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DL950 ScopeCorder Communication Interface

DL950 ScopeCorder Communication Interface User's Manual

YOKOGAWA ◆

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 { }	COUPling {AC DC DC50 GND}	COUPLING AC
	Exclusive OR		
[]	Can be omitted	TRIGger [:SIMPlE]:SLOPe	TRIGger:SLOPe

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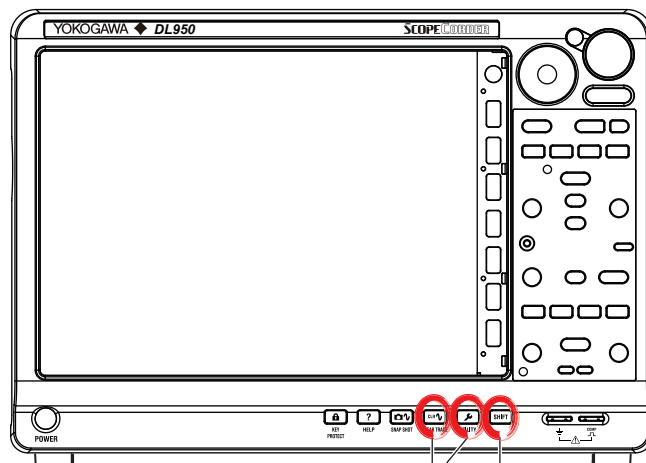
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1.1 Component Names and Functions

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.

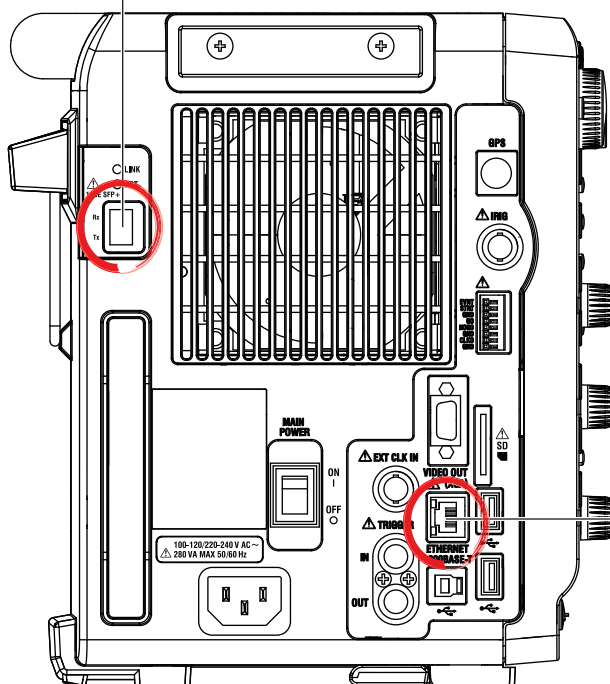
UTILITY key (page 1-5)

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 Gbps 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

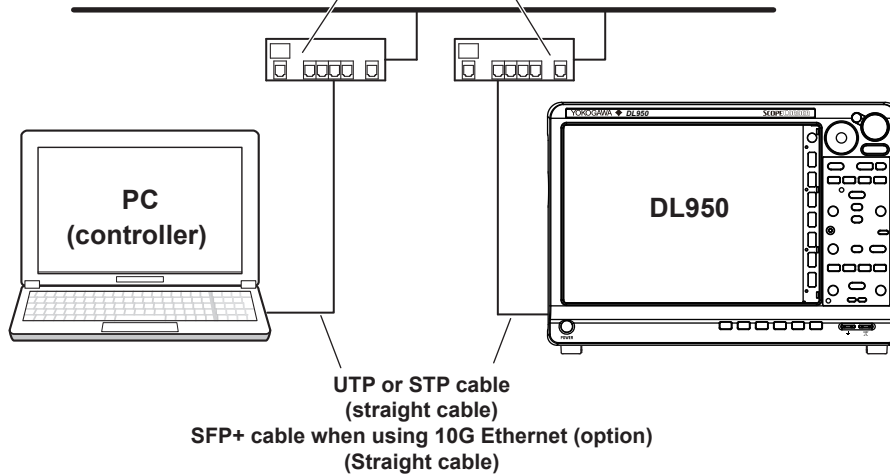
To connect the instrument to a network as an FTP or Web server, you have to enter a user name and password in the Ethernet-communication-interface settings. To set the user name and password, access the instrument's UTILITY menu, the Network menu, and then the FTP/Web Server screen. For details, see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

1.3 Connecting to the Ethernet Interface

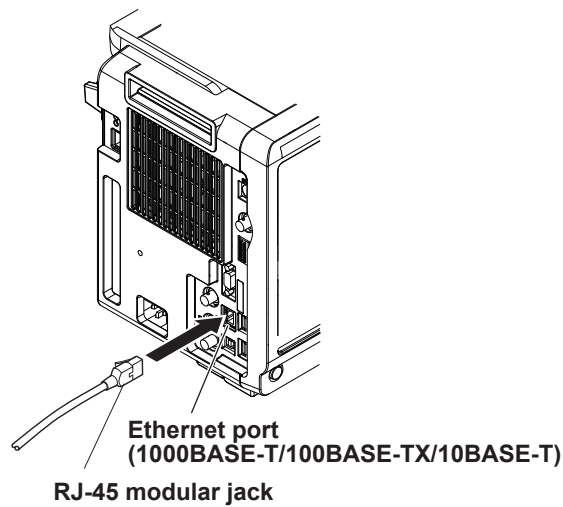
Connection Procedure

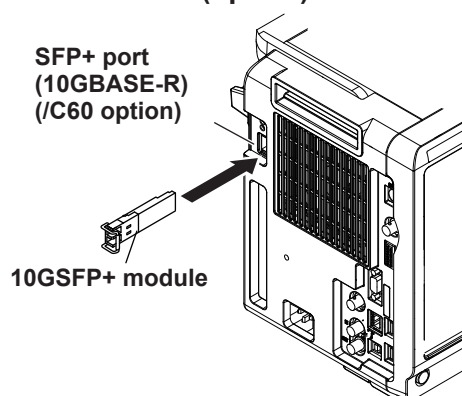
Connect a UTP (Unshielded Twisted-Pair) or STP (Shielded Twisted-Pair) cable that is connected to a hub or router to the Ethernet port on the instrument's rear panel. Or, if you want to use 10G Ethernet (option), connect an SFP+ cable to the 10GSFP+ module installed in the 10G Ethernet port of the instrument.

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



Ethernet (standard)



10G Ethernet (option)**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.

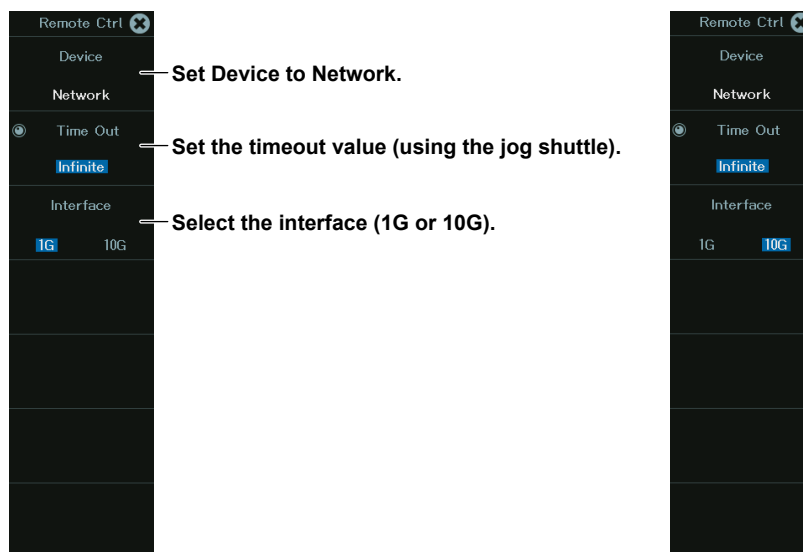
1.4 Configuring the Instrument Ethernet Settings

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).



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

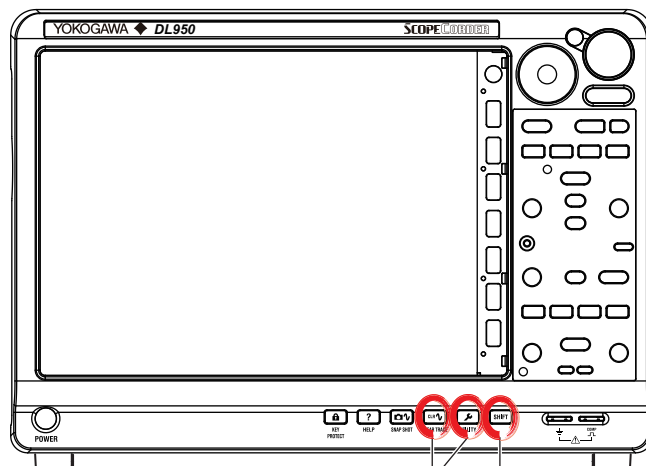
To use the Ethernet interface, you must specify the following TCP/IP settings.

- 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.

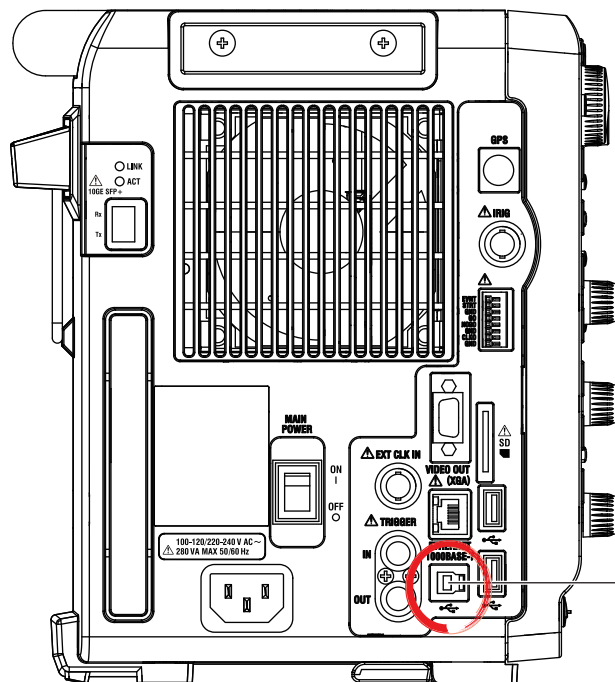
In local mode, remote mode (remote control using communication commands) is cleared, and key operation becomes possible.

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: Core i7-10700 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.

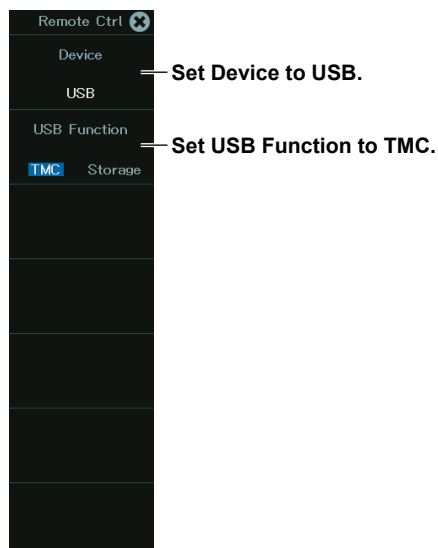
2.4 Configuring the Instrument's Settings (USB)

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.



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/yml/>
- Do not use USB drivers (or software) supplied by other companies.

3.1 Messages

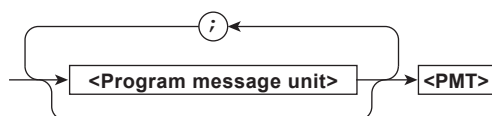
Messages

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.

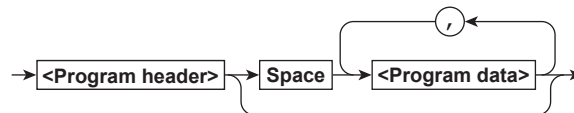
NL (new line): Same as LF (line feed). One ASCII code "0AH."

^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.

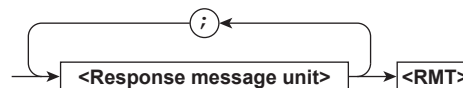
For details, see page 3-6.

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

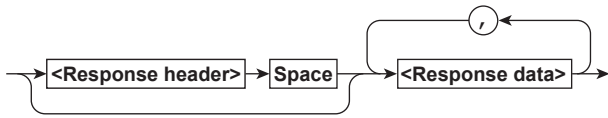
<RMT>

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

3.1 Messages

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 necessarily 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.

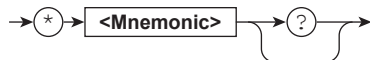
3.2 Commands

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

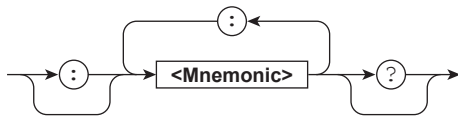
Commands that are defined in IEEE 488.2-1987 are called common commands. The common command header syntax is shown below. Be sure to include an asterisk (*) at the beginning of a common command.



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:RELEngth
: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>

3.2 Commands

- **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 :ACQure:MODE?<PMT>
        -> :ACQure: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 -> #800000010ABCDEFGHJ)

<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>	#800000010ABCDEFGHIJ
<Data byte sequence>	

- #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";:  
CHANnel1: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.

3.5 Synchronization with the Controller

- **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:
EES E #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:EES E #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.

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:RERecorder?	(Upper-level query) Queries all acquisition settings for recorder mode.	4-42
:ACQuire:RERecorder:CONDition	Sets or queries the acquisition condition in recorder mode.	4-43
:ACQuire:RERecorder:HOLD	Holds the waveform display in recorder mode.	4-43
:ACQuire:RERecorder:RESume	Resumes the waveform display in recorder mode.	4-43
:ACQuire:RERecorder:RLENgth	Sets or queries the external sampling record length in recorder mode.	4-43
:ACQuire:RERecorder:SINterval (Sampling Interval)	Sets or queries the sampling interval in recorder mode.	4-43
:ACQuire:RERecorder: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:DIT em?	(Upper-level query) Queries all analysis items settings of the harmonic analysis result display.	4-45
:ANALysis<x>:HARMonic:GRAPh:DIT em:HDF	Sets or queries whether percentage content (HDF) is displayed in the harmonic analysis result display.	4-45
:ANALysis<x>:HARMonic:GRAPh:DIT em:P	Sets or queries whether active power (P) is displayed in the harmonic analysis result display.	4-45
:ANALysis<x>:HARMonic:GRAPh:DIT em:PHI	Sets or queries whether phase angle (ϕ) is displayed in the harmonic analysis result display.	4-45
:ANALysis<x>:HARMonic:GRAPh:DIT em:RMS	Sets or queries whether rms values (RMS) is displayed in the harmonic analysis result display.	4-45
:ANALysis<x>:HARMonic:GRAPh:IZO om	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:LST art	Sets or queries whether list starting harmonic is displayed in the harmonic analysis result display (window settings).	4-46
:ANALysis<x>:HARMonic:GRAPh:MAX order	Sets or queries the maximum displayed harmonic in the harmonic analysis result display (window settings).	4-46
:ANALysis<x>:HARMonic:GRAPh:MO DE	Sets or queries the graph mode in the harmonic analysis result display (window settings).	4-46

4.1 Commands

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>:DSOutpu t? (Delta Star Output)	(Upper-level query) Queries all settings for delta-star transformation of power analysis.	4-52
:ANALysis<x1>:POWer<x2>:DSOutpu t:I1	Sets or queries the channel for outputting the I1 resulting from delta-star transformation of power analysis.	4-53
:ANALysis<x1>:POWer<x2>:DSOutpu t:I2	Sets or queries the channel for outputting the I2 resulting from delta-star transformation of power analysis.	4-53
:ANALysis<x1>:POWer<x2>:DSOutpu t:I3	Sets or queries the channel for outputting the I3 resulting from delta-star transformation of power analysis.	4-53
:ANALysis<x1>:POWer<x2>:DSOutpu t:IN	Sets or queries the channel for outputting the IN resulting from delta-star transformation of power analysis.	4-53
:ANALysis<x1>:POWer<x2>:DSOutpu t:U1	Sets or queries the channel for outputting the U1 resulting from delta-star transformation of power analysis.	4-54
:ANALysis<x1>:POWer<x2>:DSOutpu t:U2	Sets or queries the channel for outputting the U2 resulting from delta-star transformation of power analysis.	4-54
:ANALysis<x1>:POWer<x2>:DSOutpu t:U3	Sets or queries the channel for outputting the U3 resulting from delta-star transformation of power analysis.	4-54
:ANALysis<x1>:POWer<x2>:EFFicie ncy?	(Upper-level query) Queries all efficiency settings of power analysis (Wiring System1 or Wiring System2).	4-54
:ANALysis<x1>:POWer<x2>:EFFicie ncy:MODE	Sets or queries the efficiency mode of power analysis.	4-54
:ANALysis<x1>:POWer<x2>:EFFicie ncy:MOTor	Sets or queries the motor efficiency calculation method of power analysis.	4-55
:ANALysis<x1>:POWer<x2>:EFFicie ncy: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>:EFFicie ncy:SCALing	Sets or queries the scaling for the motor efficiency calculation (rotation angle mode) of power analysis.	4-55
:ANALysis<x1>:POWer<x2>:EFFicie ncy: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>:EFFicie ncy: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>:EFFicie ncy:TORQue	Sets or queries the torque source for the motor efficiency calculation of power analysis.	4-56
:ANALysis<x1>:POWer<x2>:INTegra tion?	(Upper-level query) Queries all integration settings of power analysis.	4-56
:ANALysis<x1>:POWer<x2>:INTegra tion:CALExecute	Calibrates the integration calculation of power analysis.	4-56
:ANALysis<x1>:POWer<x2>:INTegra tion:CONDition	Sets or queries the integration condition for the power analysis integration.	4-56
:ANALysis<x1>:POWer<x2>:INTegra tion:MRESet	Manually resets the integrated value of power analysis.	4-56
:ANALysis<x1>:POWer<x2>:INTegra tion:RCONDition	Sets or queries whether the integrated value is reset when the power analysis integration starts.	4-57
:ANALysis<x1>:POWer<x2>:INTegra tion:SCALing	Sets or queries the scaling for the power analysis integration.	4-57
:ANALysis<x1>:POWer<x2>:<Parame ter>?	(Upper-level query) Queries all power analysis settings.	4-57
:ANALysis<x1>:POWer<x2>:<Parame ter>:{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>:<Parame ter>:{PH1 PH2 PH3 SIGMa}:LABel	Sets or queries the label of an analysis item in power analysis.	4-57
:ANALysis<x1>:POWer<x2>:<Parame ter>:{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>:<Parame ter>:{PH1 PH2 PH3 SIGMa}:STATe	Sets or queries the on/off status of an analysis item in power analysis.	4-58

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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>:QFORmu la	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:AT IMer	Sets or queries the update time of the calculation period in power analysis.	4-60
:ANALysis<x1>:POWer<x2>:TERM:ES Filter	Sets or queries the edge source filter for the calculation period in power analysis.	4-61
:ANALysis<x1>:POWer<x2>:TERM:ES Lope	Sets or queries the source slope of the calculation period in power analysis.	4-61
:ANALysis<x1>:POWer<x2>:TERM:ES Ource	Sets or queries the edge detection source channel for the calculation period in power analysis.	4-61
:ANALysis<x1>:POWer<x2>:TERM:HY STeresis	Sets or queries the hysteresis for the calculation period in power analysis.	4-61
:ANALysis<x1>:POWer<x2>:TERM:LE Vel	Sets or queries the source level of the calculation period in power analysis.	4-61
:ANALysis<x1>:POWer<x2>:TERM:ST OPpredict	Sets or queries the stop prediction of the calculation period in power analysis.	4-62
:ANALysis<x1>:POWer<x2>:TERM:TY PE	Sets or queries the calculation period type in power analysis.	4-62
:ANALysis<x1>:POWer<x2>:TERM:OC Hannel (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:ZO SToppredict (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
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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		
: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>:FORM at	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

: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

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: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>:B COunt (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>:B ICount (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>:B LABel<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>:B ORDer (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>:F ACTor	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>:I NPut	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>:L ABel	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>:M FORmat	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>:M ID	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>:O FFSet	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>:P OSition	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>:S BIT (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>:S CALe	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>:U NIT	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>:V TYPe (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>:Z OOM	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:CELimina tion	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:HYSTeres is	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:THResho ld	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

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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:STOPprediction	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

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: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>:BITCount (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>:BITLabel<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>:BITOrder (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>:BITFactor	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>:BITID	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>:BITInput	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>:BITLabel	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>:BITOffsetSet	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>:BITPosition	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>:BITStart (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>:BITScale	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>:BITUnit	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>:BITValueType (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>:BITZoom	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:BMAppling	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 (Successive 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:MRSESet: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 (Successive 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:SRSESet (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:DISPPlaytype?	(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:DISPPlaytype: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:DISPPlaytype: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:DISPPlaytype: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:DECimal num	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]:VGAin	Sets or queries the gain adjustment of a voltage measurement module.	4-112
: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 Group

:COMMunicate?	(Upper-level query) Queries all communication settings.	4-115
:COMMunicate:HEADer	Sets or queries whether headers are attached to query responses.	4-115
:COMMunicate:LOCKout	Sets/clears local lockout.	4-115
:COMMunicate:OPSE	Sets or queries the overlap command that is used by the *OPC, *OPC?, and *WAI commands.	4-115
: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
:COMMunicate:VERBoSe	Sets or queries whether query responses are returned in full or abbreviated form.	4-115
:COMMunicate:WAIT	Waits for a specified extended event to occur.	4-115
:COMMunicate:WAIT?	Creates the response that is returned when a specified extended event occurs.	4-116

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 ΔF 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>:POSiti on	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 $\Delta Y/\Delta X$ of the H & V cursor on the T-Y display.	4-122
:CURSor[:TY]:HVERtical:DYDx:STATe	Sets or queries whether $\Delta Y/\Delta X$ between the H & V cursors on the T-Y display is displayed.	4-122
:CURSor[:TY]:HVERtical:DYDx:VALue?	Queries $\Delta Y/\Delta X$ between the H & V cursors on the T-Y display.	4-122

4.1 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>:POSiti on	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 $1/\Delta T$ value between the Y cursors on the T-Y display.	4-124
:CURSor[:TY]:VERTical:PERDt:STATe	Sets or queries whether the $1/\Delta T$ value between the V cursors on the T-Y display is displayed.	4-125
:CURSor[:TY]:VERTical:PERDt:VALue?	Queries the $1/\Delta T$ value between the V cursors on the T-Y display.	4-125
:CURSor[:TY]:VERTical:POSiti on<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>:STaTe	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>:VALue?	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>:STaTe	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>:VALue?	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 $\Delta X/\Delta Y$ of the H & V cursor on the X-Y display.	4-127
:CURSor:XY:HVERTical:DXDy:STaTe	Sets or queries whether $\Delta X/\Delta Y$ between the H & V cursors on the X-Y display is displayed.	4-127
:CURSor:XY:HVERTical:DXDy:VALue?	Queries the $\Delta X/\Delta Y$ 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 $\Delta Y/\Delta X$ of the H & V cursor on the X-Y display.	4-127
:CURSor:XY:HVERTical:DYDx:STaTe	Sets or queries whether $\Delta Y/\Delta X$ between the H & V cursors on the X-Y display is displayed.	4-127
:CURSor:XY:HVERTical:DYDx:VALue?	Queries $\Delta Y/\Delta X$ 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>:STaTe	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>:VALue?	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

4.1 Commands

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

: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

: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

: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:SENSiti vity	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:CSP an?	(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:LRIG ht?	(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:LRIGH t: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:EXPonenti al?	(Upper-level query) Queries all FFT exponential window settings.	4-138
:FFT:WINDow<x>:WINDow:EXPonenti al:DRATe	Sets or queries the FFT exponential window's damping rate.	4-138
:FFT:WINDow<x1>:WINDow:EXPonenti al: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

4.1 Commands

Command	Function	Page
FILE group		
: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 MEA Sure 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}:TINFormation	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

GO Nogo Group

: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

: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

Command	Function	Page
HCOPy Group		
: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

: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

: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

:INITialize:EXECute	Initializes the settings.	4-158
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LStart Group

:LStart (Log SStart)	Starts waveform acquisition immediately.	4-159
:LStart?	Starts waveform acquisition immediately, and waits for acquisition to complete.	4-159

MATH Group

: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> [:SC Hannel<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> [:SC Hannel<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> [:SCH annel<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

: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

Command	Function	Page
:MEASure:CHANnel<x1>:BIT<x2>:AR EA2: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>:AR EA2: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>:AR EA2: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>:AR EA2: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>:AR EA2: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>:AR EA2: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>:AR EA2: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>:AR EA2: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>:AR EA2: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>:AR EA2: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>:AR EA2: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>:AR EA2:DElay:VALue?	Queries the delay measurement result of bit area 2 of the specified channel.	4-167
:MEASure:CHANnel<x1>:BIT<x2>:CD ESTination	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>:CO PY	Copies the on/off setting of the specified bit of the specified channel to another specified channel.	4-167
:MEASure:CHANnel<x1>:BIT<x2>:DE Lay?	(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>:DE Lay:COUNT?	Queries the statistics count of the delay of the specified bit of the specified channel.	4-167
:MEASure:CHANnel<x1>:BIT<x2>:DE Lay:{MAXimum MEAN MINimum SDEv iation}?	Queries the statistical value of the delay of the specified bit of the specified channel.	4-167
:MEASure:CHANnel<x1>:BIT<x2>:DE Lay: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>:DE Lay: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>:DE Lay: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>:DE Lay: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>:DE Lay: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>:DE Lay: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>:DE Lay: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>:DE Lay: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>:DE Lay: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>:DE Lay: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>:DE Lay:VALue?	Queries the delay measurement result of the specified bit of the specified channel.	4-169
:MEASure:CHANnel<x1>:BIT<x2>:<P arameter>?	(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

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Command	Function	Page
:MEASure:CHANnel<x1>:BIT<x2>:<Parameter>:COUNT?	Queries the waveform parameter statistics count of the specified bit of the specified channel.	4-170
:MEASure:CHANnel<x1>:BIT<x2>:<Parameter>:{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>:<Parameter>: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>:<Parameter>:VALue?	Queries the measured waveform parameter value of the specified bit of the specified channel.	4-170
:MEASure:CHANnel<x1>:BIT<x2>:AREA2:<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>:AREA2:<Parameter>:COUNT?	Queries the waveform parameter statistics count of bit area 2 of the specified channel.	4-171
:MEASure:CHANnel<x1>:BIT<x2>:AREA2:<Parameter>:{MAXimum MEAN MINimum SDEVIation}?	Queries the waveform parameter statistics value of bit area 2 of the specified channel.	4-171
:MEASure:CHANnel<x1>:BIT<x2>:AREA2:<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>:AREA2:<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:COPI	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	Queries the statistics count of the delay between channels area 2.	4-172
:MEASure:{CHANnel<x1>[:SCHannel<x2>] MATH<x3>}:AREA2:DELAy:MAXimum MEAN MINimum SDEVIation}?	Queries a statistic of the delay between channels area 2.	4-172
:MEASure:{CHANnel<x1>[:SCHannel<x2>] MATH<x3>}:AREA2:DELAy:MEASure?	(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:MEASure: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:MEASure: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:REFERENCE?	(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:REFERENCE: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:REFERENCE: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:REFERENCE: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:REFERENCE: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:REFERENCE: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

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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

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

MONitor Group

: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

:MTRigger	Manually triggers the instrument.	4-189
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RECall Group

:RECall:SEtUp<x>:EXECute	Recalls setup data from an internal memory area.	4-190
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RMATh CHANnel Group

: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 B 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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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

Command	Function	Page
:CHANnel<x>:RMATH:IFILter:CFReq uency	Sets or queries the center frequency of the bandpass filter of the IIR filter operation.	4-199
:CHANnel<x>:RMATH:IFILter:CUTO ff	Sets or queries the cutoff frequency of the IIR filter operation.	4-199
:CHANnel<x>:RMATH:IFILter:INTer po	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:MRES et:EXECute (Manual Reset)	Manually resets the integrated value of the specified channel.	4-199
:CHANnel<x>:RMATH:INTEgral:OLIM it	Sets or queries the over limit value for integration.	4-200
:CHANnel<x>:RMATH:INTEgral:OVER ange	Sets or queries whether the integrated value is reset when an over limit occurs for the specified channel.	4-200
:CHANnel<x>:RMATH:INTEgral:SRES et (Start Reset)	Sets or queries whether the integrated value is reset when integration starts for the specified channel.	4-200
:CHANnel<x>:RMATH:INTEgral:ZRES et?	(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:ZRES et: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:ZRES et: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:ZRES et: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:DIFF erential	Sets or queries the differentiation on/off status of the specified channel's knocking filter.	4-201
:CHANnel<x>:RMATH:KNOckflt:ELEV el	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:MRE Set:EXECute	Manually resets the effective power integration of the specified channel.	4-202
:CHANnel<x>:RMATH:PINTEgral:OVE Range	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:SCA Le	Sets the reference time for the effective power integration of the specified channel.	4-202
:CHANnel<x>:RMATH:PINTEgral:SRE Set	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:EB IT	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:EH YSteresis	Sets or queries the effective power calculation period's detection hysteresis of the specified channel.	4-203
:CHANnel<x>:RMATH:POWER:TERM:EL EVeL	Sets or queries the effective power calculation period's detection level of the specified channel.	4-203
:CHANnel<x>:RMATH:POWER:TERM:ES LoPe	Sets or queries the effective power calculation period's detection slope of the specified channel.	4-203
:CHANnel<x>:RMATH:POWER:TERM:ES Ource	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:BLENGTH	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:CCONdition	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:HYSTeresis<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:MULTiply	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:PPRoate (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:PROTate	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:REVerse	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:RSOURce (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:RTIMing (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: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 not logic.	4-208
:CHANnel<x1>:RMATH:RANGle:TIMing<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:ZINVert	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:PHASE	Sets or queries the angle combination of 3 phase resolver operation.	4-208
:CHANnel<x>:RMATH:RESolver:OFFSet	Sets or queries the offset angle of resolver operation.	4-209
:CHANnel<x1>:RMATH:RESolver:SOURce<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:OVERRange	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

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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
:SEARCh:SElect? MAXimum	Queries the maximum save number, which is the number that is attached to the last position that the search retrieved.	4-215
: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

:SNAP	Takes a snapshot.	4-216
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SStart Group

: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

:StArt	Starts waveform acquisition.	4-218
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StATus Group

: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

:StOP	Stops waveform acquisition.	4-220
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StORe Group

: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

: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
:SYSTem:CLOCk:DATE	Sets or queries the date.	4-222
: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
:SYSTem:FLASh?	(Upper-level query) Queries all flash acquisition settings.	4-223
: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
:SYSTem:STORage:FORMAT:EXECute	Formats the specified storage device. This is an overlap command.	4-226
:SYSTem:SYNChronous:ABORt	Clears the multi-unit synchronization mode.	4-226
: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
:SYSTem:TSYNchro? (Time Synchronization)	(Upper-level query) Queries all time synchronization settings.	4-227

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Command	Function	Page
:SYSTem:TSYNchro:IEEE1588?	(Upper-level query) Queries all IEEE1588 settings.	4-227
:SYSTem:TSYNchro:IEEE1588:DMECh anism	Sets or queries the IEEE1588 delay mechanism.	4-227
:SYSTem:TSYNchro:IEEE1588:DNUMb er	Sets or queries the IEEE1588 domain number.	4-227
:SYSTem:TSYNchro:IEEE1588:LSECo nd	Sets or queries IEEE1588 leap second.	4-227
:SYSTem:TSYNchro:IEEE1588:MSOUr ce	Sets or queries the IEEE1588 master source.	4-227
:SYSTem:TSYNchro:IEEE1588:NLAY er	Sets or queries the IEEE1588 network layer.	4-227
:SYSTem:TSYNchro:IEEE1588:PRIor ity<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:MODulati on	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

: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

: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:CDIRecto ry	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:MO DE	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>[:CONDit ion]	Sets or queries the state of the specified channel for AND triggers.	4-232
:TRIGger:AND:CHANnel<x1>:SCHann el<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>:SCHann el<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>[:C ONDition]	Sets or queries the state of the specified channel of condition A.	4-233
:TRIGger:ATrigger:CHANnel<x1>:S CHannel<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>:S CHannel<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>[:C ONDition]	Sets or queries the state of the specified channel of condition B.	4-234
:TRIGger:BTRigger:CHANnel<x1>:S CHannel<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>:S CHannel<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>[:CONDit ion]	Sets or queries the state of the specified channel for EdgeOnA triggers.	4-235
:TRIGger:EOA:CHANnel<x1>:SCHann el<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>:SCHann el<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

4.1 Commands

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>:SC Hannel<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

: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

4.1 Commands

Command	Function	Page
XY group		
: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

: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

*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

4.1 Commands

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

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 2ⁿ 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 2ⁿ 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:RECOder:CONDition

Function Sets or queries the acquisition condition in recorder mode.

Syntax :ACQuire:RECOder:CONDition {START|STOP|STRigger}

Example :ACQuire:RECOder:CONDition?
:ACQUIRE:RECORDER:CONDITION START
:ACQUIRE:RECORDER:CONDITION?
-> :ACQUIRE:RECORDER:CONDITION START

Description Default value: STOP

:ACQuire:RECOder:HOLD

Function Holds the waveform display in recorder mode.

Syntax :ACQuire:RECOder:HOLD

Example :ACQUIRE:RECORDER:HOLD

:ACQuire:RECOder:RESume

Function Resumes the waveform display in recorder mode.

Syntax :ACQuire:RECOder:RESume

Example :ACQUIRE:RECORDER:RESUME

:ACQuire:RECOder:RLENgth

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

Syntax :ACQuire:RECOder:RLENgth {<NRf>}

Example :ACQUIRE:RECORDER:RLENGTH 1000000
:ACQUIRE:RECORDER:RLENGTH?
-> :ACQUIRE:RECORDER:RLENGTH 1000000

Description Default value: 10 000

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

**:ACQuire:RECOder:SINterval
(Sampling Interval)**

Function Sets or queries the sampling interval in recorder mode.

Syntax :ACQuire:RECOder:SINterval {<Time>}

Example :ACQUIRE:RECORDER:SINTERVAL 1us
:ACQUIRE:RECORDER:SINTERVAL?
-> :ACQUIRE:RECORDER:SINTERVAL 1us

Description Default value: 10us

:ACQuire:RECOder:TIME

Function Sets or queries the record time in recorder mode.

Syntax :ACQuire:RECOder:TIME {<Day>, <Hour>, <Minute>, <Second>}

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>}

Example :ACQUIRE:RLENGTH 10000
:ACQUIRE:RLENGTH?
-> :ACQUIRE:RLENGTH 10000

Description Default value: 10 000

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

:ACQuire:RTOut?

Function (Upper-level query) Queries all SSD recording settings.

Syntax :ACQuire:RTOut?

4.2 ACQuire Group

: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 {RECOder|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

4.3 ANALysis Group

: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:POSITi
on?
<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:UZOm

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:
UZOm {NRf}
:ANALysis<x>:HARMonic:GRAPH:UZOm?
<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		
THDlec	(Firmware version 3.2 and later)	
THDCsa	(Firmware version 3.2 and later)	
HDFlec	Same as THDlec	
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.

4.3 ANALysis Group

: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.

4.3 ANALysis Group

: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:ESFilter

- 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

4.3 ANALysis Group

:ANALysis<x>:HARMonic:POWer:TERM:HYS Teresis

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:ESO urce

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|
V3A3}, {OFF|P3W3_V3A3|DT_ST|ST_DT}
<x> = 2
First parameter: wiring system
Second parameter: delta math

Example :ANALYSIS2:HARMONIC:POWER:
WIRING P1W2,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

4.3 ANALysis Group

: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).

4.3 ANALysis Group

:ANALysis<x1>:POWER<x2>:EFFiciency:SScaling (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:TORQue

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

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)	

4.3 ANALysis Group

<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.

4.3 ANALysis Group

: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	<pre>: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</pre>
Example	<pre>:ANALYSIS1:POWER1:TERM: ESFILTER 128kHz :ANALYSIS1:POWER1:TERM:ESFILTER? -> :ANALYSIS1:POWER1:TERM: ESFILTER 128E+03</pre>
Description	<ul style="list-style-type: none"> 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	<pre>:ANALysis<x1>:POWER<x2>:TERM: ESLope {RISE FALL BISLope} :ANALysis<x1>:POWER<x2>:TERM:ESLope? <x1> = 1 <x2> = 1, 2</pre>
Example	<pre>:ANALYSIS1:POWER1:TERM:ESLOPE RISE :ANALYSIS1:POWER1:TERM:ESLOPE? -> :ANALYSIS1:POWER1:TERM: ESLOPE RISE</pre>
Description	<ul style="list-style-type: none"> 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	<pre>: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</pre>
Example	<pre>:ANALYSIS1:POWER1:TERM:ESOURCE U1 :ANALYSIS1:POWER1:TERM:ESOURCE? -> :ANALYSIS1:POWER1:TERM:ESOURCE U1</pre>
Description	<ul style="list-style-type: none"> 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	<pre>:ANALysis<x1>:POWER<x2>:TERM: HYSTeresis {HIGH LOW MIDDLE} :ANALysis<x1>:POWER<x2>:TERM: HYSTeresis? <x1> = 1 <x2> = 1, 2</pre>
Example	<pre>:ANALYSIS1:POWER1:TERM: HYSTERESIS MIDDLE :ANALYSIS1:POWER1:TERM:HYSTERESIS? -> :ANALYSIS1:POWER1:TERM: HYSTERESIS MIDDLE</pre>
Description	<ul style="list-style-type: none"> 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	<pre>:ANALysis<x1>:POWER<x2>:TERM: LEVel {<NRf>} :ANALysis<x1>:POWER<x2>:TERM:LEVel? <x1> = 1 <x2> = 1, 2</pre>
Example	<pre>:ANALYSIS1:POWER1:TERM:LEVEL 0 :ANALYSIS1:POWER1:TERM:LEVEL? -> :ANALYSIS1:POWER1:TERM:LEVEL 0.0</pre>
Description	<ul style="list-style-type: none"> This command is valid when the /G05 option is installed. Default value: 0.0

:ANALysis<x1>:POWER<x2>:TERM:STOPpredict

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:OCHannel (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:ZOSToppredict

(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?

4.6 CAPTure Group

:CAPTure:ACTion:SAVE:ANAMing

Function Sets or queries the auto file naming method.

Syntax :CAPTure:ACTion:SAVE:ANAMing {DATE|NUMBERing}

Example :CAPTure:ACTion:SAVE:ANAMing?
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>}

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>

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>}

Example :CAPTure:ACTion:SAVE:ASCIi:MODE?
:CAPTure:ACTion:SAVE:ASCIi:MODE 1
-> :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>}

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>}

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>}

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>}

Example :CAPTure:ACTion:SAVE:DAScii:MODE?
: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>}

Example :CAPTure:ACTion:SAVE:DMATlab:MODE?
: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

4.6 CAPTure Group

: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

4.6 CAPTure Group

: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

4.7 CHANnel Group

: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 CANFDMESAGE
:CHANNEL13:CAN:OSOUT:MTYPE?
-> :CHANNEL13:CAN:OSOUT:
MTYPE CANFDMESAGE

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

4.7 CHANnel Group

: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:ONLY ON
:CHANNEL13:CAN:PORT:ONLY?
-> :CHANNEL13:CAN:PORT:ONLY 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

4.7 CHANnel Group

: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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: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:CHANNEL1:MID "7FF"
:CHANNEL13:CAN:CHANNEL1:MID?
-> :CHANNEL1:CAN:CHANNEL1: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:CHANNEL1:OFFSET 5E15
:CHANNEL13:CAN:CHANNEL1:OFFSET?
-> :CHANNEL13:CAN:CHANNEL1:
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>:POSiti on

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:CHANNEL1:POSITION 1
:CHANNEL13:CAN:CHANNEL1:POSITION?
-> :CHANNEL13:CAN:CHANNEL1:
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:CHANNEL1:SBIT 10
:CHANNEL13:CAN:CHANNEL1:SBIT?
-> :CHANNEL13:CAN:CHANNEL1: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

4.7 CHANnel Group

: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:
CELIMITATION 0.000
:CHANNEL1:FREQ:INPUT:
CELIMITATION?
-> :CHANNEL1:FREQ:INPUT:
CELIMITATION 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

4.7 CHANnel Group

: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:PAVera ge?

Function (Upper-level query) Queries all frequency module pulse average settings.

Syntax :CHANnel<x>:FREQ:SETup:FILTer:
PAverage?

:CHANnel<x>:FREQ:SETup:FILTer:PAVera ge: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:PAVera ge: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:SMOoth ing?

Function (Upper-level query) Queries all frequency module smoothing settings.

Syntax :CHANnel<x>:FREQ:SETup:FILTer:
SMOothing?

:CHANnel<x>:FREQ:SETup:FILTer:SMOoth ing: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:SMOoth ing: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

4.7 CHANnel Group

: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

4.7 CHANnel Group

: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>:BICou nt (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:CHANNEL1:
BORDER LITTLE
:CHANNEL14:LIN:CHANNEL1:BORDER?
-> :CHANNEL14:LIN:CHANNEL1:
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:CHANNEL1:FACTOR 1.0
:CHANNEL14:LIN:CHANNEL1:FACTOR?
-> :CHANNEL14:LIN:CHANNEL1:
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:CHANNEL1:ID "10"
:CHANNEL14:LIN:CHANNEL1:ID?
-> :CHANNEL14:LIN:CHANNEL1: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:CHANNEL1:INPUT ON
:CHANNEL14:LIN:CHANNEL1:INPUT?
-> :CHANNEL14:LIN:CHANNEL1: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:CHANNEL1:
LABEL "CH14_1"
:CHANNEL14:LIN:CHANNEL1:LABEL?
-> :CHANNEL14:LIN:CHANNEL1:
LABEL "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:CHANNEL1:OFFSET 1.0
:CHANNEL14:LIN:CHANNEL1:OFFSET?
-> :CHANNEL14:LIN:CHANNEL1:
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

4.7 CHANnel Group

:CHANnel<x1>:LIN:SCHannel<x2>:POSiti on

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 (:CHANnel<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 (:CHANnel<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

4.7 CHANnel Group

: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:SCPulse (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:NVALue (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

4.7 CHANnel Group

: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 (Successive 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?

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
(Successive 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?

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>:BICou
nt (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

4.7 CHANnel Group

: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|ERRigger|ERCount}

FACHannel:	Fast Channel
SLCHannel:	Slow Channel
SCALibration:	Status and

Calibration

ERRigger:	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:	ERRigger
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

4.7 CHANnel Group

: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:BALance: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?

4.7 CHANnel Group

: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|P2X|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 μ STR)

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
 μ STR)
-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

4.7 CHANnel Group

: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

4.7 CHANnel Group

: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	<ul style="list-style-type: none"> 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

4.7 CHANnel Group

: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

4.7 CHANnel Group

: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

4.7 CHANnel Group

**: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

4.7 CHANnel Group

: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:CHANNEL2:PROBE 10
:CHANNEL1:VOLTAGE:CHANNEL2:PROBE?
-> :CHANNEL1:VOLTAGE:CHANNEL2:
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**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**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

4.7 CHANnel Group

: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

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

4.9 COMMunicate Group

: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

4.10 CURSor Group

: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

4.10 CURSor Group

: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 1.0000000000000

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 -1.0000000000000

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 that 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

4.10 CURSor Group

: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 $\Delta Y/\Delta X$ 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 $\Delta Y/\Delta X$ 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 $\Delta Y/\Delta X$ 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

4.10 CURSor Group

: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|HORIZONTAL|
: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 3.000000E-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 $1/\Delta T$ 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/ΔT 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/ΔT 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

4.10 CURSor Group

: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 that 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 $\Delta X/\Delta Y$ 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 $\Delta X/\Delta Y$ 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 $\Delta X/\Delta Y$ 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 $\Delta Y/\Delta X$ 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 $\Delta Y/\Delta X$ 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 $\Delta Y/\Delta X$ 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)

4.10 CURSor Group

: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 2ⁿ 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

4.11 DISPlay Group

: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

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

4.11 DISPlay Group

: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

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

4.13 FFT Group

: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

4.13 FFT Group

: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 -5.0000000000000

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"

4.14 FILE Group

: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

4.14 FILE Group

:FILE:SAVE:{ASCIi|BINary|MATLab|DASCIi|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}:HISTory

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|DASCIi|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|DASCIi|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}:TINFormation

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 {<Boolean>}
: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.

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.

4.15 GONogo Group

: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>}

Example :GONOGO:ACTion:SAVE:ASCIi:MODE?
: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>}

Example :GONOGO:ACTion:SAVE:BINArY:MODE?
: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>}

Example :GONOGO:ACTion:SAVE:MATLab:MODE?
: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>}

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

4.15 GONogo Group

: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"

4.16 GPS Group

: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?

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?

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).

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: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 -5.0000000000000,
5.0000000000000

: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 "-----."

4.18 HISTory Group

: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 SStart)

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> = \pm (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.

4.22 MATH Group

: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 GAUSSs parameter when the band is set to LPASS.
• Default value: LPASS

: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) \pm (T/Div \times 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"

4.23 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|SDEviati on}?

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|SDEviati on}?
 <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

4.23 MEASure Group

: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?

4.23 MEASure Group

: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.

4.23 MEASure Group

: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}

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:CHANNEL1:ALL ON

Description For channels that have sub channels, use the :MEAS:CHAN:SCH:ALL command.

4.23 MEASure Group

**: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:COU

Nt

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

4.23 MEASure Group

:MEASure: {CHANnel<x1>[:SCHannel<x2>]|MATH<x3>}:AREA2:DElay:REfereNce:SOU
Rce

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:TRA
Ce

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: COUNT?**

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

4.23 MEASure Group

: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:{CHANnel<x>[:SCHannel<x>]|MATH<x>}:DElay:REFERENCE: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
```

4.23 MEASure Group

: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 \pm 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

4.23 MEASure Group

: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>:{MAXimu
m|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?

4.23 MEASure Group

: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

4.23 MEASure Group

:MEASure: {XY<x>} :<Parameter>:VALue?

Function	Queries the measured value of a waveform parameter.
Syntax	<pre>:MEASure: {XY<x>} :<Parameter>: VALue? {<NRf>} <x> = 1 to 8 <Parameter> = {XY1Integ XY2Integ} <NRf> = 1 to 64000</pre>
Description	<ul style="list-style-type: none">• 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	<pre>:MEASure: {XY<x>} :AREA2? <x> = 1 to 8</pre>

:MEASure: {XY<x>} :AREA2:<Parameter>?

Function	Queries the setting of a waveform area 2 parameter (measurement item).
Syntax	<pre>:MEASure: {XY<x>} :AREA2:<Parameter>? <x> = 1 to 8 <Parameter> = {XY1Integ XY2Integ}</pre>

:MEASure: {XY<x>} :AREA2:<Parameter>:COUNT?

Function	Queries the count of measured values for cyclic statistical processing of a waveform area 2 parameter.
Syntax	<pre>:MEASure: {XY<x>} :AREA2: <Parameter>:COUNT? <x> = 1 to 8 <Parameter> = {XY1Integ XY2Integ}</pre>
Example	<pre>:MEASURE:XY1:AREA2:XY1INTEG:COUNT? -> :MEASURE:XY1:AREA2:XY1INTEG: COUNT 1</pre>

:MEASure: {XY<x>} :AREA2:<Parameter>:{MAXimum|MEAN|MINimum|SDEViation}?

Function	Queries a cyclic statistical processing value of a waveform area 2 parameter.
Syntax	<pre>:MEASure: {XY<x>} :AREA2:<Parameter>: {MAXimum MEAN MINimum SDEViation}? <x> = 1 to 8 <Parameter> = {XY1Integ XY2Integ}</pre>
Example	<pre>:MEASURE:XY1:AREA2:XY1INTEG:MAXIMUM? -> :MEASURE:XY1:AREA2:XY1INTEG: MAXIMUM NAN</pre>
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	<pre>:MEASure: {XY<x>} :AREA2:<Parameter>: STATe {<Boolean>} :MEASure: {XY<x>} :AREA2:<Parameter>: STATe? <x> = 1 to 8 <Parameter> = {XY1Integ XY2Integ}</pre>
Example	<pre>:MEASURE:XY1:AREA2:XY1INTEG:STATE ON :MEASURE:XY1:AREA2:XY1INTEG:STATE? -> :MEASURE:XY1:AREA2:XY1INTEG: STATE 1</pre>

**:MEASure:{XY<x>}:AREA2:<Parameter>:V
ALue?**

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.

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.

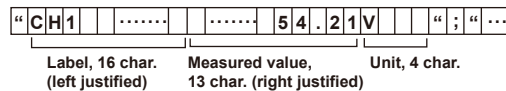
Syntax :MONitor:ASENd?

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



: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>[:SCHannel<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>[:SCHannel<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.

4.24 MONitor Group

: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

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.

4.27 RMATH CHANNEL Group

: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 GAUSSs, 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 GAUSSs, 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 GAUSSs, 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

4.27 RMATH CHANNEL Group

: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

4.27 RMATH CHANNEL Group

: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:EXEC ute (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

4.27 RMATH CHANNEL Group

: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.

4.27 RMATH CHANNEL Group

: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. Querying is possible only on RMATH channels set to DSOutput.

4.27 RMATH CHANNEL Group

: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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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.

4.27 RMATH CHANNEL Group

: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

4.27 RMATH CHANNEL Group

: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 2 π)
RAD3: Radians (–2 π to +2 π)

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

4.27 RMATH CHANnel Group

: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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> This command is valid when the /G03 option is installed. Default value: LOW

4.27 RMATH CHANnel Group

: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:RSPeet:SCALE

Function Sets or queries the scale for rotary speed calculation.

Syntax :CHANnel<x>:RMATH:RSPeet:
SCALE {HZ|RPM|USERdefine}
:CHANnel<x>:RMATH:RSPeet:SCALE?
<x> = 17 to 32

Example :CHANNEL17:RMATH:RSPeet:SCALE HZ
:CHANNEL17:RMATH:RSPeet:SCALE?
-> :CHANNEL17:RMATH:RSPeet:SCALE HZ

Description • This command is valid when the /G03 or /G05 option is installed.
• Default value: HZ

4.27 RMATH CHANnel Group

: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.

4.28 SEARCh Group

: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>}
: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

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:EES

Function Sets or queries the extended event enable register.

Syntax :STATus:EES <Register>

:STATus:EES?

<Register> = 0 to 65535

Example :STATUS:EES #B00000000

:STATUS:EES? -> :STATUS:EES 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?
-> :SYSTEM: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.

4.35 SYSTem Group

: 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

4.35 SYSTem Group

: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.

4.35 SYSTem Group

: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[:MODE]?
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

4.37 TRIGger Group

: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:CHANNEL1:BIT1 LOW
:TRIGGER:AND:CHANNEL1:CHANNEL1:BIT1?
-> :TRIGGER:AND:CHANNEL1:CHANNEL1: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:CHANNEL1:
CONDITION HIGH
:TRIGGER:AND:CHANNEL15:CHANNEL1:
CONDITION?
-> :TRIGGER:AND:CHANNEL15:CHANNEL1:
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?

4.37 TRIGger Group

: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:BLTime:TIME {<Time>}
:TRIGger:BLTime: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>[:CONDition]

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>:SCHann
el<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>:
SCHann el<x2>:BIT<x3> {DONTcare|HIGH|
LOW}
:TRIGger:BTRigger:CHANnel<x1>:
SCHann el<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>:SCHann
el<x2>[:CONDition]**

Function Sets or queries the state of the specified sub channel of condition B.

Syntax :TRIGger:BTRigger:CHANnel<x1>
:SCHann el<x2>[:CONDition] {DONTcare|
HIGH|LOW}
:TRIGger:BTRigger:CHANnel<x1>
:SCHann el<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

4.37 TRIGger Group

: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:CHANNEL1:
BIT1 RISE
:TRIGGER:EOA:CHANNEL15:CHANNEL1:
BIT1?
-> :TRIGGER:EOA:CHANNEL15:CHANNEL1:
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:CHANNEL1:
CONDITION RISE
:TRIGGER:EOA:CHANNEL15:CHANNEL1:
CONDITION?
-> :TRIGGER:EOA:CHANNEL15:CHANNEL1:
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:TIME

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:CHANNEL1:CONDITION RISE
:TRIGGER:OR:CHANNEL15:CHANNEL1:CONDITION?
-> :TRIGGER:OR:CHANNEL15:CHANNEL1: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

4.37 TRIGger Group

: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 \pm 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:CHANNEL1:
CENTER 1
:TRIGGER:SOURCE:CHANNEL15:CHANNEL1:
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:CHANNEL1:
HYSTERESIS HIGH
:TRIGGER:SOURCE:CHANNEL15:CHANNEL1:
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:CHANNEL1:
LEVEL 1
:TRIGGER:SOURCE:CHANNEL15:CHANNEL1:
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:CHANNEL1:
WIDTH 2
:TRIGGER:SOURCE:CHANNEL15:CHANNEL1:
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?

4.37 TRIGger Group

: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:TIme?

Function (Upper-level query) Queries all time trigger settings.

Syntax :TRIGger:TIme?

: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}

Example :TRIGger:TYPE?
:TRIGGER:TYPE SIMPLE
-> :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>:SCHannel1<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

4.37 TRIGger Group

: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

4.38 WAVEform Group

: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:
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
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

4.38 WAVEform Group

:WAVEform:SEND?

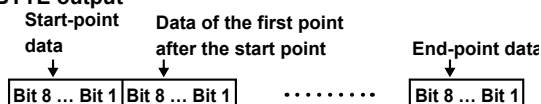
Function	Queries the waveform data specified by the :WAVEform:TRACe command (main waveform data, raw data).
----------	--

Syntax :WAVeform:SEND?

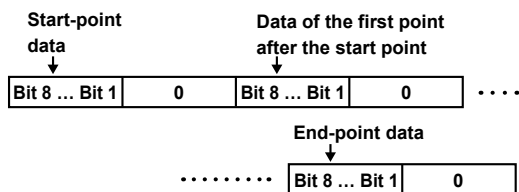
```
Example • BYTE, WORD, SREal, QWORD output (block
        data format response)
        :WAVeform:SEND?
        -> #? (?-digit number of bytes; data
        byte sequence)
        • ASCII output
        :WAVeform:SEND?
        -> <NRf>,<NRf>,<NRf>...
```

- 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.

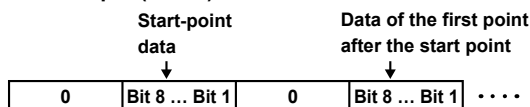
BYTE output



WORD output (LSBF)



WORD output (MSBF)



- 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

$$\text{Physical value} = (\text{Range} \times \text{data} \times 10) / \text{Division} + \text{Offset}$$

	BYTE	WORD/DWORD
Division	93.75	24000

For Strain Modules

$$\text{Physical value} = (\text{Range} \times \text{data} \times 10) / \text{Division} + \text{Offset}$$

	BYTE	WORD/DWORD
Division	187.5	48000

For Temperature Modules

$$\text{Physical value} = \text{Data} \times \text{Division}$$

	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."

4.39 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:TCLLEAR ON
:XY:TCLLEAR? -> :XY:TCLLEAR 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

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 2.00000000000000

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

4.40 ZOOM Group

: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.

4.41 Common Command Group

*OPT?

Function Queries the installed options.

Syntax *OPT?

Example *OPT? -> 1Gpts,ST1,ST2,C35,C40,C50,C60,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

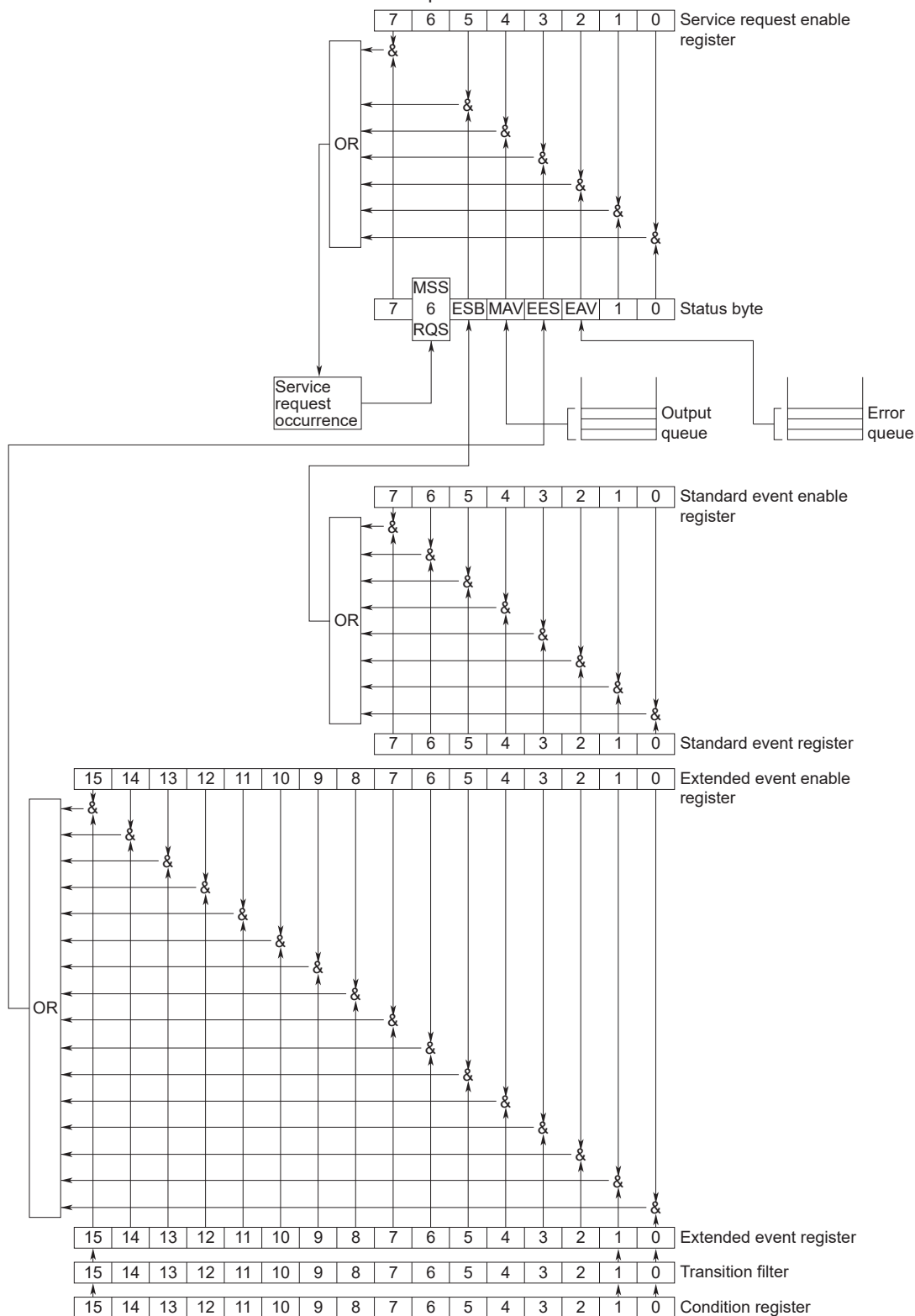
Description • For details on how to use the *WAI command to synchronize the DL850, see page 3-8.

- 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.



5.1 About Status Reports

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



- **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. For details, 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.

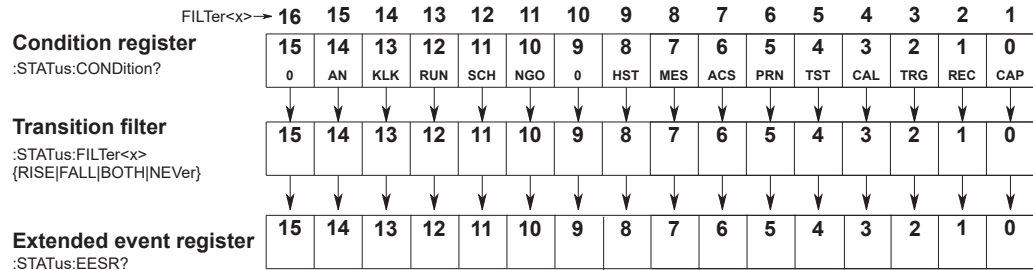
Clearing the Standard Event Register

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.



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.

5.5 Output and Error Queues

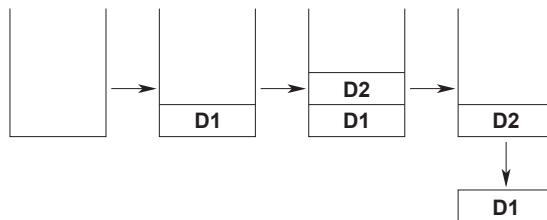
Output Queue

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.

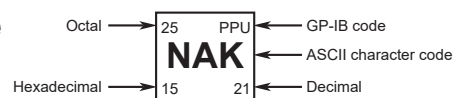
You can determine whether or not the error queue is empty by checking bit 2 (EAV) in the status byte.

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	20 DEL	40 SP	60 0	100 @	120 P	140 '	160 p
1	1 SOH	21 DC1	41 !	61 1	101 A	121 Q	141 a	161 q
2	2 STX	22 DC2	42 "	62 2	102 B	122 R	142 b	162 r
3	3 ETX	23 DC3	43 #	63 3	103 C	123 S	143 c	163 s
4	4 EOT	24 DC4	44 \$	64 4	104 D	124 T	144 d	164 t
5	5 ENQ	25 NAK	45 %	65 5	105 E	125 U	145 e	165 u
6	6 ACK	26 SYN	46 &	66 6	106 F	126 V	146 f	166 v
7	7 BEL	27 ETB	47 ,	67 7	107 G	127 W	147 g	167 w
8	10 BS	30 CAN	50 (70 8	110 H	130 X	150 h	170 x
9	11 HT	31 EM	51)	71 9	111 I	131 Y	151 i	171 y
A	12 LF	32 SUB	52 *	72 :	112 J	132 Z	152 j	172 z
B	13 VT	33 ESC	53 +	73 ;	113 K	133 [153 k	173 {
C	14 FF	34 FS	54 ,	74 <	114 L	134 \ I	154 l	174
D	15 CR	35 GS	55 -	75 =	115 M	135] m	155 M	175 }
E	16 SO	36 RS	56 .	76 >	116 N	136 ^	156 n	176 ~
F	17 SI	37 US	57 /	77 ?	117 O	137 _	157 o	177 DEL (RUBOUT)
	Address command	Universal command	Listener address		Talker address		Secondary command	

Example



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
 - System errors (communication) 300, 399
 - Other errors 350

} Listed below

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.

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