	`:CURSOR:XY:HORIZONTAL:Y1:STATE?`
	`-> :CURSOR:XY:HORIZONTAL:Y1:STATE 1`

Description	Default value: ON

:CURSor:XY:HORizontal:Y\<x>:VALue?

Function	Queries the Y-axis value of an H cursor on the X-Y display.
Syntax	`:CURSor:XY:HORizontal:Y<x>:VALue?` `<x> = 1, 2`

Example	`:CURSOR:XY:HORIZONTAL:Y1:VALUE?`
	`-> :CURSOR:XY:HORIZONTAL:Y1:`
	`    VALUE 150.00000E+00`

:CURSor:XY:HVERtical?

Function	(Upper-level query) Queries all H & V cursor settings for the X-Y display.
Syntax	`:CURSor:XY:HVERtical?`

:CURSor:XY:HVERtical:DXDy?

Function	(Upper-level query) Queries all settings related to ΔX/ΔY of the H & V cursor on the X-Y display.
Syntax	`:CURSor:XY:HVERtical:DXDy?`

:CURSor:XY:HVERtical:DXDy:STATe

Function	Sets or queries whether ΔX/ΔY between the H & V cursors on the X-Y display is displayed.
Syntax	`:CURSor:XY:HVERtical:DXDy:` `STATe [<Boolean>]`

:CURSor:XY:HVERtical:DXDy:VALue?

Function	Queries the ΔX/ΔY value between the H & V cursors on the X-Y display.
Syntax	`:CURSor:XY:HVERtical:DXDy:VALue?`

:CURSor:XY:HVERtical:DYDx?

Function	(Upper-level query) Queries all settings related to ΔY/ΔX of the H & V cursor on the X-Y display.
Syntax	`:CURSor:XY:HVERtical:DYDx?`

:CURSor:XY:HVERtical:DYDx:STATe

Function	Sets or queries whether ΔY/ΔX between the H & V cursors on the X-Y display is displayed.
Syntax	`:CURSor:XY:HVERtical:DYDx:` `STATe [<Boolean>]`

:CURSor:XY:HVERtical:DYDx:VALue?

Function	Queries ΔY/ΔX between the H & V cursors on the X-Y display.
Syntax	`:CURSor:XY:HVERtical:DYDx:VALue?`

:CURSor:XY:MARKer:FORM

Function	Sets or queries the form of the marker cursors on the X-Y display.

Syntax	`:CURSor:XY:MARKer:FORM {LINE|MARK}`
	`:CURSor:XY:MARKer:FORM?`
	`<x> = 1 to 4 (marker number)`

Example	`:CURSOR:XY:MARKER:FORM LINE`
	`:CURSOR:XY:MARKER:FORM?`
	`-> :CURSOR:XY:MARKER:FORM LINE`

Description	• The value is common regardless of the marker number (1 to 4). • Default value: MARK

:CURSor:XY:MARKer:M\<x>?

Function	(Upper-level query) Queries all marker cursor settings for the X-Y display.
Syntax	`:CURSor:XY:MARKer:M<x>?` `<x> = 1 to 4 (marker number)`

:CURSor:XY:MARKer:M\<x>:DT\<y>?

Function	(Upper-level query) Queries all settings related to ΔT between the specified marker cursors on the X-Y display.

Syntax	`:CURSor:XY:MARKer:M<x>:DT<y>?`
	`<x> = 1 to 4 (marker number)`
	`<y> = 1 to 4 (marker number)`

:CURSor:XY:MARKer:M\<x>:DT\<y>:STATe

Function	Sets or queries whether ΔT between the specified marker cursors on the X-Y display is displayed.

Syntax	`:CURSor:XY:MARKer:M<x>:DT<y>:`
	`STATe {<Boolean>}`
	`:CURSor:XY:MARKer:M<x>:DT<y>:STATe?`
	`<x> = 1 to 4 (marker number)`
	`<y> = 1 to 4 (marker number)`

Description	Default value: ON

:CURSor:XY:MARKer:M\<x>:DT\<y>:VALue?

Function	Queries the ΔT value between the specified marker cursors on the X-Y display.

Syntax	`:CURSor:XY:MARKer:M<x>:DT<y>:VALue?`
	`<x> = 1 to 4 (marker number)`
	`<y> = 1 to 4 (marker number)`

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:CURSor:XY:MARKer:M<x>:POSition

Function Sets or queries a marker cursor's time-axis-equivalent position on the X-Y display.

Syntax :CURSor:XY:MARKer:M<x>:
POSition {<NRf>}
:CURSor:XY:MARKer:M<x>:POSition?
<x> = 1 to 4 (marker number)
<NRf> = −5 to 5 div (the resolution depends on the measurement length)

Example :CURSOR:XY:MARKER:M1:POSITION −3
:CURSOR:XY:MARKER:M1:POSITION?
-> :CURSOR:XY:MARKER:M1:
POSITION −3.000000000000

Description Default value: <x> = 1: –3, <x> = 2: –1,
<x> = 3: 1, <x> = 4: 3

:CURSor:XY:MARKer:M<x>:T?

Function (Upper-level query) Queries all time value settings for a marker cursor on the X-Y display.

Syntax :CURSor:XY:MARKer:M<x>:T?
<x> = 1 to 4 (marker number)

:CURSor:XY:MARKer:M<x>:T:STATe

Function Sets or queries whether the time value for a marker cursor on the X-Y display is displayed.

Syntax :CURSor:XY:MARKer:M<x>:T:
STATe {<Boolean>}
:CURSor:XY:MARKer:M<x>:T:STATe?
<x> = 1 to 4 (marker number)

Example :CURSOR:XY:MARKER:M1:T:STATE ON
:CURSOR:XY:MARKER:M1:T:STATE?
-> :CURSOR:XY:MARKER:M1:T:STATE 1

Description Default value: ON

:CURSor:XY:MARKer:M<x>:T:VALue?

Function Queries the time value of a marker cursor on the X-Y display.

Syntax :CURSor:XY:MARKer:M<x>:T:VALue?
<x> = 1 to 4 (marker number)

Example :CURSOR:XY:MARKER:M1:T:VALUE?
-> :CURSOR:XY:MARKER:M1:T:
VALUE −3.0000000E−03

:CURSor:XY:MARKer:M<x>:TRACe

Function Sets or queries the source waveform that you want to measure using the marker cursors on the X-Y display.

Syntax :CURSor:XY:MARKer:M<x>:TRACe {OFF|
XY1|XY2|XY3|XY4|XY5|XY6|XY7|XY8}
:CURSor:XY:MARKer:M<x>:TRACe?
<x> = 1 to 4 (marker number)

Example :CURSOR:XY:MARKER:M1:TRACE XY1
:CURSOR:XY:MARKER:M1:TRACE?
-> :CURSOR:XY:MARKER:M1:TRACE XY1

Description Default value: <x> = 1: XY1, <x> = 2: XY2, <x> = 3: XY5, <x> = 4: XY6

:CURSor:XY:MARKer:M<x>:X?

Function (Upper-level query) Queries all X-axis-value settings for a marker cursor on the X-Y display.

Syntax :CURSor:XY:MARKer:M<x>:X?
<x> = 1 to 4 (marker number)

:CURSor:XY:MARKer:M<x>:X:STATe

Function Sets or queries whether the X-axis value for a marker cursor on the X-Y display is displayed.

Syntax :CURSor:XY:MARKer:M<x>:X:
STATe {<Boolean>}
:CURSor:XY:MARKer:M<x>:X:STATe?
<x> = 1 to 4 (marker number)

Example :CURSOR:XY:MARKER:M1:X:STATE 1
:CURSOR:XY:MARKER:M1:X:STATE?
-> :CURSOR:XY:MARKER:M1:X:STATE 1

Description Default value: ON

:CURSor:XY:MARKer:M<x>:X:VALue?

Function Queries the X-axis value of a marker cursor on the X-Y display.

Syntax :CURSor:XY:MARKer:M<x>:X:VALue?
<x> = 1 to 4 (marker number)

Example :CURSOR:XY:MARKER:M1:X:VALUE?
-> :CURSOR:XY:MARKER:M1:X:
VALUE 333.33333E−03

:CURSor:XY:MARKer:M<x>:Y?

Function (Upper-level query) Queries all Y-axis-value settings for a marker cursor on the X-Y display.

Syntax :CURSor:XY:MARKer:M<x>:Y?
<x> = 1 to 4 (marker number)

:CURSor:XY:MARKer:M<x>:Y:STATe

Function Sets or queries whether the Y-axis value for a marker cursor on the X-Y display is displayed.

Syntax :CURSor:XY:MARKer:M<x>:Y:
STATe {<Boolean>}
:CURSor:XY:MARKer:M<x>:Y:STATe?
<x> = 1 to 4 (marker number)

Example :CURSOR:XY:MARKER:M1:Y:STATE ON
:CURSOR:XY:MARKER:M1:Y:STATE?
-> :CURSOR:XY:MARKER:M1:Y:STATE 1

Description Default value: ON

:CURSor:XY:MARKer:M<x>:Y:VALue?

Function Queries the Y-axis value of a marker cursor on the X-Y display.

Syntax :CURSor:XY:MARKer:M<x>:Y:VALue?
<x> = 1 to 4 (marker number)

Example :CURSOR:XY:MARKER:M1:Y:VALUE?
-> :CURSOR:XY:MARKER:M1:Y:
VALUE 0.0000000E+00

:CURSor:XY:TYPE

Function	Sets or queries the cursor type on the X-Y display.
Syntax	:CURSor:XY:TYPE {OFF|HORizontal| VERTical|MARKer|HAVertical} :CURSor:XY:TYPE?
Example	:CURSOR:XY:TYPE MARKER :CURSOR:XY:TYPE? -> :CURSOR:XY:TYPE MARKER
Description	Default value: OFF

:CURSor:XY:VERTical?

Function	(Upper-level query) Queries all V cursor settings for the X-Y display.
Syntax	:CURSor:XY:VERTical?

:CURSor:XY:VERTical:DX?

Function	(Upper-level query) Queries all settings related to the ΔX axis of the V cursor on the X-Y display.
Syntax	:CURSor:XY:VERTical:DX?

:CURSor:XY:VERTical:DX:STATe

Function	Sets or queries whether the ΔX-axis value between the V cursors on the X-Y display is displayed.
Syntax	:CURSor:XY:VERTical:DX: STATe {<Boolean>} :CURSor:XY:VERTical:DX:STATe?
Example	:CURSOR:XY:VERTICAL:DX:STATE ON :CURSOR:XY:VERTICAL:DX:STATE? -> :CURSOR:XY:VERTICAL:DX:STATE 1
Description	Default value: ON

:CURSor:XY:VERTical:DX:VALue?

Function	Queries the ΔX-axis value between the V cursors on the X-Y display.
Syntax	:CURSor:XY:VERTical:DX:VALue?
Example	:CURSOR:XY:VERTICAL:DX:VALUE? -> :CURSOR:XY:VERTICAL:DX: VALUE 300.00000E+00

:CURSor:XY:VERTical:POSition<x>

Function	Sets or queries a V cursor position on the X-Y display.
Syntax	:CURSor:XY:VERTical: POSition<x> {<NRf>} :CURSor:XY:VERTical:POSition<x>? <x> = 1, 2
Example	:CURSOR:XY:VERTICAL:POSITION1 -3 :CURSOR:XY:VERTICAL:POSITION1? -> :CURSOR:XY:VERTICAL: POSITION1 -3.00
Description	• Cursor position information is shared between cursors XY1 to XY4 and XY5 to XY8. • Default value: -3 to 3

:CURSor:XY:VERTical:TRACe

Function	Sets or queries the source waveform that you want to measure using the V cursors on the X-Y display.
Syntax	:CURSor:XY:VERTical:TRACe {XY1|XY2| XY3|XY4|XY5|XY6|XY7|XY8} :CURSor:XY:VERTical:TRACe?
Example	:CURSOR:XY:VERTICAL:TRACE XY2 :CURSOR:XY:VERTICAL:TRACE? -> :CURSOR:XY:VERTICAL:TRACE XY2
Description	Default value: XY1

:CURSor:XY:VERTical:X<x>?

Function	(Upper-level query) Queries all X-axis-value settings for a V cursor on the X-Y display.
Syntax	:CURSor:XY:VERTical:X<x>?

:CURSor:XY:VERTical:X<x>:STATe

Function	Sets or queries whether the X-axis value for a V cursor on the X-Y display is displayed.
Syntax	:CURSor:XY:VERTical:X<x>: STATe {<Boolean>} :CURSor:XY:VERTical:X<x>:STATe? <x> = 1, 2
Example	:CURSOR:XY:VERTICAL:X1:STATE ON :CURSOR:XY:VERTICAL:X1:STATE? -> :CURSOR:XY:VERTICAL:X1:STATE 1
Description	Default value: ON

:CURSor:XY:VERTical:X<x>:VALue?

Function	Queries the X-axis value of a V cursor on the X-Y display.
Syntax	:CURSor:XY:VERTical:X<x>:VALue? <x> = 1, 2
Example	:CURSOR:XY:VERTICAL:X1:VALUE? -> :CURSOR:XY:VERTICAL:X1: VALUE -150.00000E+00

4.11 DISPlay Group

The commands in this group deal with the screen display. You can make the same settings and queries that you can by using keys such as the DISPLAY (X-Y) and UTILITY keys on the front panel.

:DISPlay?

Function	(Upper-level query) Queries all display settings.
Syntax	:DISPlay?

:DISPlay:ACCumulate?

Function	(Upper-level query) Queries all accumulated waveform display settings.
Syntax	:DISPlay:ACCumulate?

:DISPlay:ACCumulate:MODE

Function	Sets or queries the accumulated waveform mode.
Syntax	:DISPlay:ACCumulate:MODE {OFF|ON}
	:DISPlay:ACCumulate:MODE?
Example	:DISPLAY:ACCUMULATE:MODE ON
	:DISPLAY:ACCUMULATE:MODE?
	-> :DISPLAY:ACCUMULATE:MODE 1
Description	Default value: OFF

:DISPlay:ACCumulate:PERSistence

Function	Sets or queries the number of times that waveforms are accumulated.
Syntax	:DISPlay:ACCumulate:PERSistence {<NRf>|INFinity}
	:DISPlay:ACCumulate:PERSistence?
	<NRf> = 2 to 128 (in 2^n steps)
Example	:DISPLAY:ACCUMULATE:PERSISTENCE 128
	:DISPLAY:ACCUMULATE:PERSISTENCE?
	-> :DISPLAY:ACCUMULATE: PERSISTENCE 128
Description	Default value: 16

:DISPlay:ACHannel

Function	Sets or queries the active channel number for controlling the instrument channel.
Syntax	:DISPlay:ACHannel {<NRf>[,<NRf>]|MATH<x1>|FFT<x2>}
	:DISPlay:ACHannel?
	<NRf> = 1 to 32 (channel number)
	[, <NRf>] = 1 to 64 (sub channel number. When sub channels are available)
	<x1> = 1 to 8
	<x2> = 1 to 8

:DISPlay:AGRoup (Auto Grouping)

Function	Automatically assigns the waveforms whose displays are turned on to display groups 1 to 4.
Syntax	:DISPlay:AGRoup
Example	:DISPLAY:AGROUP

:DISPlay:ANALysis<x>:FORMat

Function	Sets or queries the display format (the number of divisions in the vertical direction) of power analysis (G05) display group P and H.
Syntax	:DISPlay:ANALysis<x>:FORMat {G1|<NRf>}
	:DISPlay:ANALysis<x>:FORMat?
	<x> = 1, 2
	1: display group P, 2: display group H
	<NRf> = 1 to 16
Example	:DISPLAY:ANALYSIS1:FORMAT 1
	:DISPLAY:ANALYSIS1:FORMAT?
	-> :DISPLAY:ANALYSIS1:FORMAT 1
Description	• This command is valid when the /G05 option is installed.
	• Default value: G1

:DISPlay:CINFormation?
(Channel Information)

Function	(Upper-level query) Queries all channel information display settings.
Syntax	:DISPlay:CINFormation?

:DISPlay:CINFormation:MODE

Function	Sets or queries whether the channel information display is displayed.
Syntax	:DISPlay:CINFormation:MODE {<Boolean>}
	:DISPlay:CINFormation:MODE?
Example	:DISPLAY:CINFORMATION:MODE 1
	:DISPLAY:CINFORMATION:MODE?
	-> :DISPLAY:CINFORMATION:MODE 1
Description	Default value: 0

:DISPlay:CINFormation:TYPE

Function	Sets or queries the contents of the channel information display.
Syntax	:DISPlay:CINFormation:TYPE {INFO|MONitor}
	:DISPlay:CINFormation:TYPE?
Example	:DISPLAY:CINFORMATION:TYPE MONITOR
	:DISPLAY:CINFORMATION:TYPE?
	-> :DISPLAY:CINFORMATION: TYPE MONITOR
Description	Default value: MONitor

`:DISPlay:CINFormation:WIDTh`
Function   Sets or queries the width of the channel
           information display.
Syntax   `:DISPlay:CINFormation:WIDTh {FULL|`
           `NARRow|WIDe}`
           `:DISPlay:CINFormation:WIDTh?`
Example   `:DISPLAY:CINFORMATION:WIDTH FULL`
           `:DISPLAY:CINFORMATION:WIDTH?`
           `-> :DISPLAY:CINFORMATION:WIDTH FULL`
Description Default value: NARRow

`:DISPlay:{CHANnel<x>[:SCHannel<x>]|MATH<x>}:COLor`
Function   Sets or queries the waveform color.
Syntax   • For channels that do not have sub channels or
             for math channels:
           `:DISPlay:{CHANnel<x>|MATH<x>}:`
           `COLor {BLUE|BGReen|CYAN|DBLue|GRAY|`
           `GREen|LBLue|LGReen|MAGenta|MGReen|`
           `ORANge|PINK|PURPle|RED|SPINk|YELLow}`
           `:DISPlay:{CHANnel<x>|MATH<x>}:COLor?`
           • For channels that have sub channels:
           `:DISPlay:CHANnel<x>:SCHannel<x>:`
           `COLor {BLUE|BGReen|CYAN|DBLue|GRAY|`
           `GREen|LBLue|LGReen|MAGenta|MGReen|`
           `ORANge|PINK|PURPle|RED|SPINk|YELLow}`
           `:DISPlay:CHANnel<x>:SCHannel<x>:`
           `COLor?`
Example   `:DISPLAY:CHANNEL1:COLOR YELLOW`
           `:DISPLAY:CHANNEL1:COLOR?`
           `-> :DISPLAY:CHANNEL1:COLOR YELLOW`

`:DISPlay:COLor:BASecolor`
Function   Sets or queries the base color of the screen.
Syntax   `:DISPlay:COLor:BASecolor {DEFault|`
           `BLACk|WHITe}`
           `:DISPlay:COLor:BASecolor?`
Example   `:DISPLAY:COLOR:BASECOLOR BLACK`
           `:DISPLAY:COLOR:BASECOLOR?`
           `-> :DISPLAY:COLOR:BASECOLOR BLACK`
Description Default value: DEFault

`:DISPlay:DECimation`
Function   Sets or queries the number of dots that are used
           on the dot display.
Syntax   `:DISPlay:DECimation {<NRf>}`
           `:DISPlay:DECimation?`
           `<NRf>` = 2000, 100000
Example   `:DISPLAY:DECIMATION 2000`
           `:DISPLAY:DECIMATION?`
           `-> :DISPLAY:DECIMATION 2000`
Description Default value: 2000

`:DISPlay:DMMode`
Function   Sets the display group of the numeric monitor you
           want to display.
Syntax   `:DISPlay:DMMode {DGRoup|PGRoup|`
           `HGRoup}`
           `:DISPlay:DMMode?`
           DGRoup: Display Group
           PGRoup: PowerGroup
           HGRoup: HarmonicGroup
Example   `:DISPLAY:DMMODE DGROUP`
           `:DISPLAY:DMMODE?`
           `-> :DISPLAY:DMMODE DGROUP`
Description • This command is valid when the /G05 option is
             installed.
           • Default value: DGRoup

`:DISPlay:ESIZe (Extra Window Size)`
Function   Sets or queries the extra window mode.
Syntax   `:DISPlay:ESIZe {<Boolean>}`
           `:DISPlay:ESIZe?`
Example   `:DISPLAY:ESIZE ON`
           `:DISPLAY:ESIZE?`
           `-> :DISPLAY:ESIZE 1`
Description • This command only sets the on/off state. To
             set the size, use the :SYSTem:AMAXline
             command.
           • Default value: 0

`:DISPlay:FGRid`
Function   Sets or queries the fine grid on/off state.
Syntax   `:DISPlay:FGRid {<Boolean>}`
           `:DISPlay:FGRid?`
Example   `:DISPLAY:FGRID ON`
           `:DISPLAY:FGRID?`
           `-> :DISPLAY:FGRID 1`
Description Default value: 0 (OFF)

`:DISPlay:FORMat`
Function   Sets or queries the display format (the number of
           divisions in the vertical direction).
Syntax   `:DISPlay:FORMat {<NRf>}`
           `:DISPlay:FORMat?`
           `<NRf>` = 1, 2, 3, 4, 5, 6, 8, 12, 16
Example   `:DISPLAY:FORMAT 4`
           `:DISPLAY:FORMAT?`
           `-> :DISPLAY:FORMAT 4`
Description Default value: 4

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:DISPlay:GRATicule

Function	Sets or queries the grid type.
Syntax	:DISPlay:GRATicule {CROSshair|FRAMe| GRID}
	:DISPlay:GRATicule?
Example	:DISPLAY:GRATICULE GRID
	:DISPLAY:GRATICULE?
	-> :DISPLAY:GRATICULE GRID
Description	Default value: GRID

:DISPlay:GROup<x>?

Function	(Upper-level query) Queries all group display settings.
Syntax	:DISPlay:GROup<x>?

:DISPlay:GROup<x>:ACLear (All Clear)

Function	Clears all the trace assignments of the specified display group.
Syntax	:DISPlay:GROup<x>:ACLear
	<x> = 1 to 4
Example	:DISPLAY:GROUP1:ACLEAR

:DISPlay:GROUp<x>:FORMat

Function	Sets or queries the display format (the number of divisions in the vertical direction) of the specified display group.
Syntax	:DISPlay:GROUp<x>:FORMat {G1|<NRf>}
	:DISPlay:GROUp<x>:FORMat?
	<x> = 1 to 4
	<NRf> = 1, 2, 3, 4, 6, 8, 12, 16
Example	:DISPLAY:GROUP1:FORMAT 4
	:DISPLAY:GROUP1:FORMAT?
	-> :DISPLAY:GROUP1:FORMAT 4
Description	• When <x> = 1, the G1 setting is invalid.
	• Default value: 4 when <x> = 1, G1 when <x> = 2, 3, or 4

:DISPlay:GROup<x1>:TRACe<x2>?

Function	(Upper-level query) Queries all source waveform settings for a display group.
Syntax	:DISPlay:GROup<x1>:TRACe<x2>?

:DISPlay:GROup<x1>:TRACe<x2>:SOURce

Function	Sets or queries the source that is assigned to the specified source waveform of the specified display group.
Syntax	:DISPlay:GROup<x1>:TRACe<x2>: SOURce {OFF|MATH<x3>|<NRf>[,<NRf>]}
	:DISPlay:GROup<x1>:TRACe<x2>:SOURce?
	<x1> = 1 to 4
	<x2> = 1 to 64
	<x3> = 1 to 8
	<NRf> = 1 to 32
	[,<NRf>] = 1 to 64 (only when it is necessary to specify the sub channel)
Example	:DISPLAY:GROUP1:TRACE1:SOURCE 1
	:DISPLAY:GROUP1:TRACE1:SOURCE?
	-> :DISPLAY:GROUP1:TRACE1:SOURCE 1

:DISPlay:GROup<x1>:TRACe<x2>:ZNUMber (Zone Number)

Function	Sets or queries the zone number that displays the specified source waveform of the specified display group.
Syntax	:DISPlay:GROup<x1>:TRACe<x2>: ZNUMber {<NRf>}
	:DISPlay:GROup<x1>:TRACe<x2>: ZNUMber?
	<x1> = 1 to 4
	<x2> = 1 to 64
	<NRf> = 1 to 16
Example	:DISPLAY:GROUP1:TRACE1:ZNUMBER 1
	:DISPLAY:GROUP1:TRACE1:ZNUMBER?
	-> :DISPLAY:GROUP1:TRACE1:ZNUMBER 1
Description	Regardless of the number of zones that have been set, you can always specify a number from 1 to 16 with this command.

:DISPlay:INTENsity?

Function	(Upper-level query) Queries all intensity settings.
Syntax	:DISPlay:INTENsity?

:DISPlay:INTENsity:{CURSor|GRID|MARKer}

Function	Sets or queries the intensity of a display item.
Syntax	:DISPlay:INTENsity:{CURSor|GRID| MARKer} {<NRf>}
	:DISPlay:INTENsity:{CURSor|GRID| MARKer}?
	<NRf> = 1 to 8
Example	:DISPLAY:INTENSITY:CURSOR 8
	:DISPLAY:INTENSITY:CURSOR?
	-> :DISPLAY:INTENSITY:CURSOR 8
Description	Default value: 8 for CURSor, 5 for GRID, 7 for MARKer

:DISPlay:INTerpolate

Function	Sets or queries the waveform interpolation method.
Syntax	:DISPlay:INTerpolate {LINE|OFF| PULSe|SINE}
	:DISPlay:INTerpolate?
Example	:DISPLAY:INTERPOLATE LINE
	:DISPLAY:INTERPOLATE?
	-> :DISPLAY:INTERPOLATE LINE
Description	Default value: LINE

:DISPlay:LINDicator (Level Indicator)

Function	Sets or queries whether the right indicator on the TY waveform display is displayed.
Syntax	:DISPlay:LINDicator {<Boolean>}
	:DISPlay:LINDicator?
Example	:DISPLAY:LINDICATOR ON
	:DISPLAY:LINDICATOR?
	-> :DISPLAY:LINDICATOR 1
Description	Default value: ON

:DISPlay:MAIN

Function   Sets or queries the ratio of the main waveform
             display area.
Syntax   :DISPlay:MAIN {20|50|OFF}
             :DISPlay:MAIN?
Example   :DISPLAY:MAIN 20
             :DISPLAY:MAIN? -> :DISPLAY:MAIN 20
Description   Default value: 50

:DISPlay:MAPPing

Function   Sets or queries the waveform mapping mode for
             when the display format is set to an option other
             than 1.
Syntax   :DISPlay:MAPPing {AUTO|USERdefine}
             :DISPlay:MAPPing?
Example   :DISPLAY:MAPPING USERDEFINE
             :DISPLAY:MAPPING?
             -> :DISPLAY:MAPPING USERDEFINE
Description   Default value: AUTO

:DISPlay:SDGRoup
(Select Display Group)

Function   Sets or queries the number of the display group
             that is displayed.
Syntax   :DISPlay:SDGRoup {<NRf>|ANALysis<x>}
             :DISPlay:SDGRoup?
             <x> = 1, 2
                    1: display group P, 2: display group H
             <NRf> = 1 to 4
Example   :DISPLAY:SDGROUP 1
             :DISPLAY:SDGROUP?
             -> :DISPLAY:SDGROUP 1
Description   • The ANALysis<x> parameter is valid on models
               with the /G05 option.
             • Default value: 1

:DISPlay:SVALue (Scale Value)

Function   Sets or queries whether scale values are
             displayed.
Syntax   :DISPlay:SVALue {<Boolean>}
             :DISPlay:SVALue?
Example   :DISPLAY:SVALUE ON
             :DISPLAY:SVALUE?
             -> :DISPLAY:SVALUE 1
Description   Default value: ON

:DISPlay:TLABel (Trace Label)

Function   Sets or queries whether waveform labels are
             displayed.
Syntax   :DISPlay:TLABel {<Boolean>}
             :DISPlay:TLABel?
Example   :DISPLAY:TLABEL ON
             :DISPLAY:TLABEL?
             -> :DISPLAY:TLABEL 1
Description   Default value: OFF

:DISPlay:WLAYout (Window Layout)

Function   Sets or queries the layout for when two analysis
             Windows are displayed.
Syntax   :DISPlay:WLAYout {VERTical|SIDE}
             :DISPlay:WLAYout?
Example   :DISPLAY:WLAYOUT SIDE
             :DISPLAY:WLAYOUT?
             -> :DISPLAY:WLAYOUT SIDE
Description   Default value: SIDE

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4.12 EVENt Group

You can use the commands in this group to set data for and query data from events such as dual-capture and external-terminal-input events.

:EVENt?

Function   (Upper-level query) Queries all event waveform settings.

Syntax   :EVENt?

:EVENt:MEVent:EXECute

Function   Manually inserts an event.

Syntax   :EVENt:MEVent:EXECute

:EVENt:MEVent:MODE (Manual Event)

Function   Sets or queries whether the event waveform's manual events are displayed.

Syntax   :EVENt:MEVent:MODE {<Boolean>}
               :EVENt:MEVent:MODE?

Example   :EVENT:MEVENT:MODE ON
               :EVENT:MEVENT:MODE?
               -> :EVENT:MEVENT:MODE ON

Description   Default value: OFF

4.13 FFT Group

The commands in this group deal with FFT analysis. You can make the same settings and queries that you can by using the SHIFT+MATH keys on the front panel.

:FFT?
Function   (Upper-level query) Queries all FFT settings.
Syntax   :FFT?

:FFT:CDISplay
Function   Sets or queries whether two windows for FFT display are overlaid.
Syntax   :FFT:CDISplay {<Boolean>}
            :FFT:CDISplay?
Example   :FFT:CDISPLAY 1
            :FFT:CDISPLAY? -> :FFT:CDISPLAY 1

:FFT:WAVeform<x>?
Function   (Upper-level query) Queries all FFT waveform settings.
Syntax   :FFT:WAVeform<x>?
            <x> = 1 to 8

:FFT:WAVeform<x>:MODE
Function   Sets or queries whether an FFT waveform is displayed.
Syntax   :FFT:WAVeform<x>:MODE {<Boolean>}
            :FFT:WAVeform<x>:MODE?
            <x> = 1 to 8
Example   :FFT:WAVEFORM1:MODE ON
            :FFT:WAVEFORM1:MODE?
            -> :FFT:WAVEFORM1:MODE 0
Description Default value: 0

:FFT:WAVeform<x1>:SOURce<x2>
Function   Sets or queries an FFT waveform's FFT source channel.
Syntax   :FFT:WAVeform<x1>:
            SOURce<x2> {MATH<x3>|<NRf>[,<NRf>]}
            :FFT:WAVeform<x1>:SOURce<x2>?
            <x1> = 1 to 8
            <x2> = 1, 2
            <x3> = 1 to 8
            <NRf> = 1 to 32
            [, <NRf>] = 1 to 64 (sub channel)
Example   :FFT:WAVEFORM1:SOURCE1 1
            :FFT:WAVEFORM1:SOURCE1?
            -> :FFT:WAVEFORM1:SOURCE1 1
Description • This command returns "Math1" if no modules are installed.
            • Default value: Installed channel with the smallest channel number

:FFT:WAVeform<x>:STYPe (Sub Type)
Function   Sets or queries an FFT waveform's analysis sub type.
Syntax   :FFT:WAVeform<x>:STYPe {REAL|IMAG|
            MAG|PHASe|LOGMag}
            :FFT:WAVeform<x>:STYPe?
            <x> = 1 to 8
Example   :FFT:WAVEFORM1:STYPE LOGMAG
            :FFT:WAVEFORM1:STYPE?
            -> :FFT:WAVEFORM1:STYPE LOGMAG
Description • This command is valid when the /G02 option is installed.
            • Default value: LOGMAG

:FFT:WAVeform<x>:TYPE
Function   Sets or queries an FFT waveform's analysis type.
Syntax   :FFT:WAVeform<x>:TYPE {LS|RS|PS|PSD|
            CS|TF|CH}
            :FFT:WAVeform<x>:TYPE?
            <x> = 1 to 8
Example   :FFT:WAVEFORM1:TYPE PS
            :FFT:WAVEFORM1:TYPE?
            -> :FFT:WAVEFORM1:TYPE PS
Description • This command is valid when the /G02 option is installed.
            • Default value: PS

:FFT:WAVeform<x>:UNIT
Function   Sets or queries a unit string that is attached to FFT computation results.
Syntax   :FFT:WAVeform<x>:UNIT {<String>}
            :FFT:WAVeform<x>:UNIT?
            <x> = 1 to 8
            <String> = Up to 4 characters
Example   :FFT:WAVEFORM1:UNIT "UU"
            :FFT:WAVEFORM1:UNIT?
            -> :FFT:WAVEFORM1:UNIT "UU"
Description Default value: All spaces

:FFT:WAVeform<x>:VSCale?
Function   (Upper-level query) Queries all FFT vertical scale settings.
Syntax   :FFT:WAVeform<x>:VSCale?
            <x> = 1 to 8

`:FFT:WAVeform<x>:VSCale:CENTer`

Function   Sets or queries the center value of an FFT waveform's vertical scale.

Syntax   `:FFT:WAVeform<x>:VSCale:`
            `CENTer {<NRf>}`
            `:FFT:WAVeform<x>:VSCale:CENTer?`
            `<x> = 1 to 8`
            `<NRf> = −1E+30 to 1E+30`

Example   `:FFT:WAVEFORM1:VSCALE:CENTER −40`
            `:FFT:WAVEFORM1:VSCALE:CENTER?`
            `-> :FFT:WAVEFORM1:VSCALE:`
            `    CENTER −40.0000E+00`

Description Default value: 0

`:FFT:WAVeform<x>:VSCale:MODE`
`(Vertical Scale Mode)`

Function   Sets or queries an FFT waveform's vertical scale mode.

Syntax   `:FFT:WAVeform<x>:VSCale:MODE {AUTO|`
            `MANual}`
            `:FFT:WAVeform<x>:VSCale:MODE?`
            `<x> = 1 to 8`

Example   `:FFT:WAVEFORM1:VSCALE:MODE AUTO`
            `:FFT:WAVEFORM1:VSCALE:MODE?`
            `-> :FFT:WAVEFORM1:VSCALE:MODE AUTO`

Description Default value: AUTO

`:FFT:WAVeform<x>:VSCale:SENSitivity`

Function   Sets or queries the sensitivity of an FFT waveform's vertical scale.

Syntax   `:FFT:WAVeform<x>:VSCale:`
            `SENSitivity {<NRf>}`
            `:FFT:WAVeform<x>:VSCale:SENSitivity?`
            `<x> = 1 to 8`
            `<NRf> = 0 to 1E+30`

Example   `:FFT:WAVEFORM1:VSCALE:`
            `SENSITIVITY 20.0000E+00`
            `:FFT:WAVEFORM1:VSCALE:`
            `SENSITIVITY?`
            `-> :FFT:WAVEFORM1:VSCALE:`
            `    SENSITIVITY 20.0000E+00`

Description Default value: 0.2

`:FFT:WINDow<x>?`

Function   (Upper-level query) Queries all FFT window settings.

Syntax   `:FFT:WINDow<x>?`
            `<x> = 1, 2`

`:FFT:WINDow<x>:AVERage?`

Function   (Upper-level query) Queries all FFT average settings.

Syntax   `:FFT:WINDow<x>:AVERage?`
            `<x> = 1, 2`

Description This command is valid when the /G02 option is installed.

`:FFT:WINDow<x>:AVERage:COUNt`

Function   Sets or queries the average count for FFT average LIN.

Syntax   `:FFT:WINDow<x>:AVERage:COUNt {<NRf>}`
            `:FFT:WINDow<x>:AVERage:COUNt?`
            `<x> = 1, 2`
            `<NRf> = 2 to 128 (in 2n steps)`

Example   `:FFT:WINDOW1:AVERAGE:COUNT 32`
            `:FFT:WINDOW1:AVERAGE:COUNT?`
            `-> :FFT:WINDOW1:AVERAGE:COUNT 32`

Description • This command is valid when the /G02 option is installed.
            • Default value: 16

`:FFT:WINDow<x>:AVERage:EWEight`

Function   Sets or queries the attenuation constant of FFT average EXP.

Syntax   `:FFT:WINDow<x>:AVERage:`
            `EWEight {<NRf>}`
            `:FFT:WINDow<x>:AVERage:EWEight?`
            `<x> = 1, 2`
            `<NRf> = 2 to 256 (in 2n steps)`

Example   `:FFT:WINDOW1:AVERAGE:EWEIGHT 16`
            `:FFT:WINDOW1:AVERAGE:EWEIGHT?`
            `-> :FFT:WINDOW1:AVERAGE:EWEIGHT 16`

Description • This command is valid when the /G02 option is installed.
            • Default value: 16

`:FFT:WINDow<x>:AVERage:MODE`

Function   Sets or queries the FFT averaging mode.

Syntax   `:FFT:WINDow<x>:AVERage:`
            `MODE {EXPonent|LINear|OFF|PEAK}`
            `:FFT:WINDow<x>:AVERage:MODE?`
            `<x> = 1, 2`

Example   `:FFT:WINDOW1:AVERAGE:MODE PEAK`
            `:FFT:WINDOW1:AVERAGE:MODE?`
            `-> :FFT:WINDOW1:AVERAGE:MODE PEAK`

Description • This command is valid when the /G02 option is installed.
            • Default value: OFF

:FFT:WINDow<x>:AVERage:TYPE

Function   Sets or queries the averaging domain.

Syntax   :FFT:WINDow<x>:AVERage:
            TYPE {FREQuency|TIME}
            :FFT:WINDow<x>:AVERage:TYPE?
            <x> = 1, 2

Example   :FFT:WINDOW1:AVERAGE:TYPE FREQUENCY
            :FFT:WINDOW1:AVERAGE:TYPE?
            -> :FFT:WINDOW1:AVERAGE:
               TYPE FREQUENCY

Description • This command is valid when the /G02 option is
              installed.
            • Default value: TIME

:FFT:WINDow<x>:FORMat

Function   Sets or queries the FFT display format (number
            of zones).

Syntax   :FFT:WINDow<x>:FORMat {<NRf>}
            :FFT:WINDow<x>:FORMat?
            <x> = 1, 2
            <NRf> = 1, 2, 3, 4

Example   :FFT:WINDOW1:FORMAT 1
            :FFT:WINDOW1:FORMAT?
            -> :FFT:WINDOW1:FORMAT 1

Description Default value: 1

:FFT:WINDow<x>:HAXis

Function   Sets or queries an FFT window's horizontal-axis
            display method.

Syntax   :FFT:WINDow<x>:HAXis {LINear|LOG}
            :FFT:WINDow<x>:HAXis?

Example   :FFT:WINDOW1:HAXIS LOG
            :FFT:WINDOW1:HAXIS?
            -> :FFT:WAVEFORM1:HAXIS LOG

Description Default value: LOG

:FFT:WINDow<x>:HORizontal?

Function   (Upper-level query) Queries all horizontal axis
            settings of FFT analysis.

Syntax   :FFT:WINDow<x>:HORizontal?
            <x> = 1, 2

:FFT:WINDow<x>:HORizontal:CSPan?

Function   (Upper-level query) Queries all settings related to
            the center value and span of the horizontal axis in
            FFT analysis.

Syntax   :FFT:WINDow<x>:HORizontal:CSPan?
            <x> = 1, 2

:FFT:WINDow<x>:HORizontal:CSPan:CENTer

Function   Sets or queries the center value of the horizontal
            axis in FFT analysis.

Syntax   :FFT:WINDow<x>:HORizontal:CSPan:
            CENTer {<Frequency>}
            :FFT:WINDow<x>:HORizontal:CSPan:
            CENTer?
            <x> = 1, 2

Example   :FFT:WINDOW1:HORIZONTAL:CSPAN:
            CENTER 250.00000E+03
            :FFT:WINDOW1:HORIZONTAL:CSPAN:
            CENTER?
            -> :FFT:WINDOW1:HORIZONTAL:CSPAN:
               CENTER 250.00000E+03

:FFT:WINDow<x>:HORizontal:CSPan:SPAN

Function   Sets or queries the span of the horizontal axis in
            FFT analysis.

Syntax   :FFT:WINDow<x>:HORizontal:CSPan:
            SPAN {<Frequency>}
            :FFT:WINDow<x>:HORizontal:CSPan:
            SPAN?
            <x> = 1, 2

Example   :FFT:WINDOW1:HORIZONTAL:CSPAN:
            SPAN 500.00000E+03
            :FFT:WINDOW1:HORIZONTAL:CSPAN:
            SPAN?
            -> :FFT:WINDOW1:HORIZONTAL:CSPAN:
               SPAN 500.00000E+03

:FFT:WINDow<x>:HORizontal:LRIGht?

Function   (Upper-level query) Queries all settings related to
            the left and right edges of the horizontal axis in
            FFT analysis.

Syntax   :FFT:WINDow<x>:HORizontal:LRIGht?
            <x> = 1, 2

:FFT:WINDow<x>:HORizontal:LRIGht:RANGe

Function   Sets or queries the range of the left and right
            edges of the horizontal axis in FFT analysis.

Syntax   :FFT:WINDow<x>:HORizontal:LRIGht:
            RANGe {<Frequency>,<Frequency>}
            :FFT:WINDow<x>:HORizontal:LRIGht:
            RANGe?
            <x> = 1, 2

Example   :FFT:WINDOW1:HORIZONTAL:LRIGHT:
            RANGE 0.0000000E+00,500.00000E+03
            :FFT:WINDOW1:HORIZONTAL:LRIGHT:
            RANGE?
            -> :FFT:WINDOW1:HORIZONTAL:LRIGHT:
               RANGE 0.0000000E+00,500.00000E+03

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:FFT:WINDow<x>:HORizontal:MODE

Function   Sets or queries the horizontal axis mode of FFT analysis.

Syntax   :FFT:WINDow<x>:HORizontal:
MODE {AUTO|CSPan|LRIGht}
:FFT:WINDow<x>:HORizontal:MODE?
<x> = 1, 2

Example   :FFT:WINDOW1:HORIZONTAL:MODE AUTO
:FFT:WINDOW1:HORIZONTAL:MODE?
-> :FFT:WINDOW1:HORIZONTAL:
MODE AUTO

Description Default value: AUTO

:FFT:WINDow<x>:MODE

Function   Sets or queries whether the specified FFT window is displayed.

Syntax   :FFT:WINDow<x>:MODE {<Boolean>}
:FFT:WINDow<x>:MODE?
<x> = 1, 2

Example   :FFT:WINDOW1:MODE 1
:FFT:WINDOW1:MODE?
-> :FFT:WINDOW1:MODE 1

Description Default value: 0

:FFT:WINDow<x>:POINt

Function   Sets or queries the number of analysis source points of the FFT windows.

Syntax   :FFT:WINDow<x>:POINt {<NRf>}
:FFT:WINDow<x>:POINt?
<x> = 1, 2
<NRf> = 1000, 2000, 5000, 10000, 20000, 50000, 100000

Example   :FFT:WINDOW1:POINT 1000
:FFT:WINDOW1:POINT?
-> :FFT:WINDOW1:POINT 1000

Description Default value: 1000

:FFT:WINDow<x>:STARt

Function   Sets or queries the analysis-source start point of the FFT windows.

Syntax   :FFT:WINDow<x>:STARt {<NRf>}
:FFT:WINDow<x>:STARt?
<x> = 1, 2
<NRf> = −5 to 5

Example   :FFT:WINDOW1:START −5
:FFT:WINDOW1:START?
-> :FFT:WINDOW1:START −5.000000000000

Description Default value: -5.00

:FFT:WINDow<x>:WINDow?

Function   (Upper-level query) Queries all FFT window function settings.

Syntax   :FFT:WINDow<x>?
<x> = 1, 2

:FFT:WINDow<x>:WINDow:EXPonential?

Function   (Upper-level query) Queries all FFT exponential window settings.

Syntax   :FFT:WINDow<x>:WINDow:EXPonential?
<x> = 1, 2

:FFT:WINDow<x>:WINDow:EXPonential:DRATe

Function   Sets or queries the FFT exponential window's damping rate.

Syntax   :FFT:WINDow<x>:WINDow:EXPonential:
DRATe {<NRf>}
:FFT:WINDow<x>:WINDow:EXPonential:
DRATe?
<x> = 1, 2
<NRf> = 1 to 100

Example   :FFT:WINDOW1:WINDOW:EXPONENTIAL:
DRATE 100
:FFT:WINDOW1:WINDOW:EXPONENTIAL:
DRATE?
-> :FFT:WINDOW1:WINDOW:EXPONENTIAL:
DRATE 100

Description Default value: 100

:FFT:WINDow<x1>:WINDow:EXPonential:FORCe<x2>

Function   Sets or queries the FFT exponential window's Force1 or Force2 value.

Syntax   :FFT:WINDow<x1>:WINDow:EXPonential:
FORCe<x2> {<NRf>}
:FFT:WINDow<x1>:WINDow:EXPonential:
FORCe<x2>?
<x1> = 1, 2
<x2> = 1, 2
<NRf> = 1 to 100

Example   :FFT:WINDOW1:WINDOW:EXPONENTIAL:
FORCE1 100
:FFT:WINDOW1:WINDOW:EXPONENTIAL:
FORCE1?
-> :FFT:WINDOW1:WINDOW:EXPONENTIAL:
FORCE1 100

Description Default value: 100

:FFT:WINDow<x>:WINDow:TYPE

Function   Sets or queries the computation window type for FFT analysis.

Syntax   :FFT:WINDow<x>:WINDow:TYPE {HANNing|
RECTangle|FLATtop|EXPonential|
HAMMing}
:FFT:WINDow<x>:WINDow:TYPE?

Example   :FFT:WINDOW1:WINDOW:TYPE HANNING
:FFT:WINDOW1:WINDOW:TYPE?
-> :FFT:WINDOW1:WINDOW:TYPE HANNING

Description Default value: HANNing

4.14　FILE group

The commands in this group deal with USB storage devices, internal drives, and so on. You can perform the same operations and make the same settings and queries that you can by using the FILE key on the front panel.

:FILE?
Function　(Upper-level query) Queries all storage device settings.
Syntax　　:FILE?

:FILE:COPY:ABORt
Function　Aborts file copying.
Syntax　　:FILE:COPY:ABORt
Example　:FILE:COPY:ABORT

:FILE:COPY:CDIRectory
Function　Changes the file copy destination directory.
Syntax　　:FILE:COPY:CDIRectory {<String>}
　　　　　<String> = Directory name
Example　:FILE:COPY:CDIRECTORY "NO_1"
Description　Specify a relative path for the string.

:FILE:COPY:DRIVe
Function　Changes the file copy destination drive.
Syntax　　:FILE:COPY:DRIVe {IDRive|NETWork|SD|USB,<NRf>}
Example　:FILE:COPY:DRIVe HD
Description　Specify IDRive for the internal drive.
　　　　　Specify NETWork for a network drive.
　　　　　Specify SD for the SD memory card.
　　　　　Specify USB,<NRf> for a USB storage device.
　　　　　　<NRf>: Can be omitted. When multiple devices are inserted, specify 0 and 1 in the order each device is inserted.

:FILE:COPY[:EXECute]
Function　Executes file copying. This is an overlap command.
Syntax　　:FILE:COPY[:EXECute] {<String>}
　　　　　<String> = The file name, including its extension.
Example　:FILE:COPY:EXECUTE "DATA.PNG"

:FILE:COPY:PATH?
Function　Queries the file copy destination directory.
Example　:FILE:COPY:PATH?
　　　　　-> :FILE:COPY:PATH "PATH=USB/UTIL"

:FILE:DDIRectory:CDIRectory (Change Directory)
Function　Changes the copy destination directory on the storage device.
Syntax　　:FILE:DDIRectory: CDIRectory {<String>}
　　　　　<String> = Up to 16 characters
Example　:FILE:DDIRECTORY:CDIRECTORY "NO_1"

:FILE:DDIRectory:DRIVe
Function　Sets the storage device to copy to.
Syntax　　:FILE:DDIRectory:DRIVe {IDRive|NETWork|SD|USB,<NRf>}
Example　:FILE:DDIRECTORY:DRIVE IDRIVE
Description　Specify IDRive for the internal drive.
　　　　　Specify NETWork for a network drive.
　　　　　Specify SD for the SD memory card.
　　　　　Specify USB for a USB memory device.
　　　　　　<NRf>: 0 to LUN or the partition number (can be omitted)

:FILE:DDIRectory:MDIRectory (Make Directory)
Function　Creates a directory in the copy destination directory.
Syntax　　:FILE:DDIRectory: MDIRectory {<String>}
Example　:FILE:DDIRECTORY:MDIRECTORY "NO_1"
Description　Specify a relative path for the string.

:FILE:DDIRectory:PATH?
Function　Queries the copy destination directory.
Syntax　　:FILE:DDIRectory:PATH?
Example　:FILE:DDIRECTORY:PATH?
　　　　　-> :FILE:DDIRECTORY: PATH "Path = HD,1/20090506"

:FILE:DELete
Function　Deletes files. This is an overlap command.
Syntax　　:FILE:DELete {<String>}
Example　:FILE:DELETE "CASE1.WDF"
Description　• Use the FILE[:DIRectory]:DRIVe command to select the target medium.
　　　　　• Use the FILE[:DIRectory]:CDIRectory command to select the directory that contains the file that you want to delete.
　　　　　• Include the extension when you specify the file name.
　　　　　• If you specify a directory, the directory is deleted.

:FILE[:DIRectory]:CDIRectory (Change Directory)
Function　Changes the current directory on the storage device.
Syntax　　:FILE[:DIRectory]: CDIRectory {<String>}
　　　　　<String> = Up to 16 characters
Example　:FILE:DIRECTORY:CDIRECTORY "NO_1"

`:FILE[:DIRectory]:DRIVe`

Function   Sets the storage device to perform file operations on.

Syntax   `:FILE[:DIRectory]:DRIVe {IDRive|NETWork|SD|USB,<NRf>|FLASh}`

Example   `:FILE:DIRECTORY:DRIVE IDRIVE`

Description   Specify IDRive for the internal drive.
             Specify NETWork for a network drive.
             Specify SD for the SD memory card.
             Specify USB for a USB memory device.
             <NRf>: 0 to LUN or the partition number (can be omitted)
             For flash acquisition: FLASh

`:FILE[:DIRectory]:FREE?`

Function   Queries the free space on the storage device that is being operated on in bytes.

Syntax   `:FILE[:DIRectory]:FREE?`

Example   `:FILE:DIRECTORY:FREE?`
             `-> :FILE:DIRECTORY:`
             `FREE 3.7567939E+09`

`:FILE[:DIRectory]:MDIRectory`
`(Make Directory)`

Function   Creates a directory in the current directory.

Syntax   `:FILE[:DIRectory]:`
             `MDIRectory {<String>}`

Example   `:FILE:DIRECTORY:MDIRECTORY "NO_1"`

Description   Specify a relative path for the string.

`:FILE[:DIRectory]:PATH?`

Function   Queries the current directory.

Syntax   `:FILE[:DIRectory]:PATH?`

Example   `:FILE:DIRECTORY:PATH?`
             `-> :FILE:DIRECTORY:`
             `PATH "Path = HD,1/20090506"`

`:FILE[:DIRectory]:SDRIVe`

Function   Sets the file output destination for multi--unit synchronization.

Syntax   `:FILE[:DIRectory]:SDRIVe {IDRive|NETWork|SD|USB,<NRf>}`

Example   `:FILE:DIRECTORY:DRIVE IDRIVE`

Description   Specify IDRive for the internal drive.
             Specify NETWork for a network drive.
             Specify SD for the SD memory card.
             Specify USB for a USB memory device.
             <NRf>: 0 to LUN or the partition number (can be omitted)

`:FILE[:DIRectory]:SPATH?`

Function   Queries the file output destination for multi--unit synchronization.

Syntax   `:FILE[:DIRectory]:SPATH?`

Example   `:FILE:DIRECTORY:SPATH?`
             `-> :FILE:DIRECTORY:`
             `SPATH "Path = IDR,1/20090506"`

`:FILE:LOAD:BINary:ABORt`

Function   Aborts the loading of binary data.

Syntax   `:FILE:LOAD:BINary:ABORt`

Example   `:FILE:LOAD:BINARY:ABOR`

`:FILE:LOAD:{BINary|SETup|SNAP}`
`[:EXECute]`

Function   Executes the loading of various types of data. This is an overlap command.

Syntax   `:FILE:LOAD:{BINary|SETup|SNAP}[:EXECute] {<Filename>}`

Example   `:FILE:LOAD:SETUP "CASE1"`

Description   Do not include the extension when you specify <Filename>.

`:FILE:MSAVe?`

Function   (Upper-level query) Queries all SAVE key settings.

Syntax   `:FILE:MSAVe?`

`:FILE:MSAVe:ASCii`

Function   Sets or queries the on/off status for saving ASCII data using the SAVE key.

Syntax   `:FILE:MSAVe:ASCii <Boolean>`
             `:FILE:MSAVe:ASCii?`

Example   `:FILE:MSAVE:ASCII ON`
             `:FILE:MSAVE:ASCII?`
             `-> :FILE:MSAVE:ASCII 1`

Description   During dual capture, this is the on/off status for saving high-speed sampling waveforms.

`:FILE:MSAVe:BINary`

Function   Sets or queries the on/off status for saving binary data using the SAVE key.

Syntax   `:FILE:MSAVe:BINary <Boolean>`
             `:FILE:MSAVe:BINary?`

Example   `:FILE:MSAVE:BINARY ON`
             `:FILE:MSAVE:BINARY?`
             `-> :FILE:MSAVE:BINARY 1`

Description   During dual capture, this is the on/off status for saving high-speed sampling waveforms.

`:FILE:MSAVe:DASCii`

Function   Sets or queries the on/off status for saving low-speed sampling waveform ASCII data using the SAVE key during dual capture.

Syntax   `:FILE:MSAVe:DASCii <Boolean>`
             `:FILE:MSAVe:DASCii?`

Example   `:FILE:MSAVE:DASCII ON`
             `:FILE:MSAVE:DASCII?`
             `-> :FILE:MSAVE:DASCII 1`

:FILE:MSAVe:DBINary

Function   Sets or queries the on/off status for saving all binary data using the SAVE key during dual capture.

Syntax   :FILE:MSAVe:DBINary <Boolean>
            :FILE:MSAVe:DBINary?

Example   :FILE:MSAVE:DBINARY ON
            :FILE:MSAVE:DBINARY?
            -> :FILE:MSAVE:DBINARY 1

:FILE:MSAVe:DMATlab

Function   Sets or queries the on/off status for saving low-speed sampling waveform MATLAB data using the SAVE key during dual capture.

Syntax   :FILE:MSAVe:DMATlab <Boolean>
            :FILE:MSAVe:DMATlab?

Example   :FILE:MSAVE:DMATLAB ON
            :FILE:MSAVE:DMATLAB?
            -> :FILE:MSAVE:DMATLAB 1

:FILE:MSAVe:EXECute

Function   Executes the same process as executing the SAVE key.

Syntax   :FILE:MSAVe:EXECute

:FILE:MSAVe:IMAGe

Function   Sets or queries the on/off status for saving image data using the SAVE key.

Syntax   :FILE:MSAVe:IMAGe <Boolean>
            :FILE:MSAVe:IMAGe?

Example   :FILE:MSAVE:IMAGE ON
            :FILE:MSAVE:IMAGE?
            -> :FILE:MSAVE:IMAGE 1

:FILE:MSAVe:MATLab

Function   Sets or queries the on/off status for saving MATLAB data using the SAVE key.

Syntax   :FILE:MSAVe:MATLab <Boolean>
            :FILE:MSAVe:MATLab?

Example   :FILE:MSAVE:MATLAB ON
            :FILE:MSAVE:MATLAB?
            -> :FILE:MSAVE:MATLAB 1

Description During dual capture, this is the on/off status for saving high-speed sampling waveforms.

:FILE:SAVE?

Function   (Upper-level query) Queries all saved file name settings.

Syntax   :FILE:SAVE?

:FILE:SAVE:ANAMing

Function   Sets or queries the auto naming mode for saving files.

Syntax   :FILE:SAVE:ANAMing {DATE|NUMBering|OFF}
            :FILE:SAVE:ANAMing?

Example   :FILE:SAVE:ANAMING DATE
            :FILE:SAVE:ANAMING?
            -> :FILE:SAVE:ANAMING DATE

Description DATE: Date and time
            NUMBering: Numbering
            OFF: The file name that you saved with the FILE:SAVE:NAME command

:FILE:SAVE:{ASCii|BINary}?

Function   (Upper-level query) Queries all the settings related to the saving of a specific type of file.

Syntax   :FILE:SAVE:{ASCii|BINary}?

:FILE:SAVE:{ASCii|BINary|MATLab|DASCii|DBINary|DMATlab}:ABORt

Function   Aborts the saving of a specific type of file.

Syntax   :FILE:SAVE:{ASCii|BINary|MATLab|DASCii|DBINary|DMATlab}:ABORt

Example   :FILE:SAVE:ASCII:ABORT

:FILE:SAVE:{ASCii|BINary|MATLab}:CRANge<x>

Function   Sets or queries the cursor position for when data is to be saved using a cursor range.

Syntax   :FILE:SAVE:{ASCii|BINary|MATLab}:CRANGe<x> {<NRf>}
            :FILE:SAVE:{ASCii|BINary|MATLab}:CRANGe<x>?
            <x> = 1, 2
            <NRf> = Resolution
                    (depends on the measurement length)

:FILE:SAVE:{ASCii|FFT}:DPOint

Function   Sets or queries the type of decimal point that is used when saving data in ASCII format.

Syntax   :FILE:SAVE:{ASCii|FFT}:DPOint {POINt|COMMa}
            :FILE:SAVE:{ASCii|FFT}:DPOint?

Example   :FILE:SAVE:ASCII:DPOINT POINT
            :FILE:SAVE:ASCII:DPOINT?
            -> :FILE:SAVE:ASCII:DPOINT POINT

Description Default value: POINt

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`:FILE:SAVE:{ASCii|BINary|MATLab|DASC`
`ii|DBINary|DMATlab|FFT|MEASure|SETup`
`|SNAP}[:EXECute]`

Function   Executes the saving of a specific type of file. This
            is an overlap command.

Syntax   `:FILE:SAVE:{ASCii|BINary|MATLab|`
            `DASCii|DBINary|DMATlab|FFT|MEASure|`
            `SETup|SNAP}[:EXECute]`

Example   `:FILE:SAVE:SETUP:EXECUTE`

Description In dual capture mode, high-speed sampling data
            is saved for ASCii, BINary, and MATLab and low-
            speed sampling data for DASCii, DBINary, and
            DMATlab (valid only in dual capture mode).

`:FILE:SAVE:{ASCii|BINary|MATLab}:HIS`
`Tory`

Function   Sets or queries what waveforms the history
            memory feature will save for a specific type of
            data.

Syntax   `:FILE:SAVE:{ASCii|BINary|MATLab}:`
            `HISTORY {ONE|ALL|AVERage}`
            `:FILE:SAVE:{ASCii|BINary|MATLab}:`
            `HISTORY?`

Example   `:FILE:SAVE:BINARY:HISTORY ALL`
            `:FILE:SAVE:BINARY:HISTORY?`
            `-> :FILE:SAVE:BINARY:HISTORY ALL`

Description ALL is valid for ASCii and BINary.

`:FILE:SAVE:ASCii:INTerval`

Function   Sets or queries the data removal interval that is
            used when saving data in ASCII format.

Syntax   `:FILE:SAVE:ASCii:INTerval {<NRf>|`
            `OFF}`
            `:FILE:SAVE:ASCii:INTerval?`
            <NRf> = 5, 10, 20, 50, 100, 200, 500, 1000,
                    2000, 5000

Example   `:FILE:SAVE:ASCII:INTERVAL 1000`
            `:FILE:SAVE:ASCII:INTERVAL?`
            `-> :FILE:SAVE:ASCII:INTERVAL 1000`

`:FILE:SAVE:{ASCii|BINary|MATLab|DASC`
`ii|DBINary|DMATlab}:RANGe`

Function   Sets or queries the save range for a specific type
            of data.

Syntax   `:FILE:SAVE:{ASCii|BINary|MATLab|`
            `DASCii|DBINary|DMATlab}:`
            `RANGe {MAIN|Z1|Z2|CURSor|ZOOM}`
            `:FILE:SAVE:{ASCii|BINary|MATLab|`
            `DASCii|DBINary|DMATlab}:RANGe?`

Example   `:FILE:SAVE:BINARY:RANGE CURSOR`
            `:FILE:SAVE:BINARY:RANGE?`
            `-> :FILE:SAVE:BINARY:RANGE CURSOR`

Description In dual capture mode, high-speed sampling data
            is saved for ASCii, BINary, and MATLab and low-
            speed sampling data for DASCii, DBINary, and
            DMATlab (valid only in dual capture mode). In
            dual capture mode, only MAIN or ZOOM can be
            specified.

`:FILE:SAVE:ASCii:SCHannel`

Function   Sets or queries the writing method of sub channel
            data when saving data in ASCII format.

Syntax   `:FILE:SAVE:ASCii:`
            `SCHannel {SUPPlement|SPACe}`
            `:FILE:SAVE:ASCii:SCHannel?`

Example   `:FILE:SAVE:ASCII:SCHANNEL SPACE`
            `:FILE:SAVE:ASCII:SCHANNEL?`
            `-> :FILE:SAVE:ASCII:SCHANNEL SPACE`

Description Default value: SUPPlement

`:FILE:SAVE:{ASCii|BINary|MATLab|DASC`
`ii|DBINary|DMATlab}:STRace:{CHANnel<`
`x>[:SCHannel<x>]|MATH<x>}`

Function   Sets or queries the waveform that will be saved
            for a specific type of data.

Syntax   `:FILE:SAVE:{ASCii|BINary|MATLab|`
            `DASCii|DBINary|DMATlab}:STRace:`
            `{CHANnel<x>[:SCHannel<x>]|`
            `MATH<x>} {<Boolean>}`
            `:FILE:SAVE:{ASCii|BINary|MATLab|`
            `DASCii|DBINary|DMATlab}:STRace:`
            `{CHANnel<x>[:SCHannel<x>]|MATH<x>}?`

Example   `:FILE:SAVE:BINARY:STRACE:CHANNEL1 ON`
            `:FILE:SAVE:BINARY:STRACE:CHANNEL1?`
            `-> :FILE:SAVE:BINARY:STRACE:`
            `   CHANNEL1 1`

Description • Sub channel settings are valid only for the
              4-CH module (720254, 720256).
            • Default value: ON

`:FILE:SAVE:{ASCii|MEASure}:TINFormat`
`ion`

Function   Sets or queries whether time information is
            included when saving data in ASCII or CSV
            format.

Syntax   `:FILE:SAVE:{ASCii|MEASure}:`
            `TINFormation {<Boolean>}`
            `:FILE:SAVE:{ASCii|MEASure}:`
            `TINFormation?`

Example   `:FILE:SAVE:ASCII:TINFORMATION ON`
            `:FILE:SAVE:ASCII:TINFORMATION?`
            `-> :FILE:SAVE:ASCII:TINFORMATION 1`

Description Default value: OFF

`:FILE:SAVE:BINary:COMPression`

Function   Sets or queries whether waveform data is
            compressed during saving.

Syntax   `:FILE:SAVE:BINary:`
            `COMPression {<Boolean>}`
            `:FILE:SAVE:BINary:COMPression?`

Example   `:FILE:SAVE:BINARY:COMPRESSION ON`
            `:FILE:SAVE:BINARY:COMPRESSION?`
            `-> :FILE:SAVE:BINARY:COMPRESSION 1`

Description This command is valid when you have set the
            waveform to save to the full range of waveforms
            on the main screen. Data can only be saved in
            binary format.

`:FILE:SAVE:BINary:LINFormation`

Function	Sets or queries whether GPS position information is included when saving data in binary format.
Syntax	`:FILE:SAVE:BINary:LINFormation {<Boolian>}` `:FILE:SAVE:BINary:LINFormation?`
Description	Default value: OFF

`:FILE:SAVE:COMMent`

Function	Sets or queries the comment that will be saved.

Syntax	`:FILE:SAVE:COMMent <String>`
	`:FILE:SAVE:COMMent?`
	`<String> = Up to 120 characters`

Example	`:FILE:SAVE:COMMENT "WAVEFORM_1"`
	`:FILE:SAVE:COMMENT?`
	`-> :FILE:SAVE:COMMENT "WAVEFORM_1"`

Description	You can only use the characters and symbols on the keyboard that appears on the instrument's screen. Ω is "1EH" and "µ" is "1FH" expressed in ASCII code. Characters that cannot be used: "/", "\", "?", "*", ":", "|", """, "<", ">"

`:FILE:SAVE:FFT:FINFormation`

Function	Sets or queries whether frequency information is included when saving FFT waveforms in ASCII format.
Syntax	`:FILE:SAVE:FFT:FINFormation {<Boolean>}` `:FILE:SAVE:FFT:FINFormation?`

Example	`:FILE:SAVE:FFT:FINFORMATION ON`
	`:FILE:SAVE:FFT:FINFORMATION?`
	`-> :FILE:SAVE:FFT:FINFORMATION ON`

Description	Default value: OFF

`:FILE:SAVE:MATLab:ITEXt`
`(Information Text)`

Function	Sets or queries whether horizontal axis information is included in text format when saving data in MATLAB format.
Syntax	`:FILE:SAVE:MATLab:ITEXt {<Boolean>}` `:FILE:SAVE:MATLAB:ITEXt?`

Example	`:FILE:SAVE:MATLAB:ITEXT ON`
	`:FILE:SAVE:MATLAB:ITEXT?`
	`-> :FILE:SAVE:MATLAB:ITEXT ON`

Description	Default value: OFF

`:FILE:SAVE:MATLab:SINFO`

Function	Sets or queries whether sampling information is included when saving data in MATLAB format.
Syntax	`:FILE:SAVE:MATLab:SINFo {<Boolean>}` `:FILE:SAVE:MATLAB:SINFo?`

Example	`:FILE:SAVE:MATLAB:SINFO ON`
	`:FILE:SAVE:MATLAB:SINFO?`
	`-> :FILE:SAVE:MATLAB:SINFO 1`

Description	Default value: OFF

`:FILE:SAVE:MEASure:UNIT`

Function	Sets or queries whether a unit is included in each cell when measured results are saved.
Syntax	`:FILE:SAVE:MEASure:UNIT {<Boolean>}` `:FILE:SAVE:MEASure:UNIT?`

Example	`:FILE:SAVE:MEASURE:UNIT ON`
	`:FILE:SAVE:MEASURE:UNIT?`
	`-> :FILE:SAVE:MEASURE:UNIT ON`

Description	Default value: OFF

`:FILE:SAVE:NAME`

Function	Sets or queries the name of the file that will be saved.
Syntax	`:FILE:SAVE:NAME <Filename>` `:FILE:SAVE:NAME?`

Example	`:FILE:SAVE:NAME "CASE1"`
	`:FILE:SAVE:NAME?`
	`-> :FILE:SAVE:NAME "CASE1"`

Description	File names that cannot be used "aux", "con", "prn", "nul", "clock", "com1" to "com9", "lpt1" to "lpt9"

`:FILE:SAVE:SETup:DESTination`

Function	Sets or queries the file merging of setup files.
Syntax	`:FILE:SAVE:SETup:DESTination {MAIN|EUNit}` `:FILE:SAVE:SETup:DESTination?`

Example	`:FILE:SAVE:SETUP:DESTINATION MAIN`
	`:FILE:SAVE:SETUP:DESTINATION?`
	`-> :FILE:SAVE:SETUP:DESTINATION MAIN`

Description	Sets whether to create on the main unit a merged file that includes the setup information of sub units when saving the setup file on the main unit in the linked state. The response to queries in the unlinked state and on sub units will always be EUNit.

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4.15 GONogo Group

The commands in this group deal with GO/NO-GO determination. You can make the same settings and queries (of settings and measured values) that you can by using the SHIFT+MEASURE key on the front panel. If the selectable range of the time axis is "<NRf> = −5 to 5div," the selectable range varies depending on settings such as the record length. For details, see "Notes about Cursor Measurement" in chapter 10 of IM DL950-01EN.

:GONogo?
Function	(Upper-level query) Queries all GO/NO-GO determination settings.
Syntax	:GONogo?

:GONogo:ACONdition
Function	Sets or queries the GO/NO-GO determination-action condition.
Syntax	:GONogo:ACONdition {ALWays|FAILure|SUCCess}
	:GONogo:ACONdition?
Example	:GONOGO:ACONDITION ALWAYS
	:GONOGO:ACONDITION?
	-> :GONOGO:ACONDITION ALWAYS
Description	Default value: FAIL

:GONogo:ACTion?
Function	(Upper-level query) Queries all settings for the action that is performed when the condition is met and the settings for the condition itself.
Syntax	:GONogo:ACTion?

:GONogo:ACTion:BUZZer
Function	Sets or queries whether a beep is sounded when the condition is met.
Syntax	:GONogo:ACTion:BUZZer {<Boolean>}
	:GONogo:ACTion:BUZZer?
Example	:GONOGO:ACTION:BUZZER ON
	:GONOGO:ACTION:BUZZER?
	-> :GONOGO:ACTION:BUZZER 1
Description	Default value: OFF

:GONogo:ACTion:FOLDer
Function	Sets or queries whether a date folder is created when waveform data or screen capture data is saved to the storage device when conditions are met.
Syntax	:GONogo:ACTion:FOLDer {<Boolean>}
	:GONogo:ACTion:FOLDer?
Example	:GONOGO:ACTION:FOLDER 1
	:GONOGO:ACTION:FOLDER?
	-> :GONOGO:ACTION:FOLDER 1
Description	Default value: 1

:GONogo:ACTion:IMAGe?
Function	(Upper-level query) Queries all settings for the screen capture that is saved when the condition is met.
Syntax	:GONogo:ACTion:IMAGe?

:GONogo:ACTion:IMAGe:CDIRectory
Function	Changes the current directory where the screen capture is saved to when the condition is met.
Syntax	:GONogo:ACTion:IMAGe:CDIRectory {<String>}
	:GONogo:ACTion:IMAGe:CDIRectory?
	<String> = Directory name
Example	:GONOGO:ACTION:IMAGE:CDIRECTORY "CASE1"
	:GONOGO:ACTION:IMAGE:CDIRECTORY?
	-> :GONOGO:ACTION:IMAGE:CDIRECTORY "CASE1"

:GONogo:ACTion:IMAGe:DRIVe
Function	Sets or queries the medium that the screen capture is saved to when the condition is met.
Syntax	:GONogo:ACTion:IMAGe:DRIVe {IDRive|NETWork|SD|USB,<NRf>}
	:GONogo:ACTion:IMAGe:DRIVe?
Example	:GONOGO:ACTION:IMAGE:DRIVE SD
	:GONOGO:ACTION:IMAGE:DRIVE?
	-> :GONOGO:ACTION:IMAGE:DRIVE SD
Description	• Specify IDRive for the internal drive. Specify SD for the SD memory card. Specify NETWork for a network drive. Specify USB for a USB storage device.
	<NRf>: 0 to LUN or the partition number (can be omitted)
	• Default value: Depends on the installation state of the storage device.

:GONogo:ACTion:IMAGe[:MODE]
Function   Sets or queries whether a screen capture is saved when the condition is met.
Syntax   :GONogo:ACTion:
                 IMAGe[:MODE] {<Boolean>}
                 :GONogo:ACTion:IMAGe:MODE?
Example   :GONOGO:ACTION:IMAGE:MODE ON
                 :GONOGO:ACTION:IMAGE:MODE?
                 -> :GONOGO:ACTION:IMAGE:MODE 1
Description   Default value: OFF

:GONogo:ACTion:IMAGe:PATH?
Function   Queries the path on the storage device that screen captures are saved to when the condition is met.
Syntax   :GONogo:ACTion:SAVE:PATH?
Example   :GONOGO:ACTION:SAVE:PATH?
                 -> :GONOGO:ACTION:SAVE:
                    PATH "PATH = USB/UTIL"

:GONogo:ACTion:MAIL?
Function   (Upper-level query) Queries all settings for sending e-mail when the condition is met.
Syntax   :GONogo:ACTion:MAIL?

:GONogo:ACTion:MAIL:COUNt
Function   Sets or queries the number of times that e-mail is sent when the condition is met.
Syntax   :GONogo:ACTion:MAIL:
                 COUNt {INFinity|<NRf>}
                 :GONogo:ACTion:MAIL:COUNt?
                 <NRf> = 0 (Infinite), 1 to 1000
Example   :GONOGO:ACTION:MAIL:COUNT 100
                 :GONOGO:ACTION:MAIL:COUNT?
                 -> :GONOGO:ACTION:MAIL:COUNT 100
Description   Default value: 100

:GONogo:ACTion:MAIL:MODE
Function   Sets or queries whether e-mail is sent when the condition is met.
Syntax   :GONogo:ACTion:MAIL:MODE {<Boolean>}
                 :GONogo:ACTion:MAIL:MODE?
Example   :GONOGO:ACTION:MAIL:MODE ON
                 :GONOGO:ACTION:MAIL:MODE?
                 -> :GONOGO:ACTION:MAIL:MODE 1
Description   Default value: OFF

:GONogo:ACTion:MSAVe (Measure Save)
Function   Sets or queries whether measurement results are saved to the storage device when the condition is met.
Syntax   :GONogo:ACTion:MSAVe {<Boolean>}
                 :GONogo:ACTion:MSAVE?
Example   :GONOGO:ACTION:MSAVE ON
                 :GONOGO:ACTION:MSAVE?
                 -> :GONOGO:ACTION:MSAVE 1
Description   Default value: OFF

:GONogo:ACTion:SAVE?
Function   (Upper-level query) Queries all settings for saving waveform data when conditions are met.
Syntax   :GONogo:ACTion:SAVE?

:GONogo:ACTion:SAVE:CDIRectory
Function   Changes the current directory on the storage device where waveform data is saved to when the condition is met.
Syntax   :GONogo:ACTion:SAVE:
                 CDIRectory {<String>}
                 :GONogo:ACTion:SAVE:CDIRectory?
Example   :GONOGO:ACTION:SAVE:
                 CDIRECTORY "CASE1"
                 :GONOGO:ACTION:SAVE:CDIRECTORY?
                 -> :GONOGO:ACTION:SAVE:
                    CDIRECTORY "CASE1"

:GONogo:ACTion:SAVE:DRIVe
Function   Sets or queries the storage device that waveform data is saved to when the condition is met.
Syntax   :GONogo:ACTion:SAVE:DRIVe {IDRive|
                 NETWork|SD|USB,<NRf>}
                 :GONogo:ACTion:SAVE:DRIVe?
Example   :GONOGO:ACTION:SAVE:DRIVE SD
                 :GONOGO:ACTION:SAVE:DRIVE?
                 -> :GONOGO:ACTION:SAVE:DRIVE SD
Description   • Specify IDRive for the internal drive.
                   Specify SD for the SD memory card.
                   Specify NETWork for a network drive.
                   Specify USB for a USB storage device.
                     <NRf>: 0 to LUN or the partition number
                         (can be omitted)
            • Default value: Depends on the installation state of the storage device.

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:GONogo:ACTion:SAVE:ASCii:MODE
Function   Sets or queries whether waveform data is saved to the storage device in ASCII format when the condition is met.
Syntax   :GONogo:ACTion:SAVE:ASCii:
            MODE {<Boolean>}
            :GONogo:ACTion:SAVE:ASCii:MODE?
Example   :GONOGO:ACTION:SAVE:ASCII:MODE 1
            :GONOGO:ACTION:SAVE:ASCII:MODE?
            -> :GONOGO:ACTION:SAVE:ASCII:MODE 1
Description Default value: 0

:GONogo:ACTion:SAVE:BINary:MODE
Function   Sets or queries whether waveform data is saved to the storage device in binary format when the execution condition is met.
Syntax   :GONogo:ACTion:SAVE:BINary:
            MODE {<Boolean>}
            :GONogo:ACTion:SAVE:BINary:MODE?
Example   :GONOGO:ACTION:SAVE:BINARY:MODE 1
            :GONOGO:ACTION:SAVE:BINARY:MODE?
            -> :GONOGO:ACTION:SAVE:BINARY:MODE 1
Description Default value: 1

:GONogo:ACTion:SAVE:MATLab:MODE
Function   Sets or queries whether waveform data is saved to the storage device in MATLAB format when the condition is met.
Syntax   :GONogo:ACTion:SAVE:MATLab:
            MODE {<Boolean>}
            :GONogo:ACTion:SAVE:MATLab:MODE?
Example   :GONOGO:ACTION:SAVE:MATLAB:MODE 1
            :GONOGO:ACTION:SAVE:MATLAB:MODE?
            -> :GONOGO:ACTION:SAVE:MATLAB:MODE 1
Description Default value: 0

:GONogo:ACTion:SAVE[:MODE]
Function   Sets or queries whether waveform data is saved to the storage device when the condition is met.
Syntax   :GONogo:ACTion:SAVE:MODE {<Boolean>}
            :GONogo:ACTion:SAVE:MODE?
Example   :GONOGO:ACTION:SAVE:MODE ON
            :GONOGO:ACTION:SAVE:MODE?
            -> :GONOGO:ACTION:SAVE:MODE 1
Description Default value: OFF

:GONogo:ACTion:SAVE:PATH?
Function   Queries the path on the storage device that waveform data is saved to when the condition is met.
Syntax   :GONogo:ACTion:SAVE:PATH?
Example   :GONogo:ACTION:SAVE:PATH?
            -> :GONOGO:ACTION:SAVE:
               PATH "PATH = USB/UTIL"

:GONogo:COUNt?
Function   Queries the number of GO/NO-GO determinations that were performed.
Syntax   :GONogo:COUNt?
Example   :GONOGO:COUNT? -> :GONOGO:COUNT 10

:GONogo:LOGic
Function   Sets or queries the GO/NO-GO determination logic.
Syntax   :GONogo:LOGic {AND|OR}
            :GONogo:LOGic?
Example   :GONOGO:LOGIC AND
            :GONOGO:LOGIC? -> :GONOGO:LOGIC AND
Description Default value: AND

:GONogo:MODE
Function   Sets or queries the GO/NO-GO determination mode.
Syntax   :GONogo:MODE {OFF|PARameter|ZONE}
            :GONogo:MODE?
Example   :GONOGO:MODE ZONE
            :GONOGO:MODE? -> :GONOGO:MODE ZONE
Description Default value: OFF

:GONogo:NGCount?
Function   Queries the GO/NO-GO determination NO-GO count.
Syntax   :GONogo:NGCount?
Example   :GONogo:NGCOUNT?
            -> :GONOGO:NGCOUNT 10

:GONogo:PARameter?
Function   (Upper-level query) Queries all parameter determination settings.
Syntax   :GONogo:PARameter?

:GONogo:PARameter:ITEM<x>?
Function   (Upper-level query) Queries all settings for the specified waveform parameter for parameter determination.
Syntax   :GONogo:PARameter:ITEM<x>?
            <x> = 1 to 16

:GONogo:PARameter:ITEM<x>:CAUSe?
Function   Queries whether the specified waveform parameter for parameter determination is the cause of a NO-GO judgment.
Syntax   :GONogo:PARameter:ITEM<x>:CAUSe?
            <x> = 1 to 16
Example   :GONOGO:PARAMETER:ITEM1:CAUSE?
            -> :GONOGO:PARAMETER:ITEM1:CAUSE 1
Description When the parameter is the cause of a NO-GO result, the instrument returns 1. Otherwise, the instrument returns 0.

:GONogo:PARameter:ITEM<x>:LOGic:BIT

Function   Sets or queries the bit when the the specified waveform parameter's source waveform for parameter determination is set to 720230 (logic module).

Syntax   :GONogo:PARameter:ITEM<x>:LOGic: BIT {<NRf>}
:GONogo:PARameter:ITEM<x>:LOGic:BIT?
<NRf> = 1 to 8
<x> = 1 to 16

Example   :GONOGO:PARAMETER:ITEM:LOGIC:BIT 2
:GONOGO:PARAMETER:ITEM:LOGIC:BIT?
-> :GONOGO:PARAMETER:ITEM:LOGIC: BIT 2

Description   Default value: 1

:GONogo:PARameter:ITEM<x>:MODE

Function   Sets or queries the specified waveform parameter's reference condition for parameter determination.

Syntax   :GONogo:PARameter:ITEM<x>:MODE {OFF| IN|OUT}
:GONogo:PARameter:ITEM<x>:MODE?
<x> = 1 to 16

Example   :GONOGO:PARAMETER:ITEM1:MODE IN
:GONOGO:PARAMETER:ITEM1:MODE?
-> :GONOGO:PARAMETER:ITEM1:MODE IN

Description   Default value: OFF

:GONogo:PARameter:ITEM<x>:TRACe

Function   Sets or queries the specified waveform parameter's source waveform for parameter determination.

Syntax   :GONogo:PARameter:ITEM<x>: TRACe {MATH<x>|<NRf>[,<NRf>]}
:GONogo:PARameter:ITEM<x>:TRACe?
<x> = 1 to 16
MATH<x>'s <x> = 1 to 8
<NRf> = 1 to 32 (channel number designation)
[,<NRf>] = 1, 2 (only on a 4-CH module (720254, 720256))

Example   :GONOGO:PARAMETER:ITEM1:TRACE 1
:GONOGO:PARAMETER:ITEM1:TRACE?
-> :GONOGO:PARAMETER:ITEM1:TRACE 1

Description   Default value: Installed channel with the smallest channel number

:GONogo:PARameter:ITEM<x>:TYPE?

Function   Queries, for parameter determination, the specified waveform parameter's measurement item and upper and lower limits.

Syntax   :GONogo:PARameter:ITEM<x>:TYPE?
<x> = 1 to 16

Example   :GONOGO:PARAMETER:ITEM1:TYPE?
-> :GONOGO:PARAMETER:ITEM1:TYPE: MAXIMUM 1.10000E+00,1.00000E+00

:GONogo:PARameter:ITEM<x>:TYPE: <Parameter>

Function   Sets or queries the upper and lower limits of the measurement item for the specified waveform parameter.

Syntax   :GONogo:PARameter:ITEM<x>:TYPE: <Parameter> {<Voltage>,<Voltage>| <Current>,<Current>|<Time>,<Time>| <Frequency>,<Frequency>|<NRf>,<NRf>}
<x> = 1 to 16
<Parameter> = {AMPLitude|AVERage| AVGFreq|AVGPeriod|BWIDth1|BWIDth2| DELay|DUTYcycle|FALL|FREQuency| HIGH|LOW|MAXimum|MIDDle|MINimum| NOVershoot|NWIDth|PERiod|PNUMber| POVershoot|PTOPeak|PWIDth|RISE| RMS|SDEViation|TY1Integ|TY2Integ}

Description   Default value: 0.0

:GONogo:PARameter:ITEM<x>:VALue?

Function   Queries the measured value of the specified waveform parameter.

Syntax   :GONogo:PARameter:ITEM<x>:VALue?
<x> = 1 to 16

:GONogo:REMote

Function   Sets or queries the remote mode of GO/NO-GO determination.

Syntax   :GONogo:REMote {<Boolean>}
:GONogo:REMote?

Example   :GONOGO:REMOTE ON
:GONOGO:REMOTE? -> :GONOGO:REMOTE 1

Description   Default value: OFF

:GONogo:SEQuence

Function   Sets or queries the action mode of GO/NO-GO determination.

Syntax   :GONogo:SEQuence {CONTinue|SINGle}
:GONogo:SEQuence?

Example   :GONOGO:SEQUENCE CONTINUE
:GONOGO:SEQUENCE?
-> :GONOGO:SEQUENCE CONTINUE

Description   Default value: CONT

:GONogo:TRANge

Function   Sets or queries the determination range of GO/NO-GO determination.

Syntax   :GONogo:TRANge {<NRf>,<NRf>}
:GONogo:TRANge?
<NRf> = –5 to 5div

Example   :GONOGO:TRANGE –5, 5
:GONOGO:TRANGE?
-> :GONOGO:TRANGE -5.000000000000, 5.000000000000

Description   Default value: -5 to 5

4

Commands

:GONogo:WAIT?

Function   Waits for the completion of GO/NO-GO
             determination with a timeout.

Syntax   :GONogo:WAIT? {<NRf>}
             <NRf> = 1 to 864000 (100 ms steps)

Example   Setting the timeout value to 5
             seconds
             :GONOGO:WAIT? 50 -> 0

Description The instrument returns 0 if the operation finishes
             before the timer expires and returns 1 if the timer
             expires.

:GONogo:ZONE?

Function   (Upper-level query) Queries all waveform zone
             determination settings.

Syntax   :GONogo:ZONE?

:GONogo:ZONE:PATTern<x>?

Function   (Upper-level query) Queries all settings for the
             specified determination pattern for waveform
             zone determination.

Syntax   :GONogo:ZONE:PATTern<x>?

:GONogo:ZONE:PATTern<x>:CAUSe?

Function   Queries whether the specified determination
             pattern for waveform zone determination is the
             cause of a NO-GO judgment.

Syntax   :GONogo:ZONE:PATTern<x>:CAUSe?
             <x> = 1 to 16

Example   :GONOGO:ZONE:PATTERN1 CAUSE?
             -> :GONOGO:ZONE:PATTERN1 CAUSE 0

Description When the determination pattern is the cause
             of a NO-GO result, the instrument returns 1.
             Otherwise, the instrument returns 0.

:GONogo:ZONE:PATTern<x>:MODE

Function   Sets or queries the specified determination
             pattern's reference condition for waveform zone
             determination.

Syntax   :GONogo:ZONE:PATTern<x>:MODE {IN|
             OUT|OFF}
             :GONogo:ZONE:PATTern<x>:MODE?
             <x> = 1 to 16

Example   :GONOGO:ZONE:PATTERN1:MODE IN
             :GONOGO:ZONE:PATTERN1:MODE?
             -> :GONOGO:ZONE:PATTERN1:MODE IN

Description Default value: OFF

:GONogo:ZONE:PATTern<x>:TRACe

Function   Sets or queries the specified determination
             pattern's determination waveform for waveform
             zone determination.

Syntax   :GONogo:ZONE:PATTern<x>:
             TRACe {MATH<x>|<NRf>[,<NRf>]}
             :GONogo:ZONE:PATTern<x>:TRACe?
             <x> = 1 to 16
             MATH<x>'s <x> = 1 to 8
             <NRf> = 1 to 32 (channel number designation)
             [,<NRf>] = 1, 2 (only on a 4-CH module (720254,
                       720256))

Example   :GONOGO:ZONE:PATTERN1:TRACE 1
             :GONOGO:ZONE:PATTERN1:TRACE?
             -> :GONOGO:ZONE:PATTERN1:TRACE 1

Description Default value: Installed channel with the smallest
             channel number

:GONogo:ZONE:PATTern<x>:ZONE

Function   Sets or queries the specified determination
             pattern's source waveform zone data for
             waveform zone determination.

Syntax   :GONogo:ZONE:PATTern<x>:ZONE {<NRf>}
             :GONogo:ZONE:PATTern<x>:ZONE?
             <x> = 1 to 16
             <NRf> = 0 to 5

Example   :GONOGO:ZONE:PATTERN1:ZONE 1
             :GONOGO:ZONE:PATTERN1:ZONE?
             -> :GONOGO:ZONE:PATTERN1:ZONE 1

4.16 GPS Group

The commands in this group deal with acquiring GPS data. You can perform the same operations and make the same settings and queries that you can by using the SHIFT+HISTORY (ANALYSIS) keys on the front panel.

:GPS?
Function (Upper-level query) Queries all GPS data acquisition settings.
Syntax :GPS?
Description This command is valid when the /C35 option is installed.

:GPS:ALTitude?
Function (Upper-level query) Queries all GPS altitude data acquisition settings.
Syntax :GPS:ALTitude?
Description • This command is valid when the /C35 option is installed.
• The altitude data output channel is CH17_3 (RMath1_3).

:GPS:ALTitude:INPut
Function Sets or queries whether the GPS altitude data channel is displayed.
Syntax :GPS:ALTitude:INPut {<Boolean>}
:GPS:ALTitude:INPut?
Example :GPS:ALTITUDE:INPUT ON
:GPS:ALTITUDE:INPUT?
-> :GPS:ALTITUDE:INPUT ON
Description • This command is valid when the /C35 option is installed.
• Default value: ON

:GPS:ALTitude:LABel
Function Sets or queries the label of the GPS altitude data channel.
Syntax :GPS:ALTitude:LABel {<String>}
:GPS:ALTitude:LABel?
<String> = Up to 16 characters
Example :GPS:ALTITUDE:LABEL "ALT."
:GPS:ALTITUDE:LABEL?
-> :GPS:ALTITUDE:LABEL "ALT."
Description • This command is valid when the /C35 option is installed.
• Default value: "Altitude"

:GPS:ALTitude:SCALe
Function Sets or queries the scale of the GPS altitude data channel.
Syntax :GPS:ALTitude:SCALe {<NRf>,<NRf>}
:GPS:ALTitude:SCALe?
<NRf> = −32768 to 32767
(When the position is not 0, both the upper and lower limits are reduced by the position amount.)
Example :GPS:ALTITUDE:SCALE 0,100
:GPS:ALTITUDE:SCALE?
-> :GPS:ALTITUDE:SCALE 0,100
Description • This command is valid when the /C35 option is installed.
• Default value: −100,100

:GPS:DIRection?
Function (Upper-level query) Queries all GPS direction data acquisition settings.
Syntax :GPS:DIRection?
Description • This command is valid when the /C35 option is installed.
• The altitude data output channel is CH17_5 (RMath1_5).

:GPS:DIRection:INPut
Function Sets or queries whether the GPS direction data channel is displayed.
Syntax :GPS:DIRection:INPut {<Boolean>}
:GPS:DIRection:INPut?
Example :GPS:DIRECTION:INPUT ON
:GPS:DIRECTION:INPUT?
-> :GPS:DIRECTION:INPUT ON
Description • This command is valid when the /C35 option is installed.
• Default value: ON

:GPS:DIRection:LABel
Function Sets or queries the label of the GPS direction data channel.
Syntax :GPS:DIRection:LABel {<String>}
:GPS:DIRection:LABel?
<String> = Up to 16 characters
Example :GPS:DIRECTION:LABEL "DIR."
:GPS:DIRECTION:LABEL?
-> :GPS:DIRECTION:LABEL "DIR."
Description • This command is valid when the /C35 option is installed.
• Default value: "Direction"

:GPS:DIRection:SCALe

Function	Sets or queries the scale of the GPS direction data channel.
Syntax	:GPS:DIRection:SCALe {<NRf>,<NRf>}
	:GPS:DIRection:SCALe?
	<NRf> = –3600 to 3600
	(When the position is not 0, both the upper and lower limits are reduced by the position amount.)
Example	:GPS:LATITUDE:SCALE 0,180
	:GPS:LATITUDE:SCALE?
	-> :GPS:LATITUDE:SCALE 0,180
Description	• This command is valid when the /C35 option is installed.
	• Default value: 0,360

:GPS:LATitude?

Function	(Upper-level query) Queries all GPS latitude data acquisition settings.
Syntax	:GPS:LATitude?
Description	• This command is valid when the /C35 option is installed.
	• The latitude data output channel is CH17_1 (RMath1_1).

:GPS:LATitude:INPut

Function	Sets or queries whether the GPS latitude data channel is displayed.
Syntax	:GPS:LATitude:INPut {<Boolean>}
	:GPS:LATitude:INPut?
Example	:GPS:LATITUDE:INPUT ON
	:GPS:LATITUDE:INPUT?
	-> :GPS:LATITUDE:INPUT ON
Description	• This command is valid when the /C35 option is installed.
	• Default value: ON

:GPS:LATitude:LABel

Function	Sets or queries the label of the GPS latitude data channel.
Syntax	:GPS:LATitude:LABel {<String>}
	:GPS:LATitude:LABel?
	<String> = Up to 16 characters
Example	:GPS:LATITUDE:LABEL "LAT."
	:GPS:LATITUDE:LABEL?
	-> :GPS:LATITUDE:LABEL "LAT."
Description	• This command is valid when the /C35 option is installed.
	• Default value: "Latitude"

:GPS:LATitude:SCALe

Function	Sets or queries the scale of the GPS latitude data channel.
Syntax	:GPS:LATitude:SCALe {<NRf>,<NRf>}
	:GPS:LATitude:SCALe?
	<NRf> = –900 to 900
	(When the position is not 0, both the upper and lower limits are reduced by the position amount.)
Example	:GPS:LATITUDE:SCALE 35.0,45.0
	:GPS:LATITUDE:SCALE?
	-> :GPS:LATITUDE:SCALE 35.0,45.0
Description	• This command is valid when the /C35 option is installed.
	• Default value: –90,90

:GPS:LONGitude?

Function	(Upper-level query) Queries all GPS longitude data acquisition settings.
Syntax	:GPS:LONGitude?
Description	• This command is valid when the /C35 option is installed.
	• The longitude data output channel is CH17_2 (RMath1_2).

:GPS:LONGitude:INPut

Function	Sets or queries whether the GPS longitude data channel is displayed.
Syntax	:GPS:LONGitude:INPut {<Boolean>}
	:GPS:LONGitude:INPut?
Example	:GPS:LONGITUDE:INPUT ON
	:GPS:LONGITUDE:INPUT?
	-> :GPS:LONGITUDE:INPUT ON
Description	• This command is valid when the /C35 option is installed.
	• Default value: ON

:GPS:LONGitude:LABel

Function   Sets or queries the label of the GPS longitude data channel.

Syntax   :GPS:LONGitude:LABel {<String>}
:GPS:LONGitude:LABel?
<String> = Up to 16 characters

Example   :GPS:LONGITUDE:LABEL "LONG."
:GPS:LONGITUDE:LABEL?
-> :GPS:LONGITUDE:LABEL "LONG."

Description • This command is valid when the /C35 option is installed.
• Default value: "Longitude"

:GPS:LONGitude:SCALe

Function   Sets or queries the scale of the GPS longitude data channel.

Syntax   :GPS:LONGitude:SCALe {<NRf>,<NRf>}
:GPS:LONGitude:SCALe?
<NRf> = −1800 to 1800
(When the position is not 0, both the upper and lower limits are reduced by the position amount.)

Example   :GPS:LONGITUDE:SCALE 130.0,140.0
:GPS:LONGITUDE:SCALE?
-> :GPS:LONGITUDE:SCALE 130.0,140.0

Description • This command is valid when the /C35 option is installed.
• Default value: −180,180

:GPS:MODE

Function   Sets or queries whether GPS data is acquired.

Syntax   :GPS:MODE {<Boolean>}
:GPS:MODE?

Example   :GPS:MODE ON
:GPS:MODE? -> :GPS:MODE 1

Description • This command is valid when the /C35 option is installed.
• Default value: 0

:GPS:STATus?

Function   (Upper-level query) Queries all GPS status channel settings.

Syntax   :GPS:STATus?

Description • This command is valid when the /C35 option is installed.
• The status data output channel is CH17_6 (RMath1_6).

:GPS:STATus:INPut

Function   Sets or queries whether the GPS status channel is displayed.

Syntax   :GPS:STATus:INPut {<Boolean>}
:GPS:STATus:INPut?

Example   :GPS:STATUS:INPUT ON
:GPS:STATUS:INPUT?
-> :GPS:STATUS:INPUT ON

Description • This command is valid when the /C35 option is installed.
• Default value: ON

:GPS:STATus:LABel

Function   Sets or queries the label of the GPS status channel.

Syntax   :GPS:STATus:LABel {<String>}
:GPS:STATus:LABel?
<String> = Up to 16 characters

Example   :GPS:STATUS:LABEL "STAT"
:GPS:STATUS:LABEL?
-> :GPS:STATUS:LABEL "STAT"

Description • This command is valid when the /C35 option is installed.
• Default value: "Status"

:GPS:STATus:SCALe

Function   Sets or queries the scale of the GPS status channel.

Syntax   :GPS:STATus:SCALe {<NRf>,<NRf>}
:GPS:STATus:SCALe?
<NRf> = −30 to 30
(When the position is not 0, both the upper and lower limits are reduced by the position amount.)

Example   :GPS:STATUS:SCALE 0,3
:GPS:STATUS:SCALE?
-> :GPS:STATUS:SCALE 0,3

Description • This command is valid when the /C35 option is installed.
• Default value: −1,4

:GPS:VELocity?

Function   (Upper-level query) Queries all GPS velocity data acquisition settings.

Syntax   :GPS:VELocity?

Description • This command is valid when the /C35 option is installed.
• The velocity data output channel is CH17_4 (RMath1_4).

:GPS:VELocity:INPut

Function   Sets or queries whether the GPS velocity data channel is displayed.

Syntax   `:GPS:VELocity:INPut {<Boolean>}`
          `:GPS:VELocity:INPut?`

Example   `:GPS:VELOCITY:INPUT ON`
           `:GPS:VELOCITY:INPUT?`
           `-> :GPS:VELOCITY:INPUT ON`

Description • This command is valid when the /C35 option is installed.
            • Default value: ON

:GPS:VELocity:LABel

Function   Sets or queries the label of the GPS velocity data channel.

Syntax   `:GPS:VELocity:LABel {<String>}`
          `:GPS:VELocity:LABel?`
          `<String> = Up to 16 characters`

Example   `:GPS:VELOCITY:LABEL "VEL."`
           `:GPS:VELOCITY:LABEL?`
           `-> :GPS:VELOCITY:LABEL "VEL."`

Description • This command is valid when the /C35 option is installed.
            • Default value: "Velocity"

:GPS:VELocity:SCALe

Function   Sets or queries the scale of the GPS velocity data channel.

Syntax   `:GPS:VELocity:SCALe {<NRf>,<NRf>}`
          `:GPS:VELocity:SCALe?`
          `<NRf> = –6553.5 to 6553.5`
                (When the position is not 0, both the upper and lower limits are reduced by the position amount.)

Example   `:GPS:VELOCITY:SCALE 0,100`
           `:GPS:VELOCITY:SCALE?`
           `-> :GPS:VELOCITY:SCALE 0,100`

Description • This command is valid when the /C35 option is installed.
            • Default value: 0,100

4.17 HCOPy Group

The commands in this group deal with printing screen captures. You can perform the same operations and make the same settings and queries that you can by using the SHIFT+ImageSave keys on the front panel.

:HCOPy?
Function   (Upper-level query) Queries all screen capture data output settings.
Syntax   :HCOPy?

:HCOPy:COMMent
Function   Sets or queries the screen comment.
Syntax   :HCOPy:COMMent {<String>}
            :HCOPy:COMMent?
            <String> = Up to 26 characters
Example   :HCOPY:COMMENT "ABC"
            :HCOPY:COMMENT?
            -> :HCOPY:COMMENT "ABC"

:HCOPy:DIRection
Function   Sets or queries the data output destination.
Syntax   :HCOPy:DIRection {EXTPrinter|
            NETPrinter|FILE}
            :HCOPy:DIRection?
Example   :HCOPY:DIRECTION FILE
            :HCOPY:DIRECTION?
            -> :HCOPY:DIRECTION FILE
Description Default value: FILE

:HCOPy:EXECute
Function   Executes data output.
Syntax   :HCOPy:EXECute

:HCOPy:EXTPrinter?
Function   (Upper-level query) Queries all USB printer output settings.
Syntax   :HCOPy:EXTPrinter?

:HCOPy:EXTPrinter:TONE
Function   Sets or queries the colors that will be used when printing from the HP Inkjet printer.
Syntax   :HCOPy:EXTPrinter:TONE {<Boolean>}
            :HCOPy:EXTPrinter:TONE?
Example   :HCOPY:EXTPRINTER:TONE ON
            :HCOPY:EXTPRINTER:TONE?
            -> :HCOPY:EXTPRINTER:TONE 1
Description Default value: OFF

:HCOPy:EXTPrinter:TYPE
Function   Sets or queries the USB printer output command type.
Syntax   :HCOPy:EXTPrinter:TYPE {BROTher|
            HINKjet}
            :HCOPy:EXTPrinter:TYPE?
Example   :HCOPY:EXTPRINTER:TYPE BROTHER
            :HCOPY:EXTPRINTER:TYPE?
            -> :HCOPY:EXTPRINTER:TYPE BROTHER
Description Default value: HINKjet

:HCOPy:NETPrint?
Function   (Upper-level query) Queries all network printer output settings.
Syntax   :HCOPy:NETPrint?

:HCOPy:NETPrint:TONE
Function   Sets or queries whether data will be printed in color from the network printer.
Syntax   :HCOPy:NETPrint:TONE {<Boolean>}
            :HCOPy:NETPrint:TONE?
Example   :HCOPY:NETPRINT:TONE ON
            :HCOPY:NETPRINT:TONE?
            -> :HCOPY:NETPRINT:TONE 1
Description Default value: OFF

4.18 HISTory Group

The commands in this group deal with loading data from history waveforms. You can perform the same operations and make the same settings and queries that you can by using the HISTORY key on the front panel.

`:HISTory?`

Function (Upper-level query) Queries all history feature settings.
Syntax :HISTory?

`:HISTory:ABORt`

Function Aborts the history search.
Syntax :HISTory:ABORt
Example :HISTORY:ABORT

`:HISTory:CLEar`

Function Clears the data of all history waveforms.
Syntax :HISTory:CLEar
Example :HISTORY:CLEAR

`:HISTory:DATE?`

Function Queries the trigger date of the data at the specified record number.
Syntax :HISTory:DATE? {<NRf>|MINimum}
<NRf> = 0 to −4999
Example :HIST:DATE? −1
-> :HIST:DATE "−0001 2010/02/02"
Description If you specify a record number that is lower than MINimum, this command will return "-----------."

`:HISTory:DISPlay`

Function Sets or queries the history start and end numbers that will be displayed.
Syntax :HISTory:DISPlay {<NRf>,<NRf>}
:HISTory:DISPlay?
<NRf> = 0 to −4999
Example :HISTORY:DISPLAY −1,−2
:HISTORY:DISPLAY?
-> :HISTORY:DISPLAY −1,−2
Description The settable values vary depending on the memory model and the acquisition conditions.
Description Default value: 0, 0

`:HISTory:DMODe (Display Mode)`

Function Sets or queries the history waveform display mode.
Syntax :HISTory:DMODe {ONE|ALL|AVE}
:HISTory:DMODe?
Example :HISTORY:DMODE ONE
:HISTORY:DMODE?
-> :HISTORY:DMODE ONE
Description Default value: ONE

`:HISTory:EXECute`

Function Executes the history waveform search.
Syntax :HISTory:EXECute

`:HISTory:PARameter?`

Function (Upper-level query) Queries all history-waveform parameter-search settings.
Syntax :HISTory:PARameter?

`:HISTory:PARameter:ITEM<x>?`

Function (Upper-level query) Queries all the specified parameter's settings for history-waveform parameter searches.
Syntax :HISTory:PARameter:ITEM<x>?
<x> = 1 to 4

`:HISTory:PARameter:ITEM<x>:CONDition`

Function Sets or queries the specified parameter's reference condition for history-waveform parameter searches.
Syntax :HISTory:PARameter:ITEM<x>:
CONDition {OFF|IN|OUT}
<x> = 1 to 4
Example :HISTORY:PARAMETER:ITEM1:
CONDITION IN
:HISTORY:PARAMETER:ITEM1:CONDITION?
-> :HISTORY:PARAMETER:ITEM1:
CONDITION IN
Description Default value: OFF

`:HISTory:PARameter:ITEM<x>:LOGic:BIT`

Function Sets or queries the bit when the specified parameter's source trace for history-waveform parameter searches is set to 720230 (logic module).
Syntax :HISTory:PARameter:ITEM<x>:LOGic:
BIT {<NRf>}
:HISTory:PARameter:ITEM<x>:LOGic:
BIT?
<NRf> = 1 to 8
<x> = 1 to 4
Example :HISTORY:PARAMETER:ITEM:LOGIC:BIT 2
:HISTORY:PARAMETER:ITEM:LOGIC:BIT?
-> :HISTORY:PARAMETER:ITEM:LOGIC:
BIT 2
Description Default value: 1

:HISTory:PARameter:ITEM<x>:SOURce

Function	Sets or queries the specified parameter's source trace for history-waveform parameter searches.
Syntax	:HISTory:PARameter:ITEM<x>: SOURce {<NRf>[,<NRf>]} :HISTory:PARameter:ITEM<x>:SOURce? <x> = 1 to 4 <NRf> = 1 to 32 [,<NRf>] = 1, 2 (only on a 4-CH module (720254, 720256))
Example	:HISTORY:PARAMETER:ITEM1:SOURCE 1 :HISTORY:PARAMETER:ITEM1:SOURCE? -> :HISTORY:PARAMETER:ITEM1:SOURCE 1
Description	Default value: Installed channel with the smallest channel number

:HISTory:PARameter:ITEM<x>:TYPE?

Function	Queries, for history-waveform parameter searches, the specified parameter's automatically measured item and upper and lower limits.
Syntax	:HISTory:PARameter:ITEM<x>:TYPE? <x> = 1 to 4

:HISTory:PARameter:ITEM<x>:TYPE:<Parameter>

Function	Sets or queries the specified parameter's upper and lower limits for history-waveform parameter searches.
Syntax	:HISTory:PARameter:ITEM<x>:TYPE: <Parameter> {<Voltage>,<Voltage>| <Current>,<Current>|<Time>,<Time>| <Frequency>,<Frequency>|<NRf>,<NRf>} <x> = 1 to 4 <Parameter> = {AMPLitude|AVERage| AVGFreq|AVGPeriod|BWIDth1|BWIDth2| DELay|DUTYcycle|FALL|FREQuency| HIGH|LOW|MAXimum|MIDDle|MINimum| NOVershoot|NWIDth|PERiod|PNUMber| POVershoot|PTOPeak|PWIDth|RISE| RMS|SDEViation|TY1Integ|TY2Integ}
Description	Default value: 0,0 (but NAN,NAN if a query is made using a parameter that is not set or selected)

:HISTory:PARameter:LOGic

Function	Sets or queries the logic to apply to history waveform searches.
Syntax	:HISTory:PARameter:LOGic {AND|OR} :HISTory:PARameter:LOGic? <x> = 1 to 4
Example	:HISTORY:PARAMETER:LOGIC AND :HISTORY:PARAMETER:LOGIC? -> :HISTORY:PARAMETER:LOGIC AND
Description	Default value: AND

:HISTory:PARameter:TRANge

Function	Sets or queries the determination range of history waveform parameter searches.
Syntax	:HISTory:PARameter: TRANge {<NRf>,<NRf>} :HISTory:PARameter:TRANge? <NRf> = –5 to 5div
Example	:HISTORY:PARAMETER:TRANGE –5,5 :HISTORY:PARAMETER:TRANGE? -> :HISTORY:PARAMETER: TRANGE –5.000000000000, 5.000000000000

:HISTory:RECord

Function	Sets or queries the source record.
Syntax	:HISTory:RECord {<NRf>|MINimum} :HISTory:RECord? <NRf> = 0 to –4999 Specify "MINimum" to specify the minimum record number.
Example	:HISTORY:RECORD –1 :HISTORY:RECORD? -> :HISTORY:RECORD –1
Description	Default value: 0

:HISTory:RECord? MINimum

Function	Queries the minimum record number.
Example	:HISTORY:RECORD? MINimum :HISTORY:RECORD –4
Description	• This command returns the record number of the oldest data in the history function. • During measurements, this value is fixed to 0. Use this command when the instrument is not performing measurements.

:HISTory:SMODe

Function	Sets or queries the history waveform search mode.
Syntax	:HISTory:SMODe {OFF|ZONE|PARameter} :HISTory:SMODe?
Example	:HISTORY:SMODE ZONE :HISTORY:SMODE? -> :HISTORY:SMODE ZONE
Description	Default value: OFF

:HISTory:TIME?

Function	Queries the time reference point of the data at the specified record number.
Syntax	:HISTory:TIME? {<NRf>|MINimum} <NRf> = 0 to –4999
Example	:HIST:TIME? –1 -> :HIST:TIME "–0001 10:20:30.04"
Description	If you specify a record number that is lower than MINimum, this command will return "----------."

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:HISTory:ZONE?

Function (Upper-level query) Queries all history waveform zone search settings.

Syntax :HISTory:ZONE?

:HISTory:ZONE:EDIT<x>?

Function (Upper-level query) Queries all settings for the specified search zone.

Syntax :HISTory:ZONE:EDIT<x>?
        <x> = 1 to 4

:HISTory:ZONE:EDIT<x>:CONDition

Function Sets or queries the specified search zone's search condition.

Syntax :HISTory:ZONE:EDIT<x>:
        CONDition {OFF|IN|OUT}
        :HISTory:ZONE:EDIT<x>:CONDition?

Example :HISTORY:ZONE:EDIT1:CONDITION IN
         :HISTORY:ZONE:EDIT1:CONDITION?
         -> :HISTORY:ZONE:EDIT1:CONDITION IN

Description Default value: OFF

:HISTory:ZONE:EDIT<x>:SOURce

Function Sets or queries the specified search zone's source waveform.

Syntax :HISTory:ZONE:EDIT<x>:
        SOURce {<NRf>[,<NRf>]}
        :HISTory:ZONE:EDIT<x>:SOURce?
        <x> = 1 to 4
        <NRf> = 1 to 16 (channel number designation)
        <NRf> = 1 to 64
             (sub channel number designation)
        [,<NRf>] = 1, 2 (only on a 4-CH module (720254, 720256))

Example :HISTORY:ZONE:EDIT1:SOURCE 1
         :HISTORY:ZONE:EDIT1:SOURCE?
         -> :HISTORY:ZONE:EDIT1:SOURCE 1

Description Default value: Installed channel with the smallest channel number

:HISTory:ZONE:LOGic

Function Sets or queries the logic condition of history-waveform zone searches.

Syntax :HISTory:ZONE:LOGic {AND|OR}
        :HISTory:ZONE:LOGic?

Example :HISTORY:ZONE:LOGIC AND
         :HISTORY:ZONE:LOGIC?
         -> :HISTORY:ZONE:LOGIC AND

Description Default value: AND

4.19 IMAGe Group

The commands in this group deal with saving screen capture data. You can perform the same operations and make the same settings and queries that you can by using the SHIFT+SAVE keys on the front panel.

:IMAGe?
Function	(Upper-level query) Queries all screen capture data output settings.
Syntax	:IMAGe?

:IMAGe:BACKground
Function	Sets or queries the screen capture background (png).
Syntax	:IMAGe:BACKground {NORMal|TRANsparent} :IMAGe:BACKground?
Example	:IMAGE:BACKGROUND NORMAL :IMAGE:BACKGROUND? -> :IMAGE:BACKGROUND NORMAL
Description	Default value: NORMal

:IMAGe:COMMent
Function	Sets or queries the screen comment.
Syntax	:IMAGe:COMMent {<String>} :IMAGe:COMMent? <String> = Up to 26 characters
Example	:IMAGE:COMMENT "ABC" :IMAGE:COMMENT? -> :IMAGE:COMMENT "ABC"

:IMAGe:EXECute
Function	Saves the screen capture data.
Syntax	:IMAGe:EXECute
Example	:IMAGE:EXECUTE

:IMAGe:FORMat
Function	Sets or queries the screen capture output format.
Syntax	:IMAGe:FORMat {BMP|JPEG|PNG} :IMAGe:FORMat?
Example	:IMAGE:FORMAT PNG :IMAGE:FORMAT? -> :IMAGE:FORMAT PNG
Description	Default value: PNG

:IMAGe:SAVE?
Function	(Upper-level query) Queries all file output settings.
Syntax	:IMAGe:SAVE?

:IMAGe:SAVE:ANAMing
Function	Sets or queries the setting of the auto naming feature for saving files.
Syntax	:IMAGe:SAVE:ANAMing {DATE|NUMBering|OFF} :IMAGe:SAVE:ANAMing?
Example	:IMAGE:SAVE:ANAMING NUMBERING :IMAGE:SAVE:ANAMING? -> :IMAGE:SAVE:ANAMING NUMBERING
Description	Default value: NUMBering

:IMAGe:SAVE:CDIRectory
Function	Changes the output destination directory.
Syntax	:IMAGe:SAVE:CDIRectory {<String>} <String> = Up to 16 characters
Example	:IMAGW:SAVE:CDIRECTORY "20100318_000"

:IMAGe:SAVE:DRIVe
Function	Sets the output destination medium.
Syntax	:IMAGe:SAVE:DRIVe {IDRive,<NRf>|NETWork|SD|USB,<NRf>,<NRf>}
Example	:IMAGe:SAVE:DRIVe USB,0
Description	See the description of the :FILE[:DIRectory]:DRIVe command.

:IMAGe:SAVE:NAME
Function	Sets or queries the name of the file that will be saved.
Syntax	:IMAGe:SAVE:NAME {<Filename>} :IMAGe:SAVE:NAME?
Example	:IMAGE:SAVE:NAME "ABC" :IMAGE:SAVE:NAME? -> :IMAGe:SAVE:NAME

:IMAGe:SAVE:PATH?
Function	Queries the current directory.
Example	:IMAGE:SAVE:PATH? -> :IMAGE:SAVE:PATH "Path = IDR,0"

:IMAGe:SEND?
Function	Queries the screen capture data.
Syntax	:IMAGe:SEND?
Description	The screen capture data is returned as block data.

:IMAGe:TONE
Function	Sets or queries the color tone of the screen capture data that will be saved.
Description	:IMAGe:TONE {COLor|GRAY|OFF|REVerse} :IMAGe:TONE?
Example	:IMAGE:TONE REVERSE :IMAGE:TONE? -> :IMAGE:TONE REVERSE
Description	Default value: COLor

4.20 INITialize Group

The commands in this group deal with initializing the instrument settings. You can perform the same operations that you can by pressing the SETUP key on the front panel and then the Initialize soft key.

:INITialize:EXECute

Function   Initializes the settings.

Syntax   :INITialize:EXECute [{NSTart}]

Description • Measurement will not start after initialization. This is also true when NSTart is omitted.
• The following settings cannot be reset.
  - Date and time settings
  - Communication settings
  - Language setting (English or Japanese)
  - Environment settings
• An error will occur if the instrument receives this command while SSD recording is being performed. When you want to execute this command, stop SSD recording.
• History data will be cleared.

4.21 LSTart Group

The commands in this group deal with starting the log operation. These commands set the trigger mode to On Start and start waveform acquisition.

:LSTart (Log STart)

Function   Starts waveform acquisition immediately.

Syntax   :LSTart

:LSTart?

Function   Starts waveform acquisition immediately, and
            waits for acquisition to complete.

Syntax   :LSTart?

Example   :LSTart? -> 0

Description When acquisition is complete, this command
            returns 0.

4.22 MATH Group

The commands in this group deal with computations. You can make the same settings and queries that you can by using the MATH key on the front panel. If the selectable range of the time axis is "<NRf> = −5 to 5div," the selectable range varies depending on settings such as the record length. For details, see "Selectable Range of Cursor Positions" under "Notes about Cursor Measurement" in chapter 10 of IM DL950-01EN.

:MATH<x>?
Function	(Upper-level query) Queries all math settings.
Syntax	:MATH<x>?
	<x> = 1 to 8

:MATH<x>:AVALue
Function	Sets or queries the basic Arithmetic scaling coefficient A.
Syntax	:MATH<x>:AVALue {<NRf>}
	:MATH<x>:AVALue?
	<x> = 1 to 8
Example	:MATH1:AVALUE 1.0
	:MATH1:AVALUE?
	-> :MATH1:AVALUE 1.00E+00
Description	Default value: 1.00

:MATH<x>:AVERage?
Function	(Upper-level query) Queries all averaging computation settings.
Syntax	:MATH<x>:AVERage?
	<x> = 1 to 8 (this command performs the same no matter what value you specify)
Description	This command is valid on models with the /G02 option.

:MATH<x>:AVERage:CCOunt
Function	Sets or queries the cycle count of cycle averaging.
Syntax	:MATH<x>:AVERage:CCOunt {<NRf>}
	:MATH<x>:AVERage:CCOunt?
	<x> = 1 to 8 (this command performs the same no matter what value you specify)
	<NRf> = 10 to 1800
Example	:MATH1:AVERAGE:CCOUNT 720
	:MATH1:AVERAGE:CCOUNT?
	-> :MATH1:AVERAGE:CCOUNT 720
Description	• This command is valid on models with the /G02 option.
	• Default value: 720

:MATH<x>:AVERage:COUNt
Function	Sets or queries the average count of linear averaging.
Syntax	:MATH<x>:AVERage:COUNt {<NRf>}
	:MATH<x>:AVERage:COUNt?
	<x> = 1 to 8 (this command performs the same no matter what value you specify)
	<NRf> = 2 to 128 (in 2n steps)
Example	:MATH1:AVERAGE:COUNT 16
	:MATH1:AVERAGE:COUNT?
	-> :MATH1:AVERAGE:COUNT 16
Description	• This command is valid on models with the /G02 option.
	• Default value: 16

:MATH<x>:AVERage:EWEight
Function	Sets or queries the attenuation constant of exponential averaging.
Syntax	:MATH<x>:AVERage:EWEight {<NRf>}
	:MATH<x>:AVERage:EWEight?
	<x> = 1 to 8 (this command performs the same no matter what value you specify)
	<NRf> = 2 to 256 (in 2n steps)
Example	:MATH1:AVERAGE:EWEIGHT 16
	:MATH1:AVERAGE:EWEIGHT?
	-> :MATH1:AVERAGE:EWEIGHT 16
Description	• This command is valid on models with the /G02 option.
	• Default value: 16

:MATH<x>:AVERage:MODE
Function	Sets or queries the averaging mode.
Syntax	:MATH<x>:AVERage:MODE {CYCLe| EXPonent|LINear|OFF|PEAK}
	:MATH<x>:AVERage:MODE?
	<x> = 1 to 8 (this command performs the same no matter what value you specify)
Example	:MATH1:AVERAGE:MODE EXPONENT
	:MATH1:AVERAGE:MODE?
	-> :MATH1:AVERAGE:MODE EXPONENT
Description	• This command is valid on models with the /G02 option.
	• Default value: OFF

:MATH<x>:BINary?
Function	(Upper-level query) Queries all binary computation settings.
Syntax	:MATH<x>:BINary?

**:MATH<x>:BINary:{CHANnel<x>[:SCHanne
l<x>]|MATH<x>}[:THReshold]**

Function   Sets or queries the threshold level of the specified
           channel for binary computations.

Syntax   :MATH<x>:BINary:{CHANnel<x>|
           MATH<x>}[:THReshold]
           {<Voltage>,<Voltage>|
           <Current>,<Current>|<NRf>,<NRf>}
           :MATH<x>:BINary:{CHANnel<x>|
           MATH<x>}[:THReshold]?
           :MATH<x>:BINary:CHANnel<x>:
           SCHannel<x>[:THReshold]
           {<Voltage>,<Voltage>|
           <Current>,<Current>|<NRf>,<NRf>}
           :MATH<x>:BINary:CHANnel<x>:
           SCHannel<x>[:THReshold]?
           MATH<x> = 1 to 8
           CHANnel<x> = 1 to 32
           SCHannel<x> = 1 to 60
                       (modules with sub channels)
           <Voltage, <Current>, and <NRf> = The selectable
              range varies depending on settings such
              as the range and offset. For details, see the
              instrument's User's Manual.
           For settings other than MATH<x>,
              <NRf> = −10 to 10 div (or an equivalent value)
           For MATH<x>,
              <NRf> = 5 to 5 div (in 0.01 div steps)

Example   :MATH1:BINARY:CHANNEL1:THRESHOLD 1,0
           :MATH1:BINARY:CHANNEL1:THRESHOLD?
           -> :MATH1:BINARY:CHANNEL1:
              THRESHOLD 1.000000E+00,
              0.000000E+00

Description Default value: 0

:MATH<x>:BVALue

Function   Sets or queries the basic Arithmetic scaling
           coefficient B.

Syntax   :MATH<x>:BVALue {<NRf>}
           :MATH<x>:BVALue?
           <x> = 1 to 8

Example   :MATH1:BVALUE 1.0
           :MATH1:BVALUE?
           -> :MATH1:BVALUE 1.00E+00

Description Default value: 1.00

:MATH<x>:CONStant<x>

Function   Sets or queries a constant for user-defined
           computation.

Syntax   :MATH<x>:CONStant<x> {<NRf>}
           :MATH<x>:CONStant<x>?
           MATH<x> = 1 to 8
           CONStant<x> = 1 to 8
           <NRf> = −9.9999E+30 to +9.9999E+30

Example   :MATH1:CONSTANT1 1
           :MATH1:CONSTANT1?
           -> :MATH1:CONSTANT1 1

Description • This command is valid on models with the /G02
              option.
            • Default value: 1

:MATH<x>:CVALue

Function   Sets or queries the basic Arithmetic scaling
           coefficient B.

Syntax   :MATH<x>:CVALue {<NRf>}
           :MATH<x>:CVALue?
           <x> = 1 to 8

Example   :MATH1:CVALUE 1.0
           :MATH1:CVALUE?
           -> :MATH1:CVALUE 1.00E+00

Description Default value: 0.00

:MATH<x>:DEFine

Function   Sets or queries an expression for user-defined
           computation.

Syntax   :MATH<x>:DEFine {<String>}
           :MATH<x>:DEFine?
           <x> = 1 to 8
           <String> = Up to 80 characters

Example   :MATH1:DEFINE "PS(C1)"
           :MATH1:DEFINE?
           -> :MATH1:DEFINE "PS(C1)"

Description • This command is valid on models with the /G02
              option.
            • If OPERation is set to a value other than
              USERdefine, this query will return the
              OPERation setting.

**:MATH<x>:ESHift:{CHANnel<x>[:SCHanne
l<x>]|[MATH<x>][:COUNt]**

Function   Sets or queries the amount of phase shift in the
           Shift computation when an external clock is used.

Syntax   :MATH<x>:ESHift:{CHANnel<x>|
           MATH<x>}[:COUNt] {<NRf>}
           :MATH<x>:ESHift:CHANnel<x>:
           SCHannel<x>}[:COUNt] {<NRf>}
           :MATH<x>:ESHift:{CHANnel<x>|
           MATH<x>}[:COUNt]?
           :MATH<x>:ESHift:CHANnel<x>:
           SCHannel<x>}[:COUNt]?
           MATH<x> = 1 to 8
           CHANnel<x> = 1 to 32
           SCHannel<x> = 1 to 60
                       (modules with sub channels)
           <NRf> = ±(record length/2). The resolution is 1.

Example   :MATH1:ESHIFT:CHANNEL1:COUNT 10
           :MATH1:ESHIFT:CHANNEL1:COUNT?
           -> :MATH1:ESHIFT:CHANNEL1:COUNT 10

:MATH<x>:FILTer<x>?

Function   (Upper-level query) Queries all digital filter
           settings.

Syntax   :MATH<x>:FILTer<x>?
           MATH<x> = 1 to 8 (this command performs the
           same no matter what value you specify)
           FILTer<x> = 1, 2

Description This command is valid on models with the /G02
            option.

:MATH\<x\>:FILTer\<x\>:BAND

Function   Sets or queries a digital filter band.

Syntax   `:MATH<x>:FILTer<x>:BAND {BPASs|`
`HPASs|LPASs}`
`:MATH<x>:FILTer<x>:BAND?`
MATH\<x\> = 1 to 8 (this command performs the same no matter what value you specify)
FILTer\<x\> = 1, 2

Example   `:MATH1:FILTER1:BAND LPASS`
`:MATH1:FILTER1:BAND?`
`-> :MATH1:FILTER1:BAND LPASS`

Description • This command is valid on models with the /G02 option.
 • You can only specify the GAUSs parameter when the band is set to LPASs.
 • Default value: LPAS

:MATH\<x\>:FILTer\<x\>:CUToff\<x\>

Function   Sets or queries a cutoff frequency of a digital filter.

Syntax   `:MATH<x>:FILTer<x>:CUToff<x> {<NRf>}`
`:MATH<x>:FILTer<x>:CUToff<x>?`
MATH\<x\> = 1 to 8 (this command performs the same no matter what value you specify)
FILTer\<x\> = 1, 2
CUToff\<x\> = 1, 2
\<NRf\> = 2 to 30 % (in 0.2 steps)

Example   `:MATH1:FILTER1:CUTOFF1 10.0`
`:MATH1:FILTER1:CUTOFF1?`
`-> :MATH1:FILTER1:CUTOFF1 10.0`

Description • This command is valid on models with the /G02 option.
 • Default value: 10.0

:MATH\<x\>:FILTer\<x\>:TYPE

Function   Sets or queries the type of a digital filter.

Syntax   `:MATH<x>:FILTer<x>:TYPE {GAUSs|IIR|`
`SHARp}`
`:MATH<x>:FILTer<x>:TYPE?`
MATH\<x\> = 1 to 8 (this command performs the same no matter what value you specify)
FILTer\<x\> = 1, 2

Example   `:MATH1:FILTER1:TYPE GAUSS`
`:MATH1:FILTER1:TYPE?`
`-> :MATH1:FILTER1:TYPE GAUSS`

Description • This command is valid on models with the /G02 option.
 • Default value: GAUSs

:MATH\<x\>:LABel

Function   Sets or queries a computed waveform label.

Syntax   `:MATH<x>:LABel {<String>}`
`:MATH<x>:LABel?`
\<x\> = 1 to 8 (this command performs the same no matter what value you specify)
\<String\> = Up to 16 characters

Example   `:MATH1:LABEL "ABC"`
`:MATH1:LABEL? -> :MATH1:LABEL "ABC"`

:MATH\<x\>:MODE

Function   Sets or queries whether the instrument is in math mode.

Syntax   `:MATH<x>:MODE {<Boolean>}`
`:MATH<x>:MODE?`
\<x\> = 1 to 8 (this command performs the same no matter what value you specify)

Example   `:MATH1:MODE ON`
`:MATH1:MODE? -> :MATH1:MODE 1`

Description   Default value: OFF

:MATH\<x\>:MREFerence

Function   Sets or queries the computation range.

Syntax   `:MATH<x>:MREFerence {<NRf>,<NRf>}`
`:MATH<x>:MREFerence?`
\<x\> = 1 to 8 (this command performs the same no matter what value you specify)
\<NRf\> = –5 to 5div

Example   `:MATH1:MREFERENCE -5,5`
`:MATH1:MREFERENCE?`
`-> :MATH1:MREFERENCE -5.000000000000,`
`5.000000000000`

Description   Default value: -5 to 5

:MATH\<x\>:OPERation

Function   Sets or queries the computation type.

Syntax   `:MATH<x>:OPERation {FPLus|FMINus|`
`FMULtiple|BINary|FDIVide|SHIFt|OFF|`
`USERdefine}`
`:MATH<x>:OPERation?`
\<x\> = 1 to 8

Example   `:MATH1:OPERATION PLUS`
`:MATH1:OPERATION?`
`-> :MATH1:OPERATION PLUS`

Description • The USERdefine parameter is valid on models with the /G02 option.
 • Default value: OFF

:MATH\<x\>:SCALe?

Function   (Upper-level query) Queries all scaling settings.

Syntax   `:MATH<x>:SCALe?`
\<x\> = 1 to 8

:MATH\<x\>:SCALe:MODE

Function   Sets or queries a scale mode.

Syntax   `:MATH<x>:SCALe:MODE {AUTO|MANual}`
`:MATH<x>:SCALe:MODE?`
\<x\> = 1 to 8

Example   `:MATH1:SCALE:MODE AUTO`
`:MATH1:SCALE:MODE?`
`-> :MATH1:SCALE:MODE AUTO`

Description   Default value: AUTO

:MATH<x>:SCALe:VALue

Function	Sets or queries a set of upper and lower limits for manual scaling.
Syntax	:MATH<x>:SCALe:VALue {<NRf>,<NRf>}
	:MATH<x>:SCALe:VALue?
	<x> = 1 to 8
	<NRf> = −9.9999E+30 to +9.9999E+30
Example	:MATH1:SCALE:VALUE 1,−1
	:MATH1:SCALE:VALUE?
	-> :MATH1:SCALE:
	VALUE 1.00000E+00,−1.00000E+00
Description	Default value: 1, -1

:MATH<x>:SHIFt:{CHANnel<x>[:SCHannel<x>]|MATH<x>}[:TIME]

Function	Sets or queries the amount of phase shift in the Shift computation when the internal clock is used.
Syntax	:MATH<x>:SHIFt:{CHANnel<x>|MATH<x>}[:TIME] {<Time>}
	:MATH<x>:SHIFt:CHANnel<x>:SCHannel<x>[:TIME] {<Time>}
	:MATH<x>:SHIFt:{CHANnel<x>|MATH<x>}[:TIME]?
	:MATH<x>:SHIFt:CHANnel<x>:SCHannel<x>[:TIME]?
	MATH<x> = 1 to 8
	CHANnel<x> = 1 to 32
	SCHannel<x> = 1 to 60 (modules with sub channels)
	<Time> = 0 to 2592000 s (720 hours) ± (T/Div × 5)
	Step = 1/sample rate
Example	:MATH1:SHIFT:CHANNEL1:TIME −0.001
	:MATH1:SHIFT:CHANNEL1:TIME?
	-> :MATH1:SHIFT:CHANNEL1:
	TIME −1.000000000E−03
Description	Default value: 0s

:MATH<x>:SOURce<x>

Function	Sets or queries a sub channel's computation type.
Syntax	:MATH<x>:SOURce<x> {<NRf>[,<NRf>]|MATH<x>}
	:MATH<x>:SOURce<x>?
	MATH<x> = 1 to 8
	SOURce<x> = 1, 2
Description	You cannot use this command when no modules are installed.

:MATH<x>:UNIT

Function	Sets or queries a unit that is attached to computation results.
Syntax	:MATH<x>:UNIT {<String>}
	:MATH<x>:UNIT?
	<x> = 1 to 8
	<String> = Up to 4 characters
Example	:MATH1:UNIT "UU"
	:MATH1:UNIT? -> :MATH1:UNIT "UU"

4

Commands

4.23 MEASure Group

The commands in this group deal with the automated measurement of waveform parameters. You can make the same settings and queries (of settings and measured values) that you can by using the MEASURE key on the front panel. If the selectable range of the time axis is "<NRf> = −5 to 5div," the selectable range varies depending on settings such as the record length. For details, see "Selectable Range of Cursor Positions" under "Notes about Cursor Measurement" in chapter 10 of IM DL950-01EN.

:MEASure?
Function	(Upper-level query) Queries all the settings for automated measurement of waveform parameters.
Syntax	:MEASure?

:MEASure:AREA2:MODE
Function	Sets or queries the on/off state of the automated measurement feature of area 2.
Syntax	:MEASure:AREA2:MODE {<Boolean>} :MEASure:AREA2:MODE?
Example	:MEASURE:AREA2:MODE 1 :MEASURE:AREA2:MODE? -> :MEASURE:AREA2:MODE 1

:MEASure:CHANnel<x1>:BIT<x2>?
Function	(Upper-level query) Queries all settings for the specified channel and specified bit.
Syntax	:MEASure:CHANnel<x1>:BIT<x2>? <x1> = 1 to 16 <x2> = 1 to 8
Description	This command is valid only on logic module channels.

:MEASure:CHANnel<x1>:BIT<x2>:ALL
Function	Sets the specified bit of the specified channel to on or off at once.
Syntax	:MEASure:CHANnel<x1>:BIT<x2>:ALL {<Boolean>} <x1> = 1 to 16 <x2> = 1 to 8
Example	:MEASURE:CHANNEL1:BIT1:ALL ON
Description	This command is valid only on logic module channels.

:MEASure:CHANnel<x1>:BIT<x2>:AREA2:ALL
Function	Sets the specified bit area 2 of the specified channel to on or off at once.
Syntax	:MEASure:CHANnel<x1>:BIT<x2>:AREA2:ALL {<Boolean>} <x1> = 1 to 16 <x2> = 1 to 8
Example	:MEASURE:CHANNEL1:BIT1:AREA2:ALL ON
Description	This command is valid only on logic module channels.

:MEASure:CHANnel<x1>:BIT<x2>:AREA2:COPY
Function	Copies the on/off setting of the specified bit area 2 of the specified channel to another specified channel.
Syntax	:MEASure:CHANnel<x1>:BIT<x2>:AREA2:COPY <x1> = 1 to 16 <x2> = 1 to 8
Example	:MEASURE:CHANNEL1:BIT1:AREA2:COPY
Description	This command is valid only on logic module channels.

:MEASure:CHANnel<x1>:BIT<x2>:AREA2:DELay?
Function	(Upper-level query) Queries all settings related to the delay of the specified bit area 2 of the specified channel on a logic module.
Syntax	:MEASure:CHANnel<x1>:BIT<x2>:AREA2:DELay? <x1> = 1 to 16 <x2> = 1 to 8

:MEASure:CHANnel<x1>:BIT<x2>:AREA2:DELay:COUNt?
Function	Queries the statistics count of the delay of bit area 2 of the specified channel.
Syntax	:MEASure:CHANnel<x1>:BIT<x2>:AREA2:DELay:COUNt? <x1> = 1 to 16 <x2> = 1 to 8
Example	:MEASURE:CHANNEL1:BIT1:AREA2:DELAY:COUNT? -> :MEASURE:CHANNEL1:BIT1:AREA2:DELAY:COUNT 10
Description	This command is valid only on logic module channels.

`:MEASure:CHANnel<x1>:BIT<x2>:AREA2:DELay:{MAXimum|MEAN|MINimum|SDEViation}?`

Function Queries the statistical value of the delay of bit area 2 of the specified channel.

Syntax `:MEASure:CHANnel<x1>:BIT<x2>:AREA2:DELay:{MAXimum|MEAN|MINimum|SDEViation}?`
`<x1> = 1 to 16`
`<x2> = 1 to 8`

Example `:MEASURE:CHANNEL1:BIT1:AREA2:DELAY:MEAN?`
`-> :MEASURE:CHANNEL1:BIT1:AREA2:DELAY:MEAN 6.6666667E-06`

Description This command is valid only on logic module channels.

`:MEASure:CHANnel<x1>:BIT<x2>:AREA2:DELay:MEASure?`

Function (Upper-level query) Queries all settings related to the source waveform used to measure the delay of the specified bit area 2 of the specified channel on a logic module.

Syntax `:MEASure:CHANnel<x1>:BIT<x2>:AREA2:DELay:MEASure?`

`:MEASure:CHANnel<x1>:BIT<x2>:AREA2:DELay:MEASure:COUNt`

Function Sets or queries the edge detection count of the source waveform used to measure the delay of bit area 2 of the specified channel.

Syntax `:MEASure:CHANnel<x1>:BIT<x2>:AREA2:DELay:MEASure:COUNt {<NRf>}`
`:MEASure:CHANnel<x1>:BIT<x2>:AREA2:DELay:MEASure:COUNt?`
`<x1> = 1 to 16`
`<x2> = 1 to 8`
`<NRf> = 1 to 9`

Example `:MEASURE:CHANNEL1:BIT1:AREA2:DELAY:MEASURE:COUNT 2`
`:MEASURE:CHANNEL1:BIT1:AREA2:DELAY:MEASURE:COUNT?`
`-> :MEASURE:CHANNEL1:BIT1:AREA2:DELAY:MEASURE:COUNT 2`

Description • This command is valid only on logic module channels.
• Default value: 1

`:MEASure:CHANnel<x1>:BIT<x2>:AREA2:DELay:MEASure:SLOPe`

Function Sets or queries the edge polarity of the source waveform used to measure the delay of bit area 2 of the specified channel.

Syntax `:MEASure:CHANnel<x1>:BIT<x2>:AREA2:DELay:MEASure:SLOPe {RISE|FALL}`
`:MEASure:CHANnel<x1>:BIT<x2>:AREA2:DELay:MEASure:SLOPe?`
`<x1> = 1 to 16`
`<x2> = 1 to 8`

Example `:MEASURE:CHANNEL1:BIT1:AREA2:DELAY:MEASURE:SLOPE FALL`
`:MEASURE:CHANNEL1:BIT1:AREA2:DELAY:MEASURE:SLOPE?`
`-> :MEASURE:CHANNEL1:BIT1:AREA2:DELAY:MEASURE:SLOPE FALL`

Description • This command is valid only on logic module channels.
• Default value: RISE

`:MEASure:CHANnel<x1>:BIT<x2>:AREA2:DELay:REFerence?`

Function (Upper-level query) Queries all settings related to the reference waveform used to measure the delay of the specified bit area 2 of the specified channel on a logic module.

Syntax `:MEASure:CHANnel<x1>:BIT<x2>:AREA2:DELay:REFerence?`
`<x1> = 1 to 16`
`<x2> = 1 to 8`

`:MEASure:CHANnel<x1>:BIT<x2>:AREA2:DELay:REFerence:COUNt`

Function Sets or queries the edge detection count of the reference waveform used to measure the delay of bit area 2 of the specified channel.

Syntax `:MEASure:CHANnel<x1>:BIT<x2>:AREA2:DELay:REFerence:COUNt {<NRf>}`
`:MEASure:CHANnel<x1>:BIT<x2>:AREA2:DELay:REFerence:COUNt?`
`<x1> = 1 to 16`
`<x2> = 1 to 8`
`<NRf> = 1 to 9`

Example `:MEASURE:CHANNEL1:BIT1:AREA2:DELAY:REFERENCE:COUNT 2`
`:MEASURE:CHANNEL1:BIT1:AREA2:DELAY:REFERENCE:COUNT?`
`-> :MEASURE:CHANNEL1:BIT1:AREA2:DELAY:REFERENCE:COUNT 2`

Description • This command is valid only on logic module channels.
• Default value: 1

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:MEASure:CHANnel<x1>:BIT<x2>:AREA2:DELay:REFerence:LOGic:BIT

Function	Sets or queries the reference waveform bit used to measure the delay of bit area 2 of the specified channel.
Syntax	:MEASure:CHANnel<x1>:BIT<x2>:AREA2:DELay:REFerence:LOGic:BIT {<NRf>}
	:MEASure:CHANnel<x1>:BIT<x2>:AREA2:DELay:REFerence:LOGic:BIT?
	<x1> = 1 to 16
	<x2> = 1 to 8
	<NRf> = 1 to 8
Example	:MEASURE:CHANNEL1:BIT1:AREA2:DELAY:REFERENCE:LOGIC:BIT 1
	:MEASURE:CHANNEL1:BIT1:AREA2:DELAY:REFERENCE:LOGIC:BIT?
	-> :MEASURE:CHANNEL1:BIT1:AREA2:DELAY:REFERENCE:LOGIC:BIT 1
Description	• This command is valid only on logic module channels.
	• :MEASure:CHANnel<x1>:BIT<x2>:AREA2:
	This command is valid when the channel specified by DELay:REFerence:TRACe is a logic module channel.
	• Default value: 1

:MEASure:CHANnel<x1>:BIT<x2>:AREA2:DELay:REFerence:SLOPe

Function	Sets or queries the edge polarity of the reference waveform used to measure the delay of bit area 2 of the specified channel.
Syntax	:MEASure:CHANnel<x1>:BIT<x2>:AREA2:DELay:REFerence:SLOPe {RISE|FALL}
	:MEASure:CHANnel<x1>:BIT<x2>:AREA2:DELay:REFerence:SLOPe?
	<x1> = 1 to 16
	<x2> = 1 to 8
Example	:MEASURE:CHANNEL1:BIT1:AREA2:DELAY:REFERENCE:SLOPE FALL
	:MEASURE:CHANNEL1:BIT1:AREA2:DELAY:REFERENCE:SLOPE?
	-> :MEASURE:CHANNEL1:BIT1:AREA2:DELAY:REFERENCE:SLOPE FALL
Description	• This command is valid only on logic module channels.
	• Default value: RISE

:MEASure:CHANnel<x1>:BIT<x2>:AREA2:DELay:REFerence:SOURce

Function	Sets or queries whether to set the reference for measuring the delay of bit area 2 of the specified channel to a trigger point or to a waveform.
Syntax	:MEASure:CHANnel<x1>:BIT<x2>:AREA2:DELay:REFerence:SOURce {TRACe|TRIGger}
	:MEASure:CHANnel<x1>:BIT<x2>:AREA2:DELay:REFerence:SOURce?
	<x1> = 1 to 16
	<x2> = 1 to 8
Example	:MEASURE:CHANNEL1:BIT1:AREA2:DELAY:REFERENCE:SOURCE TRACE
	:MEASURE:CHANNEL1:BIT1:AREA2:DELAY:REFERENCE:SOURCE?
	-> :MEASURE:CHANNEL1:BIT1:AREA2:DELAY:REFERENCE:SOURCE TRACE
Description	• This command is valid only on logic module channels.
	• Default value: TRACe

:MEASure:CHANnel<x1>:BIT<x2>:AREA2:DELay:REFerence:TRACe

Function	Sets or queries the reference waveform trace used to measure the delay of bit area 2 of the specified channel.
Syntax	:MEASure:CHANnel<x1>:BIT<x2>:AREA2:DELay:REFerence:TRACe{<NRf>[,<NRf>]|MATH<x3>}
	:MEASure:CHANnel<x1>:BIT<x2>:AREA2:DELay:REFerence:TRACe?
	<x1> = 1 to 16
	<x2> = 1 to 8
	<x3> = 1 to 16
	<NRf> = 1 to 16
Example	:MEASURE:CHANNEL1:BIT1:AREA2:DELAY:REFERENCE:TRACE 1
	:MEASURE:CHANNEL1:BIT1:AREA2:DELAY:REFERENCE:TRACE?
	-> :MEASURE:CHANNEL1:BIT1:AREA2:DELAY:REFERENCE:TRACE 1
Description	• This command is valid only on logic module channels.
	• Default value: 1

:MEASure:CHANnel<x1>:BIT<x2>:AREA2:DELay:STATe

Function   Sets or queries the display format of the delay of bit area 2 of the specified channel.

Syntax   :MEASure:CHANnel<x1>:BIT<x2>:AREA2:DELay:STATe {TIME|OFF|DEGRee}
:MEASure:CHANnel<x1>:BIT<x2>:AREA2:DELay:STATe?
<x1> = 1 to 16
<x2> = 1 to 8

Example   :MEASURE:CHANNEL1:BIT1:AREA2:DELAY:STATE TIME
:MEASURE:CHANNEL1:BIT1:AREA2:DELAY:STATE?
-> :MEASURE:CHANNEL1:BIT1:AREA2:DELAY:STATE TIME

Description • This command is valid only on logic module channels.
• Default value: OFF

:MEASure:CHANnel<x1>:BIT<x2>:AREA2:DELay:VALue?

Function   Queries the delay measurement result of bit area 2 of the specified channel.

Syntax   :MEASure:CHANnel<x1>:BIT<x2>:AREA2:DELay:VALue? {<NRf>}
<x1> = 1 to 16
<x2> = 1 to 8
<NRf> = 1 to the number of history entries (can be omitted)

Example   :MEASURE:CHANNEL1:BIT1:AREA2:DELAY:VALUE?
-> :MEASURE:CHANNEL1:BIT1:AREA2:DELAY:VALUE 0.000000E+00

Description   This command is valid only on logic module channels.

:MEASure:CHANnel<x1>:BIT<x2>:CDEStination

Function   Sets or queries whether the copy destination channel is on or off for when parameter measurement items are copied between channels and bits.

Syntax   :MEASure:CHANnel<x1>:BIT<x2>:CDEStination {<Boolean>}
<x1> = 1 to 16
<x2> = 1 to 8

Example   :MEASURE:CHANNEL1:BIT1:CDESTINATION ON

Description • This command is valid only on logic module channels.
• Default value: ON

:MEASure:CHANnel<x1>:BIT<x2>:COPY

Function   Copies the on/off setting of the specified bit of the specified channel to another specified channel.

Syntax   :MEASure:CHANnel<x1>:BIT<x2>:COPY
<x1> = 1 to 16
<x2> = 1 to 8

Example   :MEASURE:CHANNEL1:BIT1:COPY

Description   This command is valid only on logic module channels.

:MEASure:CHANnel<x1>:BIT<x2>:DELay?

Function   (Upper-level query) Queries all settings related to the delay of the specified bit of the specified channel on a logic module.

Syntax   :MEASure:CHANnel<x1>:BIT<x2>:DELay?

:MEASure:CHANnel<x1>:BIT<x2>:DELay:COUNt?

Function   Queries the statistics count of the delay of the specified bit of the specified channel.

Syntax   :MEASure:CHANnel<x1>:BIT<x2>:DELay:COUNt?
<x1> = 1 to 16
<x2> = 1 to 8

Example   :MEASURE:CHANNEL1:BIT1:DELAY:COUNT?
-> :MEASURE:CHANNEL1:BIT1:DELAY:COUNT 10

Description   This command is valid only on logic module channels.

:MEASure:CHANnel<x1>:BIT<x2>:DELay:{MAXimum|MEAN|MINimum|SDEViation}?

Function   Queries the statistical value of the delay of the specified bit of the specified channel.

Syntax   :MEASure:CHANnel<x1>:BIT<x2>:DELay:{MAXimum|MEAN|MINimum|SDEViation}?
<x1> = 1 to 16
<x2> = 1 to 8

Example   :MEASURE:CHANNEL1:BIT1:DELAY:MEAN?
-> :MEASURE:CHANNEL1:BIT1:DELAY:MEAN 6.6666667E-06

Description   This command is valid only on logic module channels.

:MEASure:CHANnel<x1>:BIT<x2>:DELay:MEASure?

Function   (Upper-level query) Queries all settings related to the source waveform used to measure the delay of the specified bit of the specified channel on a logic module.

Syntax   :MEASure:CHANnel<x1>:BIT<x2>:DELay:MEASure?

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:MEASure:CHANnel<x1>:BIT<x2>:DELay:MEASure:COUNt

Function   Sets or queries the edge detection count of the source waveform used to measure the delay of the specified bit of the specified channel.

Syntax   `:MEASure:CHANnel<x1>:BIT<x2>:DELay:MEASure:COUNt {<NRf>}`
`:MEASure:CHANnel<x1>:BIT<x2>:DELay:MEASure:COUNt?`
`<x1> = 1 to 16`
`<x2> = 1 to 8`
`<NRf> = 1 to 9`

Example   `:MEASURE:CHANNEL1:BIT1:DELAY:MEASURE:COUNT 2`
`:MEASURE:CHANNEL1:BIT1:DELAY:MEASURE:COUNT?`
`-> :MEASURE:CHANNEL1:BIT1:DELAY:MEASURE:COUNT 2`

Description   • This command is valid only on logic module channels.
     • Default value: 1

:MEASure:CHANnel<x1>:BIT<x2>:DELay:MEASure:SLOPe

Function   Sets or queries the edge polarity of the source waveform used to measure the delay of the specified bit of the specified channel.

Syntax   `:MEASure:CHANnel<x1>:BIT<x2>:DELay:MEASure:SLOPe {RISE|FALL}`
`:MEASure:CHANnel<x1>:BIT<x2>:DELay:MEASure:SLOPe?`
`<x1> = 1 to 16`
`<x2> = 1 to 8`

Example   `:MEASURE:CHANNEL1:BIT1:DELAY:MEASURE:SLOPE FALL`
`:MEASURE:CHANNEL1:BIT1:DELAY:MEASURE:SLOPE?`
`-> :MEASURE:CHANNEL1:BIT1:DELAY:MEASURE:SLOPE FALL`

Description   • This command is valid only on logic module channels.
     • Default value: RISE

:MEASure:CHANnel<x1>:BIT<x2>:DELay:REFerence?

Function   (Upper-level query) Queries all settings related to the reference waveform used to measure the delay of the specified bit of the specified channel on a logic module.

Syntax   `:MEASure:CHANnel<x1>:BIT<x2>:DELay:REFerence?`

:MEASure:CHANnel<x1>:BIT<x2>:DELay:REFerence:COUNt

Function   Sets or queries the edge detection count of the reference waveform used to measure the delay of the specified bit of the specified channel.

Syntax   `:MEASure:CHANnel<x1>:BIT<x2>:DELay:REFerence:COUNt {<NRf>}`
`:MEASure:CHANnel<x1>:BIT<x2>:DELay:REFerence:COUNt?`
`<x1> = 1 to 16`
`<x2> = 1 to 8`
`<NRf> = 1 to 9`

Example   `:MEASURE:CHANNEL1:BIT1:DELAY:REFERENCE:COUNT 2`
`:MEASURE:CHANNEL1:BIT1:DELAY:REFERENCE:COUNT?`
`-> :MEASURE:CHANNEL1:BIT1:DELAY:REFERENCE:COUNT 2`

Description   • This command is valid only on logic module channels.
     • Default value: 1

:MEASure:CHANnel<x1>:BIT<x2>:DELay:REFerence:LOGic:BIT

Function   Sets or queries the reference waveform bit used to measure the delay of the specified bit of the specified channel.

Syntax   `:MEASure:CHANnel<x1>:BIT<x2>:DELay:REFerence:BIT {<NRf>}`
`:MEASure:CHANnel<x1>:BIT<x2>:DELay:REFerence:BIT?`
`<x1> = 1 to 16`
`<x2> = 1 to 8`
`<NRf> = 1 to 8`

Example   `:MEASURE:CHANNEL1:BIT1:DELAY:REFERENCE:BIT 1`
`:MEASURE:CHANNEL1:BIT1:DELAY:REFERENCE:BIT?`
`-> :MEASURE:CHANNEL1:BIT1:DELAY:REFERENCE:BIT 1`

Description   • This command is valid only on logic module channels.
     • This command is valid when the channel specified by `:MEASure:CHANnel<x1>:BIT<x2>:DELay:REFerence:TRACe` is a logic module channel.
     • Default value: 1

:MEASure:CHANnel\<x1>:BIT\<x2>:DELay:REFerence:SLOPe

Function   Sets or queries the edge polarity of the reference waveform used to measure the delay of the specified bit of the specified channel.

Syntax   :MEASure:CHANnel\<x1>:BIT\<x2>:DELay:REFerence:SLOPe {RISE|FALL}
:MEASure:CHANnel\<x1>:BIT\<x2>:DELay:REFerence:SLOPe?
\<x1> = 1 to 16
\<x2> = 1 to 8

Example   :MEASURE:CHANNEL1:BIT1:DELAY:REFERENCE:SLOPE FALL
:MEASURE:CHANNEL1:BIT1:DELAY:REFERENCE:SLOPE?
-> :MEASURE:CHANNEL1:BIT1:DELAY:REFERENCE:SLOPE FALL

Description • This command is valid only on logic module channels.
• Default value: RISE

:MEASure:CHANnel\<x1>:BIT\<x2>:DELay:REFerence:SOURce

Function   Sets or queries whether to set the reference for measuring the delay of the specified bit of the specified channel to a trigger point or to a waveform.

Syntax   :MEASure:CHANnel\<x1>:BIT\<x2>:DELay:REFerence:SOURce {TRACe|TRIGger}
:MEASure:CHANnel\<x1>:BIT\<x2>:DELay:REFerence:SOURce?
\<x1> = 1 to 16
\<x2> = 1 to 8

Example   :MEASURE:CHANNEL1:BIT1:DELAY:REFERENCE:SOURCE TRACE
:MEASURE:CHANNEL1:BIT1:DELAY:REFERENCE:SOURCE?
-> :MEASURE:CHANNEL1:BIT1:DELAY:REFERENCE:SOURCE TRACE

Description • This command is valid only on logic module channels.
• Default value: TRACe

:MEASure:CHANnel\<x1>:BIT\<x2>:DELay:REFerence:TRACe

Function   Sets or queries the reference waveform trace used to measure the delay of the specified bit of the specified channel.

Syntax   :MEASure:CHANnel\<x1>:BIT\<x2>:DELay:REFerence:TRACe {\<NRf>[,\<NRf>]|MATH\<x3>}
:MEASure:CHANnel\<x1>:BIT\<x2>:DELay:REFerence:TRACe?
\<x1> = 1 to 16
\<x2> = 1 to 8
\<x3> = 1 to 16
\<NRf> = 1 to 16

Example   :MEASURE:CHANNEL1:BIT1:DELAY:REFERENCE:TRACE 1
:MEASURE:CHANNEL1:BIT1:DELAY:REFERENCE:TRACE?
-> :MEASURE:CHANNEL1:BIT1:DELAY:REFERENCE:TRACE 1

Description • This command is valid only on logic module channels.
• Default value: 1

:MEASure:CHANnel\<x1>:BIT\<x2>:DELay:STATe

Function   Sets or queries the display format of the delay of the specified bit of the specified channel.

Syntax   :MEASure:CHANnel\<x1>:BIT\<x2>:DELay:STATe {TIME|OFF|DEGRee}
:MEASure:CHANnel\<x1>:BIT\<x2>:DELay:STATe?
\<x1> = 1 to 16
\<x2> = 1 to 8

Example   :MEASURE:CHANNEL1:BIT1:DELAY:STATE TIME
:MEASURE:CHANNEL1:BIT1:DELAY:STATE?
-> :MEASURE:CHANNEL1:BIT1:DELAY:STATE TIME

Description • This command is valid only on logic module channels.
• Default value: OFF

:MEASure:CHANnel\<x1>:BIT\<x2>:DELay:VALue?

Function   Queries the delay measurement result of the specified bit of the specified channel.

Syntax   :MEASure:CHANnel\<x1>:BIT\<x2>:DELay:VALue? {\<NRf>}
\<x1> = 1 to 16
\<x2> = 1 to 8
\<NRf> = 1 to the number of history entries (can be omitted)

Example   :MEASURE:CHANNEL1:BIT1:DELAY:VALUE?
-> :MEASURE:CHANNEL1:BIT1:DELAY:VALUE 0.000000E+00

Description This command is valid only on logic module channels.

:MEASure:CHANnel<x1>:BIT<x2>:<Parameter>?

Function (Upper-level query) Queries all settings related to the waveform parameter of the specified bit of the specified channel on a logic module.

Syntax :MEASure:CHANnel<x1>:BIT<x2>:
<Parameter>?
<Parameter> = {AVGFreq|DUTYcycle|
FREQuency|PERiod|PNUMber}

:MEASure:CHANnel<x1>:BIT<x2>:<Parameter>:COUNt?

Function Queries the waveform parameter statistics count of the specified bit of the specified channel.

Syntax :MEASure:CHANnel<x1>:BIT<x2>:
<Parameter>:COUNt?
<x1> = 1 to 16
<x2> = 1 to 8
<Parameter> = {AVGFreq|DUTYcycle|
FREQuency|PERiod|PNUMber}

Example :MEASURE:CHANNEL1:BIT1:FREQUENCY:
COUNT?
-> :MEASURE:CHANNEL1:BIT1:FREQUENCY:
COUNT 10

Description This command is valid only on logic module channels.

:MEASure:CHANnel<x1>:BIT<x2>:<Parameter>:{MAXimum|MEAN|MINimum|SDEViation}?

Function Queries the waveform parameter statistics value of the specified bit of the specified channel.

Syntax :MEASure:CHANnel<x1>:BIT<x2>:
<Parameter>:{MAXimum|MEAN|MINimum|
SDEViation}?
<x1> = 1 to 16
<x2> = 1 to 8
<Parameter> = {AVGFreq|DUTYcycle|
FREQuency|PERiod|PNUMber}

Example :MEASURE:CHANNEL1:BIT1:FREQUENCY:
MEAN?
-> :MEASURE:CHANNEL1:BIT1:FREQUENCY:
MEAN 50.00000E+00

Description This command is valid only on logic module channels.

:MEASure:CHANnel<x1>:BIT<x2>:<Parameter>:STATe

Function Sets or queries the on/off state of the waveform parameter of the specified bit of the specified channel.

Syntax :MEASure:CHANnel<x1>:BIT<x2>:
<Parameter>:STATe {<Boolean>}
:MEASure:CHANnel<x1>:BIT<x2>:
<Parameter>:STATe?
<x1> = 1 to 16
<x2> = 1 to 8
<Parameter> = {AVGFreq|DUTYcycle|
FREQuency|PERiod|PNUMber}

Example :MEASURE:CHANNEL1:BIT1:FREQUENCY:
STATE ON
:MEASURE:CHANNEL1:BIT1:FREQUENCY:
STATE?
-> :MEASURE:CHANNEL1:BIT1:FREQUENCY:
STATE ON

Description • This command is valid only on logic module channels.
• Default value: OFF

:MEASure:CHANnel<x1>:BIT<x2>:<Parameter>:VALue?

Function Queries the measured waveform parameter value of the specified bit of the specified channel.

Syntax :MEASure:CHANnel<x1>:BIT<x2>:
<Parameter>:VALue? {<NRf>}
<x1> = 1 to 16
<x2> = 1 to 8
<Parameter> = {AVGFreq|DUTYcycle|
FREQuency|PERiod|PNUMber}
<NRf> = 1 to the number of history entries

Example :MEASURE:CHANNEL1:BIT1:FREQUENCY:
VALUE?
-> :MEASURE:CHANNEL1:BIT1:FREQUENCY:
VALUE 50.00000E+00

Description This command is valid only on logic module channels.

:MEASure:CHANnel<x1>:BIT<x2>:AREA2:<Parameter>?

Function (Upper-level query) Queries all settings related to the waveform parameter of the specified bit area 2 of the specified channel on a logic module.

Syntax :MEASure:CHANnel<x1>:BIT<x2>:AREA2:
<Parameter>?
<Parameter> = {AVGFreq|DUTYcycle|
FREQuency|PERiod|PNUMber}

:MEASure:CHANnel<x1>:BIT<x2>:AREA2:<Parameter>:COUNt?

Function   Queries the waveform parameter statistics count of bit area 2 of the specified channel.

Syntax   :MEASure:CHANnel<x1>:BIT<x2>:AREA2:
<Parameter>:COUNt?
<x1> = 1 to 16
<x2> = 1 to 8
<Parameter> = {AVGFreq|DUTYcycle|
FREQuency|PERiod|PNUMber}

Example   :MEASURE:CHANNEL1:BIT1:AREA2:
FREQUENCY:COUNT?
-> :MEASURE:CHANNEL1:BIT1:AREA2:
FREQUENCY:COUNT 10

Description   This command is valid only on logic module channels.

:MEASure:CHANnel<x1>:BIT<x2>:AREA2:<Parameter>:{MAXimum|MEAN|MINimum|SDEViation}?

Function   Queries the waveform parameter statistics value of bit area 2 of the specified channel.

Syntax   :MEASure:CHANnel<x1>:BIT<x2>:AREA2:
<Parameter>:{MAXimum|MEAN|MINimum|
SDEViation}?
<x1> = 1 to 16
<x2> = 1 to 8
<Parameter> = {AVGFreq|DUTYcycle|
FREQuency|PERiod|PNUMber}

Example   :MEASURE:CHANNEL1:BIT1:AREA2:
FREQUENCY:MEAN?
-> :MEASURE:CHANNEL1:BIT1:AREA2:
FREQUENCY:MEAN 50.00000E+00

Description   This command is valid only on logic module channels.

:MEASure:CHANnel<x1>:BIT<x2>:AREA2:<Parameter>:STATe

Function   Sets or queries the on/off state of the waveform parameter of bit area 2 of the specified channel.

Syntax   :MEASure:CHANnel<x1>:BIT<x2>:AREA2:
<Parameter>:STATe {<Boolean>}
:MEASure:CHANnel<x1>:BIT<x2>:AREA2:
<Parameter>:STATe?
<x1> = 1 to 16
<x2> = 1 to 8
<Parameter> = {AVGFreq|DUTYcycle|
FREQuency|PERiod|PNUMber}

Example   :MEASURE:CHANNEL1:BIT1:AREA2:
FREQUENCY:STATE ON
:MEASURE:CHANNEL1:BIT1:AREA2:
FREQUENCY:STATE?
-> :MEASURE:CHANNEL1:BIT1:AREA2:
FREQUENCY:STATE ON

Description   • This command is valid only on logic module channels.
• Default value: OFF

:MEASure:CHANnel<x1>:BIT<x2>:AREA2:<Parameter>:VALue?

Function   Queries the measured waveform parameter value of bit area 2 of the specified channel.

Syntax   :MEASure:CHANnel<x1>:BIT<x2>:AREA2:
<Parameter>:VALue? {<NRf>}
<x1> = 1 to 16
<x2> = 1 to 8
<Parameter> = {AVGFreq|DUTYcycle|
FREQuency|PERiod|PNUMber}
<NRf> = 1 to the number of history entries

Example   :MEASURE:CHANNEL1:BIT1:AREA2:
FREQUENCY:VALUE?
-> :MEASURE:CHANNEL1:BIT1:AREA2:
FREQUENCY:VALUE 50.00000E+00

Description   This command is valid only on logic module channels.

:MEASure:{CHANnel<x1>[:SCHannel<x2>]|MATH<x3>}?

Function   Sets or queries whether all the waveform parameters of the specified channel are ON or OFF.

Syntax   :MEASure:{CHANnel<x1>|MATH<x3>}?
:MEASure:CHANnel<x1>:SCHannel<x2>?
<x1> = 1 to 32
<x2> = 1 to 64 (sub channel)
<x3> = 1 to 16

Description   For channels that have sub channels, use the :MEAS:CHAN:SCH? command.

:MEASure:{CHANnel<x1>[:SCHannel<x2>]|MATH<x3>}:ALL

Function   Sets all the measurement items of the specified channel to ON or OFF.

Syntax   :MEASure:{CHANnel<x1>|MATH<x3>}:
ALL {<Boolean>}
:MEASure:CHANnel<x1>:SCHannel<x2>:
ALL {<Boolean>}
<x1> = 1 to 32
<x2> = 1 to 64 (sub channel)
<x3> = 1 to 16

Example   :MEASURE:CHANNEL1:ALL ON
:MEASURE:CHANNEL7:SCHANNEL1:ALL ON

Description   For channels that have sub channels, use the :MEAS:CHAN:SCH:ALL command.

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:MEASure:{CHANnel<x1>[:SCHannel<x2>] |MATH<x3>}:AREA2:ALL

Function	Sets all the measurement items of the specified channel area 2 to ON or OFF.
Syntax	:MEASure:{CHANnel<x1>|MATH<x3>}: AREA2:ALL {<Boolean>}
	:MEASure:CHANnel<x1>:SCHannel<x2>: AREA2:ALL {<Boolean>}
	<x1> = 1 to 32
	<x2> = 1 to 64 (sub channel)
	<x3> = 1 to 16
Example	:MEASURE:CHANNEL1:AREA2:ALL ON
	:MEASURE:CHANNEL7:SCHANNEL1:AREA2: ALL ON

:MEASure:{CHANnel<x1>[:SCHannel<x2>] |MATH<x3>}:AREA2:COPY

Function	Copies all the measurement item ON/OFF settings from the specified channel area 2 to another specified channel.
Syntax	:MEASure:{CHANnel<x1>|MATH<x3>}: AREA2:COPY
	:MEASure:CHANnel<x1>:SCHannel<x2>: AREA2:COPY
	<x1> = 1 to 32
	<x2> = 1 to 64 (sub channel)
	<x3> = 1 to 16
Example	:MEASURE:CHANNEL1:AREA2:COPY

:MEASure:{CHANnel<x1>[:SCHannel<x2>] |MATH<x3>}:AREA2:DELay?

Function	(Upper-level query) Queries all delay area 2 settings.
Syntax	:MEASure:{CHANnel<x1>[: SCHannel<x2>]|MATH<x3>}:AREA2:DELay?
	<x1> = 1 to 32
	<x2> = 1 to 64 (sub channel)
	<x3> = 1 to 16

:MEASure:{CHANnel<x1>[:SCHannel<x2>] |MATH<x3>}:AREA2:DELay:COUNt?

Function	Queries the statistics count of the delay between channels area 2.
Syntax	:MEASure:{CHANnel<x1>[: SCHannel<x2>]|MATH<x3>}:AREA2:DELay: COUNt?
	<x1> = 1 to 32
	<x2> = 1 to 64 (sub channel)
	<x3> = 1 to 16
Example	:MEASURE:CHANNEL1:AREA2:DELAY:COUNT?
	-> :MEASURE:CHANNEL1:AREA2:DELAY: COUNT 3

:MEASure:{CHANnel<x1>[:SCHannel<x2>] |MATH<x3>}:AREA2:DELay:{MAXimum|MEAN |MINimum|SDEViation}?

Function	Queries a statistic of the delay between channels area 2.
Syntax	:MEASure:{CHANnel<x1>[: SCHannel<x2>]|MATH<x3>}:AREA2:DELay: {MAXimum|MEAN|MINimum|SDEViation}?
	<x1> = 1 to 32
	<x2> = 1 to 64 (sub channel)
	<x3> = 1 to 16
Example	:MEASURE:CHANNEL1:AREA2:DELAY:MEAN?
	-> :MEASURE:CHANNEL1:AREA2:DELAY: MEAN 6.6666667E-06

:MEASure:{CHANnel<x1>[:SCHannel<x2>] |MATH<x3>}:AREA2:DELay:MEASure?

Function	(Upper-level query) Queries all the settings for a source waveform for measuring the delay between channels area 2 of a waveform.
Syntax	:MEASure:{CHANnel<x1>[: SCHannel<x2>]|MATH<x3>}:AREA2:DELay: MEASure?
	<x1> = 1 to 32
	<x2> = 1 to 64 (sub channel)
	<x3> = 1 to 16
Example	:MEASURE:CHANNEL1:AREA2:DELAY: MEASURE?

:MEASure:{CHANnel<x1>[:SCHannel<x2>] |MATH<x3>}:AREA2:DELay:MEASure:COUNt

Function	Sets or queries the number of edges at which delay between channels area 2 will be measured for a waveform.
Syntax	:MEASure:{CHANnel<x1>[: SCHannel<x2>]|MATH<x3>}:AREA2:DELay: MEASure:COUNt {<NRf>}
	:MEASure:{CHANnel<x1>[: SCHannel<x2>]|MATH<x3>}:AREA2:DELay: MEASure:COUNt?
	<x1> = 1 to 32
	<x2> = 1 to 64 (sub channel)
	<x3> = 1 to 16
	<NRf> = 1 to 9
Example	:MEASURE:CHANNEL1:AREA2:DELAY: MEASURE:COUNT 2
	:MEASURE:CHANNEL1:AREA2:DELAY: MEASURE:COUNT?
	-> :MEASURE:CHANNEL1:AREA2:DELAY: MEASURE:COUNT 2
Description	Default value: 1

:MEASure:{CHANnel\<x1>[:SCHannel\<x2>]|MATH\<x3>}:AREA2:DELay:MEASure:SLOPe

Function　Sets or queries a source waveform slope that will be used to measure delay between channels area 2 for a waveform.

Syntax　:MEASure:{CHANnel\<x1>[:SCHannel\<x2>]|MATH\<x3>}:AREA2:DELay:MEASure:SLOPe {RISE|FALL}
:MEASure:{CHANnel\<x1>[:SCHannel\<x2>]|MATH\<x3>}:AREA2:DELay:MEASure:SLOPe?
\<x1> = 1 to 32
\<x2> = 1 to 64 (sub channel)
\<x3> = 1 to 16

Example　:MEASURE:CHANNEL1:AREA2:DELAY:MEASURE:SLOPE RISE
:MEASURE:CHANNEL1:AREA2:DELAY:MEASURE:SLOPE?
-> :MEASURE:CHANNEL1:AREA2:DELAY:MEASURE:SLOPE RISE

Description　Default value: RISE

:MEASure:{CHANnel\<x1>[:SCHannel\<x2>]|MATH\<x3>}:AREA2:DELay:REFerence?

Function　(Upper-level query) Queries all the settings for a reference waveform for measuring the delay between channels area 2 of a waveform.

Syntax　:MEASure:{CHANnel\<x1>[:SCHannel\<x2>]|MATH\<x3>}:AREA2:DELay:REFerence?
\<x1> = 1 to 32
\<x2> = 1 to 64 (sub channel)
\<x3> = 1 to 16

:MEASure:{CHANnel\<x1>[:SCHannel\<x2>]|MATH\<x3>}:AREA2:DELay:REFerence:COUNt

Function　Sets or queries the edge detection count of the reference waveform used to measure the delay between channels area 2 for the specified waveform.

Syntax　:MEASure:{CHANnel\<x1>[:SCHannel\<x2>]|MATH\<x3>}:AREA2:DELay:REFerence:COUNt {\<NRf>}
:MEASure:{CHANnel\<x1>[:SCHannel\<x2>]|MATH\<x3>}:AREA2:DELay:REFerence:COUNt?
\<x1> = 1 to 32
\<x2> = 1 to 64 (sub channel)
\<x3> = 1 to 16
\<NRf> = 1 to 9

Example　:MEASURE:CHANNEL1:AREA2:DELAY:REFERENCE:COUNT 1
:MEASURE:CHANNEL1:AREA2:DELAY:REFERENCE:COUNT?
-> :MEASURE:CHANNEL1:AREA2:DELAY:REFERENCE:COUNT 1

Description　Default value: 1

:MEASure:{CHANnel\<x1>[:SCHannel\<x2>]|MATH\<x3>}:AREA2:DELay:REFerence:LOGic:BIT

Function　Sets or queries the bit of the reference waveform trace used to measure the delay between channels area 2 for a waveform.

Syntax　:MEASure:{CHANnel\<x1>[:SCHannel\<x2>]|MATH\<x3>}:AREA2:DELay:REFerence:LOGic:BIT {\<NRf>}
:MEASure:{CHANnel\<x1>[:SCHannel\<x2>]|MATH\<x3>}:AREA2:DELay:REFerence:LOGic:BIT?
\<x1> = 1 to 32
\<x2> = 1 to 64 (sub channel)
\<x3> = 1 to 16
\<NRf> = 1 to 8

Example　:MEASURE:CHANNEL1:AREA2:DELAY:REFERENCE:LOGIC:BIT 1
:MEASURE:CHANNEL1:AREA2:DELAY:REFERENCE:LOGIC:BIT?
-> :MEASURE:CHANNEL1:AREA2:DELAY:REFERENCE:LOGIC:BIT 1

Description　• When the trace specified by the :MEASure:{CHANnel\<x>[:SCHannel\<x>]|MATH\<x>}:AREA2:DELay:REFerence:TRACe: command is a logic module, specify the bit of that channel.
• Default value: 1

:MEASure:{CHANnel\<x1>[:SCHannel\<x2>]|MATH\<x3>}:AREA2:DELay:REFerence:SLOPe

Function　Sets or queries the edge detection slope count of the reference waveform used to measure the delay between channels area 2 for the specified waveform.

Syntax　:MEASure:{CHANnel\<x1>[:SCHannel\<x2>]|MATH\<x3>}:AREA2:DELay:REFerence:SLOPe {RISE|FALL}
:MEASure:{CHANnel\<x1>[:SCHannel\<x2>]|MATH\<x3>}:AREA2:DELay:REFerence:SLOPe?
\<x1> = 1 to 32
\<x2> = 1 to 64 (sub channel)
\<x3> = 1 to 16

Example　:MEASURE:CHANNEL1:AREA2:DELAY:REFERENCE:SLOPE RISE
:MEASURE:CHANNEL1:AREA2:DELAY:REFERENCE:SLOPE?
-> :MEASURE:CHANNEL1:AREA2:DELAY:REFERENCE:SLOPE RISE

Description　Default value: RISE

:MEASure:{CHANnel<x1>[:SCHannel<x2>]|MATH<x3>}:AREA2:DELay:REFerence:SOURce

Function   Sets or queries whether to set the reference point for measuring the delay between channels area 2 for a waveform to a trigger point or to a waveform.

Syntax   :MEASure:{CHANnel<x1>[:
SCHannel<x2>]|MATH<x3>}:AREA2:DELay:
REFerence:SOURce {TRACe|TRIGger}
:MEASure:{CHANnel<x1>[:
SCHannel<x2>]|MATH<x3>}:AREA2:DELay:
REFerence:SOURce?
<x1> = 1 to 32
<x2> = 1 to 64 (sub channel)
<x3> = 1 to 16

Example   :MEASURE:CHANNEL1:AREA2:DELAY:
REFERENCE:SOURCE TRACE
:MEASURE:CHANNEL1:AREA2:DELAY:
REFERENCE:SOURCE?
-> :MEASURE:CHANNEL1:AREA2:DELAY:
REFERENCE:SOURCE TRACE

Description   Default value: TRACe

:MEASure:{CHANnel<x1>[:SCHannel<x2>]|MATH<x3>}:AREA2:DELay:REFerence:TRACe

Function   Sets or queries the reference waveform trace used to measure the delay between channels area 2 for a waveform.

Syntax   :MEASure:{CHANnel<x1>[:
SCHannel<x2>]|MATH<x3>}:AREA2:DELay:
REFerence:TRACe {<NRf>[,<NRf>]|
MATH<x>}
:MEASure:{CHANnel<x1>[:
SCHannel<x2>]|MATH<x3>}:AREA2:DELay:
REFerence:TRACe?
<x1> = 1 to 32
<x2> = 1 to 64 (sub channel)
<x3> = 1 to 16

Example   :MEASURE:CHANNEL1:AREA2:DELAY:
REFERENCE:TRACE 1
:MEASURE:CHANNEL1:AREA2:DELAY:
REFERENCE:TRACE?
-> :MEASURE:CHANNEL1:AREA2:DELAY:
REFERENCE:TRACE 1

Description   Default value: Installed channel with the smallest channel number

:MEASure:{CHANnel<x1>[:SCHannel<x2>]|MATH<x3>}:AREA2:DELay:STATe

Function   Sets or queries the display format of the delay area 2 of the specified waveform parameter.

Syntax   :MEASure:{CHANnel<x1>[:
SCHannel<x2>]|MATH<x3>}:AREA2:DELay:
STATe {TIME|OFF|DEGRee}
:MEASure:{CHANnel<x1>[:
SCHannel<x2>]|MATH<x3>}:AREA2:DELay:
STATe?
<x1> = 1 to 32
<x2> = 1 to 64 (sub channel)
<x3> = 1 to 16

Example   :MEASURE:CHANNEL1:AREA2:DELAY:
STATE TIME
:MEASURE:CHANNEL1:AREA2:DELAY:STATE?
-> :MEASURE:CHANNEL1:AREA2:DELAY:
STATE TIME

Description   Default value: OFF

:MEASure:{CHANnel<x1>[:SCHannel<x2>]|MATH<x3>}:AREA2:DELay:VALue?

Function   Queries the measured value of the specified waveform parameter delay area 2.

Syntax   :MEASure:{CHANnel<x1>[:
SCHannel<x2>]|MATH<x3>}:AREA2:DELay:
VALue? {<NRf>}
:MEASure:{CHANnel<x1>[:
SCHannel<x2>]|MATH<x3>}:AREA2:DELay:
VALue?
<x1> = 1 to 32
<x2> = 1 to 64 (sub channel)
<x3> = 1 to 16

Example   :MEASURE:CHANNEL1:AREA2:DELAY:VALUE?
-> :MEASURE:CHANNEL1:AREA2:DELAY:
VALUE 0.0000000E+00

Description   • The <NRf> is used to specify which iteration of measurement to query after executing statistical processing. This command returns "NAN" if the specified value does not exist.
     • <NRf> can be omitted. If it is omitted, the measured values of the newest waveform in history memory are queried. If you include <NRf>, the measured value of the waveform <NRf> times before the newest history waveform will be queried.
     • This command returns "NAN" if the value cannot be measured.

:MEASure:{CHANnel<x1>[:SCHannel<x2>]|MATH<x3>}:CDEStination (Copy Destination)

Function   Sets or queries whether the copy destination channel is ON or OFF for when parameter measurement items are copied between channels.

Syntax   :MEASure:{CHANnel<x1>|MATH<x3>}: CDEStination {<Boolean>}
:MEASure:CHANnel<x1>:SCHannel<x2>: CDEStination
<x1> = 1 to 32
<x2> = 1 to 64 (sub channel)
<x3> = 1 to 16

Example   :MEASURE:CHANNEL2:CDESTINATION ON
:MEASURE:CHANNEL2:CDESTINATION?
-> :MEASURE:CHANNEL2:CDESTINATION 1
:MEASURE:CHANNEL7:SCHANNEL1: CDESTINATION ON
:MEASURE:CHANNEL7:SCHANNEL1: CDESTINATION?
-> :MEASURE:CHANNEL7:SCHANNEL1: CDESTINATION 1

Description   Default value: ON for installed channels and Math1 to 8

:MEASure:{CHANnel<x1>[:SCHannel<x2>]|MATH<x3>}:COPY

Function   Copies all the measurement item ON/OFF settings from one specified channel to another specified channel.

Syntax   :MEASure:{CHANnel<x1>|MATH<x3>}:COPY
:MEASure:CHANnel<x1>:SCHannel<x2>: COPY
<x1> = 1 to 32
<x2> = 1 to 64 (sub channel)
<x3> = 1 to 16

Example   :MEASURE:CHANNEL1:COPY

:MEASure:{CHANnel<x1>[:SCHannel<x2>]|MATH<x3>}:DELay?

Function   (Upper-level query) Queries all delay settings.

Syntax   :MEASure:{CHANnel<x1>[: SCHannel<x2>]|MATH<x3>}:DELay?
<x1> = 1 to 32
<x2> = 1 to 64 (sub channel)
<x3> = 1 to 16

:MEASure:{CHANnel<x1>[:SCHannel<x2>]|MATH<x3>}:DELay:COUNt?

Function   Queries the statistics count of the delay between channels.

Syntax   :MEASure:{CHANnel<x1>[: SCHannel<x2>]|MATH<x3>}:DELay:COUNt?

Example   :MEASURE:CHANNEL1:DELAY:COUNT?
-> :MEASURE:CHANNEL1:DELAY:COUNT 3

:MEASure:{CHANnel<x1>[:SCHannel<x2>]|MATH<x3>}:DELay:{MAXimum|MEAN|MINimum|SDEViation}?

Function   Queries a statistic of the delay between channels.

Syntax   :MEASure:{CHANnel<x1>[: SCHannel<x2>]|MATH<x3>}:DELay: {MAXimum|MEAN|MINimum|SDEViation}?
<x1> = 1 to 32
<x2> = 1 to 64 (sub channel)
<x3> = 1 to 16

Example   :MEASURE:CHANNEL1:DELAY:MEAN?
-> :MEASURE:CHANNEL1:DELAY: MEAN 6.6666667E-06

:MEASure:{CHANnel<x1>[:SCHannel<x2>]|MATH<x3>}:DELay:MEASure?

Function   (Upper-level query) Queries all the settings for a source waveform for measuring the delay between channels of a waveform.

Syntax   :MEASure:{CHANnel<x1>[: SCHannel<x2>]|MATH<x3>}:DELay: MEASure?
<x1> = 1 to 32
<x2> = 1 to 64 (sub channel)
<x3> = 1 to 16

Example   :MEASURE:CHANNEL1:DELAY:MEASURE?

:MEASure:{CHANnel<x1>[:SCHannel<x2>]|MATH<x3>}:DELay:MEASure:COUNt

Function   Sets or queries the number of edges at which delay between channels will be measured for a waveform.

Syntax   :MEASure:{CHANnel<x1>[: SCHannel<x2>]|MATH<x3>}: DELay:MEASure:COUNt {<NRf>}
:MEASure:{CHANnel<x1>[: SCHannel<x2>]|MATH<x3>}: DELay:MEASure:COUNt?
<x1> = 1 to 32
<x2> = 1 to 64 (sub channel)
<x3> = 1 to 16
<NRf> = 1 to 9

Example   :MEASURE:CHANNEL1:DELAY:MEASURE: COUNT 2
:MEASURE:CHANNEL1:DELAY:MEASURE: COUNT?
-> :MEASURE:CHANNEL1:DELAY:MEASURE: COUNT 2

Description   Default value: 1

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**:MEASure:{CHANnel<x1>[:SCHannel<x2>]
|MATH<x3>}:DELay:MEASure:SLOPe**

Function   Sets or queries a source waveform slope that will
            be used to measure delay between channels for
            a waveform.

Syntax   :MEASure:{CHANnel<x1>[:
            SCHannel<x2>]|MATH<x3>}:DELay:
            MEASure:SLOPe {RISE|FALL}
            :MEASure:{CHANnel<x1>[:
            SCHannel<x2>]|MATH<x3>}:DELay:
            MEASure:SLOPe?
            <x1> = 1 to 32
            <x2> = 1 to 64 (sub channel)
            <x3> = 1 to 16

Example   :MEASURE:CHANNEL1:DELAY:MEASURE:
            SLOPE RISE
            :MEASURE:CHANNEL1:DELAY:MEASURE:
            SLOPE?
            -> :MEASURE:CHANNEL1:DELAY:MEASURE:
               SLOPE RISE

Description Default value: RISE

**:MEASure:{CHANnel<x1>[:SCHannel<x2>]
|MATH<x3>}:DELay:REFerence?**

Function   (Upper-level query) Queries all reference
            waveform settings used to measure the delay
            between channels for the specified waveform.

Syntax   :MEASure:{CHANnel<x1>[:
            SCHannel<x2>]|MATH<x3>}:DELay:
            REFerence?
            <x1> = 1 to 32
            <x2> = 1 to 64 (sub channel)
            <x3> = 1 to 16

**:MEASure:{CHANnel<x1>[:SCHannel<x2>]
|MATH<x3>}:DELay:REFerence:COUNt**

Function   Sets or queries the edge detection count of the
            reference waveform used to measure the delay
            between channels for the specified waveform.

Syntax   :MEASure:{CHANnel<x1>[:
            SCHannel<x2>]|MATH<x3>}:DELay:
            REFerence:COUNt {<NRf>}
            :MEASure:{CHANnel<x1>[:
            SCHannel<x2>]|MATH<x3>}:DELay:
            REFerence:COUNt?
            <x1> = 1 to 32
            <x2> = 1 to 64 (sub channel)
            <x3> = 1 to 16
            <NRf> = 1 to 9

Example   :MEASURE:CHANNEL1:DELAY:REFERENCE:
            COUNT 1
            :MEASURE:CHANNEL1:DELAY:REFERENCE:
            COUNT?
            -> :MEASURE:CHANNEL1:DELAY:
               REFERENCE:COUNT 1

Description Default value: 1

**:MEASure:{CHANnel<x1>[:SCHannel<x2>]
|MATH<x3>}:DELay:REFerence:LOGic:BIT**

Function   Sets or queries the bit of the reference waveform
            trace used to measure the delay between
            channels for a waveform.

Syntax   :MEASure:{CHANnel<x1>[:
            SCHannel<x2>]|MATH<x3>}:DELay:
            REFerence:LOGic:BIT {<NRf>}
            :MEASure:{CHANnel<x1>[:
            SCHannel<x2>]|MATH<x3>}:DELay:
            REFerence:LOGic:BIT?
            <x1> = 1 to 32
            <x2> = 1 to 64 (sub channel)
            <x3> = 1 to 16
            <NRf> = 1 to 8

Example   :MEASURE:CHANNEL1:DELAY:REFERENCE:
            LOGIC:BIT 1
            :MEASURE:CHANNEL1:DELAY:REFERENCE:
            LOGIC:BIT?
            -> :MEASURE:CHANNEL1:DELAY:
               REFERENCE:LOGIC:BIT 1

Description • When the trace specified by the :MEASure:{CH
              ANnel<x>[:SCHannel<x>]|MATH<x>}:DELay:R
              EFerence:TRACe command is a logic module,
              specify the bit of that channel.
            • Default value: 1

**:MEASure:{CHANnel<x1>[:SCHannel<x2>]
|MATH<x3>}:DELay:REFerence:SLOPe**

Function   Sets or queries the edge detection slope count
            of the reference waveform used to measure
            the delay between channels for the specified
            waveform.

Syntax   :MEASure:{CHANnel<x1>[:
            SCHannel<x2>]|MATH<x3>}:DELay:
            REFerence:SLOPe {RISE|FALL}
            :MEASure:{CHANnel<x1>[:
            SCHannel<x2>]|MATH<x3>}:DELay:
            REFerence:SLOPe?
            <x1> = 1 to 32
            <x2> = 1 to 64 (sub channel)
            <x3> = 1 to 16

Example   :MEASURE:CHANNEL1:DELAY:REFERENCE:
            SLOPE RISE
            :MEASURE:CHANNEL1:DELAY:REFERENCE:
            SLOPE?
            -> :MEASURE:CHANNEL1:DELAY:
               REFERENCE:SLOPE RISE

Description Default value: RISE

:MEASure:{CHANnel<x1>[:SCHannel<x2>]|MATH<x3>}:DELay:REFerence:SOURce

Function   Sets or queries whether to set the reference point for measuring the delay between channels for a waveform to a trigger point or to a waveform.

Syntax   :MEASure:{CHANnel<x1>[:SCHannel<x2>]|MATH<x3>}:DELay:REFerence:SOURce {TRACe|TRIGger}
            :MEASure:{CHANnel<x1>[:SCHannel<x2>]|MATH<x3>}:DELay:REFerence:SOURce?
            <x1> = 1 to 32
            <x2> = 1 to 64 (sub channel)
            <x3> = 1 to 16

Example   :MEASURE:CHANNEL1:DELAY:REFERENCE:SOURCE TRACE
            :MEASURE:CHANNEL1:DELAY:REFERENCE:SOURCE?
            -> :MEASURE:CHANNEL1:DELAY:REFERENCE:SOURCE TRACE

Description Default value: TRACe

:MEASure:{CHANnel<x1>[:SCHannel<x2>]|MATH<x3>}:DELay:REFerence:TRACe

Function   Sets or queries the reference waveform trace used to measure the delay between channels for a waveform.

Syntax   :MEASure:{CHANnel<x1>[:SCHannel<x2>]|MATH<x3>}:DELay:REFerence:TRACe {<NRf>[,<NRf>]|MATH<x>}
            :MEASure:{CHANnel<x1>[:SCHannel<x2>]|MATH<x3>}:DELay:REFerence:TRACe?
            <x1> = 1 to 32
            <x2> = 1 to 64 (sub channel)
            <x3> = 1 to 16

Example   :MEASURE:CHANNEL1:DELAY:REFERENCE:TRACE 1
            :MEASURE:CHANNEL1:DELAY:REFERENCE:TRACE?
            -> :MEASURE:CHANNEL1:DELAY:REFERENCE:TRACE 1

Description Default value: Installed channel with the smallest channel number

:MEASure:{CHANnel<x1>[:SCHannel<x2>]|MATH<x3>}:DELay:STATe

Function   Sets or queries the display format of the delay of the specified waveform parameter.

Syntax   :MEASure:{CHANnel<x1>[:SCHannel<x2>]|MATH<x3>}:DELay:STATe {TIME|OFF|DEGRee}
            :MEASure:{CHANnel<x1>[:SCHannel<x2>]|MATH<x3>}:DELay:STATe?
            <x1> = 1 to 32
            <x2> = 1 to 64 (sub channel)
            <x3> = 1 to 16

Example   :MEASURE:CHANNEL1:DELAY:STATE TIME
            :MEASURE:CHANNEL1:DELAY:STATE?
            -> :MEASURE:CHANNEL1:DELAY:STATE TIME

Description Default value: OFF

:MEASure:{CHANnel<x1>[:SCHannel<x2>]|MATH<x3>}:DELay:VALue?

Function   Queries a measured delay value of the specified waveform's parameter.

Syntax   :MEASure:{CHANnel<x1>[:SCHannel<x2>]|MATH<x3>}:DELay:VALue? {<NRf>}
            :MEASure:{CHANnel<x1>[:SCHannel<x2>]|MATH<x3>}:DELay:VALue?
            <x1> = 1 to 32
            <x2> = 1 to 64 (sub channel)
            <x3> = 1 to 16

Example   :MEASURE:CHANNEL1:DELAY:VALUE?
            -> :MEASURE:CHANNEL1:DELAY:VALUE 0.0000000E+00

Description • The <NRf> is used to specify which iteration of measurement to query after executing statistical processing. This command returns "NAN" if the specified value does not exist.
            • <NRf> can be omitted. If it is omitted, the measured values of the newest waveform in history memory are queried. If you include <NRf>, the measured value of the waveform <NRf> times before the newest history waveform will be queried.
            • This command returns "NAN" if the value cannot be measured.

:MEASure:{CHANnel<x1>[:SCHannel<x2>]|MATH<x3>}:DPRoximal?

Function   (Upper-level query) Queries all distal, mesial, and proximal settings.

Syntax   :MEASURE:CHANNEL1:DPROXIMAL?
            <x1> = 1 to 32
            <x2> = 1 to 64 (sub channel)
            <x3> = 1 to 16

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Commands

:MEASure:{CHANnel<x1>[:SCHannel<x2>] |MATH<x3>}:DPRoximal:MODE

Function   Sets or queries the distal, mesial, and proximal point mode setting.

Syntax   :MEASure:{CHANnel<x1>[:
SCHannel<x2>]|MATH<x3>}:DPRoximal:
MODE {PERCent|UNIT}
:MEASure:{CHANnel<x1>[:
SCHannel<x2>]|MATH<x3>}:DPRoximal:
MODE?
<x1> = 1 to 32
<x2> = 1 to 64 (sub channel)
<x3> = 1 to 16

Example   :MEASURE:CHANNEL1:DPROXIMAL:
MODE PERCENT
:MEASURE:CHANNEL1:DPROXIMAL:MODE?
-> :MEASURE:CHANNEL1:DPROXIMAL:
MODE PERCENT

Description   Default value: PERCent

:MEASure:{CHANnel<x1>[:SCHannel<x2>] |MATH<x3>}:DPRoximal:PERCent

Function   Sets or queries the distal, mesial, and proximal points as percentages.

Syntax   :MEASure:{CHANnel<x1>[:
SCHannel<x2>]|MATH<x3>}:DPRoximal:
PERCent {<NRf>,<NRf>,<NRf>}
:MEASure:{CHANnel<x1>[:
SCHannel<x2>]|MATH<x3>}:DPRoximal:
PERCent?
<x1> = 1 to 32
<x2> = 1 to 64 (sub channel)
<x3> = 1 to 16
<NRf> = 0 to 100 (%, in steps of 0.1)
The order is
<Proximal><Mesial><Distal>.

Example   :MEASURE:CHANNEL1:DPROXIMAL:
PERCENT 20,50,80
:MEASURE:CHANNEL1:DPROXIMAL:PERCENT?
-> :MEASURE:CHANNEL1:DPROXIMAL:
PERCENT 20.0,50.0,80.0

Description   Default value: 10, 50, 90

:MEASure:{CHANnel<x1>[:SCHannel<x2>] |MATH<x3>}:DPRoximal:UNIT

Function   Sets or queries the distal, mesial, and proximal points as units.

Syntax   :MEASure:{CHANnel<x1>[:
SCHannel<x2>]|MATH<x3>}:DPRoximal:
UNIT {<Voltage>,<Voltage>,<Voltage>|
<Current>,<Current>,<Current>|
<NRf>,<NRf>,<NRf>}
:MEASure:{CHANnel<x1>[:
SCHannel<x2>]|MATH<x3>}:DPRoximal:
UNIT?
<x1> = 1 to 32
<x2> = 1 to 64 (sub channel)
<x3> = 1 to 16
<Voltage><Current><NRf> = The selectable range is the measurement range. For details, see the instrument's User's Manual.
The order is
<Proximal><Mesial><Distal>.
Selectable range of the
MEAS:{CHAN<x>}:DPR:UNIT command
   For <Voltage>, <Voltage>, <Voltage>, the selectable range is ±the measurement range, and the resolution is the same as the resolution of the zoom method (DIV/SPAN) that has been set by the V Scale of the vertical axis.
For Math channels: ±5 div

Example   :MEASURE:CHANNEL1:DPROXIMAL:
UNIT -10,0,10
:MEASURE:CHANNEL1:DPROXIMAL:UNIT?
-> :MEASURE:CHANNEL1:DPROXIMAL:
UNIT -10.0000E+00,0.00000E+00,
10.0000E+00

Description   • You cannot set the distal, mesial, and proximal points using units on frequency modules.
• Depending on the settings that were in use before you sent this command, the values may not be set according to the parameters.
• Default value: (voltage) -15V, 0V, +15V (value obtained by multiplying this value by the probe's attenuation)
(temperature) -200 °C, 0 °C, 1300 °C
(strain) -20000, 0, 20000
(acceleration) -4500, 0, 4500
[Unit]

:MEASure:{CHANnel\<x1>[:SCHannel\<x2>]|MATH\<x3>}:METHod

Function   Sets or queries the modes of a set of high
            and low points (rising-time and falling-time
            measurement references).
Syntax   :MEASure:{CHANnel\<x1>[:
            SCHannel\<x2>]|MATH\<x3>}:
            METHod {AUTO|MAXMin}
            :MEASure:{CHANnel\<x1>[:
            SCHannel\<x2>]|MATH\<x3>}:METHod?
            \<x1> = 1 to 32
            \<x2> = 1 to 64 (sub channel)
            \<x3> = 1 to 16
Example   :MEASURE:CHANNEL1:METHOD AUTO
            :MEASURE:CHANNEL1:METHOD?
            -> :MEASURE:CHANNEL1:METHOD AUTO
Description Default value: AUTO

:MEASure:{CHANnel\<x1>[:SCHannel\<x2>]|MATH\<x3>}:\<Parameter>?

Function   Queries the setting of a waveform parameter
            (measurement item).
Syntax   :MEASure:{CHANnel\<x1>[:
            SCHannel\<x2>]|MATH\<x3>}:\<Parameter>?
            \<x1> = 1 to 32
            \<x2> = 1 to 64 (sub channel)
            \<x3> = 1 to 16
            \<Parameter> = {AMPLitude|AVERage|
              AVGFreq|AVGPeriod|BWIDth1|BWIDth2|
              DUTYcycle|FALL|FREQuency|HIGH|LOW|
              MAXimum|MIDDle|MINimum|NOVershoot|
              NWIDth|PERiod|PNUMber|POVershoot|
              PTOPeak|PWIDth|RISE|RMS|
              SDEViation|TY1Integ|TY2Integ}
Example   :MEASURE:CHANNEL1:PTOPEAK?
            -> :MEASURE:CHANNEL1:PTOPEAK:STATE 0
Description This command returns the same response as the
             :MEAS:CHAN:\<Parameter>:STAT? command.

:MEASure:{CHANnel\<x1>[:SCHannel\<x2>]|MATH\<x3>}:\<Parameter>:COUNt?

Function   Queries the count of measured values for cyclic
            statistical processing of a waveform parameter.
Syntax   :MEASure:{CHANnel\<x1>[:
            SCHannel\<x2>]|MATH\<x3>}:
            \<Parameter>:COUNt?
            \<x1> = 1 to 32
            \<x2> = 1 to 64 (sub channel)
            \<x3> = 1 to 16
            \<Parameter> = {AMPLitude|AVERage|
              AVGFreq|AVGPeriod|BWIDth1|BWIDth2|
              DUTYcycle|FALL|FREQuency|HIGH|LOW|
              MAXimum|MIDDle|MINimum|NOVershoot|
              NWIDth|PERiod|PNUMber|POVershoot|
              PTOPeak|PWIDth|RISE|RMS|
              SDEViation|TY1Integ|TY2Integ}
Example   :MEASURE:CHANNEL1:PTOPEAK:COUNT?
            -> :MEASURE:CHANNEL1:PTOPEAK:COUNT 3

:MEASure:{CHANnel\<x1>[:SCHannel\<x2>]|MATH\<x3>}:\<Parameter>:{MAXimum|MEAN|MINimum|SDEViation}?

Function   Queries a cyclic statistical processing value of a
            waveform parameter.
Syntax   :MEASure:{CHANnel\<x1>[:
            SCHannel\<x2>]|MATH\<x3>}:
            \<Parameter>:{MAXimum|MEAN|MINimum|
            SDEViation}?
            \<x1> = 1 to 32
            \<x2> = 1 to 64 (sub channel)
            \<x3> = 1 to 16
            \<Parameter> = {AMPLitude|AVERage|
              AVGFreq|AVGPeriod|BWIDth1|BWIDth2|
              DUTYcycle|FALL|FREQuency|HIGH|LOW|
              MAXimum|MIDDle|MINimum|NOVershoot|
              NWIDth|PERiod|PNUMber|POVershoot|
              PTOPeak|PWIDth|RISE|RMS|
              SDEViation|TY1Integ|TY2Integ}
Example   :MEASURE:CHANNEL1:PTOPEAK:MAXIMUM?
            -> :MEASURE:CHANNEL1:PTOPEAK:
               MAXIMUM 30.633333E+00
Description This command returns "NAN" for any statistics
             that cannot be processed.

:MEASure:{CHANnel\<x1>[:SCHannel\<x2>]|MATH\<x3>}:\<Parameter>:STATe

Function   Sets or queries whether the specified waveform's
            waveform parameter (measurement item) is ON
            or OFF.
Syntax   :MEASure:{CHANnel\<x1>[:
            SCHannel\<x2>]|MATH\<x3>}:
            \<Parameter>:STATe
            \<x1> = 1 to 32
            \<x2> = 1 to 64 (sub channel)
            \<x3> = 1 to 16
            \<Parameter> = {AMPLitude|AVERage|
              AVGFreq|AVGPeriod|BWIDth1|BWIDth2|
              DUTYcycle|FALL|FREQuency|HIGH|LOW|
              MAXimum|MIDDle|MINimum|NOVershoot|
              NWIDth|PERiod|PNUMber|POVershoot|
              PTOPeak|PWIDth|RISE|RMS|
              SDEViation|TY1Integ|TY2Integ}
Example   :MEASURE:CHANNEL1:PTOPEAK:STATE ON
            :MEASURE:CHANNEL1:PTOPEAK:STATE?
            -> :MEASURE:CHANNEL1:PTOPEAK:STATE 1

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Commands

:MEASure:{CHANnel<x1>[:SCHannel<x2>]|MATH<x3>}:<Parameter>:VALue?

Function   Queries the measured value of a waveform parameter.

Syntax   :MEASure:{CHANnel<x1>[:SCHannel<x2>]|MATH<x3>}:<Parameter>:VALue? {<NRf>}
   <x1> = 1 to 32
   <x2> = 1 to 64 (sub channel)
   <x3> = 1 to 16
   <NRf> = 1 to 64000
   <Parameter> = {AMPLitude|AVERage|AVGFreq|AVGPeriod|BWIDth1|BWIDth2|DUTYcycle|FALL|FREQuency|HIGH|LOW|MAXimum|MIDDle|MINimum|NOVershoot|NWIDth|PERiod|PNUMber|POVershoot|PTOPeak|PWIDth|RISE|RMS|SDEViation|TY1Integ|TY2Integ}

Example   :MEASURE:CHANNEL1:PTOPEAK:VALUE?
   -> :MEASURE:CHANNEL1:PTOPEAK:VALUE 30.516667E+00

Description   • This command returns "NAN" if the value cannot be measured.
   • Parameters cannot be measured if the measurement has not been performed or if the measurement was performed, but computations were not performed because the specified range exceeded 10 Mpoint.
   • The <NRf> at the end is used to specify which iteration of statistical processing to query the parameter value from. This command returns "NAN" (Not A Number) if the specified value does not exist.
   • (For non-cyclic statistical processing) <NRf> can be omitted. If you omit , the most recent history parameter value will be queried. If <NRf> is included, the history parameter value of the waveform <NRf> times before the newest history waveform will be queried.
   • (After cyclic statistical processing has been completed) <NRf> can be omitted. If you omit , the parameter value within the cycle that was measured last will be queried. If you include <NRf>, the parameter value within the cycle that was measured <NRf> times after the measurement shown on the screen's left edge will be queried.
   • When you execute a normal measurement, without cyclic statistical processing, even if you include <NRf> in the command, you cannot query the waveform parameters in the history memory.

:MEASure:{CHANnel<x1>[:SCHannel<x2>]|MATH<x3>}:AREA2:<Parameter>?

Function   Queries the setting of a waveform area 2 parameter (measurement item).

Syntax   :MEASure:{CHANnel<x1>[:SCHannel<x2>]|MATH<x3>}:AREA2:<Parameter>?
   <x1> = 1 to 32
   <x2> = 1 to 64 (sub channel)
   <x3> = 1 to 16
   <Parameter> = {AMPLitude|AVERage|AVGFreq|AVGPeriod|BWIDth1|BWIDth2|DUTYcycle|FALL|FREQuency|HIGH|LOW|MAXimum|MIDDle|MINimum|NOVershoot|NWIDth|PERiod|PNUMber|POVershoot|PTOPeak|PWIDth|RISE|RMS|SDEViation|TY1Integ|TY2Integ}

Example   :MEASURE:CHANNEL1:AREA2:PTOPEAK?
   -> :MEASURE:CHANNEL1:AREA2:PTOPEAK:STATE 0

Description   This command returns the same response as the :MEAS:CHAN:<Parameter>:STAT? command.

:MEASure:{CHANnel<x1>[:SCHannel<x2>]|MATH<x3>}:AREA2:<Parameter>:COUNt?

Function   Queries the count of measured values for cyclic statistical processing of a waveform area 2 parameter.

Syntax   :MEASure:{CHANnel<x1>[:SCHannel<x2>]|MATH<x3>}::AREA2<Parameter>:COUNt?
   <x1> = 1 to 32
   <x2> = 1 to 64 (sub channel)
   <x3> = 1 to 16
   <Parameter> = {AMPLitude|AVERage|AVGFreq|AVGPeriod|BWIDth1|BWIDth2|DUTYcycle|FALL|FREQuency|HIGH|LOW|MAXimum|MIDDle|MINimum|NOVershoot|NWIDth|PERiod|PNUMber|POVershoot|PTOPeak|PWIDth|RISE|RMS|SDEViation|TY1Integ|TY2Integ}

Example   :MEASURE:CHANNEL1:AREA2:PTOPEAK:COUNT?
   -> :MEASURE:CHANNEL1:AREA2:PTOPEAK:COUNT 3

:MEASure:{CHANnel\<x1>[:SCHannel\<x2>]|MATH\<x3>}:AREA2:\<Parameter>:{MAXimum|MEAN|MINimum|SDEViation}?

Function   Queries a cyclic statistical processing value of a waveform area 2 parameter.

Syntax   :MEASure:{CHANnel\<x1>[: SCHannel\<x2>]|MATH\<x3>}:AREA2: \<Parameter>:{MAXimum|MEAN|MINimum| SDEViation}?
\<x1> = 1 to 32
\<x2> = 1 to 64 (sub channel)
\<x3> = 1 to 16
\<Parameter> = {AMPLitude|AVERage| AVGFreq|AVGPeriod|BWIDth1|BWIDth2| DUTYcycle|FALL|FREQuency|HIGH|LOW| MAXimum|MIDDle|MINimum|NOVershoot| NWIDth|PERiod|PNUMber|POVershoot| PTOPeak|PWIDth|RISE|RMS| SDEViation|TY1Integ|TY2Integ}

Example   :MEASURE:CHANNEL1:AREA2:PTOPEAK: MAXIMUM?
-> :MEASURE:CHANNEL1:AREA2:PTOPEAK: MAXIMUM 30.633333E+00

Description   This command returns "NAN" for any statistics that cannot be processed.

:MEASure:{CHANnel\<x1>[:SCHannel\<x2>]|MATH\<x3>}:AREA2:\<Parameter>:STATe

Function   Sets or queries whether the specified waveform's waveform area 2 parameter (measurement item) is ON or OFF.

Syntax   :MEASure:{CHANnel\<x1>[: SCHannel\<x2>]|MATH\<x3>}:AREA2: \<Parameter>:STATe
\<x1> = 1 to 32
\<x2> = 1 to 64 (sub channel)
\<x3> = 1 to 16
\<Parameter> = {AMPLitude|AVERage| AVGFreq|AVGPeriod|BWIDth1|BWIDth2| DUTYcycle|FALL|FREQuency|HIGH|LOW| MAXimum|MIDDle|MINimum|NOVershoot| NWIDth|PERiod|PNUMber|POVershoot| PTOPeak|PWIDth|RISE|RMS| SDEViation|TY1Integ|TY2Integ}

Example   :MEASURE:CHANNEL1:AREA2:PTOPEAK: STATE ON
:MEASURE:CHANNEL1:AREA2:PTOPEAK: STATE?
-> :MEASURE:CHANNEL1:AREA2:PTOPEAK: STATE 1

:MEASure:{CHANnel\<x1>[:SCHannel\<x2>]|MATH\<x3>}:AREA2:\<Parameter>:VALue?

Function   Queries the measured value of a waveform area 2 parameter.

Syntax   :MEASure:{CHANnel\<x1>[: SCHannel\<x2>]|MATH\<x3>}:AREA2: \<Parameter>:VALue? {\<NRf>}
\<x1> = 1 to 32
\<x2> = 1 to 64 (sub channel)
\<x3> = 1 to 16
\<NRf> = 1 to 64000
\<Parameter> = {AMPLitude|AVERage| AVGFreq|AVGPeriod|BWIDth1|BWIDth2| DUTYcycle|FALL|FREQuency|HIGH|LOW| MAXimum|MIDDle|MINimum|NOVershoot| NWIDth|PERiod|PNUMber|POVershoot| PTOPeak|PWIDth|RISE|RMS| SDEViation|TY1Integ|TY2Integ}

Example   :MEASURE:CHANNEL1:AREA2:PTOPEAK: VALUE?
-> :MEASURE:CHANNEL1:AREA2:PTOPEAK: VALUE 30.516667E+00

Description   • This command returns "NAN" if the value cannot be measured.
• Parameters cannot be measured if the measurement has not been performed or if the measurement was performed, but computations were not performed because the specified range exceeded 10 Mpoint.
• The \<NRf> at the end is used to specify which iteration of statistical processing to query the parameter value from. This command returns "NAN" (Not A Number) if the specified value does not exist.
• (For non-cyclic statistical processing) \<NRf> can be omitted. If you omit , the most recent history parameter value will be queried. If \<NRf> is included, the history parameter value of the waveform \<NRf> times before the newest history waveform will be queried.
• (After cyclic statistical processing has been completed) \<NRf> can be omitted. If you omit , the parameter value within the cycle that was measured last will be queried. If you include \<NRf>, the parameter value within the cycle that was measured \<NRf> times after the measurement shown on the screen's left edge will be queried.
• When you execute a normal measurement, without cyclic statistical processing, even if you include \<NRf> in the command, you cannot query the waveform parameters in the history memory.

:MEASure:CYCLe?

Function   (Upper-level query) Queries all cycle statistics settings.

Syntax   :MEASure:CYCLe?

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Commands

:MEASure:CYCLe:ABORt

Function   Aborts cyclic statistical processing.

Syntax   :MEASure:CYCLe:ABORt

Example   :MEASURE:CYCLE:ABORT

:MEASure:CYCLe:EXECute

Function   Executes cyclic statistical processing.

Syntax   :MEASure:CYCLe:EXECute

Example   :MEASURE:CYCLE:EXECUTE

:MEASure:CYCLe:LOGic:BIT

Function   Sets or queries the cycle trace bit of cycle statistics.

Syntax   :MEASure:CYCLe:LOGic:BIT {<NRf>}

            :MEASure:CYCLe:LOGic:BIT?

            <NRf> = 1 to 8

Example   :MEASURE:CYCLE:LOGIC:BIT 1

            :MEASURE:CYCLE:LOGIC:BIT?

            -> :MEASURE:CYCLE:LOGIC:BIT 1

Description • This command is valid only when the channel specified by the :MEASure:CYCLe:TRACe command is a logic module channel.

            • Default value: 1

:MEASure:CYCLe:TRACe

Function   Sets or queries the cycle trace of cycle statistics.

Syntax   :MEASure:CYCLe:

            TRACe {OWN|<NRf>[,<NRf>]|MATH<x>}

            :MEASure:CYCLe:TRACe?

            <NRf> = 1 to 32

            [, <NRf>] = 1 to 64 (sub channel)

            <x> = 1 to 16

Example   :MEASURE:CYCLE:TRACE OWN

            :MEASURE:CYCLE:TRACE?

            -> :MEASURE:CYCLE:TRACE OWN

Description Default value: Installed channel with the smallest channel number

:MEASure:HISTory:ABORt

Function   Aborts the statistical processing of history waveforms.

Syntax   :MEASure:HISTory:ABORt

Example   :MEASURE:HISTORY:ABORT

:MEASure:HISTory:EXECute

Function   Executes the statistical processing of history waveforms.

Syntax   :MEASure:HISTory:EXECute

Example   :MEASURE:HISTORY:EXECUTE

:MEASure:INDicator?

Function   (Upper-level query) Queries all parameter math indicator display settings.

Syntax   :MEASure:INDicator?

:MEASure:INDicator[:LOGic]:BIT

Function   Sets or queries the indicator display logic bit of parameter math.

Syntax   :MEASure:INDicator[:LOGic]:

            BIT {<NRf>}

            :MEASure:INDicator[:LOGic]:BIT?

            <NRf> = 1 to 8 (bit number)

Example   :MEASURE:INDICATOR:LOGIC:BIT 1

            :MEASURE:INDICATOR:LOGIC:BIT?

            -> :MEASURE:INDICATOR:LOGIC:BIT 1

Description • This command is valid only when the channel specified by the :MEASure:INDicator:TRACe command is a logic module channel.

            • Default value: 1

:MEASure:INDicator:PARameter

Function   Sets or queries the indicator display parameter of parameter math.

Syntax   :MEASure:INDicator:

            PARameter {OFF|<Parameter>[,{1|2}]}

            :MEASure:INDicator:PARameter?

            <Parameter> = {AMPLitude|AVERage|

            AVGFreq|AVGPeriod|B1Width|B2Width|

            DUTYcycle|FALL|FREQuency|HIGH|LOW|

            MAXimum|MIDDle|MINimum|NOVershoot|

            NWIDth|PERiod|PNUMber|POVershoot|

            PTOPeak|PWIDth|RISE|RMS|

            SDEViation|TY1Integ|TY2Integ}

            1|2: Area 1 or area 2 (area 1 if omitted)

Example   :MEASURE:INDICATOR:PARAMETER OFF

            :MEASURE:INDICATOR:PARAMETER?

            -> :MEASURE:INDICATOR:PARAMETER OFF

Description Default value: OFF

:MEASure:INDicator:TRACe

Function   Sets or queries the indicator display trace of parameter math.

Syntax   :MEASure:INDicator:

            TRACe {<NRf>[,<NRf>]|MATH<x>}

            :MEASure:INDicator:TRACe?

            <NRf> = 1 to 32

            [, <NRf>] = 1 to 64 (sub channel)

            <x> = 1 to 8

Example   :MEASURE:INDICATOR:TRACE 1

            :MEASURE:INDICATOR:TRACE?

            -> :MEASURE:INDICATOR:TRACE 1

Description Default value: 1

:MEASure:MODE

Function	Sets or queries the measure mode.
Syntax	:MEASure:MODE {OFF|ON|CYCLe|HISTory| STATistics} :MEASure:MODE?
Example	:MEASURE:MODE ON :MEASURE:MODE? -> :MEASURE:MODE ON
Description	Default value: OFF

:MEASure:ONECycle

Function	Sets or queries whether one cycle mode is ON or OFF.
Syntax	:MEASure:ONECycle {<Boolean>} :MEASure:ONECycle?
Example	:MEASURE:ONECYCLE ON :MEASURE:ONECYCLE? -> :MEASURE:ONECYCLE 1
Description	Default value: OFF

:MEASure:TRANge (Time Range)

Function	Sets or queries the waveform parameter measurement range.
Syntax	:MEASure:TRANge {<NRf>,<NRf>} :MEASure:TRANge? <NRf> = –5 to 5 divisions (in steps of 10 divisions/ display record length)
Example	:MEASURE:TRANGE –5,5 :MEASURE:TRANGE? -> :MEASURE:TRANGE –5.000000000000, 5.000000000000
Description	Default value: -5, 5

:MEASure:WAIT?

Function	Waits for the completion of measurement with a timeout.
Syntax	:MEASure:WAIT? {<NRf>} <NRf> = 1 to 36000 (timeout value, in units of 100 ms)
Example	:MEASure:WAIT? 100 -> 1
Description	The command returns 0 if the measurement finishes within the specified timeout. If measurement does not finish, or if it was never taking place to begin with, the command returns 1. Even if you make the timeout value long, 0 is returned as soon as the measurement finishes.

:MEASure:{XY<x>}?

Function	(Upper-level query) Queries all the settings for automated measurement of XY waveform parameters.
Syntax	:MEASure:{XY<x>}? <x> = 1 to 8

:MEASure:{XY<x>}:<Parameter>?

Function	Queries the setting of a waveform parameter (measurement item).
Syntax	:MEASure:{XY<x>}:<Parameter>? <x> = 1 to 8 <Parameter> = {XY1Integ|XY2Integ}

:MEASure:{XY<x>}:<Parameter>:COUNt?

Function	Queries the count of measured values for cyclic statistical processing of a waveform parameter.
Syntax	:MEASure:{XY<x>}:<Parameter>:COUNt? <x> = 1 to 8 <Parameter> = {XY1Integ|XY2Integ}
Example	:MEASURE:XY1:XY1INTEG:COUNT? -> :MEASURE:XY1:XY1INTEG:COUNT 1

:MEASure:{XY<x>}:<Parameter>:{MAXimum|MEAN|MINimum|SDEViation}?

Function	Queries a cyclic statistical processing value of a waveform parameter.
Syntax	:MEASure:{XY<x>}:<Parameter>: {MAXimum|MEAN|MINimum|SDEViation}? <x> = 1 to 8 <Parameter> = {XY1Integ|XY2Integ}
Example	:MEASURE:XY1:XY1INTEG:MAXIMUM? -> :MEASURE:XY1:XY1INTEG:MAXIMUM NAN
Description	This command returns "NAN" for any statistics that cannot be processed.

:MEASure:{XY<x>}:<Parameter>:STATe

Function	Sets or queries whether the specified waveform's parameter is ON or OFF.
Syntax	:MEASure:{XY<x>}:<Parameter>: STATe {<Boolean>} :MEASure:{XY<x>}:<Parameter>:STATe? <x> = 1 to 8 <Parameter> = {XY1Integ|XY2Integ}
Example	:MEASURE:XY1:XY1INTEG:STATE ON :MEASURE:XY1:XY1INTEG:STATE? -> :MEASURE:XY1:XY1INTEG:STATE 1
Description	Default value: OFF

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Commands

:MEASure:{XY<x>}:<Parameter>:VALue?

Function   Queries the measured value of a waveform parameter.

Syntax   :MEASure:{XY<x>}:<Parameter>: VALue? {<NRf>}
<x> = 1 to 8
<Parameter> = {XY1Integ|XY2Integ}
<NRf> = 1 to 64000

Description   • This command returns "NAN" if the value cannot be measured.
     • Parameters cannot be measured if the measurement has not been performed or if the measurement was performed, but computations were not performed because the specified range exceeded 10 Mpoint.
     • The <NRf> at the end is used to specify which iteration of statistical processing to query the parameter value from. This command returns "NAN" (Not A Number) if the specified value does not exist.
     • (For non-cyclic statistical processing) <NRf> can be omitted. If you omit , the most recent history parameter value will be queried. If <NRf> is included, the history parameter value of the waveform <NRf> times before the newest history waveform will be queried.
     • (After cyclic statistical processing has been completed) <NRf> can be omitted. If you omit , the parameter value within the cycle that was measured last will be queried.
      If you include <NRf>, the parameter value within the cycle that was measured <NRf> times after the measurement shown on the screen's left edge will be queried.

:MEASure:{XY<x>}:AREA2?

Function   (Upper-level query) Queries all settings related to area 2 of the specified waveform.

Syntax   :MEASure:{XY<x>}:AREA2?
<x> = 1 to 8

:MEASure:{XY<x>}:AREA2:<Parameter>?

Function   Queries the setting of a waveform area 2 parameter (measurement item).

Syntax   :MEASure:{XY<x>}:AREA2:<Parameter>?
<x> = 1 to 8
<Parameter> = {XY1Integ|XY2Integ}

:MEASure:{XY<x>}:AREA2:<Parameter>:COUNt?

Function   Queries the count of measured values for cyclic statistical processing of a waveform area 2 parameter.

Syntax   :MEASure:{XY<x>}:AREA2: <Parameter>:COUNt?
<x> = 1 to 8
<Parameter> = {XY1Integ|XY2Integ}

Example   :MEASURE:XY1:AREA2:XY1INTEG:COUNT?
-> :MEASURE:XY1:AREA2:XY1INTEG: COUNT 1

:MEASure:{XY<x>}:AREA2:<Parameter>:{MAXimum|MEAN|MINimum|SDEViation}?

Function   Queries a cyclic statistical processing value of a waveform area 2 parameter.

Syntax   :MEASure:{XY<x>}:AREA2:<Parameter>: {MAXimum|MEAN|MINimum|SDEViation}?
<x> = 1 to 8
<Parameter> = {XY1Integ|XY2Integ}

Example   :MEASURE:XY1:AREA2:XY1INTEG:MAXIMUM?
-> :MEASURE:XY1:AREA2:XY1INTEG: MAXIMUM NAN

Description   This command returns "NAN" for any statistics that cannot be processed.

:MEASure:{XY<x>}:AREA2:<Parameter>:STATe

Function   Sets or queries whether the specified waveform's area 2 waveform parameter (measurement item) is ON or OFF.

Syntax   :MEASure:{XY<x>}:AREA2:<Parameter>: STATe {<Boolean>}
:MEASure:{XY<x>}:AREA2:<Parameter>: STATe?
<x> = 1 to 8
<Parameter> = {XY1Integ|XY2Integ}

Example   :MEASURE:XY1:AREA2:XY1INTEG:STATE ON
:MEASURE:XY1:AREA2:XY1INTEG:STATE?
-> :MEASURE:XY1:AREA2:XY1INTEG: STATE 1

`:MEASure:{XY<x>}:AREA2:<Parameter>:VALue?`

Function   Queries the measured value of a waveform area 2 parameter.

Syntax   `:MEASure:{XY<x>}:AREA2:<Parameter>:VALue? {<NRf>}`
          `<x>` = 1 to 8
          `<Parameter>` = `{XY1Integ|XY2Integ}`
          `<NRf>` = 1 to 64000

Description
• This command returns "NAN" if the value cannot be measured.
• Parameters cannot be measured if the measurement has not been performed or if the measurement was performed, but computations were not performed because the specified range exceeded 10 Mpoint.
• The `<NRf>` at the end is used to specify which iteration of statistical processing to query the parameter value from. This command returns "NAN" (Not A Number) if the specified value does not exist.
• (For non-cyclic statistical processing) `<NRf>` can be omitted. If you omit , the most recent history parameter value will be queried. If `<NRf>` is included, the history parameter value of the waveform `<NRf>` times before the newest history waveform will be queried.
• (After cyclic statistical processing has been completed) `<NRf>` can be omitted. If you omit , the parameter value within the cycle that was measured last will be queried. If you include `<NRf>`, the parameter value within the cycle that was measured `<NRf>` times after the measurement shown on the screen's left edge will be queried.

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Commands

4.24 MONitor Group

The commands in this group deal with switching the screen that is displayed and the output of the numeric monitor.

:MONitor:ASENd?

Function	Sends the numeric monitor data (in ASCII format) of all channels.
Syntax	:MONitor:ASENd?
Example	:MONITOR:ASEND?
	-> See the response format shown in the figure below.
Description	• The measured values of each channel are divided by semicolons (0x3b). The values for all active channels are output.
	• Depending on the MONitor:VERBose command's setting, the measured value is returned with a label and the unit, or just the measured value is returned.
	• The active channels are channels whose input is turned on for 2-channel modules and sub channels whose input is turned on and coupling set to a setting other than OFF for 16-channel modules.
	• Logic channels follow the same guidelines explained here. The measured value is right justified. The unit is returned as white space.

Response format

| " | C | H | 1 | | ······· | | ······· | 5 | 4 | . | 2 | 1 | V | | | " | ; | " | ··· |

Label, 16 char. (left justified)   Measured value, 13 char. (right justified)   Unit, 4 char.

:MONitor:ASENd:CHANnel<x1>[:SCHannel<x2>]?

Function	Sends the numeric monitor data (in ASCII format) of the specified channel.
Syntax	:MONitor:ASENd: CHANnel<x1>[:SCHannel<x2>]?
	<x1> = 1 to 32
	<x2> = 1 to 62 (sub channel)
Example	:MONITOR:ASEND:CHAN1?
	-> The response format is the same as the :MONitor:ASENd command.
Description	• Depending on the MONitor:VERBose command's setting, the measured value is returned with a label and the unit, or just the measured value is returned.
	• If the specified channel input is off, "OFF" is returned for the measured value.

:MONitor:BITS:CHANnel<x1>[:SCHannel<x2>]?

Function	Queries the effective bit length of the specified channel's data.
Syntax	:MONitor:BITS: CHANnel<x1>[:SCHannel<x2>]?
	<x1> = 1 to 32
	<x2> = 1 to 62 (sub channel)
Example	:MONitor:BITS:CHAN1?
	-> :MONITOR:BITS:CHAN1 16
Description	For example, if this command is received by a 701250 voltage module (effective bit length of 12 bits), 12 will be returned. A logic module will return 8.

:MONitor:BYTeorder

Function	Sets or queries the transmission byte order for data formats that are 2 bytes or longer.
Syntax	:MONitor:BYTeorder {LSBFirst| MSBFirst}
	:MONitor:BYTeorder?
Example	:MONITOR:BYTEORDER MSBFIRST
	:MONITOR:BYTEORDER?
	-> :MONITOR:BYTEORDER MSBFIRST

:MONitor:FORMat:CHANnel<x1>[:SCHannel<x2>]

Function	Sets or queries the transmission data format.
Syntax	:MONitor:FORMat: CHANnel<x1>[:SCHannel<x2>] {BYTE| WORD|DWORd|SREal}
	:MONitor:FORMat: CHANnel<x1>[:SCHannel<x2>]?
	<x1> = 1 to 32
	<x2> = 1 to 62 (sub channel)
Example	:MONITOR:FORMAT:CHANNEL1: SCHANNEL1 WORD
	:MONITOR:FORMAT:CHANNEL1:SCHANNEL1?
	-> :MONITOR:FORMAT:CHANNEL1: SCHANNEL1 WORD

:MONitor:GAIN:CHANnel<x1>[:SCHannel<x2>]?

Function	Queries the gain that is used when the specified channel's numeric monitor data is converted to a physical value.
Syntax	:MONitor:GAIN: CHANnel<x1>[:SCHannel<x2>]?
	<x1> = 1 to 32
	<x2> = 1 to 62 (sub channel)
Example	:MONITOR:GAIN:CHANNEL1?

:MONitor:LATCh:ASENd?

Function   Sends the numeric monitor data (in ASCII format) of all channels. The data that is present at the time when you execute the latch command is sent.

Syntax   :MONitor:LATCH:ASENd?

Example   :MONITOR:LATCH:ASEND?
           -> The response format is the same as the :MONitor:ASENd command.

Description The data that is present at the time when you execute the latch command is sent. If the latch command has not been executed, an undefined value is returned.

:MONitor:LATCh:ASENd:CHANnel<x1>[:SC Hannel<x2>]?

Function   Sends the numeric monitor data (in ASCII format) of the specified channel. The data that is present at the time when you execute the latch command is sent.

Syntax   :MONitor:LATCH:ASENd:
          CHANnel<x1>[:SCHannel<x2>]?
          <x1> = 1 to 32
          <x2> = 1 to 62 (sub channel)

Example   :MONITOR:LATCH:ASEND:CHANNEL1?
           -> The response format is the same as the :MONitor:ASENd:
           CHANnel<x>[:SCHannel<x>]? command.

Description The data that is present at the time when you execute the latch command is sent. If the latch command has not been executed, an undefined value is returned.

:MONitor:LATCh:EXECute

Function   Latches the monitor data.

Syntax   :MONitor:LATCH:EXECute

:MONitor:LATCh:SEND:{ALL|CHANnel<x1> [:SCHannel<x2>]}?

Function   Sends numeric monitor data.

Syntax   :MONitor:LATCH:SEND:{ALL|
          CHANnel<x1>[:SCHannel<x2>]}?
          <x1> = 1 to 32
          <x2> = 1 to 62 (sub channel)

Example   :MON:LATCh:SEND:CHAN1?
           -> #9 (9-digit number of bytes; data byte sequence)

Description The data that is present at the time when you execute the latch command is sent.

:MONitor:OFFSet:CHANnel<x1>[:SCHanne l<x2>]?

Function   Queries the offset that is used when the specified channel's numeric monitor data is converted to a physical value.

Syntax   :MONitor:OFFSet:
          CHANnel<x1>[:SCHannel<x2>]?
          <x1> = 1 to 32
          <x2> = 1 to 62 (sub channel)

Example   :MONITOR:OFFSET:CHANNEL1
           -> :MONITOR:OFFSET:
              CHANNEL1 0.0000000E+00

:MONitor:RANGe:CHANnel<x1>[:SCHannel <x2>]?

Function   Queries the range that is used when the specified channel's numeric monitor data is converted to a physical value.

Syntax   :MONitor:RANGe:
          CHANnel<x1>[:SCHannel<x2>]?
          <x1> = 1 to 32
          <x2> = 1 to 62 (sub channel)

Example   :MONITOR:RANGE:CHANNEL1?
           -> :MONITOR:RANGE:
              CHANNEL1 5.0000000E+00

**:MONitor:RODisplay?
(Range Out Display)**

Function   Queries the over-range state of the input signal using a character string displayed on the instrument.

Syntax   :MONitor:RODisplay?

Example   :MONITOR:RODISPLAY?

Description This command returns the over-range state of the input signal using a character string displayed on the instrument.

**:MONitor:ROSTatus?
(Range Out Status)**

Function   Queries the over-range state of the input signal.

Syntax   :MONitor:ROSTatus?

Example   :MONITOR:ROSTATUS?
           -> #128(128-byte data)

Description This command returns the over-range state in a 128-byte data array.
           Elements [0] to [7] indicate the Slot1-Ach state.
           Bit 7 of [0] indicates the state of sub channel 1, and bit 0 of [7] indicates the state of sub channel 64.
           The state is either 0, which indicates that the input signal is within the range, or 1, which indicates that the input signal is over the range.

:MONitor:SEND:ALL?

Function   Sends the numeric monitor data (in binary format) of all channels.

Syntax   :MONitor:SEND:ALL?

Example   :MON:SEND:ALL?
           -> #9 (9-digit number of bytes; data byte sequence)

Description • The number of output bytes for each channel is based on the value specified by the :MONitor:FORMat:CHANnel<x> command.
           • Channels whose input is off are not sent.

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:MONitor:SEND:CHANnel\<x1\>[:SCHannel \<x2\>]?

Function   Sends the numeric monitor data (in binary format) of the specified channel.

Syntax   :MONitor:SEND:
               CHANnel\<x1\>[:SCHannel\<x2\>]?
               \<x1\> = 1 to 32
               \<x2\> = 1 to 62

Example   :MON:SEND:CHAN1?
               -> #9 (9-digit number of bytes; data byte sequence)

Description   • The number of output bytes for each channel is based on the value specified by the :MONitor:FORMat:CHANnel\<x\> command.
               • Channels whose input is off are not sent.

:MONitor:VERBose

Function   Set whether to include labels and units in the response to the MONitor:ASENd? command.

Syntax   :MONitor:VERBose {\<Boolean\>}
               :MONitor:VERBose?

Example   :MONITOR:VERBOSE ON
               :MONITOR:VERBOSE?
               -> :MONITOR:VERBOSE 1

Description   Default value: 1 (include labels and units)

4.25　MTRigger Group

The command in this group deals with manual triggers.

:MTRigger

Function　　Manually triggers the instrument.

Syntax　　　:MTRigger

Example　　 :MTRIGGER

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4.26 RECall Group

The commands in this group deal with recalling setup data.

:RECall:SETup\<x\>:EXECute

Function   Recalls setup data from an internal memory area.

Syntax   :RECall:SETup\<x\>:EXECute

              \<x\> = 1 to 17

Example   :RECALL:SETUP1:EXECUTE

Description   • \<x\> = 17 represents product setting.

              • If you specify an area that does not contain
                setup data, an error occurs.

4.27 RMATh CHANnel Group

The commands in this group deal with real time math. You can perform the same operations and make the same settings and queries that you can make from the Filter/Delay Setup menu that you access by pressing R.MATH on the front panel or by accessing the menus for channels RMATh1 to RMATh16.

:CHANnel<x>:RMATh?
Function   (Upper-level query) Queries all real time math settings.
Syntax   :CHANnel<x>:RMATh?
Description This command is valid when the /G03 or /G05 option is installed.

:CHANnel<x>:RMATh:AMINus:SCALe
Function   Sets or queries the scale for angle difference calculation.
Syntax   :CHANnel<x>:RMATh:AMINus:
            SCALe {DEG1|DEG2|RAD1|RAD2}
            :CHANnel<x>:RMATh:AMINus:SCALe?
            <x> = 17 to 32
Example   :CHANNEL17:RMATH:AMINUS:SCALE RAD1
            :CHANNEL17:RMATH:AMINUS:SCALE?
            -> :CHANNEL17:RMATH:AMINUS:
               SCALE RAD1
Description • This command is valid when the /G03 or /G05 option is installed.
            • Default value: DEG1

:CHANnel<x>:RMATh:APLus:SCALe
Function   Sets or queries the scale for angle sum calculation.
Syntax   :CHANnel<x>:RMATh:APLus:
            SCALe {DEG1|DEG2|RAD1|RAD2}
            :CHANnel<x>:RMATh:APLus:SCALe?
            <x> = 17 to 32
Example   :CHANNEL17:RMATH:APLUS:SCALE RAD1
            :CHANNEL17:RMATH:APLUS:SCALE?
            -> :CHANNEL17:RMATH:AMINUS:
               SCALE RAD1
Description • This command is valid when the /G03 or /G05 option is installed.
            • Default value: DEG1

:CHANnel<x>:RMATh:ATANgent:SCALe
Function   Sets or queries the scale of the specified channel's arc tangent operation.
Syntax   :CHANnel<x>:RMATh:ATANgent:
            SCALe {DEGRee|RADian}
            :CHANnel<x>:RMATh:ATANgent:SCALe?
            <x> = 17 to 32
Example   :CHANNEL17:RMATH:ATANGENT:
            SCALE DEGREE
            :CHANNEL17:RMATH:ATANGENT:SCALE?
            -> :CHANNEL17:RMATH:ATANGENT:
               SCALE DEGREE
Description • This command is valid when the /G03 or /G05 option is installed.
            • Default value: RADian

:CHANnel<x>:RMATh:ATANgent:QUADrant
Function   Sets or queries the quadrant range for the arctangent calculation of the specified channel.
Syntax   :CHANnel<x>:RMATh:ATANgent:
            QUADrant {2|4}
            :CHANnel<x>:RMATh:ATANgent:QUADrant?
            <x> = 17 to 32
Example   :CHANNEL17:RMATH:ATANGENT:QUADRANT 2
            :CHANNEL17:RMATH:ATANGENT:QUADRANT?
            -> :CHANNEL17:RMATH:ATANGENT:
               QUADRANT 2
Description • This command is valid when the /G03 or /G05 option is installed.
            • Default value: 2

:CHANnel<x>:RMATh:AVALue
Function   Sets or queries coefficient A of the currently specified real time math operation.
Syntax   :CHANnel<x>:RMATh:AVALue {<NRf>}
            :CHANnel<x>:RMATh:AVALue?
            <x> = 17 to 32
            <NRf> = –9.9999E+30 to 9.9999E+30
Example   :CHANNEL17:RMATH:AVALUE +1.0000E+30
            :CHANNEL17:RMATH:AVALUE?
            -> :CHANNEL17:RMATH:
               AVALUE+ 1.0000E+30
Description • This command is valid when the /G03 or /G05 option is installed.
            • This command is also used for constant K when the scaling of angle of rotation or rotating speed is set to user-defined.

:CHANnel<x>:RMATh:BVALue
Function   Sets or queries coefficient A of the currently specified real time math operation.
Syntax   :CHANnel<x>:RMATh:BVALue {<NRf>}
            :CHANnel<x>:RMATh:BVALue?
            <x> = 17 to 32
            <NRf> = –9.9999E+30 to 9.9999E+30
Example   :CHANNEL17:RMATH:BVALUE +1.0000E+30
            :CHANNEL17:RMATH:BVALUE?
            -> :CHANNEL17:RMATH:
               BVALUE +1.0000E+30
Description This command is valid when the /G03 or /G05 option is installed.

`:CHANnel<x>:RMATh:BWIDth?`

Function (Upper-level query) Queries all filter mode settings of a channel.

Syntax `:CHANnel<x>:RMATh:BWIDth?`

`<x>` = 1 to 16

Description This command is valid when the /G03 or /G05 option is installed.

`:CHANnel<x>:RMATh:BWIDth:BAND`

Function Sets or queries the band of the specified channel's digital filter.

Syntax `:CHANnel<x>:RMATh:BWIDth:`
`BAND {BPASs|HPASs|LPASs}`
`:CHANnel<x>:RMATh:BWIDth:BAND?`

`<x>` = 1 to 16

Example `:CHANNEL1:RMATH:BWIDTH:BAND BPASS`
`:CHANNEL1:RMATH:BWIDTH:BAND?`
`-> :CHANNEL1:RMATH:BWIDTH:BAND BPASS`

Description
• This command is valid when the /G03 or /G05 option is installed.
• This command cannot be used on channels that a 16-CH temperature/voltage input module, logic input module, CAN bus monitor module, CAN&LIN bus monitor module, or CAN/CAN FD monitor module is installed in.
• When the digital filter type is GAUSs, you can only select LPASs.
• Default value: LPASs

`:CHANnel<x>:RMATh:BWIDth:CFRequency`

Function Sets or queries the center frequency of the bandpass filter of the specified channel's digital filter.

Syntax `:CHANnel<x>:RMATh:BWIDth:`
`CFRequency {<Frequency>}`
`:CHANnel<x>:RMATh:BWIDth:CFRequency?`

`<x>` = 1 to 16

`<Frequency>`:

   TYPE: IIR
      60Hz to 294kHz
      Resolution: 20Hz (60Hz to 1.18kHz)
                   200Hz (1.2kHz to 11.8kHz)
                   2kHz (12kHz to 294kHz)

   TYPE: SHARp
      300Hz to 290kHz
      Resolution: 20Hz (300Hz to 2.98kHz)
                   200Hz (3kHz to 29.8kHz)
                   2kHz (30kHz to 290kHz)

Example `:CHANNEL1:RMATH:BWIDTH:`
`CFREQUENCY 300Hz`
`:CHANNEL1:RMATH:BWIDTH:CFREQUENCY?`
`-> :CHANNEL1:RMATH:BWIDTH:`
`   CFREQUENCY 300Hz`

Description
• This command is valid when the /G03 or /G05 option is installed.
• This command cannot be used on channels that a 16-CH temperature/voltage input module, logic input module, CAN bus monitor module, CAN&LIN bus monitor module, or CAN/CAN FD monitor module is installed in.
• Default value: 300kHz

`:CHANnel<x>:RMATh:BWIDth:CUToff`

Function Sets or queries the cutoff frequency of the specified channel's digital filter.

Syntax `:CHANnel<x>:RMATh:BWIDth:`
`CUToff {<Frequency>}`
`:CHANnel<x>:RMATh:BWIDth:CUToff?`

`<x>` = 1 to 16

`<Frequency>`:

   When TYPE is set to GAUSs, and TYPE is set to SHARp and BAND is set to LPASs
      2Hz to 300kHz
      Resolution: 0.2Hz (2Hz to 29.8Hz)
                   2Hz (30Hz to 298Hz)
                   20Hz (300Hz to 2.98kHz)
                   200Hz (3kHz to 29.8kHz)
                   2kHz (30kHz to 300kHz)

   When TYPE is set to SHARp and BAND is set to HPASs
      200Hz to 300kHz
      Resolution: 20Hz (200Hz to 2.98kHz)
                   200Hz (3kHz to 29.8kHz)
                   2kHz (30kHz to 300kHz)

   When TYPE is set to IIR and BAND is set to LPASs
      2Hz to 300kHz
      Resolution: 2Hz (2Hz to 298Hz)
                   20Hz (300Hz to 2.98kHz)
                   200Hz (3kHz to 29.8kHz)
                   2kHz (30kHz to 300kHz)

   When TYPE is set to IIR and BAND is set to HPASs
      20Hz to 300kHz
      Resolution: 20Hz (20Hz to 2.98kHz)
                   200Hz (3kHz to 29.8kHz)
                   2kHz (30kHz to 300kHz)

   When TYPE is set to LIIR
      128kHz, 64kHz, 32kHz, 16kHz, 8kHz, 4kHz, 2kHz, 1kHz, 500Hz, 250Hz, 125Hz, 62.5Hz

Example `:CHANNEL1:RMATH:BWIDTH:CUTOFF 300kHz`
`:CHANNEL1:RMATH:BWIDTH:CUTOFF?`
`-> :CHANNEL1:RMATH:BWIDTH:`
`   CUTOFF 300kHz`

Description
• This command is valid when the /G03 or /G05 option is installed.
• This command cannot be used on channels that a 16-CH temperature/voltage input module, logic input module, CAN bus monitor module, CAN&LIN bus monitor module, or CAN/CAN FD monitor module is installed in.
• When the digital filter type is GAUSs, you can only select LPASs.
• Default value: 300kHz

:CHANnel<x>:RMATh:BWIDth:INTerpo

Function   Sets or queries the interpolation feature of the
             specified channel's digital filter.
Syntax   :CHANnel<x>:RMATh:BWIDth:
             INTerpo {<Boolean>}
             :CHANnel<x>:RMATh:BWIDth:INTerpo?
             <x> = 1 to 16
Example   :CHANNEL1:RMATH:BWIDTH:INTERPO 1
             :CHANNEL1:RMATH:BWIDTH:INTERPO?
             -> :CHANNEL1:RMATH:BWIDTH:INTERPO 1
Description • This command is valid when the /G03 or /G05
               option is installed.
             • This command cannot be used on channels
               that a 16-CH temperature/voltage input
               module, logic input module, CAN bus monitor
               module, CAN&LIN bus monitor module, or
               CAN/CAN FD monitor module is installed in.
             • Default value: ON

:CHANnel<x>:RMATh:BWIDth:MEAN?

Function   (Upper-level query) Queries all mean settings of
             the specified channel's digital filter.
Syntax   :CHANnel<x>:RMATh:BWIDth:MEAN?
Description This command is valid when the /G03 or /G05
             option is installed.

:CHANnel<x>:RMATh:BWIDth:MEAN:TAP

Function   Sets or queries the tap of the mean of the
             specified channel's digital filter.
Syntax   :CHANnel<x>:RMATh:BWIDth:MEAN:
             TAP {<NRf>}
             :CHANnel<x>:RMATh:BWIDth:MEAN:TAP?
             <x> = 1 to 16
             <NRf> = 2, 4, 8, 16, 32, 64, 128
Example   :CHANNEL1:RMATH:BWIDTH:MEAN:TAP 4
             :CHANNEL1:RMATH:BWIDTH:MEAN:TAP?
             -> :CHANNEL1:RMATH:BWIDTH:MEAN:TAP 4
Description • This command is valid when the /G03 or /G05
               option is installed.
             • This command cannot be used on channels
               that a 16-CH temperature/voltage input
               module, logic input module, CAN bus monitor
               module, CAN&LIN bus monitor module, or
               CAN/CAN FD monitor module is installed in.
             • Default value: 2

**:CHANnel<x>:RMATh:BWIDth:MEAN:SAMPle
(Base Sample)**

Function   Sets or queries the sample of the mean of the
             specified channel's digital filter.
Syntax   :CHANnel<x>:RMATh:BWIDth:MEAN:
             SAMPle {<Frequency>}
             :CHANnel<x>:RMATh:BWIDth:MEAN:
             SAMPle?
             <x> = 1 to 16
             <Frequency> = 1MHz, 100kHz, 10kHz, 1kHz
Example   :CHANNEL1:RMATH:BWIDTH:MEAN:
             SAMPLE 1MHz
             :CHANNEL1:RMATH:BWIDTH:MEAN:SAMPLE?
             -> :CHANNEL1:RMATH:BWIDTH:MEAN:
                SAMPLE 1MHz
Description • This command is valid when the /G03 or /G05
               option is installed.
             • This command cannot be used on channels
               that a 16-CH temperature/voltage input
               module, logic input module, CAN bus monitor
               module, CAN&LIN bus monitor module, or
               CAN/CAN FD monitor module is installed in.
             • Default value: 1MHz

:CHANnel<x>:RMATh:BWIDth:MODE

Function   Sets or queries the filter mode of the specified
             channel.
Syntax   :CHANnel<x>:RMATh:BWIDth:
             MODE {LPF|DIGital}
             :CHANnel<x>:RMATh:BWIDth:MODE?
             <x> = 1 to 16
Example   :CHANNEL1:RMATH:BWIDTH:MODE LPF
             :CHANNEL1:RMATH:BWIDTH:MODE?
             -> :CHANNEL1:RMATH:BWIDTH:MODE LPF
Description • This command is valid when the /G03 or /G05
               option is installed.
             • This command cannot be used on channels
               that a 16-CH temperature/voltage input
               module, logic input module, CAN bus monitor
               module, CAN&LIN bus monitor module, or
               CAN/CAN FD monitor module is installed in.
             • Default value: LPF

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:CHANnel<x>:RMATh:BWIDth:PBANd (Pass Band)

Function   Sets or queries the bandwidth of the bandpass filter of the specified channel's digital filter.

Syntax   :CHANnel<x>:RMATh:BWIDth:
            PBANd {<Frequency>}
            :CHANnel<x>:RMATh:BWIDth:PBANd?
            <x> = 1 to 16
            <Frequency>:
                TYPE: IIR
                    200kHz, 150kHz, 100kHz, 50kHz,
                    20kHz, 15kHz, 10kHz, 5kHz, 2kHz,
                    1.5kHz, 1kHz, 500Hz, 200Hz, 100Hz
                TYPE: SHARp
                    200kHz, 150kHz, 100kHz, 50kHz,
                    20kHz, 15kHz, 10kHz, 5kHz, 2kHz,
                    1.5kHz, 1kHz, 500Hz, 200Hz

Example   :CHANNEL1:RMATH:BWIDTH:PBAND 200Hz
            :CHANNEL1:RMATH:BWIDTH:PBAND?
            -> :CHANNEL1:RMATH:BWIDTH:
               PBAND 200Hz

Description • This command is valid when the /G03 or /G05 option is installed.
            • This command cannot be used on channels that a 16-CH temperature/voltage input module, logic input module, CAN bus monitor module, CAN&LIN bus monitor module, or CAN/CAN FD monitor module is installed in.
            • When the center frequency is changed, if the frequency approaches the bandwidth limit, the bandwidth is changed.
            • Default value: 200Hz

:CHANnel<x>:RMATh:BWIDth:TYPE

Function   Sets or queries the digital filter type of the specified channel.

Syntax   :CHANnel<x>:RMATh:BWIDth:
            TYPE {GAUSs|IIR|SHARp|MEAN|LIIR}
            :CHANnel<x>:RMATh:BWIDth:TYPE?
            <x> = 1 to 16

Example   :CHANNEL1:RMATH:BWIDTH:TYPE IIR
            :CHANNEL1:RMATH:BWIDTH:TYPE?
            -> :CHANNEL1:RMATH:BWIDTH:TYPE IIR

Description • This command is valid when the /G03 or /G05 option is installed.
            • This command cannot be used on channels that a 16-CH temperature/voltage input module, logic input module, CAN bus monitor module, CAN&LIN bus monitor module, or CAN/CAN FD monitor module is installed in.
            • Default value: IIR

:CHANnel<x>:RMATh:CANId?

Function   (Upper-level query) Queries all CAN ID settings.

Syntax   :CHANnel<x>:RMATh:CANId?

Description This command is valid when the /G03 option is installed.

:CHANnel<x>:RMATh:CANId:BRATe (Bit Rate)

Function   Sets or queries the CAN ID bit rate of the specified channel.

Syntax   :CHANnel<x>:RMATh:CANId:
            BRATe {<NRf>}
            :CHANnel<x>:RMATh:CANId:BRATe?
            <x> = 17 to 32
            <NRf> = 10000, 20000, 33300, 50000, 62500,
                    66700, 83300, 100000, 125000,
                    250000, 500000, 800000, 1000000

Example   :CHANNEL17:RMATH:CANID:BRATE 500000
            :CHANNEL17:RMATH:CANID:BRATE?
            -> :CHANNEL17:RMATH:CANID:
               BRATE 500000

Description • This command is valid when the /G03 option is installed.
            • Default value: 500000

:CHANnel<x>:RMATh:CANId:MFORmat (Message Format)

Function   Sets or queries the CAN ID message format of the specified channel.

Syntax   :CHANnel<x>:RMATh:CANId:
            MFORmat {STANdard|EXTended}
            :CHANnel<x>:RMATh:CANId:MFORmat?
            <x> = 17 to 32

Example   :CHANNEL17:RMATH:CANID:
            MFORMAT STANDARD
            :CHANNEL17:RMATH:CANID:MFORMAT?
            -> :CHANNEL17:RMATH:CANID:
               MFORMAT STANDARD

Description • This command is valid when the /G03 option is installed.
            • Default value: STANdard

:CHANnel<x>:RMATh:CANId:MID (Message ID)

Function   Sets or queries the CAN ID message ID of the specified channel.

Syntax   :CHANnel<x>:RMATh:CANId:
MID {<String>}
:CHANnel<x>:RMATh:CANId:MID?
<x> = 17 to 32
<String>
When MFormat is Standard: "0" to "7FF"
When MFormat is Extended: "0" to "1FFFFFFF"

Example   :CHANNEL17:RMATH:CANID:MID "7FF"
:CHANNEL17:RMATH:CANID:MID?
-> :CHANNEL17:RMATH:CANID:MID "7FF"

Description • This command is valid when the /G03 option is installed.
• Default value: 0

:CHANnel<x>:RMATh:CANId:SOURce

Function   Sets or queries the CAN ID source channel of the specified channel.

Syntax   :CHANnel<x>:RMATh:CANId:
SOURce {<NRf>}
:CHANnel<x>:RMATh:CANId:SOURce?
<x> = 17 to 32
<NRf> = 1 to 16

Example   :CHANNEL17:RMATH:CANID:SOURCE 1
:CHANNEL17:RMATH:CANID:SOURCE?
-> :CHANNEL17:RMATH:CANID:SOURCE 1

Description • This command is valid when the /G03 option is installed.
• Default value: 1

:CHANnel<x>:RMATh:CVALue

Function   Sets or queries coefficient C of the currently specified real time math operation.

Syntax   :CHANnel<x>:RMATh:CVALue {<NRf>}
:CHANnel<x>:RMATh:CVALue?
<x> = 17 to 32
<NRf> = -9.9999E+30 to +9.9999E+30

Example   :CHANNEL17:RMATH:CVALUE +1.0000E+30
:CHANNEL17:RMATH:CVALUE?
-> :CHANNEL17:RMATH:
CVALUE +1.0000E+30

Description This command is valid when the /G03 or /G05 option is installed.

:CHANnel<x>:RMATh:DA?

Function   (Upper-level query) Queries all logic signal and analog waveform conversion settings.

Syntax   :CHANnel<x>:RMATh:DA?

Description • This command is valid when the /G03 or /G05 option is installed.
• An execution error will occur if you specify a channel other than that of a logic input module.

:CHANnel<x>:RMATh:DA:BLENgth (Bit Length)

Function   Sets or queries the logic signal and analog waveform conversion bit length.

Syntax   :CHANnel<x>:RMATh:DA:BLENgth {<NRf>}
:CHANnel<x>:RMATh:DA:BLENgth?
<x> = 17 to 32
<NRf> = 2 to 16

Example   :CHANNEL17:RMATH:DA:BLENGTH 16
:CHANNEL17:RMATH:DA:BLENGTH?
-> :CHANNEL17:RMATH:DA:BLENGTH 16

Description • This command is valid when the /G03 or /G05 option is installed.
• An execution error will occur if you specify a channel other than that of a logic input module.
• Default value: 16

:CHANnel<x1>:RMATh:DA:SOURce<x2>

Function   Sets or queries the math source waveform that you want to convert into an analog waveform.

Syntax   :CHANnel<x1>:RMATh:DA:
SOURce<x2> {<NRf>}
:CHANnel<x>:RMATh:DA:SOURce<x2>?
<x1> = 17 to 32
<x2> = 1, 2

Example   :CHANNEL17:RMATH:DA:SOURCE1 1
:CHANNEL17:RMATH:DA:SOURCE1?
-> :CHANNEL17:RMATH:DA:SOURCE1 1

Description • This command is valid when the /G03 or /G05 option is installed.
• This command cannot be used on logic channels that a CAN bus monitor module, CAN&LIN bus monitor module, or CAN/CAN FD monitor module is installed in.
• An execution error will occur if you specify a channel other than that of a logic input module.
• Default value: The earliest installed logic channel

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:CHANnel<x>:RMATh:DA:TYPE

Function   Sets or queries the logic signal and analog
            waveform conversion method (type).
Syntax   :CHANnel<x>:RMATh:DA:TYPE {OBINary|
            SIGNed|UNSigned}
            :CHANnel<x>:RMATh:DA:TYPE?
            <x> = 17 to 32
Example   :CHANNEL17:RMATH:DA:TYPE OBINARY
            :CHANNEL17:RMATH:DA:TYPE?
            -> :CHANNEL17:RMATH:DA:TYPE OBINARY
Description • This command is valid when the /G03 or /G05
              option is installed.
            • An execution error will occur if you specify a
              channel other than that of a logic input module.
            • Default value: UNSigned

:CHANnel<x>:RMATh:DVALue

Function   Sets or queries coefficient D of the currently
            specified real time math operation.
Syntax   :CHANnel<x>:RMATh:DVALue {<NRf>}
            :CHANnel<x>:RMATh:DVALue?
            <x> = 17 to 32
            <NRf> = -9.9999E+30 to +9.9999E+30
Example   :CHANNEL17:RMATH:DVALUE +1.0000E+30
            :CHANNEL17:RMATH:DVALUE?
            -> :CHANNEL17:RMATH:
               DVALUE +1.0000E+30
Description This command is valid when the /G03 or /G05
            option is installed.

:CHANnel<x>:RMATh:EANGle:TARGet

Function   Sets or queries the electrical angle target
            channel.
Syntax   :CHANnel<x>:RMATh:EANGle:
            TARGet {<NRf>[,<NRf>]}
            :CHANnel<x>:RMATh:EANGle:TARGet?
            <x> = 17 to 32
            <NRf> = 1 to 32
            [,<NRf>] = 1 to 60
Example   :CHANNEL17:RMATH:EANGLE:TARGET 1,1
            :CHANNEL17:RMATH:EANGLE:TARGET?
            -> :CHANNEL17:RMATH:EANGLE:
               TARGET 1,1
Description • This command is valid when the /G03 or /G05
              option is installed.
            • Default value: 1

:CHANnel<x>:RMATh:ECOunt?
(Edge Count)

Function   (Upper-level query) Queries all reset condition
            settings for the specified channel's edge count
            operation.
Syntax   :CHANnel<x>:RMATh:ECOunt?
            <x> = 17 to 32
Description This command is valid when the /G03 or /G05
            option is installed.

:CHANnel<x>:RMATh:ECOunt:MRESet:EXECute (Manual Reset)

Function   Manually resets the count value of the edge count
            operation.
Syntax   :CHANnel<x>:RMATh:ECOunt:MRESet:
            EXECute
            <x> = 17 to 32
Example   :CHANNEL17:RMATH:ECOUNT:MRESET:
            EXECUTE
Description This command is valid when the /G03 or /G05
            option is installed.

:CHANnel<x>:RMATh:ECOunt:OLIMit

Function   Sets or queries the over limit value for edge count
            operation.
Syntax   :CHANnel<x>:RMATh:ECOunt:
            OLIMit {<NRf>}
            :CHANnel<x>:RMATh:ECOunt:OLIMit?
            <x> = 17 to 32
Example   :CHANNEL17:RMATH:ECOUNT:OLIMIT 0
            :CHANNEL17:RMATH:ECOUNT:OLIMIT?
            -> :CHANNEL17:RMATH:ECOUNT:OLIMIT 0
Description • This command is valid when the /G03 or /G05
              option is installed.
            • Default value: 0

:CHANnel<x>:RMATh:ECOunt:OVERange

Function   Sets or queries whether the edge count is reset
            when an over limit occurs for the specified
            channel's edge count operation.
Syntax   :CHANnel<x>:RMATh:ECOunt:
            OVERange {<Boolean>}
            :CHANnel<x>:RMATh:ECOunt:OVERange?
            <x> = 17 to 32
Example   :CHANNEL17:RMATH:ECOUNT:OVERANGE 1
            :CHANNEL17:RMATH:ECOUNT:OVERANGE?
            -> :CHANNEL17:RMATH:ECOUNT:
               OVERANGE 1
Description • This command is valid when the /G03 or /G05
              option is installed.
            • Default value: OFF

**:CHANnel<x>:RMATh:ECOunt:SRESet
(Start Reset)**
Function   Sets or queries whether the edge count is reset
             when the edge count operation starts for the
             specified channel.
Syntax   :CHANnel<x>:RMATh:ECOunt:
             SRESet {<Boolean>}
             :CHANnel<x>:RMATh:ECOunt:SRESet?
             <x> = 17 to 32
Example   :CHANNEL17:RMATH:ECOUNT:SRESET 1
             :CHANNEL17:RMATH:ECOUNT:SRESET?
             -> :CHANNEL17:RMATH:ECOUNT:SRESET 1
Description • This command is valid when the /G03 or /G05
               option is installed.
             • Default value: ON

:CHANnel<x>:RMATh:EVALue
Function   Sets or queries coefficient E of the currently
             specified real time math operation.
Syntax   :CHANnel<x>:RMATh:EVALue {<NRf>}
             :CHANnel<x>:RMATh:EVALue?
             <x> = 17 to 32
             <NRf> = -9.9999E+30 to +9.9999E+30
Example   :CHANNEL17:RMATH:EVALUE +1.0000E+30
             :CHANNEL17:RMATH:EVALUE?
             -> :CHANNEL17:RMATH:
                EVALUE +1.0000E+30
Description This command is valid when the /G03 or /G05
             option is installed.

:CHANnel<x>:RMATh:FREQ?
Function   (Upper-level query) Queries all the settings for
             the specified channel's frequency, period, torque,
             and edge count (excluding reset) operations.
Syntax   :CHANnel<x>:RMATh:FREQ?
             <x> = 17 to 32
Description • This command is valid when the /G03 or /G05
               option is installed.
             • To set the math settings for the
               frequency, period, torque, and edge count
               (excluding reset) operations, use the
               :CHANnel<x>:RMATh:FREQ command and
               the commands that are lower in its hierarchy.
               Before you set any of the settings, use the
               :CHANnel<x>:RMATh:OPERation command to
               set the operation type to FREQuency, PERiod,
               or ECOunt. For details on the commands
               that have different settings for the various
               operations, see the conditions that are written
               in the command descriptions.

:CHANnel<x>:RMATh:FREQ:BIT
Function   Sets or queries the math source waveform (source
             bit) for when frequency, period, torque, or edge
             count is computed for a logic channel.
Syntax   :CHANnel<x>:RMATh:FREQ:BIT {<NRf>}
             :CHANnel<x>:RMATh:FREQ:BIT?
             <x> = 17 to 32
             <NRf> = 1 to 8
Example   :CHANNEL17:RMATH:FREQ:BIT 1
             :CHANNEL17:RMATH:FREQ:BIT?
             -> :CHANNEL17:RMATH:FREQ:BIT 1
Description • This command is valid when the /G03 or /G05
               option is installed.
             • The setting is universal.
             • Default value: 1

:CHANnel<x>:RMATh:FREQ:DECeleration
Function   Sets or queries the on/off state of deceleration
             prediction for frequency, period, torque, and
             rotating speed operations.
Syntax   :CHANnel<x>:RMATh:FREQ:
             DECeleration {<Boolean>}
             :CHANnel<x>:RMATh:FREQ:DECeleration?
             <x> = 17 to 32
Example   :CHANNEL17:RMATH:FREQ:
             DECELERATION ON
             :CHANNEL17:RMATH:FREQ:DECELERATION?
             -> :CHANNEL17:RMATH:FREQ:
                DECELERATION ON
Description • This command is valid when the /G03 or /G05
               option is installed.
             • The setting is universal.
             • Default value: ON

:CHANnel<x>:RMATh:FREQ:HYSTeresis
Function   Sets or queries the detection hysteresis for the
             specified channel's frequency, period, torque, and
             edge count operations.
Syntax   :CHANnel<x>:RMATh:FREQ:
             HYSTeresis {HIGH|LOW|MIDDLE}
             :CHANnel<x>:RMATh:FREQ:HYSTeresis?
             <x> = 17 to 32
Example   :CHANNEL17:RMATH:FREQ:
             HYSTERESIS HIGH
             :CHANNEL17:RMATH:FREQ:HYSTERESIS?
             -> :CHANNEL17:RMATH:FREQ:
                HYSTERESIS HIGH
Description • This command is valid when the /G03 or /G05
               option is installed.
             • The setting is universal.
             • Default value: LOW

:CHANnel<x>:RMATh:FREQ:LEVel

Function   Sets or queries the detection level for the specified channel's frequency, period, torque, and edge count operations.

Syntax   :CHANnel<x>:RMATh:FREQ:
            LEVel {<Voltage>|<NRf>|<Current>}
            :CHANnel<x>:RMATh:FREQ:LEVel?
            <x> = 17 to 32

Example   :CHANNEL17:RMATH:FREQ:LEVEL 1
            :CHANNEL17:RMATH:FREQ:LEVEL?
            -> :CHANNEL17:RMATH:FREQ:
               LEVEL 1.000000E+00

Description • This command is valid when the /G03 or /G05 option is installed.
            • The setting is universal.
            • Default value: 0.0

:CHANnel<x>:RMATh:FREQ:PROTate
(Pulse per Rotate)

Function   Sets or queries the number of pulses per rotation and rotating speed of a frequency operation.

Syntax   :CHANnel<x>:RMATh:FREQ:
            PROTate {<NRf>}
            :CHANnel<x>:RMATh:FREQ:PROTate?
            <x> = 17 to 32

Example   :CHANNEL17:RMATH:FREQ:PROTATE 180
            :CHANNEL17:RMATH:FREQ:PROTATE?
            -> :CHANNEL17:RMATH:FREQ:PROTATE 180

Description • This command is valid when the /G03 or /G05 option is installed.
            • Default value: 1

:CHANnel<x>:RMATh:FREQ:SCALe

Function   Sets or queries the unit of the specified channel's frequency operation.

Syntax   :CHANnel<x>:RMATh:FREQ:SCALe {HZ|RPM}
            :CHANnel<x>:RMATh:FREQ:SCALe?
            <x> = 17 to 32

Example   :CHANNEL17:RMATH:FREQ:SCALE HZ
            :CHANNEL17:RMATH:FREQ:SCALE?
            -> :CHANNEL17:RMATH:FREQ:SCALE HZ

Description • This command is valid when the /G03 or /G05 option is installed.
            • Default value: HZ

:CHANnel<x>:RMATh:FREQ:SLOPe

Function   Sets or queries the detection slope for the specified channel's frequency, period, torque, and edge count operations.

Syntax   :CHANnel<x>:RMATh:FREQ:
            SLOPe {RISE|FALL}
            :CHANnel<x>:RMATh:FREQ:SLOPe?
            <x> = 17 to 32

Example   :CHANNEL17:RMATH:FREQ:SLOPE RISE
            :CHANNEL17:RMATH:FREQ:SLOPE?
            -> :CHANNEL17:RMATH:FREQ:SLOPE RISE

Description • This command is valid when the /G03 or /G05 option is installed.
            • The setting is universal.
            • Default value: RISE

:CHANnel<x1>:RMATh:FREQ:SOURce

Function   Sets or queries the math source waveform for the specified channel's frequency, period, torque, and edge count operations.

Syntax   :CHANnel<x1>:RMATh:FREQ:
            SOURce {<NRf>[,<NRf>]|RMATH<x2>}
            :CHANnel<x1>:RMATh:FREQ:SOURce?
            <x1> = 17 to 32
            <x2> = 17 to 31

Example   :CHANNEL17:RMATH:FREQ:SOURCE 17
            :CHANNEL17:RMATH:FREQ:SOURCE?
            -> :CHANNEL17:RMATH:FREQ:SOURCE 17

Description • This command is valid when the /G03 or /G05 option is installed.
            • The setting is universal.

:CHANnel<x>:RMATh:FREQ:STOPpredict

Function   Sets or queries the stop prediction for frequency, period, torque, and rotating speed operations.

Syntax   :CHANnel<x>:RMATh:FREQ:
            STOPpredict {<NRf>|OFF}
            :CHANnel<x>:RMATh:FREQ:STOPpredict?
            <x> = 17 to 32
            <NRf> = 2, 4, 8, 16

Example   :CHANNEL17:RMATH:FREQ:
            STOPPREDICT OFF
            :CHANNEL17:RMATH:FREQ:STOPPREDICT?
            -> :CHANNEL17:RMATH:FREQ:
               STOPPREDICT OFF

Description • This command is valid when the /G03 or /G05 option is installed.
            • The setting is universal.
            • Default value: OFF

:CHANnel<x>:RMATh:IFILter?

Function   (Upper-level query) Queries all IIR filter settings of the specified channel.

Syntax   :CHANnel<x>:RMATh:IFILter?

Description This command is valid when the /G03 option is installed.

:CHANnel<x>:RMATh:IFILter:BAND

Function   Sets or queries the band of the IIR filter operation.

Syntax   :CHANnel<x>:RMATh:IFILter:
            BAND {BPASs|HPASs|LPASs}
            :CHANnel<x>:RMATh:IFILter:BAND?
            <x> = 17 to 32

Example   :CHANNEL17:RMATH:IFILTER:BAND LPASS
            :CHANNEL17:RMATH:IFILTER:BAND?
            -> :CHANNEL17:RMATH:IFILTER:
               BAND LPASS

Description • This command is valid when the /G03 option is installed.
            • Default value: LPASs

:CHANnel<x>:RMATh:IFILter:CFRequency

Function	Sets or queries the center frequency of the bandpass filter of the IIR filter operation.

Syntax	:CHANnel<x>:RMATh:IFILter:
	CFRequency {<Frequency>}
	:CHANnel<x>:RMATh:IFILter:
	CFRequency?
	<x> = 17 to 32
	<Frequency>
	  Selectable range: 60Hz to 3MHz
	  Resolution: 20Hz (60Hz to 1.18kHz)
	        200Hz (1.2kHz to 11.8kHz)
	        2kHz (12kHz to 118kHz)
	        20kHz (120kHz to 3MHz)

Example	:CHANNEL17:RMATH:IFILTER: CFREQUENCY 100Hz :CHANNEL17:RMATH:IFILTER:CFREQUENCY? -> :CHANNEL17:RMATH:IFILTER: CFREQUENCY 100Hz
Description	• This command is valid when the /G03 option is installed. • Default value: 300Hz

:CHANnel<x>:RMATh:IFILter:CUToff

Function	Sets or queries the cutoff frequency of the IIR filter operation.

Syntax	:CHANnel<x>:RMATh:IFILter:
	CUToff {<Frequency>}
	:CHANnel<x>:RMATh:IFILter:CUToff?
	<x> = 17 to 32
	<Frequency>
	LowPass
	  Selectable range: 0.2Hz to 3MHz
	  Resolution: 0.2Hz (0.2Hz to 29.8Hz)
	        2Hz (30Hz to 298Hz)
	        20Hz (300Hz to 2.98kHz)
	        200Hz (3kHz to 29.8kHz)
	        2kHz (30kHz to 298kHz)
	        20kHz (300kHz to 3MHz)
	HighPass
	  Selectable range: 20Hz to 3MHz
	  Resolution: 20Hz (20Hz to 2.98kHz)
	        200Hz (3kHz to 29.8kHz)
	        2kHz (30kHz to 298kHz)
	        20kHz (300kHz to 3MHz)

Example	:CHANNEL17:RMATH:IFILTER: CUTOFF 100Hz :CHANNEL17:RMATH:IFILTER:CUTOFF? -> :CHANNEL17:RMATH:IFILTER: CUTOFF 100Hz
Description	• This command is valid when the /G03 option is installed. • Default value: 300kHz

:CHANnel<x>:RMATh:IFILter:INTerpo

Function	Sets or queries whether interpolation is used with the IIR filter operation.
Syntax	:CHANnel<x>:RMATh:IFILter: INTerpo {<Boolean>} :CHANnel<x>:RMATh:IFILter:INTerpo? <x> = 17 to 32
Example	:CHANNEL17:RMATH:IFILTER:INTERPO ON :CHANNEL17:RMATH:IFILTER:INTERPO? -> :CHANNEL17:RMATH:IFILTER: INTERPO ON
Description	• This command is valid when the /G03 option is installed. • Default value: OFF

:CHANnel<x>:RMATh:IFILter:PBANd

Function	Sets or queries the bandwidth of the bandpass filter of the IIR filter operation.

Syntax	:CHANnel<x>:RMATh:IFILter:
	PBANd {<Frequency>}
	:CHANnel<x>:RMATh:IFILter:PBANd?
	<x> = 17 to 32
	<Frequency> = 100Hz, 200Hz, 500Hz, 1kHz,
	        2kHz, 5kHz, 10kHz, 15kHz,
	        20kHz, 50kHz, 100kHz, 150kHz,
	        200kHz, 500kHz, 1MHz, 1.5MHz,
	        2MHz

Example	:CHANNEL17:RMATH:IFILTER:PBAND 200Hz :CHANNEL17:RMATH:IFILTER:PBAND? -> :CHANNEL17:RMATH:IFILTER: PBAND 200Hz
Description	• This command is valid when the /G03 option is installed. • Default value: 200Hz

:CHANnel<x>:RMATh:INTegral?

Function	(Upper-level query) Queries all integration settings.
Syntax	:CHANnel<x>:RMATh:INTegral? <x> = 17 to 32
Description	This command is valid when the /G03 or /G05 option is installed.

:CHANnel<x>:RMATh:INTegral:MRESet:EXECute (Manual Reset)

Function	Manually resets the integrated value of the specified channel.
Syntax	:CHANnel<x>:RMATh:INTegral:MRESet: EXECute <x> = 17 to 32
Example	:CHANNEL17:RMATH:INTEGRAL:MRESET: EXECUTE
Description	This command is valid when the /G03 or /G05 option is installed.

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:CHANnel<x>:RMATh:INTegral:OLIMit

Function   Sets or queries the over limit value for integration.

Syntax   :CHANnel<x>:RMATh:INTegral:
OLIMit {<NRf>}
:CHANnel<x>:RMATh:INTegral:OLIMit?
<x> = 17 to 32

Example   :CHANNEL17:RMATH:INTEGRAL:OLIMIT 0
:CHANNEL17:RMATH:INTEGRAL:OLIMIT?
-> :CHANNEL17:RMATH:INTEGRAL:
OLIMIT 0

Description • This command is valid when the /G03 or /G05 option is installed.
• Default value: 0

:CHANnel<x>:RMATh:INTegral:OVERange

Function   Sets or queries whether the integrated value is reset when an over limit occurs for the specified channel.

Syntax   :CHANnel<x>:RMATh:INTegral:
OVERange {<Boolean>}
:CHANnel<x>:RMATh:INTegral:OVERange?
<x> = 17 to 32

Example   :CHANNEL17:RMATH:INTEGRAL:
OVERRANGE 1
:CHANNEL17:RMATH:INTEGRAL:OVERRANGE?
-> :CHANNEL17:RMATH:INTEGRAL:
OVERRANGE 1

Description • This command is valid when the /G03 or /G05 option is installed.
• Default value: OFF

:CHANnel<x>:RMATh:INTegral:SRESet (Start Reset)

Function   Sets or queries whether the integrated value is reset when integration starts for the specified channel.

Syntax   :CHANnel<x>:RMATh:INTegral:
SRESet {<Boolean>}
:CHANnel<x>:RMATh:INTegral:SRESet?
<x> = 17 to 32

Example   :CHANNEL17:RMATH:INTEGRAL:SRESET 1
:CHANNEL17:RMATH:INTEGRAL:SRESET?
-> :CHANNEL17:RMATH:INTEGRAL:
SRESET 1

Description • This command is valid when the /G03 or /G05 option is installed.
• Default value: ON

:CHANnel<x>:RMATh:INTegral:ZRESet?

Function   (Upper-level query) Queries all settings related to the integrated value being reset when the signal crosses zero in integration of the specified channel.

Syntax   :CHANnel<x>:RMATh:INTegral:ZRESet?

Description This command is valid when the /G03 or /G05 option is installed.

:CHANnel<x>:RMATh:INTegral:ZRESet:HYSTeresis

Function   Sets or queries the hysteresis that is used for resetting the integrated value when the signal crosses zero for the specified channel.

Syntax   :CHANnel<x>:RMATh:INTegral:ZRESet:
HYSTeresis {LOW|HIGH|MIDDle}
:CHANnel<x>:RMATh:INTegral:ZRESet:
HYSTeresis?
<x> = 17 to 32

Example   :CHANNEL17:RMATH:INTEGRAL:ZRESET LOW
:CHANNEL17:RMATH:INTEGRAL:ZRESET?
-> :CHANNEL17:RMATH:INTEGRAL:
ZRESET LOW

Description • This command is valid when the /G03 or /G05 option is installed.
• Default value: LOW

:CHANnel<x>:RMATh:INTegral:ZRESet:MODE

Function   Sets or queries whether the integrated value is reset when the signal crosses zero for the specified channel.

Syntax   :CHANnel<x>:RMATh:INTegral:ZRESet:
MODE {<Boolean>}
:CHANnel<x>:RMATh:INTegral:ZRESet:
MODE?
<x> = 17 to 32

Example   :CHANNEL17:RMATH:INTEGRAL:ZRESET:
MODE 1
:CHANNEL17:RMATH:INTEGRAL:ZRESET:
MODE?
-> :CHANNEL17:RMATH:INTEGRAL:ZRESET:
MODE 1

Description • This command is valid when the /G03 or /G05 option is installed.
• Default value: OFF

:CHANnel<x>:RMATh:INTegral:ZRESet:SLOPe

Function   Sets or queries the slope that is used for resetting the integrated value when the signal crosses zero for the specified channel.

Syntax   :CHANnel<x>:RMATh:INTegral:ZRESet:
SLOPe {FALL|RISE}
:CHANnel<x>:RMATh:INTegral:ZRESet:
SLOPe?
<x> = 17 to 32

Example   :CHANNEL17:RMATH:INTEGRAL:ZRESET:
SLOPE FALL
:CHANNEL17:RMATH:INTEGRAL:ZRESET:
SLOPE?
-> :CHANNEL17:RMATH:INTEGRAL:ZRESET:
SLOPE FALL

Description • This command is valid when the /G03 or /G05 option is installed.
• Default value: RISE

:CHANnel<x>:RMATh:KNOCkflt?

Function   (Upper-level query) Queries all knocking filter settings of the specified channel.

Syntax   :CHANnel<x>:RMATh:KNOCkflt?

Description This command is valid when the /G03 or /G05 option is installed.

:CHANnel<x>:RMATh:KNOCkflt:DIFFerential

Function   Sets or queries the differentiation on/off status of the specified channel's knocking filter.

Syntax   :CHANnel<x>:RMATh:KNOCkflt:
            DIFFerential {<Boolean>}
            :CHANnel<x>:RMATh:KNOCkflt:
            DIFFerential?
            <x> = 17 to 32

Example   :CHANNEL17:RMATH:KNOCKFLT:
            DIFFERENTIAL 1
            :CHANNEL17:RMATH:KNOCKFLT:
            DIFFERENTIAL?
            -> :CHANNEL17:RMATH:KNOCKFLT:
               DIFFERENTIAL 1

Description • This command is valid when the /G03 or /G05 option is installed.
            • Default value: OFF

:CHANnel<x>:RMATh:KNOCkflt:ELEVel

Function   Sets or queries the elimination level of the specified channel's knocking filter.

Syntax   :CHANnel<x>:RMATh:KNOCkflt:
            ELEVel {<Voltage>|<Current>|<NRf>}
            :CHANnel<x>:RMATh:KNOCkfltinaiton:
            ELEVel?
            <x> = 17 to 32

Example   :CHANNEL17:RMATH:KNOCKFLT:ELEVEL 1
            :CHANNEL17:RMATH:KNOCKFLT:ELEVEL?
            -> :CHANNEL17:RMATH:KNOCKFLT:
               ELEVEL 1.000000E+00

Description • This command is valid when the /G03 or /G05 option is installed.
            • Default value: 0

:CHANnel<x>:RMATh:LIIR

Function   Sets or queries the filter applied to real time math results of the specified channel.

Syntax   :CHANnel<x>:RMATh:
            LIIR {FULL|<Frequency>}
            <x> = 17 to 32
            <Frequency> = 128kHz, 64kHz, 32kHz, 16kHz,
                          8kHz, 4kHz, 2kHz, 1kHz, 500Hz,
                          250Hz, 125Hz, 62.5Hz

Example   :CHANNEL17:RMATH:LIIR FULL
            :CHANNEL17:RMATH:LIIR?
            -> :CHANNEL17:RMATH:LIIR FULL

Description • This command is valid when the /G03 or /G05 option is installed.
            • Default value: FULL

:CHANnel<x>:RMATh:LABel

Function   Sets or queries the label for real-time math of the specified channel.

Syntax   :CHANnel<x>:RMATh:LABel {<String>}
            <x> = 17 to 32
            <String> = Up to 16 characters

Example   :CHANNEL17:RMATH:LABEL "TRACE3"
            :CHANNEL17:RMATH:LABEL?
            -> :CHANNEL17:RMATH:LABEL "TRACE3"

Description • This command is valid when the /G03 or /G05 option is installed.
            • Default value: RMath17 or similar

:CHANnel<x>:RMATh:MODE

Function   Sets or queries the on/off state of real time math of the specified channel.

Syntax   :CHANnel<x>:RMATh:MODE {<Boolean>}
            :CHANnel<x>:RMATh:MODE?
            <x> = 17 to 32

Example   :CHANNEL17:RMATH:MODE 1
            :CHANNEL17:RMATH:MODE?
            -> :CHANNEL17:RMATH:MODE 1

Description • This command is valid when the /G03 or /G05 option is installed.
            • Channels that a 16-CH temperature/voltage input module, CAN bus monitor module, CAN&LIN bus monitor module, or CAN/CAN FD monitor module is installed in cannot be turned on.
            • Default value: OFF

:CHANnel<x>:RMATh:OPERation

Function   Sets or queries the real time math operation.

Syntax   :CHANnel<x>:RMATh:
            OPERation {DIFFerential|FPLus|
            FMINus|FMULtiple|FDIVide|INT1|INT2|
            POLYnomial|SQRT1|SQRT2|LOG1|LOG2|
            RANGle|SIN|COS|ATAN|RMS|POWer|
            PINTegral|DA|KNOCkflt|EANGle|PASub|
            FREQuency|PERiod|ECount|RESolver|
            IFILter|PWM|CANId|TORQue|APLus|
            AMINus|TPResolver|RSPeed|UDCount|
            DSOutput}
            :CHANnel<x>:RMATh:OPERation?
            <x> = 17 to 32

Example   :CHANNEL17:RMATH:OPERATION FPLUS
            :CHANNEL17:RMATH:OPERATION?
            -> :CHANNEL17:RMATH:OPERATION FPLUS

Description • This command is valid when the /G03 or /G05 option is installed.
            • DSOutput (DeltaStar Output) cannot be specified. Quering is possible only on RMath channels set to DSOutput.

`:CHANnel<x>:RMATh:PASub:SIGN`

Function	Sets or queries the sign of each term (source) of a polynomial.

Syntax	`:CHANnel<x>:RMATh:PASub:SIGN {MINus|PLUS}`
	`:CHANnel<x>:RMATh:PASub:SIGN?`
	`<x>` = 17 to 32

Example	`:CHANNEL17:RMATH:PASUB:SIGN PLUS`
	`:CHANNEL17:RMATH:PASUB:SIGN?`
	`-> :CHANNEL17:RMATH:PASUB:SIGN PLUS`

Description	This command is valid when the /G03 or /G05 option is installed.

`:CHANnel<x>:RMATh:PINTegral?`

Function	(Upper-level query) Queries all effective power integration settings of the specified channel.
Syntax	`:CHANnel<x>:RMATh:PINTegral?`
Description	This command is valid when the /G03 or /G05 option is installed.

`:CHANnel<x>:RMATh:PINTegral:MRESet:EXECute`

Function	Manually resets the effective power integration of the specified channel.
Syntax	`:CHANnel<x>:RMATh:PINTegral:MRESet:EXECute` `<x>` = 17 to 32
Example	`:CHANNEL17:RMATH:PINTEGRAL:MRESET:EXECUTE`
Description	This command is valid when the /G03 or /G05 option is installed.

`:CHANnel<x>:RMATh:PINTegral:OVERange`

Function	Sets or queries whether the integrated power value of the specified channel is reset when an over limit occurs during effective power integration.

Syntax	`:CHANnel<x>:RMATh:PINTegral:OVERange {<Boolean>}`
	`:CHANnel<x>:RMATh:PINTegral:OVERange?`
	`<x>` = 17 to 32

Example	`:CHANNEL17:RMATH:PINTEGRAL:OVERRANGE 1`
	`:CHANNEL17:RMATH:PINTEGRAL:OVERRANGE?`
	`-> :CHANNEL17:RMATH:PINTEGRAL:OVERRANGE 1`

Description	• This command is valid when the /G03 or /G05 option is installed. • Default value: OFF

`:CHANnel<x>:RMATh:PINTegral:SCALe`

Function	Sets the reference time for the effective power integration of the specified channel.

Syntax	`:CHANnel<x>:RMATh:PINTegral:SCALe {HOUR|SECond}`
	`:CHANnel<x>:RMATh:PINTegral:SCALe?`
	`<x>` = 17 to 32

Example	`:CHANNEL17:RMATH:PINTEGRAL:SCALE HOUR`
	`:CHANNEL17:RMATH:PINTEGRAL:SCALE?`
	`-> :CHANNEL17:RMATH:PINTEGRAL:SCALE HOUR`

Description	• This command is valid when the /G03 or /G05 option is installed. • Default value: HOUR

`:CHANnel<x>:RMATh:PINTegral:SRESet`

Function	Sets or queries whether the integrated value is reset when the effective power integration starts for the specified channel.

Syntax	`:CHANnel<x>:RMATh:PINTegral:SRESet {<Boolean>}`
	`:CHANnel<x>:RMATh:PINTegral:SRESet?`
	`<x>` = 17 to 32

Example	`:CHANNEL17:RMATH:PINTEGRAL:SRESET 1`
	`:CHANNEL17:RMATH:PINTEGRAL:SRESET?`
	`-> :CHANNEL17:RMATH:PINTEGRAL:SRESET 1`

Description	• This command is valid when the /G03 or /G05 option is installed. • Default value: ON

`:CHANnel<x>:RMATh:POWer?`

Function	(Upper-level query) Queries all effective power calculation period settings of the specified channel.
Syntax	`:CHANnel<x>:RMATh:POWer?`
Description	This command is valid when the /G03 or /G05 option is installed.

`:CHANnel<x>:RMATh:POWer:TERM:EBIT`

Function	Sets or queries the edge detection math source waveform (detection bit) for when the effective power calculation period's edge detection channel is a logic channel.

Syntax	`:CHANnel<x>:RMATh:POWer:TERM:EBIT {<NRf>}`
	`:CHANnel<x>:RMATh:POWer:TERM:EBIT?`
	`<x>` = 17 to 32
	`<NRf>` = 1 to 8

Example	`:CHANNEL17:RMATH:POWER:TERM:EBIT 1`
	`:CHANNEL17:RMATH:POWER:TERM:EBIT?`
	`-> :CHANNEL17:RMATH:POWER:TERM:EBIT 1`

Description	• This command is valid when the /G03 or /G05 option is installed. • This setting is shared with the `:CHANnel<x>:RMATh:RMS` command. • Default value: 1

:CHANnel<x>:RMATh:POWer:TERM:EHYSteresis

Function   Sets or queries the effective power calculation period's detection hysteresis of the specified channel.

Syntax   :CHANnel<x>:RMATh:POWer:TERM:
EHYSteresis {HIGH|LOW|MIDDle}
:CHANnel<x>:RMATh:POWer:TERM:
EHYSteresis?
<x> = 17 to 32

Example   :CHANNEL17:RMATH:POWER:TERM:
EHYSTERESIS HIGH
:CHANNEL17:RMATH:POWER:TERM:
EHYSTERESIS?
-> :CHANNEL17:RMATH:POWER:TERM:
EHYSTERESIS HIGH

Description • This command is valid when the /G03 or /G05 option is installed.
• This setting is shared with the :CHANnel<x>:RMATh:RMS command.
• Default value: LOW

:CHANnel<x>:RMATh:POWer:TERM:ELEVel

Function   Sets or queries the effective power calculation period's detection level of the specified channel.

Syntax   :CHANnel<x>:RMATh:POWer:TERM:
ELEVel {<Voltage>|<NRf>|<Current>}
:CHANnel<x>:RMATh:POWer:TERM:ELEVel?
<x> = 17 to 32

Example   :CHANNEL17:RMATH:POWER:TERM:ELEVEL 1
:CHANNEL17:RMATH:POWER:TERM:ELEVEL?
-> :CHANNEL17:RMATH:POWER:TERM:
ELEVEL 1.000000E+00

Description • This command is valid when the /G03 or /G05 option is installed.
• This setting is shared with the :CHANnel<x>:RMATh:RMS command.
• Default value: 0

:CHANnel<x>:RMATh:POWer:TERM:ESLope

Function   Sets or queries the effective power calculation period's detection slope of the specified channel.

Syntax   :CHANnel<x>:RMATh:POWer:TERM:
ESLope {FALL|RISE|BISlope}
:CHANnel<x>:RMATh:POWer:TERM:ESLope?
<x> = 17 to 32

Example   :CHANNEL17:RMATH:POWER:TERM:
ESLOPE FALL
:CHANNEL17:RMATH:POWER:TERM:ESLOPE?
-> :CHANNEL17:RMATH:POWER:TERM:
ESLOPE FALL

Description • This command is valid when the /G03 or /G05 option is installed.
• This setting is shared with the :CHANnel<x>:RMATh:RMS command.
• Default value: 0

:CHANnel<x>:RMATh:POWer:TERM:ESOurce

Function   Sets or queries the effective power calculation period's edge detection math source waveform of the specified channel.

Syntax   :CHANnel<x>:RMATh:POWer:
ESOurce {S1|S2|<NRf>[,<NRf>]}
:CHANnel<x>:RMATh:POWer:ESOurce?
<x> = 17 to 32

Example   :CHANNEL17:RMATH:POWER:TERM:
ESOURCE S1
:CHANNEL17:RMATH:POWER:TERM:ESOURCE?
-> :CHANNEL17:RMATH:POWER:TERM:
ESOURCE S1

Description • This command is valid when the /G03 or /G05 option is installed.
• This setting is shared with the :CHANnel<x>:RMATh:RMS command.
• Default value: S1

:CHANnel<x>:RMATh:PWM:PERiod

Function   Sets or queries the period of the PWM operation.

Syntax   :CHANnel<x>:RMATh:PWM:
PERiod {<Time>}
<x> = 17 to 32
<Time> = 0.0000001 to 0.005s (100ns to 5ms)

Example   :CHANNEL17:RMATH:PWM:PERIOD 0.01
:CHANNEL17:RMATH:PWM:PERIOD?
-> :CHANNEL17:RMATH:PWM:PERIOD 0.01

Description • This command is valid when the /G03 or /G05 option is installed.
• Default value: 0.1us

:CHANnel<x>:RMATh:RANGle?

Function   (Upper-level query) Queries all settings related to the angle-of-rotation, electrical angle, sine, and cosine operations of the specified channel.

Syntax   :CHANnel<x>:RMATh:RANGle?

Description • This command is valid when the /G03 or /G05 option is installed.
• To set the math settings for the angle-of-rotation, electrical angle, sine, and cosine operations, use the :CHANnel<x>:RMATh:RANGle command and the commands that are lower in its hierarchy. Before you set any of the settings, use the :CHANnel<x>:RMATh:OPERation command to set the operation type to RANGle, EANGle, SIN, or COS. For details on the commands that have different settings for the various operations, see the conditions that are written in the command descriptions.

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`:CHANnel<x>:RMATh:RANGle:APHase`

Function   Sets or queries the phase A trace when setting the analog channels for angle-of-rotation, electrical-angle, sine, and cosine operations.

Syntax   `:CHANnel<x>:RMATh:RANGle:`
`APHase {<NRf>[,<NRf>]}`
`:CHANnel<x>:RMATh:RANGle:APHase?`
`<x>` = 17 to 32
`<NRf>` = 1 to 16
`[,<NRf>]` = 1 to 60

Example   `:CHANNEL17:RMATH:RANGLE:APHASE 1,1`
`:CHANNEL17:RMATH:RANGLE:APHASE?`
`-> :CHANNEL17:RMATH:RANGLE:`
`    APHASE 1,1`

Description   • This command is valid when the /G03 or /G05 option is installed.
   • Default value: 1

`:CHANnel<x>:RMATh:RANGle:BLENgth`

Function   Sets or queries the bit length when the encode type is GRAY for an angle, electric angle, sine, or cosine operation.

Syntax   `:CHANnel<x>:RMATh:RANGle:`
`BLENgth {<NRf>}`
`:CHANnel<x>:RMATh:RANGle:BLENgth?`
`<x>` = 17 to 32
`<NRf>` = 2 to 16

Example   `:CHANNEL17:RMATH:RANGLE:BLENGTH 16`
`:CHANNEL17:RMATH:RANGLE:BLENGTH?`
`-> :CHANNEL17:RMATH:RANGLE:`
`    BLENGTH 16`

Description   • This command is valid when the /G03 or /G05 option is installed.
   • Default value: 16

`:CHANnel<x>:RMATh:RANGle:BPHase`

Function   Sets or queries the phase B trace when setting the analog channels for angle-of-rotation, electrical-angle, sine, and cosine operations.

Syntax   `:CHANnel<x>:RMATh:RANGle:`
`BPHase {<NRf>[,<NRf>]}`
`:CHANnel<x>:RMATh:RANGle:BPHase?`
`<x>` = 17 to 32
`<NRf>` = 1 to 16
`[,<NRf>]` = 1 to 60

Example   `:CHANNEL17:RMATH:RANGLE:BPHASE 1,1`
`:CHANNEL17:RMATH:RANGLE:BPHASE?`
`-> :CHANNEL17:RMATH:RANGLE:`
`    BPHASE 1,1`

Description   • This command is valid when the /G03 or /G05 option is installed.
   • Default value: 1

`:CHANnel<x>:RMATh:RANGle:CCONdition`

Function   Sets or queries the resolution for the specified channel's angle-of-rotation, electrical angle, sine, cosine, and rotating speed operations.

Syntax   `:CHANnel<x>:RMATh:RANGle:`
`CCONdition {<NRf>}`
`:CHANnel<x>:RMATh:RANGle:CCONdition?`
`<x>` = 17 to 32
`<NRf>` = 1, 2, 4

Example   `:CHANNEL17:RMATH:RANGLE:CCONDITION 4`
`:CHANNEL17:RMATH:RANGLE:CCONDITION?`
`-> :CHANNEL17:RMATH:RANGLE:`
`    CCONDITION 4`

Description   • This command is valid when the /G03 or /G05 option is installed.
   • Default value: 4

`:CHANnel<x>:RMATh:RANGle:ETYPe` (Edge Type)

Function   Sets or queries the encoding type for the specified channel's angle-of-rotation, electrical angle, sine, and cosine operations.

Syntax   `:CHANnel<x>:RMATh:RANGle:ETYPe {ABZ|`
`AZ|A8Bit|A16Bit|GRAY|RESolver|`
`ZPULse}`
`:CHANnel<x>:RMATh:RANGle:ETYPe?`
`<x>` = 17 to 32

Example   `:CHANNEL17:RMATH:RANGLE:ETYPE ABZ`
`:CHANNEL17:RMATH:RANGLE:ETYPE?`
`-> :CHANNEL17:RMATH:RANGLE:ETYPE ABZ`

Description   • This command is valid when the /G03 or /G05 option is installed.
   • RESolver is valid when the math type (CHANnel<x>:RMATh:OPERation) is set to ERANGe, SIN, or COS and the math type of another real time math channel is set to RESolver.
   • ZPULse can only be specified for angle-of-rotation calculations.
   • Default value: ABZ

:CHANnel\<x1\>:RMATh:RANGle:HYSTeresis\<x2\>

Function   Sets or queries the slope for the specified math source waveform for the specified channel's angle-of-rotation, electrical angle, sine, cosine, and rotating speed operations.

Syntax   :CHANnel\<x1\>:RMATh:RANGle:
            HYSTeresis\<x2\> {HIGH|LOW|MIDDle}
            :CHANnel\<x1\>:RMATh:RANGle:
            HYSTeresis\<x2\>?
            \<x1\> = 17 to 32
            \<x2\> = 1 to 3

Example   :CHANNEL17:RMATH:RANGLE:
            HYSTERESIS1 HIGH
            :CHANNEL17:RMATH:RANGLE:HYSTERESIS1?
            -> :CHANNEL17:RMATH:RANGLE:
               HYSTERESIS1 HIGH

Description • This command is valid when the /G03 or /G05 option is installed.
            • Default value: LOW

:CHANnel\<x1\>:RMATh:RANGle:LEVel\<x2\>

Function   Sets or queries the detection level for the specified math source waveform for the specified channel's angle-of-rotation, electrical angle, sine, cosine, and rotating speed operations.

Syntax   :CHANnel\<x1\>:RMATh:RANGle:LEVel\<x2\>
            {\<Voltage\>|\<NRf\>|\<Current\>}
            :CHANnel\<x1\>:RMATh:RANGle:LEVel\<x2\>?
            \<x1\> = 17 to 32
            \<x2\> = 1 to 3

Example   :CHANNEL17:RMATH:RANGLE:LEVEL1 1
            :CHANNEL17:RMATH:RANGLE:LEVEL1?
            -> :CHANNEL17:RMATH:RANGLE:
               LEVEL1 1.000000E+00

Description This command is valid when the /G03 or /G05 option is installed.

:CHANnel\<x\>:RMATh:RANGle:LOGic?

Function   (Upper-level query) Queries all the math source waveform settings for the angle-of-rotation, electrical angle, sine, cosine, and rotating speed operations.

Syntax   :CHANnel\<x\>:RMATh:RANGle:LOGic?

Description • This command is valid when the /G03 or /G05 option is installed.
            • An execution error will occur if you specify a channel other than that of a logic input module.

:CHANnel\<x\>:RMATh:RANGle:LOGic:MODE

Function   Sets or queries the math source waveform mode for the specified channel's angle-of-rotation, electrical angle, sine, cosine, and rotating speed operations.

Syntax   :CHANnel\<x\>:RMATh:RANGle:LOGic:
            MODE {\<Boolean\>}
            :CHANnel\<x\>:RMATh:RANGle:LOGic:MODE?
            \<x\> = 17 to 32

Example   :CHANNEL17:RMATH:RANGLE:LOGIC:MODE 1
            :CHANNEL17:RMATH:RANGLE:LOGIC:MODE?
            -> :CHANNEL17:RMATH:RANGLE:LOGIC:
               MODE 1

Description • This command is valid when the /G03 or /G05 option is installed.
            • An execution error will occur if you specify a channel other than that of a logic input module.
            • Default value: ON

:CHANnel\<x1\>:RMATh:RANGle:LOGic:SBIT\<x2\> (Source Bit)

Function   Sets or queries the source bit when the math source waveform mode for the specified channel's angle-of-rotation, electrical angle, sine, cosine, and rotating speed operations is logic.

Syntax   :CHANnel\<x1\>:RMATh:RANGle:LOGic:
            SBIT\<x2\> {\<NRf\>}
            :CHANnel\<x1\>:RMATh:RANGle:LOGic:
            SBIT\<x2\>
            \<x1\> = 17 to 32
            \<x2\> = 1 to 3
                    1: Phase A setting
                    2: Phase B setting
                    3: Phase Z setting
            \<NRf\> = 1 to 8

Example   :CHANNEL17:RMATH:RANGLE:LOGIC:
            SBIT1 1
            :CHANNEL17:RMATH:RANGLE:LOGIC:SBIT1?
            -> :CHANNEL17:RMATH:RANGLE:LOGIC:
               SBIT1 1

Description • This command is valid when the /G03 or /G05 option is installed.
            • An execution error will occur if you specify a channel other than that of a logic input module.
            • Default value: 1 for phase A, 2 for phase B, 3 for phase Z

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:CHANnel<x1>:RMATh:RANGle:LOGic:SOURce<x2>

Function   Sets or queries the math source waveform when the math source waveform mode for the specified channel's angle-of-rotation, electrical angle, sine, cosine, and rotating speed operations is logic.

Syntax   :CHANnel<x1>:RMATh:RANGle:LOGic:
SOURce<x2> {<NRf>}
:CHANnel<x1>:RMATh:RANGle:LOGic:
SOURce<x2>?
<x1> = 17 to 32
<x2> = 1, 2
<NRf> = 1 to 16

Example   :CHANNEL17:RMATH:RANGLE:LOGIC:
SOURCE1 1
:CHANNEL17:RMATH:RANGLE:LOGIC:
SOURCE1?
-> :CHANNEL17:RMATH:RANGLE:LOGIC:
SOURCE1 1

Description • This command is valid when the /G03 or /G05 option is installed.
• An execution error will occur if you specify a channel other than that of a logic input module.
• This command cannot be used on logic channels that a CAN bus monitor module, CAN&LIN bus monitor module, or CAN/CAN FD monitor module is installed in.
• Default value: The earliest installed logic channel

:CHANnel<x>:RMATh:RANGle:MRESet:EXECute

Function   Manually resets the angle of the specified channel's angle operations.

Syntax   :CHANnel<x>:RMATh:RANGle:MRESet:
EXECute
<x> = 17 to 32

Example   :CHANNEL17:RMATH:RANGLE:MRESET:
EXECUTE

Description This command is valid when the /G03 or /G05 option is installed.

:CHANnel<x>:RMATh:RANGle:MULTiply

Function   Sets or queries the multiplication factor for angle math.

Syntax   :CHANnel<x>:RMATh:RANGle:
MULTiply {<NRf>}
:CHANnel<x>:RMATh:RANGle:MULTiply?
<x> = 17 to 32
<NRf> = 1 to 15

Example   :CHANNEL17:RMATH:RANGLE:MULTIPLY 1
:CHANNEL17:RMATH:RANGLE:MULTIPLY?
-> :CHANNEL17:RMATH:RANGLE:
MULTIPLY 1

Description • This command is valid when the /G03 or /G05 option is installed.
• Default value: 1

:CHANnel<x>:RMATh:RANGle:NLOGic (Negative Logic)

Function   Sets or queries the on/off state of the negative logic for angle operations.

Syntax   :CHANnel<x>:RMATh:RANGle:
NLOGic {<Boolean>}
:CHANnel<x>:RMATh:RANGle:NLOGic?
<x> = 17 to 32

Example   :CHANNEL17:RMATH:RANGLE:NLOGIC 1
:CHANNEL17:RMATH:RANGLE:NLOGIC?
-> :CHANNEL17:RMATH:RANGLE:NLOGIC 1

Description • This command is valid when the /G03 or /G05 option is installed.
• Default value: OFF

:CHANnel<x>:RMATh:RANGle:OFFSet

Function   Sets or queries the offset angle for angle math.

Syntax   :CHANnel<x>:RMATh:RANGle:
OFFSet {<NRf>}
:CHANnel<x>:RMATh:RANGle:OFFSet?
<x> = 17 to 32

Example   :CHANNEL17:RMATH:RANGLE:OFFSET 0
:CHANNEL17:RMATH:RANGLE:OFFSET?
-> :CHANNEL17:RMATH:RANGLE:
OFFSET 0.00

Description • This command is valid when the /G03 or /G05 option is installed.
• Default value: 0.00

:CHANnel<x>:RMATh:RANGle:PPRotate (Pulse Per Rotate)

Function   Sets or queries the number of pulses per rotation for the specified channel's angle-of-rotation, electrical angle, sine, and cosine operations.

Syntax   :CHANnel<x>:RMATh:RANGle:
PPRotate {<NRf>}
:CHANnel<x>:RMATh:RANGle:PPRotate?
<x> = 17 to 32
<NRf> = 1 to 500 000

Example   :CHANNEL17:RMATH:RANGLE:PPROTATE 1
:CHANNEL17:RMATH:RANGLE:PPROTATE?
-> :CHANNEL17:RMATH:RANGLE:
PPROTATE 1

Description • This command is valid when the /G03 or /G05 option is installed.
• Default value: 180

:CHANnel<x>:RMATh:RANGle:PROTate

Function   Sets or queries the number of counts per rotation for the specified channel's angle-of-rotation, electrical angle, sine, and cosine operations.

Syntax   :CHANnel<x>:RMATh:RANGle:
PROTate {<NRf>}
:CHANnel<x>:RMATh:RANGle:PROTate?
<x> = 17 to 32
<NRf> = 1 to 2 000 000

Example   :CHANNEL17:RMATH:RANGLE:PROTATE 1
:CHANNEL17:RMATH:RANGLE:PROTATE?
-> :CHANNEL17:RMATH:RANGLE:PROTATE 1

Description • This command is valid when the /G03 or /G05 option is installed.
• Default value: 720

:CHANnel<x>:RMATh:RANGle:REVerse

Function   Sets or queries whether the rotation direction is inverted for the specified channel's angle-of-rotation, electrical angle, sine, and cosine operations.

Syntax   :CHANnel<x>:RMATh:RANGle:
REVerse {<Boolean>}
:CHANnel<x>:RMATh:RANGle:REVerse?
<x> = 17 to 32

Example   :CHANNEL17:RMATH:RANGLE:REVERSE 1
:CHANNEL17:RMATH:RANGLE:REVERSE?
-> :CHANNEL17:RMATH:RANGLE:REVERSE 1

Description • This command is valid when the /G03 or /G05 option is installed.
• Default value: 0

:CHANnel<x>:RMATh:RANGle:RSOurce
(Resolver Source Ch)

Function   Sets or queries the math source waveform when the encoding type of the angle-of-rotation, sine, and cosine operations is RESolver.

Syntax   :CHANnel<x>:RMATh:RANGle:
RSOurce {<NRf>}
:CHANnel<x>:RMATh:RANGle:RSOurce?
<x> = 17 to 32
<NRf> = 17 to <x>-1

Example   :CHANNEL17:RMATH:RANGLE:RSOURCE 17
:CHANNEL17:RMATH:RANGLE:RSOURCE?
-> :CHANNEL17:RMATH:RANGLE:RSOURCE 17

Description   This command is valid when the /G03 or /G05 option is installed.

:CHANnel<x>:RMATh:RANGle:RTIMing
(Reset Timing)

Function   Sets or queries the timing that will be used to reset the number of rotations for the specified channel's angle-of-rotation, electrical angle, sine, and cosine operations.

Syntax   :CHANnel<x>:RMATh:RANGle:
RTIMing {ZLEVel|ZARise|ZAFall|
ZBRise|ZBFall}
:CHANnel<x>:RMATh:RANGle:RTIMing?
<x> = 17 to 32

Example   :CHANNEL17:RMATH:RANGLE:
RTIMING ZLEVEL
:CHANNEL17:RMATH:RANGLE:RTIMING?
-> :CHANNEL17:RMATH:RANGLE:
RTIMING ZLEVEL

Description • This command is valid when the /G03 or /G05 option is installed.
• Default value: ZARise

:CHANnel<x>:RMATh:RANGle:SCALe

Function   Sets or queries the scale of the specified channel's angle-of-rotation and electrical angle operations.

Syntax   :CHANnel<x>:RMATh:RANGle:
SCALe {DEG1|DEG2|DEG3|RAD1|RAD2|
RAD3|USERdefine}
:CHANnel<x>:RMATh:RANGle:SCALe?
<x> = 17 to 32
DEG1: Degrees (−180 to +180)
DEG2: Degree(0 to 360)
DEG3: Degrees (−360 to +360)
RAD1: Radians (−π to +π)
RAD2: Radians (0 to 2π)
RAD3: Radians (−2π to +2π)

Example   :CHANNEL17:RMATH:RANGLE:SCALE DEG1
:CHANNEL17:RMATH:RANGLE:SCALE?
-> :CHANNEL17:RMATH:RANGLE:
SCALE DEG1

Description • This command is valid when the /G03 or /G05 option is installed.
• USERdefine can only be specified when the :CHANnel<x>:RMATh:OPERation command has been used to select RANGle.
• Default value: RAD3

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Commands

`:CHANnel<x1>:RMATh:RANGle:SOURce<x2>`

Function	Sets or queries the math source waveform when the math source waveform mode for the specified channel's angle-of-rotation, electrical angle, sine, cosine, and rotating speed operations is not logic.

Syntax	`:CHANnel<x1>:RMATh:RANGle:`
	`SOURce<x2> {<NRf>[,<NRf>]}`
	`:CHANnel<x1>:RMATh:RANGle:`
	`SOURce<x2>?`
	`<x1> = 17 to 32`
	`<x2> = 1 to 3`
	`<NRf> = 1 to 16`

Example	`:CHANNEL17:RMATH:RANGLE:SOURCE1 1`
	`:CHANNEL17:RMATH:RANGLE:SOURCE1?`
	`-> :CHANNEL17:RMATH:RANGLE:SOURCE1 1`

Description	This command is valid when the /G03 or /G05 option is installed.

`:CHANnel<x1>:RMATh:RANGle:TIMing<x2>`

Function	Sets or queries the edge detection timing for the specified channel's angle-of-rotation, electrical angle, sine, cosine, and rotating speed operations.

Syntax	`:CHANnel<x1>:RMATh:RANGle:`
	`TIMing<x2> {ARISe|AFALl|BRISe|BFALl}`
	`:CHANnel<x1>:RMATh:RANGle:`
	`TIMing<x2>?`
	`<x1> = 17 to 32`
	`<x2> = 1, 2`

Example	`:CHANNEL17:RMATH:RANGLE:`
	`TIMING1 ARISE`
	`:CHANNEL17:RMATH:RANGLE:TIMING1?`
	`-> :CHANNEL17:RMATH:RANGLE:`
	`   TIMING1 ARISE`

Description	• This command is valid when the /G03 or /G05 option is installed. • Default value: ARISe

`:CHANnel<x>:RMATh:RANGle:ZINVert`

Function	Sets or queries whether the Z phase is inverted for the specified channel's angle-of-rotation, electrical angle, sine, and cosine operations.

Syntax	`:CHANnel<x>:RMATh:RANGle:`
	`ZINVert {<Boolean>}`
	`:CHANnel<x>:RMATh:RANGle:ZINVert?`
	`<x> = 17 to 32`

Example	`:CHANNEL17:RMATH:RANGLE:ZINVERT ON`
	`:CHANNEL17:RMATH:RANGLE:ZINVERT?`
	`-> :CHANNEL17:RMATH:RANGLE:`
	`   ZINVERT ON`

Description	• This command is valid when the /G03 or /G05 option is installed. • Default value: OFF

`:CHANnel<x>:RMATh:RANGle:ZPHase`

Function	Sets or queries the phase Z trace when setting the analog channels for angle-of-rotation, electrical-angle, sine, and cosine operations.

Syntax	`:CHANnel<x>:RMATh:RANGle:`
	`ZPHase {<NRf>[,<NRf>]}`
	`:CHANnel<x>:RMATh:RANGle:ZPHase?`
	`<x> = 17 to 32`
	`<NRf> = 1 to 16`
	`[,<NRf>] = 1 to 60`

Example	`:CHANNEL17:RMATH:RANGLE:ZPHASE 1,1`
	`:CHANNEL17:RMATH:RANGLE:ZPHASE?`
	`-> :CHANNEL17:RMATH:RANGLE:`
	`   ZPHASE 1,1`

Description	• This command is valid when the /G03 or /G05 option is installed. • Default value: 1

`:CHANnel<x>:RMATh:RESolver?`

Function	(Upper-level query) Queries all resolver operation settings.
Syntax	`:CHANnel<x>:RMATh:RESolver?` `<x> = 17 to 32`
Description	This command is valid when the /G03 or /G05 option is installed.

`:CHANnel<x>:RMATh:RESolver:PHASe`

Function	Sets or queries the angle combination of 3 phase resolver operation.

Syntax	`:CHANnel<x>:RMATh:RESolver:`
	`PHASe {P1|P2|P3}`
	`<x> = 17 to 32`
	P1: 0°-120°
	P2: 0°-240°
	P3: 120°-240°

Example	`:CHANNEL17:RMATH:RESOLVER:PHASE P1`
	`:CHANNEL17:RMATH:RESOLVER:PHASE?`
	`-> :CHANNEL17:RMATH:RESOLVER:`
	`   PHASE P1`

Description	• This command is valid when the /G03 option is installed. • Default value P1: 0°-120°

:CHANnel<x>:RMATh:RESolver:OFFSet

Function   Sets or queries the offset angle of resolver operation.

Syntax   :CHANnel<x>:RMATh:RESolver:
OFFSet {<NRf>}
<x> = 17 to 32
<NRf> = -180 to 180 (angle set in unit of 0.01°)

Example   :CHANNEL17:RMATH:RESOLVER:OFFSET 60
:CHANNEL17:RMATH:RESOLVER:OFFSET?
-> :CHANNEL17:RMATH:RESOLVER:
OFFSET 60

Description • This command is valid when the /G03 option is installed.
• Default value: 0

:CHANnel<x1>:RMATh:RESolver:SOURce<x2>

Function   Sets or queries the math source waveform of the resolver operation.

Syntax   :CHANnel<x1>:RMATh:RESolver:
SOURce<x2> {<NRf>[,<NRf>]}
<x1> = 17 to 32
<x2> = 1 to 3
Resolver operation
    1: CarrierCH (excitation waveform)
    2: sinθCH
    3: cosθCH
3-phase resolver operation (0°-120°)
    1: CarrierCH (excitation waveform)
    2: sin0°CH
    3: sin120°CH
3-phase resolver operation (0°-240°)
    1: CarrierCH (excitation waveform)
    2: sin0°CH
    3: sin240°CH
3-phase resolver operation (120°-240°)
    1: CarrierCH (excitation waveform)
    2: sin120°CH
    3: sin240°CH

Example   :CHANNEL17:RMATH:RESOLVER:SOURCE1 1
:CHANNEL17:RMATH:RESOLVER:SOURCE1?
-> :CHANNEL17:RMATH:RESOLVER:
SOURCE1 1

Description This command is valid when the /G03 option is installed.

:CHANnel<x>:RMATh:RESolver:MULTiply

Function   Sets or queries the multiplication factor for resolver operation.

Syntax   :CHANnel<x>:RMATh:RESolver:
MULTiply {<NRf>}
:CHANnel<x>:RMATh:RESolver:MULTiply?
<x> = 17 to 32
<NRf> = 1 to 15

Example   :CHANNEL17:RMATH:RESOLVER:MULTIPLY 1
:CHANNEL17:RMATH:RESOLVER:MULTIPLY?
-> :CHANNEL17:RMATH:RESOLBER:
MULTIPLY 1

Description • This command is valid when the /G03 option is installed.
• Default value: 1

:CHANnel<x>:RMATh:RESolver:SMODe (Sample Mode)

Function   Sets or queries the sample mode of the resolver operation.

Syntax   :CHANnel<x>:RMATh:RESolver:
SMODe {AUTO|MANual}
<x> = 17 to 32

Example   :CHANNEL17:RMATH:RESOLVER:SMODE AUTO
:CHANNEL17:RMATH:RESOLVER:SMODE?
-> :CHANNEL17:RMATH:RESOLVER:
SMODE AUTO

Description • This command is valid when the /G03 option is installed.
• Default value: AUTO

:CHANnel<x>:RMATh:RESolver:HYSTeresis

Function   Sets or queries the hysteresis of the resolver operation when the sample mode is set to AUTO.

Syntax   :CHANnel<x>:RMATh:RESolver:
HYSTeresis {HIGH|LOW|MIDDle}
<x> = 17 to 32

Example   :CHANNEL17:RMATH:RESOLVER:
HYSTERESIS LOW
:CHANNEL17:RMATH:RESOLVER:
HYSTERESIS?
-> :CHANNEL17:RMATH:RESOLVER:
HYSTERESIS LOW

Description • This command is valid when the /G03 option is installed.
• Default value: LOW

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:CHANnel<x>:RMATh:RESolver:STIMe (Sampling Time)

Function   Sets or queries the time from the excitation edge of the resolver operation when the sample mode is set to MANual.

Syntax   :CHANnel<x>:RMATh:RESolver:
STIMe {<Time>}
<x> = 17 to 32
<Time> = 0.0000001 to 0.001s (100ns to 1ms)

Example   :CHANNEL17:RMATH:RESOLVER:
STIME 0.0001
:CHANNEL17:RMATH:RESOLVER:STIME?
-> :CHANNEL17:RMATH:RESOLVER:
STIME 1.0E-3

Description   • This command is valid when the /G03 option is installed.
     • Default value: 100ns

:CHANnel<x>:RMATh:RESolver:TFILter

Function   Sets or queries the tracking filter of the resolver operation.

Syntax   :CHANnel<x>:RMATh:RESolver:
TFILter {OFF|<NRf>}
<x> = 17 to 32
<NRf> = 100, 250, 1000, 2000

Example   :CHANNEL17:RMATH:RESOLVER:
TFILTER 100
:CHANNEL17:RMATH:RESOLVER:TFILTER?
-> :CHANNEL17:RMATH:RESOLVER:
TFILTER 100

Description   • This command is valid when the /G03 option is installed.
     • Default value: 2000

:CHANnel<x>:RMATh:RESolver:SCALe

Function   Sets or queries the scale of the resolver operation.

Syntax   :CHANnel<x>:RMATh:RESolver:
SCALe {DEG1|DEG2|RAD1|RAD2}
<x> = 17 to 32
DEG1: Degrees (−180 to +180)
DEG2: Degree(0 to +360)
RAD1: Radians (−π to π)
RAD2: Radians (0 to 2π)

Example   :CHANNEL17:RMATH:RESOLVER:SCALE DEG1
:CHANNEL17:RMATH:RESOLVER:SCALE?
-> :CHANNEL17:RMATH:RESOLVER:
SCALE DEG1

Description   • This command is valid when the /G03 option is installed.
     • Default value: DEG1

:CHANnel<x>:RMATh:RMS?

Function   (Upper-level query) Queries all RMS calculation period settings of the specified channel.

Syntax   :CHANnel<x>:RMATh:RMS?

Description   This command is valid when the /G03 or /G05 option is installed.

:CHANnel<x>:RMATh:RMS:TERM:EBIT

Function   Sets or queries the edge detection math source waveform (detection bit) for when the RMS value's calculation period is edge and the detection channel is logic.

Syntax   :CHANnel<x>:RMATh:RMS:TERM:
EBIT {<NRf>}
:CHANnel<x>:RMATh:RMS:TERM:EBIT?
<x> = 17 to 32
<NRf> = 1 to 8

Example   :CHANNEL17:RMATH:RMS:TERM:EBIT 1
:CHANNEL17:RMATH:RMS:TERM:EBIT?
-> :CHANNEL17:RMATH:RMS:TERM:EBIT 1

Description   • This command is valid when the /G03 or /G05 option is installed.
     • This setting is shared with the :CHANnel:RMATh:POWer command.
     • Default value: 1

:CHANnel<x>:RMATh:RMS:TERM:EHYSteresis

Function   Sets or queries the detection hysteresis for when the RMS calculation period of the specified channel is set to edge.

Syntax   :CHANnel<x>:RMATh:RMS:TERM:
EHYSteresis {HIGH|LOW|MIDDle}
:CHANnel<x>:RMATh:RMS:TERM:
EHYSteresis?
<x> = 17 to 32

Example   :CHANNEL17:RMATH:RMS:TERM:
EHYSTERESIS HIGH
:CHANNEL17:RMATH:RMS:TERM:
EHYSTERESIS?
-> :CHANNEL17:RMATH:RMS:TERM:
EHYSTERESIS HIGH

Description   • This command is valid when the /G03 or /G05 option is installed.
     • This setting is shared with the :CHANnel:RMATh:POWer command.
     • Default value: LOW

:CHANnel<x>:RMATh:RMS:TERM:ELEVel

Function   Sets or queries the detection level for when the RMS calculation period of the specified channel is set to edge.

Syntax   :CHANnel<x>:RMATh:RMS:TERM:
ELEVel {<Voltage>|<NRf>|<Current>}
:CHANnel<x>:RMATh:RMS:TERM:ELEVel?
<x> = 17 to 32

Example   :CHANNEL17:RMATH:RMS:TERM:ELEVEL 1
:CHANNEL17:RMATH:RMS:TERM:ELEVEL?
-> :CHANNEL17:RMATH:RMS:TERM:
ELEVEL 1.000000E+00

Description • This command is valid when the /G03 or /G05 option is installed.
• This setting is shared with the :CHANnel:RMATh:POWer command.
• Default value: 0

:CHANnel<x>:RMATh:RMS:TERM:ESLope

Function   Sets or queries the detection slope for when the RMS calculation period of the specified channel is set to edge.

Syntax   :CHANnel<x>:RMATh:RMS:TERM:
ESLope {FALL|RISE|BISLope}
:CHANnel<x>:RMATh:RMS:TERM:ESLope?
<x> = 17 to 32

Example   :CHANNEL17:RMATH:RMS:TERM:
ESLOPE FALL
:CHANNEL17:RMATH:RMS:TERM:ESLOPE?
-> :CHANNEL17:RMATH:RMS:TERM:
ESLOPE FALL

Description • This command is valid when the /G03 or /G05 option is installed.
• This setting is shared with the :CHANnel:RMATh:POWer command.
• Default value: RISE

:CHANnel<x>:RMATh:RMS:TERM:ESOurce

Function   Sets or queries the edge detection math source waveform for when the RMS calculation period of the specified channel is set to edge.

Syntax   :CHANnel<x>:RMATh:RMS:TERM:
ESOurce {OWN|<NRf>[,<NRf>]}
:CHANnel<x>:RMATh:RMS:TERM:ESOurce?
<x> = 17 to 32

Example   :CHANNEL17:RMATH:RMS:TERM:
ESOURCE OWN
:CHANNEL17:RMATH:RMS:TERM:ESOURCE?
-> :CHANNEL17:RMATH:RMS:TERM:
ESOURCE OWN

Description • This command is valid when the /G03 or /G05 option is installed.
• This setting is shared with the :CHANnel:RMATh:POWer command.
• Default value: OWN

:CHANnel<x>:RMATh:RMS:TERM:MODE

Function   Sets or queries the RMS calculation period mode of the specified channel.

Syntax   :CHANnel<x>:RMATh:RMS:TERM:
MODE {TIME|EDGE}
:CHANnel<x>:RMATh:RMS:TERM:MODE?
<x> = 17 to 32

Example   :CHANNEL17:RMATH:RMS:TERM:MODE TIME
:CHANNEL17:RMATH:RMS:TERM:MODE?
-> :CHANNEL17:RMATH:RMS:TERM:
MODE TIME

Description • This command is valid when the /G03 or /G05 option is installed.
• Default value: EDGE

:CHANnel<x>:RMATh:RMS:TERM:TIME

Function   Sets or queries the interval for when the RMS calculation period of the specified channel is set to time.

Syntax   :CHANnel<x>:RMATh:RMS:TERM:
TIME {<Time>}
:CHANnel<x>:RMATh:RMS:TERM:TIME?
<x> = 17 to 32
<Time> = 1ms to 500ms

Example   :CHANNEL17:RMATH:RMS:TERM:TIME 100ms
:CHANNEL17:RMATH:RMS:TERM:TIME?
-> :CHANNEL17:RMATH:RMS:TERM:
TIME 100ms

Description This command is valid when the /G03 or /G05 option is installed.

:CHANnel<x>:RMATh:RSPeed:SCALe

Function   Sets or queries the scale for rotary speed calculation.

Syntax   :CHANnel<x>:RMATh:RSPeed:
SCALe {HZ|RPM|USERdefine}
:CHANnel<x>:RMATh:RSPeed:SCALe?
<x> = 17 to 32

Example   :CHANNEL17:RMATH:RSPEED:SCALE HZ
:CHANNEL17:RMATH:RSPEED:SCALE?
-> :CHANNEL17:RMATH:RSPEED:SCALE HZ

Description • This command is valid when the /G03 or /G05 option is installed.
• Default value: HZ

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Commands

:CHANnel<x1>:RMATh:SC<x2>

Function   Sets or queries source waveforms 1 to 3 of the currently specified real time math operation.

Syntax   :CHANnel<x1>:RMATh:
SC<x2> {<NRf>[,<NRf>]}
:CHANnel<x1>:RMATh:SC<x2>?
<x1> = 17 to 32
<x2> = 1 to 3
<NRf> = 1 to 31
[,<NRf>] = 1 to 60

Example   :CHANNEL17:RMATH:SC1 1
:CHANNEL17:RMATH:SC1?
-> :CHANNEL17:RMATH:SC1 1

Description • This command is valid when the /G03 or /G05 option is installed.
• Use the :CHANnel<x1>:RMATh:FREQ:SOURce command to set the frequency, period, and edge count operations.
• To set the source of the electrical angle operation, use this command with parameter <x2> set to 3.

:CHANnel<x>:RMATh:SC4

Function   Sets or queries source waveform 4 for the coefficient multiplied by addition or subtraction of sources operation of the specified real time math channel.

Syntax   :CHANnel<x>:RMATh:SC4 {Off|
<NRf>[,<NRf>]}
:CHANnel<x>:RMATh:SC4?
<x> = 17 to 32
<NRf> = 1 to 31
[,<NRf>] = 1 to 60

Example   :CHANNEL17:RMATH:SC4 1
:CHANNEL17:RMATH:SC4?
-> :CHANNEL17:RMATH:SC4 1

Description • This command is valid when the /G03 or /G05 option is installed.
• Default value: OFF

:CHANnel<x>:RMATh:SCALe

Function   Sets or queries the scale boundaries for real-time math of the specified channel.

Syntax   :CHANnel<x>:RMATh:
SCALe {AUTO|DEFault|<NRf>,<NRf>}
:CHANnel<x>:RMATh:SCALe?
<x> = 17 to 32
<NRf> = –9.9999E+30 to 9.9999E+30

Example   :CHANNEL17:RMATH:
SCALE -1.0000E+10,+1.0000E+10
:CHANNEL17:RMATH:SCALE?
-> :CHANNEL17:RMATH:
SCALE {-1.0000E+10,+1.0000E+10}

Description This command is valid when the /G03 or /G05 option is installed.

:CHANnel<x>:RMATh:SQRT1:SIGN

Function   Sets or queries the sign for the specified channel's square root operation.

Syntax   :CHANnel<x>:RMATh:SQRT1:
SIGN {MINus|PLUS}
:CHANnel<x>:RMATh:SQRT1:SIGN?
<x> = 17 to 32

Example   :CHANNEL17:RMATH:SQRT1:SIGN1 PLUS
:CHANNEL17:RMATH:SQRT1:SIGN1?
-> :CHANNEL17:RMATH:SQRT1:SIGN1 PLUS

Description • This command is valid when the /G03 or /G05 option is installed.
• Default value: PLUS

:CHANnel<x>:RMATh:UDCount?

Function   (Upper-level query) Queries all up down count settings.

Syntax   :CHANnel<x>:RMATh:UDCount?

:CHANnel<x>:RMATh:UDCount:OLIMit

Function   Sets or queries the over limit value for up down count.

Syntax   :CHANnel<x>:RMATh:UDCount:
OLIMit {<NRf>}
:CHANnel<x>:RMATh:UDCount:OLIMit?
<x> = 17 to 32
<NRf> = 0 to 16777215

Example   :CHANNEL17:RMATH:UDCOUNT:OLIMIT 0
:CHANNEL17:RMATH:UDCOUNT:OLIMIT?
-> :CHANNEL17:RMATH:UDCOUNT:OLIMIT 0

Description Default value: 0
(but always 16777215 when OVERange is off)

:CHANnel<x>:RMATh:UDCount:OVERange

Function   Sets or queries whether the up down count value is reset when an over limit occurs.

Syntax   :CHANnel<x>:RMATh:UDCount:
OVERange {<Boolean>}
:CHANnel<x>:RMATh:UDCount:OVERange?
<x> = 17 to 32

Example   :CHANNEL17:RMATH:UDCOUNT:OVERANGE ON
:CHANNEL17:RMATH:UDCOUNT:OVERANGE?
-> :CHANNEL17:RMATH:UDCOUNT:
OVERANGE 1

Description Default value: OFF

:CHANnel<x>:RMATh:UNIT

Function   Sets or queries the unit string for real-time math of the specified channel.

Syntax   :CHANnel<x>:RMATh:UNIT {<String>}
:CHANnel<x>:RMATh:UNIT?
<x> = 17 to 32
<String> = Up to 4 characters

Example   :CHANNEL17:RMATH:UNIT "RPM"
:CHANNEL17:RMATH:UNIT?
-> :CHANNEL17:RMATH:UNIT "RPM"

Description • This command is valid when the /G03 or /G05 option is installed.
• Default value: All spaces

4.28 SEARch Group

The commands in this group deal with searching for and extracting patterns from acquired waveforms. You can perform the same operations and make the same settings and queries that you can by using the SHIFT+ZOOM keys on the front panel. If the selectable range of the time axis is "<NRf> = −5 to 5div," the selectable range varies depending on settings such as the record length. For details, see "Selectable Range of Cursor Positions" under "Notes about Cursor Measurement" in chapter 10 of IM DL950-01EN.

:SEARch?
Function   (Upper-level query) Queries all search settings.
Syntax   :SEARch?

:SEARch:ABORt
Function   Aborts the search.
Syntax   :SEARch:ABORt
Example   :SEARCH:ABORT

:SEARch:EDGE?
Function   (Upper-level query) Queries all edge search settings.
Syntax   :SEARch:EDGE?

:SEARch:EDGE:COUNt
Function   Sets or queries the edge search count.
Syntax   :SEARch:EDGE:COUNt {<NRf>}
            :SEARch:EDGE:COUNt?
            <NRf> = 1 to 1000000
Example   :SEARCH:EDGE:COUNT 100
            :SEARCH:EDGE:COUNT?
            -> :SEARCH:EDGE:COUNT 100
Description Default value: 1

:SEARch:EDGE:HYSTeresis
Function   Sets or queries the edge search determination-level hysteresis.
Syntax   :SEARch:EDGE:HYSTeresis {HIGH|LOW|MIDDle}
            :SEARch:EDGE:HYSTeresis?
Example   :SEARCH:EDGE:HYSTERESIS LOW
            :SEARCH:EDGE:HYSTERESIS?
            -> :SEARCH:EDGE:HYSTERESIS LOW
Description • This command is valid if the channel that is being searched is not a logic channel.
            • Default value: LOW

:SEARch:EDGE:LEVEl
Function   Sets or queries the edge search determination level.
Syntax   :SEARch:EDGE:LEVEl {<Voltage>|<Current>|<NRf>}
            :SEARch:EDGE:LEVEl?
Example   :SEARCH:EDGE:LEVEL 2
            :SEARCH:EDGE:LEVEL?
            -> :SEARCH:EDGE:LEVEL 2.00000E+00
Description Default value: 0

:SEARch:EDGE:[LOGic:]BIT<x>
Function   Sets or queries the edge polarity of the specified logic bit for edge searches.
Syntax   :SEARch:EDGE:[LOGic:]BIT<x> {BISLope|OFF|FALL|RISE}
            :SEARch:EDGE:[LOGic:]BIT<x>?
            <x> = 1 to 8
Example   :SEARCH:EDGE:LOGIC:BIT1 BISLOPE
            :SEARCH:EDGE:LOGIC:BIT1?
            -> :SEARCH:EDGE:LOGIC:BIT1 BISLOPE
Description • This command is valid when the source type is logic.
            • Default value: OFF

:SEARch:EDGE:SLOPe
Function   Sets or queries the edge polarity of edge search.
Syntax   :SEARch:EDGE:SLOPe {BISLope|FALL|RISE}
            :SEARch:EDGE:SLOPe?
Example   :SEARCH:EDGE:SLOPE RISE
            :SEARCH:EDGE:SLOPE?
            -> :SEARCH:EDGE:SLOPE RISE
Description • This command is valid if the channel that is being searched is not a logic channel.
            • Default value: RISE

:SEARch:EDGE:SOURce
Function   Sets or queries the trace to perform the edge search on.
Syntax   :SEARch:EDGE:SOURce {<NRf>[,<NRf>]}
            :SEARch:EDGE:SOURce?
            <NRf> = 1 to 32
            [,<NRf>] = If the channel has sub channels, this is the range of sub channel numbers.
Example   :SEARCH:EDGE:SOURCE 1
            :SEARCH:EDGE:SOURCE?
            -> :SEARCH:EDGE:SOURCE 1
Description If no module is installed, you cannot select the edge search.

:SEARch:EPOint (End Point)
Function   Sets or queries the search end position.
Syntax   :SEARch:EPOint {<NRf>}
             :SEARch:EPOint?
             <NRf> = −5 to 5div (the resolution depends on
                       the record length)
Example   :SEARCH:EPOINT 3
             :SEARCH:EPOINT?
             -> :SEARCH:EPOINT 3.000000000000
Description Default value: 5

:SEARch:EXECute
Function   Executes the search.
Syntax   :SEARch:EXECute

:SEARch:EVENt?
Function   (Upper-level query) Queries all event search
             settings.
Syntax   :SEARch:EVENt?

:SEARch:EVENt:COUNt
Function   Sets or queries the event search event number.
Syntax   :SEARch:EVENt:COUNt {<NRf>}
             :SEARch:EVENt:COUNt?
             <NRf> = 1 to 100
Example   :SEARCH:EVENT:COUNT 1
             :SEARCH:EVENT:COUNT?
             -> :SEARCH:EVENT:COUNT 1

:SEARch:LSTate?
Function   (Upper-level query) Queries all logic pattern
             search settings.
Syntax   :SEARch:LSTate?

:SEARch:LSTate:BIT<x>
Function   Sets or queries the level of the specified bit for
             logic pattern searches.
Syntax   :SEARch:LSTate:BIT<x> {DONTcare|
             HIGH|LOW}
             :SEARch:LSTate:BIT<x>?
             <x> = 1 to 8
Example   :SEARCH:LSTATE:BIT1 HIGH
             :SEARCH:LSTATE:BIT1?
             -> :SEARCH:LSTATE:BIT1 HIGH

:SEARch:LSTate:COUNt
Function   Sets or queries the logic pattern search count.
Syntax   :SEARch:LSTate:COUNt {<NRf>}
             :SEARch:LSTate:COUNt?
             <NRf> = 1 to 1000000
Example   :SEARCH:LSTATE:COUNT 100
             :SEARCH:LSTATE:COUNT?
             -> :SEARCH:LSTATE:COUNT 100
Description This setting is the same as the edge search count
             setting.

:SEARch:LSTate:SOURce
Function   Sets or queries the trace to perform the logic
             pattern search on.
Syntax   :SEARch:LSTate:
             SOURce {<NRf>[,<NRf>]}
             :SEARch:LSTate:SOURce?
             <NRf> = 1 to 32
             [, <NRf>] = 1 to 64 (sub channel designation)
Example   :SEARCH:LSTATE:SOURCE 7
             :SEARCH:LSTATE:SOURCE?
             -> :SEARCH:LSTATE:SOURCE 7

:SEARch:MAG<x>
Function   Sets or queries a zoom waveform magnification.
Syntax   :SEARch:MAG<x> {<NRf>}
             :SEARch:MAG<x>?
             <x> = 1, 2
             <NRf> = 2 to 500000000
Example   :SEARCH:MAG1 1000
             :SEARCH:MAG1? -> :SEARCH:MAG1 1000.0
Description • This command is valid an external clock is
               in use. When the internal clock is use, use
               the :SEARch:TDIV<x> command to set the
               magnification.
             • Default value: 100.0

:SEARch:POSition<x>
Function   Sets or queries the position of a zoom box.
Syntax   :SEARch:POSition<x> {<NRf>}
             :SEARch:POSition<x>?
             <x> = 1, 2
             <NRf> = −5 to 5div
Example   :SEARCH:POSITION1 −0.7219
             :SEARCH:POSITION1?
             -> :SEARCH:POSITION1 −0.721900000000

:SEARch:SELect
Function   Sets the search point that is displayed on the
             zoom window, and queries the zoom position of
             that search point.
Syntax   :SEARch:SELect {<NRf>|MAXimum}
             :SEARch:SELect?
             <NRf> = 1 to 5000
Example   :SEARCH:SELECT 4
             :SEARCH:SELECT?
             -> :SEARCH:SELECT −0.721900000000
Description • The string "NAN" is returned if the search could
               not retrieve a position.
             • Default value: NAN

:SEARch:SELect? MAXimum

Function   Queries the maximum save number, which is the
            number that is attached to the last position that
            the search retrieved.

Syntax   :SEARch:SELect? MAXimum

Example   :SEARCH:SELECT? MAXIMUM
            -> :SEARCH:SELECT 5

Description The string "NAN" is returned if the search could
            not retrieve a position.

:SEARch:SPOint (Start Point)

Function   Sets or queries the search start position.

Syntax   :SEARch:SPOint {<NRf>}
            :SEARch:SPOint?
            <NRf> = −5 to 5div (the resolution depends on
                   the record length)

Example   :SEARCH:SPOINT −5
            :SEARCH:SPOINT?
            -> :SEARCH:SPOINT −5.000000000000

Description Default value: -5

:SEARch:TDIV<x>

Function   Sets or queries a zoom waveform T/div value.

Syntax   :SEARch:TDIV<x> {<Time>|HOUR1|HOUR2|
            HOUR3|HOUR4|HOUR5|HOUR6|HOUR7|HOUR8|
            HOUR9|HOUR10|HOUR12|DAY1|DAY2|DAY3|
            DAY4|DAY5}
            :SEARch:TDIV<x>?
            <x> = 1, 2 (sets the target zoom box)
            <Time> = the same as the T/div setting

Example   :SEARCH:TDIV1 0.01
            :SEARCH:TDIV1?
            -> :SEARCH:TDIV1 10.00E-03

Description This command is valid the internal clock is in
            use. When an external clock is in use, use
            the :SEARch:MAG<x> command to set the
            magnification.

:SEARch:TIME:TIME

Function   Sets or queries the time of the time search.

Syntax   :SEARch:TIME:TIME {<NRf>,<NRf>,
            <NRf>,<NRf>,<NRf>,<NRf>,<NRf>}
            :SEARch:TIME:TIME?
            <NRf> = 2000 and higher (year)
            <NRf> = 1 to 12 (month)
            <NRf> = 1 to 31 (day)
            <NRf> = 0 to 23 (hour)
            <NRf> = 0 to 59 (minute)
            <NRf> = 0 to 59 (s)
            <NRf> = 0 to 999999 (microsecond)

Example   :SEARCH:TIME:TIME 2010,1,1,0,0,0,0
            :SEARCH:TIME:TIME?
            -> :SEARCH:TIME:
               TIME 2010,1,1,0,0,0,0

Description Default value: Waveform reference time displayed
            when the menu is opened (0 hour 0 minute 0
            second 0 on January 1, 2010 when there no
            history waveforms or when a menu is not opened)

:SEARch:TWINdow (Target Window)

Function   Sets or queries the window that search results
            will be displayed in.

Syntax   :SEARch:TWINdow {Z1|Z2}
            :SEARch:TWINdow?

Example   :SEARCH:TWINDOW Z1
            :SEARCH:TWINDOW?
            -> :SEARCH:TWINDOW Z1

Description Default value: Z1

:SEARch:TYPE

Function   Sets or queries the search type.

Syntax   :SEARch:TYPE {EDGE|EVENt|LSTate|
            TIME}
            :SEARch:TYPE?

Example   :SEARCH:TYPE EDGE
            :SEARCH:TYPE? -> :SEARCH:TYPE EDGE

Description Default value: EDGE

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4.29 SNAP Group

The command in this group is used to take snapshots. You can execute the same operation that you can by using the SNAPSHOT key on the front panel.

: SNAP

Function   Takes a snapshot.

Syntax   :SNAP

Example   :SNAP

4.30 SSTart Group

The commands in this group deal with executing the single start operation. These commands set the trigger mode to Single and start waveform acquisition.

:SSTart

Function	Executes the single start operation.
Syntax	:SSTart
Example	:SSTART

:SSTart? {<NRf>}

Function	Executes the single start operation and waits for its completion with a timeout.
Syntax	:SSTart? {<NRf>}
Example	:SSTART? 100
Description	<NRf> = 1 to 36000 (timeout value in 100 ms steps; start and wait)
	<NRf> = −36000 to 1 (timeout value in 100 ms steps; wait without starting)

4.31 STARt group

The command in this group is used to start waveform acquisition. You can execute the same operation that you can by using the START/STOP key on the front panel.

:STARt

Function	Starts waveform acquisition.
Syntax	:STARt
Example	:START

4.32 STATus Group

The commands in this group are used to make settings and queries related to the status report. There are no front panel keys that correspond to the commands in this group. For information about status reports, see chapter 5.

:STATus?
Function   (Upper-level query) Queries all the settings for the communication status feature.
Syntax   :STATus?

:STATus:CONDition?
Function   Queries the contents of the condition register.
Syntax   :STATus:CONDition?
Example   :STATUS:CONDITION? -> 16
Description For details on how to use the :STATus:CONDition command to synchronize the instrument, see page 3-9.

:STATus:EESE
Function   Sets or queries the extended event enable register.
Syntax   :STATus:EESE <Register>
            :STATus:EESE?
            <Register> = 0 to 65535
Example   :STATUS:EESE #B00000000
            :STATUS:EESE? -> :STATUS:EESE 0

:STATus:EESR?
Function   Queries the contents of the extended event register and clears the register.
Syntax   :STATus:EESR?
Example   :STATUS:EESR? -> 0

:STATus:ERRor?
Function   Queries the error code and message of the last error that has occurred.
Syntax   :STATus:ERRor?
Description • If no errors have occurred, 0,"No error" is returned.
            • You can use the :STATus:QMESsage command to specify whether the message is included.

:STATus:FILTer<x>
Function   Sets or queries the transition filter.
Syntax   :STATus:FILTer<x> {RISE|FALL|BOTH|
            NEVer}
            :STATus:FILTer<x>?
            <x> = 1 to 16
Description Set how each bit in the condition register must change to trigger the setting of an event. If you specify RISE, a change from 0 to 1 triggers the setting of an event.

:STATus:QENable
Function   Sets or queries whether messages other than errors will be stored to the error queue (ON) or not (OFF).
Syntax   :STATus:QENable {<Boolean>}
            :STATus:QENable?
Example   :STATUS:QENABLE ON
            :STATUS:QENABLE?
            -> :STATUS:QENABLE 1
Description Default value: 1

:STATus:QMESsage
Function   Sets or queries whether message information will be attached to the response to the STAT:ERR? query (ON) or not (OFF).
Syntax   :STATus:QMESsage {<Boolean>}
            :STATus:QMESsage?
Example   :STATUS:QMESSAGE ON
            :STATUS:QMESSAGE?
            -> :STATUS:QMESSAGE 1
Description Default value: 1

4.33 STOP Group

The command in this group is used to stop waveform acquisition. You can execute the same operation that you can by using the START/STOP key on the front panel.

:STOP

Function   Stops waveform acquisition.

Syntax   :STOP

Description   If recording is in progress, it is also stopped.

4.34 STORe Group

The commands in this group deal with saving setup data. You can perform the same operations that you can by pressing the SETUP key on the front panel, the Setup Data Store/Recall soft key, and then the Store Exec soft key.

:STORe?

Function (Upper-level query) Queries all the information related to setup data in the internal memory.

Syntax `:STORe?`

:STORe:SETup<x>?

Function (Upper-level query) Queries information about the setup data in the specified location of the internal memory.

Syntax `:STORe:SETup<x>?`
`<x> = 1 to 17`

Description `<x>` = 17 represents product setting.

:STORe:SETup<x>:CLEar

Function Clears the setup data stored in the specified location of the internal memory.

Syntax `:STORe:SETup<x>:CLEar`
`<x> = 1 to 17`

Example `:STORE:SETUP1:CKEAR`

Description `<x>` = 17 represents product setting.

:STORe:SETup<x>:COMMent

Function Sets or queries the comment for the setup data that is stored to the specified location in the internal memory.

Syntax `:STORe:SETup<x>:COMMent {<String>}`
`:STORe:SETup<x>:COMMent?`
`<x> = 1 to 17`
`<String> = Up to 120 characters`

Example `:STORE:SETUP1:COMMENT "ABCD"`
`:STORE:SETUP1:COMMENT?`
`-> :STORE:SETUP1:COMMENT "ABCD"`

Description `<x>` = 17 represents product setting.

:STORe:SETup<x>:DATE?

Function Queries the date and time of the setup data that is stored to the specified location in the internal memory.

Syntax `:STORe:SETup<x>:DATE?`
`<x> = 1 to 17`

Example `:STORE:SETUP1:DATE?`
`-> :STORE:SETUP1:`
`DATE "2021/02/09 09:44:02"`

Description This command returns "No Valid Data" if no setup data is stored in the specified location.

Description `<x>` = 17 represents product setting.

:STORe:SETup<x>:EXECute

Function Saves setup data to the specified location in the internal memory.

Syntax `:STORe:SETup<x>:EXECute`
`<x> = 1 to 17`

Example `:STORE:SETUP1:EXECUTE`

Description `<x>` = 17 represents product setting.

4.35 SYSTem Group

The commands in this group deal with the system. You can make the same settings and queries that you can by pressing the UTILITY key on the front panel, and then using the System Config menu.

:SYSTem?
Function   (Upper-level query) Queries all system settings.
Syntax   :SYSTem?

:SYSTem:AFONt
Function   Sets or queries the font size of analysis results.
Syntax   :SYSTem:AFONt {LARGe|SMALl}
           :SYSTem:AFONt?
Example   :SYSTEM:AFONT SMALL
           :SYSTEM:AFONT?
           -> :SYSTEM:AFONT SMALL
Description Default value: SMALL

:SYSTem:AMAXline
Function   Sets or queries the maximum number of digits used to display analysis results.
Syntax   :SYSTem:AMAXline {<NRf>}
           :SYSTem:AMAXline?
           <NRf> = 1 to 20
Example   :SYSTEM:AMAXLINE 3
           :SYSTEM:AMAXLINE?
           -> :SYSTEM:AMAXLINE 3
Description Default value: 8

:SYSTem:BEEP
Function   Sets or queries the on/off state of the beep sound generated when an error occurs.
Syntax   :SYSTem:BEEP {<Boolean>}
           :SYSTem:BEEP?
Example   :SYSTEM:BEEP ON
           :SYSTEM:BEEP? -> :SYSTEM:BEEP 1
Description Default value: ON

:SYSTem:BOOTmode
Function   Sets or queries the startup mode.
Syntax   :SYSTem:BOOTmode {STANby|IMMEdiate}
           :SYSTem:BOOTmode?
Example   :SYSTEM:BOOTMODE IMMEDIATE
           :SYSTEM:BOOTMODE?
           -> :SYSTEM:BOOTMODE STANBY
Description STANBY (standby startup mode): In this mode, the main power switch is on. The front-panel switch starts the instrument.
           IMMEDIATE (immediate startup mode): In this mode, the main power switch starts the instrument.

:SYSTem:CHANnel<x>:SNUMber?
(Serial Number)
Function   Queries the instrument number of the specified channel.
Syntax   :SYSTem:CHANnel<x>:SNUMber?
           <x> = 1 to 16
Example   :SYSTEM:CHANNEL1:SNUMBER?
           -> :SYTEM:CHANNEL1:
              SNUMBER "111111111"
Description This command is invalid for the following modules.
           701250 High-Speed 10 MS/s 12-bit Isolation Module
           701251 High-Speed High-Resolution 1 MS/s, 16-Bit Isolation Module
           701255 High-Speed 10 MS/s 12-bit Non-Isolation Module
           701261 Universal (Voltage/Temp.) Module
           701262 Universal (Voltage/Temp.) Module (with AAF)
           701265 Temperature, High Precision Voltage Isolation Module
           701270 Strain Module (NDIS)
           701271 Strain Module (DSUB, Shunt-Cal)
           701275 Acceleration/Voltage Module (with AAF)
           720230 Logic Input Module
           720240 CAN Bus Monitor Module

:SYSTem:CLICk
Function   Sets or queries whether click sounds are produced.
Syntax   :SYSTem:CLICk {<Boolean>}
           :SYSTem:CLICk?
Example   :SYSTEM:CLICK ON
           :SYSTEM:CLICK? -> :SYSTEM:CLICK 1
Description Default value: ON

:SYSTem:CLOCk?
Function   (Upper-level query) Queries all date/time settings.
Syntax   :SYSTem:CLOCk?

:SYSTem:CLOCk:DATE
Function   Sets or queries the date.
Syntax   :SYSTem:CLOCk:DATE <String>
           :SYSTem:CLOCk:DATE?
           <String> = YYYY:MM:DD
           Specify a Gregorian year in YYYY.
           YYYY: 2000 to 2099
Example   :SYSTEM:CLOCK:DATE "2021/02/09"
           :SYSTEM:CLOCK:DATE?
           -> :SYSTEM:CLOCK:DATE "2021/02/09"
Description Regardless of the setting that you have made using the SYST:CLOC:FORM command, this command returns responses in the format shown above.

:SYSTem:CLOCk:FORMat
Function   Sets or queries the date format.
Syntax   :SYSTem:CLOCk:FORMat {<NRf>}
            :SYSTem:CLOCk:FORMat?
            <NRf> = 1 to 4
Example   :SYSTEM:CLOCK:FORMAT 1
            :SYSTEM:CLOCK:FORMAT?
            -> :SYSTEM:CLOCK:FORMAT 1
Description This command specifies the display format of the
            date. (The communication response format of the
            date is fixed.)
            1: Year/month (number)/day
            2: Day/month (number)/year
            3: Day-month (English abbreviation)-year (last
            two digits)
            4: Day month (English abbreviation) year
Description Default value: 1

:SYSTem:CLOCk:MODE
Function   Sets or queries whether the date and time are
            displayed.
Syntax   :SYSTem:CLOCk:MODE {<Boolean>}
            :SYSTem:CLOCk:MODE?
Example   :SYSTEM:CLOCK:MODE ON
            :SYSTEM:CLOCK:MODE?
            -> :SYSTEM:CLOCK:MODE 1
Description Default value: ON

:SYSTem:CLOCk:SNTP?
Function   (Upper-level query) Queries all SNTP settings.
Syntax   :SYSTem:CLOCk:SNTP?

:SYSTem:CLOCk:SNTP:EXECute
Function   Uses SNTP to set the date and time.
Syntax   :SYSTem:CLOCk:SNTP:EXECute
Example   :SYSTEM:CLOCK:SNTP:EXECUTE

:SYSTem:CLOCk:TIME
Function   Sets or queries the time.
Syntax   :SYSTem:CLOCk:TIME <String>
            :SYSTem:CLOCk:TIME?
            <String> = HH:MM:SS
            HH can be set to a value from 0 to 23.
Example   :SYSTEM:CLOCK:TIME "10:00:00"
            :SYSTEM:CLOCK:TIME?
            -> :SYSTEM:CLOCK:TIME "10:00:00"

:SYSTem:CLOCk:TZONe (Time Zone)
Function   Sets or queries the time difference from UTC.
Syntax   :SYSTem:CLOCk:TZONe <String>
            :SYSTem:CLOCk:TZONe?
            <String> = HH:MM (−12:00 to 14:00)
Example   :SYSTEM:CLOCK:TZONE "09:00"
            :SYSTEM:CLOCK:TZONE?
            -> :SYSTEM:CLOCK:TZONE "09:00"
Description Default value: "09:00"

:SYSTem:CRMode
Function   Sets or queries the mode for reading vertical,
            marker, and degree cursor values.
Syntax   :SYSTem:CRMode {DISPlay|ACQuisition}
            :SYSTem:CRMode?
Example   :SYSTEM:CRMODE DISPLAY
            :SYSTEM:CRMODE?
            -> :SYSTEM:CRMODE DISPLAY
Description Default value: DISPlay

:SYSTem:FLASh?
Function   (Upper-level query) Queries all flash acquisition
            settings.
Syntax   :SYSTem:FLASh?

:SYSTem:FLASh:ERASe
Function   Initializes flash acquisition (FlashACQ).
Syntax   :SYSTem:FLASh:ERASe
Description The settings will be initialized unconditionally.

:SYSTem:FLASh:LIFe?
Function   Queries the life of the SSD used in flash
            acquisition.
Syntax   :SYSTem:FLASh:LIFe?
Description • The current elapsed life is returned as a
            percentage.
            • If the SSD is not installed, 0 is returned.

:SYSTem:HAFormat
(Horizontal Axis Format)
Function   Sets or queries the horizontal axis display mode.
Syntax   :SYSTem:HAFormat {AUTO|ABSolute|
            RELative}
            :SYSTem:HAFormat?
            AUTO: Auto
            ABSolute: Absolute time
            RELative: Relative time
Example   :SYSTEM:HAFORMAT AUTO
            :SYSTEM:HAFORMAT?
            -> :SYSTEM:HAFORMAT AUTO
Description • This command is valid when the /G05 option is
            installed.
            • Default value: AUTO

:SYSTem:KEYProtect?
Function   (Upper-level query) Queries all key lock settings.
Syntax   :SYSTem:KEYProtect?

:SYSTem:KEYProtect:EPASsword
(Enter Password)
Function   Enters the password to release the key lock.
Syntax   :SYSTem:KEYProtect:
            EPASsword {<String>}
            <String> = Up to 8 characters
Example   :SYSTEM:KEYPROTECT:EPASSWORD "ABC"
Description This command is valid when the keys are locked,
            a password is required to release the key lock,
            and a password has been set.

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:SYSTem:KEYProtect:MODE

Function　Sets or queries whether the keys are locked.

Syntax　　:SYSTem:KEYProtect:MODE {<Boolean>}
　　　　　:SYSTem:KEYProtect:MODE?

Example　:SYSTEM:KEYPROTECT:MODE ON
　　　　　:SYSTEM:KEYPROTECT:MODE?
　　　　　-> :SYSTEM:KEYPROTECT:MODE 1

Description　• The key lock status is retained even when the
　　　　　　　instrument is restarted.
　　　　　　• Default value: OFF

:SYSTem:KEYProtect:RTYPe
(Release Type)

Function　Sets or queries how to release the key lock.

Syntax　　:SYSTem:KEYProtect:RTYPe {KEY|
　　　　　PASSword}
　　　　　:SYSTem:KEYProtect:RTYPe?

Example　:SYSTEM:KEYPROTECT:RTYPE PASSWORD
　　　　　:SYSTEM:KEYPROTECT:RTYPE?
　　　　　-> :SYSTEM:KEYPROTECT:RTYPE PASSWORD

Description　Default value: KEY

:SYSTem:KEYProtect:SPASsword
(Set Password)

Function　Sets the password that is used to release the key
　　　　　lock.

Syntax　　:SYSTem:KEYProtect:
　　　　　SPASsword {<String>}
　　　　　<String> = Up to 8 characters

Example　:SYSTEM:KEYPROTECT:SPASSWORD "ABC"

Description　Send the command
　　　　　:SYSTem:KEYProtect:SPASsword "" to reset the
　　　　　password.

:SYSTem:KEYProtect:TYPE

Function　Sets or queries which keys will be locked.

Syntax　　:SYSTem:KEYProtect:TYPE {ALL|EStart}
　　　　　:SYSTem:KEYProtect:TYPE?

Example　:SYSTEM:KEYPROTECT:TYPE ESTART
　　　　　:SYSTEM:KEYPROTECT:TYPE?
　　　　　-> :SYSTEM:KEYPROTECT:TYPE ESTART

Description　Default value: ALL

:SYSTem:KEYResponse

Function　Sets or queries the response time of the START/
　　　　　STOP key.

Syntax　　:SYSTem:KEYResponse {QUICK|SEC1}
　　　　　:SYSTem:KEYResponse?

Example　:SYSTEM:KEYRESPONSE SEC1
　　　　　:SYSTEM:KEYRESPONSE?
　　　　　-> :SYSTEM:KEYRESPONSE SEC1

Description　Default value: QUICK

:SYSTem:LANGuage

Function　Sets or queries the message language.

Syntax　　:SYSTem:LANGuage {CHINese|ENGLish|
　　　　　FRENch|GERMan|ITALian|JAPANese|
　　　　　KORean|SPANish|RUSSian}
　　　　　:SYSTem:LANGuage?

Example　:SYSTEM:LANGUAGE ENGLISH
　　　　　:SYSTEM:LANGUAGE?
　　　　　-> :SYSTEM:LANGUAGE ENGLISH

Description　Default value: language determined by the order
　　　　　code

:SYSTem:LCD?

Function　(Upper-level query) Queries all LCD settings.

Syntax　　:SYSTem:LCD?

:SYSTem:LCD:AUTO?

Function　(Upper-level query) Queries all the settings for the
　　　　　feature that automatically turns off the backlight.

Syntax　　:SYSTem:LCD:AUTO?

:SYSTem:LCD:AUTO:MODE

Function　Sets or queries whether the feature that
　　　　　automatically turns off the backlight is on.

Syntax　　:SYSTem:LCD:AUTO:MODE {<Boolean>}
　　　　　:SYSTem:LCD:AUTO:MODE?

Example　:SYSTEM:LCD:AUTO:MODE ON
　　　　　:SYSTEM:LCD:AUTO:MODE?
　　　　　-> :SYSTEM:LCD:AUTO:MODE 1

Description　Default value: OFF

:SYSTem:LCD:AUTO:TIME

Function　Sets or queries the amount of time until the
　　　　　backlight is turned off.

Syntax　　:SYSTem:LCD:AUTO:TIME {<NRf>}
　　　　　:SYSTem:LCD:AUTO:TIME?
　　　　　<NRf> = 1 to 60 (minute)

Example　:SYSTEM:LCD:AUTO:TIME 10
　　　　　:SYSTEM:LCD:AUTO:TIME?
　　　　　-> :SYSTEM:LCD:AUTO:TIME 10

Description　Default value: 1

:SYSTem:LCD:BRIGhtness

Function　Sets or queries the LCD brightness.

Syntax　　:SYSTem:LCD:BRIGhtness {<NRf>}
　　　　　:SYSTem:LCD:BRIGhtness?
　　　　　<NRf> = 1 to 10

Example　:SYSTEM:LCD:BRIGHTNESS 3
　　　　　:SYSTEM:LCD:BRIGHTNESS?
　　　　　-> :SYSTEM:LCD:BRIGHTNESS 3

Description　Default value: 8

:SYSTem:LCD:MODE
Function   Sets or queries whether the backlight is on.
Syntax   :SYSTem:LCD:MODE {<Boolean>}
            :SYSTem:LCD:MODE?
Example   :SYSTEM:LCD:MODE ON
            :SYSTEM:LCD:MODE?
            -> :SYSTEM:LCD:MODE 1
Description Default value: ON

:SYSTem:LOGic?
Function   (Upper-level query) Queries all logic display
            settings.
Syntax   :SYSTem:LOGic?

:SYSTem:LOGic:BORDer (Bit Order)
Function   Sets or queries the bit order that is used when
            you display logic module data as waveforms.
Syntax   :SYSTem:LOGic:BORDer {LSBFirst|
            MSBFirst}
            :SYSTem:LOGic:BORDer?
Example   :SYSTEM:LOGIC:BORDER LSBFIRST
            :SYSTEM:LOGIC:BORDER?
            -> :SYSTEM:LOGIC:BORDER LSBFIRST
Description This setting is applied to all channels that have
            modules installed in them.

:SYSTem:LOGic:CORDer (Cursor Order)
Function   Sets or queries the bit order that is used when
            you use cursors to display logic module data as
            bits.
Syntax   :SYSTem:LOGic:CORDer {LSBFirst|
            MSBFirst}
            :SYSTem:LOGic:CORDer?
Example   :SYSTEM:LOGIC:CORDER LSBFIRST
            :SYSTEM:LOGIC:CORDER?
            -> :SYSTEM:LOGIC:CORDER LSBFIRST
Description This setting is applied to all channels that have
            modules installed in them.

:SYSTem:LOGic:NFORmat
(Numerical Format)
Function   Sets or queries the numeric display format of
            logic module data.
Syntax   :SYSTem:LOGic:NFORmat {BIT|
            HEXadecimal}
            :SYSTem:LOGic:NFORmat?
Example   :SYSTEM:LOGIC:NFORMAT BIT
            :SYSTEM:LOGIC:NFORMAT?
            -> :SYSTEM:LOGIC:NFORMAT BIT
Description This setting is applied to all channels that have
            modules installed in them.

:SYSTem:MLANguage
Function   Sets or queries the menu language.
Syntax   :SYSTem:MLANguage {CHINese|ENGLish|
            FRENch|GERMan|ITALian|JAPANese|
            KORean|SPANish|RUSSian}
            :SYSTem:MLANguage?
Example   :SYSTEM:MLANGUAGE ENGLISH
            :SYSTEM:MLANGUAGE?
            -> :SYSTEM:MLANGUAGE ENGLISH
Description Default value: language determined by the order
            code

:SYSTem:OVERview
Function   Displays the system information.
Syntax   :SYSTem:OVERview
Example   :SYSTEM:OVERVIEW

:SYSTem:PACTion
Function   Sets or queries whether the action mode is
            enabled at power-on.
Syntax   :SYSTem:PACTion {<Boolean>}
            :SYSTem:PACTion?
Example   :SYSTEM:PACTION ON
            :SYSTEM:PACTION?
            -> :SYSTEM:PACTION 1
Description Default value: ON

:SYSTem:PSTart
Function   Sets or queries whether waveform acquisition will
            start at power-on.
Syntax   :SYSTem:PSTart {<Boolean>}
            :SYSTem:PSTart?
Example   :SYSTEM:PSTART ON
            :SYSTEM:PSTART? -> :SYSTEM:PSTART 1
Description Default value: OFF

:SYSTem:RCMode (Remote Control Mode)
Function   Sets or queries whether remote signals are used
            to stop measurements.
Syntax   :SYSTem:RCMode {<Boolean>}
            :SYSTem:RCMode?
Example   :SYSTEM:RCMODE ON
            :SYSTEM:RCMODE? -> :SYSTEM:RCMODE 1
Description Default value: ON (Low->High stops
            measurements)

:SYSTem:SCALefont
Function   Sets or queries the font size that is used for
            waveform labels and scale values.
Syntax   :SYSTem:SCALefont {SMALl|LARGe}
            :SYSTem:SCALefont?
Example   :SYSTEM:SCALEFONT SMALL
            :SYSTEM:SCALEFONT?
            -> :SYSTEM:SCALEFONT SMALL
Description • Even if you specify LARGe with this command,
              depending on the display conditions, the
              SMAll font may be displayed.
            • Default value: SMAll

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:SYSTem:SOITem (Scale On Item)
Function   Sets or queries which scales are displayed.
Syntax   :SYSTem:SOITem {ALL|TSCale}
            :SYSTem:SOITem?
Example   :SYSTEM:SOITEM ALL
            :SYSTEM:SOITEM?
            -> :SYSTEM:SOITEM ALL
Description Default value: ALL

:SYSTem:STORage:MEDia
Function   Sets or queries the medium that you want to
            format.
Syntax   :SYSTem:STORage:MEDia {IDRive|SD}
            :SYSTem:STORage:MEDia?
Example   :SYSTEM:STORAGE:MEDIA SD
            :SYSTEM:STORAGE:MEDIA?
            -> :SYSTEM:STORAGE:MEDIA SD
Description • IDRive: Internal drive
            • SD: SD memory card

:SYSTem:STORage:FORMat:EXECute
Function   Formats the specified storage device. This is an
            overlap command.
Syntax   :SYSTem:STORage:FORMat:EXECute
Example   :SYSTEM:STORAGE:FORMAT:EXECUTE

:SYSTem:SYNChronous:ABORt
Function   Clears the multi-unit synchronization mode.
Syntax   :SYSTem:SYNChronous:ABORt
Example   :SYSTEM:SYNCHRONOUS:ABORT
Description • This command is valid when the /C50 option is
              installed.
            • This command is valid only when multi-unit
              synchronization is running or is established.

:SYSTem:SYNChronous:EXECute
Function   Executes the multi-unit synchronization.
Syntax   :SYSTem:SYNChronous:EXECute
Example   :SYSTEM:SYNCHRONOUS:EXECUTE
Description • This command is valid when the /C50 option is
              installed.
            • This command is valid only when MAIN or SUB
              has been specified with the MODE command,
              but multi-unit synchronization is not running.

:SYSTem:SYNChronous:MODE
Function   Sets or queries the multi-unit synchronization.
Syntax   :SYSTem:SYNChronous:
            MODE {OFF|MAIN|SUB}
            :SYSTem:SYNChronous:MODE?
Example   :SYSTEM:SYNCHRONOUS:MODE MAIN
            :SYSTEM:SYNCHRONOUS:MODE?
            -> :SYSTEM:SYNCHRONOUS:MODE MAIN
Description • This command is valid when the /C50 option is
              installed.
            • Default value: OFF

:SYSTem:SYNChronous:PSTAte?
Function   Queries the multi-unit synchronization state.
Syntax   :SYSTem:SYNChronous:PSTAte?
            {OFF|CONNecting|MAIN|SUB}
Example   :SYSTEM:SYNCHRONOUS:PSTATE?
            -> :SYSTEM:SYNCHRONOUS:PSTATE OFF
Description • This command is valid when the /C50 option is
              installed.
            • OFF: Multi-unit synchronization is disabled.
              CONNecting: Multi-unit synchronization
              connections standby state.
              MAIN: Running as the main unit.
              SUB: Running as a sub unit.

:SYSTem:SYNChronous:TRIGger<x>
Function   Sets or queries the multi-unit synchronization
            trigger on/off state.
Syntax   :SYSTem:SYNChronous:TRIGger<x>
            :SYSTem:SYNChronous:TRIGger?
            <x> = 1 to 5
            (1: Main Unit, 2: Sub Unit1, 3: Sub Unit2, 4: Sub
            Unit3, 5: Sub Unit4)
            The sub unit number indicates the port position.
Example   :SYSTEM:SYNCHRONOUS:TRIGGER1 ON
            :SYSTEM:SYNCHRONOUS:TRIGGER1?
            -> :SYSTEM:SYNCHRONOUS:TRIGGER1 ON
Description • This command is valid when the /C50 option is
              installed.
            • This command is valid only for the main unit.
            • Default value: OFF

:SYSTem:TPANel:MODE
Function   Sets or queries the touch panel on/off state.
Syntax   :SYSTem:TPANel:MODE {<Boolean>}
            :SYSTem:TPANel:MODE?
Example   :SYSTEM:TPANEL:MODE ON
            :SYSTEM:TPANEL:MODE?
            -> :SYSTEM:TPANEL:MODE 1
Description Default value: ON

`:SYSTem:TSYNchro?`
`(Time Synchronization)`
Function　　(Upper-level query) Queries all time
　　　　　　synchronization settings.
Syntax　　　:SYSTem:TSYNchro?
Example　　:SYSTEM:TSYNCHRO?

`:SYSTem:TSYNchro:IEEE1588?`
Function　　(Upper-level query) Queries all IEEE1588
　　　　　　settings.
Syntax　　　:SYSTem:TSYNchro:IEEE1588?

`:SYSTem:TSYNchro:IEEE1588:DMEChanism`
Function　　Sets or queries the IEEE1588 delay mechanism.
Syntax　　　:SYSTem:TSYNchro:IEEE1588:
　　　　　　DMEChanism {E2E|P2P}
　　　　　　:SYSTem:TSYNchro:IEEE1588:
　　　　　　DMEChanism?
Example　　:SYSTEM:TSYNCHRO:IEEE1588:
　　　　　　DMECHANISM E2E
　　　　　　:SYSTEM:TSYNCHRO:IEEE1588:
　　　　　　DMECHANISM?
　　　　　　-> :SYSTEM:TSYNCHRO:IEEE1588:
　　　　　　　　DMECHANISM E2E

`:SYSTem:TSYNchro:IEEE1588:DNUMber`
Function　　Sets or queries the IEEE1588 domain number.
Syntax　　　:SYSTem:TSYNchro:IEEE1588:
　　　　　　DNUMber {<NRf>}
　　　　　　:SYSTem:TSYNchro:IEEE1588:
　　　　　　DNUMber?
　　　　　　<NRf> = 0 to 255
Example　　:SYSTEM:TSYNCHRO:IEEE1588:DNUMBER 0
　　　　　　:SYSTEM:TSYNCHRO:IEEE1588:DNUMBER?
　　　　　　-> :SYSTEM:TSYNCHRO:IEEE1588:
　　　　　　　　DNUMBER 0
Description　Default value: 0

`:SYSTem:TSYNchro:IEEE1588:LSECond`
Function　　Sets or queries IEEE1588 leap second.
Syntax　　　:SYSTem:TSYNchro:IEEE1588:
　　　　　　LSECond {<NRf>}
　　　　　　:SYSTem:TSYNchro:IEEE1588:
　　　　　　LSECond?
　　　　　　<NRf> = 0 to 255
Example　　:SYSTEM:TSYNCHRO:IEEE1588:LSECOND 37
　　　　　　:SYSTEM:TSYNCHRO:IEEE1588:LSECOND?
　　　　　　-> :SYSTEM:TSYNCHRO:IEEE1588:
　　　　　　　　LSECOND 37
Description　Default value: 37

`:SYSTem:TSYNchro:IEEE1588:MSOUrce`
Function　　Sets or queries the IEEE1588 master source.
Syntax　　　:SYSTem:TSYNchro:IEEE1588:
　　　　　　MSOUrce {INTernal|GPS}
　　　　　　:SYSTem:TSYNchro:IEEE1588:MSOUrce?
Example　　:SYSTEM:TSYNCHRO:IEEE1588:
　　　　　　MSOURCE GPS
　　　　　　:SYSTEM:TSYNCHRO:IEEE1588:MSOURCE?
　　　　　　-> :SYSTEM:TSYNCHRO:IEEE1588:
　　　　　　　　MSOURCE GPS
Description　• This command is valid when the /C40 option is
　　　　　　　installed.
　　　　　　• GPS is valid when the /C35 option is installed.
　　　　　　• Default value: INTernal

`:SYSTem:TSYNchro:IEEE1588:NLAYer`
Function　　Sets or queries the IEEE1588 network layer.
Syntax　　　:SYSTem:TSYNchro:IEEE1588:
　　　　　　NLAYer {LAYER2|LAYER3}
　　　　　　:SYSTem:TSYNchro:IEEE1588:NLAYer?
Description　Default value: LAYER2

`:SYSTem:TSYNchro:IEEE1588:PRIority`
`<x>`
Function　　Sets or queries the IEEE1588 priority.
Syntax　　　:SYSTem:TSYNchro:IEEE1588:
　　　　　　PRIority<x> {<NRf>}
　　　　　　:SYSTem:TSYNchro:IEEE1588:
　　　　　　PRIority<x>?
　　　　　　<x> = 1, 2
　　　　　　<NRf> = 0 to 255
Example　　:SYSTEM:TSYNCHRO:IEEE1588:
　　　　　　PRIORITY1 GPS
　　　　　　:SYSTEM:TSYNCHRO:IEEE1588:PRIORITY1?
　　　　　　-> :SYSTEM:TSYNCHRO:IEEE1588:
　　　　　　PRIORITY1 0
Description　This command is valid when the /C40 option is
　　　　　　installed.

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`:SYSTem:TSYNchro:IEEE1588:SONLy`

Function   Sets or queries IEEE1588 slave only.

Syntax   `:SYSTem:TSYNchro:IEEE1588:`
`SONLy {<Boolean>}`
`:SYSTem:TSYNchro:IEEE1588:SONLy?`

Example   `:SYSTEM:TSYNCHRO:IEEE1588:`
`SONLY ON`
`:SYSTEM:TSYNCHRO:IEEE1588:SONLY?`
`-> :SYSTEM:TSYNCHRO:IEEE1588:`
`SONLY ON`

Description • This command is valid when the /C40 option is
installed.
• Default value: OFF

`:SYSTem:TSYNchro:IRIG?`

Function   (Upper-level query) Queries all IRIG time
synchronization settings.

Syntax   `:SYSTem:TSYNchro:IRIG?`

`:SYSTem:TSYNchro:IRIG:FORMat`

Function   Sets or queries the IRIG format.

Syntax   `:SYSTem:TSYNchro:IRIG:FORMat {A|B}`
`:SYSTem:TSYNchro:IRIG:FORMat?`

Example   `:SYSTEM:TSYNCHRO:IRIG:FORMAT A`
`:SYSTEM:TSYNCHRO:IRIG:FORMAT?`
`-> :SYSTEM:TSYNCHRO:IRIG:FORMAT A`

Description • This command is valid when the /C35 option is
installed.
• Default value: A

`:SYSTem:TSYNchro:IRIG:IMPedance`

Function   Sets or queries the IRIG input impedance.

Syntax   `:SYSTem:TSYNchro:IRIG:`
`IMPedance {<NRf>}`
`:SYSTem:TSYNchro:IRIG:IMPedance?`
`<NRf> = 50, 5000`

Example   `:SYSTEM:TSYNCHRO:IRIG:IMPEDANCE 50`
`:SYSTEM:TSYNCHRO:IRIG:IMPEDANCE?`
`-> :SYSTEM:TSYNCHRO:IRIG:`
`IMPEDANCE 50`

Description • This command is valid when the /C35 option is
installed.
• Default value: 50

`:SYSTem:TSYNchro:IRIG:MODulation`

Function   Sets or queries the IRIG modulation type.

Syntax   `:SYSTem:TSYNchro:IRIG:`
`MODulation {AM|PWCode}`
`:SYSTem:TSYNchro:IRIG:MODulation?`

Example   `:SYSTEM:TSYNCHRO:IRIG:MODULATION AM`
`:SYSTEM:TSYNCHRO:IRIG:MODULATION?`
`-> :SYSTEM:TSYNCHRO:IRIG:`
`MODULATION AM`

Description • This command is valid when the /C35 option is
installed.
• Default value: AM

`:SYSTem:TSYNchro:MODE`

Function   Sets or queries the time synchronization mode.

Syntax   `:SYSTem:TSYNchro:MODE {OFF|GPS|IRIG|`
`IEEE1588}`
`:SYSTem:TSYNchro:MODE?`

Example   `:SYSTEM:TSYNCHRO:MODE IEEE1588`
`:SYSTEM:TSYNCHRO:MODE?`
`-> :SYSTEM:TSYNCHRO:MODE IEEE1588`

Description • IRIG and GPS are valid when the /C35 option
is installed.
• Default value: OFF

`:SYSTem:TSYNchro:STATe?`

Function   Queries the time synchronization state.

Syntax   `:SYSTem:TSYNchro:STATe?`
`{OFF|UNLock|LOCK|STABle}`
LOCK: Normal reception
UNLock: Reception not possible
STABle: Normal reception, synchronized within
10 ppm

Example   `:SYSTEM:TSYNCHRO:STATE?`
`-> :SYSTEM:TSYNCHRO:STATE STABLE`

`:SYSTem:USBKeyboard`

Function   Sets or queries the USB keyboard type.

Syntax   `:SYSTem:USBKeyboard {ENGLish|`
`JAPANese}`
`:SYSTem:USBKeyboard?`

Example   `:SYSTEM:USBKEYBOARD ENGLISH`
`:SYSTEM:USBKEYBOARD?`
`-> :SYSTEM:USBKEYBOARD ENGLISH`

4.36 TIMebase Group

The commands in this group deal with time bases. You can make the same settings and queries that you can by using the TIME/DIV knob on the front panel.

:TIMebase?
Function   (Upper-level query) Queries all time base settings.
Syntax   :TIMebase?

:TIMebase:CHANnel<x>:SRATe?
Function   Queries the sample rate of the specified channel.
Syntax   :TIMebase:CHANnel<x>:SRATe?
            <x> = 1 to 32
Example   :TIMEBASE:CHANNEL1:SRATE?
            -> :TIMEBASE:CHANNEL1:
               SRATE 1.0000000E+06
Description • This command returns the current setting (the reserved value for the next measurement).
            • Use the :WAVeform:CAPTure:SRATe? command to query the measured data.

:TIMebase:SOURce
Function   Sets or queries the time base.
Syntax   :TIMebase:SOURce {EXTernal|INTernal}
            :TIMebase:SOURce?
Example   :TIMEBASE:SOURCE INTERNAL
            :TIMEBASE:SOURCE?
            -> :TIMEBASE:SOURCE INTERNAL
Description Default value: INT

:TIMebase:SRATe
Function   Sets or queries the sample rate.
Syntax   :TIMebase:SRATe {<Frequency>}
            :TIMebase:SRATe?
            <Frequency> = 5Hz, 10Hz, 20Hz, 50Hz, 100Hz,
                          ..., 20MHz, 50MHz, 100MHz,
                          200MHz
Example   :TIMEBASE:SRATE 500kHz
            :TIMEBASE:SRATE?
            -> :TIMEBASE:SRATE 500.00000E+03

:TIMebase:TDIV
Function   Sets or queries the T/div value.
Syntax   :TIMebase:TDIV {<Time>|HOUR1|HOUR2|
            HOUR3|HOUR4|HOUR5|HOUR6|HOUR7|HOUR8|
            HOUR9|HOUR10|HOUR12|DAY1|DAY2|DAY3|
            DAY4|DAY5}
            :TIMebase:TDIV?
            <Time> = 100ns to 1800s
Example   :TIMEBASE:TDIV 1ms
            :TIMEBASE:TDIV?
            -> :TIMEBASE:TDIV 1.000E-03

4.37 TRIGger group

The commands in this group deal with triggers. You can make the same settings and queries that you can by using the TRIGGER group keys (MODE, SIMPLE, ENHANCED, POSITION, and DELAY keys) on the front panel.

`:TRIGger?`
Function (Upper-level query) Queries all trigger settings.
Syntax `:TRIGger?`

`:TRIGger:ABN? (A -> B(n))`
Function (Upper-level query) Queries all A->B(n) trigger settings.
Syntax `:TRIGger:ABN?`

`:TRIGger:ABN:COUNt`
Function Sets or queries the number of times condition B must be met for A->B(n) triggers.
Syntax `:TRIGger:ABN:COUNt {<NRf>}`
`:TRIGger:ABN:COUNt?`
`<NRf> = 1 to 10000`
Example `:TRIGGER:ABN:COUNT 100`
`:TRIGGER:ABN:COUNT?`
`-> :TRIGGER:ABN:COUNT 100`
Description Default value: 1

`:TRIGger:ACTion?`
Function (Upper-level query) Queries all action settings.
Syntax `:TRIGger:ACTion?`

`:TRIGger:ACTion:BUZZer`
Function Sets or queries whether a beep is sounded as an action.
Syntax `:TRIGger:ACTion:BUZZer {<Boolean>}`
`:TRIGger:ACTion:BUZZer?`
Example `:TRIGGER:ACTION:BUZZER ON`
`:TRIGGER:ACTION:BUZZER?`
`-> :TRIGGER:ACTION:BUZZER 1`
Description Default value: OFF

`:TRIGger:ACTion:FOLDer`
Function Sets or queries whether a date folder is created when waveform data or screen capture data is saved to the storage device when an action is executed.
Syntax `:TRIGger:ACTion:FOLDer {<Boolean>}`
Example `:TRIGGER:ACTION:FOLDER ON`
`:TRIGGER:ACTION:FOLDER?`
`-> :TRIGGER:ACTION:FOLDER 1`
Description Default value: 1

`:TRIGger:ACTion:IMAGe?`
Function (Upper-level query) Queries all settings for saving screen captures as an action.
Syntax `:TRIGger:ACTion:IMAGe?`

`:TRIGger:ACTion:IMAGe:CDIRectory`
Function Sets or queries the current directory on the storage device where screen captures are saved to as an action.
Syntax `:TRIGger:ACTion:IMAGe:CDIRectory {<String>}`
`:TRIGger:ACTion:IMAGe:CDIRectory?`
Example `:TRIGGER*ACTION:IMAGE:CDIRECTORY "NO_1"`
`:TRIGGER*ACTION:IMAGE:CDIRECTORY?`
`-> :TRIGGER*ACTION:IMAGE:CDIRECTORY "NO_1"`

`:TRIGger:ACTion:IMAGe:DRIVe`
Function Sets the storage device that screen captures are saved to as an action.
Syntax `:TRIGger:ACTion:IMAGe:DRIVe {IDRive,<NRf>|NETWork|SD|USB,<NRf>}`
Example `:TRIGGER:ACTION:IMAG:DRIVE SD`

`:TRIGger:ACTion:IMAGe[:MODE]`
Function Sets or queries whether a screen capture is saved to the storage device as an action.
Syntax `:TRIGger:ACTion:IMAGe[:MODE] {<Boolean>}`
`:TRIGger:ACTion:IMAGe?`
Example `:TRIGGER:ACTION:IMAGE:MODE ON`
`:TRIGGER:ACTION:IMAGE:MODE?`
`-> :TRIGGER:ACTION:IMAGE:MODE 1`
Description Default value: OFF

:TRIGger:ACTion:IMAGe:PATH?
Function   Queries the path on the storage device where
            screen captures are saved to as an action.
Syntax   :TRIGger:ACTion:IMAGe:PATH?
Example   :TRIGGER:ACTION:IMAGE:PATH?
            -> :TRIG:ACT:IMAG:
               PATH "Path = HD,1/20090506"

:TRIGger:ACTion:MAIL?
Function   (Upper-level query) Queries all settings for
            sending e-mail as an action.
Syntax   :TRIGger:ACTion:MAIL?

:TRIGger:ACTion:MAIL:COUNt
Function   Sets or queries the e-mail transmission limit for
            when e-mail is sent as an action.
Syntax   :TRIGger:ACTion:MAIL:
            COUNt {INFinity|<NRf>}
            :TRIGger:ACTion:MAIL:COUNt?
            <NRf> = 0 (INFinite), 1 to 1000
Example   :TRIGGER:ACTION:MAIL:COUNT 100
            :TRIGGER:ACTION:MAIL:COUNT?
            -> :TRIGGER:ACTION:MAIL:COUNT 100

:TRIGger:ACTion:MAIL:MODE
Function   Sets or queries whether e-mail is sent as an
            action.
Syntax   :TRIGger:ACTion:MAIL:
            MODE {<Boolean>}
            :TRIGger:ACTion:MAIL:MODE?
Example   :TRIGGER:ACTION:MAIL:MODE ON
            :TRIGGER:ACTION:MAIL:MODE?
            -> :TRIGGER:ACTION:MAIL:MODE 1
Description Default value: OFF

:TRIGger:ACTion:MODE
Function   Sets or queries the action on/off state.
Syntax   :TRIGger:ACTion:MODE {<Boolean>}
            :TRIGger:ACTion:MODE?
Example   :TRIGGER:ACTION:MODE ON
            :TRIGGER:ACTION:MODE?
            -> :TRIGGER:ACTION:MODE 1
Description Default value: OFF

:TRIGger:ACTion:MSAVe (Measure Save)
Function   Sets or queries whether measurement results are
            saved to the storage device as an action.
Syntax   :TRIGger:ACTion:MSAVe {<Boolean>}
            :TRIGger:ACTion:MSAVe?
Example   :TRIGGER:ACTION:MSAVE ON
            :TRIGGER:ACTION:MSAVE?
            -> :TRIGGER:ACTION:MSAVE 1
Description Default value: OFF

:TRIGger:ACTion:SAVE?
Function   (Upper-level query) Queries all the settings
            related to saving data as an action.
Syntax   :TRIGger:ACTion:SAVE?

:TRIGger:ACTion:SAVE:ASCii:MODE
Function   Sets or queries whether waveform data is saved
            to the storage device in ASCII format as an
            action.
Syntax   :TRIGger:ACTion:SAVE:ASCii:
            MODE {<Boolean>}
            :TRIGger:ACTion:SAVE:ASCii:MODE?
Example   :TRIGGER:ACTION:SAVE:ASCII:MODE 1
            :TRIGGER:ACTION:SAVE:ASCII:MODE?
            -> :TRIGGER:ACTION:SAVE:ASCII:MODE 1
Description Default value: 0

:TRIGger:ACTion:SAVE:BINary:MODE
Function   Sets or queries whether waveform data is saved
            in binary format to the storage device as an
            action.
Syntax   :TRIGger:ACTion:SAVE:BINary:
            MODE {<Boolean>}
            :TRIGger:ACTion:SAVE:BINary:MODE?
Example   :TRIGGER:ACTION:SAVE:BINARY:MODE 1
            :TRIGGER:ACTION:SAVE:BINARY:MODE?
            -> :TRIGGER:ACTION:SAVE:BINARY:
               MODE 1
Description Default value: 1

:TRIGger:ACTion:SAVE:CDIRectory
Function   Changes the current directory on the storage
            device that waveform data is saved to as an
            action.
Syntax   :TRIGger:ACTion:SAVE:
            CDIRectory {<String>}
Example   :TRIGGER:ACTION:SAVE:
            CDIRECTORY "NO_1"

:TRIGger:ACTion:SAVE:DRIVe
Function   Sets the storage device that waveform data is
            saved to as an action.
Syntax   :TRIGger:ACTion:SAVE:
            DRIVe {IDRive,<NRf>|NETWork|SD|
            USB,<NRf>}
Example   :TRIGGER:ACTION:SAVE:DRIVE SD

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:TRIGger:ACTion:SAVE:MATLab:MODE

Function   Sets or queries whether waveform data is saved to the storage device in MATLAB format as an action.

Syntax   :TRIGger:ACTion:SAVE:MATLab:
MODE {<Boolean>}
:TRIGger:ACTion:SAVE:MATLab:MODE?

Example   :TRIGGER:ACTION:SAVE:MATLAB:MODE 1
:TRIGGER:ACTION:SAVE:MATLAB:MODE?
-> :TRIGGER:ACTION:SAVE:MATLAB:
MODE 1

Description   Default value: 0

:TRIGger:ACTion:SAVE[:MODE]

Function   Sets or queries whether waveform data is saved to the storage device as an action.

Syntax   :TRIGger:ACTion:
SAVE[:MODE] {<Boolean>}
:TRIGger:ACTion:SAVE:MODE?

Example   :TRIGGER:ACTION:SAVE:MODE ON
:TRIGGER:ACTION:SAVE:MODE?
-> :TRIGGER:ACTION:SAVE:MODE 1

Description   Default value: OFF

:TRIGger:ACTion:SAVE:PATH?

Function   Queries the path on the storage device that waveform data is saved to as an action.

Syntax   :TRIGger:ACTion:SAVE:PATH?

Example   :TRIGger:ACTion:SAVE:PATH?
-> :TRIG:ACT:SAVE:
PATH "Path = HD,1/20090506"

:TRIGger:ADB? (A Delay B)

Function   (Upper-level query) Queries all A Delay B trigger settings.

Syntax   :TRIGger:ADB?

:TRIGger:ADB:DELay

Function   Sets or queries the delay time for condition B for A Delay B triggers.

Syntax   :TRIGger:ADB:DELay {<Time>}
:TRIGger:ADB:DELay?
<Time> = 0ns to 10s

Example   :TRIGGER:ADB:DEL 0.001
:TRIGGER:ADB:DEL?
-> :TRIGGER:ADB:DELAY 1.0000000E-03

Description   • The resolution is 10 ns.
• Default value: 0

:TRIGger:AND?

Function   (Upper-level query) Queries all AND trigger settings.

Syntax   :TRIGger:AND?

:TRIGger:AND:CHANnel<x1>:BIT<x2>

Function   Sets or queries the state of the specified bit of the specified logic channel for AND triggers.

Syntax   :TRIGger:AND:CHANnel<x1>:
BIT<x2> {DONTcare|HIGH|LOW}
:TRIGger:AND:CHANnel<x1>:BIT<x2>?

Example   :TRIGGER:AND:CHANNEL9:BIT1 DONTCARE
:TRIGGER:AND:CHANNEL9:BIT1?
-> :TRIGGER:AND:CHANNEL9:
BIT1 DONTCARE

Description   Default value: DONTcare

:TRIGger:AND:CHANnel<x>[:CONDition]

Function   Sets or queries the state of the specified channel for AND triggers.

Syntax   :TRIGger:AND:CHANnel<x>[:
CONDition] {DONTcare|HIGH|LOW|WLIn|
WLOut}
:TRIGger:AND:CHANnel<x>[:CONDition]?

Example   :TRIGGER:AND:CHANNEL2:CONDITION HIGH
:TRIGGER:AND:CHANNEL2:CONDITION?
-> :TRIGGER:AND:CHANNEL2:
CONDITION HIGH

Description   • Use this command on channels that do not have sub channels.
• Default value: DONTcare

:TRIGger:AND:CHANnel<x1>:SCHannel<x2>:BIT<x3>

Function   Sets or queries the state of the specified bit of the specified sub channel of the specified logic channel for AND triggers.

Syntax   :TRIGger:AND:CHANnel<x1>:
SCHannel<x2>:BIT<x3> {DONTcare|HIGH|
LOW}
:TRIGger:AND:CHANnel<x1>:
SCHannel<x2>:BIT<x3>?

Example   :TRIGGER:AND:CHANNEL1:SCHANNEL1:
BIT1 LOW
:TRIGGER:AND:CHANNEL1:SCHANNEL1:
BIT1?
-> :TRIGGER:AND:CHANNEL1:SCHANNEL1:
BIT1 LOW

Description   Default value: DONTcare

:TRIGger:AND:CHANnel\<x1>:SCHannel\<x2>[:CONDition]

Function   Sets or queries the state of the specified sub
             channel for AND triggers.
Syntax   :TRIGger:AND:CHANnel\<x1>:
             SCHannel\<x2>[:CONDition] {DONTcare|
             HIGH|LOW|WLIn|WLOut}
             :TRIGger:AND:CHANnel\<x1>:
             SCHannel\<x2>[:CONDition]?
Example   :TRIGGER:AND:CHANNEL15:SCHANNEL1:
             CONDITION HIGH
             :TRIGGER:AND:CHANNEL15:SCHANNEL1:
             CONDITION?
             -> :TRIGGER:AND:CHANNEL15:SCHANNEL1:
                CONDITION HIGH
Description • Use this command on channels that have sub
               channels.
             • Default value: DONTcare

:TRIGger:ATRigger?

Function   (Upper-level query) Queries all condition A
             settings.
Syntax   :TRIGger:ATRigger?

:TRIGger:ATRigger:CHANnel\<x1>:BIT\<x2>

Function   Sets or queries the state of the specified bit of the
             specified logic channel of condition A.
Syntax   :TRIGger:ATRigger:CHANnel\<x1>:
             BIT\<x2> {DONTcare|HIGH|LOW}
             :TRIGger:ATRigger:CHANnel\<x1>:
             BIT\<x2>?
Example   :TRIGGER:ATRIGGER:CHANNEL9:BIT1 HIGH
             :TRIGGER:ATRIGGER:CHANNEL9:BIT1?
             -> :TRIGGER:ATRIGGER:CHANNEL9:
                BIT1 HIGH
Description Default value: DONTcare

:TRIGger:ATRigger:CHANnel\<x>[:CONDition]

Function   Sets or queries the state of the specified channel
             of condition A.
Syntax   :TRIGger:ATRigger:
             CHANnel\<x>[:CONDition] {DONTcare|
             HIGH|LOW}
             :TRIGger:ATRigger:
             CHANnel\<x>[:CONDition]?
             CHANnel\<x>'s \<x> = 1 to 32
Example   :TRIGGER:ATRIGGER:CHANNEL1:
             CONDITION HIGH
             :TRIGGER:ATRIGGER:CHANNEL1:
             CONDITION?
             -> :TRIGGER:ATRIGGER:CHANNEL1:
                CONDITION HIGH
Description • This command is valid on channels other than
               logic channels.
             • Use this command on channels that do not
               have sub channels.
             • Default value: HIGH when CH1 is an analog
                              channel or DONTcare otherwise.

:TRIGger:ATRigger:CHANnel\<x1>:SCHannel\<x2>:BIT\<x3>

Function   Sets or queries the state of the specified bit of
             the specified sub channel of the specified logic
             channel of condition A.
Syntax   :TRIGger:ATRigger:CHANnel\<x1>:
             SCHannel\<x2>:BIT\<x3> {DONTcare|HIGH|
             LOW}
             :TRIGger:ATRigger:CHANnel\<x1>:
             SCHannel\<x2>:BIT\<x3>?
Example   :TRIGGER:ATRIGGER:CHANNEL1:
             SCHANNEL1:BIT1 LOW
             :TRIGGER:ATRIGGER:CHANNEL1:
             SCHANNEL1:BIT1?
             -> :TRIGGER:ATRIGGER:CHANNEL1:
                SCHANNEL1:BIT1 LOW
Description Default value: DONTcare

:TRIGger:ATRigger:CHANnel\<x1>:SCHannel\<x2>[:CONDition]

Function   Sets or queries the state of the specified sub
             channel of condition A.
Syntax   :TRIGger:ATRigger:CHANnel\<x1>:
             SCHannel\<x2>[:CONDition] {DONTcare|
             HIGH|LOW}
             :TRIGger:ATRigger:CHANnel\<x1>:
             SCHannel\<x2>[:CONDition]?
             \<x1> = 1 to 32
             \<x2> = 1 to 60 (sub channel)
Example   :TRIGGER:ATRIGGER:CHANNEL15:
             SCHANNEL1:CONDITION HIGH
             :TRIGGER:ATRIGGER:CHANNEL15:
             SCHANNEL1:CONDITION?
             -> :TRIGGER:ATRIGGER:CHANNEL15:
                SCHANNEL1:CONDITION HIGH
Description • This command is valid on channels other than
               logic channels.
             • Use this command on channels that have sub
               channels.
             • Default value: HIGH when CH1 is an analog
                              channel or DONTcare otherwise.

:TRIGger:ATRigger:CONDition

Function   Sets or queries the achievement condition of
             condition A.
Syntax   :TRIGger:ATRigger:CONDition {ENTer|
             EXIT|FALSe|TRUE}
             :TRIGger:ATRigger:CONDition?
Example   :TRIGGER:ATRIGGER:CONDITION ENTER
             :TRIGGER:ATRIGGER:CONDITION?
             -> :TRIGGER:ATRIGGER:CONDITION ENTER
Description • This command is valid when the trigger type is
               ABN or ADB.
             • Default value: ENTer

:TRIGger:BBETween?

Function   (Upper-level query) Queries all B Between trigger
             settings.
Syntax   :TRIGger:BBETween?

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:TRIGger:BBETween:TIME<x>

Function   Sets or queries a pulse width for B Between
           triggers.
Syntax   :TRIGger:BBETween:TIME<x> {<Time>}
           :TRIGger:BBETween:TIME<x>?
           <x> = 1 to 2
           <Time> = 10ns to 10s
Example   :TRIGger:BBET:TIME1 0.001
           :TRIGGER:BBETWEEN:TIME1?
           -> :TRIGGER:BBETWEEN:
              TIME1 1.00000000E-03

:TRIGger:BGTime?

Function   (Upper-level query) Queries all B>Time trigger
           settings.
Syntax   :TRIGger:BGTime?

:TRIGger:BGTime:TIME

Function   Sets or queries the pulse width for B>Time
           triggers.
Syntax   :TRIGger:BGTime:TIME {<Time>}
           :TRIGger:BGTime:TIME?
           <Time> = 10ns to 10s
Example   :TRIGGER:BGTIME:TIME 0.001
           :TRIGGER:BGTIME:TIME?
           -> :TRIGGER:BGTIME:
              TIME 1.00000000E-03

:TRIGger:BLTime?

Function   (Upper-level query) Queries all B<Time trigger
           settings.
Syntax   :TRIGger:BLTime?

:TRIGger:BLTime:TIME

Function   Sets or queries the pulse width for B<Time
           triggers.
Syntax   :TRIGger:BGTime:TIME {<Time>}
           :TRIGger:BGTime:TIME?
           <Time> = 10ns to 10s
Example   :TRIGGER:BLTIME:TIME 0.001
           :TRIGGER:BLTIME:TIME?
           -> :TRIGGER:BLTIME:
              TIME 1.00000000E-03

:TRIGger:BTOut?

Function   (Upper-level query) Queries all B TimeOut trigger
           settings.
Syntax   :TRIGger:BTOut?

:TRIGger:BTOut:TIME

Function   Sets or queries the pulse width for B TimeOut
           triggers.
Syntax   :TRIGger:BTOut:TIME {<Time>}
           :TRIGger:BTOut:TIME?
           <Time> = 10ns to 10s
Example   :TRIGGER:BTOUT:TIME 0.001
           :TRIGGER:BTOUT:TIME?
           -> :TRIGGER:BTOUT:
              TIME 1.00000000E-03

:TRIGger:BTRigger?

Function   (Upper-level query) Queries all condition B
           settings.
Syntax   :TRIGger:BTRigger?

**:TRIGger:BTRigger:CHANnel<x1>:BIT
<x2>**

Function   Sets or queries the state of the specified bit of the
           specified logic channel of condition B.
Syntax   :TRIGger:BTRigger:CHANnel<x1>:
           BIT<x2> {DONTcare|HIGH|LOW}
           :TRIGger:BTRigger:CHANnel<x1>:
           BIT<x2>?
Example   :TRIGGER:BTRIGGER:CHANNEL9:BIT1 LOW
           :TRIGGER:BTRIGGER:CHANNEL9:BIT1?
           -> :TRIGGER:BTRIGGER:CHANNEL9:
              BIT1 LOW
Description Default value: DONTcare

**:TRIGger:BTRigger:CHANnel<x>[:CONDit
ion]**

Function   Sets or queries the state of the specified channel
           of condition B.
Syntax   :TRIGger:BTRigger:
           CHANnel<x>[:CONDition] {DONTcare|
           HIGH|LOW}
           :TRIGger:BTRigger:
           CHANnel<x>[:CONDition]?
           CHANnel<x>'s <x> = 1 to 32
Example   :TRIGGER:BTRIGGER:CHANNEL2:
           CONDITION HIGH
           :TRIGGER:BTRIGGER:CHANNEL2:
           CONDITION?
           -> :TRIGGER:BTRIGGER:CHANNEL2:
              CONDITION HIGH
Description • This command is valid on channels other than
             logic channels.
           • Use this command on channels that do not
             have sub channels.

:TRIGger:BTRigger:CHANnel<x1>:SCHannel<x2>:BIT<x3>

Function   Sets or queries the state of the specified bit of the specified sub channel of the specified logic channel of condition B.

Syntax   :TRIGger:BTRigger:CHANnel<x1>:
SCHannel<x2>:BIT<x3> {DONTcare|HIGH|
LOW}
:TRIGger:BTRigger:CHANnel<x1>:
SCHannel<x2>:BIT<x3>?

Example   :TRIGGER:BTRIGGER:CHANNEL1:
SCHANNEL1:BIT1 LOW
:TRIGGER:BTRIGGER:CHANNEL1:
SCHANNEL1:BIT1?
-> :TRIGGER:BTRIGGER:CHANNEL1:
SCHANNEL1:BIT1 LOW

:TRIGger:BTRigger:CHANnel<x1>:SCHannel<x2>[:CONDition]

Function   Sets or queries the state of the specified sub channel of condition B.

Syntax   :TRIGger:BTRigger:CHANnel<x1>
:SCHannel<x2>[:CONDition] {DONTcare|
HIGH|LOW}
:TRIGger:BTRigger:CHANnel<x1>
:SCHannel<x2>[:CONDition]?
<x1> = 1 to 32
<x2> = 1 to 60 (sub channel)

Example   :TRIGGER:BTRIGGER:CHANNEL15:
SCHANNEL2:CONDITION HIGH
:TRIGGER:BTRIGGER:CHANNEL15:
SCHANNEL2:CONDITION?
-> :TRIGGER:BTRIGGER:CHANNEL15:
SCHANNEL2:CONDITION HIGH

Description • This command is valid on channels other than logic channels.
• Use this command on channels that have sub channels.

:TRIGger:BTRigger:CONDition

Function   Sets or queries the achievement condition of condition B.

Syntax   :TRIGger:BTRigger:CONDition {ENTer|
EXIT}
:TRIGger:BTRigger:CONDition?

Example   :TRIGGER:BTRIGGER:CONDITION ENTER
:TRIGGER:BTRIGGER:CONDITION?
-> :TRIGGER:BTRIGGER:CONDITION ENTER

Description • This command is valid when the trigger type is ABN or ADB.
• Default value: ENTer

:TRIGger:DELay

Function   Sets or queries the delay.

Syntax   :TRIGger:DELay {<Time>}
:TRIGger:DELay?
<Time> = 0 to 10 s
The resolution varies depending on the sample rate.
Resolution = (1/sample rate) × (1/10)
The minimum resolution is 10 ns.
(10ns when the sample rate is 10 MS/s or more)

Example   :TRIGGER:DELAY 0.001
:TRIGGER:DELAY?
-> :TRIGGER:DELAY 1.0000000E-03

Description • When the instrument is using an external clock, the delay is fixed to 0.
• Default value: 0

:TRIGger:EOA?

Function   (Upper-level query) Queries all EdgeOnA settings.

Syntax   :TRIGger:EOA?

:TRIGger:EOA:CHANnel<x1>:BIT<x2>

Function   Sets or queries the state of the specified bit of the specified logic channel for EdgeOnA triggers.

Syntax   :TRIGger:EOA:CHANnel<x1>:
BIT<x2> {OFF|FALL|RISE}
:TRIGger:EOA:CHANnel<x1>:BIT<x2>?
<x1> = 1 to 32
<x2> = 1 to 8

Example   :TRIGGER:EOA:CHANNEL9:BIT1 RISE
:TRIGGER:EOA:CHANNEL9:BIT1?
-> :TRIGGER:EOA:CHANNEL9:BIT1 RISE

Description Default value: OFF

:TRIGger:EOA:CHANnel<x>[:CONDition]

Function   Sets or queries the state of the specified channel for EdgeOnA triggers.

Syntax   :TRIGger:EOA:CHANnel<x>[:
CONDition] {OFF|FALL|RISE}
:TRIGger:EOA:CHANnel<x>[:CONDition]?
CHANnel<x>'s <x> = 1 to 32

Example   :TRIGGER:EOA:CHANNEL3:CONDITION FALL
:TRIGGER:EOA:CHANNEL3:CONDITION?
-> :TRIGGER:EOA:CHANNEL3:
CONDITION FALL

Description • Use this command on channels that do not have sub channels.
• Default value: RISE for the installed channel with the second smallest channel number, OFF for other channels

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:TRIGger:EOA:CHANnel<x1>:SCHannel<x2>:BIT<x3>

Function   Sets or queries the state of the specified bit of the specified sub channel of the specified logic channel for EdgeOnA triggers.

Syntax   :TRIGger:EOA:CHANnel<x1>:
SCHannel<x2>:BIT<x3> {OFF|FALL|RISE}
:TRIGger:EOA:CHANnel<x1>:
SCHannel<x2>:BIT<x3>?
<x1> = 1 to 32
<x3> = 1 to 8

Example   :TRIGGER:EOA:CHANNEL15:SCHANNEL1:
BIT1 RISE
:TRIGGER:EOA:CHANNEL15:SCHANNEL1:
BIT1?
-> :TRIGGER:EOA:CHANNEL15:SCHANNEL1:
BIT1 RISE

Description Default value: OFF

:TRIGger:EOA:CHANnel<x1>:SCHannel<x2>[:CONDition]

Function   Sets or queries the state of the specified sub channel for EdgeOn triggers.

Syntax   :TRIGger:EOA:CHANnel<x1>:
SCHannel<x2>[:CONDition] {OFF|FALL|
RISE}
:TRIGger:EOA:CHANnel<x1>:
SCHannel<x2>[:CONDition]?
<x1> = 1 to 32
<x2> = 1 to 60 (sub channel)

Example   :TRIGGER:EOA:CHANNEL15:SCHANNEL1:
CONDITION RISE
:TRIGGER:EOA:CHANNEL15:SCHANNEL1:
CONDITION?
-> :TRIGGER:EOA:CHANNEL15:SCHANNEL1:
CONDITION RISE

Description • Use this command on channels that have sub channels.
            • Default value: RISE for the installed channel with the second smallest channel number, OFF for other channels

:TRIGger:EOA:CONDition

Function   Sets or queries the achievement condition for EdgeOnA triggers.

Syntax   :TRIGger:EOA:CONDition {FALSe|TRUE}
:TRIGger:EOA:CONDition?

Example   :TRIGGER:EOA:CONDITION TRUE
:TRIGGER:EOA:CONDITION?
-> :TRIGGER:EOA:CONDITION TRUE

Description Default value: TRUE

:TRIGger:HOLDoff?

Function   (Upper-level query) Queries all hold-off settings.

Syntax   :TRIGger:HOLDoff?

:TRIGger:HOLDoff:TIME

Function   Sets or queries the hold-off time.

Syntax   :TRIGger:HOLDoff:TIME {<Time>}
:TRIGger:HOLDoff:TIME?
<Time> = 0 to 10s (the resolution is 10 ns)

Example   :TRIGGER:HOLDOFF:TIME 0.001
:TRIGGER:HOLDOFF:TIME?
-> :TRIGGER:HOLDOFF:
TIME 1.0000000E-03

Description Default value: 0

:TRIGger:MODE

Function   Sets or queries the trigger mode.

Syntax   :TRIGger:MODE {AUTO|ALEVel|NORMal|
SINGle|NSINgle|ONSTart}
:TRIGger:MODE?

Example   :TRIGGER:MODE AUTO
:TRIGGER:MODE? -> :TRIGGER:MODE AUTO

:TRIGger:OR?

Function   (Upper-level query) Queries all OR trigger settings.

Syntax   :TRIGger:OR?

:TRIGger:OR:CHANnel<x1>:BIT<x2>

Function   Sets or queries the state of the specified bit of the specified logic channel for OR triggers.

Syntax   :TRIGger:OR:CHANnel<x1>:
BIT<x2> {OFF|FALL|RISE}
:TRIGger:OR:CHANnel<x1>:BIT<x2>?

Example   :TRIGGER:OR:CHANNEL9:BIT1 RISE
:TRIGGER:OR:CHANNEL9:BIT1?
-> :TRIGGER:OR:CHANNEL9:BIT1 RISE

Description Default value: OFF

:TRIGger:OR:CHANnel<x>[:CONDition]

Function   Sets or queries the state of the specified channel for OR triggers.

Syntax   :TRIGger:OR:CHANnel<x>[:
CONDition] {OFF|FALL|RISE|WINIn|
WINOut}
:TRIGger:OR:CHANnel<x>[:CONDition]?

Example   :TRIGGER:OR:CHANNEL1:CONDITION RISE
:TRIGGER:OR:CHANNEL1:CONDITION?
-> :TRIGGER:OR:CHANNEL1:
CONDITION RISE

Description Use this command on channels that do not have sub channels.

:TRIGger:OR:CHANnel<x1>:SCHannel<x2>:BIT<x3>

Function   Sets or queries the state of the specified bit of the specified sub channel of the specified logic channel for OR triggers.

Syntax   :TRIGger:OR:CHANnel<x1>:
SCHannel<x2>:BIT<x3> {OFF|FALL|RISE}
:TRIGger:OR:CHANnel<x1>:
SCHannel<x2>:BIT<x3>?

Description Default value: OFF

:TRIGger:OR:CHANnel\<x1\>:SCHannel\<x2\>
[:CONDition]

Function   Sets or queries the state of the specified sub
            channel for OR triggers.

Syntax   :TRIGger:OR:CHANnel\<x1\>:
            SCHannel\<x2\>[:CONDition] {OFF|FALL|
            RISE|WINIn|WINOut}
            :TRIGger:OR:CHANnel\<x1\>:
            SCHannel\<x2\>[:CONDition]?

Example   :TRIGGER:OR:CHANNEL15:SCHANNEL1:
            CONDITION RISE
            :TRIGGER:OR:CHANNEL15:SCHANNEL1:
            CONDITION?
            -> :TRIGGER:OR:CHANNEL15:SCHANNEL1:
              CONDITION RISE

Description • Use this command on channels that have sub
              channels.
            • Default value: RISE for the installed channel
              with the smallest channel
              number, OFF for other channels

:TRIGger:OR:EXTernal:TYPE

Function   Sets or queries the type of external trigger that is
            used with OR triggers.

Syntax   :TRIGger:OR:EXTernal:TYPE {OFF|FALL|
            RISE}
            :TRIGger:OR:EXTernal:TYPE?

Example   :TRIGGER:OR:EXTERNAL:TYPE RISE
            :TRIGGER:OR:EXTERNAL:TYPE?
            -> :TRIGGER:OR:EXTERNAL:TYPE RISE

Description Default value: OFF

:TRIGger:OUT?

Function   (Upper-level query) Queries all trigger output
            settings.

Syntax   :TRIGger:OUT?

:TRIGger:OUT:TIME

Function   Sets or queries the H-pulse interval that is used
            when the trigger output terminal output type is 1
            (Pulse).

Syntax   :TRIGger:OUT:TIME {\<Time\>}
            :TRIGger:OUT:TIME?
            \<Time\>: 1ms, 50ms, 100ms, 500ms

Example   :TRIGGER:OUT:TIME 0.05
            :TRIGGER:OUT:TIME?
            -> :TRIGGER:OUT:TIME 50.000000E-03

Description Default value: 1ms

:TRIGger:OUT:TYPE

Function   Sets or queries the trigger output terminal output
            type.

Syntax   :TRIGger:OUT:TYPE {\<NRf\>}
            :TRIGger:OUT:TYPE?
            \<NRf\> = 1 to 2
                    1 : Pulse
                    2 : Normal

Example   :TRIGGER:OUT:TYPE 2
            :TRIGGER:OUT:TYPE?
            -> :TRIGGER:OUT:TYPE 2

Description • Pulse: H pulses are generated for a fixed
              interval when a trigger occurs.
            • Normal: An L pulse is generated when a trigger
              occurs. The L pulse is held during the post
              operation. The instrument switches to an H
              pulse when the post operation finishes.

:TRIGger:POSition

Function   Sets or queries the trigger position.

Syntax   :TRIGger:POSition {\<NRf\>}
            :TRIGger:POSition?
            \<NRf\> = 0 to 100 (%, in 0.1 steps)

Example   :TRIGGER:POSITION 50
            :TRIGGER:POSITION?
            -> :TRIGGER:POSITION 50

Description Default value: 50.0

:TRIGger:RECorder:POSition

Function   Sets or queries the trigger position for recorder
            mode.

Syntax   :TRIGger:RECorder:POSition {\<NRf\>}
            :TRIGger:RECorder:POSition?
            \<NRf\> = 0 to 100 (%, in 0.1 steps)

Example   :TRIGGER:RECORDER:POSITION 50
            :TRIGGER:RECORDER:POSITION?
            -> :TRIGGER:RECORDER:POSITION 50

Description Default value: 10.0

:TRIGger:SCOunt (Single(N) Count)

Function   Sets or queries the number of times the trigger
            condition is to be met when the trigger mode is
            set to Single(N).

Syntax   :TRIGger:SCOunt {\<NRf\>}
            :TRIGger:SCOunt?
            \<NRf\> = 1 to 5000

Example   :TRIGGER:SCOUNT 100
            :TRIGGER:SCOUNT?
            -> :TRIGGER:SCOUNT 100

Description Default value: 1

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:TRIGger:SIMPle?
Function   (Upper-level query) Queries all simple trigger settings.
Syntax   :TRIGger:SIMPle?

:TRIGger[:SIMPle]:EXTernal:SLOPe
Function   Sets or queries the external trigger slope.
Syntax   :TRIGger[:SIMPle]:EXTernal:
            SLOPe {FALL|RISE}
            :TRIGger[:SIMPle]:EXTernal:SLOPe?
Example   :TRIGGER:SIMPLE:EXTERNAL:SLOPE RISE
            :TRIGGER:SIMPLE:EXTERNAL:SLOPE?
            -> :TRIGGER:SIMPLE:EXTERNAL:
               SLOPE RISE
Description Default value: RISE

:TRIGger[:SIMPle]:HYSTeresis
Function   Sets or queries the hysteresis for simple triggers.
Syntax   :TRIGger[:SIMPle]:HYSTeresis {HIGH|
            LOW|MIDDle}
            :TRIGger[:SIMPle]:HYSTeresis?
Example   :TRIGGER:SIMPLE:HYSTERESIS HIGH
            :TRIGGER:SIMPLE:HYSTERESIS?
            -> :TRIGGER:SIMPLE:HYSTERESIS HIGH
Description • You cannot use this command to set the setting when the trigger zone is EXTernal, LINE, or TIME.
             • Default value: LOW

:TRIGger[:SIMPle]:LEVel
Function   Sets or queries the trigger level of the channel specified by :TRIGger:SIMPle:SOURce for simple triggers .
Syntax   :TRIGger[:SIMPle]:LEVel {<Voltage>|
            <NRf>|<Current>}
            :TRIGger[:SIMPle]:LEVel?
Example   :TRIGGER:SIMPLE:LEVEL 1
            :TRIGGER:SIMPLE:LEVEL?
            -> :TRIGGER:SIMPLE:LEVEL 1.00000E+00
Description • You cannot use this command to set the setting when the trigger zone is EXTernal, LINE, or TIME.
             • The selectable range is the range that can be measured with the current measurement range setting.
               Example: If V/Div is 10, the selectable range is ±100 V. For strain measurements, the selectable range is ±the current measurement range setting.
             • Values do not take linear scaling information into consideration.
             • Au7Fe temperature trigger setting range: 0K to 280K(−273°C to 7°C)

:TRIGger[:SIMPle]:LOGic?
Function   (Upper-level query) Queries all simple trigger (logic trigger) settings.
Syntax   :TRIGger[:SIMPle]:LOGic?

:TRIGger[:SIMPle]:LOGic:BIT
Function   Sets or queries the bit that sets the trigger slope.
Syntax   :TRIGger[:SIMPle]:LOGic:BIT {<NRf>}
            :TRIGger[:SIMPle]:LOGic:BIT?
            <NRf> = 1 to 8
Example   :TRIGGER:SIMPLE:LOGIC:BIT 2
            :TRIGGER:SIMPLE:LOGIC:BIT?
            -> :TRIGGER:SIMPLE:LOGIC:BIT 2
Description Default value: 1

:TRIGger[:SIMPle]:LOGic:SLOPe
Function   Sets or queries the slope for logic triggers.
Syntax   :TRIGger[:SIMPle]:LOGic:SLOPe {FALL|
            RISE}
            :TRIGger[:SIMPle]:LOGic:SLOPe?
Example   :TRIGGER:SIMPLE:LOGIC:SLOPE FALL
            :TRIGGER:SIMPLE:LOGIC:SLOPE?
            -> :TRIGGER:SIMPLE:LOGIC:SLOPE FALL
Description Default value: RISE

:TRIGger[:SIMPle]:SLOPe
Function   Sets or queries the trigger slope of the channel specified by :TRIGger:SIMPle:SOURce for simple triggers .
Syntax   :TRIGger[:SIMPle]:SLOPe {RISE|FALL|
            BISLope}
            :TRIGger[:SIMPle]:SLOPe?
Example   :TRIGGER:SIMPLE:SLOPE RISE
            :TRIGGER:SIMPLE:SLOPE?
            -> :TRIGGER:SIMPLE:SLOPE RISE
Description • You cannot use this command to set the setting when the trigger zone is EXTernal, LINE, or TIME.
             • Default value: RISE

:TRIGger:SIMPle:SOURce
Function   Sets or queries the source for simple triggers.
Syntax   :TRIGger:SIMPle:SOURce
            {<NRf>[,<NRf>]|
            EXTernal|LINE|TIME|OFF}
            :TRIGger:SIMPle:SOURce?
            <NRf> = 1 to 32
            [,<NRf>] = If the channel has sub channels, this is the range of sub channel numbers.
Example   :TRIGGER:SIMPLE:SOURCE 1
            :TRIGGER:SIMPLE:SOURCE?
            -> :TRIGGER:SIMPLE:SOURCE 1
Description • OFF is for linked operation.
             • Default value: Installed channel with the smallest channel number

:TRIGger:SOURce?

Function   (Upper-level query) Queries all the settings of the trigger source for enhanced triggers.

Syntax   :TRIGger:SOURce?

:TRIGger:SOURce:CHANnel<x1>[:SCHannel<x2>]?

Function   (Upper-level query) Queries all the settings of the specified channel's trigger source for enhanced triggers.

Syntax   :TRIGger:SOURce:
            CHANnel<x1>[:SCHannel<x2>]?

:TRIGger:SOURce:CHANnel<x1>[:SCHannel<x2>]:CENTer

Function   Sets or queries the window trigger center for enhanced triggers.

Syntax   :TRIGger:SOURce:
            CHANnel<x1>[:SCHannel<x2>]:
            CENTer {<Voltage>|<NRf>|<Current>}
            :TRIGger:SOURce:
            CHANnel<x1>[:SCHannel<x2>]:CENTer?
            <x1> = 1 to 32
            <x2> = 1 to 60

Example   :TRIGGER:SOURCE:CHANNEL15:SCHANNEL1:
            CENTER 1
            :TRIGGER:SOURCE:CHANNEL15:SCHANNEL1:
            CENTER?
            -> :TRIGGER:SOURCE:CHANNEL15:
               SCHANNEL1:CENTER 1.00000E+00

:TRIGger:SOURce:CHANnel<x1>[:SCHannel<x2>]:HYSTeresis

Function   Sets or queries the specified channel's hysteresis for enhanced triggers.

Syntax   :TRIGger:SOURce:
            CHANnel<x1>[:SCHannel<x2>]:
            HYSTeresis {HIGH|LOW|MIDDle}
            <x1> = 1 to 32
            <x2> = 1 to 60

Example   :TRIGGER:SOURCE:CHANNEL15:SCHANNEL1:
            HYSTERESIS HIGH
            :TRIGGER:SOURCE:CHANNEL15:SCHANNEL1:
            HYSTERESIS?
            -> :TRIGGER:SOURCE:CHANNEL15:
               SCHANNEL1:HYSTERESIS HIGH

:TRIGger:SOURce:CHANnel<x1>[:SCHannel<x2>]:LEVel

Function   Sets or queries the specified channel's level for enhanced triggers.

Syntax   :TRIGger:SOURce:
            CHANnel<x1>[:SCHannel<x2>]:
            LEVel {<Voltage>|<NRf>|<Current>}
            :TRIGger:SOURce:
            CHANnel<x1>[:SCHannel<x2>]:LEVel?
            <x1>'s <x> = 1 to 32
            <x2>'s <x> = 1 to 60

Example   :TRIGGER:SOURCE:CHANNEL15:SCHANNEL1:
            LEVEL 1
            :TRIGGER:SOURCE:CHANNEL15:SCHANNEL1:
            LEVEL?
            -> :TRIGGER:SOURCE:CHANNEL15:
               SCHANNEL1:LEVEL 1

:TRIGger:SOURce:CHANnel<x1>[:SCHannel<x2>]:WIDTh

Function   Sets or queries the window trigger width for enhanced triggers.

Syntax   :TRIGger:SOURce:
            CHANnel<x1>[:SCHannel<x2>]:
            WIDTh {<Voltage>|<NRf>|<Current>}
            :TRIGger:SOURce:
            CHANnel<x1>[:SCHannel<x2>]:WIDTh?
            <x1> = 1 to 32
            <x2> = 1 to 60

Example   :TRIGGER:SOURCE:CHANNEL15:SCHANNEL1:
            WIDTH 2
            :TRIGGER:SOURCE:CHANNEL15:SCHANNEL1:
            WIDTH?
            -> :TRIGGER:SOURCE:CHANNEL15:
               SCHANNEL1:WIDTH 2

:TRIGger:SOURce:CHANnel<x>:WWIDth

Function   Sets or queries the width for wave window triggers.

Syntax   :TRIGger:SOURce:CHANnel<x>:
            WWIDth {<Voltage>|<NRf>|<Current>}
            :TRIGger:SOURce:CHANnel<x>:WWIDth?
            CHANnel<x>'s <x> = 1 to 32

Example   :TRIGGER:SOURCE:CHANNEL1:WWIDTH 0.5
            :TRIGGER:SOURCE:CHANNEL1:WWIDTH?
            -> :TRIGGER:SOURCE:CHANNEL1:WWIDTH

:TRIGger:SOUT?

Function   (Upper-level query) Queries all sample output settings.

Syntax   :TRIGger:SOUT?

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:TRIGger:SOUT:PRATe

Function   Sets or queries the pulse output rate of the sample output terminal.

Syntax   :TRIGger:SOUT:PRATe {<Frequency>}
    :TRIGger:SOUT:PRATe?
    <Frequency> = 5Hz, 10Hz, 20Hz,..., 20kHz,
                 50kHz, 100kHz, 200kHz

:TRIGger:SOUT:TYPE

Function   Sets or queries the sample output terminal output type.

Syntax   :TRIGger:SOUT:
    TYPE {OFF|FREerun|ACQuisition}
    :TRIGger:SOUT:TYPE?

Example   :TRIGGER:SOUT:TYPE FREERUN
    :TRIGGER:SOUT:TYPE?
    -> :TRIGGER:SOUT:TYPE FREERUN

Description Default value: OFF

:TRIGger:TGTime?

Function   (Upper-level query) Queries all T>Time trigger settings.

Syntax   :TRIGger:TGTime?

:TRIGger:TGTime:TIME

Function   Sets or queries the pulse width for T>Time triggers.

Syntax   :TRIGger:TGTime:TIME {<Time>}
    :TRIGger:TGTime:TIME?
    <Time> = 20ns to 10s

Example   :TRIGGER:TGTIME:TIME 0.001
    :TRIGGER:TGTIME:TIME?
    -> :TRIGGER:TGTIME:
       TIME 1.00000000E-03

:TRIGger:TIMer?

Function   (Upper-level query) Queries all time trigger settings.

Syntax   :TRIGger:TIMer?

:TRIGger:TIMer:DATE

Function   Sets or queries the date for time triggers.

Syntax   :TRIGger:TIMer:DATE <String>
    :TRIGger:TIMer:DATE?
    <String> = YYYY/MM/DD
    YYYY: 2000 to 2099

Example   :TRIGGER:TIMER:DATE "2010/01/01"
    :TRIGGER:TIMER:DATE?
    -> :TRIGGER:TIMER:DATE "2010/01/01"

Description Default value: 2010/01/01

:TRIGger:TIMer:INTerval

Function   Sets or queries the trigger interval for time triggers.

Syntax   :TRIGger:TIMer:INTerval {SEC10|
    SEC15|SEC20|SEC30|SEC40|SEC50|MIN1|
    MIN2|MIN3|MIN4|MIN5|MIN6|MIN7|MIN8|
    MIN9|MIN10|MIN15|MIN20|MIN25|MIN30|
    MIN40|MIN45|MIN50|HOUR1|HOUR2|HOUR3|
    HOUR4|HOUR5|HOUR6|HOUR7|HOUR8|HOUR9|
    HOUR10|HOUR11|HOUR12|HOUR18|HOUR24}
    TRIGger:TIMer:INTerval?

Example   :TRIGGER:TIMER:INTERVAL HOUR1
    :TRIGGER:TIMER:INTERVAL?
    -> :TRIGGER:TIMER:INTERVAL HOUR1

:TRIGger:TIMer:TIME

Function   Sets or queries the time for time triggers.

Syntax   :TRIGger:TIMer:TIME <String>
    :TRIGger:TIMer:TIME?
    <String> = HH:MM:SS

Example   :TRIGGER:TIMER:TIME "00:00:00"
    :TRIGGER:TIMER:TIME?
    -> :TRIGGER:TIMER:TIME "00:00:00"

Description Default value: 00:00:00

:TRIGger:TITime?

Function   (Upper-level query) Queries all T1<T<T2 trigger settings.

Syntax   :TRIGger:TITime?

:TRIGger:TITime:TIME<x>

Function   Sets or queries the pulse width for T1<T<T2 triggers.

Syntax   :TRIGger:TITime:TIME<x> {<Time>}
    :TRIGger:TITime:TIME<x>?
    <Time> = 20ns to 10s
    <x> = 1, 2

Example   :TRIGGER:TITIME:TIME1 0.001
    :TRIGGER:TITIME:TIME1?
    -> :TRIGGER:TITIME:
       TIME1 1.00000000E-03

:TRIGger:TLTime?

Function   (Upper-level query) Queries all T<Time trigger settings.

Syntax   :TRIGger:TLTime?

:TRIGger:TLTime:TIME

Function Sets or queries the pulse width for T<Time triggers.

Syntax :TRIGger:TLTime:TIME {<Time>}
:TRIGger:TLTime:TIME?
<Time> = 20ns to 10s

Example :TRIGGER:TLTIME:TIME 0.001
:TRIGGER:TLTIME:TIME?
-> :TRIGGER:TLTIME:
TIME 1.00000000E-03

:TRIGger:TOTime?

Function (Upper-level query) Queries all T<T1,T2<T trigger settings.

Syntax :TRIGger:TOTime?

:TRIGger:TOTime:TIME<x>

Function Sets or queries the pulse width for T<T1,T2<T triggers.

Syntax :TRIGger:TOTime:TIME<x> {<Time>}
:TRIGger:TOTime:TIME<x>?
<Time> = 20ns to 10s
<x> = 1, 2

Example :TRIGGER:TOTIME:TIME1 0.001
:TRIGGER:TOTIME:TIME1?
-> :TRIGGER:TOTIME:
TIME1 1.00000000E-03

:TRIGger:TYPE

Function Sets or queries the trigger type.

Syntax :TRIGger:TYPE {ABN|ADB|AND|EOA|
BBETween|BLTime|BGTime|BTOut|OR|
SIMPle|TGTime|TLTime|TITime|TOTime|
WWINdow}
:TRIGger:TYPE?

Example :TRIGGER:TYPE SIMPLE
:TRIGGER:TYPE?
-> :TRIGGER:TYPE SIMPLE

:TRIGger:WWINdow?

Function (Upper-level query) Queries all wave window trigger settings.

Syntax :TRIGger:WWINdow?

:TRIGger:WWINdow:CHANnel<x>[:CONDition]

Function Sets or queries the state of the specified channel for wave window triggers.

Syntax :TRIGger:WWINdow:CHANnel<x>[:
CONDition] {<Boolean>}
:TRIGger:WWINdow:CHANnel<x>[:
CONDition]?
<x> = 1 to 16

Example :TRIGGER:WWINDOW:CHANNEL1 ON
:TRIGGER:WWINDOW:CHANNEL1?
-> :TRIGGER:WWINDOW:CHANNEL1 1

Description • The instrument cannot perform wave window triggering on modules that have sub channels, logic modules, modules that are performing temperature measurements, and frequency modules.
• Default value: OFF

:TRIGger:WWINdow:CHANnel<x1>:SCHannel<x2>

Function Sets or queries the state of the specified channel for wave window triggers.

Syntax :TRIGger:WWINdow:CHANnel<x1>:
SCHannel<x2> {<Boolean>}
:TRIGger:WWINdow:CHANnel<x1>:
SCHannel<x2>?
<x> = 1 to 16

Example :TRIGGER:WWINDOW:CHANNEL1:
SCHANNEL2 ON
:TRIGGER:WWINDOW:CHANNEL1:
SCHANNEL2?
-> :TRIGGER:WWINDOW:CHANNEL1:
SCHANNEL2 1

Description • This command is valid only when a 4-CH module (720254, 720256) is installed.
• Default value: OFF

:TRIGger:WWINdow:FREQuency

Function Sets or queries the cycle frequency for wave window triggers.

Syntax :TRIGger:WWINdow:
FREQuency {<Frequency>}
:TRIGger:WWINdow:FREQuency?
<Frequency> = 40 to 1000 (Hz)

Example :TRIGGER:WWINDOW:FREQUENCY 400
:TRIGGER:WWINDOW:FREQUENCY?
-> :TRIGGER:WWINDOW:FREQUENCY 400

Description Default value: 50

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`:TRIGger:WWINdow:REFCycle`

Function   Sets or queries the reference cycle for wave
             window triggers.

Syntax   `:TRIGger:WWINdow:REFCycle {<NRf>}`
          `:TRIGger:WWINdow:REFCycle?`
          `<NRf> = 1, 2, 4`

Example   `:TRIGGER:WWINDOW:REFCYCLE 1`
          `:TRIGGER:WWINDOW:REFCYCLE?`
          `-> :TRIGGER:WWINDOW:REFCYCLE 1`

Description   Default value: 1

`:TRIGger:WWINdow:SYNC?`

Function   (Upper-level query) Queries all synchronization
             channel settings for wave window triggers.

Syntax   `:TRIGger:WWINdow:SYNC?`

`:TRIGger:WWINdow:SYNC:HYSTeresis`

Function   Sets or queries the hysteresis of the
             synchronization channel for wave window
             triggers.

Syntax   `:TRIGger:WWINdow:SYNC:`
          `HYSTeresis {HIGH|LOW|MIDDle}`
          `:TRIGger:WWINdow:SYNC:HYSTeresis?`

Example   `:TRIGGER:WWINDOW:SYNC:`
          `HYSTERESIS MIDDLE`
          `:TRIGGER:WWINDOW:SYNC:HYSTERESIS?`
          `-> :TRIGGER:WWINDOW:SYNC:`
             `HYSTERESIS MIDDLE`

Description   • You cannot set this setting when the
              synchronization channel is set to AUTO.
            • Default value: LOW

`:TRIGger:WWINdow:SYNC:LEVel`

Function   Sets or queries the level of the synchronization
             channel for wave window triggers.

Syntax   `:TRIGger:WWINdow:SYNC:`
          `LEVel {<Voltage>|<NRf>|<Current>}`
          `:TRIGger:WWINdow:SYNC:LEVel?`

Example   `:TRIGGER:WWINDOW:SYNC:`
          `LEVEL 2.00000E+00`
          `:TRIGGER:WWINDOW:SYNC:LEVEL?`
          `-> :TRIGGER:WWINDOW:SYNC:`
             `LEVEL 2.00000E+00`

Description   • You cannot set this setting when the
              synchronization channel is set to AUTO.
            • Default value: 0

`:TRIGger:WWINdow:SYNC:TRACe`

Function   Sets or queries the synchronization channel for
             wave window triggers.

Syntax   `:TRIGger:WWINdow:SYNC:TRACe {<NRf>|`
          `AUTO}`
          `:TRIGger:WWINdow:SYNC:TRACe?`
          `<NRf> = 1 to 16`

Example   `:TRIGGER:WWINDOW:SYNC:TRACE 1`
          `:TRIGGER:WWINDOW:SYNC:TRACE?`
          `-> :TRIGGER:WWINDOW:SYNC:TRACE 1`

4.38 WAVeform group

The commands in this group deal with the acquired waveform data. There are no front panel keys that correspond to the commands in this group.

`:WAVeform?`
Function (Upper-level query) Queries all waveform data output settings.
Syntax `:WAVeform?`

`:WAVeform:BITS?`
Function Queries the bit length of the waveform data specified by the :WAVeform:TRACe command.
Syntax `:WAVeform:BITS?`
Example `:WAVEFORM:BITS? -> :WAVEFORM:BITS 16`
Description This is the number of bits that a single source waveform data value uses. The command returns 16 for analog channels, 8 for logic channels, 16 for Math channels, 32 for RMath channels, 32 for CAN with 17 bits or more, and 64 for the time channel (sub channel 63) of power and harmonic analysis.

`:WAVeform:BYTeorder`
Function Sets or queries the transmission byte order for data formats that are 2 bytes or longer.
Syntax `:WAVeform:BYTeorder {LSBFirst|MSBFirst}`
`:WAVeform:BYTeorder?`
Example `:WAVEFORM:BYTEORDER LSBFIRST`
`:WAVEFORM:BYTEORDER?`
`-> :WAVEFORM:BYTEORDER LSBFIRST`
Description This command is only valid in the :WAVeform group.

`:WAVeform:CAPTure?`
Function (Upper-level query) Queries all capture data output settings.
Syntax `:WAVeform:CAPTure?`

`:WAVeform:CAPTure:DATE?`
Function Queries the year, month, and day of the trigger of the specified capture waveform.
Syntax `:WAVeform:CAPTure:DATE? {<NRf>}`
When the capture mode is set to Auto
<NRf> = 0 to −4999
When the capture mode is set to On Start
<NRf> = 1 to 5000
Example `:WAVeform:CAPTure:DATE?`
`-> :WAVeform:CAPTure:`
`DATE "−0001 2021/02/09"`
Description If you set <NRf> to a number greater than the number of captures, the string "<NRf> -----------" is returned.
When nothing has been captured, the string "0000 ------------" is returned. If you query while the instrument is running, the string "0000 ----------" is returned.

`:WAVeform:CAPTure:END`
Function Sets or queries the end point to use when capturing waveform data.
Syntax `:WAVeform:CAPTure:END {<NRf>}`
`:WAVeform:CAPTure:END?`
<NRf> = 0 to (the number of data points in the waveform that is being captured − 1)
Example `:WAVEFORM:CAPTURE:END 10000`
`:WAVEFORM:CAPTURE:END?`
`-> :WAVEFORM:CAPTURE:END 10000`

`:WAVeform:CAPTure:LENGth?`
Function Queries the number of data points in the captured waveform.
Syntax `:WAVeform:CAPTure:LENGth?`
Example `:WAVEFORM:CAPTURE:LENGTH?`
`-> :WAVEFORM:CAPTURE:LENGTH 10001`

`:WAVeform:CAPTure:RECord`
Function Sets or queries the record number to use when capturing waveform data.
Syntax `:WAVeform:CAPTure:RECord {MAXimum|MINimum|<NRf>}`
`:WAVeform:CAPTure:RECord?`
<NRf> = −5000 to 5000
Example `:WAVEFORM:CAPTURE:RECORD −1`
`:WAVEFORM:CAPTURE:RECORD?`
`-> :WAVEFORM:CAPTURE:RECORD −1`

`:WAVeform:CAPTure:RECord? MAXimum`
Function Queries the largest record number of the captured waveform.
Syntax `:WAVeform:CAPTure:RECord? MAXimum`
Example `:WAVEFORM:CAPTURE:RECORD? MAXIMUM`
`-> :WAVEFORM:CAPTURE:RECORD 0`

`:WAVeform:CAPTure:RECord? MINimum`
Function Queries the smallest record number of the captured waveform.
Syntax `:WAVeform:CAPTure:RECord? MINimum`
Example `:WAVEFORM:CAPTURE:RECORD? MINIMUM`
`-> :WAVEFORM:CAPTURE:RECORD −1`

`:WAVeform:CAPTure:SEND?`

Function	Queries specified capture waveform data.
Syntax	`:WAVeform:CAPTure:SEND?`
Example	`:WAVeform:CAPTure:SEND?`

`:WAVeform:CAPTure:SRATe?`

Function	Queries the sample rate of the capture waveform specified by the :WAVeform:TRACe command.
Syntax	`:WAVeform:CAPTure:SRATe?`
Example	`:WAVEFORM:CAPTURE:SRATE 1000`
	`:WAVEFORM:CAPTURE:SRATE?`
	`-> :WAVEFORM:CAPTURE:`
	`  SRATE 1.0000000E+03`
Description	This command returns the sample rate of measured data.

`:WAVeform:CAPTure:STARt`

Function	Sets or queries the start point to use when capturing waveform data.
Syntax	`:WAVeform:CAPTure:STARt {<NRf>}`
	`:WAVeform:CAPTure:STARt?`
	`<NRf>` = 0 to (the number of acquired points in the captured waveform − 1)
Example	`:WAVEFORM:CAPTURE:START 0`
	`:WAVEFORM:CAPTURE:START?`
	`-> :WAVEFORM:CAPTURE:START 0`

`:WAVeform:CAPTure:TIME?`

Function	Queries the time of the trigger of the specified capture waveform.
Syntax	`:WAVeform:CAPTure:TIME? {<NRf>}`
	When the capture mode is set to Auto
	`<NRf>` = 0 to −4999
	When the capture mode is set to On Start
	`<NRf>` = 1 to 5000
Example	`:WAVeform:CAPTure:TIME?`
	`  -> :WAVeform:CAPTure:`
	`    TIME "−0001 10:00:00.06"`
Description	If you set `<NRf>` to a number greater than the number of captures, the string "`<NRf>` -----------" is returned.
	When nothing has been captured, the string "0000 ------------" is returned. If you query while the instrument is running, the string "0000 ----------" is returned.

`:WAVeform:CAPTure:TRIGger?`

Function	Queries the trigger position (represented as a number of points) in the captured waveform.
Syntax	`:WAVeform:CAPTure:TRIGger?`
Example	`:WAVEFORM:CAPTURE:TRIGGER?`
	`-> :WAVEFORM:CAPTURE:TRIGGER 5000`

`:WAVeform:DATaselect`

Function	Queries whether to query the waveform specified by the :WAVeform:TRACe command using ACQ data or PP data.
Syntax	`:WAVeform:DATaselect {ACQData|PPData}`
	`:WAVeform:DATaselect?`
Example	`:WAVEFORM:DATASELECT ACQDATA`
	`:WAVEFORM:DATASELECT?`
	`-> :WAVEFORM:DATASELECT ACQDATA`

`:WAVeform:END`

Function	Sets or queries the end data point in the waveform specified by the :WAVeform:TRACe command (the main waveform).
Syntax	`:WAVeform:END {<NRf>}`
	`:WAVeform:END?`
	`<NRf>` = 0 to 50100000000
Example	`:WAVEFORM:END 10000`
	`:WAVEFORM:END?`
	`-> :WAVEFORM:END 10000`
Description	You can query the total number of data points that have been acquired by using the :WAVeform:LENGth? command.

`:WAVeform:FORMat`

Function	Sets or queries the transmission data format.
Syntax	`:WAVeform:FORMat {ASCii|BYTE|WORD|DWORd|SREal|QWORd}`
	`:WAVeform:FORMat?`
Example	`:WAVEFORM:FORMAT ASCII`
	`:WAVEFORM:FORMAT?`
	`-> :WAVEFORM:FORMAT ASCII`
Description	• "DWORd" is valid for CAN data when the bit length is 17 bits or more.
	• RMath channels and normal power and harmonic analysis channels are fixed to "SREal," and the time channel is fixed to "QWORd."
	• Default value: WORD

`:WAVeform:LENGth?`

Function   Queries the total number of data points in the
            waveform specified by the :WAVeform:TRACe
            command (the main waveform).

Syntax   `:WAVeform:LENGth?`

Example   `:WAVEFORM:LENGTH?`
            `-> :WAVEFORM:LENGTH 10001`

Description The total number of data points varies depending
            on the instrument's settings.
            For details, see the appendix, "Relationship
            between the Time Scale, Record Length, and
            Sample Rate" in the Getting Started Guide.

`:WAVeform:MODule?`

Function   Queries the module of the waveform specified by
            the :WAVeform:TRACe command.

Syntax   `:WAVeform:MODule?`

Example   `:WAVEFORM:MODULE?`
            `-> :WAVEFORM:MODULE M701250`

Description The values returned for each module are listed
            below.

NOMODULE	No module
M701250	701250(HS10M12)
M701251	701251(HS1M16)
M701255	701255(NONISO_10M12)
M701261	701261(Voltage/Temp.)
M701262	701262(Voltage/Temp. with AAF)
M701265	701265(TEMP/HPV)
M701270	701270(STRAIN_NDIS)
M701271	701271(STRAIN_DSUB)
M701275	701275(ACCL/VOLT)
M701281	701281(FREQ)
M720211	720211(HS100M12)
M720212	720212(HS200M14)
M720221	720221(16CH TEMP/VOLT)
M720230	720230(LOGIC)
M720240	720240(CAN)
M720241	720241(CAN&LIN)
M720242	720242(CAN/CAN FD)
M720243	720243(SENT)
M720250	720250(HS10M12)
M720254	720254(4CH 1M16)
M720256	720256(4CH 10M16)
M720266	720266(TEMP/HPV)
M720268	720268(HV(AAF,RMS))
M720281	720281(FREQ)

`:WAVeform:OFFSet?`

Function   Queries the offset value used to convert
            the waveform data specified by the
            :WAVeform:TRACe command to physical values.

Syntax   `:WAVeform:OFFSet?`

Example   `:WAVEFORM:OFFSET?`
            `-> :WAVEFORM:OFFSET 0.0000000E+00`

Description When you are using linear scaling, this command
            returns a value that includes the scaling data. If
            the source waveform is logic data, this command
            returns 0.

`:WAVeform:RANGe?`

Function   Queries the measurement range used to
            convert the waveform data specified by the
            :WAVeform:TRACe command to physical values.

Syntax   `:WAVeform:RANGe?`

Example   `:WAVEFORM:RANGE?`
            `-> :WAVEFORM:RANGE 50.000000E+00`

Description When you are using linear scaling, this command
            returns a value that includes the scaling data. If
            the source waveform is logic data, this command
            returns 1.

`:WAVeform:RECord`

Function   Sets or queries the main waveform record
            number that WAVeform commands will be applied
            to.

Syntax   `:WAVeform:RECord {AVERage|MINimum|`
            `<NRf>}`
            `:WAVeform:RECord?`
            `<NRf> = 0 to −4999`

Example   `:WAVEFORM:RECORD -4`
            `:WAVEFORM:RECORD?`
            `-> :WAVEFORM:RECORD -4`

Description • Specify "MINimum" to specify the minimum
              record number.
              The minimum record number is the record
              number of the oldest data.
            • If AVERage is specified, the command will
              be applied to history average waveform. The
              response when there is no history average
              data is zero.

`:WAVeform:RECord? MINimum`

Function   Queries the smallest record number of the history
            (main waveform).

Syntax   `:WAVeform:RECord? MINimum`

Example   `:WAVEFORM:RECORD?`
            `-> :WAVEFORM:RECORD -8`

:WAVeform:SEND?

|	
Function	Queries the waveform data specified by the :WAVeform:TRACe command (main waveform data, raw data).
Syntax	`:WAVeform:SEND?`
Example	• BYTE, WORD, SREal, QWORd output (block data format response)

```
:WAVeform:SEND?
-> #? (?-digit number of bytes; data
byte sequence)
```
• ASCII output
```
:WAVeform:SEND?
-> <NRf>,<NRf>,<NRf>...
```

Description
• If the number of output bytes in binary exceeds nine digits, 0 is returned.
• If the output format is PP and the original data is less than 10 div, only the queried portion of the data is sent. When the output format is PP, the output start and end points are disabled. If 10 div is acquired, 1001 pairs of PP data are output.
• The output format for logic waveforms is shown below.

BYTE output

Start-point data	Data of the first point after the start point		End-point data
Bit 8 … Bit 1	Bit 8 … Bit 1	· · · · · · · ·	Bit 8 … Bit 1

WORD output (LSBF)

Start-point data		Data of the first point after the start point		
Bit 8 … Bit 1	0	Bit 8 … Bit 1	0	· · · ·

	End-point data	
· · · · · · · ·	Bit 8 … Bit 1	0

WORD output (MSBF)

	Start-point data		Data of the first point after the start point	
0	Bit 8 … Bit 1	0	Bit 8 … Bit 1	· · · ·
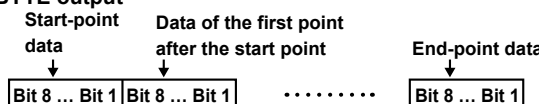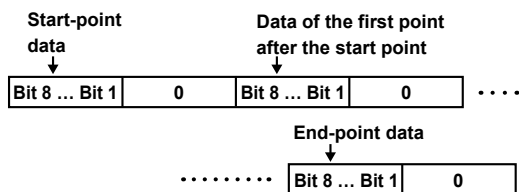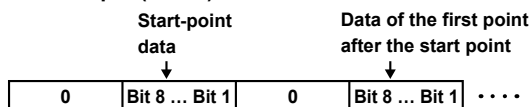
• The equations used to convert the sent BYTE, WORD, or DWORd values to physical values are as follows. Use the ":WAVeform:RANGe?" and ":WAVeform:OFFSet?" commands to query the range and offset values.

For Voltage, Acceleration, Frequency, CAN Bus Monitor (when the display mode is set to Float), CAN/CAN FD Monitor Modules, or Computed Waveforms

Physical value = (Range × data × 10) / Division + Offset

	BYTE	WORD/DWORd
Division	93.75	24000

For Strain Modules

Physical value = (Range × data × 10) / Division + Offset

	BYTE	WORD/DWORd
Division	187.5	48000

For Temperature Modules

Physical value = Data × Division

	BYTE	WORD/DWORd
Division	25.6	0.1

CAN Bus Monitor Module, CAN & LIN Bus Monitor Module, CAN/CAN FD Monitor Module (Unsigned, Signed), and SENT Monitor Module

Physical value = (Range × data) + Offset

• When Format is set to SREAL, physical values are output in 32-bit float format.
• Values are output in float format for normal power and harmonic analysis channels (sub channels 1 to 62) and QWORD format for the time channel (sub channel 63).
• If the channel is RMath and the format is BYTE, WORD, or DWORD, the data is invalid, and zero is returned for the number of data points.

:WAVeform:SIGN?

Function	Queries whether signs are included in the block data of the source waveform data specified by :WAVeform:TRACe when the data is queried.
Syntax	:WAVeform:SIGN?
Example	:WAVEFORM:SIGN?
	-> :WAVEFORM:SIGN 1
Description	This command returns 0 if the source waveform is a logic waveform and 1 otherwise.

:WAVeform:SRATe? (Sample Rate)

Function	Queries the sample rate of the waveform specified by the :WAVeform:TRACe command.
Syntax	:WAVeform:SRATe?
Example	:WAVEFORM:SRATE?
	-> :WAVEFORM:SRATE 500.0E+03
Description	This command returns the sample rate of measured data.

:WAVeform:STARt

Function	Sets or queries the start data point in the waveform specified by the :WAVeform:TRACe command (the main waveform).
Syntax	:WAVeform:STARt {<NRf>}
	:WAVeform:STARt?
	<NRf> = 0 to (the number of data points − 1)
Example	:WAVEFORM:START 0
	:WAVEFORM:START?
	-> :WAVEFORM:START 0
Description	You can query the total number of data points that have been acquired by using the :WAVeform:LENGth? command.

:WAVeform:TRACe

Function	Sets or queries the waveform that WAVeform commands will be applied to.
Syntax	:WAVeform:TRACe {MATH<x>|<NRf>[,<NRf>]}
	:WAVeform:TRACe?
	<NRf> = 1 to 32
	[,<NRf>] = 1 to 62 (sub channels), 63 (time channel of power analysis or harmonic analysis)
	<x> = 1 to 8
Example	:WAVEFORM:TRACE 1
	:WAVEFORM:TRACE?
	-> :WAVEFORM:TRACE 1
Description	An error will occur if nothing is installed in the specified channel.

:WAVeform:TRIGger?

Function	Queries the trigger position of the record specified by the :WAVeform:RECord command.
Syntax	:WAVeform:TRIGger?
Example	:WAVEFORM:TRIGGER?
	-> :WAVEFORM:TRIGGER 5000
Description	Queries the number of points from the beginning of the record to the trigger position.

:WAVeform:TYPE?

Function	Queries the acquisition mode of the source waveform.
Syntax	:WAVeform:TYPE?
Example	:WAVEFORM:TYPE?
	-> :WAVEFORM:TYPE NORMAL
Description	This command returns "AVERage," "ENVelope," "BAVerage," or "NORMal."

4

Commands

4.39 XY group

The commands in this group deal with the X-Y display. You can make the same settings and queries that you can by using the SHIFT+DISPLAY (X-Y) keys on the front panel.

:XY?

Function   (Upper-level query) Queries all X-Y display settings.

Syntax   :XY?

:XY:CDISplay (Combine Display)

Function   Sets or queries whether to combine the displays of Window1 and Window2 on the X-Y waveform display.

Syntax   :XY:CDISplay {<Boolean>}
           :XY:CDISplay?

Example   :XY:CDISPLAY ON
           :XY:CDISPLAY? -> :XY:CDISPLAY 1

:XY:DOTConnect

Function   Sets or queries whether dot connect is ON or OFF for X-Y waveforms.

Syntax   :XY:DOTConnect {<Boolean>}
           :XY:DOTConnect?

Example   :XY:DOTCONNECT ON
           :XY:DOTCONNECT? -> :XY:DOTCONNECT 1

Description Default value: OFF

:XY:DECimation

Function   Sets or queries the number of dots that X-Y waveforms use.

Syntax   :XY:DECimation {<NRf>}
           :XY:DECimation?
           <NRf> = 2000, 100000

Example   :XY:DECIMATION 2000
           :XY:DECIMATION?
           -> :XY:DECIMATION 2000

Description Default value: 2000

:XY:MARKer

Function   Sets or queries whether X-Y pen markers are on.

Syntax   :XY:MARKer {<Boolean>}
           :XY:MARKer?

Example   :XY:MARKER ON
           :XY:MARKER? -> :XY:MARKER 1

Description Default value: OFF

:XY:TCLear (Trace Clear On Start)

Function   Sets or queries whether the X-Y waveform trace-clear-on-start feature is on.

Syntax   :XY:TCLear {<Boolean>}
           :XY:TCLear?

Example   :XY:TCLEAR ON
           :XY:TCLEAR? -> :XY:TCLEAR 1

Description Default value: ON

:XY:WAVeform<x>?

Function   (Upper-level query) Queries all settings related to the specified X-Y waveform.

Syntax   :XY:WAVeform<x>?

:XY:WAVeform<x>:DISPlay

Function   Sets or queries whether the specified X-Y waveform is displayed.

Syntax   :XY:WAVeform<x>:DISPlay {<Boolean>}
           :XY:WAVeform<x>:DISPlay?
           <x> = 1 to 8

Example   :XY:WAVEFORM1:DISPLAY ON
           :XY:WAVEFORM1:DISPLAY?
           -> :XY:WAVEFORM1:DISPLAY 1

Description Default value: ON when X=1, 5, OFF otherwise

:XY:WAVeform<x1>:XTRace

Function   Sets or queries the channel that is assigned to the specified X-Y waveform's X-axis.

Syntax   :XY:WAVeform<x1>:
           XTRace {<NRf>[,<NRf>]|MATH<x2>}
           :XY:WAVeform<x1>:XTRace?
           <x1> = 1 to 8
           <NRf> = 1 to 32
           [,<NRf>] = If the channel has sub channels, this
                      is the range of sub channel numbers.
           <x2> = 1 to 8

Example   :XY:WAVEFORM1:XTRACE 1
           :XY:WAVEFORM1:XTRACE?
           -> :XY:WAVEFORM1:XTRACE 1

Description • You cannot select the channel of a logic module.
           • Default value: Installed channel with the smallest channel number, Math1 when there are no installed modules

:XY:WAVeform\<x1>:YTRace

Function   Sets or queries the channel that is assigned to
            the specified X-Y waveform's Y-axis.

Syntax   :XY:WAVeform\<x1>:
            YTRace {\<NRf>[,\<NRf>]|MATH\<x2>}
            :XY:WAVeform\<x1>:YTRace?
            \<x1> = 1 to 8
            \<NRf> = 1 to 32
            [,\<NRf>] = If the channel has sub channels, this
                       is the range of sub channel numbers.
            \<x2> = 1 to 8

Example   :XY:WAVEFORM1:YTRACE 2
            :XY:WAVEFORM1:YTRACE?
            -> :XY:WAVEFORM1:YTRACE 2

Description • You cannot select the channel of a logic
              module.
            • Default value: 2 when Slot1 is a 2-CH module,
              1_1 when Slot1 is a 16-CH module, and Math1
              when there are no installed modules

:XY:WINDow\<x>?

Function   (Upper-level query) Queries all settings related to
            the specified X-Y window.

Syntax   :XY:WINDow\<x>?

:XY:WINDow\<x>:MODE

Function   Sets or queries whether the specified X-Y window
            is displayed.

Syntax   :XY:WINDow\<x>:MODE {\<Boolean>}
            :XY:WINDow\<x>:MODE?
            \<x> = 1, 2

Example   :XY:WINDOW1:MODE ON
            :XY:WINDOW1:MODE?
            -> :XY:WINDOW1:MODE 1

Description Default value: OFF

:XY:WINDow\<x>:TRANge

Function   Sets or queries the T-Y waveform range to
            display in the X-Y window.

Syntax   :XY:WINDow\<x>:TRANge {\<NRf>,\<NRf>}
            :XY:WINDow\<x>:TRANge?
            \<NRf> = −5.00 to 5.00div
                     resolution: 10/record length

Example   :XY:WINDOW1:TRANGE −5,5
            :XY:WINDOW1:TRANGE?
            -> :XY:WINDOW1:TRANGE
               −5.000000000000,5.000000000000

Description Default value: -5 to 5

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Commands

4.40 ZOOM Group

The commands in this group deal with the zoomed display. You can make the same settings and queries that you can by using the ZOOM key on the front panel. If the selectable range of the time axis is "<NRf> = −5 to 5div," the selectable range varies depending on settings such as the record length. For details, see "Notes about Cursor Measurement" in chapter 10 of IM DL950-01EN.

:ZOOM?
Function	(Upper-level query) Queries all zoom settings.
Syntax	:ZOOM?

:ZOOM:ANALysis<x1>:FORMat<x2>
Function	Sets or queries the display format (the number of divisions in the vertical direction) of zoomed waveforms of display group P and H.
Syntax	:ZOOM:ANALysis<x1>:FORMat<x2> {MAIN|<NRf>}
	:ZOOM:ANALysis<x>:FORMat?
	<NRf> = 1, 2, 3, 4, 5, 6, 8, 12, 16
	<x1> = 1, 2
	1: display group P, 2: display group H
	<x2> = 1, 2
	1: Z1, 2: Z2
Example	:ZOOM:ANALYSIS1:FORMAT1 1
	:ZOOM:ANALYSIS1:FORMAT1?
	-> :ZOOM:ANALYSIS1:FORMAT1 4
Description	• This command is valid when the /G05 option is installed.
	• Default value: MAIN

:ZOOM:ASCRoll?
Function	(Upper-level query) Queries all auto scroll settings.
Syntax	:ZOOM:ASCRoll?

:ZOOM:ASCRoll:JUMP
Function	Moves the center position of the zoom box to the left or right edge of the main window.
Syntax	:ZOOM:ASCRoll:JUMP {LEFT|RIGHt}
Example	:ZOOM:ASCROLL:JUMP RIGHT

:ZOOM:ASCRoll:SPEed
Function	Sets or queries the auto scroll speed of the zoom box.
Syntax	:ZOOM:ASCRoll:SPEed {<NRf>}
	:ZOOM:ASCRoll:SPEed?
	<NRf> = 1 to 10
Example	:ZOOM:ASCROLL:SPEED 5
	:ZOOM:ASCROLL:SPEED?
	-> :ZOOM:ASCROLL:SPEED 5
Description	Default value: 4

:ZOOM:ASCRoll:STARt
Function	Starts auto scrolling.
Syntax	:ZOOM:ASCRoll:STARt {LEFT|RIGHt}
Example	:ZOOM:ASCROLL:START LEFT

:ZOOM:ASCRoll:STOP
Function	Stops auto scrolling.
Syntax	:ZOOM:ASCRoll:STOP
Example	:ZOOM:ASCROLL:STOP

:ZOOM:ASCRoll:TARGet
Function	Sets or queries the zoom window that will be auto scrolled.
Syntax	:ZOOM:ASCRoll:TARGet {Z1|Z2}
	:ZOOM:ASCRoll:TARGet?
Example	:ZOOM:ASCROLL:TARGET Z1
	:ZOOM:ASCROLL:TARGET?
	-> :ZOOM:ASCROLL:TARGET Z1
Description	Default value: Z1

:ZOOM:FITMeasure
Function	Moves the range on which automated measurement of waveform parameters is performed to the zoom waveform display frame.
Syntax	:ZOOM:FITMeasure {Z1|Z2|A2_Z1|A2_Z2}
Example	:ZOOM:FITMEASURE Z1
Description	• Z1 is main and Z2 is zoom in Recorder mode.
	• When dual capture is on in Scope mode, A2_Z1 represents the low-speed sampling Z1, and Z2 represents the high-speed sampling Z2. The operation of A2_Z1 and A2_Z2 is the same as well as the operation of Z1 and Z2.

:ZOOM:FORMat<x>
Function	Sets or queries the display format of the specified zoom waveform.
Syntax	:ZOOM:FORMat<x> {MAIN|<NRf>}
	:ZOOM:FORMat<x>?
	<NRf> = 1, 2, 3, 4, 5, 6, 8, 12, 16
	<x> = 1, 2 (sets the target zoom box)
Example	:ZOOM:FORMAT1 1
	:ZOOM:FORMAT1? -> :ZOOM:FORMAT1 1
Description	Default value: MAIN

:ZOOM:GROup<x>?
Function	(Upper-level query) Queries all settings related to the specified group display of zoom waveforms.
Syntax	:ZOOM:GROup<x>?

:ZOOM:GROUp<x1>:FORMat<x2>

Function   Sets or queries the zoom waveform display
           format of the specified display group.
Syntax   ZOOM:GROUp<x1>:
           FORMat<x2> {MAIN|<NRf>}
           ZOOM:GROUp<x1>:FORMat<x2>?
           <NRf> = 1, 2, 3, 4, 5, 6, 8, 12, 16
           <x1> = 1 to 4
           <x2> = 1, 2 (sets the target zoom box)
Example   :ZOOM:GROUP1:FORMAT1 1
           :ZOOM:GROUP1:FORMAT1?
           -> :ZOOM:GROUP1:FORMAT1 1
Description Default value: MAIN

:ZOOM:GROup<x1>:TRACe<x2>

Function   Sets or queries whether the specified source
           waveform of the specified group display of zoom
           waveforms is displayed.
Syntax   :ZOOM:GROup<x1>:
           TRACe<x2> {<Boolean>}
           :ZOOM:GROup<x1>:TRACe<x2>?
           <X1> = 1 to 4 (sets the group display)
           <x2> = 1 to 64 (sets the source waveform)
Example   :ZOOM:GROUP1:TRACE1 1
           :ZOOM:GROUP1:TRACE1?
           -> :ZOOM:GROUP1:TRACE1 1
Description • ZOOM1 and ZOOM2 both reference the same
             setting. Any changes made to the dual capture
             setting do not affect this setting, nor do any
             changes made to this setting affect the dual
             capture setting.
           • Default value: ON

:ZOOM:MAG<x>

Function   Sets or queries the horizontal magnification of the
           specified zoom waveform.
Syntax   :ZOOM:MAG<x> {<NRf>}
           :ZOOM:MAG<x>?
           <x> = 1, 2 (sets the target zoom box)
           <NRf> = 1 to 200000000
Example   :ZOOM:MAG1 100
           :ZOOM:MAG1? -> :ZOOM:MAG1 100.0
Description • Use this command when an external clock
             is in use. When the internal clock is in use,
             use the :ZOOM:TDIV<x> command to set the
             magnification.
           • The magnification is set as a percentage.

:ZOOM:MAIN

Function   Sets or queries the proportion of the main
           waveform display area that is used when zooming
           waveforms.
Syntax   :ZOOM:MAIN {20|50|OFF}
           :ZOOM:MAIN?
Example   :ZOOM:MAIN 20
           :ZOOM:MAIN? -> :ZOOM:MAIN 20
Description Default value: 50

:ZOOM:MODE<x>

Function   Sets or queries whether the specified zoom
           waveform is displayed.
Syntax   :ZOOM:MODE<x> {<Boolean>}
           :ZOOM:MODE<x>?
Example   :ZOOM:MODE1 ON
           :ZOOM:MODE1? -> :ZOOM:MODE1 1
Description Default value: OFF

:ZOOM:MOVE

Function   Moves the zoom box to the latest position.
Syntax   :ZOOM:MOVE<x> {Z1|Z2}
Example   :ZOOM:MOVE1 Z1

:ZOOM:POSition<x>

Function   Sets or queries the zoom position of the specified
           zoom waveform.
Syntax   :ZOOM:POSition<x> {<NRf>}
           :ZOOM:POSition<x>?
           <x> = 1, 2 (sets the target zoom box)
           <NRf> = –5 to 5div
Example   :ZOOM:POS1 2
           :ZOOM:POS1?
           -> :ZOOM:POS1 2.000000000000
Description Default value: 0

:ZOOM:TDIV<x>

Function   Sets or queries the T/div value of the specified
           zoom waveform.
Syntax   :ZOOM:TDIV<x> {<Time>|HOUR1|HOUR2|
           HOUR3|HOUR4|HOUR5|HOUR6|HOUR7|HOUR8|
           HOUR9|HOUR10|HOUR12|DAY1|DAY2|DAY3|
           DAY4|DAY5}
           :ZOOM:TDIV<x>?
           <x> = 1, 2 (sets the target zoom box)
           <Time> = the same as the T/div setting
Example   :ZOOM:TDIV1 100us
           :ZOOM:TDIV1? -> :ZOOM:TDIV1 100.0E-06
Description • Use this command when the internal clock
             is in use. When an external clock is in use,
             use the :ZOOM:MAG<x> command to set the
             magnification.
           • Default value: 100us

:ZOOM:WLAYout (Window Layout)

Function   Sets or queries the window layout that is used
           when waveforms are zoomed.
Syntax   :ZOOM:WLAYout {VERTical|SIDE}
           :ZOOM:WLAYout?
Example   :ZOOM:WLAY SIDE
           :ZOOM:WLAY? -> :ZOOM:WLAY SIDE
Description Default value: SIDE

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Commands

:ZOOM:Z2Target

Function   Sets or queries the source window of Z2 when
             both Z1 and Z2 are displayed.

Syntax   :ZOOM:Z2Target {MAIN|Z1}
             :ZOOM:Z2Target?

Example   :ZOOM:Z2TARGET MAIN
             :ZOOM:Z2TARGET?
             -> :ZOOM:Z2TARGET MAIN

Description Default value: MAIN

4.41 Common Command Group

The commands in this group are defined in IEEE 488.2-1987 and are independent from the instrument's individual functions. There are no front panel keys that correspond to the commands in this group.

*CAL?

Function	Executes calibration and queries the result.
Syntax	*CAL?
Example	*CAL? -> 0
Description	This command returns 0 if calibration is completed successfully and 1 otherwise.

*CLS

Function	Clears the standard event register, extended event register, and error queue.
Syntax	*CLS
Example	*CLS
Description	• If the *CLS command is located immediately after the program message terminator, the output queue is also cleared.
	• For information about each register and queue, see chapter 5.

*ESE

Function	Sets or queries the standard event enable register.
Syntax	*ESE {<NRf>}
	*ESE?
	<NRf> = 0 to 255
Example	*ESE 251
	*ESE? -> 251
Description	• Specify the value as a sum of the values of each bit in decimal format.
	• For example, specifying *ESE 251 will cause the standard enable register to be set to 11111011. In this case, bit 2 of the standard event register is disabled. This means that bit 5 (ESB) of the status byte register is not set to 1, even if a query error occurs.
	• A query using *ESE? will not clear the contents of the standard event enable register.
	• For information about the standard event enable register, see page 5-2.
	• Default value: *ESE 0 (all bits disabled).

*ESR?

Function	Queries and clears the standard event register.
Syntax	*ESR?
Example	*ESR? -> 32
Description	• This command returns a sum of the values of each bit in decimal format.
	• When an SRQ is sent, you can check what types of events have occurred.
	• For example, if a value of 32 is returned, this indicates that the standard event register is set to 00100000. This means that the SRQ occurred due to a command syntax error.
	• A query using *ESR? will clear the contents of the Standard Event Register.
	• For information about the standard event register, see page 5-4.

*IDN?

Function	Queries the instrument model.
Syntax	*IDN?
Example	*IDN? -> YOKOGAWA,DL950,0,F0.10
Description	This command returns a string in the following format: <Manufacturer>, <Model>, <Serial no.>, <Firmware version>.

*OPC

Function	Sets bit 0 (the OPC bit) of the standard event register to 1 upon the completion of the specified overlap command.
Syntax	*OPC
Example	*OPC
Description	• For details on how to use the *OPC command to synchronize the instrument, see page 3-8.
	• Use the COMMunicate:OPSE command to specify the overlap command.
	• If *OPC is not the last command of the message, its operation is not guaranteed.

*OPC?

Function	Returns ASCII code 1 when the specified overlap command is completed.
Syntax	*OPC?
Example	*OPC? -> 1
Description	• For details on how to use the *OPC? command to synchronize the instrument, see page 3-9.
	• Use the COMMunicate:OPSE command to specify the overlap command.
	• If *OPC? is not the last command of the message, its operation is not guaranteed.

*OPT?

Function   Queries the installed options.

Syntax   `*OPT?`

Example   `*OPT? -> 1GPts,ST1,ST2,C35,C40,C50,C`
              `60,G02,G03,G05,P4,P8,VCE`

Description   • This command returns the availability of
                <Memory>, <ST1>, <ST2>, <C35>, <C40>,
                <C50>, <C60>, <G02>, <G03>, <G05>, <P4>,
                <P8>, and <VCE>.
              • <Memory> is 1GPts for /STD, 4GPts for /M1,
                and 8GPTs for /M2.
              • An error occurs if there is a query after this
                command.

*RST

Function   Initializes settings.

Syntax   `*RST`

Example   `*RST`

Description   This command also clears the *OPC and *OPC?
              commands that have been sent.

*SRE

Function   Sets or queries the service request enable
              register value.

Syntax   `*SRE <NRf>`
              `*SRE?`
              `<NRf> = 0 to 255`

Example   `*SRE 239`
              `*SRE? -> 175`

Description   Default value: *SRE 0 (all bits disabled).

*STB?

Function   Queries the Status Byte Register value.

Syntax   `*STB?`

Example   `*STB? -> 4`

Description   • This command returns a sum of the values of
                each bit in decimal format.
              • Because the register is read without executing
                serial polling, bit 6 is an MSS bit, not an RQS
                bit.
              • For example, if a value of 4 is returned, this
                indicates that the status byte register is set to
                00000100. This means that the error queue is
                not empty (in other words, an error occurred).
              • A query using *STB? will not clear the contents
                of the status byte register.
              • For information about the status byte register,
                see page 5-2.

*TST?

Function   Executes a self-test and queries the result. The
              self-test consists of tests of each kind of internal
              memory.

Syntax   `*TST?`

Example   `*TST? -> 0`

Description   This command returns 0 if the self-test is
              successful and 1 otherwise.

*WAI

Function   Holds the execution of the subsequent command
              until the specified overlap command is completed.

Syntax   `*WAI`

Example   `*WAI`

Description   • For details on how to use the *WAI command
                to synchronize the DL850, see page 3-8.
              • Use the COMMunicate:OPSE command to
                specify the overlap command.

5.1   About Status Reports

Status Reports

The figure below shows the format of status reports that are read by serial polling. This status report format is an extended version of the status report format defined in IEEE 488.2-1992.
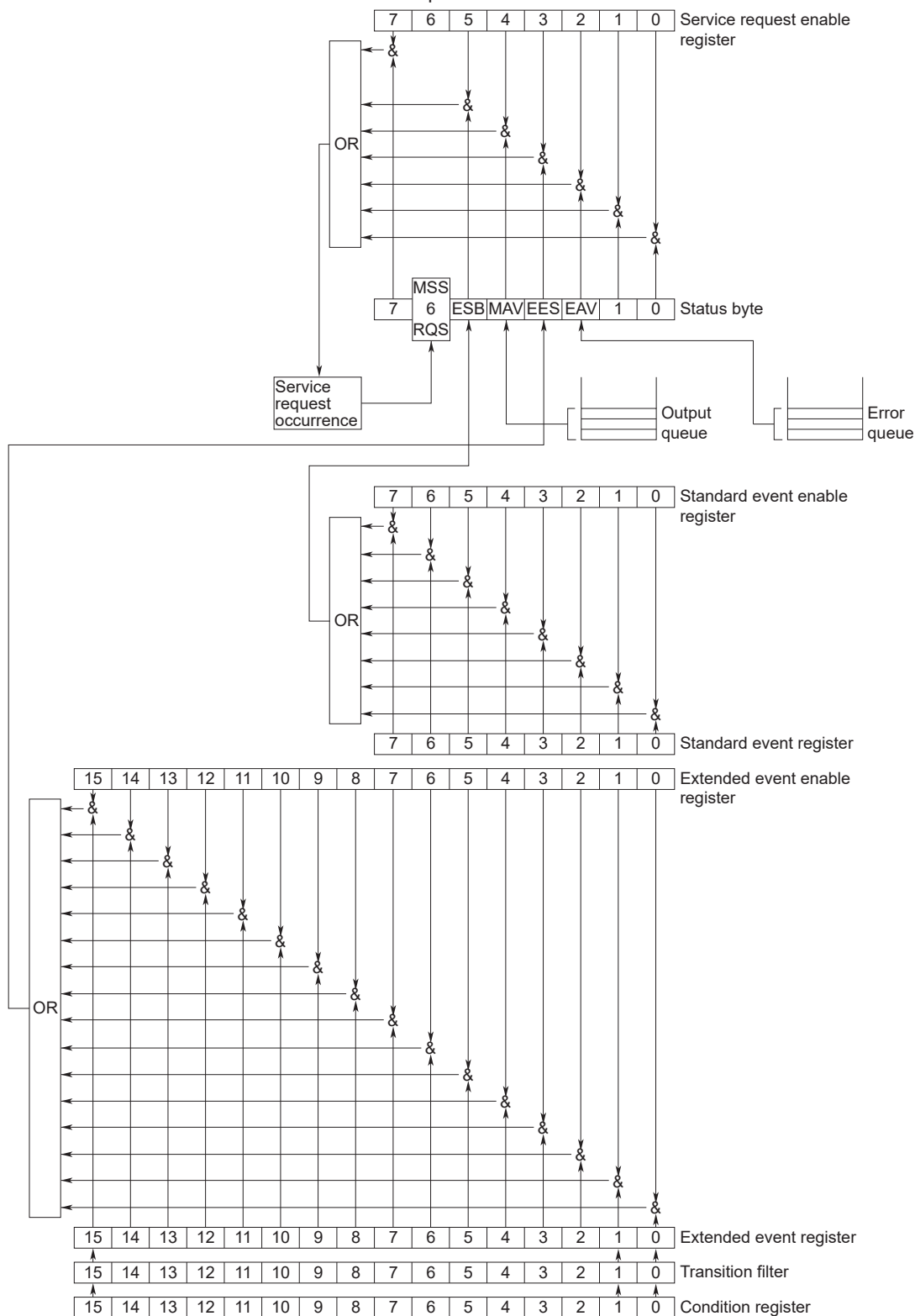
Overview of Registers and Queues

Name	Function	Write	Read
Status byte	–	–	Serial polling (RQS), *STB? (MSS)
Service request enable register	Status byte mask	*SRE	*SRE?
Standard event register	Indicates device status changes	–	*ESR?
Standard event enable register	Standard event register mask	*ESE	*ESE?
Extended event register	Indicates device status changes	–	STATus:EESR?
Extended event enable register	Extended event register mask	STATus:EESE	STATus:EESE?
Condition register	Current device status	–	STATus:CONDition?
Transition filter	Conditions that change the extended event register	STATus:FILTer<x>	STATus:FILTer<x>?
Output queue	Stores response messages for queries	Query commands	
Error queue	Stores error numbers and messages	–	STATus:ERRor?

Registers and Queues That Affect the Status Byte

The following registers affect the status byte bits.

Standard event register	Sets bit 5 (ESB) of the status byte to 1 or 0.
Output queue	Sets bit 4 (MAV) of the status byte to 1 or 0.
Extended event register	Sets bit 3 (EES) of the status byte to 1 or 0.
Error queue	Sets bit 2 (EAV) of the status byte to 1 or 0.

Enable Registers

The following registers are used to mask a bit so that the bit will not affect the status byte even when it is set to 1.

Service request enable register	Masks bits of the status byte.
Standard event register	Masks bits in the standard event register.
Extended event register	Masks bits in the extended event register.

Reading and Writing to Registers

For example, use the *ESE command to set the standard event enable register bits to 1 and 0. You can use the *ESE? command to query whether the standard event enable register bits are ones or zeros. For details on these commands, see chapter 4.

5.2   Status Byte

Status Byte

```
             RQS
      7   6   ESB MAV EES EAV  1   0
             MSS
```

- **Bits 0 and 7**
  Not used (always 0)
- **Bit 1**
  Reserved
- **Bit 2 EAV (Error Available)**
  This bit is 1 when the error queue is not empty. In other words, this bit is set to 1 when an error occurs. For details, see page 5-6.
- **Bit 3 EES (Extend Event Summary Bit)**
  This bit is 1 when the logical AND of the extended event register and its corresponding event register is 1. In other words, this bit is set to 1 when a certain event takes place inside the instrument. For details, see page 5-5.
- **Bit 4 MAV (Message Available)**
  This bit is 1 when the output queue is not empty. In other words, this bit is set to 1 when there is data to be transmitted in response to a query. For details, see page 5-6.
- **Bit 5 ESB (Event Summary Bit)**
  This bit is 1 when the logical AND of the standard event register and its corresponding event register is 1. In other words, this bit is set to 1 when a certain event takes place inside the instrument, see page 5-4.
- **Bit 6 RQS (Request Service)/MSS (Master Status Summary)**
  This bit is 1 when the logical AND of the status byte excluding bit 6 and the service request enable register is 1. In other words, this bit is set to 1 when the instrument requests service from the controller. RQS is set to 1 when the MSS bit changes from 0 to 1 and is cleared when serial polling is carried out or when the MSS bit changes to 0.

Bit Masking

To mask a bit in the status byte so that it does not cause an SRQ, set the corresponding bit of the service request enable register to 0.
For example, to mask bit 2 (EAV) so that service is not requested when an error occurs, set bit 2 of the service request enable register to 0. Do this using the *SRE command. To query whether each bit of the service request enable register is 1 or 0, use *SRE?. For details on the *SRE command, see chapter 4.

Status Byte Operation

A service request is issued when bit 6 in the status byte becomes 1. Bit 6 is set to 1 when any other bit becomes 1 (when the corresponding bit of the service request enable register is also set to 1). For example, if an event occurs and the logical OR of a standard event register bit and its corresponding enable register bit is 1, then bit 5 (ESB) is set to 1. At this point, if bit 5 of the service request enable register is 1, bit 6 (MSS) is set to 1, and the instrument requests service from the controller.
You can check what type of event occurred by reading the contents of the status byte.

Reading the Status Byte

There are two ways to read the contents of the status byte.
- ***STB? Query**
  Bit 6 functions as MSS when a query is made using *STB?. This causes the MSS to be read. This query does not cause any of the status byte bits to be cleared after the status byte is read.
- **Serial polling**
  Serial polling causes bit 6 to function as an RQS bit. This causes the RQS to be read. After the status byte is read, only the RQS bit is cleared. You cannot read the MSS bit when serial polling is used.

Clearing the Status Byte

There is no way to clear all the bits in the status byte. The bits that are cleared for each operation are shown below.
- ***STB? Query**
  None of the bits are cleared.
- **Serial Polling**
  Only the RQS bit is cleared.
- **When a *CLS Command Is Received**
  When a *CLS command is received, the status byte itself is not cleared, but the contents of the standard event register, which affects the bits in the status byte, are cleared. As a result, the corresponding status byte bits are cleared. Because the output queue is not cleared with a *CLS command, bit 4 (MAV) in the status byte is not affected. However, the output queue will be cleared if the *CLS command is received just after a program message terminator.

5.3 Standard event register

Standard Event Register

7	6	5	4	3	2	1	0
PON	URQ	CME	EXE	DDE	QYE	RQC	OPC

- **Bit 7 PON (Power ON)**
  This bit is set to 1 when the instrument is turned on.
- **Bit 6 URQ (User Request)**
  Not used (always 0)
- **Bit 5 CME (Command Error)**
  This bit is set to 1 when there is a command syntax error.
  Example   Incorrectly spelled command name; 9 used in octal data.
- **Bit 4 EXE (Execution Error)**
  This bit is set to 1 when the command syntax is correct, but the command cannot be executed in the current state.
  Example   The instrument receives a command whose parameter is outside the selectable range. An attempt is made to print a hard copy while the instrument is running.
- **Bit 3 DDE (Device Error)**
  This bit is set to 1 when a command cannot be executed for instrument's internal reasons other than a command syntax error or command execution error.
- **Bit 2 QYE (Query Error)**
  This bit is set to 1 when a query command is received, but the output queue is empty or the data is lost.
  Example   There is no response data, or data is lost due to an overflow in the output queue.
- **Bit 1 RQC (Request Control)**
  Not used (always 0)
- **Bit 0 OPC (Operation Complete)**
  This bit is set to 1 upon the completion of the operation designated by the *OPC command (see chapter 4).

Bit Masking

To mask a certain bit of the standard event register so that it does not cause bit 5 (ESB) in the status byte to change, set the corresponding bit of the standard event enable register to 0.

For example, to mask bit 2 (QYE) so that ESB will not be set to 1 even if a query error occurs, set bit 2 of the standard event enable register to 0. Do this using the *ESE command. To query whether each bit of the standard event enable register is 1 or 0, use *ESE?. For details on the *ESE command, see chapter 4.

Standard Event Register Operation

The standard event register indicates eight types of events that occur inside the instrument. When one of the bits in this register becomes 1 (and the corresponding bit of the standard event enable register is also 1), bit 5 (ESB) in the status byte is set to 1.
Example
1. A query error occurs.
2. Bit 2 (QYE) is set to 1.
3. When bit 2 of the standard event enable register is 1, bit 5 (ESB) in the status byte is set to 1.

You can also check what type of event occurred in the instrument by reading the contents of the standard event register.

Reading the Standard Event Register

You can use the *ESR? command to read the contents of the standard event register. The register is cleared after it is read.

Clearing the Standard Event Register

The standard event register is cleared in the following three cases.
- When the contents of the standard event register are read using the *ESR command.
- When a *CLS command is received.
- When the instrument is restarted.

5.4 Extended event register

The extended event register receives information about changes in the condition register, which indicates the instrument's internal condition. The information is the result of edge detection performed by the transition filter.

	FILTer<x>→	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
Condition register :STATus:CONDition?		15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
		0	AN	KLK	RUN	SCH	NGO	0	HST	MES	ACS	PRN	TST	CAL	TRG	REC	CAP
Transition filter :STATus:FILTer<x> {RISE|FALL|BOTH|NEVer}		15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Extended event register :STATus:EESR?		15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
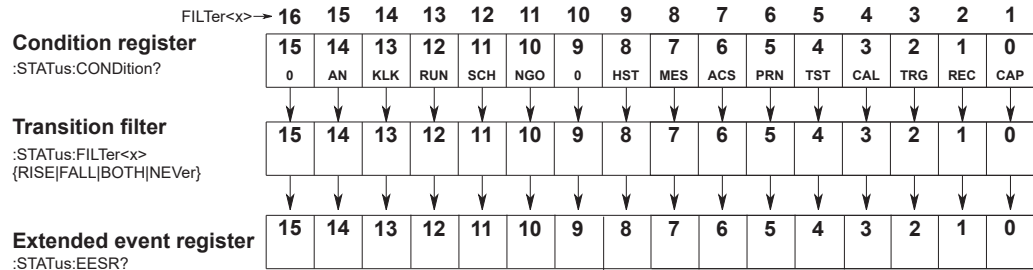
The condition register bits are described below.

Bit 0	CAP(Capture)	This bit is 1 when waveform acquisition is in progress.
Bit 1	REC(Record)	This bit is 1 when recording is in progress.
Bit 2	TRG(Awaiting Trigger)	This bit is 1 when the instrument is waiting for a trigger.
Bit 3	CAL(Calibration)	This bit is 1 when calibration is in progress.
Bit 4	TST(Testing)	This bit is 1 when a self-test is in progress.
Bit 5	PRN(Printing)	This bit is 1 when the built-in printer is operating or when data is being transmitted to a network printer.
Bit 6	ACS(Accessing)	Set to 1 when a drive is being accessed.
Bit 7	MES(Measuring)	This bit is 1 when automated measurement of waveform parameters is in progress.
Bit 8	HST(History Search)	This bit is 1 when a history search is in progress.
Bit 10	NGO(Go/No-Go)	This bit is 1 when a GO/NO-GO search is in progress.
Bit 11	SCH(Search)	This bit is 1 when a search is in progress.
Bit 12	RUN(Running)	This bit is 1 when a measurement is in progress.
Bit 13	KLK(Key lock)	This bit is 1 when the keys are locked.
Bit 14	AN(Analysis)	This bit is 1 when math or FFT is in progress.

The transition filter parameters detect changes in the specified condition register bits (numeric suffixes 1 to 16) and overwrite the extended event register in the following ways.

RISE	The specified extended event register bit is set to 0 when the corresponding condition register bit changes from 1 to 1.
FALL	The specified extended event register bit is set to 1 when the corresponding condition register bit changes from 1 to 0.
BOTH	The specified extended event register bit is set to 1 when the corresponding condition register bit changes from 0 to 1 or from 1 to 0.
NEVer	Always zero.

5

Status Reports

5.5 Output and Error Queues

Output Queue

The output queue stores query response messages. For example, if you send a `:WAVeform:SEND?` command, which requests for the transmission of acquired waveform data, the data is stored in the output queue until it is read.

As shown below, data is stored in order and read from the oldest message first. The output queue is cleared in the following cases.

- When a new message is received from the controller.
- When a deadlock occurs (see page 3-2).
- When a device clear command (DCL or SDC) is received.
- When the instrument is restarted.

The `*CLS` command does not clear the output queue. You can determine whether the output queue is empty by checking bit 4 (MAV) in the status byte.
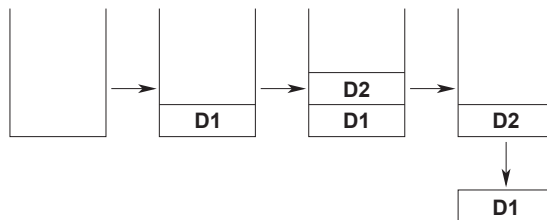
Error Queue

When an error occurs, the error queue stores the error number and message. For example, if the instrument receives an incorrect program message from the controller, the error number (113) and the error message ("Undefined header") are stored in the error queue when the instrument displays the error message.

You can use the `:STATus:ERRor?` query to read the contents of the error queue. Like the output queue, the messages in the error queue are read from the oldest one first.

If the error queue overflows, the last message is replaced with the following message: 350, "Queue overflow."

The error queue is cleared in the following cases.

- When a `*CLS` command is received.
- When the instrument is restarted.

You can determine whether or not the error queue is empty by checking bit 2 (EAV) in the status byte.

Appendix 1 ASCII Character Codes

This section provides a table of ASCII character codes.

	0	1	2	3	4	5	6	7
0	0 **NUL** 0 / 0	20 DEL **DEL** 10 / 16	40 0 **SP** 20 / 32	60 16 **0** 30 / 48	100 0 **@** 40 / 64	120 16 **P** 50 / 80	140 0 **`** 60 / 96	160 16 **p** 70 / 112
1	1 GTL **SOH** 1 / 1	21 LLO **DC1** 11 / 17	41 1 **!** 21 / 33	61 17 **1** 31 / 49	101 1 **A** 41 / 65	121 17 **Q** 51 / 81	141 1 **a** 61 / 97	161 17 **q** 71 / 113
2	2 **STX** 2 / 2	22 **DC2** 12 / 18	42 2 **"** 22 / 34	62 18 **2** 32 / 50	102 2 **B** 42 / 66	122 18 **R** 52 / 82	142 2 **b** 62 / 98	162 18 **r** 72 / 114
3	3 **ETX** 3 / 3	23 **DC3** 13 / 19	43 3 **#** 23 / 35	63 19 **3** 33 / 51	103 3 **C** 43 / 67	123 19 **S** 53 / 83	143 3 **c** 63 / 99	163 19 **s** 73 / 115
4	4 SDC **EOT** 4 / 4	24 DCL **DC4** 14 / 20	44 4 **$** 24 / 36	64 20 **4** 34 / 52	104 4 **D** 44 / 68	124 20 **T** 54 / 84	144 4 **d** 64 / 100	164 20 **t** 74 / 116
5	5 PPC **ENQ** 5 / 5	25 PPU **NAK** 15 / 21	45 5 **%** 25 / 37	65 21 **5** 35 / 53	105 5 **E** 45 / 69	125 21 **U** 55 / 85	145 5 **e** 65 / 101	165 21 **u** 75 / 117
6	6 **ACK** 6 / 6	26 **SYN** 16 / 22	46 6 **&** 26 / 38	66 22 **6** 36 / 54	106 6 **F** 46 / 70	126 22 **V** 56 / 86	146 6 **f** 66 / 102	166 22 **v** 76 / 118
7	7 **BEL** 7 / 7	27 **ETB** 17 / 23	47 7 **'** 27 / 39	67 23 **7** 37 / 55	107 7 **G** 47 / 71	127 23 **W** 57 / 87	147 7 **g** 67 / 103	167 23 **w** 77 / 119
8	10 GET **BS** 8 / 8	30 SPE **CAN** 18 / 24	50 8 **(** 28 / 40	70 24 **8** 38 / 56	110 8 **H** 48 / 72	130 24 **X** 58 / 88	150 8 **h** 68 / 104	170 24 **x** 78 / 120
9	11 TCT **HT** 9 / 9	31 SPD **EM** 19 / 25	51 9 **)** 29 / 41	71 25 **9** 39 / 57	111 9 **I** 49 / 73	131 25 **Y** 59 / 89	151 9 **i** 69 / 105	171 25 **y** 79 / 121
A	12 **LF** A / 10	32 **SUB** 1A / 26	52 10 ***** 2A / 42	72 26 **:** 3A / 58	112 10 **J** 4A / 74	132 26 **Z** 5A / 90	152 10 **j** 6A / 106	172 26 **z** 7A / 122
B	13 **VT** B / 11	33 **ESC** 1B / 27	53 11 **+** 2B / 43	73 27 **;** 3B / 59	113 11 **K** 4B / 75	133 27 **[** 5B / 91	153 11 **k** 6B / 107	173 27 **{** 7B / 123
C	14 **FF** C / 12	34 **FS** 1C / 28	54 12 **,** 2C / 44	74 28 **<** 3C / 60	114 12 **L** 4C / 76	134 28 **** 5C / 92	154 12 **l** 6C / 108	174 28 **|** 7C / 124
D	15 **CR** D / 13	35 **GS** 1D / 29	55 13 **-** 2D / 45	75 29 **=** 3D / 61	115 13 **M** 4D / 77	135 29 **]** 5D / 93	155 13 **m** 6D / 109	175 29 **}** 7D / 125
E	16 **SO** E / 14	36 **RS** 1E / 30	56 14 **.** 2E / 46	76 30 **>** 3E / 62	116 14 **N** 4E / 78	136 30 **^** 5E / 94	156 14 **n** 6E / 110	176 30 **~** 7E / 126
F	17 **SI** F / 15	37 **US** 1F / 31	57 15 **/** 2F / 47	77 UNL **?** 3F / 63	117 15 **O** 4F / 79	137 UNT **_** 5F / 95	157 15 **o** 6F / 111	177 **DEL (RUBOUT)** 7F / 127
	Address command	Universal command	Listener address		Talker address		Secondary command	

Example

Octal → 25 PPU ← GP-IB code
NAK ← ASCII character code
Hexadecimal → 15 21 ← Decimal
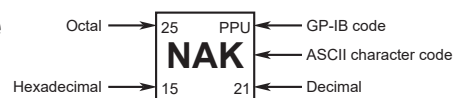
Appendix 2 Error Messages

This section explains communication error messages.

- Messages can be displayed in English or Japanese on the instrument. However, when they are read from a PC or other similar device, messages are displayed in English.
- If servicing is necessary to solve the problem indicated by a message, contact your nearest YOKOGAWA dealer.
- Only communication error messages are listed here. For details on other error messages, see the *DL950 Getting Started Guide*, IM DL950-03EN.

  - Communication syntax errors   100 to 199
  - Communication execution errors   200 to 299
  - Communication query errors   400 to 499   } Listed below
  - System errors (communication)   300, 399
  - Other errors   350

Communication Syntax Errors (100 to 199)

Code	messages	Corrective Action	Page
102	Syntax error.	A syntax error not covered by error codes 100 to 199.	Chapter 3, chapter 4
103	Invalid separator.	Separate data values with a comma.	3-1
104	Data type error.	See page 3-6 and 3-7 and use the correct data type for each parameter.	3-6 and 3-7
105	GET not allowed.	GET is not supported as a response to an interface message.	–
108	Parameter not allowed.	Check the number of data values.	3-6 and chapter 4
109	Missing parameter.	Be sure to include all necessary data values.	3-6 and chapter 4
111	Header separator error.	Use a comma to separate each header from its data.	3-1
112	Program mnemonic too long.	Check the command length.	Chapter 4
113	Undefined header.	Check the header.	Chapter 4
114	Header suffix out of range.	Check the header.	Chapter 4
120	Numeric data error.	A value must be specified where the syntax contains <NRf>.	3-6
123	Exponent too large.	Where the syntax contains <NR3>, make the exponent that follows E smaller.	3-6 and chapter 4
124	Too many digits.	Limit numeric values to 255 digits or less.	3-6 and chapter 4
128	Numeric data not allowed.	Use a data type other than <NRf>.	3-6 and chapter 4
131	Invalid suffix.	Check the unit of <Voltage>, <Time>, or <Frequency>.	3-6
134	Suffix too long.	Check the unit of <Voltage>, <Time>, or <Frequency>.	3-6
138	Suffix not allowed.	Units can only be used for <Voltage>, <Time>, <Frequency>.	3-6
141	Invalid character data.	Be sure to select one of the listed choices when the syntax contains {...|...|...}.	Chapter 3, chapter 4
144	Character data too long.	Check the spelling of the strings when the syntax contains {...|...|...}.	Chapter 4
148	Character data not allowed.	Use a data type other than {...|...|...}.	Chapter 4
150	String data error.	Enclose parameters with single or double quotation marks where the syntax contains <String>.	3-7
151	Invalid string data.	The <String> is either too long, or it contains an unusable character.	Chapter 4
158	String data not allowed.	Use a data type other than <String>.	Chapter 4
161	Invalid block data.	<Block data> cannot be used.	3-7 and chapter 4
168	Block data not allowed.	<Block data> cannot be used.	3-7 and chapter 4
171	Missing Right	Mathematical operations cannot be used.	–
172	Invalid expression.	Mathematical operations cannot be used.	Chapter 4

Code	messages	Corrective Action	Page
178	Expression data not allowed.	Mathematical operations cannot be used.	Chapter 4
181	Invalid outside macro definition.	The instrument does not support the IEEE 488.2 macro specifications.	–

Communication Execution Errors (200 to 299)

Code	messages	Corrective Action	Page
221	Setting conflict.	Check settings that are related to each other.	Chapter 4
222	Data out of range.	Check the ranges of the settings.	Chapter 4
223	Too much data.	Check data byte lengths.	Chapter 4
224	Illegal parameter value.	Check the ranges of the settings.	Chapter 4
225	OverFlow.	Keep program messages to 1024 bytes or less in length, including <PMT>.	3-2
226	Out Of Memory.	Keep program messages to 1024 bytes or less in length, including <PMT>.	3-2
241	Hardware missing.	Check that the specified options are all installed.	–
260	Expression error.	Mathematical operations cannot be used.	–
270	Macro error.	The instrument does not support the IEEE 488.2 macro specifications.	–
272	Macro execution error.	The instrument does not support the IEEE 488.2 macro specifications.	–
273	Illegal macro label.	The instrument does not support the IEEE 488.2 macro specifications.	–
275	Macro definition too long.	The instrument does not support the IEEE 488.2 macro specifications.	–
276	Macro recursion error.	The instrument does not support the IEEE 488.2 macro specifications.	–
277	Macro redefinition not allowed.	The instrument does not support the IEEE 488.2 macro specifications.	–
278	Macro header not found.	The instrument does not support the IEEE 488.2 macro specifications.	–
280	Buffer overrun occurred.	Decrease the instrument's data acquisition rate.	–

System Communication Errors (300 and 399)

Code	messages	Corrective Action	Page
300	Communication device-specific error.	Servicing is required.	–
399	Fatal error in the communication driver.	Servicing is required.	–

Communication Query Errors (400 to 499)

Code	messages	Corrective Action	Page
410	Query INTERRUPTED.	Check the transmission and reception order.	3-2
420	Query UNTERMINATED.	Check the transmission and reception order.	3-2
430	Query DEADLOCKED.	Keep program messages to 1024 bytes or less in length, including <PMT>.	3-2
440	Query UNTERMINATED after indefinite response.	Do not write a query after *IDN? or *OPT?.	–

Other Errors (350)

Code	messages	Corrective Action	Page
350	Queue overflow.	Read the error queue.	5-6

Note

Code 350 occurs when the error queue overflows. This error is only returned in response to a :STATus:ERRor? query; it is never displayed on the screen.

App

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