



# 产 品 手 册

仪器型号： 固纬示波器GDS-2000E编程指令手册

西安安泰测试科技有限公司

仪器维修|租赁|销售|测试

# Digital Storage Oscilloscope

GDS-2000E Series

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## PROGRAMMING MANUAL

GW INSTEK PART NO. Version 1.03, June 2015



ISO-9001 CERTIFIED MANUFACTURER

**GW INSTEK**

June 2015

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# INTERFACE OVERVIEW

This manual describes how to use the GDS-2000E’s remote command functionality and lists the command details. The Overview chapter describes how to configure the GDS-2000E USB and Ethernet remote control interface.

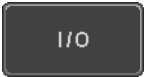
## Interface Configuration

### Configure USB Interface

|                   |                          |                                   |
|-------------------|--------------------------|-----------------------------------|
| USB Configuration | PC side connector        | Type A, host                      |
|                   | GDS-2000E side connector | Type B, device                    |
|                   | Speed                    | 1.1/2.0                           |
|                   | USB Class                | CDC (communications device class) |

Panel Operation

1. Press the Utility key.
2. Press *I/O* from the bottom menu.
3. Press *USB Device Port* from the side menu and select *Computer*.
4. Connect the USB cable to the rear panel device port.



- When the PC asks for the USB driver, select the USB driver included on the accompanying User Manual CD or download the driver from the GW Instek website, [www.gwinstek.com](http://www.gwinstek.com), in the GDS-2000E Download section. The driver automatically sets the GDS-2000E as a serial COM port (Shown as VPO in the PORTS node).

## USB Functionality Check

### Terminal Application

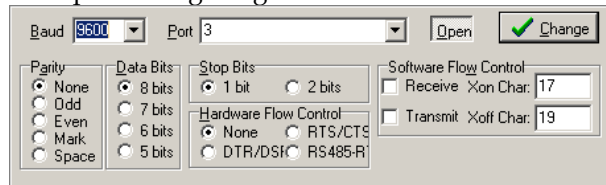
Invoke a terminal application such as RealTerm.

Set the COM port, baud rate, stop bit, data bit, and parity accordingly.

To check the COM port number and associated port settings, see the Device Manager in the PC. For Windows 7:

*Control panel → Hardware and Sound → Device Manager*

Example: Configuring RealTerm:



### Functionality Check

Key in this query command via the terminal application.

`*idn?`

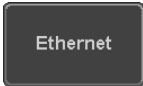
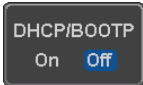
This should return the Manufacturer, Model number, Serial number, and Firmware version in the following format.

*GW,GDS-2202E,PXXXXXX,V1.00*

## Configure the Ethernet Interface

|                        |                       |                      |
|------------------------|-----------------------|----------------------|
| Ethernet Configuration | MAC Address           | Domain Name          |
|                        | Instrument Name       | DNS IP Address       |
|                        | User Password         | Gateway IP Address   |
|                        | Instrument IP Address | Subnet Mask          |
|                        |                       | HTTP Port 80 (fixed) |

|            |                                                                                                                                                  |
|------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| Background | The Ethernet interface is used for remote control using a socket server connection. For details, please see the Socket Server section on page 9. |
|------------|--------------------------------------------------------------------------------------------------------------------------------------------------|

|                 |                                                                         |                                                                                     |
|-----------------|-------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Panel Operation | 1. Connect the Ethernet cable to the LAN port on the rear panel.        |    |
|                 | 2. Press the <i>Utility</i> key.                                        |    |
|                 | 3. Press <i>I/O</i> from the bottom menu.                               |    |
|                 | 4. Press <i>Ethernet</i> from the side menu.                            |    |
|                 | 5. Set <i>DHCP/BOOTP</i> to <i>On</i> or <i>Off</i> from the side menu. |  |



Note

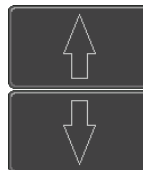
IP addresses will automatically be assigned with DHCP/BOOTP set to on. For Static IP Addresses, DHCP/BOOTP should be set to off.

|                         |                   |
|-------------------------|-------------------|
| MAC Address :           | 00:08:21:21:72:73 |
| Instrument Name :       | Steve             |
| User Password :         | dso               |
| Instrument IP Address : | 172.16.5.56       |
| Domain Name :           |                   |
| DNS IP Address :        |                   |
| Gateway IP Address :    | 172.16.0.254      |
| Subnet Mask :           | 255.255.0.0       |
| HTTP Port :             | 80                |

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z  
 a b c d e f g h i j k l m n o p q r s t u v w x y z  
 . 0 1 2 3 4 5 6 7 8 9 \_ -

1. Use the variable knob to select a character.  
 2. Press Select to enter the character.

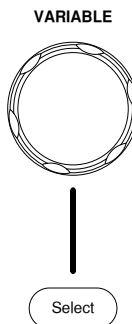
6. Use the *Up* and *Down* arrows on the side menu to navigate to each Ethernet configuration item.



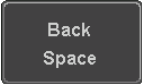
Items      MAC Address, Instrument Name, User Password, Instrument IP Address, Domain Name, DNS IP Address, Gateway IP Address, Subnet Mask

Note: HTTP Port is fixed at 80.

7. Use the *Variable* knob to highlight a character and use the *Select* key to choose a character.



Press *Backspace* to delete a character.


 A dark gray rectangular button with the text "Back Space" in white.

Press *Save Now* to save the configuration. Complete will be displayed when successful.


 A dark gray rectangular button with the text "Save Now" in white.

## Configure Socket Server

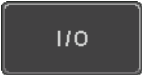
The GDS-2000E supports socket server functionality for direct two-way communication with a client PC or device over LAN. By default, the Socket Server is off.

Configure Socket Server 1. Configure the IP address for the GDS-2000E. Page 7

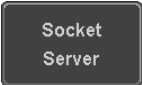
2. Press the *Utility* key.


 A dark gray rounded rectangular button with the text "Utility" in white.

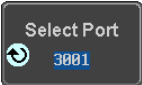
3. Press *I/O* from the bottom menu.


 A dark gray rectangular button with the text "I/O" in white.

4. Press *Socket Server* from the side menu.


 A dark gray rectangular button with the text "Socket Server" in white.

5. Press *Select Port* and choose the port number with the Variable knob.


 A dark gray rectangular button with the text "Select Port" in white and a green circular icon with a white arrow.

Range 1024~65535

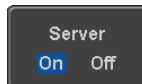
6. Press *Set Port* to confirm the port number.


 A dark gray rectangular button with the text "Set Port" in white.

7. The Current Port icon will update to the new port number.


 A dark gray rectangular button with the text "Current Port" in white and a white oval icon containing the number "3001".

8. Press *Server* and turn the socket server On.



## Socket Server Functionality Check

---

NI Measurement and Automation Explorer To test the socket server functionality, National Instruments Measurement and Automation Explorer can be used. This program is available on the NI website, [www.ni.com](http://www.ni.com).

---

### Operation

1. Configure the IP address for the GDS-2000E. Page 7
2. Configure the socket port. Page 9
3. Start the NI Measurement and Automation Explorer (MAX) program. Using Windows, press:



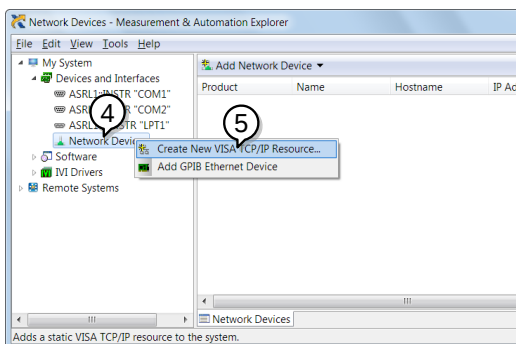
*Start>All Programs>National Instruments>Measurement & Automation*



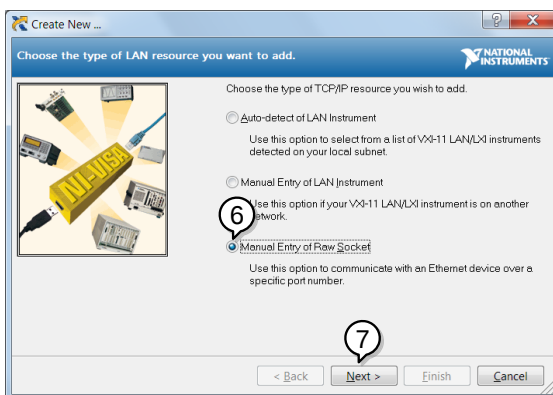
4. From the Configuration panel access;

*My System>Devices and Interfaces>Network Devices*

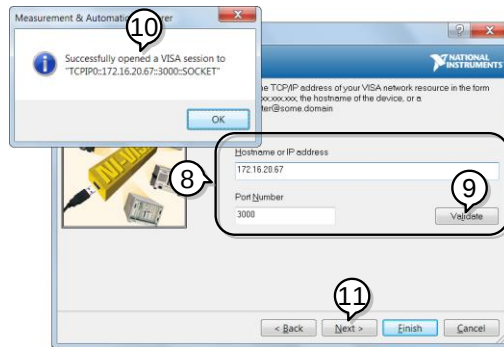
5. Right click *Network Devices* and select *Create New Visa TCP/IP Resource...*



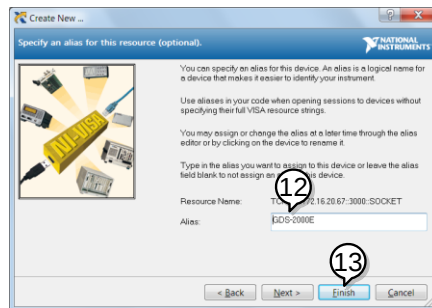
6. Select *Manual Entry of Raw Socket* from the popup window.
7. Click *Next*.



8. Enter the GDS-2000E's IP address and socket port number.
9. Click *Validate*.
10. A popup will appear to tell you if a VISA socket session was successfully created.
11. Click *Next*.



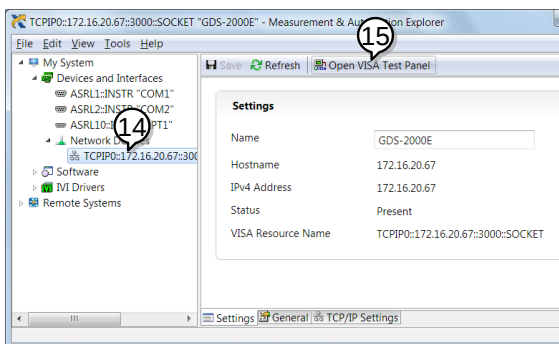
12. Choose an alias for the socket connection if you like.
13. Click *Finish* to finish the configuration.



14. The GDS-2000E will now appear under Network Devices in the Configuration Panel.

Functionality  
Check

15. Click the *Open Visa Test Panel* to send a remote command to the GDS-2000E.

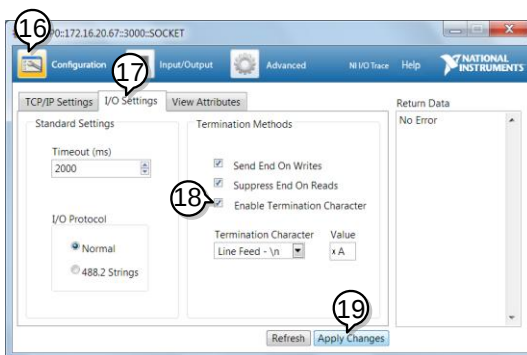


16. Click on the *Configuration* icon.

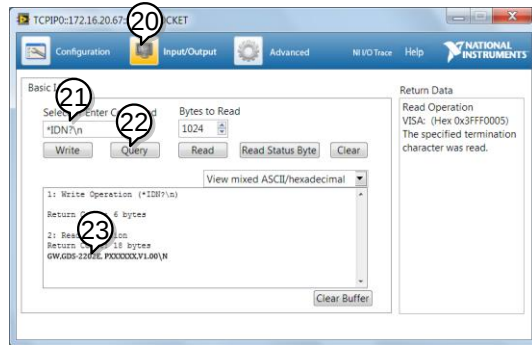
17. Select the *I/O Settings* tab.

18. Mark the *Enable Termination Character* checkbox.  
Make sure the termination character is a line feed (/n, value: xA).

19. Click *Apply Changes*.



20. Click the *Input/Output* icon.
21. Make sure *\*IDN?* query is selected in the *Select or Enter Command* drop box.
22. Click on *Query*.
23. The manufacturer, model number, serial number and firmware version will be displayed in the buffer. For example:  
GW,GDS-2202E,PXXXXXX,V1.00



# COMMAND OVERVIEW

The Command overview chapter lists all GDS-2000E commands in functional order as well as alphabetical order. The command syntax section shows you the basic syntax rules you have to apply when using commands.

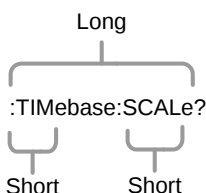
## Command Syntax

Compatible  
standard

- USB CDC\_ACM compatible
- SCPI, 1994 (partially compatible)

Command forms

Commands and queries have two different forms, long and short. The command syntax is written with the short form of the command in capitals and the remainder (long form) in lower case.



The commands can be written in capitals or lower-case, just so long as the short or long forms are complete. An incomplete command will not be recognized.

Below are examples of correctly written commands.

---

LONG :TIMEbase:SCALE? :TIMEBASE:SCALE?  
:timebase:scale?

---

| SHORT :TIM:SCAL?   |                                  | :TIM:SCAL?                      |                 |
|--------------------|----------------------------------|---------------------------------|-----------------|
| Command format     | :TIMEbase:SCALE <NR3>LF          |                                 |                 |
|                    | 1: command header                |                                 |                 |
|                    | 2: single space                  |                                 |                 |
|                    | 3: parameter                     |                                 |                 |
|                    | 4: message terminator            |                                 |                 |
| Parameter          | Type                             | Description                     | Example         |
|                    | <Boolean>                        | boolean logic                   | 0, 1            |
|                    | <NR1>                            | Integers                        | 0, 1, 2, 3      |
|                    | <NR2>                            | floating point                  | 0.1, 3.14, 8.5  |
|                    | <NR3>                            | floating point with an exponent | 4.5e-1, 8.25e+1 |
|                    | <NRf>                            | any of NR1, 2, 3                | 1, 1.5, 4.5e-1  |
| Message terminator | LF                               | line feed code                  |                 |
| Note               | Commands are non-case sensitive. |                                 |                 |

## List of Commands in Functional Order

---

|             |                           |    |
|-------------|---------------------------|----|
| Common      | *IDN?                     | 32 |
|             | *LRN?                     | 32 |
|             | *SAV                      | 33 |
|             | *RCL                      | 33 |
|             | *RST                      | 34 |
|             | *CLS                      | 34 |
|             | *ESE                      | 34 |
|             | *ESR                      | 35 |
|             | *OPC                      | 35 |
|             | *SRE                      | 36 |
|             | *STB                      | 36 |
| Acquisition | :ACQuire:AVERage          | 38 |
|             | :ACQuire:MODE             | 39 |
|             | :ACQuire<X>:MEMory?       | 39 |
|             | :ACQuire:FILTer:SOURce    | 41 |
|             | :ACQuire:FILTer           | 42 |
|             | :ACQuire:FILTer:FREQuency | 42 |
|             | :ACQuire:FILTer:TRACking  | 42 |
|             | :ACQuire<X>:STATe?        | 43 |
|             | :ACQuire:INTERpolation    | 43 |
|             | :ACQuire:RECOrdlength     | 43 |
| Autoscale   | :HEADer                   | 44 |
|             | :AUTOSet                  | 45 |
|             | :AUTORSET:MODE            | 45 |

---

|                |                                   |    |
|----------------|-----------------------------------|----|
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|                | :CHANnel<X>:COUPling.....         | 47 |
|                | :CHANnel<X>:DESKew .....          | 47 |
|                | :CHANnel<X>:DISPlay .....         | 47 |
|                | :CHANnel<X>:EXPand .....          | 48 |
|                | :CHANnel<X>:IMPedance?.....       | 48 |
|                | :CHANnel<X>:INVert .....          | 49 |
|                | :CHANnel<X>:POSition .....        | 49 |
|                | :CHANnel<X>:PROBe:RATio .....     | 50 |
|                | :CHANnel<X>:PROBe:TYPe .....      | 50 |
|                | :CHANnel<X>:SCALE .....           | 50 |
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|                | :MATH:TYPe .....                  | 53 |
|                | :MATH:DUAL:SOURce<X> .....        | 53 |
|                | :MATH:DUAL:OPERator .....         | 53 |
|                | :MATH:DUAL:POSition.....          | 54 |
|                | :MATH:DUAL:SCALE.....             | 54 |
|                | :MATH:FFT:SOURce .....            | 55 |
|                | :MATH:FFT:MAG .....               | 55 |
|                | :MATH:FFT:WINDow .....            | 55 |
|                | :MATH:FFT:POSition .....          | 56 |
|                | :MATH:FFT:SCALE .....             | 56 |
|                | :MATH:FFT:HORizontal:SCALE.....   | 57 |
|                | MATH:FFT:HORizontal:POSition..... | 57 |
|                | :MATH:DEFine .....                | 57 |
|                | MATHVAR? .....                    | 58 |
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| Cursor         | :CURSor:MODE .....                | 62 |
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|                | :CURSor:HUSE .....                | 63 |
|                | :CURSor:VUNI .....                | 64 |

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|         | :CURSor:H2Position .....                        | 65 |
|         | :CURSor:HDELta .....                            | 66 |
|         | :CURSor:V1Position .....                        | 66 |
|         | :CURSor:V2Position .....                        | 66 |
|         | :CURSor:VDELta .....                            | 67 |
|         | :CURSor:XY:RECTangular:X:POSition<X> .....      | 67 |
|         | :CURSor:XY:RECTangular:X:DELta .....            | 67 |
|         | :CURSor:XY:RECTangular:Y:POSition<X> .....      | 68 |
|         | :CURSor:XY:RECTangular:Y:DELta .....            | 68 |
|         | :CURSor:XY:POLar:RADIUS:POSition<X> .....       | 68 |
|         | :CURSor:XY:POLar:RADIUS:DELta .....             | 69 |
|         | :CURSor:XY:POLar:THETA:POSition<X> .....        | 69 |
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|         | :CURSor:XY:PRODuct:POSition<X> .....            | 70 |
|         | :CURSor:XY:PRODuct:DELta .....                  | 70 |
|         | :CURSor:XY:RATio:POSition<X> .....              | 70 |
|         | :CURSor:XY:RATio:DELta .....                    | 71 |
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|         | DISplay:INTENSITY:BACKLight:AUTODim:TIME .....  | 73 |
|         | :DISPlay:PERSistence .....                      | 73 |
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|          | :MEASurement:REFLevel:PERCent:LOW .....  | 81 |
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|          | :MEASure:FPreShoot .....                 | 83 |
|          | :MEASure:FREQuency .....                 | 83 |
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|          | :MEASure:PDUTy .....                     | 84 |
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|          | :MEASure:PWIDth .....                    | 85 |
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|          | :MEASure:RPReshoot .....                 | 87 |
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|             | :MEASUrement:MEAS<X>:TYPe.....          | 104 |
|             | :MEASUrement:MEAS<X>:STATE .....        | 104 |
|             | :MEASUrement:MEAS<X>:VALue.....         | 105 |
|             | :MEASUrement:MEAS<X>:MAXimum .....      | 106 |
|             | :MEASUrement:MEAS<X>:MEAN .....         | 107 |
|             | :MEASUrement:MEAS<X>:MINImum .....      | 107 |
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# C

## COMMAND DETAILS

The Command details chapter shows the detailed syntax, equivalent panel operation, and example for each command. For the list of all commands, see page17.

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## Common Commands

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### \*IDN?



|             |                                                                                |
|-------------|--------------------------------------------------------------------------------|
| Description | Returns the manufacturer, model, serial number and version number of the unit. |
| Syntax      | *IDN?                                                                          |
| Example     | *IDN?<br>GW,GDS-2074E,PXXXXXX,V1.XX                                            |

### \*LRN?



|             |                                                                                                                                                                                                                                  |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Returns the oscilloscope settings as a data string.                                                                                                                                                                              |
| Syntax      | *LRN?                                                                                                                                                                                                                            |
| Example     | *LRN?<br><br>:DISPlay:WAVEform VECTOR;PERSistence 2.400E-01;<br>INTensity:WAVEform 50;INTensity:GRATicule<br>50;GRATicule FULL;;CHANnel CH1:DISPlay<br>ON;BWLimit FULL;COUPling DC;INVert<br>OFF;POSition -1.600E+00;PROBe:RATio |

```

1.000e+01;PROBe:TYPe VOLTAGE;SCALe 2.000E+
01;IMPedance 1E+6;EXPand GROUND;;CHANnel
CH2:DISPlay ON;BWLimit FULL;COUPling DC;INVert
OFF;POSition 0.000E+00;PROBe:RATio
1.000e+01;PROBe:TYPe VOLTAGE;SCALe
2.000E+00;IMPedance 1E+6;EXPand
GROUND;;CHANnel CH3:DISPlay OFF;BWLimit
FULL;COUPling DC;INVert OFF;POSition
0.000E+00;PROBe:RATio 1.000e+01;PROBe:TYPe
VOLTAGE;SCALe 1.000E+00;IMPedance 1E+6;EXPand
GROUND;;CHANnel CH4:DISPlay OFF;BWLimit
FULL;COUPling DC;INVert OFF;POSition
0.000E+00;PROBe:RATio 1.000e+01;PROBe:TYPe
VOLTAGE;SCALe 1.000E+00;IMPedance 1E+6;EXPand
GROUND;;MATH:TYPe FFT;DISP
OFF;DUAL:SOURce1 CH1;SOURce2 CH2;OPERator
MUL;POSition 0.000E+00;SCALe ?;FFT:SOURce
CH1;MAG DB;WINDow HANNING;POSition 2.800E-
01;SCALe 2.000E+01;MATH:ADVanced:OPERator
DIFF;ADVanced:SOURce CH1;ADVanced:EDIT:
SOURce1 CH1;ADVanced:EDIT:S

```

**\*SAV**

|             |                                                                                |
|-------------|--------------------------------------------------------------------------------|
| Description | Saves the current panel settings to the selected memory number( setup 1 ~ 20). |
|-------------|--------------------------------------------------------------------------------|

|        |                            |
|--------|----------------------------|
| Syntax | *SAV {1   2   3  ...   20} |
|--------|----------------------------|

|         |                                                      |
|---------|------------------------------------------------------|
| Example | *SAV 1<br>Saves the current panel settings to Set 1. |
|---------|------------------------------------------------------|

**\*RCL**

|             |                                  |
|-------------|----------------------------------|
| Description | Recalls a set of panel settings. |
|-------------|----------------------------------|

|        |                            |
|--------|----------------------------|
| Syntax | *RCL {1   2   3  ...   20} |
|--------|----------------------------|

|         |                                                  |
|---------|--------------------------------------------------|
| Example | *RCL 1<br>Recalls the selected setup from Set 1. |
|---------|--------------------------------------------------|

## \*RST

Set →

Description Resets the GDS-2000E (recalls the default panel settings).

Syntax \*RST

## \*CLS

Set →

Description Clears the error queue.

Syntax \*CLS

## \*ESE

Set →

→ Query

Description Sets or queries the Standard Event Status Enable register.

Syntax \*ESE <NR1>

Query Syntax \*ESE?

Return parameter <NR1> 0~255

| Bit Weight | Bit# | Weight | Event | Description            |
|------------|------|--------|-------|------------------------|
|            | 0    | 1      | OPC   | Operation Complete Bit |
|            | 1    | 2      | RQC   | Not used               |
|            | 2    | 4      | QYE   | Query Error            |
|            | 3    | 8      | DDE   | Device Error           |
|            | 4    | 16     | EXE   | Execution Error        |
|            | 5    | 32     | CME   | Command Error          |
|            | 6    | 64     | URQ   | User Request           |
|            | 7    | 128    | PON   | Power On               |

Example \*ESE?

>4

Indicates that there is a query error.

\*ESR

→ Query

Description      Queries the Standard Event Status (Event) register. The Event Status register is cleared after it is read.

Query Syntax      \*ESR?

Return parameter   <NR1>   0~255

| Bit Weight | Bit# | Weight | Event | Description            |
|------------|------|--------|-------|------------------------|
|            | 0    | 1      | OPC   | Operation Complete Bit |
|            | 1    | 2      | RQC   | Not used               |
|            | 2    | 4      | QYE   | Query Error            |
|            | 3    | 8      | DDE   | Device Error           |
|            | 4    | 16     | EXE   | Execution Error        |
|            | 5    | 32     | CME   | Command Error          |
|            | 6    | 64     | URQ   | User Request           |
|            | 7    | 128    | PON   | Power On               |

Example      \*ESR?

>4

Indicates that there is a query error.

Set →

\*OPC

→ Query

Description      The \*OPC command sets the OPC bit (bit0) of the Standard Event Status Register when all current commands have been processed.  
  
The \*OPC? Query returns 1 when all the outstanding commands have completed.

Syntax      \*OPC

Query Syntax      \*OPC?

Return parameter   1   Returns 1 when all the outstanding commands have completed.

Set →

→ Query

**\*SRE**

**Description** Sets or queries the Service Request Enable register. The Service Request Enable register determines which registers of the Status Byte register are able to generate service requests.

**Syntax** \*SRE <NR1>

**Query Syntax** \*SRE?

**Parameter/** <NR1> 0~255  
**Return parameter**

| Bit Weight | Bit# | Weight | Event | Description           |
|------------|------|--------|-------|-----------------------|
|            | 0    | 1      |       | Not used              |
|            | 1    | 2      |       | Not used              |
|            | 2    | 4      |       | Not used              |
|            | 3    | 8      |       | Not used              |
|            | 4    | 16     | MAV   | Message Available Bit |
|            | 5    | 32     | ESB   | Event Status Bit      |
|            | 6    | 64     | MSS   | Master Summary Bit    |
|            | 6    | 64     | RQS   | Request Service Bit   |
|            | 7    | 128    |       | Not used              |

**Example** \*SRE?  
>48  
Indicates that the MAVB and ESB bit are both set.

**\*STB**

→ Query

**Description** Queries the bit sum of the Status Byte register with MSS (Master summary Status) replacing the RQS bit (bit 6).

**Query Syntax** \*STB?

**Return parameter** <NR1> 0 ~ 255

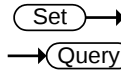
| Bit Weight | Bit# | Weight | Event | Description           |
|------------|------|--------|-------|-----------------------|
|            | 0    | 1      |       | Not used              |
|            | 1    | 2      |       | Not used              |
|            | 2    | 4      |       | Not used              |
|            | 3    | 8      |       | Not used              |
|            | 4    | 16     | MAV   | Message Available Bit |
|            | 5    | 32     | ESB   | Event Status Bit      |
|            | 6    | 64     | MSS   | Master Summary Bit    |
|            | 6    | 64     | RQS   | Request Service Bit   |
|            | 7    | 128    |       | Not used              |

Example      \*STB?  
                  >16  
                  Indicates that the MAV bit is set.

# Acquisition Commands

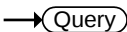
|                                |    |
|--------------------------------|----|
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| :ACQuire:MODE .....            | 39 |
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| :ACQuire:FILTer:FREQuency..... | 42 |
| :ACQuire:FILTer:TRACking.....  | 42 |
| :ACQuire<X>:STATe? .....       | 43 |
| :ACQuire:INTERpolation .....   | 43 |
| :ACQuire:RECOrdlength.....     | 43 |
| :HEADer .....                  | 44 |

## :ACQuire:AVERage



|                  |                                                                                                                        |
|------------------|------------------------------------------------------------------------------------------------------------------------|
| Description      | Selects or returns the number of waveform acquisitions that are averaged in the average acquisition mode.              |
| Syntax           | :ACQuire:AVERage {<NR1>  ?}                                                                                            |
| Related Commands | :ACQuire:MODE                                                                                                          |
| Parameter        | <NR1> 2, 4, 8 ,16, 32, 64, 128, 256                                                                                    |
| Note             | Before using this command, select the average acquisition mode. See the example below.                                 |
| Example          | :ACQuire:MODE AVERage<br>:ACQuire:AVERage 2<br>Selects the average acquisition mode, and sets the average number to 2. |

:ACQuire:MODE 

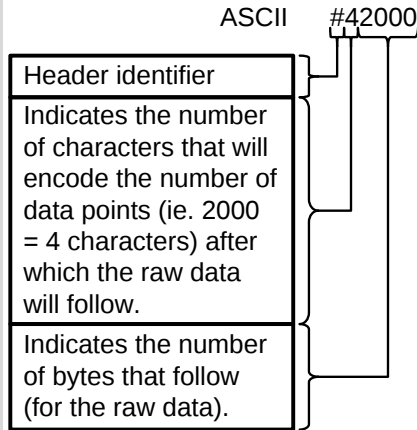
|                  |                                                                    |                       |
|------------------|--------------------------------------------------------------------|-----------------------|
| Description      | Selects or returns the acquisition mode.                           |                       |
| Syntax           | :ACQuire:MODE {SAMPLE   PDETECT   AVERAge   ?}                     |                       |
| Related Commands | :ACQuire:AVERAge                                                   |                       |
| Parameter        | SAMPLE                                                             | Sample mode sampling  |
|                  | PDETECT                                                            | Peak detect sampling  |
|                  | AVERAge                                                            | Average sampling mode |
| Example          | :ACQuire:MODE PDETECT<br>Sets the sampling mode to peak detection. |                       |

:ACQuire<X>:MEMory? 

|                  |                                                                                         |                                                                                                                                                                                                                                                                                                                                                            |
|------------------|-----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description      | Returns the data in acquisition memory for the selected channel as a header + raw data. |                                                                                                                                                                                                                                                                                                                                                            |
| Syntax           | :ACQuire<X>:MEMory?                                                                     |                                                                                                                                                                                                                                                                                                                                                            |
| Related Commands | :ACQuire:RECOrdlength<br>:HEADer                                                        |                                                                                                                                                                                                                                                                                                                                                            |
| Parameter        | <X>                                                                                     | Channel number (1 to 4)                                                                                                                                                                                                                                                                                                                                    |
| Return parameter | <string><br><waveform block data>                                                       | <p>Returns acquisition settings followed by raw waveform block data.</p> <p>&lt;string&gt;<br/>Returns the acquisition settings for the selected channel.</p> <p>Format:<br/>parameter(1),setting(1);parameter(2),setting(2)...parameter(n),setting(n);Waveform Data;</p> <p>&lt;waveform block data&gt;<br/>Header followed by the raw waveform data.</p> |

Format:

Header: The header (in ASCII) encodes the number of bytes for the header followed by the number of data points in bytes for the raw data.



Raw Data:

Each two bytes (in hex) encodes the vertical data of a data point. The data is signed hex data (2's complement, -32768 ~ 32767).

Waveform Raw Data Example:

Header raw data.....

Hex:

23 34 32 30 30 30 00 1C 00 1B 00 1A 00  
1A 00 1B .....

ASCII/Decimal:

#42000 28 27 26 26 27 .....

The actual value of a data point can be calculated with the following formula:  
(Decimal value of hex data/AD Factor) \* vertical scale.

Note: AD Factor is fixed as 25. The vertical scale is returned with the

|  |  |                                                                                                                                                            |
|--|--|------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  |  | acquisition settings that precede the raw data.<br><br>For example if the raw data for a point is 001C (=28 decimal) then,<br>$(28/25) \times 0.5 = 0.56V$ |
|--|--|------------------------------------------------------------------------------------------------------------------------------------------------------------|

|         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Example | :ACQuire1:MEMory?<br><br>Format,2.0E;Memory Length,10000;IntpDistance,0;<br>Trigger Address,4999;Trigger Level,1.160E+01;<br>Source,CH1;Vertical Units,V;Vertical Units<br>Div,0;Vertical Units Extend<br>Div,15;Label,ACK ;Probe Type,0;Probe<br>Ratio,1.000e+01;Vertical Scale,5.000e+00;Vertical<br>Position,-1.100e+01;Horizontal Units,S;Horizontal<br>Scale,5.000E-04;Horizontal Position,0.000E+00;<br>Horizontal Mode,Main;SincET Mode,Real<br>Time;Sampling Period,5.000e-07;Horizontal Old<br>Scale,5.000E-04;Horizontal Old Position,0.000E+00;<br>Firmware,V0.99b8;Time,02-Oct-14 17:00:43;<br>Waveform Data;<br>#520000.....follows waveform block<br>data in hex..... |
|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

:ACQuire:FILTer:SOURce

Set

→

→

Query

|                                |                                            |
|--------------------------------|--------------------------------------------|
| Description                    | Returns the source of the filter.          |
| Syntax                         | :ACQuire:FILTer:SOURce {CH1 CH2 CH3 CH4 ?} |
| Parameter/<br>Return parameter | CH1 ~ CH4    Source channel                |

|         |                                                                          |
|---------|--------------------------------------------------------------------------|
| Example | :ACQuire:FILTer:SOURce?<br><br>CH1<br><br>Sets the filter source to CH1. |
|---------|--------------------------------------------------------------------------|

**:ACQuire:FILTer**

Set →  
→ Query

|                                |                                                |             |
|--------------------------------|------------------------------------------------|-------------|
| Description                    | Turns the filter on/off or queries its status. |             |
| Syntax                         | :ACQuire:FILTer {ON OFF ?}                     |             |
| Parameter/<br>Return parameter | ON                                             | Filter on.  |
|                                | OFF                                            | Filter off. |
| Example                        | :ACQuire:FILTer?                               |             |
|                                | OFF                                            |             |
|                                | Indicates that the filter is turned off.       |             |

**:ACQuire:FILTer:FREQuency**

Set →  
→ Query

|                                |                                             |                                                       |
|--------------------------------|---------------------------------------------|-------------------------------------------------------|
| Description                    | Sets or queries the filter frequency.       |                                                       |
| Syntax                         | :ACQuire:FILTer:FREQuency {DEFAult <NRf> ?} |                                                       |
| Parameter/<br>Return parameter | DEFAult                                     | Sets the filter frequency to the default.             |
|                                | <NRf>                                       | Manually sets the filter frequency.<br>(1Hz ~ 500MHz) |
| Example                        | :ACQuire:FILTer:FREQuency 1                 |                                                       |
|                                | Sets the filter frequency to 1Hz.           |                                                       |

**:ACQuire:FILTer:TRACking**

Set →  
→ Query

|                                |                                                    |              |
|--------------------------------|----------------------------------------------------|--------------|
| Description                    | Turns filter tracking on/off or queries its state. |              |
| Syntax                         | :ACQuire:FILTer:TRACking {ON OFF ?}                |              |
| Parameter/<br>Return parameter | OFF                                                | Tracking off |
|                                | ON                                                 | Tracking on  |
| Example                        | :ACQuire:FILTer:TRACking ON                        |              |
|                                | Turns filter tracking on.                          |              |

**:ACQuire<X>:STATe?**→ **Query**

|                  |                                                                                                                                                                                               |                         |
|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| Description      | Returns the status of waveform data.                                                                                                                                                          |                         |
| Syntax           | :ACQuire<X>:STATe?                                                                                                                                                                            |                         |
| Parameter        | <X>                                                                                                                                                                                           | Channel number (1 to 4) |
| Return parameter | 0                                                                                                                                                                                             | Raw data is not ready   |
|                  | 1                                                                                                                                                                                             | Raw data is ready       |
| Example          | :ACQuire1:STATe?<br>0<br>Returns 0. Channel 1's raw data is not ready.<br><i>Note: If the oscilloscope changes the acquisition status from STOP to RUN, the status will be reset as zero.</i> |                         |

**Set** →**:ACQuire:INTERpolation**→ **Query**

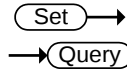
|                            |                                                                             |                                                                  |
|----------------------------|-----------------------------------------------------------------------------|------------------------------------------------------------------|
| Description                | Selects or returns the interpolation mode.                                  |                                                                  |
| Syntax                     | :ACQuire:INTERpolation {ET   SINC   ?}                                      |                                                                  |
| Parameter/Return parameter | ET                                                                          | Equivalent Time interpolation. The GDS-2000E doesn't support ET. |
|                            | SINC                                                                        | Sets to SIN(X)/X interpolation                                   |
| Example                    | :ACQuire:INTERpolation?<br>>SINC<br>Returns SINC as the interpolation mode. |                                                                  |

**Set** →**:ACQuire:RECOrdlength**→ **Query**

|                            |                                    |                                                                           |
|----------------------------|------------------------------------|---------------------------------------------------------------------------|
| Description                | Sets or queries the record length. |                                                                           |
| Syntax                     | :ACQuire:RECOrdlength {<NRf>   ?}  |                                                                           |
| Parameter/Return parameter | <NRf>                              | Record length. Settable record length: (1e+3   1e+4   1e+5   1e+6   1e+7) |

Example               :ACQuire:RECOrdlength 1e+3  
Sets the record length to 1000 points.

:HEADer



|                  |                                                                                                                                    |                               |
|------------------|------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|
| Description      | Configures whether the returned data of the :ACQuire:MEM query will contain header information or not. It is set to ON by default. |                               |
| Syntax           | :HEADer {OFF   ON   ?}                                                                                                             |                               |
| Related Commands | :ACQuire<X>:MEMory?                                                                                                                |                               |
| Parameter        | ON                                                                                                                                 | Add header information.       |
|                  | OFF                                                                                                                                | Don't add header information. |
| Return parameter | Returns the configuration (ON, OFF) for the selected channel.                                                                      |                               |
| Example          | :HEADer ON                                                                                                                         |                               |

# Autoscale Commands

|                      |    |
|----------------------|----|
| :AUTOSet .....       | 45 |
| :AUTORSET:MODE ..... | 45 |

## :AUTOSet

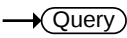


|             |                                                                                                                                       |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------|
| Description | Runs the Autoset function to automatically configure the horizontal scale, vertical scale, and trigger according to the input signal. |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------|

|        |          |
|--------|----------|
| Syntax | :AUTOSet |
|--------|----------|



## :AUTORSET:MODE



|             |                                             |
|-------------|---------------------------------------------|
| Description | Sets the Autoset mode or queries its state. |
|-------------|---------------------------------------------|

|        |                                             |
|--------|---------------------------------------------|
| Syntax | :AUTORSET:MODE {FITScreen   ACPriority   ?} |
|--------|---------------------------------------------|

|                  |          |
|------------------|----------|
| Related Commands | :AUTOSet |
|------------------|----------|

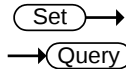
|                            |            |                  |
|----------------------------|------------|------------------|
| Parameter/Return parameter | FITScreen  | Fit Screen mode  |
|                            | ACPriority | AC priority mode |

|         |                         |
|---------|-------------------------|
| Example | :AUTORSET?<br>FITSCREEN |
|---------|-------------------------|

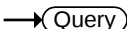
## Vertical Commands

|                               |    |
|-------------------------------|----|
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| :CHANnel<X>:COUPling.....     | 47 |
| :CHANnel<X>:DESKew .....      | 47 |
| :CHANnel<X>:DISPlay .....     | 47 |
| :CHANnel<X>:EXPand .....      | 48 |
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| :CHANnel<X>:PROBe:RATio ..... | 50 |
| :CHANnel<X>:PROBe:TYPe .....  | 50 |
| :CHANnel<X>:SCALE .....       | 50 |

### :CHANnel<X>:BWLimit

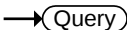


|                  |                                                                       |                                                      |
|------------------|-----------------------------------------------------------------------|------------------------------------------------------|
| Description      | Sets or returns the bandwidth limit on/off.                           |                                                      |
| Syntax           | :CHANnel<X>:BWLimit {FULL   <NR3>   ?}                                |                                                      |
| Parameter        | <X>                                                                   | Channel 1,2,3,4                                      |
|                  | FULL                                                                  | Full bandwidth                                       |
|                  | <NR3>                                                                 | Sets the bandwidth limit to a pre-defined bandwidth. |
|                  |                                                                       | 100E+6: 100MHz<br>20E+6: 20MHz                       |
| Return Parameter | <NR3>                                                                 | Returns the bandwidth.                               |
|                  | Full                                                                  | Full bandwidth                                       |
| Example          | :CHANnel1:BWLimit 2.000E+07<br>Sets the channel 1 bandwidth to 20MHz. |                                                      |

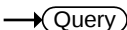
**:CHANnel<X>:COUPling**

|                  |                                         |                 |
|------------------|-----------------------------------------|-----------------|
| Description      | Selects or returns the coupling mode.   |                 |
| Syntax           | CHANnel<X>:COUPling {AC   DC   GND   ?} |                 |
| Parameter        | <X>                                     | Channel 1,2,3,4 |
|                  | AC                                      | AC coupling     |
|                  | DC                                      | DC coupling     |
|                  | GND                                     | Ground coupling |
| Return parameter | Returns the coupling mode.              |                 |
| Example          | :CHANnel1:COUPling DC                   |                 |
|                  | Sets the coupling to DC for Channel 1.  |                 |

**:CHANnel<X>:DESKew**

|                  |                                           |                                                                      |
|------------------|-------------------------------------------|----------------------------------------------------------------------|
| Description      | Sets the deskew time in seconds.          |                                                                      |
| Syntax           | :CHANnel<X>:DESKew { <NR3>   ?}           |                                                                      |
| Parameter        | <X>                                       | Channel 1,2,3,4                                                      |
|                  | <NR3>                                     | Deskew time: -5.00E -11 to 5.00E-11<br>-50ns to 50 ns. (10 ps /step) |
| Return parameter | <NR3>                                     | Returns the deskew time.                                             |
| Example          | :CHANnel1:DESKew 1.300E-9                 |                                                                      |
|                  | Sets the deskew time to 1.3 nano seconds. |                                                                      |

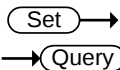
**:CHANnel<X>:DISPlay**

|             |                                               |                 |
|-------------|-----------------------------------------------|-----------------|
| Description | Turns a channel on/off or returns its status. |                 |
| Syntax      | :CHANnel<X>:DISPlay {OFF   ON   ?}            |                 |
| Parameter   | <X>                                           | Channel 1,2,3,4 |
|             | OFF                                           | Channel off     |
|             | ON                                            | Channel on      |

|                  |     |                |
|------------------|-----|----------------|
| Return Parameter | ON  | Channel is on  |
|                  | OFF | Channel is off |

Example :CHANnel1:DISPlay ON  
Turns on Channel 1

:CHANnel<X>:EXPand



Description Sets Expand By Ground or Expand By Center for a channel or queries its status.

Syntax :CHANnel<X>:EXPand {GND | CENTER | ?}

|           |        |                 |
|-----------|--------|-----------------|
| Parameter | <X>    | Channel 1,2,3,4 |
|           | GND    | Ground          |
|           | CENTER | Center          |

|                  |        |                  |
|------------------|--------|------------------|
| Return parameter | GND    | Expand By Ground |
|                  | CENTER | Expand By Center |

Example :CHANnel1:EXPand GND  
Sets Channel 1 to Expand By Ground.

:CHANnel<X>:IMPedance?



Description Returns the impedance of the oscilloscope. (The impedance of the GDS-2000E is fixed at 1MΩ)

Syntax :CHANnel<X>:IMPedance?

|           |         |           |
|-----------|---------|-----------|
| Parameter | <x>     | Channel   |
|           | 1/2/3/4 | CH1/2/3/4 |

Return parameter <NR3> Returns the impedance value.

Example :CHANnel1:IMPedance?  
1.000000E+06  
The impedance is 1M ohms.

:CHANnel<X>:INVert

Set

→

→

Query

|                  |                                          |                    |
|------------------|------------------------------------------|--------------------|
| Description      | Inverts a channel or returns its status. |                    |
| Syntax           | :CHANnel<X>:INVert {OFF   ON   ?}        |                    |
| Parameter        | <X>                                      | Channel 1, 2, 3, 4 |
|                  | OFF                                      | Invert off         |
|                  | ON                                       | Invert on          |
| Return parameter | ON                                       | Invert on          |
|                  | OFF                                      | Invert off         |
| Example          | :CHANnel1:INVert ON<br>Inverts Channel 1 |                    |

:CHANnel<X>:POSition

Set

→

→

Query

|                  |                                                                                                                          |                                                |
|------------------|--------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|
| Description      | Sets or returns the position level for a channel.                                                                        |                                                |
| Note             | The vertical position will only be set to closest allowed value. The position level range depends on the vertical scale. |                                                |
|                  | The scale must first be set before the position can be set.                                                              |                                                |
| Syntax           | :CHANnel<X>:POSition { <NRf>   ?}                                                                                        |                                                |
| Parameter        | <X>                                                                                                                      | Channel 1, 2, 3, 4                             |
|                  | <NRf>                                                                                                                    | Position. Range depends on the vertical scale. |
| Return parameter | <NR3>                                                                                                                    | Returns the position value.                    |
| Example 1        | :CHANnel1:POSition 2.4E-3<br>Sets the Channel 1 position to 2.4mV/mA                                                     |                                                |
| Example 2        | :CHANnel1:POSition?<br>2.4E-3<br>Returns 2.4mV as the vertical position.                                                 |                                                |

**:CHANnel<X>:PROBe:RATio**

Set →  
→ Query

|                  |                                                                                    |                          |
|------------------|------------------------------------------------------------------------------------|--------------------------|
| Description      | Sets or returns the probe attenuation factor.                                      |                          |
| Syntax           | :CHANnel<X>:PROBe:RATio { <NRf>   ? }                                              |                          |
| Related Commands | :CHANnel<X>:PROBe:TYPE                                                             |                          |
| Parameter        | <X>                                                                                | Channel 1, 2, 3, 4       |
|                  | <NRf>                                                                              | Probe attenuation factor |
| Return parameter | <NR3>                                                                              | Returns the probe factor |
| Example          | :CHANnel1:PROBe:RATio 1.00E+0<br>Sets the Channel 1 probe attenuation factor to 1x |                          |

**:CHANnel<X>:PROBe:TYPE**

Set →  
→ Query

|                  |                                                                           |                    |
|------------------|---------------------------------------------------------------------------|--------------------|
| Description      | Sets or returns the probe type (voltage/current).                         |                    |
| Syntax           | :CHANnel<X>:PROBe:TYPE { VOLTage   CURRent   ? }                          |                    |
| Related Commands | :CHANnel<X>:PROBe:RATio                                                   |                    |
| Parameter        | <X>                                                                       | Channel 1, 2, 3, 4 |
|                  | VOLTage                                                                   | Voltage            |
|                  | CURRent                                                                   | Current            |
| Return parameter | Returns the probe type.                                                   |                    |
| Example          | :CHANnel1:PROBe:TYPE VOLTage<br>Sets the Channel 1 probe type to voltage. |                    |

**:CHANnel<X>:SCALE**

Set →  
→ Query

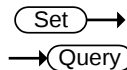
|             |                                                                                                                                                                 |  |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| Description | Sets or returns the vertical scale. The scale depends on the probe attenuation factor.<br><br>Note the probe attenuation factor should be set before the scale. |  |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|--|

|                  |                                               |                                                       |
|------------------|-----------------------------------------------|-------------------------------------------------------|
| Syntax           | :CHANnel<X>:SCALE { <NRf>   ?}                |                                                       |
| Parameter        | <X>                                           | Channel 1, 2, 3, 4                                    |
|                  | <NRf>                                         | Vertical scale: 2e-3 to 1e+1<br>2mV to 10V (Probe x1) |
| Return parameter | <NR3>                                         | Returns the vertical scale in volts or amps.          |
| Example          | :CHANnel1:SCALE 2.00E-2                       |                                                       |
|                  | Sets the Channel 1 vertical scale to 20mV/div |                                                       |

## Math Commands

|                                   |    |
|-----------------------------------|----|
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| :MATH:ADVanced:SCALE .....        | 59 |

### :MATH:DISP



|                                |                                                 |                                 |
|--------------------------------|-------------------------------------------------|---------------------------------|
| Description                    | Turns the math display on or off on the screen. |                                 |
| Syntax                         | :MATH:DISP {OFF ON ?}                           |                                 |
| Parameter/<br>Return parameter | OFF                                             | Math is not displayed on screen |
|                                | ON                                              | Math is displayed on screen     |
| Example                        | :MATH:DISP OFF<br>Math is off.                  |                                 |

|                   |                                                                                        |                                                                                     |
|-------------------|----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                   |                                                                                        | <div> <div>Set</div> <div>→</div> </div> <div> <div>→</div> <div>Query</div> </div> |
| <b>:MATH:TYPE</b> |                                                                                        |                                                                                     |
| Description       | Queries or sets the Math type to FFT, Advanced Math or to dual channel math operations |                                                                                     |
| Syntax            | :MATH:TYPE { DUAL   ADVanced   FFT   ? }                                               |                                                                                     |
| Related Commands  | :MATH:DISP                                                                             |                                                                                     |
| Parameter         | DUAL                                                                                   | Dual channel operations                                                             |
|                   | ADVanced                                                                               | Advanced math operations                                                            |
|                   | FFT                                                                                    | FFT operations                                                                      |
| Return parameter  | Returns the math type.                                                                 |                                                                                     |
| Example           | :MATH:TYPE DUAL<br>Sets the Math type to dual channel math operation.                  |                                                                                     |

|                                   |                                                                                |                                                                                     |
|-----------------------------------|--------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                                   |                                                                                | <div> <div>Set</div> <div>→</div> </div> <div> <div>→</div> <div>Query</div> </div> |
| <b>:MATH:DUAL:SOURce&lt;X&gt;</b> |                                                                                |                                                                                     |
| Description                       | Sets the dual math source for source 1 or 2.                                   |                                                                                     |
| Syntax                            | :MATH:DUAL:SOURce<X> { CH1   CH2   CH3   CH4   REF1   REF2   REF3   REF4   ? } |                                                                                     |
| Parameter                         | <X>                                                                            | Source number 1 or 2                                                                |
|                                   | CH1~4                                                                          | Channel 1 to 4                                                                      |
|                                   | REF1~4                                                                         | Reference waveforms 1 to 4                                                          |
| Return parameter                  | Returns the source for the source 1 or 2.                                      |                                                                                     |
| Example                           | :MATH:DUAL:SOURce1 CH1<br>Sets source1 as channel 1.                           |                                                                                     |

|                            |                                                  |                                                                                     |
|----------------------------|--------------------------------------------------|-------------------------------------------------------------------------------------|
|                            |                                                  | <div> <div>Set</div> <div>→</div> </div> <div> <div>→</div> <div>Query</div> </div> |
| <b>:MATH:DUAL:OPERator</b> |                                                  |                                                                                     |
| Description                | Sets the math operator for dual math operations. |                                                                                     |

|                  |                                                                 |            |
|------------------|-----------------------------------------------------------------|------------|
| Syntax           | :MATH:DUAL:OPERator {PLUS   MINUS   MUL   DIV ?}                |            |
| Parameter        | PLUS                                                            | + operator |
|                  | MINUS                                                           | - operator |
|                  | MUL                                                             | × operator |
|                  | DIV                                                             | ÷ operator |
| Return parameter | Returns operator type.                                          |            |
| Example          | :MATH:DUAL:OPERator PLUS<br>Sets the math operator as plus (+). |            |

Set →

→ Query

**:MATH:DUAL:POSition**

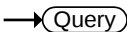
|                  |                                                                                     |                                          |
|------------------|-------------------------------------------------------------------------------------|------------------------------------------|
| Description      | Sets the vertical position of the displayed math result expressed by unit/division. |                                          |
| Syntax           | :MATH:DUAL:POSition {<NRf>   ? }                                                    |                                          |
| Parameter        | <NRf>                                                                               | Vertical position                        |
|                  |                                                                                     | Depends on the vertical scale (Unit/Div) |
| Return parameter | <NR3>                                                                               | Returns the vertical position.           |
| Example          | :MATH:DUAL:POSition 1.0E+0<br>Sets the vertical position to 1.00 unit/div.          |                                          |

Set →

→ Query

**:MATH:DUAL:SCALe**

|                  |                                                                |                    |
|------------------|----------------------------------------------------------------|--------------------|
| Description      | Sets the vertical scale of the displayed math result.          |                    |
| Syntax           | :MATH:DUAL:SCALe {<NRf>   ? }                                  |                    |
| Parameter        | <NRf>                                                          | Vertical scale     |
| Return parameter | <NR3>                                                          | Returns the scale. |
| Example          | :MATH:DUAL:SCALe 2.0E-3<br>Sets the vertical scale to 2mV/2mA. |                    |

:MATH:FFT:SOURce  

|                  |                                                                            |                           |
|------------------|----------------------------------------------------------------------------|---------------------------|
| Description      | Sets and queries the FFT math source.                                      |                           |
| Syntax           | :MATH:FFT:SOURce { CH1   CH2   CH3   CH4   REF1   REF2   REF3   REF4   ? } |                           |
| Related commands | :MATH:ADVanced:EDIT:SOURce<X><br>:MATH:ADVanced:EDIT:OPERator              |                           |
| Parameter        | CH1~4                                                                      | Channel 1 to 4            |
|                  | REF1~4                                                                     | Reference waveform 1 to 4 |
| Return parameter | Returns the FFT source.                                                    |                           |
| Example          | :MATH:FFT:SOURce CH1<br>Sets the FFT math source as channel 1.             |                           |

:MATH:FFT:MAG  

|                  |                                                    |                        |
|------------------|----------------------------------------------------|------------------------|
| Description      | Sets FFT vertical units as linear or decibels.     |                        |
| Syntax           | :MATH:FFT:MAG {LINEAR   DB   ?}                    |                        |
| Parameter        | LINEAR                                             | Linear units (Vrms)    |
|                  | DB                                                 | Logarithmic units (dB) |
| Return parameter | Returns the FFT vertical units.                    |                        |
| Example          | :MATH:FFT:MAG DB<br>Sets FFT vertical units to dB. |                        |

:MATH:FFT:WINDow  

|             |                                                              |                    |
|-------------|--------------------------------------------------------------|--------------------|
| Description | Sets the windowing filter used for the FFT function.         |                    |
| Syntax      | :MATH:FFT:WINDow<br>{RECTangular HAMming HANning BLAckman ?} |                    |
| Parameter   | RECTangular                                                  | Rectangular window |

|          |                 |
|----------|-----------------|
| HAMming  | Hamming window  |
| HANning  | Hanning window  |
| BLAckman | Blackman window |

Return parameter Returns the FFT window.

Example :MATH:FFT:WINDow HAMming  
Sets the FFT window filter to hamming.

Set →

→ Query

:MATH:FFT:POSition

Description Sets the vertical position of the displayed FFT result.

Syntax MATH:FFT:POSition { <NRf> | ? }

Parameter <NRf> Vertical position: -12e+0 to +12e+0  
(12 units/division to +12 units/division.)

Return parameter <NR3> Returns the vertical position.

Example :MATH:FFT:POSition -2e-1  
Sets the FFT position to -0.2 divisions.

Set →

→ Query

:MATH:FFT:SCALE

Description Sets the vertical scale of the displayed FFT result.

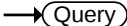
Syntax :MATH:FFT:SCALE {<NRf> | ?}

Parameter <NRf> Vertical scale:  
Linear: 2e-3 to 1e+3 (2mV~1kV)  
dB: 1e+0 to 2e+1 (1~20dB)

Return parameter <NR3> Returns vertical scale.

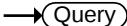
Example :MATH:FFT:SCALE 1.0e+0  
Sets the scale to 1dB.

**:MATH:FFT:HORizontal:SCALe** 



|                  |                                                            |                           |
|------------------|------------------------------------------------------------|---------------------------|
| Description      | Sets or queries the zoom scale for FFT math.               |                           |
| Syntax           | :MATH:FFT:HORizontal:SCALE {<NRf>   ?}                     |                           |
| Parameter        | <NRf>                                                      | Zoom scale: 1 to 20 times |
| Return parameter | <NR3>                                                      | Returns zoom scale.       |
| Example          | :MATH:FFT:HORizontal:SCALE 5<br>Sets the zoom scale to 5X. |                           |

**MATH:FFT:HORizontal:POSition** 



|                  |                                                                                    |                                     |
|------------------|------------------------------------------------------------------------------------|-------------------------------------|
| Description      | Sets the horizontal position of the displayed FFT result.                          |                                     |
| Syntax           | MATH:FFT:HORizontal:POSition { <NRf>   ? }                                         |                                     |
| Parameter        | <NRf>                                                                              | Horizontal position: 0Hz ~ 999.9kHz |
| Return parameter | <NR3>                                                                              | Returns the vertical position.      |
| Example          | :MATH:FFT:HORizontal:POSition 6.0e5<br>Sets the FFT horizontal position to 600kHz. |                                     |

**:MATH:DEFine** 



|             |                                                           |                                                                                                                                                         |
|-------------|-----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Sets or queries the advanced math expression as a string. |                                                                                                                                                         |
| Syntax      | :MATH:DEFine {<string>  ?}                                |                                                                                                                                                         |
| Related     | :MATH:DISP<br>:MATH:TYPE                                  |                                                                                                                                                         |
| Parameter   | <string>                                                  | An expression enclosed in double quotes. Note, ensure parentheses are used correctly in the expression. The expression can contain the following parts: |

|  |             |                                                                                                                                                                                                                                            |
|--|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | Source      | CH1~CH4, Ref1~Ref4                                                                                                                                                                                                                         |
|  | Function    | Intg(, Diff(, log(, ln(, Exp(, Sqrt(, Abs(, Rad(, Deg(, sin(, cos(, tan(, asin(, acos(, atan(                                                                                                                                              |
|  | Variable    | VAR1, VAR2                                                                                                                                                                                                                                 |
|  | Operator    | +, -, *, /, (, ), !, <, >, <=, >=, ==, !=,   , &&                                                                                                                                                                                          |
|  | Figure      | 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, ., E                                                                                                                                                                                                         |
|  | Measurement | Pk-Pk(, Max(, Min(, Amp(, High(, Low(, Mean(, CycleMean(, RMS(, CycleRMS(, Area(, CycleArea(, ROVShoot(, FOVShoot(, Freq(, Period(, Rise(, Fall(, PosWidth(, NegWidth(, Dutycycle(, FRR(, FRF(, FFR(, FFF(, LRR(, LRF(, LFR(, LFF(, Phase( |

Return parameter Returns the expression as a string.

Example :MATH:DISP ON  
:MATH:TYPE ADVanced  
MATH:DEFine "CH1-CH2"  
Sets the math expression to CH1-CH2.

## MATHVAR?



|                  |                                                   |
|------------------|---------------------------------------------------|
| Description      | Returns the value of the VAR1 and VAR2 variables. |
| Syntax           | MATHVAR?                                          |
| Related Commands | MATHVAR:VAR<X><br>MATH:DEFine                     |
| Return parameter | <string> VAR1 <NR3>; VAR2 <NR3>                   |

Example            MATHVAR?  
                      VAR1 1.000000E+06; VAR2 1.0E+1  
                      Returns the value of both variables.

Set →

MATHVAR:VAR<X>

→ Query

Description       Sets or returns the VAR1 or VAR2 variables.

Syntax            MATHVAR:VAR<x> {<NRf> | ?}

Related  
Commands        MATH:DEFine

|           |       |                     |
|-----------|-------|---------------------|
| Parameter | <X>   | 1, 2 (VAR1 or VAR2) |
|           | <NRf> | Value of VAR1/VAR2  |

|                  |       |                                |
|------------------|-------|--------------------------------|
| Return parameter | <NR3> | Returns the value of VAR1/VAR2 |
|------------------|-------|--------------------------------|

Example            :MATH:VAR1 6.0e4  
                      Sets VAR1 to 60000.

Set →

:MATH:ADVanced:POSition

→ Query

Description       Sets the vertical position of the advanced math result, expressed in unit/div.

Syntax            MATH:ADVanced:POSition { <NRf> | ? }

|           |       |                                                                                   |
|-----------|-------|-----------------------------------------------------------------------------------|
| Parameter | <NRf> | Vertical position: -12e+0 to +12e+0<br>(12 units/division to +12 units/division.) |
|-----------|-------|-----------------------------------------------------------------------------------|

|                  |       |                                |
|------------------|-------|--------------------------------|
| Return parameter | <NR3> | Returns the vertical position. |
|------------------|-------|--------------------------------|

Example            :MATH:ADVanced:POSition 1.0e+0  
                      Sets the position as 1.00 unit/div.

Set →

:MATH:ADVanced:SCALE

→ Query

Description       Sets or queries the vertical scale the advanced math result.

Syntax            :MATH:ADVanced:SCALE {<NRf> | ?}

|                  |                                                                    |                             |
|------------------|--------------------------------------------------------------------|-----------------------------|
| Parameter        | <NRf>                                                              | Vertical scale              |
| Return parameter | <NR3>                                                              | Returns the vertical scale. |
| Example          | :MATH:ADVanced:SCALe 2.0E-3<br>Sets the vertical scale to 2mV/Div. |                             |

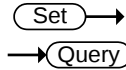
## Cursor Commands

---

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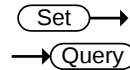
---

## :CURSor:MODE



|                  |                                                                                                                                                                      |                                           |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|
| Description      | Sets cursor mode to horizontal (H) or horizontal and vertical (HV).<br><br>Note: When the cursor source is set to bus, then only the horizontal cursor is available. |                                           |
| Syntax           | :CURSor:MODE {OFF   H   HV   ? }                                                                                                                                     |                                           |
| Parameter        | OFF                                                                                                                                                                  | Turns the cursors off.                    |
|                  | H                                                                                                                                                                    | Turns the horizontal cursors on.          |
|                  | HV                                                                                                                                                                   | Turns horizontal and vertical cursors on. |
| Return parameter | Returns the state of the cursors (H, HV, OFF).                                                                                                                       |                                           |
| Example          | :CURSor:MODE OFF<br><br>Turns the cursors off.                                                                                                                       |                                           |

## :CURSor:SOURce



|                  |                                                                                       |                           |
|------------------|---------------------------------------------------------------------------------------|---------------------------|
| Description      | Sets or queries the cursor source.                                                    |                           |
| Syntax           | :CURSor:SOURce {CH1   CH2   CH3   CH4   REF1   REF2   REF3   REF4   MATH   BUS1   ? } |                           |
| Parameter        | CH1~CH4                                                                               | Channel 1 to 4            |
|                  | REF1~4                                                                                | Reference waveform 1 to 4 |
|                  | MATH                                                                                  | Math source               |
|                  | BUS1                                                                                  | Bus source                |
| Return parameter | Returns the cursor source.                                                            |                           |
| Example          | :CURSor:SOURce CH1<br><br>Turns the cursor source as channel 1.                       |                           |

(Set) →  
→ (Query)

|                     |                                                            |                                           |
|---------------------|------------------------------------------------------------|-------------------------------------------|
| <b>:CURSor:HUNI</b> |                                                            |                                           |
| Description         | Sets or queries the units for the horizontal bar cursors.  |                                           |
| Syntax              | :CURSor:HUNI {SEConds   HERTz   DEGrees   PERcent   ?}     |                                           |
| Related Commands    | :CURSor:MODe                                               |                                           |
| Parameter           | SEConds                                                    | Sets the cursor units to time in seconds. |
|                     | HERTz                                                      | Sets the cursor units to frequency.       |
|                     | DEGrees                                                    | Sets the cursor units to degrees.         |
|                     | PERcent                                                    | Sets the cursor units to percent.         |
| Return parameter    | Returns the unit type.                                     |                                           |
| Example             | :CURSor:HUNI SEConds<br>Sets the units to time in seconds. |                                           |

(Set) →

|                     |                                                                                                                   |
|---------------------|-------------------------------------------------------------------------------------------------------------------|
| <b>:CURSor:HUSE</b> |                                                                                                                   |
| Description         | Sets the current cursor position as the phase or ratio reference for the Percent or Degrees (horizontal) cursors. |
| Note                | This command can only be used when :CURSor:HUNI is set to DEGrees or PERcent.                                     |
| Syntax              | :CURSor:HUSE {CURRent}                                                                                            |
| Related Commands    | :CURSor:MODE<br>:CURSor:HUNI                                                                                      |
| Parameter           | CURRent Uses the current horizontal position                                                                      |
| Example             | :CURSor:HUSE CURRent.                                                                                             |

Set →

→ Query

:CURSor:VUNI

|                  |                                                         |                                                                      |
|------------------|---------------------------------------------------------|----------------------------------------------------------------------|
| Description      | Sets or queries the units for the vertical bar cursors. |                                                                      |
| Syntax           | :CURSor:VUNI {BASE   PERcent   ?}                       |                                                                      |
| Related Commands | :CURSor:MODE                                            |                                                                      |
| Parameter        | BASE                                                    | Sets the vertical cursor units the same as the scope units (V or A). |
|                  | PERcent                                                 | Sets the displayed units to percent.                                 |
| Return parameter | Returns the unit type.                                  |                                                                      |
| Example          | :CURSor:VUNI BASE<br>Sets the units to the base units.  |                                                                      |

:CURSor:VUSE

Set →

|                  |                                                                                             |                                    |
|------------------|---------------------------------------------------------------------------------------------|------------------------------------|
| Description      | Sets the current cursor position as the ratio reference for the Percent (vertical) cursors. |                                    |
| Note             | This command can only be used when :CURSor:VUNI is set to PERcent.                          |                                    |
| Syntax           | :CURSor:VUSE {CURRent}                                                                      |                                    |
| Related Commands | :CURSor:MODE<br>:CURSor:VUNI                                                                |                                    |
| Parameter        | CURRent                                                                                     | Uses the current vertical position |
| Example          | :CURSor:VUSE CURRent.                                                                       |                                    |

:CURSor:DDT

→ Query

|             |                                                                                                                              |  |
|-------------|------------------------------------------------------------------------------------------------------------------------------|--|
| Description | Returns the deltaY/deltaT (dy/dT) readout. This function is only supported if the source channels are CH1~4, Ref1~4 or Math. |  |
| Syntax      | :CURSor:DDT{?}                                                                                                               |  |

Related :CURSor:MODE  
Commands

Return Parameter <NR3> Returns the readout in <NR3> format.

Example :CURSor:DDT?  
4.00E-05

Set →

→ Query

## :CURSor:H1Position

Description Sets or returns the first horizontal cursor (H1) position.

Syntax :CURSor:H1Position {<NRf> | ?}

Related :CURSor:H2Position  
Commands

Parameter <NRf> Horizontal position

Return parameter Returns the cursor position.

Example :CURSor:H1Position?  
-1.34E-3

Returns the H1 cursor position as -1.34ms.

Set →

→ Query

## :CURSor:H2Position

Description Sets or returns the second horizontal cursor (H2) position.

Syntax :CURSor:H2Position {<NRf> | ?}

Related :CURSor:H1Position  
Commands

Parameter <NRf> Horizontal Position

Return parameter Returns the cursor position.

Example :CURSor:H2Position 1.5E-3

Sets the H2 cursor position to 1.5ms.

:CURSor:HDELta

→ Query

|                  |                                                                   |                                                      |
|------------------|-------------------------------------------------------------------|------------------------------------------------------|
| Description      | Returns the delta of H1 and H2.                                   |                                                      |
| Syntax           | :CURSor:HDELta{?}                                                 |                                                      |
| Return Parameter | <NR3>                                                             | Returns the distance between two horizontal cursors. |
| Example          | :CURSor:HDELta?<br>5.0E-9<br>Returns the horizontal delta as 5ns. |                                                      |

Set →

:CURSor:V1Position

→ Query

|                  |                                                                     |                                                   |
|------------------|---------------------------------------------------------------------|---------------------------------------------------|
| Description      | Sets the first vertical cursor (V1) position.                       |                                                   |
| Syntax           | :CURSor:V1Position {<NRf>  ?}                                       |                                                   |
| Parameter        | <NRf>                                                               | Vertical position. Depends on the vertical scale. |
| Return parameter | <NR3>                                                               | Returns the cursor position.                      |
| Example          | :CURSor:V1Position 1.6E -1<br>Sets the V1 cursor position to 160mA. |                                                   |

Set →

:CURSor:V2Position

→ Query

|                  |                                                                    |                                                   |
|------------------|--------------------------------------------------------------------|---------------------------------------------------|
| Description      | Sets the first vertical cursor (V2) position.                      |                                                   |
| Syntax           | :CURSor:V2Position {<NRf>   ?}                                     |                                                   |
| Parameter        | <NRf>                                                              | Vertical position. Depends on the vertical scale. |
| Return parameter | <NR3>                                                              | Returns the cursor position.                      |
| Example          | :CURSor:V2Position 1.1E-1<br>Sets the V2 cursor position to 110mA. |                                                   |

**:CURSor:VDELta**→ **Query**

|                  |                                                                      |                                                      |
|------------------|----------------------------------------------------------------------|------------------------------------------------------|
| Description      | Returns the delta of V1 and V2.                                      |                                                      |
| Syntax           | :CURSor:VDELta{?}                                                    |                                                      |
| Return Parameter | <NR3>                                                                | Returns the difference between two vertical cursors. |
| Example          | :CURSor:VDELta?<br>4.00E+0<br>Returns the vertical delta as 4 volts. |                                                      |

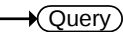
**:CURSor:XY:RECTangular:X:POSition<X>**
**Set** →  
→ **Query**

|                  |                                                                                                         |                                  |
|------------------|---------------------------------------------------------------------------------------------------------|----------------------------------|
| Description      | Sets or queries the horizontal position in XY mode for the X rectangular coordinates for cursor 1 or 2. |                                  |
| Syntax           | :CURSor:XY:RECTangular:X:POSition<X> {<NRF> ?}                                                          |                                  |
| Parameter        | <X>                                                                                                     | Cursor 1, 2                      |
|                  | <NRF>                                                                                                   | Horizontal position co-ordinates |
| Return parameter | <NR3>                                                                                                   | Returns the cursor position.     |
| Example          | :CURSor:XY:RECTangular:X:POSition1 4.0E-3<br>Sets the X-coordinate cursor 1 position to 40mV/mV.        |                                  |

**:CURSor:XY:RECTangular:X:DELta**→ **Query**

|                  |                                                                |                                                     |
|------------------|----------------------------------------------------------------|-----------------------------------------------------|
| Description      | Returns the delta value of cursor 1 and 2 on the X coordinate. |                                                     |
| Syntax           | :CURSor:XY:RECTangular:X:DELta{?}                              |                                                     |
| Return Parameter | <NR3>                                                          | Returns the delta value of cursor 1 and 2 as <NR3>. |

Example :CURSor:XY:RECTangular:X:DELta?  
80.0E-3  
Returns the horizontal delta as 80mV.

:CURSor:XY:RECTangular:Y:POSition<X>  

|             |                                                                                                       |
|-------------|-------------------------------------------------------------------------------------------------------|
| Description | Sets or queries the vertical position in XY mode for the Y rectangular coordinates for cursor 1 or 2. |
|-------------|-------------------------------------------------------------------------------------------------------|

|        |                                                |
|--------|------------------------------------------------|
| Syntax | :CURSor:XY:RECTangular:Y:POSition<X> {<NRf> ?} |
|--------|------------------------------------------------|

|           |       |                                |
|-----------|-------|--------------------------------|
| Parameter | <X>   | Cursor 1, 2                    |
|           | <NRf> | Vertical position co-ordinates |

|                  |       |                              |
|------------------|-------|------------------------------|
| Return parameter | <NR3> | Returns the cursor position. |
|------------------|-------|------------------------------|

Example :CURSor:XY:RECTangular:Y:POSition1 4.0E-3  
Sets the Y-coordinate cursor 1 position to 40mV/mV.

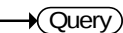
:CURSor:XY:RECTangular:Y:DELta 

|             |                                                                |
|-------------|----------------------------------------------------------------|
| Description | Returns the delta value of cursor 1 and 2 on the Y coordinate. |
|-------------|----------------------------------------------------------------|

|        |                                   |
|--------|-----------------------------------|
| Syntax | :CURSor:XY:RECTangular:Y:DELta{?} |
|--------|-----------------------------------|

|                  |       |                                                     |
|------------------|-------|-----------------------------------------------------|
| Return Parameter | <NR3> | Returns the delta value of cursor 1 and 2 as <NR3>. |
|------------------|-------|-----------------------------------------------------|

Example :CURSor:XY:RECTangular:Y:DELta?  
80.0E-3  
Returns the horizontal delta as 80mV.

:CURSor:XY:POLar:RADIUS:POSition<X> 

|             |                                                                                                             |
|-------------|-------------------------------------------------------------------------------------------------------------|
| Description | Queries the polar radius position for the specified cursor in XY mode, where X can be either cursor 1 or 2. |
|-------------|-------------------------------------------------------------------------------------------------------------|

|                  |                                                                                               |                                    |
|------------------|-----------------------------------------------------------------------------------------------|------------------------------------|
| Syntax           | :CURSor:XY:POLar:RADIUS:POSition<X>{?}                                                        |                                    |
| Parameter        | <X>                                                                                           | 1, 2 (cursor 1, cursor 2)          |
| Return Parameter | <NR3>                                                                                         | Returns the polar radius position. |
| Example          | :CURSor:XY:POLar:RADIUS:POSition1?<br>80.0E-3<br>Returns the polar radius position as 80.0mV. |                                    |

### :CURSor:XY:POLar:RADIUS:DELta

|                  |                                                                                  |                           |
|------------------|----------------------------------------------------------------------------------|---------------------------|
| Description      | Returns the radius delta value of cursor 1 and 2.                                |                           |
| Syntax           | :CURSor:XY:POLar:RADIUS:DELta{?}                                                 |                           |
| Return Parameter | <NR3>                                                                            | Returns the radius delta. |
| Example          | :CURSor:XY:POLar:RADIUS:DELta?<br>31.4E-3<br>Returns the radius delta as 31.4mV. |                           |

### :CURSor:XY:POLar:THETA:POSition<X>

|                  |                                                                                                |                           |
|------------------|------------------------------------------------------------------------------------------------|---------------------------|
| Description      | Queries the polar angle for the specified cursor in XY mode, where X can be either 1 or 2.     |                           |
| Syntax           | :CURSor:XY:POLar:THETA:POSition<X>{?}                                                          |                           |
| Parameter        | <X>                                                                                            | 1, 2 (Cursor 1, Cursor 2) |
| Return parameter | <NR3>                                                                                          | Returns the polar angle.  |
| Example          | :CURSor:XY:POLar:RADIUS:POSition1?<br>8.91E+1<br>Returns the polar angle for cursor1 as 89.1°. |                           |

### :CURSor:XY:POLar:THETA:DELta

|             |                                                            |  |
|-------------|------------------------------------------------------------|--|
| Description | Queries the polar angle delta between cursor1 and cursor2. |  |
|-------------|------------------------------------------------------------|--|

|                  |                                                                        |                                                      |
|------------------|------------------------------------------------------------------------|------------------------------------------------------|
| Syntax           | :CURSor:XY:POLar:THETA:DELta{?}                                        |                                                      |
| Return parameter | <NR3>                                                                  | Returns the theta delta between cursor1 and cursor2. |
| Example          | :CURSor:XY:POLar:THETA:DELta?<br>9.10E+0<br>Returns the delta as 9.1°. |                                                      |

:CURSor:XY:PRODuct:POSition<X> 

|                  |                                                                                        |                                                      |
|------------------|----------------------------------------------------------------------------------------|------------------------------------------------------|
| Description      | Queries the product in XY mode for the specified cursor, where x can be either 1 or 2. |                                                      |
| Syntax           | :CURSor:XY:PRODuct:POSition<X>{?}                                                      |                                                      |
| Parameter        | <X>                                                                                    | 1, 2 (Cursor 1, Cursor 2)                            |
| Return parameter | <NR3>                                                                                  | Returns the product value of the Cursor1 or Cursor2. |
| Example          | :CURSor:XY:PRODuct:POSition1?<br>9.44E-5<br>Returns the product of cursor1 as 94.4uVV. |                                                      |

:CURSor:XY:PRODuct:DELta 

|                  |                                                                               |                            |
|------------------|-------------------------------------------------------------------------------|----------------------------|
| Description      | Queries the product delta in XY mode.                                         |                            |
| Syntax           | :CURSor:XY:PRODuct:DELta{?}                                                   |                            |
| Return parameter | <NR3>                                                                         | Returns the product delta. |
| Example          | :CURSor:XY:PRODuct:DELta?<br>1.22E-5<br>Returns the product delta as 12.2uVV. |                            |

:CURSor:XY:RATio:POSition<X> 

|             |                                                                                             |  |
|-------------|---------------------------------------------------------------------------------------------|--|
| Description | Queries the ratio in XY mode for the specified cursor, where x can be either cursor 1 or 2. |  |
|-------------|---------------------------------------------------------------------------------------------|--|

|                  |                                                                                |
|------------------|--------------------------------------------------------------------------------|
| Syntax           | :CURSor:XY:RATio:POSition<X>{?}                                                |
| Parameter        | <X> 1, 2 (Cursor 1, Cursor 2)                                                  |
| Return parameter | <NR3> Returns the ratio.                                                       |
| Example          | :CURSor:XY:RATio:POSition?<br>6.717E+1<br>Returns the ratio value as 6.717V/V. |

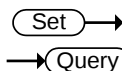
:CURSor:XY:RATio:DELta 

|                  |                                                                           |
|------------------|---------------------------------------------------------------------------|
| Description      | Queries the ratio delta in XY mode.                                       |
| Syntax           | :CURSor:XY:RATio:DELta{?}                                                 |
| Return parameter | <NR3> Returns the ratio delta.                                            |
| Example          | :CURSor:XY:RATio:DELta?<br>5.39E+1<br>Returns the ratio delta as 53.9V/V. |

## Display Commands

|                                                 |    |
|-------------------------------------------------|----|
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| :DISPlay:OUTPut .....                           | 74 |

:DISPlay:INTensity:WAVEform



|             |                                               |
|-------------|-----------------------------------------------|
| Description | Sets or queries the waveform intensity level. |
|-------------|-----------------------------------------------|

|                  |                                                                           |                               |
|------------------|---------------------------------------------------------------------------|-------------------------------|
| Syntax           | :DISPlay:INTensity:WAVEform {<NRf>   ?}                                   |                               |
| Parameter        | <NRf>                                                                     | 0.0E+0 to 1.0E+2 (0% to 100%) |
| Return Parameter | <NR3>                                                                     | Returns the intensity.        |
| Example          | :DISPlay:INTensity:WAVEform 5.0E+1<br>Sets the waveform intensity to 50%. |                               |

Set →

:DISPlay:INTensity:GRATicule

→ Query

|                  |                                                                             |                                  |
|------------------|-----------------------------------------------------------------------------|----------------------------------|
| Description      | Sets or queries the graticule intensity level.                              |                                  |
| Syntax           | :DISPlay:INTensity:GRATicule {<NRf>   ?}                                    |                                  |
| Parameter        | <NRf>                                                                       | 1.0E+0 to 1.0E+2 (10% to 100%)   |
| Return Parameter | <NR3>                                                                       | Returns the graticule intensity. |
| Example          | :DISPlay:INTensity:GRATicule 5.0E+1<br>Sets the graticule intensity to 50%. |                                  |

Set →

:DISPlay:INTensity:BACKLight

→ Query

|                  |                                                                             |                                  |
|------------------|-----------------------------------------------------------------------------|----------------------------------|
| Description      | Sets or queries the intensity of the backlight display.                     |                                  |
| Syntax           | :DISPlay:INTensity:BACKLight {<NRf>   ?}                                    |                                  |
| Parameter        | <NRf>                                                                       | 1.0E+0 to 1.0E+2 (10% to 100%)   |
| Return Parameter | <NR3>                                                                       | Returns the backlight intensity. |
| Example          | :DISPlay:INTensity:BACKLight 5.0E+1<br>Sets the backlight intensity to 50%. |                                  |

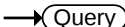
:DISPlay:INTensity:BACKLight:AUTODim  
:ENABLE

Set →

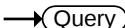
→ Query

|             |                                                               |  |
|-------------|---------------------------------------------------------------|--|
| Description | Sets or queries the display auto-dim function.                |  |
| Syntax      | :DISPlay:INTensity:BACKLight:AUTODim:ENABLE<br>{OFF   ON   ?} |  |

|                                |                                                                                   |                    |
|--------------------------------|-----------------------------------------------------------------------------------|--------------------|
| Parameter/<br>Return parameter | OFF                                                                               | Turn auto-dim on.  |
|                                | ON                                                                                | Turn auto-dim off. |
| Example                        | :DISPlay:INTensity:BACKLight:AUTODim:ENABLE ON<br>Turns the auto-dim function on. |                    |

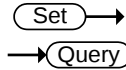
DISPlay:INTENSITY:BACKLight:AUTODim   
:TIME 

|                                |                                                                                       |                                   |
|--------------------------------|---------------------------------------------------------------------------------------|-----------------------------------|
| Description                    | Sets or queries the display auto-dim time.                                            |                                   |
| Syntax                         | :DISPlay:INTensity:BACKLight:AUTODim:TIME<br>{ <NR1>   ? }                            |                                   |
| Parameter/<br>Return parameter | <NR1>                                                                                 | 1 ~ 180 minutes. Time in minutes. |
| Example                        | :DISPlay:INTensity:BACKLight:AUTODim:TIME 10<br>Sets the auto-dim time to 10 minutes. |                                   |

:DISPlay:PERSistence   


|                  |                                                                   |                                                                                                                   |
|------------------|-------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| Description      | Sets or queries the waveform persistence level.                   |                                                                                                                   |
| Syntax           | :DISPlay:PERSistence { INFInite   OFF   <NRf>   ? }               |                                                                                                                   |
| Parameter        | <NRf>                                                             | 1.6E-2 ~ 4.0E+0. (16mS to 10S)<br>Range(1.6E-2, 30E-3, 60E-3, 120E-2, 240E-3, 500E-3, 750E-3, 1, 1.5,2,...,9.5,10 |
|                  | INFInite                                                          | Infinite persistence                                                                                              |
|                  | OFF                                                               | No persistence                                                                                                    |
| Return Parameter | <NR3>                                                             | Returns the persistence time.                                                                                     |
|                  | INFInite                                                          | Infinite persistence                                                                                              |
|                  | OFF                                                               | No persistence                                                                                                    |
| Example          | :DISPlay:PERSistence 2.0E+0<br>Sets the persistence to 2 seconds. |                                                                                                                   |

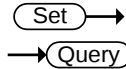
## :DISPlay:GRATicule



|             |                                                     |                                                                                   |        |                                                                                   |
|-------------|-----------------------------------------------------|-----------------------------------------------------------------------------------|--------|-----------------------------------------------------------------------------------|
| Description | Sets or queries graticule display type.             |                                                                                   |        |                                                                                   |
| Syntax      | :DISPlay:GRATicule {FULL   GRID CROSSs   FRAME   ?} |                                                                                   |        |                                                                                   |
| Parameter   | FULL                                                |  | CROSSs |  |
|             | FRAME                                               |  | GRID   |  |

Return parameter Returns the graticule type.

Example :DISPlay:GRATicule FULL  
Sets the graticule to .



## :DISPlay:WAVEform

|             |                                                                     |         |
|-------------|---------------------------------------------------------------------|---------|
| Description | Sets or queries whether the waveforms are drawn as vectors or dots. |         |
| Syntax      | :DISPlay:WAVEform {VECTor   DOT   ?}                                |         |
| Parameter   | VECTor                                                              | Vectors |
|             | DOT                                                                 | Dots    |

Return parameter Returns VECTOR or DOT.

Example :DISPlay:WAVEform VECTor  
Sets the waveform to vectors.

## :DISPlay:OUTPut



|             |                                                                    |
|-------------|--------------------------------------------------------------------|
| Description | Returns the screen image as a 16 bit RGB run length encoded image. |
| Syntax      | :DISPlay:OUTPut{?}                                                 |

Return parameter    Format: header+data+LF

For example assuming the image data size is 60072 bytes then the following would be returned:

#560072<[count] [color] [count] [color]..... ><LF>

Where #560072 is the header, each [count] and [color] data are 2 bytes and <LF> is a line feed character.

## Hardcopy Commands

|                               |    |
|-------------------------------|----|
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| :HARDcopy:ASSIGN.....         | 77 |

### :HARDcopy:START



|                  |                                                                                                                 |
|------------------|-----------------------------------------------------------------------------------------------------------------|
| Description      | Executing the HARDcopy:START command is the equivalent of pressing the Hardcopy key on the front panel.         |
| Syntax           | :HARDcopy:START                                                                                                 |
| Related Commands | :HARDcopy:MODE<br>:HARDcopy:PRINTINKSaver<br>:HARDcopy:SAVEINKSaver<br>:HARDcopy:SAVEFORMat<br>:HARDcopy:ASSIGN |



### :HARDcopy:MODE



|             |                                                           |
|-------------|-----------------------------------------------------------|
| Description | Sets or queries whether hardcopy is set to print or save. |
| Syntax      | :HARDcopy:MODE { PRINT   SAVE   ? }                       |

Related Commands :HARDcopy:START

|           |       |            |
|-----------|-------|------------|
| Parameter | PRINT | Print mode |
|           | SAVE  | Save mode  |

Return parameter Returns the mode.(PRINT/SAVE)

Example :HARDcopy:MODE PRINT  
Sets hardcopy to print.

Set →

→ Query

### :HARDcopy:PRINTINKSaver

Description Sets Inksaver On or Off for printing.

Syntax :HARDcopy:PRINTINKSaver { OFF | ON | ? }

Related Commands :HARDcopy:START  
:HARDcopy:MODE

|           |     |              |
|-----------|-----|--------------|
| Parameter | ON  | Inksaver ON  |
|           | OFF | Inksaver OFF |

Return parameter Returns the print Ink Saver mode.(ON/OFF)

Example :HARDcopy:PRINTINKSaver ON  
Sets Ink Saver to ON for printing.

Set →

→ Query

### :HARDcopy:SAVEINKSaver

Description Sets Inksaver On or Off for saving screen images.

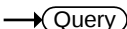
Syntax :HARDcopy:SAVEINKSaver { OFF | ON | ? }

Related Commands :HARDcopy:START  
:HARDcopy:MODE

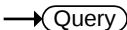
|           |     |              |
|-----------|-----|--------------|
| Parameter | ON  | Inksaver ON  |
|           | OFF | Inksaver OFF |

Return parameter Returns the screen image Ink Saver mode (ON/OFF).

Example :HARDcopy:SAVEINKSaver ON  
Sets Inksaver to ON for saving screen images.

:HARDcopy:SAVEFORMat  

|                  |                                                          |                 |
|------------------|----------------------------------------------------------|-----------------|
| Description      | Sets or queries the image save file type.                |                 |
| Syntax           | :HARDcopy:SAVEFORMat { PNG   BMP   ? }                   |                 |
| Related Commands | :HARDcopy:START<br>:HARDcopy:MODE                        |                 |
| Parameter        | PNG                                                      | PNG file format |
|                  | BMP                                                      | BMP file format |
| Return parameter | Returns the image file format (PNG/BMP).                 |                 |
| Example          | :HARDcopy:SAVEFORMat PNG<br>Sets the file format to PNG. |                 |

:HARDcopy:ASSIGN  

|                  |                                                                            |                                  |
|------------------|----------------------------------------------------------------------------|----------------------------------|
| Description      | Sets or queries what file type the hardcopy key has been assigned to save. |                                  |
| Syntax           | :HARDcopy:ASSIGN<br>{IMAGe   WAVEform   SETUp   ALL   ?}                   |                                  |
| Related Commands | :HARDcopy:START<br>:HARDcopy:MODE                                          |                                  |
| Parameter        | IMAGe                                                                      | Save image files.                |
|                  | WAVEform                                                                   | Save waveforms.                  |
|                  | SETUp                                                                      | Save the panel setup.            |
|                  | ALL                                                                        | Save All (image, waveform,setup) |
| Return parameter | Returns the file type.<br>(IMAGE/WAVEFORM/SETUP/ALL)                       |                                  |
| Example          | :HARDcopy:ASSIGN IMAGE.<br>Set the hardcopy key to save image files.       |                                  |

## Measure Commands

---

|                                          |    |
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:MEASure:GATing

Set

→

→

Query

|                  |                                               |                            |
|------------------|-----------------------------------------------|----------------------------|
| Description      | Sets or queries the measurement gating.       |                            |
| Syntax           | :MEASure:GATing { OFF   SCREEn   CURSor   ? } |                            |
| Parameter        | OFF                                           | Full record                |
|                  | SCREEn                                        | Gating set to screen width |
|                  | CURSor                                        | Gating between cursors     |
| Return parameter | Returns the gating. (OFF, SCREEN, CURSOR)     |                            |
| Example          | :MEASure:GATing OFF                           |                            |
|                  | Turns gating off (full record).               |                            |

:MEASure:SOURce

Set

→

→

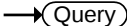
Query

|             |                                                                |                    |
|-------------|----------------------------------------------------------------|--------------------|
| Description | Sets or queries the measurement source for source1 or source2. |                    |
| Syntax      | :MEASure:SOURce<X> { CH1   CH2   CH3   CH4   MATH   ? }        |                    |
| Parameter   | <X>                                                            | Source1 or source2 |
|             | CH1~CH4                                                        | Channel 1 to 4     |

|                  |                                                    |      |
|------------------|----------------------------------------------------|------|
|                  | <b>MATH</b>                                        | Math |
| Return parameter | Returns the source (CH1, CH2, CH3, CH4, MATH)      |      |
| Example          | :MEASure:SOURce1 CH1<br>Sets source1 to channel 1. |      |

|                        |                                                                               |                                     |
|------------------------|-------------------------------------------------------------------------------|-------------------------------------|
|                        |                                                                               | <div>Set →</div> <div>→ Query</div> |
| <b>:MEASure:METHod</b> |                                                                               |                                     |
| Description            | Sets or queries the method used to determine the High-Low measurement values. |                                     |
| Syntax                 | :MEASure:METHod { AUTO   HISTogram   MINMax   ? }                             |                                     |
| Parameter              | AUTO                                                                          | Set to auto.                        |
|                        | HISTogram                                                                     | Set to the Histogram method.        |
|                        | MINMax                                                                        | Set to the Min-Max method.          |
| Return parameter       | Returns the measurement method (AUTO, HISTOGRAM, MINMAX)                      |                                     |
| Example                | :MEASure:METHod: AUTO<br>Set the measurement method to auto.                  |                                     |

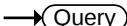
|                                           |                                                                                   |                                     |
|-------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------|
|                                           |                                                                                   | <div>Set →</div> <div>→ Query</div> |
| <b>:MEASUrement:REFLevel:PERCent:HIGH</b> |                                                                                   |                                     |
| Description                               | Sets or queries the high reference level as a percentage.                         |                                     |
| Syntax                                    | :MEASUrement:REFLevel:PERCent:HIGH {<NRF>   ?}                                    |                                     |
| Parameter                                 | <NRF>                                                                             | 0 - 100%                            |
| Return parameter                          | Returns the high reference level                                                  |                                     |
| Example                                   | :MEASUrement:REFLevel:PERCent:HIGH 50.1<br>Set the high reference level to 50.1%. |                                     |

:MEASUrement:REFLevel:PERCent:LOW  

|                  |                                                                                 |
|------------------|---------------------------------------------------------------------------------|
| Description      | Sets or queries the low reference level as a percentage.                        |
| Syntax           | :MEASUrement:REFLevel:PERCent:LOW {<Nrf>   ?}                                   |
| Parameter        | <Nrf> 0 - 100%                                                                  |
| Return parameter | Returns the low reference level.                                                |
| Example          | :MEASUrement:REFLevel:PERCent:LOW 40.1<br>Set the low reference level to 40.1%. |

:MEASUrement:REFLevel:PERCent:MID  

|                  |                                                                             |
|------------------|-----------------------------------------------------------------------------|
| Description      | Sets or queries the first mid reference level as a percentage.              |
| Syntax           | :MEASUrement:REFLevel:PERCent:MID {<Nrf>   ?}                               |
| Parameter        | <Nrf> 0 - 100%                                                              |
| Return parameter | Returns the mid reference level.                                            |
| Example          | :MEASUrement:REFLevel:PERCent:MID 50<br>Set the mid reference level to 50%. |

:MEASUrement:REFLevel:PERCent:MID2  

|                  |                                                                              |
|------------------|------------------------------------------------------------------------------|
| Description      | Sets or queries the second mid reference level as a percentage.              |
| Syntax           | :MEASUrement:REFLevel:PERCent:MID2 {<Nrf>   ?}                               |
| Parameter        | <Nrf> 0 - 100%                                                               |
| Return parameter | Returns the mid reference level of the second source.                        |
| Example          | :MEASUrement:REFLevel:PERCent:MID2 50<br>Set the mid reference level to 50%. |

## :MEASure:FALL

→ Query

|                  |                                                                                                             |                                                |
|------------------|-------------------------------------------------------------------------------------------------------------|------------------------------------------------|
| Description      | Returns the fall time measurement result.                                                                   |                                                |
| Syntax           | :MEASure:FALL{?}                                                                                            |                                                |
| Related Commands | :MEASure:SOURce<X>                                                                                          |                                                |
| Return parameter | <NR3><br>Chan Off                                                                                           | Indicates the source channel is not activated. |
| Note             | Before using this command, select the measurement channel. See the example below.                           |                                                |
| Example          | :MEASure:SOURce1 CH1<br>:MEASure:FALL?<br>Selects Channel 1 as the source, and then measures the fall time. |                                                |

## :MEASure:FOVShoot

→ Query

|                  |                                                                                   |                                                                                              |
|------------------|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| Description      | Returns the fall overshoot amplitude.                                             |                                                                                              |
| Syntax           | :MEASure:FOVShoot{?}                                                              |                                                                                              |
| Related Commands | :MEASure:SOURce<X>                                                                |                                                                                              |
| Return parameter | <NR3><br>Chan Off                                                                 | Returns the fall overshoot as a percentage<br>Indicates the source channel is not activated. |
| Note             | Before using this command, select the measurement channel. See the example below. |                                                                                              |

Example           :MEASure:SOURce1 CH1  
                   :MEASure:FOVShoot?  
                   1.27E+0  
 Selects Channel 1, and then measures the fall overshoot.

### :MEASure:FPReshoot

|                  |                                                                                                        |                                                |
|------------------|--------------------------------------------------------------------------------------------------------|------------------------------------------------|
| Description      | Returns fall preshoot amplitude.                                                                       |                                                |
| Syntax           | :MEASure:FPReshoot{?}                                                                                  |                                                |
| Related Commands | :MEASure:SOURce<X>                                                                                     |                                                |
| Returns          | Returns the fall preshoot as <NR3>.                                                                    |                                                |
| Return parameter | <NR3>                                                                                                  | Returns the fall preshoot as a percentage.     |
|                  | Chan Off                                                                                               | Indicates the source channel is not activated. |
| Note             | Before using this command, select the measurement channel. See the example below.                      |                                                |
| Example          | :MEASure:SOURce1 CH1<br>:MEASure:FPReshoot?<br>Selects Channel 1, and then measures the fall preshoot. |                                                |

### :MEASure:FREQuency

|                  |                              |                                                |
|------------------|------------------------------|------------------------------------------------|
| Description      | Returns the frequency value. |                                                |
| Syntax           | :MEASure:FREQuency{?}        |                                                |
| Related Commands | :MEASure:SOURce<X>           |                                                |
| Return parameter | <NR3>                        | Returns the frequency in Hz.                   |
|                  | Chan Off                     | Indicates the source channel is not activated. |

|         |                                                                                                               |
|---------|---------------------------------------------------------------------------------------------------------------|
| Note    | Before using this command, select the measurement channel. See the example below.                             |
| Example | :MEASure:SOURce1 CH1<br>:MEASure:FREQuency?<br>>1.0E+3<br>Selects Channel 1, and then measures the frequency. |

### :MEASure:NWIDth

→ Query

|                  |                                                                                                                         |                                                |
|------------------|-------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|
| Description      | Returns the first negative pulse width timing.                                                                          |                                                |
| Syntax           | :MEASure:NWIDth{?}                                                                                                      |                                                |
| Related Commands | :MEASure:SOURce<X>                                                                                                      |                                                |
| Return parameter | <NR3>                                                                                                                   | Returns the negative pulse width in seconds.   |
|                  | Chan Off                                                                                                                | Indicates the source channel is not activated. |
| Note             | Before using this command, select the measurement channel. See the example below.                                       |                                                |
| Example          | :MEASure:SOURce1 CH1<br>:MEASure:NWIDth?<br>4.995E-04<br>Selects Channel 1, and then measures the negative pulse width. |                                                |

### :MEASure:PDUTy

→ Query

|                  |                                                      |                                  |
|------------------|------------------------------------------------------|----------------------------------|
| Description      | Returns the positive duty cycle ratio as percentage. |                                  |
| Syntax           | :MEASure:PDUTy{?}                                    |                                  |
| Related commands | :MEASure:SOURce<X>                                   |                                  |
| Return parameter | <NR3>                                                | Returns the positive duty ratio. |

|         |                                                                                                                                |
|---------|--------------------------------------------------------------------------------------------------------------------------------|
|         | <div>Chan Off</div> <div>Indicates the source channel is not activated.</div>                                                  |
| Note    | Before using this command, select the measurement channel. See the example below.                                              |
| Example | <pre>:MEASure:SOURce1 CH1 :MEASure:PDUTy? 5.000E+01</pre> <p>Selects Channel 1, and then measures the positive duty cycle.</p> |

**:MEASure:PERiod**

|                  |                                                                                                                                     |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| Description      | Returns the period.                                                                                                                 |
| Syntax           | :MEASure:PERiod{?}                                                                                                                  |
| Related Commands | :MEASure:SOURce<X>                                                                                                                  |
| Return parameter | <div>&lt;NR3&gt;</div> <div>Returns the period.</div> <div>Chan Off</div> <div>Indicates the source channel is not activated.</div> |
| Note             | Before using this command, select the measurement channel. See the example below.                                                   |
| Example          | <pre>:MEASure:SOURce1 CH1 :MEASure:PERiod? 1.0E-3</pre> <p>Selects Channel 1, and then measures the period.</p>                     |

**:MEASure:PWIDth**

|                  |                                         |
|------------------|-----------------------------------------|
| Description      | Returns the first positive pulse width. |
| Syntax           | :MEASure:PWIDth{?}                      |
| Related Commands | :MEASure:SOURce<X>                      |

|                  |                                                                                                                      |                                                |
|------------------|----------------------------------------------------------------------------------------------------------------------|------------------------------------------------|
| Return parameter | <NR3>                                                                                                                | Returns the positive pulse width.              |
|                  | Chan Off                                                                                                             | Indicates the source channel is not activated. |
| Note             | Before using this command, select the measurement channel. See the example below.                                    |                                                |
| Example          | :MEASure:SOURce1 CH1<br>:MEASure:PWIDth?<br>5.0E-6<br>Selects Channel 1, and then measures the positive pulse width. |                                                |

### :MEASure:RISe



|                  |                                                                                                         |                                                |
|------------------|---------------------------------------------------------------------------------------------------------|------------------------------------------------|
| Description      | Returns the first pulse rise time.                                                                      |                                                |
| Syntax           | :MEASure:RISe{?}                                                                                        |                                                |
| Related Commands | :MEASure:SOURce<X>                                                                                      |                                                |
| Return parameter | <NR3>                                                                                                   | Returns the rise time.                         |
|                  | Chan Off                                                                                                | Indicates the source channel is not activated. |
| Note             | Before using this command, select the measurement channel. See the example below.                       |                                                |
| Example          | :MEASure:SOURce1 CH1<br>:MEASure:RISe?<br>8.5E-6<br>Selects Channel 1, and then measures the rise time. |                                                |

### :MEASure:ROVShoot



|             |                                                                      |  |
|-------------|----------------------------------------------------------------------|--|
| Description | Returns the rising overshoot over the entire waveform in percentage. |  |
| Syntax      | :MEASure:ROVShoot{?}                                                 |  |

|                  |                                                                                                                    |                                                |
|------------------|--------------------------------------------------------------------------------------------------------------------|------------------------------------------------|
| Related Commands | :MEASure:SOURce<X>                                                                                                 |                                                |
| Return parameter | <NR3>                                                                                                              | Returns the overshoot.                         |
|                  | Chan Off                                                                                                           | Indicates the source channel is not activated. |
| Note             | Before using this command, select the measurement channel. See the example below.                                  |                                                |
| Example          | :MEASure:SOURce1 CH1<br>:MEASure:ROVShoot?<br>5.00E+00<br>Selects Channel 1, and then measures the rise overshoot. |                                                |

**:MEASure:RPReshoot**

|                  |                                                                                                                   |                                                |
|------------------|-------------------------------------------------------------------------------------------------------------------|------------------------------------------------|
| Description      | Returns rising preshoot over the entire waveform in percentage.                                                   |                                                |
| Syntax           | :MEASure:RPReshoot{?}                                                                                             |                                                |
| Related Commands | :MEASure:SOURce<X>                                                                                                |                                                |
| Return parameter | <NR3>                                                                                                             | Returns the rising preshoot.                   |
|                  | Chan Off                                                                                                          | Indicates the source channel is not activated. |
| Note             | Before using this command, select the measurement channel. See the example below.                                 |                                                |
| Example          | :MEASure:SOURce1 CH1<br>:MEASure:RPReshoot?<br>2.13E-2<br>Selects Channel 1, and then measures the rise preshoot. |                                                |

## :MEASure:PPULSE



|                  |                                                                                                                              |                                                |
|------------------|------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|
| Description      | Returns the number of positive pulses.                                                                                       |                                                |
| Syntax           | :MEASure:PPULSE{?}                                                                                                           |                                                |
| Related Commands | :MEASure:SOURce<X>                                                                                                           |                                                |
| Return parameter | <NR3>                                                                                                                        | Returns the number of positive pulses.         |
|                  | Chan Off                                                                                                                     | Indicates the source channel is not activated. |
| Note             | Before using this command, select the measurement channel. See the example below.                                            |                                                |
| Example          | :MEASure:SOURce1 CH1<br>:MEASure:PPULSE?<br>6.000E+00<br>Selects Channel 1, and then measures the number of positive pulses. |                                                |

## :MEASure:NPULSE



|                  |                                        |                                                |
|------------------|----------------------------------------|------------------------------------------------|
| Description      | Returns the number of negative pulses. |                                                |
| Syntax           | :MEASure:NPULSE{?}                     |                                                |
| Related Commands | :MEASure:SOURce<X>                     |                                                |
| Return parameter | <NR3>                                  | Returns the number of negative pulses.         |
|                  | Chan Off                               | Indicates the source channel is not activated. |

|         |                                                                                                                              |
|---------|------------------------------------------------------------------------------------------------------------------------------|
| Note    | Before using this command, select the measurement channel. See the example below.                                            |
| Example | :MEASure:SOURce1 CH1<br>:MEASure:NPULSE?<br>4.000E+00<br>Selects Channel 1, and then measures the number of negative pulses. |

**:MEASure:PEDGE**

|                  |                                                                                                                            |                                                |
|------------------|----------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|
| Description      | Returns the number of positive edges.                                                                                      |                                                |
| Syntax           | :MEASure:PEDGE{?}                                                                                                          |                                                |
| Related Commands | :MEASure:SOURce<X>                                                                                                         |                                                |
| Return parameter | <NR3>                                                                                                                      | Returns the number of positive edges.          |
|                  | Chan Off                                                                                                                   | Indicates the source channel is not activated. |
| Note             | Before using this command, select the measurement channel. See the example below.                                          |                                                |
| Example          | :MEASure:SOURce1 CH1<br>:MEASure:PEDGE?<br>1.100E+01<br>Selects Channel 1, and then measures the number of positive edges. |                                                |

**:MEASure:NEDGE**

|                  |                                       |                                       |
|------------------|---------------------------------------|---------------------------------------|
| Description      | Returns the number of negative edges. |                                       |
| Syntax           | :MEASure:NEDGE{?}                     |                                       |
| Related Commands | :MEASure:SOURce<X>                    |                                       |
| Return parameter | <NR3>                                 | Returns the number of negative edges. |

|         |                                                                                                                                     |
|---------|-------------------------------------------------------------------------------------------------------------------------------------|
|         | <div>Chan Off</div> <div>Indicates the source channel is not activated.</div>                                                       |
| Note    | Before using this command, select the measurement channel. See the example below.                                                   |
| Example | <pre>:MEASure:SOURce1 CH1 :MEASure:NEDGE? 1.100E+01</pre> <p>Selects Channel 1, and then measures the number of negative edges.</p> |

## :MEASure:AMPlitude

→ Query

|                  |                                                                                                                                        |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| Description      | Returns the amplitude difference between the Vhigh-Vlow.                                                                               |
| Syntax           | :MEASure:AMPlitude{?}                                                                                                                  |
| Related Commands | :MEASure:SOURce<X>                                                                                                                     |
| Return parameter | <div>&lt;NR3&gt;</div> <div>Returns the amplitude.</div> <div>Chan Off</div> <div>Indicates the source channel is not activated.</div> |
| Note             | Before using this command, select the measurement channel. See the example below.                                                      |
| Example          | <pre>:MEASure:SOURce1 CH1 :MEASure:AMPlitude? 3.76E-3</pre> <p>Selects Channel 1, and then measures the amplitude.</p>                 |

## :MEASure:MEAN

→ Query

|             |                                                               |
|-------------|---------------------------------------------------------------|
| Description | Returns the mean voltage/current of one or more full periods. |
| Syntax      | :MEASure:MEAN{?}                                              |

|                  |                                                                                   |                                                |
|------------------|-----------------------------------------------------------------------------------|------------------------------------------------|
| Related Commands | :MEASure:SOURce<X>                                                                |                                                |
| Return parameter | <NR3>                                                                             | Returns the mean.                              |
|                  | Chan Off                                                                          | Indicates the source channel is not activated. |
| Note             | Before using this command, select the measurement channel. See the example below. |                                                |
| Example          | :MEASure:SOURce1 CH1                                                              |                                                |
|                  | :MEASure:MEAN?                                                                    |                                                |
|                  | 1.82E-3                                                                           |                                                |
|                  | Selects Channel 1, and then measures the mean value.                              |                                                |

**:MEASure:CMEan**

→ Query

|                  |                                                                                   |                                                |
|------------------|-----------------------------------------------------------------------------------|------------------------------------------------|
| Description      | Returns the mean voltage/current of one full period.                              |                                                |
| Syntax           | :MEASure:CMEan{?}                                                                 |                                                |
| Related Commands | :MEASure:SOURce<X>                                                                |                                                |
| Return parameter | <NR3>                                                                             | Returns the cyclic mean.                       |
|                  | Chan Off                                                                          | Indicates the source channel is not activated. |
| Note             | Before using this command, select the measurement channel. See the example below. |                                                |
| Example          | :MEASure:SOURce1 CH1                                                              |                                                |
|                  | :MEASure:CMEan?                                                                   |                                                |
|                  | 9.480E-01                                                                         |                                                |
|                  | Selects Channel 1, and then measures the mean value of the first period.          |                                                |

## :MEASure:HIGH



|                  |                                                                                   |                                                |
|------------------|-----------------------------------------------------------------------------------|------------------------------------------------|
| Description      | Returns the global high voltage/current.                                          |                                                |
| Syntax           | :MEASure:HIGH{?}                                                                  |                                                |
| Related Commands | :MEASure:SOURce<X>                                                                |                                                |
| Return parameter | <NR3>                                                                             | Returns the high value.                        |
|                  | Chan Off                                                                          | Indicates the source channel is not activated. |
| Note             | Before using this command, select the measurement channel. See the example below. |                                                |
| Example          | :MEASure:SOURce1 CH1                                                              |                                                |
|                  | :MEASure:HIGH?                                                                    |                                                |
|                  | 3.68E-3                                                                           |                                                |
|                  | Selects Channel 1, and then measures the high voltage/current.                    |                                                |

## :MEASure:LOW



|                  |                                                                                   |                                                |
|------------------|-----------------------------------------------------------------------------------|------------------------------------------------|
| Description      | Returns the global low voltage/current.                                           |                                                |
| Syntax           | :MEASure:LOW{?}                                                                   |                                                |
| Related Commands | :MEASure:SOURce<X>                                                                |                                                |
| Return parameter | <NR3>                                                                             | Returns the global low value.                  |
|                  | Chan Off                                                                          | Indicates the source channel is not activated. |
| Note             | Before using this command, select the measurement channel. See the example below. |                                                |

Example           :MEASure:SOURce1 CH1  
                       :MEASure:LOW?  
                       1.00E-0  
                       Selects Channel 1, and then measures the low  
                       current/voltage.

## :MEASure:MAX

→ Query

|                  |                                                                                                                 |                                                |
|------------------|-----------------------------------------------------------------------------------------------------------------|------------------------------------------------|
| Description      | Returns the maximum amplitude.                                                                                  |                                                |
| Syntax           | :MEASure:MAX{?}                                                                                                 |                                                |
| Related Commands | :MEASure:SOURce<X>                                                                                              |                                                |
| Return parameter | <NR3>                                                                                                           | Returns the maximum amplitude.                 |
|                  | Chan Off                                                                                                        | Indicates the source channel is not activated. |
| Note             | Before using this command, select the measurement channel. See the example below.                               |                                                |
| Example          | :MEASure:SOURce1 CH1<br>:MEASure:MAX?<br>1.90E-3<br>Selects Channel 1, and then measures the maximum amplitude. |                                                |

## :MEASure:MIN

→ Query

|                  |                                |                                                |
|------------------|--------------------------------|------------------------------------------------|
| Description      | Returns the minimum amplitude. |                                                |
| Syntax           | :MEASure:MIN{?}                |                                                |
| Related Commands | :MEASure:SOURce<X>             |                                                |
| Return parameter | <NR3>                          | Returns the minimum amplitude.                 |
|                  | Chan Off                       | Indicates the source channel is not activated. |

|         |                                                                                                                  |
|---------|------------------------------------------------------------------------------------------------------------------|
| Note    | Before using this command, select the measurement channel. See the example below.                                |
| Example | :MEASure:SOURce1 CH1<br>:MEASure:MIN?<br>-8.00E-3<br>Selects Channel 1, and then measures the minimum amplitude. |

### :MEASure:PK2PK



|                  |                                                                                                                        |                                                          |
|------------------|------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|
| Description      | Returns the peak-to-peak amplitude (difference between maximum and minimum amplitude).                                 |                                                          |
| Syntax           | :MEASure:PK2Pk{?}                                                                                                      |                                                          |
| Related Commands | :MEASure:SOURce<X>                                                                                                     |                                                          |
| Return parameter | <NR3>                                                                                                                  | Returns the voltage or current peak to peak measurement. |
|                  | Chan Off                                                                                                               | Indicates the source channel is not activated.           |
| Note             | Before using this command, select the measurement channel. See the example below.                                      |                                                          |
| Example          | :MEASure:SOURce1 CH1<br>:MEASure:PK2Pk?<br>2.04E-1<br>Selects Channel 1, and then measures the peak-to-peak amplitude. |                                                          |

### :MEASure:RMS



|             |                                                                           |  |
|-------------|---------------------------------------------------------------------------|--|
| Description | Returns the root-mean-square voltage/current of one or more full periods. |  |
| Syntax      | :MEASure:RMS{?}                                                           |  |

|                  |                                                                                                                   |                                                |
|------------------|-------------------------------------------------------------------------------------------------------------------|------------------------------------------------|
| Related Commands | :MEASure:SOURce<X>                                                                                                |                                                |
| Return parameter | <NR3>                                                                                                             | Returns the RMS value.                         |
|                  | Chan Off                                                                                                          | Indicates the source channel is not activated. |
| Note             | Before using this command, select the measurement channel. See the example below.                                 |                                                |
| Example          | :MEASure:SOURce1 CH1<br>:MEASure:RMS?<br>1.31E-3<br>Selects Channel 1, and then measures the RMS voltage/current. |                                                |

## :MEASure:CRMS



|                  |                                                                                                                     |                                                |
|------------------|---------------------------------------------------------------------------------------------------------------------|------------------------------------------------|
| Description      | Returns the root-mean-square voltage/current of one full periods.                                                   |                                                |
| Syntax           | :MEASure:CRMS{?}                                                                                                    |                                                |
| Related Commands | :MEASure:SOURce<X>                                                                                                  |                                                |
| Return parameter | <NR3>                                                                                                               | Returns the CRMS value.                        |
|                  | Chan Off                                                                                                            | Indicates the source channel is not activated. |
| Note             | Before using this command, select the measurement channel. See the example below.                                   |                                                |
| Example          | :MEASure:SOURce1 CH1<br>:MEASure:CRMS?<br>1.31E-3<br>Selects Channel 1, and then measures the CRMS voltage/current. |                                                |

## :MEASure:AREa



|                  |                                                                                                       |                                                |
|------------------|-------------------------------------------------------------------------------------------------------|------------------------------------------------|
| Description      | Returns the voltage/current area over one or more full periods.                                       |                                                |
| Syntax           | :MEASure:AREa{?}                                                                                      |                                                |
| Related Commands | :MEASure:SOURce<X>                                                                                    |                                                |
| Return parameter | <NR3>                                                                                                 | Returns the area value.                        |
|                  | Chan Off                                                                                              | Indicates the source channel is not activated. |
| Note             | Before using this command, select the measurement channel. See the example below.                     |                                                |
| Example          | :MEASure:SOURce1 CH1<br>:MEASure:AREa?<br>1.958E-03<br>Selects Channel 1, and then measures the area. |                                                |

## :MEASure:CARea



|                  |                                                                                   |                                                |
|------------------|-----------------------------------------------------------------------------------|------------------------------------------------|
| Description      | Returns the voltage/current area over one full period.                            |                                                |
| Syntax           | :MEASure:CARea{?}                                                                 |                                                |
| Related Commands | :MEASure:SOURce<X>                                                                |                                                |
| Return parameter | <NR3>                                                                             | Returns the area value.                        |
|                  | Chan Off                                                                          | Indicates the source channel is not activated. |
| Note             | Before using this command, select the measurement channel. See the example below. |                                                |

Example           :MEASure:SOURce1 CH1  
                   :MEASure:CARea?  
                   1.958E-03  
                   Selects Channel 1, and then measures the area.

### :MEASure:FRRDelay

|                  |                                                                                                                                              |                                                |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|
| Description      | Returns the delay between the first rising edge of source1 and the first rising edge of source2.                                             |                                                |
| Syntax           | :MEASure:FRRDelay{?}                                                                                                                         |                                                |
| Related Commands | :MEASure:SOURce<X>                                                                                                                           |                                                |
| Return parameter | <NR3>                                                                                                                                        | Returns the delay.                             |
|                  | Chan Off                                                                                                                                     | Indicates the source channel is not activated. |
| Note             | Select the two source channels before entering this command.                                                                                 |                                                |
| Example          | :MEASure:SOURce1 CH1<br>:MEASure:SOURce2 CH2<br>:MEASure:FRRDelay?<br>-4.68E-6<br>Select channel 1 and 2 as source1/2, and then measure FRR. |                                                |

### :MEASure:FRFDelay

|                  |                                                                                                   |                    |
|------------------|---------------------------------------------------------------------------------------------------|--------------------|
| Description      | Returns the delay between the first rising edge of source1 and the first falling edge of source2. |                    |
| Syntax           | :MEASure:FRFDelay{?}                                                                              |                    |
| Related Commands | :MEASure:SOURce<X>                                                                                |                    |
| Return parameter | <NR3>                                                                                             | Returns the delay. |

|         |                                                                                                                                                    |
|---------|----------------------------------------------------------------------------------------------------------------------------------------------------|
|         | <div>Chan Off</div> <div>Indicates the source channel is not activated.</div>                                                                      |
| Note    | Select the two source channels before entering this command.                                                                                       |
| Example | <pre>:MEASure:SOURce1 CH1 :MEASure:SOURce2 CH2 :MEASure:FRFDelay? 3.43E-6</pre> <p>Select channel 1 and 2 as source1/2, and then measures FRF.</p> |

## :MEASure:FFRDelay



|                  |                                                                                                                                                          |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description      | Returns the delay between the first falling edge of source1 and the first rising edge of source2.                                                        |
| Syntax           | :MEASure:FRRDelay{?}                                                                                                                                     |
| Related Commands | :MEASure:SOURce<X>                                                                                                                                       |
| Return parameter | <div>&lt;NR3&gt;</div> <div>Returns the delay.</div> <div>Chan Off</div> <div>Indicates the source channel is not activated.</div>                       |
| Note             | Select the two source channels before entering this command.                                                                                             |
| Example          | <pre>:MEASure:SOURce1 CH1 :MEASure:SOURce2 CH2 :MEASure:FRRDelay? -8.56E-6</pre> <p>Select channel 1 and 2 as delay source1/2, and then measure FFR.</p> |

**:MEASure:FFFDelay**

→ Query

|                  |                                                                                                    |                                                |
|------------------|----------------------------------------------------------------------------------------------------|------------------------------------------------|
| Description      | Returns the delay between the first falling edge of source1 and the first falling edge of source2. |                                                |
| Syntax           | :MEASure:FFFDelay{?}                                                                               |                                                |
| Related Commands | :MEASure:SOURce<X>                                                                                 |                                                |
| Return parameter | <NR3>                                                                                              | Returns the delay.                             |
|                  | Chan Off                                                                                           | Indicates the source channel is not activated. |
| Note             | Select the two source channels before entering this command.                                       |                                                |
| Example          | :MEASure:SOURce1 CH1                                                                               |                                                |
|                  | :MEASure:SOURce2 CH2                                                                               |                                                |
|                  | :MEASure:FFFDelay?                                                                                 |                                                |
|                  | -8.89E-6                                                                                           |                                                |
|                  | Select channel 1 and 2 as delay source1/2, and then measure FFF.                                   |                                                |

**:MEASure:LRRDelay**

→ Query

|                  |                                                                                                 |                                                |
|------------------|-------------------------------------------------------------------------------------------------|------------------------------------------------|
| Description      | Returns the delay between the first rising edge of source1 and the last rising edge of source2. |                                                |
| Syntax           | :MEASure:LRRDelay{?}                                                                            |                                                |
| Related Commands | :MEASure:SOURce<X>                                                                              |                                                |
| Return parameter | <NR3>                                                                                           | Returns the delay.                             |
|                  | Chan Off                                                                                        | Indicates the source channel is not activated. |
| Note             | Select the two source channels before entering this command.                                    |                                                |

Example               :MEASure:SOURce1 CH1  
                           :MEASure:SOURce2 CH2  
                           :MEASure:LRRDelay?  
                           -8.89E-6  
                           Select channel 1 and 2 as delay source1/2, and  
                           then measure LRR.

### :MEASure:LRFDelay



|                  |                                                                                                                                                       |                                                |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|
| Description      | Returns the delay between the first rising edge of source1 and the last rising edge of source2.                                                       |                                                |
| Syntax           | :MEASure:LRFDelay{?}                                                                                                                                  |                                                |
| Related Commands | :MEASure:SOURce<X>                                                                                                                                    |                                                |
| Return parameter | <NR3>                                                                                                                                                 | Returns the delay.                             |
|                  | Chan Off                                                                                                                                              | Indicates the source channel is not activated. |
| Note             | Select the two source channels before entering this command.                                                                                          |                                                |
| Example          | :MEASure:SOURce1 CH1<br>:MEASure:SOURce2 CH2<br>:MEASure:LRFDelay?<br>-4.99E-6<br>Select channel 1 and 2 as delay source1/2, and<br>then measure LRF. |                                                |

### :MEASure:LFRDelay



|                  |                                                                                                  |  |
|------------------|--------------------------------------------------------------------------------------------------|--|
| Description      | Returns the delay between the first falling edge of source1 and the last rising edge of source2. |  |
| Syntax           | :MEASure:LFRDelay{?}                                                                             |  |
| Related Commands | :MEASure:SOURce<X>                                                                               |  |

|                  |                                                                                                                                                          |                                                |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|
| Return parameter | <NR3>                                                                                                                                                    | Returns the delay.                             |
|                  | Chan Off                                                                                                                                                 | Indicates the source channel is not activated. |
| Note             | Select the two source channels before entering this command.                                                                                             |                                                |
| Example          | <pre>:MEASure:SOURce1 CH1 :MEASure:SOURce2 CH2 :MEASure:LFRDelay? -9.99E-6</pre> <p>Select channel 1 and 2 as delay source1/2, and then measure LFR.</p> |                                                |

## :MEASure:LFFDelay



|                  |                                                                                                                                                          |                                                |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|
| Description      | Returns the delay between the first falling edge of source1 and the last falling edge of source2.                                                        |                                                |
| Syntax           | :MEASure:LFFDelay{?}                                                                                                                                     |                                                |
| Related Commands | :MEASure:SOURce<X>                                                                                                                                       |                                                |
| Return parameter | <NR3>                                                                                                                                                    | Returns the delay.                             |
|                  | Chan Off                                                                                                                                                 | Indicates the source channel is not activated. |
| Note             | Select the two source channels before entering this command.                                                                                             |                                                |
| Example          | <pre>:MEASure:SOURce1 CH1 :MEASure:SOURce2 CH2 :MEASure:LFFDelay? -9.99E-6</pre> <p>Select channel 1 and 2 as delay source1/2, and then measure LFF.</p> |                                                |

## :MEASure:PHase



|                  |                                                                                   |                                                |
|------------------|-----------------------------------------------------------------------------------|------------------------------------------------|
| Description      | Returns the phase between source 1 and source 2.                                  |                                                |
| Syntax           | :MEASure:PHase{?}                                                                 |                                                |
| Related Commands | :MEASure:SOURce<X>                                                                |                                                |
| Return parameter | <NR3>                                                                             | Returns the phase difference.                  |
|                  | Chan Off                                                                          | Indicates the source channel is not activated. |
| Note             | Select the two source channels before entering this command.                      |                                                |
| Example          | :MEASure:SOURce1 CH1                                                              |                                                |
|                  | :MEASure:SOURce2 CH2                                                              |                                                |
|                  | :MEASure:PHase?                                                                   |                                                |
|                  | 4.50E+01                                                                          |                                                |
|                  | Select channel 1 and 2 as phase source1/2, and then measure the phase in degrees. |                                                |

Measurement Commands

:MEASUrement:MEAS<X>:SOURCE<X> .....103

:MEASUrement:MEAS<X>:TYPe .....104

:MEASUrement:MEAS<X>:STATE .....104

:MEASUrement:MEAS<X>:VALue .....105

:MEASUrement:MEAS<X>:MAXimum .....106

:MEASUrement:MEAS<X>:MEAN .....107

:MEASUrement:MEAS<X>:MINImum .....107

:MEASUrement:MEAS<X>:STDdev .....108

:MEASUrement:STATIstics:MODE .....109

:MEASUrement:STATIstics:WEIghting .....109

:MEASUrement:STATIstics .....109

:MEASUrement:MEAS<X>:SOURCE<X>

Set

→

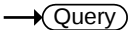
→

Query

|                  |                                                                                                                    |                                                          |
|------------------|--------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|
| Description      | Sets or queries the measurement source for a selected automatic measurement. This is a statistics related command. |                                                          |
| Syntax           | :MEASUrement:MEAS<X>:SOURCE<X> { CH1   CH2   CH3   CH4   MATH   ? }                                                |                                                          |
| Related commands | :MEASUrement:MEAS<X>:TYPe                                                                                          |                                                          |
| Parameter        | MEAS<X>                                                                                                            | The automatic measurement number from 1 to 8.            |
|                  | SOURCE<X>                                                                                                          | SOURCE1: the source for all single channel measurements. |
|                  | SOURCE<X>                                                                                                          | SOURCE2: the source for all delay or phase measurements. |
|                  | CH1 to CH4                                                                                                         | Channel 1, 2, 3, 4                                       |
|                  | MATH                                                                                                               | Math source                                              |
| Return parameter | CH1 to CH4                                                                                                         | Channel 1, 2, 3, 4                                       |

|  |             |             |
|--|-------------|-------------|
|  | <b>MATH</b> | Math source |
|--|-------------|-------------|

Example :MEASUrement:MEAS1:SOURCE1  
>CH1  
Returns the (first) source for measurement 1.

:MEASUrement:MEAS<X>:TYPE  

Description Sets or queries the measurement type for a selected automatic measurement. This is a statistics related command.

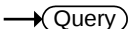
Syntax :MEASUrement:MEAS<X>:TYPE  
{PK2pk | MAXimum | MINImum | AMPLitude | HIGH | LOW | MEAN | CMEan | RMS | CRM s | AREa | CAREa | ROVShoot | FOVShoot | RPReshoot | FPReshoot | FREQuency | PERIod | RISE | FALL | PWidth | NWidth | PDUTy | PPULSE | NPULSE | PEDGE | NEDGE | FRRDelay | FRFDelay | FFRDelay | FFFDelay | LRRDelay | LRFDelay | LFRDelay | LFFDelay | PHAse | ?}

Related commands :MEASUrement:MEAS<X>:SOURCE<X>

Parameter **MEAS<X>** The automatic measurement number from 1 to 8.

Return parameter Returns the measurement type

Example :MEASUrement:MEAS1:TYPE RMS  
Sets measurement 1 to RMS measurement.

:MEASUrement:MEAS<X>:STATE  

Description Sets or queries the state of a selected measurement. This is a statistics related command.

Syntax :MEASUrement:MEAS<X>:STATE { ON | OFF | 1 | 0 | ? }

|                  |                                                             |                                               |
|------------------|-------------------------------------------------------------|-----------------------------------------------|
| Related commands | :MEASUrement:MEAS<X>:SOURce<X><br>:MEASUrement:MEAS<X>:TYPE |                                               |
| Parameter        | MEAS<X>                                                     | The automatic measurement number from 1 to 8. |
|                  | ON/1                                                        | Turn the measurement on.                      |
|                  | OFF/0                                                       | Turn the measurement off.                     |
| Return parameter | 0                                                           | Measurement is off.                           |
|                  | 1                                                           | Measurement is on.                            |
| Example          | :MEASUrement:MEAS1:STATE 1<br>Turns measurement 1 on.       |                                               |

**:MEASUrement:MEAS<X>:VALue**

|                  |                                                                                                                                                      |                                                              |
|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|
| Description      | Returns the measurement results for the selected measurement. This is a statistics related command.                                                  |                                                              |
| Syntax           | :MEASUrement:MEAS<X>:VALue?                                                                                                                          |                                                              |
| Related Commands | :MEASure:SOURce<X>                                                                                                                                   |                                                              |
| Parameter        | MEAS<X>                                                                                                                                              | The automatic measurement number from 1 to 8.                |
| Return parameter | <NR3>                                                                                                                                                | Returns the measurement for the selected measurement number. |
| Note             | The measurement source(s), measurement number, measurement type and measurement state must first be set before a measurement result can be returned. |                                                              |

Example               :MEASUrement:MEAS1:SOUrce1 CH1  
                           :MEASUrement:MEAS1:TYPe PK2PK  
                           :MEASUrement:MEAS1:STATE ON  
                           :MEASUrement:MEAS1:VALue?  
                           5.000E+0

Selects channel 1 as the source for measurement 1, sets measurement 1 to peak to peak measurement and then turns on the measurement. The result returns the peak to peak measurement.

**:MEASUrement:MEAS<X>:MAXimum** 

Description       Returns the maximum measurement results for the selected measurement from the last time the statistics were reset. This is a statistics related command.

Syntax             :MEASUrement:MEAS<X>:MAXimum?

Related Commands       :MEASUrement:STATIstics:MODe

|           |         |                                               |
|-----------|---------|-----------------------------------------------|
| Parameter | MEAS<X> | The automatic measurement number from 1 to 8. |
|-----------|---------|-----------------------------------------------|

|                  |       |                                                              |
|------------------|-------|--------------------------------------------------------------|
| Return parameter | <NR3> | Returns the measurement for the selected measurement number. |
|------------------|-------|--------------------------------------------------------------|

Example               :MEASUrement:MEAS3:SOUrce1 CH1  
                           :MEASUrement:MEAS3:TYPe PK2PK  
                           :MEASUrement:MEAS3:STATE ON  
                           :MEASUrement:STATIstics:MODe ON  
                           :MEASUrement:MEAS3:MAXimum?  
                           2.800E-02

Returns the maximum measurement result for measurement number 3.

**:MEASUrement:MEAS<X>:MEAN**

→ Query

**Description** Returns the mean measurement results for the selected measurement from the last time the statistics were reset. This is a statistics related command.

**Syntax** :MEASUrement:MEAS<X>:MEAN?

**Related Commands** :MEASUrement:STATIstics:MODE

**Parameter** MEAS<X> The automatic measurement number from 1 to 8.

**Return parameter** <NR3> Returns the measurement for the selected measurement number.

**Example**

```
:MEASUrement:MEAS3:SOURce1 CH1
:MEASUrement:MEAS3:TYPe PK2PK
:MEASUrement:MEAS3:STATE ON
:MEASUrement:STATIstics:MODE ON
:MEASUrement:MEAS3:MEAN?
2.090E-02
```

Returns the mean measurement result for measurement number 3.

**:MEASUrement:MEAS<X>:MINIum**

→ Query

**Description** Returns the minimum measurement results for the selected measurement from the last time the statistics were reset. This is a statistics related command.

**Syntax** :MEASUrement:MEAS<X>:MINIum?

**Related Commands** :MEASUrement:STATIstics:MODE

**Parameter** MEAS<X> The automatic measurement number from 1 to 8.

|                  |                                                                                                                                                                                                                                                   |                                                              |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|
| Return parameter | <NR3>                                                                                                                                                                                                                                             | Returns the measurement for the selected measurement number. |
| Example          | <pre>:MEASUrement:MEAS3:SOUrce1 CH1 :MEASUrement:MEAS3:TYPe PK2PK :MEASUrement:MEAS3:STATE ON :MEASUrement:STATIstics:MODe ON :MEASUrement:MEAS3:MINImum? 1.600E-02</pre> <p>Returns the minimum measurement result for measurement number 3.</p> |                                                              |

### :MEASUrement:MEAS<X>:STDdev → Query

|                  |                                                                                                                                                                                                                                          |                                                              |
|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|
| Description      | Returns the standard deviation for the selected measurement from the last time the statistics were reset. This is a statistics related command.                                                                                          |                                                              |
| Syntax           | :MEASUrement:MEAS<X>:STDdev?                                                                                                                                                                                                             |                                                              |
| Related Commands | :MEASUrement:STATIstics:MODe                                                                                                                                                                                                             |                                                              |
| Parameter        | MEAS<X>                                                                                                                                                                                                                                  | The automatic measurement number from 1 to 8.                |
| Return parameter | <NR3>                                                                                                                                                                                                                                    | Returns the measurement for the selected measurement number. |
| Example          | <pre>:MEASUrement:MEAS3:SOUrce1 CH1 :MEASUrement:MEAS3:TYPe PK2PK :MEASUrement:MEAS3:STATE ON :MEASUrement:STATIstics:MODe ON :MEASUrement:MEAS3:STDdev? 1.530E-03</pre> <p>Returns the standard deviation for measurement number 3.</p> |                                                              |

|                                     |                                                                                                      |                                       |
|-------------------------------------|------------------------------------------------------------------------------------------------------|---------------------------------------|
|                                     |                                                                                                      | <div>Set →</div> <div>→ Query</div>   |
| <b>:MEASUrement:STATIstics:MODE</b> |                                                                                                      |                                       |
| Description                         | Puts the statics measurement results on the display or queries whether the statistics are displayed. |                                       |
| Syntax                              | :MEASUrement:STATIstics:MODE {OFF   ON   ?}                                                          |                                       |
| Related commands                    | :MEASUrement:STATIstics                                                                              |                                       |
| Parameter/<br>Return parameter      | ON                                                                                                   | Display the statistics on the screen. |
|                                     | OFF                                                                                                  | Remove the statistics from the screen |
| Example                             | :MEASUrement:STATIstics:MODE ON<br>Displays statistics on the screen.                                |                                       |

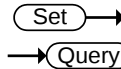
|                                         |                                                                                          |                                     |
|-----------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------|
|                                         |                                                                                          | <div>Set →</div> <div>→ Query</div> |
| <b>:MEASUrement:STATIstics:WEIghing</b> |                                                                                          |                                     |
| Description                             | Sets and queries the number of samples (weighting) used for the statistics calculations. |                                     |
| Syntax                                  | :MEASUrement:STATIstics:WEIghing { <NR1>   ? }                                           |                                     |
| Parameter/<br>Return parameter          | <NR1>                                                                                    | Number of samples (2~1000)          |
| Example                                 | :MEASUrement:STATIstics:WEIghing 5<br>Sets the number of samples to 5.                   |                                     |

|                                |                                                                                                      |                  |
|--------------------------------|------------------------------------------------------------------------------------------------------|------------------|
|                                |                                                                                                      | <div>Set →</div> |
| <b>:MEASUrement:STATIstics</b> |                                                                                                      |                  |
| Description                    | Resets the statics calculations. This command will clear all the currently accumulated measurements. |                  |
| Syntax                         | :MEASUrement:STATIstics {RESET}                                                                      |                  |

## Reference Commands

|                                 |     |
|---------------------------------|-----|
| :REF<X>:DISPlay .....           | 110 |
| :REF<X>:TIMebase:POSition ..... | 110 |
| :REF<X>:TIMebase:SCALE .....    | 111 |
| :REF<X>:OFFSet.....             | 111 |
| :REF<x>:SCALE .....             | 112 |

### :REF<X>:DISPlay



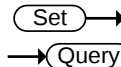
**Description** Sets or queries whether a reference waveform will be shown on the display. A reference waveform must first be saved before this command can be used.

**Syntax** :REF<x>:DISPlay { OFF| ON| ? }

|                  |     |                                           |
|------------------|-----|-------------------------------------------|
| <b>Parameter</b> | <X> | Reference waveform 1, 2, 3, 4.            |
|                  | OFF | Turns the selected reference waveform off |
|                  | ON  | Turns the selected reference waveform on  |

**Return parameter** Returns the status of the selected reference waveform. (OFF, ON).

**Example** :REF1:DISPlay ON  
Turns on reference1 (REF 1) on the display.



### :REF<X>:TIMebase:POSition

**Description** Sets or returns the selected reference waveform time base position.

**Syntax** :REF<X>:TIMebase:POSition { <NRF> | ? }

**Related commands** :REF<X>:DISPlay

|                  |                                                                                                           |                                         |
|------------------|-----------------------------------------------------------------------------------------------------------|-----------------------------------------|
| Parameter        | <X>                                                                                                       | Reference waveform 1, 2, 3, 4.          |
|                  | <NRf>                                                                                                     | Horizontal co-ordinates                 |
| Return parameter | <NR3>                                                                                                     | Returns the reference waveform position |
| Example          | :REF1:TIMEbase:POSition -5.000E-5<br>Selects reference 1, and then sets the horizontal position to -50us. |                                         |

:REF<X>:TIMEbase:SCALe

Set →

→ Query

|                  |                                                                                                       |                                       |
|------------------|-------------------------------------------------------------------------------------------------------|---------------------------------------|
| Description      | Sets or returns the selected reference waveform time base scale.                                      |                                       |
| Syntax           | :REF<X>:TIMEbase:SCALe { <NRf>   ? }                                                                  |                                       |
| Related commands | :REF<X>:DISPlay                                                                                       |                                       |
| Parameter        | <X>                                                                                                   | Reference waveform 1, 2, 3, 4.        |
|                  | <NRf>                                                                                                 | Horizontal scale                      |
| Return parameter | <NR3>                                                                                                 | Returns the reference waveform scale. |
| Example          | :REF1:TIMEbase:SCALe 5.00E-4<br>Selects reference 1, and then sets the horizontal scale to 500us/div. |                                       |

:REF<X>:OFFSet

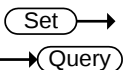
Set →

→ Query

|                  |                                                                             |                                |
|------------------|-----------------------------------------------------------------------------|--------------------------------|
| Description      | Sets or returns the selected reference waveform vertical position (offset). |                                |
| Syntax           | :REF<X>:OFFSet { <NRf>   ? }                                                |                                |
| Related commands | :REF<X>:DISPlay                                                             |                                |
| Parameter        | <X>                                                                         | Reference waveform 1, 2, 3, 4. |
|                  | <NRf>                                                                       | Vertical offset                |

|                  |       |                                                   |
|------------------|-------|---------------------------------------------------|
| Return parameter | <NR3> | Returns the reference waveform vertical position. |
|------------------|-------|---------------------------------------------------|

Example :REF1:OFFSet -5.000E-2  
Selects reference 1, and then sets the vertical position to -50mV/mA.

:REF<x>:SCALE 


|             |                                                                 |
|-------------|-----------------------------------------------------------------|
| Description | Sets or returns the selected reference waveform vertical scale. |
|-------------|-----------------------------------------------------------------|

|        |                             |
|--------|-----------------------------|
| Syntax | :REF<X>:SCALE { <NRf>   ? } |
|--------|-----------------------------|

|                  |                 |
|------------------|-----------------|
| Related commands | :REF<X>:DISPlay |
|------------------|-----------------|

|           |       |                                |
|-----------|-------|--------------------------------|
| Parameter | <X>   | Reference waveform 1, 2, 3, 4. |
|           | <NRf> | Vertical scale                 |

|                  |       |                                                |
|------------------|-------|------------------------------------------------|
| Return parameter | <NR3> | Returns the reference waveform vertical scale. |
|------------------|-------|------------------------------------------------|

Example :REF1:SCALE 5.000E-2  
Selects reference 1, and then sets the vertical scale to 50mV | mA/div.

## Run Command

:RUN



|             |                                                                                                                                    |
|-------------|------------------------------------------------------------------------------------------------------------------------------------|
| Description | The run command allows the oscilloscope to continuously make acquisitions (equivalent to pressing the Run key on the front panel). |
|-------------|------------------------------------------------------------------------------------------------------------------------------------|

|        |      |
|--------|------|
| Syntax | :RUN |
|--------|------|

## Stop Command

:STOP



|             |                                                                                                                               |
|-------------|-------------------------------------------------------------------------------------------------------------------------------|
| Description | The stop command stops the oscilloscope making further acquisitions (equivalent to pressing the Stop key on the front panel). |
|-------------|-------------------------------------------------------------------------------------------------------------------------------|

|        |       |
|--------|-------|
| Syntax | :STOP |
|--------|-------|

## Single Command

:SINGle



|             |                                                                                                                                                                                    |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | The single command allows the oscilloscope to capture a single acquisition when trigger conditions have been fulfilled (equivalent to pressing the Single key on the front panel). |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|        |         |
|--------|---------|
| Syntax | :SINGle |
|--------|---------|

## Force Command

---

:FORCe



---

|             |                                                                                                         |
|-------------|---------------------------------------------------------------------------------------------------------|
| Description | The Force command forces an acquisition (equivalent to pressing the Force-Trig key on the front panel). |
|-------------|---------------------------------------------------------------------------------------------------------|

---

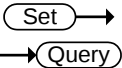
|        |        |
|--------|--------|
| Syntax | :FORCe |
|--------|--------|

---

Timebase Commands

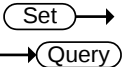
|                                 |     |
|---------------------------------|-----|
| :TImebase:EXPand .....          | 115 |
| :TImebase:POSition .....        | 115 |
| :TImebase:SCALe.....            | 115 |
| :TImebase:MODE .....            | 116 |
| :TImebase:WINDow:POSition ..... | 116 |
| :TImebase:WINDow:SCALe .....    | 117 |

:TImebase:EXPand



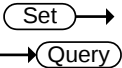
|                            |                                                                            |                                        |
|----------------------------|----------------------------------------------------------------------------|----------------------------------------|
| Description                | Sets or queries the horizontal expansion mode.                             |                                        |
| Syntax                     | :TImebase:EXPand {CENTER TRIGger ?}                                        |                                        |
| Parameter/Return parameter | CENTER                                                                     | Expand from the center of the display. |
|                            | TRIGger                                                                    | Expand from the trigger point.         |
| Example                    | :TImebase:EXPand TRIGger<br>Sets the expansion point to the trigger point. |                                        |

:TImebase:POSition



|                  |                                                                      |                                 |
|------------------|----------------------------------------------------------------------|---------------------------------|
| Description      | Sets or queries the horizontal position.                             |                                 |
| Syntax           | :TImebase:POSition {<NRf>   ?}                                       |                                 |
| Parameter        | <NRf>                                                                | Horizontal position             |
| Return parameter | <NR3>                                                                | Returns the horizontal position |
| Example          | :TImebase:POSition 5.00E-4<br>Sets the horizontal position as 500us. |                                 |

:TImebase:SCALe



|             |                                       |  |
|-------------|---------------------------------------|--|
| Description | Sets or queries the horizontal scale. |  |
|-------------|---------------------------------------|--|

|                  |                                                                   |                               |
|------------------|-------------------------------------------------------------------|-------------------------------|
| Syntax           | :TIMebase:SCALE {<NRf>   ?}                                       |                               |
| Parameter        | <NRf>                                                             | Horizontal scale              |
| Return parameter | <NR3>                                                             | Returns the horizontal scale. |
| Example          | :TIMebase:SCALE 5.00E-2<br>Sets the horizontal scale to 50ms/div. |                               |

(Set) →

### :TIMebase:MODE

→ (Query)

|                  |                                                                                                         |                                             |
|------------------|---------------------------------------------------------------------------------------------------------|---------------------------------------------|
| Description      | Sets or queries the time base mode. The time base mode determines the display view window on the scope. |                                             |
| Syntax           | :TIMebase:MODE {MAIN   WINDow   XY   ?}                                                                 |                                             |
| Parameter        | MAIN                                                                                                    | Sets the time base mode to the main screen. |
|                  | WINDow                                                                                                  | Sets the time base mode to the zoom window. |
|                  | XY                                                                                                      | Sets the time base mode to the XY display.  |
| Return parameter | Returns the time base mode (MAIN, WINDOW, XY)                                                           |                                             |
| Example          | :TIMebase:MODE MAIN<br>Sets the time base mode to the main mode.                                        |                                             |

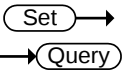
(Set) →

### :TIMebase:WINDow:POSition

→ (Query)

|                  |                                               |                                       |
|------------------|-----------------------------------------------|---------------------------------------|
| Description      | Sets or queries the zoom horizontal position. |                                       |
| Syntax           | :TIMebase:WINDow:POSition {<NRf>   ?}         |                                       |
| Related commands | :TIMebase:MODE                                |                                       |
| Parameter        | <NRf>                                         | Horizontal position for zoom window   |
| Return parameter | <NR3>                                         | Returns the zoom horizontal position. |

Example :TIMebase:WINDow:POSition 2.0E-3  
Sets the zoom horizontal position as 20ms.

:TIMebase:WINDow:SCALe 

|                  |                                                                                                               |                                                                |
|------------------|---------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|
| Description      | Sets or queries the zoom horizontal scale.                                                                    |                                                                |
| Note             | If the oscilloscope is under “ZOOM” mode, the main timebase function will be disabled and cannot be modified. |                                                                |
| Syntax           | :TIMebase:WINDow:SCALe {<NRf>   ?}                                                                            |                                                                |
| Related commands | :TIMebase:MODE                                                                                                |                                                                |
| Parameter        | <NRf>                                                                                                         | Zoom horizontal scale. The range will depend on the time base. |
| Return parameter | <NR3>                                                                                                         | Returns the zoom horizontal scale.                             |
| Example          | :TIMebase:WINDow:SCALe 2.0E-3<br>Sets the zoom horizontal scale to 2ms.                                       |                                                                |

# Trigger Commands

|                                    |     |
|------------------------------------|-----|
| :TRIGger:FREQuency.....            | 120 |
| :TRIGger:TYPe .....                | 120 |
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| :TRIGger:COUPle.....               | 121 |
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| :TRIGger:MODE.....                 | 122 |
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| :TRIGger:RISEFall:SLOP.....        | 128 |
| :TRIGger:RISEFall:WHEn .....       | 128 |
| :TRIGger:RISEFall:TIME .....       | 129 |
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| :TRIGger:PULSe:WHEn .....          | 131 |
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| :TRIGger:TIMEOut:TIMER .....       | 133 |
| :TRIGger:ALTErnate.....            | 133 |

|                                                |     |
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| :TRIGger:STATe .....                           | 133 |
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| :TRIGger:EXTERnal:PROBe:RATio .....            | 134 |
| :TRIGger:BUS:TYPe .....                        | 135 |
| :TRIGger:BUS:THReshold:CH<x> .....             | 135 |
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| :TRIGger:BUS:B1:LIN:DATA:VALue .....           | 152 |
| :TRIGger:BUS:B1:LIN:ERRTYPE .....              | 153 |
| :TRIGger:BUS:B1:LIN:IDentifier:VALue .....     | 153 |

## :TRIGger:FREQuency

→ Query

|                  |                                                                   |                                |
|------------------|-------------------------------------------------------------------|--------------------------------|
| Description      | Queries the trigger frequency.                                    |                                |
| Syntax           | :TRIGger:FREQuency{?}                                             |                                |
| Return parameter | <NR3>                                                             | Returns the trigger frequency. |
| Example          | :TRIGger:FREQuency?<br>1.032E+3<br>Returns the trigger frequency. |                                |

Set →

## :TRIGger:TYPe

→ Query

|                  |                                                                                          |                       |
|------------------|------------------------------------------------------------------------------------------|-----------------------|
| Description      | Sets or queries the trigger type.                                                        |                       |
| Syntax           | :TRIGger:TYPe {EDGE   DELay   PULSEWidth   VIDEo   RUNT   RISEFall   BUS   TIMEOut   ? } |                       |
| Parameter        | EDGE                                                                                     | Edge trigger          |
|                  | DELay                                                                                    | Delay trigger         |
|                  | PULSEWidth                                                                               | Pulse width trigger   |
|                  | VIDeo                                                                                    | Video trigger         |
|                  | RUNT                                                                                     | Runt trigger          |
|                  | RISEFall                                                                                 | Rise and fall trigger |
|                  | BUS                                                                                      | Bus trigger           |
|                  | TIMEOut                                                                                  | Timeout trigger       |
| Return parameter | Returns the trigger type.                                                                |                       |
| Example          | :TRIGger:TYPe EDGE<br>Sets the trigger type to edge.                                     |                       |

## :TRIGger:SOURce

Set →

→ Query

|                  |                                                               |                        |
|------------------|---------------------------------------------------------------|------------------------|
| Description      | Sets or queries the trigger source.                           |                        |
| Syntax           | :TRIGger:SOURce<br>{ CH1   CH2   CH3   CH4   EXT   LINe   ? } |                        |
| Parameter        | CH1 to CH4                                                    | Channel 1 to channel 4 |
|                  | EXT                                                           | External source        |
|                  | LINe                                                          | AC Line                |
| Return parameter | Returns the trigger source.                                   |                        |
| Example          | :TRIGger:SOURce CH1<br>Sets the trigger source to channel 1.  |                        |

Set →

→ Query

## :TRIGger:COUPle

|                  |                                                        |                          |
|------------------|--------------------------------------------------------|--------------------------|
| Description      | Sets or queries the trigger coupling.                  |                          |
| Note             | Applicable for edge and delay triggers only.           |                          |
| Syntax           | :TRIGger:COUPle {AC   DC   HF   LF   ?}                |                          |
| Parameter        | AC                                                     | AC mode                  |
|                  | DC                                                     | DC mode                  |
|                  | HF                                                     | High frequency rejection |
|                  | LF                                                     | Low frequency rejection  |
| Return parameter | Returns the trigger coupling.                          |                          |
| Example          | :TRIGger:COUPle AC<br>Sets the trigger coupling to AC. |                          |

Set →

→ Query

## :TRIGger:NREJ

|             |                                         |  |
|-------------|-----------------------------------------|--|
| Description | Sets or queries noise rejection status. |  |
| Syntax      | :TRIGger:NREJ {OFF  ON  ?}              |  |

|           |     |                           |
|-----------|-----|---------------------------|
| Parameter | OFF | Turns noise rejection off |
|           | ON  | Turns noise rejection on  |

Return parameter Returns the noise rejection status (ON, OFF).

Example :TRIGger:NREJ ON  
Turns noise rejection on.

## :TRIGger:MODE

Set →

→ Query

Description Sets or queries the trigger mode.

Syntax :TRIGger:MODE {AUTO | NORMAl | ?}

|           |        |                                 |
|-----------|--------|---------------------------------|
| Parameter | AUTO   | Auto trigger (Untriggered roll) |
|           | NORMAl | Normal trigger                  |

Return parameter Returns the trigger mode.

Example :TRIGger:MODE NORMAl  
Sets the trigger mode to normal.

Set →

→ Query

## :TRIGger:HOLDoff

Description Sets or queries the holdoff time.

Syntax :TRIGger:HOLDoff {<NRf> | ?}

|           |       |              |
|-----------|-------|--------------|
| Parameter | <NRf> | Holdoff time |
|-----------|-------|--------------|

Return parameter <NR3> Returns the trigger holdoff time.

Example :TRIGger:HOLDoff 1.00E-8  
Sets the trigger holdoff time to 10ns.

Set →

→ Query

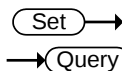
## :TRIGger:LEVel

Description Sets or queries the level.

Note Not applicable to Pulse Runt and Rise & Fall triggers.

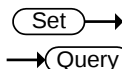
|                  |                                                               |                                                            |
|------------------|---------------------------------------------------------------|------------------------------------------------------------|
| Syntax           | :TRIGger:LEVel {TTL   ECL   SETTO50   <NRf>   ?}              |                                                            |
| Related commands | :TRIGger:TYPe                                                 |                                                            |
| Parameter        | <NRf>                                                         | Trigger level value.                                       |
|                  | TTL                                                           | Sets the trigger level to TTL.                             |
|                  | ECL                                                           | Sets the trigger level to ECL.                             |
|                  | SETTO50                                                       | Sets the trigger level to the User level (50% by default). |
| Return parameter | <NR3>                                                         | Returns the trigger level.                                 |
| Example1         | :TRIGger:LEVel TTL<br>Sets the trigger to TTL.                |                                                            |
| Example2         | :TRIGger:LEVel 3.30E-1<br>Sets the trigger level to 330mV/mA. |                                                            |

## :TRIGger:HLEVel



|                  |                                                                     |                                 |
|------------------|---------------------------------------------------------------------|---------------------------------|
| Description      | Sets or queries the high trigger level.                             |                                 |
| Note             | Applicable for Rise and Fall/Pulse Runt triggers.                   |                                 |
| Syntax           | :TRIGger:HLEVel {<NRf>   ?}                                         |                                 |
| Related commands | :TRIGger:TYPe                                                       |                                 |
| Parameter        | <NRf>                                                               | High level value.               |
| Return parameter | <NR3>                                                               | Returns the trigger high level. |
| Example          | :TRIGger:HLEVel 3.30E-1<br>Sets the trigger high level to 330mV/mA. |                                 |

## :TRIGger:LLEVel



|             |                                                   |  |
|-------------|---------------------------------------------------|--|
| Description | Sets or queries the low trigger level.            |  |
| Note        | Applicable for Rise and Fall/Pulse Runt triggers. |  |

|                  |                                                                      |                                |
|------------------|----------------------------------------------------------------------|--------------------------------|
| Syntax           | :TRIGger:LLEVel {<NRf>   ?}                                          |                                |
| Related commands | :TRIGger:TYPe                                                        |                                |
| Parameter        | <NRf>                                                                | Low level value.               |
| Return parameter | <NR3>                                                                | Returns the trigger low level. |
| Example          | :TRIGger:LLEVel -3.30E-3<br>Sets the trigger low level to -330mV/mA. |                                |

## :TRIGger:EDGE:SLOP

Set →  
→ Query

|                  |                                                               |                                |
|------------------|---------------------------------------------------------------|--------------------------------|
| Description      | Sets or queries the trigger slope.                            |                                |
| Syntax           | :TRIGger:EDGE:SLOP {RISe   FALL   EITHer   ? }                |                                |
| Related commands | :TRIGger:TYPe                                                 |                                |
| Parameter        | RISe                                                          | Rising slope                   |
|                  | FALL                                                          | Falling slope                  |
|                  | EITHer                                                        | Either rising or falling slope |
| Return parameter | Returns the trigger slope.                                    |                                |
| Example          | :TRIGger:EDGE:SLOP FALL<br>Sets the trigger slope to falling. |                                |

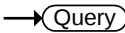
## :TRIGger:DELAy:SLOP

Set →  
→ Query

|                  |                                                          |                                |
|------------------|----------------------------------------------------------|--------------------------------|
| Description      | Sets or queries the trigger slope for the delay trigger. |                                |
| Syntax           | :TRIGger:DELAy:SLOP {RISe   FALL   EITHer   ? }          |                                |
| Related commands | :TRIGger:TYPe                                            |                                |
| Parameter        | RISe                                                     | Rising slope                   |
|                  | FALL                                                     | Falling slope                  |
|                  | EITHer                                                   | Either rising or falling slope |

Return parameter Returns the trigger slope.

Example :TRIGger:DElay:SLOP FALL  
Sets the trigger slope to falling.

:TRIGger:DElay:TYPE  

Description Sets or queries the trigger delay type.

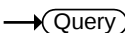
Syntax :TRIGger:DElay:TYPE {TIME | EVENT | ?}

Related commands :TRIGger:TYPE

|           |       |                               |
|-----------|-------|-------------------------------|
| Parameter | TIME  | Sets the delay type to time.  |
|           | EVENT | Sets the delay type to event. |

Return parameter Returns the trigger delay type.

Example :TRIGger:DElay:TYPE TIME  
Sets the delay type to time delay.

:TRIGger:DElay:TIME  

Description Sets or queries the delay time value.

Syntax :TRIGger:DElay:TIME {<NRf> | ?}

Related commands :TRIGger:DElay:TYPE

|           |       |                              |
|-----------|-------|------------------------------|
| Parameter | <NRf> | Delay time (1.00E-8~1.00E+1) |
|-----------|-------|------------------------------|

|                  |       |                         |
|------------------|-------|-------------------------|
| Return parameter | <NR3> | Returns the delay time. |
|------------------|-------|-------------------------|

Example :TRIGger:DElay:TIME 1.00E-6  
Sets the delay time to 1us.

:TRIGger:DElay:EVENT  

Description Sets or queries the number of events for the event trigger.

|                  |                                                           |                               |
|------------------|-----------------------------------------------------------|-------------------------------|
| Syntax           | :TRIGger:DElay:EVENT {<NR1>   ?}                          |                               |
| Related commands | :TRIGger:DElay:TYPe                                       |                               |
| Parameter        | <NR1>                                                     | 1~65535 events                |
| Return parameter | <NR1>                                                     | Returns the number of events. |
| Example          | :TRIGger:DElay:EVENT 2<br>Sets the number of events to 2. |                               |

### :TRIGger:DElay:LEVel

Set →

→ Query

|                  |                                                                         |                            |
|------------------|-------------------------------------------------------------------------|----------------------------|
| Description      | Sets or queries the trigger delay level.                                |                            |
| Syntax           | :TRIGger:DElay:LEVel {<NRf>   ?}                                        |                            |
| Parameter        | <NRf>                                                                   | Delay trigger level        |
| Return parameter | <NR3>                                                                   | Returns the delay trigger. |
| Example          | :TRIGger:DElay:LEVel 5.00E-3<br>Sets the delay trigger level to 5mV/mA. |                            |

Set →

→ Query

### :TRIGger:PULSEWidth:POLarity

|                  |                                                                                     |                   |
|------------------|-------------------------------------------------------------------------------------|-------------------|
| Description      | Sets or queries the pulse width trigger polarity.                                   |                   |
| Syntax           | :TRIGger:PULSEWidth:POLarity {POSitive   NEGative   ?}                              |                   |
| Related commands | :TRIGger:TYPe                                                                       |                   |
| Parameter        | POSitive                                                                            | Positive polarity |
|                  | NEGative                                                                            | Negative polarity |
| Return parameter | Returns the pulse width polarity.                                                   |                   |
| Example          | :TRIGger:PULSEWidth:POLarity POSitive<br>Sets the pulse width polarity to positive. |                   |

:TRIGger:RUNT:POLarity

Set

→

→

Query

|                  |                                                                                      |                               |
|------------------|--------------------------------------------------------------------------------------|-------------------------------|
| Description      | Sets or queries the Pulse Runt trigger polarity.                                     |                               |
| Syntax           | :TRIGger:RUNT:POLarity { POSitive   NEGative   EITher   ? }                          |                               |
| Related commands | :TRIGger:TYPE                                                                        |                               |
| Parameter        | POSitive                                                                             | Positive polarity             |
|                  | NEGative                                                                             | Negative polarity             |
|                  | EITher                                                                               | Positive or negative polarity |
| Return parameter | Returns the pulse runt trigger polarity.                                             |                               |
| Example          | :TRIGger:RUNT:POLarity POSitive<br>Sets the Pulse Runt trigger polarity to positive. |                               |

:TRIGger:RUNT:WHEn

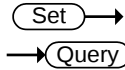
Set

→

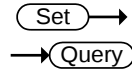
→

Query

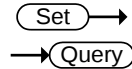
|                  |                                                                                     |   |
|------------------|-------------------------------------------------------------------------------------|---|
| Description      | Sets or queries the Pulse Runt trigger conditions.                                  |   |
| Syntax           | :TRIGger:RUNT:WHEn { MOREthan   LESSthan   EQual   UNEQual   ? }                    |   |
| Related commands | :TRIGger:TYPE<br>:TRIGger:RUNT:TIME                                                 |   |
| Parameter        | MOREthan                                                                            | > |
|                  | LESSthan                                                                            | < |
|                  | EQual                                                                               | = |
|                  | UNEQual                                                                             | ≠ |
| Return parameter | Returns the pulse runt trigger condition.                                           |   |
| Example          | :TRIGger:RUNT:WHEn UNEQual<br>Sets the Pulse Runt trigger condition to unequal (≠). |   |

**:TRIGger:RUNT:TIME**

|                  |                                                             |                                   |
|------------------|-------------------------------------------------------------|-----------------------------------|
| Description      | Sets or queries the Pulse Runt trigger time.                |                                   |
| Syntax           | :TRIGger:RUNT:TIME {<NRf>   ? }                             |                                   |
| Related commands | :TRIGger:TYPe<br>:TRIGger:RUNT:WHEn                         |                                   |
| Parameter        | <NRf>                                                       | Pulse runt time (4nS to 10S)      |
| Return Parameter | <NR3>                                                       | Returns the runt time in seconds. |
| Example          | :TRIGger:RUNT:TIME 4.00E-5<br>Sets the runt time to 40.0uS. |                                   |

**:TRIGger:RISEFall:SLOP**

|                  |                                                                      |                                |
|------------------|----------------------------------------------------------------------|--------------------------------|
| Description      | Sets or queries the Rise & Fall slope.                               |                                |
| Syntax           | :TRIGger:RISEFall:SLOP {RISe   FALL   EITHer   ? }                   |                                |
| Parameter        | RISe                                                                 | Rising slope                   |
|                  | FALL                                                                 | Falling slope                  |
|                  | EITHer                                                               | Either rising or falling slope |
| Return parameter | Returns the rise & fall slope.                                       |                                |
| Example          | :TRIGger:RISEFall:SLOP RISe<br>Sets the Rise & Fall slope to rising. |                                |

**:TRIGger:RISEFall:WHEn**

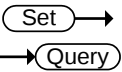
|                  |                                                                     |   |
|------------------|---------------------------------------------------------------------|---|
| Description      | Sets or queries the rise/fall trigger conditions.                   |   |
| Syntax           | :TRIGger:RISEFall:WHEn {MOREthan   LESSthan   EQUAL   UNEQual   ? } |   |
| Related commands | :TRIGger:TYPe<br>:TRIGger:RISEFall:TIME                             |   |
| Parameter        | MOREthan                                                            | > |

|          |   |
|----------|---|
| LESSthan | < |
| Equal    | = |
| UNEQual  | ≠ |

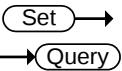
Return parameter Returns the rise/fall trigger condition.

Example :TRIGger:RISEFall:WHEn UNEQual  
Sets the Rise and Fall trigger condition to unequal (≠).

:TRIGger:RISEFall:TIME



|                  |                                                                           |                                            |
|------------------|---------------------------------------------------------------------------|--------------------------------------------|
| Description      | Sets or queries the Rise and Fall time.                                   |                                            |
| Syntax           | :TRIGger:RISEFall:TIME {<NRF>   ? }                                       |                                            |
| Related commands | :TRIGger:TYPE<br>:TRIGger:RISEFall:WHEn                                   |                                            |
| Parameter        | <NRF>                                                                     | Rise and Fall time (4nS to 10S)            |
| Return Parameter | <NR3>                                                                     | Returns the rise and fall time in seconds. |
| Example          | :TRIGger:RISEFall:TIME 4.00E-5<br>Sets the trigger rise & fall to 40.0us. |                                            |



:TRIGger:VIDeo:TYPE

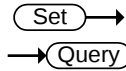
|                  |                                                                                                        |       |
|------------------|--------------------------------------------------------------------------------------------------------|-------|
| Description      | Sets or queries the video trigger type.                                                                |       |
| Syntax           | :TRIGger:VIDeo:TYPE {NTSC   PAL   SECam   EDTV480P   EDTV576P   HDTV720P   HDTV1080I   HDTV1080P   ? } |       |
| Related commands | :TRIGger:TYPE                                                                                          |       |
| Parameter        | NTSC                                                                                                   | NTSC  |
|                  | PAL                                                                                                    | PAL   |
|                  | SECam                                                                                                  | SECAM |

|           |                          |
|-----------|--------------------------|
| EDTV480P  | Extra definition TV 480P |
| EDTV576P  | Extra definition TV 576P |
| HDTV720P  | High definition TV 720P  |
| HDTV1080i | High definition TV 1080i |
| HDTV1080P | High definition TV 1080P |

Return parameter Returns the video trigger type.

Example :TRIGger:VIDeo:TYPe NTSC  
Sets the video trigger to NTSC.

:TRIGger:VIDeo:FIELD



Description Sets or queries the video trigger field.

Syntax :TRIGger:VIDeo:FIELD { FIELD1 | FIELD2 | ALLFields | ALLLines | ? }

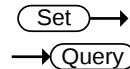
Related commands :TRIGger:TYPe

|           |           |                       |
|-----------|-----------|-----------------------|
| Parameter | FIELD1    | Trigger on field 1    |
|           | FIELD2    | Trigger on field 2    |
|           | ALLFields | Trigger on all fields |
|           | ALLLines  | Trigger on all lines  |

Return parameter Returns the video trigger field.

Example :TRIGger:VIDeo:FIELD ALLFields  
Sets the video trigger to trigger on all fields.

:TRIGger:VIDeo:LINE

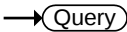


Description Sets or queries the video trigger line.

Syntax :TRIGger:VIDeo:LINE {<NR1> | ?}

Related commands :TRIGger:TYPe

|                  |                                                            |                                 |
|------------------|------------------------------------------------------------|---------------------------------|
| Parameter        | <NR1>                                                      | Video line                      |
| Return parameter | <NR3>                                                      | Returns the video trigger line. |
| Example          | :TRIGger:VIDeo:LINE 1<br>Sets the video trigger to line 1. |                                 |

:TRIGger:VIDeo:POLarity  

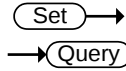
|                  |                                                                                  |                   |
|------------------|----------------------------------------------------------------------------------|-------------------|
| Description      | Sets or queries the video trigger polarity.                                      |                   |
| Syntax           | :TRIGger:VIDeo:POLarity { POSitive   NEGative   ? }                              |                   |
| Related commands | :TRIGger:TYPE                                                                    |                   |
| Parameter        | POSitive                                                                         | Positive polarity |
|                  | NEGative                                                                         | Negative polarity |
| Return parameter | Returns the video trigger polarity.                                              |                   |
| Example          | :TRIGger:VIDeo:POLarity POSitive<br>Sets the video trigger polarity to positive. |                   |

:TRIGger:PULSe:WHEn  

|                  |                                                                   |   |
|------------------|-------------------------------------------------------------------|---|
| Description      | Sets or queries the pulse width trigger conditions.               |   |
| Syntax           | :TRIGger:PULSe:WHEn { MOREthan   LESSthan   Equal   UNEQual   ? } |   |
| Related commands | :TRIGger:TYPE<br>:TRIGger:PULSe:TIME                              |   |
| Parameter        | MORE than                                                         | > |
|                  | LESSthan                                                          | < |
|                  | Equal                                                             | = |
|                  | UNEQual                                                           | ≠ |

Return parameter Returns the pulse width trigger conditions.

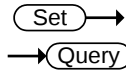
**Example**                   :TRIGger:PULSe:WHEn UNEQual  
Sets the trigger pulse width conditions to not equal to (≠).



**:TRIGger:PULSe:TIME**

|                  |                                       |                                          |
|------------------|---------------------------------------|------------------------------------------|
| Description      | Sets or queries the pulse width time. |                                          |
| Syntax           | :TRIGger:PULSe:TIME {<NRf>   ?}       |                                          |
| Related commands | :TRIGger:TYPe                         |                                          |
|                  | :TRIGger:PULSe:WHEn                   |                                          |
| Parameter        | <NRf>                                 | Pulse width time (4ns~10s)               |
| Return parameter | <NR3>                                 | Returns the pulse width time in seconds. |

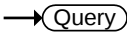
**Example**                   :TRIGger:PULSe:TIME 4.00E-5  
Sets the trigger pulse width to 40.0us.



**:TRIGger:TIMEOut:WHEn**

|                  |                                                    |                        |
|------------------|----------------------------------------------------|------------------------|
| Description      | Sets or queries the timeout trigger condition.     |                        |
| Syntax           | :TRIGger:TIMEOut:WHEn {HIGH LOW EITHER ?}          |                        |
| Related commands | :TRIGger:TIMEOut:TIMER                             |                        |
|                  |                                                    |                        |
| Parameter        | HIGH                                               | Signal is high.        |
|                  | LOW                                                | Signal is low.         |
|                  | EITHER                                             | Signal is high or low. |
| Return parameter | Returns the timeout condition (HIGH, LOW, EITHER). |                        |

**Example1**               :TRIGger:TIMEOut:WHEn LOW  
Sets the timeout condition to low.

:TRIGger:TIMEOut:TIMER  

Description Sets or returns timeout trigger time.

Syntax :TRIGger:TIMEOut:TIMER {<NRf> | ? }

Related commands :TRIGger:TIMEOut:WHEn

Parameter <NRf> Timeout time. (4nS to 10S).

Return parameter Returns the timeout time as <NR3>.

Example :TRIGger:TIMEOut:TIMER?  
8.960e-05

:TRIGger:ALTErnate  

Description Sets alternating between source triggers on or off or queries its state.

Syntax :TRIGger:ALTErnate {OFF | ON |?}

Parameter OFF Alternate off  
ON Alternate on

Return parameter Returns the Alternate trigger status (ON, OFF).

Example :TRIGger:ALTErnate ON  
Turns on alternating between source triggers.

:TRIGger:STATe 

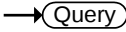
Description Returns the current state of the triggering system.

Syntax :TRIGger:STATe?

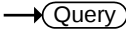
Return parameter \*ARMED Indicates that the oscilloscope is acquiring pretrigger information.

|          |                                                                                                                     |
|----------|---------------------------------------------------------------------------------------------------------------------|
| *AUTO    | Indicates that the oscilloscope is in the automatic mode and acquires data even in the absence of a trigger.        |
| *READY   | Indicates that all pretrigger information has been acquired and that the oscilloscope is ready to accept a trigger. |
| *SAVE    | Indicates that the oscilloscope is in save mode and is not acquiring data.                                          |
| *TRIGGER | Indicates that the oscilloscope triggered and is acquiring the post trigger information.                            |

Example      :TRIGger:STATe?  
                  AUTO  
                  The trigger is in auto mode.

:TRIGger:EXTERnal:PROBE:TYPE  

|                  |                                                                 |         |
|------------------|-----------------------------------------------------------------|---------|
| Description      | Sets or queries the external probe type.                        |         |
| Syntax           | :TRIGger:EXTERnal:PROBE:TYPE { VOLTage   CURRent   ? }<br>  ? } |         |
| Related commands | :TRIGger:EXTERnal:PROBE:RATio                                   |         |
| Parameter        | VOLTage                                                         | Voltage |
|                  | CURRent                                                         | Current |
| Return parameter | Returns the probe type.                                         |         |
| Example          | :TRIGger:EXTERnal:PROBE:TYPE?<br>CURRENT                        |         |

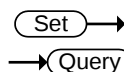
:TRIGger:EXTERnal:PROBE:RATio  

|             |                                                         |
|-------------|---------------------------------------------------------|
| Description | Sets or queries the external probe ratio (attenuation). |
|-------------|---------------------------------------------------------|

|                  |                                                |                                       |
|------------------|------------------------------------------------|---------------------------------------|
| Syntax           | :TRIGger:EXTERnaL:PROBe:RATio {<NRf>   ?}      |                                       |
| Related commands | :TRIGger:EXTERnaL:PROBe:TYPe                   |                                       |
| Parameter        | <NRf>                                          | External probe attenuation factor.    |
| Return parameter | <NR3>                                          | Returns the probe attenuation factor. |
| Example          | :TRIGger:EXTERnaL:PROBe:RATio?<br>5.000000e+01 |                                       |

**:TRIGger:BUS:TYPe**

|                  |                               |                       |
|------------------|-------------------------------|-----------------------|
| Description      | Returns the current bus type. |                       |
| Syntax           | :TRIGger:BUS:TYPe?            |                       |
| Return parameter | I2C                           | I <sup>2</sup> C mode |
|                  | SPI                           | SPI mode              |
|                  | UART                          | UART mode             |
|                  | CAN                           | CAN mode              |
|                  | LIN                           | LIN mode              |
| Example          | :TRIGger:BUS:TYPe?<br>UART    |                       |

**:TRIGger:BUS:THReshold:CH<x>**

|                  |                                                               |                             |
|------------------|---------------------------------------------------------------|-----------------------------|
| Description      | Sets or queries the threshold level for the selected channel. |                             |
| Syntax           | :TRIGger:BUS:THReshold:CH<X> {<NR3>   ?}                      |                             |
|                  | <X>                                                           | CH1 ~ CH4                   |
|                  | <NR3>                                                         | Threshold level             |
| Return Parameter | <NR3>                                                         | Returns the threshold level |
| Example          | :TRIGger:BUS:THReshold:CH1 1<br>Sets the CH1 threshold to 1V. |                             |

:TRIGger:BUS:B1:I2C:CONDition

Set →

→ Query

|                  |                                                                                                             |                                                                        |
|------------------|-------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|
| Description      | Sets or queries the I <sup>2</sup> C trigger conditions.                                                    |                                                                        |
| Syntax           | :TRIGger:BUS:B1:I2C:CONDition<br>{START   STOP   REPEATstart   ACKMISS   ADDRess   DATA   ADDRANDDATA   ? } |                                                                        |
| Parameter        | START                                                                                                       | Set Start as the I <sup>2</sup> C trigger condition.                   |
|                  | STOP                                                                                                        | Set Stop as the I <sup>2</sup> C trigger condition.                    |
|                  | REPEATstart                                                                                                 | Set Repeat of Start as the I <sup>2</sup> C trigger condition.         |
|                  | ACKMISS                                                                                                     | Set Missing Acknowledgement as the I <sup>2</sup> C trigger condition. |
|                  | ADDRess                                                                                                     | Set Address as the I <sup>2</sup> C trigger condition.                 |
|                  | DATA                                                                                                        | Set Data as the I <sup>2</sup> C trigger condition.                    |
|                  | ADDRANDDATA                                                                                                 | Set Address and Data as the I <sup>2</sup> C trigger condition.        |
| Return parameter | Returns the I <sup>2</sup> C bus trigger condition.                                                         |                                                                        |
| Example          | :TRIGger:BUS:B1:I2C:CONDition ADDRess<br>Set Address as the I <sup>2</sup> C trigger condition.             |                                                                        |

Set →

→ Query

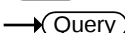
:TRIGger:BUS:B1:I2C:ADDRess:MODE

|                  |                                                                      |
|------------------|----------------------------------------------------------------------|
| Description      | Sets or queries the I <sup>2</sup> C addressing mode (7 or 10 bits). |
| Syntax           | :TRIGger:BUS:B1:I2C:ADDRess:MODE {ADDR7   ADDR10   ? }               |
| Related commands | :TRIGger:BUS:B1:I2C:CONDition                                        |

|                  |        |                   |
|------------------|--------|-------------------|
| Parameter        | ADDR7  | 7 bit addressing  |
|                  | ADDR10 | 10 bit addressing |
| Return Parameter | 0      | 7 bit addressing  |
|                  | 1      | 10 bit addressing |

Example :TRIGger:BUS:B1:I2C:ADDRess:MODE?  
0

The addressing mode is currently set to 7 bits.

:TRIGger:BUS:B1:I2C:ADDRess:TYPE  

Description Sets the I<sup>2</sup>C bus address type, or queries what the setting is.

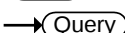
Syntax :TRIGger:BUS:B1:I2C:ADDRess:TYPE {GENeralcall | STARTbyte | HSmode | EEPROM | CBUS | ?}

Related commands :TRIGger:BUS:B1:I2C:CONDition

|           |             |                                                |
|-----------|-------------|------------------------------------------------|
| Parameter | GENeralcall | Set a general call address (0000 000 0).       |
|           | STARTbyte   | Set a start byte address. (0000 000 1)         |
|           | HSmode      | Set a high-speed mode address.<br>(0000 1xx x) |
|           | EEPROM      | Set an EEPROM address.<br>(1010 xxx x)         |
|           | CBUS        | Set a CBUS address. (0000 001 x)               |

Return Parameter Returns the address type

Example :TRIGger:BUS:B1:I2C:ADDRess:TYPE?  
CBUS

:TRIGger:BUS:B1:I2C:ADDRess:VALue  

Description Sets or queries the I<sup>2</sup>C bus address value when the I<sup>2</sup>C bus is set to trigger on Address or Address/Data.

|                                                                                                                              |                                                                                                                      |                                                                                                                     |
|------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|
| Syntax                                                                                                                       | :TRIGger:BUS:B1:I2C:ADDress:VALue {<string>   ? }                                                                    |                                                                                                                     |
| Related commands                                                                                                             | :TRIGger:BUS:B1:I2C:ADDress:MODE                                                                                     |                                                                                                                     |
| Parameter                                                                                                                    | <sting>                                                                                                              | 7/10 characters, must be enclosed in double quotes, "string".<br><br>x = don't care<br>1 = binary 1<br>0 = binary 0 |
| Return Parameter                                                                                                             | Returns the address value.                                                                                           |                                                                                                                     |
| Example1                                                                                                                     | :TRIGger:BUS:B1:I2C:ADDress:MODE ADDR7<br>:TRIGger:BUS:B1:I2C:ADDress:VALue "xxx0101"<br>Sets the address to XXX0101 |                                                                                                                     |
| Example 2                                                                                                                    | :TRIGger:BUS:B1:I2C:ADDress:VALue?<br>XXX0101                                                                        |                                                                                                                     |
| <div><div>:TRIGger:BUS:B1:I2C:ADDress:DIRection</div><div><div>Set</div><div>→</div><div>→</div><div>Query</div></div></div> |                                                                                                                      |                                                                                                                     |
| Description                                                                                                                  | Sets or queries the address bit as read write or don't care.                                                         |                                                                                                                     |
| Note                                                                                                                         | This setting only applies when the I <sup>2</sup> C trigger is set to trigger on Address or Address/Data             |                                                                                                                     |
| Syntax                                                                                                                       | :TRIGger:BUS:B1:I2C:ADDress:DIRection { READ   WRITE   NOCARE   ? }                                                  |                                                                                                                     |
| Related commands                                                                                                             | :TRIGger:BUS:B1:I2C:CONDition                                                                                        |                                                                                                                     |
| Parameter                                                                                                                    | READ<br>WRITE<br>NOCARE                                                                                              | Set read as the data direction.<br>Set write as the data direction.<br>Set either as the data direction.            |
| Return Parameter                                                                                                             | Returns the direction (READ, WRITE, NOCARE).                                                                         |                                                                                                                     |
| Example                                                                                                                      | :TRIGger:BUS:B1:I2C:ADDress:DIRection READ<br>Sets the direction to READ.                                            |                                                                                                                     |

:TRIGger:BUS:B1:I2C:DATA:SIZE Set →  
→ Query

|                  |                                                                                                       |                                 |
|------------------|-------------------------------------------------------------------------------------------------------|---------------------------------|
| Description      | Sets or queries the data size in bytes for the I <sup>2</sup> C bus.                                  |                                 |
| Note             | This setting only applies when the I <sup>2</sup> C trigger is set to trigger on Data or Address/Data |                                 |
| Syntax           | :TRIGger:BUS:B1:I2C:DATA:SIZE {<NR1>   ? }                                                            |                                 |
| Related commands | :TRIGger:BUS:B1:I2C:CONDition                                                                         |                                 |
| Parameter        | <NR1>                                                                                                 | Number of data bytes (1 to 5 ). |
| Return parameter | <NR1>                                                                                                 | Returns the number of bytes.    |
| Example          | :TRIGger:BUS:B1:I2C:DATA:SIZE 3<br>Sets the number of bytes to 3.                                     |                                 |

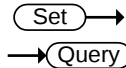
:TRIGger:BUS:B1:I2C:DATA:VALue Set →  
→ Query

|                  |                                                                                                                                                 |                                                                                                                                                                                                 |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description      | Sets or queries the triggering data value for the I <sup>2</sup> C bus when the I <sup>2</sup> C bus is set to trigger on Data or Address/Data. |                                                                                                                                                                                                 |
| Syntax           | :TRIGger:BUS:B1:I2C:DATA:VALue {<string>   ? }                                                                                                  |                                                                                                                                                                                                 |
| Related commands | :TRIGger:BUS:B1:I2C:DATA:SIZE                                                                                                                   |                                                                                                                                                                                                 |
| Parameter        | <sting>                                                                                                                                         | <p>The number of characters in the string depends on the data size setting. The string must be enclosed in double quotes, "string".</p> <p>x = don't care<br/>1 = binary 1<br/>0 = binary 0</p> |
| Return Parameter | Returns the data value.                                                                                                                         |                                                                                                                                                                                                 |

Example1 :TRIGger:BUS:B1:I2C:DATA:SIZE 1  
:TRIGger:BUS:B1:I2C:DATA:VALue "1x1x0101"  
Sets the value to XXX0101

Example 2 :TRIGger:BUS:B1:I2C:DATA:VALue?  
1X1X0101

:TRIGger:BUS:B1:UART:CONDition

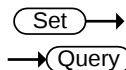


|             |                                                                                                                                      |                                                |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|
| Description | Sets or queries the UART triggering condition.                                                                                       |                                                |
| Syntax      | :TRIGger:BUS:B1:UART:CONDition { RXSTArt   RXDATA   RXENDPacket   TXSTArt   TXDATA   TXENDPacket   TXPARIttyerr   RXPARIttyerr   ? } |                                                |
| Parameter   | RXSTArt                                                                                                                              | Set trigger on the RX Start Bit.               |
|             | RXDATA                                                                                                                               | Set trigger on RX Data.                        |
|             | RXENDPacket                                                                                                                          | Set trigger on the RX End of Packet condition. |
|             | RXPARIttyerr                                                                                                                         | Set trigger on RX Parity error condition.      |
|             | TXSTArt                                                                                                                              | Set trigger on the TX Start Bit.               |
|             | TXDATA                                                                                                                               | Set trigger on TX Data.                        |
|             | TXENDPacket                                                                                                                          | Set trigger on the TX End of Packet condition. |
|             | TXPARIttyerr                                                                                                                         | Set trigger on TX Parity error condition.      |

Return Parameter Returns the triggering condition.

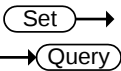
Example :TRIGger:BUS:B1:UART:CONDition TXDATA  
Sets the UART bus to trigger on Tx Data.

:TRIGger:BUS:B1:UART:RX:DATA:SIZE



Description Sets or queries the number of bytes for UART data.

|                  |                                                                              |                              |
|------------------|------------------------------------------------------------------------------|------------------------------|
| Note             | This setting only applies when the UART trigger is set to trigger on Rx Data |                              |
| Syntax           | :TRIGger:BUS:B1:UART:RX:DATA:SIZE {<NR1>   ?}                                |                              |
| Related commands | :TRIGger:BUS:B1:UART:CONDition                                               |                              |
| Parameter        | <NR1>                                                                        | Number of bytes (1 to 10).   |
| Return parameter | <NR1>                                                                        | Returns the number of bytes. |
| Example          | :TRIGger:BUS:B1:UART:RX:DATA:SIZE 5<br>Sets the number of bytes to 5.        |                              |

:TRIGger:BUS:B1:UART:RX:DATA:VALue 

|                  |                                                                                                                                                             |                                                                                                                                                                                                       |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description      | Sets or queries the triggering data value for the UART bus when the bus is set to trigger on Rx Data.                                                       |                                                                                                                                                                                                       |
| Syntax           | :TRIGger:BUS:B1:UART:RX:DATA:VALue {<string>   ? }                                                                                                          |                                                                                                                                                                                                       |
| Related commands | :TRIGger:BUS:B1:UART:RX:DATA:SIZE                                                                                                                           |                                                                                                                                                                                                       |
| Parameter        | <sting>                                                                                                                                                     | <p>The number of characters in the string depends on the data size setting. The string must be enclosed in double quotes, "string".</p> <p>x = don't care</p> <p>1 = binary 1</p> <p>0 = binary 0</p> |
| Return Parameter | Returns the data value.                                                                                                                                     |                                                                                                                                                                                                       |
| Example1         | :TRIGger:BUS:B1:UART:CONDition RXDATA<br>:TRIGger:BUS:B1:UART:RX:DATA:SIZE 1<br>:TRIGger:BUS:B1:UART:RX:DATA:VALue "1x1x0101"<br>Sets the value to 1x1x0101 |                                                                                                                                                                                                       |
| Example 2        | :TRIGger:BUS:B1:UART:RX:DATA:VALue?<br>1X1X0101                                                                                                             |                                                                                                                                                                                                       |

:TRIGger:BUS:B1:UART:TX:DATa:SIZe (Set) →  
→ (Query)

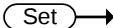
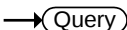
|                  |                                                                              |                              |
|------------------|------------------------------------------------------------------------------|------------------------------|
| Description      | Sets or queries the number of bytes for UART data.                           |                              |
| Note             | This setting only applies when the UART trigger is set to trigger on Tx Data |                              |
| Syntax           | :TRIGger:BUS:B1:UART:TX:DATa:SIZe {<NR1>   ?}                                |                              |
| Related commands | :TRIGger:BUS:B1:UART:CONDition                                               |                              |
| Parameter        | <NR1>                                                                        | Number of bytes (1 to 10).   |
| Return parameter | <NR1>                                                                        | Returns the number of bytes. |
| Example          | :TRIGger:BUS:B1:UART:TX:DATa:SIZe 5<br>Sets the number of bytes to 5.        |                              |

:TRIGger:BUS:B1:UART:TX:DATa:VALue (Set) →  
→ (Query)

|                  |                                                                                                       |                                                                                                                                                                                                       |
|------------------|-------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description      | Sets or queries the triggering data value for the UART bus when the bus is set to trigger on Tx Data. |                                                                                                                                                                                                       |
| Syntax           | :TRIGger:BUS:B1:UART:TX:DATa:VALue {<string>   ?}                                                     |                                                                                                                                                                                                       |
| Related commands | :TRIGger:BUS:B1:UART:TX:DATa:SIZe                                                                     |                                                                                                                                                                                                       |
| Parameter        | <sting>                                                                                               | <p>The number of characters in the string depends on the data size setting. The string must be enclosed in double quotes, "string".</p> <p>x = don't care</p> <p>1 = binary 1</p> <p>0 = binary 0</p> |
| Return Parameter | Returns the data value.                                                                               |                                                                                                                                                                                                       |

Example1 :TRIGger:BUS:B1:UART:CONDition TXDATA  
:TRIGger:BUS:B1:UART:TX:DATa:SIZE 1  
:TRIGger:BUS:B1:UART:TX:DATa:VALue "1x1x0101"  
Sets the value to 1x1x0101

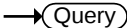
Example 2 :TRIGger:BUS:B1:UART:TX:DATa:VALue?  
1X1X0101

:TRIGger:BUS:B1:SPI:CONDition  

|             |                                                                  |                                                                               |
|-------------|------------------------------------------------------------------|-------------------------------------------------------------------------------|
| Description | Sets or queries the SPI triggering condition.                    |                                                                               |
| Syntax      | :TRIGger:BUS:B1:SPI:CONDition {SS   MISO   MOSI   MISOMOSI   ? } |                                                                               |
| Parameter   | SS                                                               | Set to trigger on the Slave Selection condition.                              |
|             | MISO                                                             | Set to trigger on the Master-In Slave-Out condition.                          |
|             | MOSI                                                             | Set to trigger on the Master-Out Slave-In condition.                          |
|             | MISOMOSI                                                         | Set to trigger on the Master-In Slave-Out and Master-Out Slave-In conditions. |

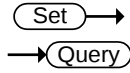
Return Parameter Returns the triggering condition.

Example :TRIGger:BUS:B1:SPI:CONDition MISO  
Sets the SPI bus to trigger on MISO.

:TRIGger:BUS:B1:SPI:DATa:SIZE  

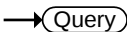
|             |                                                                                             |
|-------------|---------------------------------------------------------------------------------------------|
| Description | Sets or queries the number of words for SPI data.                                           |
| Note        | This setting only applies when the SPI trigger is set to trigger on MISO, MOSI or MISO/MOSI |
| Syntax      | :TRIGger:BUS:B1:SPI:DATa:SIZE {<NR1>   ? }                                                  |

|                  |                                                                     |                              |
|------------------|---------------------------------------------------------------------|------------------------------|
| Related commands | :TRIGger:BUS:B1:SPI:CONDition                                       |                              |
| Parameter        | <NR1>                                                               | Number of words (1 to 32).   |
| Return parameter | <NR1>                                                               | Returns the number of words. |
| Example          | :TRIGger:BUS:B1:SPI:DATA:SIZE 10<br>Sets the number of words to 10. |                              |

:TRIGger:BUS:B1:SPI:DATA:MISO:VALue 

|                  |                                                                                                                |                                                                                                                                                                                        |
|------------------|----------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description      | Sets or queries the triggering data value for the SPI bus when the bus is set to trigger on MISO or MISO/MOSI. |                                                                                                                                                                                        |
| Syntax           | :TRIGger:BUS:B1:SPI:DATA:MISO:VALue {<string>   ? }                                                            |                                                                                                                                                                                        |
| Related commands | :TRIGger:BUS:B1:SPI:DATA:SIZE                                                                                  |                                                                                                                                                                                        |
| Parameter        | <string>                                                                                                       | The number of characters in the string depends on the data size setting. The string must be enclosed in double quotes, "string".<br><br>x = don't care<br>1 = binary 1<br>0 = binary 0 |
| Return Parameter | Returns the data value.                                                                                        |                                                                                                                                                                                        |

|           |                                                                                                                                                       |  |
|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| Example 1 | :TRIGger:BUS:B1:SPI:CONDition MISO<br>:TRIGger:BUS:B1:SPI:DATA:SIZE 2<br>:TRIGger:BUS:B1:SPI:DATA:MISO:VALue "1x1x0101"<br>Sets the value to 1x1x0101 |  |
| Example 2 | :TRIGger:BUS:B1:SPI:DATA:MISO:VALue?<br>1X1X0101                                                                                                      |  |

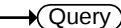
|                                            |                                                                                                                                                       |                                                                                                                                                                                                       |
|--------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                            |                                                                                                                                                       | <br>                                |
| <b>:TRIGger:BUS:B1:SPI:DATa:MOSI:VALue</b> |                                                                                                                                                       |                                                                                                                                                                                                       |
| Description                                | Sets or queries the triggering data value for the SPI bus when the bus is set to trigger on MOSI or MISO/MOSI.                                        |                                                                                                                                                                                                       |
| Syntax                                     | :TRIGger:BUS:B1:SPI:DATa:MOSI:VALue {<string>   ? }                                                                                                   |                                                                                                                                                                                                       |
| Related commands                           | :TRIGger:BUS:B1:SPI:DATa:SIZE                                                                                                                         |                                                                                                                                                                                                       |
| Parameter                                  | <string>                                                                                                                                              | <p>The number of characters in the string depends on the data size setting. The string must be enclosed in double quotes, "string".</p> <p>x = don't care</p> <p>1 = binary 1</p> <p>0 = binary 0</p> |
| Return Parameter                           | Returns the data value.                                                                                                                               |                                                                                                                                                                                                       |
| Example1                                   | :TRIGger:BUS:B1:SPI:CONDition MOSI<br>:TRIGger:BUS:B1:SPI:DATa:SIZE 2<br>:TRIGger:BUS:B1:SPI:DATa:MOSI:VALue "1x1x0101"<br>Sets the value to 1x1x0101 |                                                                                                                                                                                                       |
| Example2                                   | :TRIGger:BUS:B1:SPI:DATa:MOSI:VALue?<br>1X1X0101                                                                                                      |                                                                                                                                                                                                       |

|                                      |                                                                                                |                                                                                                                                                                            |
|--------------------------------------|------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                      |                                                                                                | <br> |
| <b>:TRIGger:BUS:B1:CAN:CONDition</b> |                                                                                                |                                                                                                                                                                            |
| Description                          | Sets or returns the CAN trigger condition.                                                     |                                                                                                                                                                            |
| Syntax                               | :TRIGger:BUS:B1:CAN:CONDition {SOF FRAMetype IDentifier DATA IDANDDATA EOF ACKMISS STUFFERR ?} |                                                                                                                                                                            |
| Parameter/                           | SOF                                                                                            | Triggers on a start of frame                                                                                                                                               |

|                  |            |                                                |
|------------------|------------|------------------------------------------------|
| Return parameter | FRAMEType  | Triggers on the type of frame                  |
|                  | Identifier | Triggers on a matching identifier              |
|                  | DATA       | Triggers on matching data                      |
|                  | IDANDDATA  | Triggers on matching identifier and data field |
|                  | EOF        | Triggers on the end of frame                   |
|                  | ACKMISS    | Triggers on a missing acknowledge              |
|                  | STUFFERR   | Triggers on a bit stuffing error               |

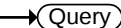
Example1 :TRIGger:BUS:B1:CAN:CONDition SOF  
Triggers on a start of frame.

Example2 :TRIGger:BUS:B1:CAN:CONDition?  
>SOF

:TRIGger:BUS:B1:CAN:FRAMEType  

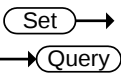
|                                |                                                              |                                     |
|--------------------------------|--------------------------------------------------------------|-------------------------------------|
| Description                    | Sets or returns the frame type for a CAN FRAMEType trigger.  |                                     |
| Syntax                         | :TRIGger:BUS:B1:CAN:FRAMEType {DATA REMOte ERRor OVERLoad ?} |                                     |
| Parameter/<br>Return parameter | DATA                                                         | Sets the frame type to data frame   |
|                                | REMOte                                                       | Sets the frame type to remote frame |
|                                | ERRor                                                        | Sets the frame type to error frame  |
|                                | OVERLoad                                                     | Sets the frame type to overload     |

Example :TRIGger:BUS:B1:CAN:FRAMEType DATA  
Sets the frame type to DATA.

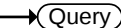
:TRIGger:BUS:B1:CAN:IDentifier:MODE  

|             |                                                      |  |
|-------------|------------------------------------------------------|--|
| Description | Sets or returns the CAN identifier mode for the bus. |  |
|-------------|------------------------------------------------------|--|

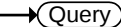
|                                |                                                                                       |                          |
|--------------------------------|---------------------------------------------------------------------------------------|--------------------------|
| Syntax                         | :TRIGger:BUS:B1:CAN:IDentifier:MODE<br>{STANDard EXTended ?}                          |                          |
| Parameter/<br>Return parameter | STANDard                                                                              | Standard addressing mode |
|                                | EXTended                                                                              | Extended addressing mode |
| Example                        | :TRIGger:BUS:B1:CAN:IDentifier:MODE?<br>>STANDARD<br><br>Returns the addressing mode. |                          |

:TRIGger:BUS:B1:CAN:IDentifier:VALue 

|                                |                                                                                                                                                                                                    |                                                                                                                                                                                            |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description                    | Sets or returns the identifier string used for the CAN trigger.<br><br>Note: Only applicable when the trigger condition is set to ID or IDANDDATA.                                                 |                                                                                                                                                                                            |
| Syntax                         | :TRIGger:BUS:B1:CAN:IDentifier:VALue {<string> ?}                                                                                                                                                  |                                                                                                                                                                                            |
| Related Commands               | :TRIGger:BUS:B1:CAN:IDentifier:MODE                                                                                                                                                                |                                                                                                                                                                                            |
| Parameter/<br>Return parameter | <string>                                                                                                                                                                                           | The size of the string depends on the data size setting. The string must be enclosed in double quotes, "string".<br><br>String contents:<br>x = don't care<br>1 = binary 1<br>0 = binary 0 |
| Example                        | :TRIGger:BUS:B1:CAN:CONDition ID<br>:TRIGger:BUS:B1:CAN:IDentifier:MODE STANDARD<br>:TRIGger:BUS:B1:CAN:IDentifier:VALue<br>"01100X1X01X"<br>:TRIGger:BUS:B1:CAN:IDentifier:VALue?<br>>01100X1X01X |                                                                                                                                                                                            |

:TRIGger:BUS:B1:CAN:IDentifier:DIRection  

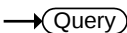
|                                |                                                                                                   |                                   |
|--------------------------------|---------------------------------------------------------------------------------------------------|-----------------------------------|
| Description                    | Sets or queries the address bit as read, write or don't care.                                     |                                   |
| Syntax                         | :TRIGger:BUS:B1:CAN:IDentifier:DIRection {READ WRITE NOCARE ?}                                    |                                   |
| Parameter/<br>Return parameter | READ                                                                                              | Sets read as the data direction   |
|                                | WRITE                                                                                             | Sets write as the data direction  |
|                                | NOCARE                                                                                            | Sets either as the data direction |
| Example1                       | :TRIGger:BUS:B1:CAN:IDentifier:DIRection? >WRITE                                                  |                                   |
| Example2                       | :TRIGger:BUS:B1:CAN:IDentifier:DIRection READ<br>:TRIGger:BUS:B1:CAN:IDentifier:DIRection? > READ |                                   |

:TRIGger:BUS:B1:CAN:DATA:QUALifier  

|                                |                                                                                                                             |                                                             |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|
| Description                    | Sets or returns the CAN data qualifier.<br>Note: Only applicable when the triggering condition is set to DATA or IDANDDATA. |                                                             |
| Syntax                         | :TRIGger:BUS:B1:CAN:DATA:QUALifier {LESSthan MOREthan EQUAL UNEQUAL LESSEQUAL MOREEQUAL ?}                                  |                                                             |
| Parameter/<br>Return parameter | LESSthan                                                                                                                    | Triggers when the data is less than the qualifier value.    |
|                                | MOREthan                                                                                                                    | Triggers when the data is greater than the qualifier value. |
|                                | EQUAL                                                                                                                       | Triggers when the data is equal to the qualifier value.     |
|                                | UNEQUAL                                                                                                                     | Triggers when the data is not equal to the qualifier value. |

|  |           |                                                                      |
|--|-----------|----------------------------------------------------------------------|
|  | LESSEqual | Triggers when the data is less than or equal to the qualifier value. |
|  | MOREEqual | Triggers when the data is more than or equal to the qualifier value. |

Example :TRIGger:BUS:B1:CAN:DATA:QUALifier?  
>EQUAL  
:TRIGger:BUS:B1:CAN:DATA:QUALifier MOREthan  
:TRIGger:BUS:B1:CAN:DATA:QUALifier?  
>MOREthan

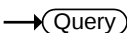
:TRIGger:BUS:B1:CAN:DATA:SIZE  

Description Sets or returns the length of the data string in bytes for a CAN trigger.  
Note: Only applicable when the condition is set to DATA or IDANDDATA.

Syntax :TRIGger:BUS:B1:CAN:DATA:SIZE {<NR1>|?}

|                                |       |             |
|--------------------------------|-------|-------------|
| Parameter/<br>Return parameter | <NR1> | 1~8 (bytes) |
|--------------------------------|-------|-------------|

Example :TRIGger:BUS:B1:CAN:DATA:SIZE?  
>1  
:TRIGger:BUS:B1:CAN:DATA:SIZE 2  
:TRIGger:BUS:B1:CAN:DATA:SIZE?  
>2

:TRIGger:BUS:B1:CAN:DATA:VALue  

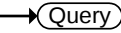
Description Sets or returns the binary data string to be used for a CAN trigger.  
Note: Only applicable when the condition is set to DATA or IDANDDATA.

Related Commands :TRIGger:BUS:B1:CAN:DATA:SIZE

Syntax :TRIGger:BUS:B1:CAN:DATA:VALue {<string>|?}

|                                |          |                                                                                                                                                                                            |
|--------------------------------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameter/<br>Return parameter | <string> | The size of the string depends on the data size setting. The string must be enclosed in double quotes, "string".<br><br>String contents:<br>x = don't care<br>1 = binary 1<br>0 = binary 0 |
|--------------------------------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Example  
:TRIGger:BUS:B1:CAN:DATa:SIZE 1  
:TRIGger:BUS:B1:CAN:DATa:VALue "01010X1X"  
:TRIGger:BUS:B1:CAN:DATa:VALue?  
>01010X1X

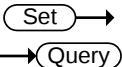
:TRIGger:BUS:B1:LIN:CONDition  

Description      Sets or returns the LIN trigger condition.

Syntax  
:TRIGger:BUS:B1:LIN:CONDition  
{SYNCField|IDentifier|DATA|IDANDDATA|WAKEup|  
SLEEP|ERRor|?}

|                                |            |                                                             |
|--------------------------------|------------|-------------------------------------------------------------|
| Parameter/<br>Return parameter | SYNCField  | Sets the LIN trigger condition to the sync field.           |
|                                | IDentifier | Sets the LIN trigger condition to identifier field.         |
|                                | DATA       | Sets the LIN trigger condition to the data field.           |
|                                | IDANDDATA  | Sets the LIN trigger condition to identifier and data field |
|                                | WAKEup     | Sets the LIN trigger condition to wake up.                  |
|                                | SLEEP      | Sets the LIN trigger condition to sleep.                    |
|                                | ERRor      | Sets the LIN trigger condition to error.                    |

Example           :TRIGger:BUS:B1:LIN:CONDition?  
                  >IDANDDATA  
  
                  :TRIGger:BUS:B1:LIN:CONDition DATA  
  
                  :TRIGger:BUS:B1:LIN:CONDition?  
                  >DATA

:TRIGger:BUS:B1:LIN:DATA:QUALifier 

Description       Sets or returns the LIN data qualifier.  
                  Note: Only applicable when the trigger condition  
                  is set to DATA or IDANDDATA.

Syntax            :TRIGger:BUS:B1:LIN:DATA:QUALifier  
                  {LESSthan|MOREthan|EQUAL|UNEQUAL|LESSEQUAL|M  
                  OREEQUAL|?}

|                                |           |                                                                      |
|--------------------------------|-----------|----------------------------------------------------------------------|
| Parameter/<br>Return parameter | LESSthan  | Triggers when the data is less than the qualifier value.             |
|                                | MOREthan  | Triggers when the data is greater than the qualifier value.          |
|                                | EQUAL     | Triggers when the data is equal to the qualifier value.              |
|                                | UNEQUAL   | Triggers when the data is not equal to the qualifier value.          |
|                                | LESSEQUAL | Triggers when the data is less than or equal to the qualifier value. |
|                                | MOREEQUAL | Triggers when the data is more than or equal to the qualifier value. |

Example           :TRIGger:BUS:B1:LIN:DATA:QUALifier?  
                  >EQUAL  
  
                  :TRIGger:BUS:B1:LIN:DATA:QUALifier MOREthan  
  
                  :TRIGger:BUS:B1:LIN:DATA:QUALifier?  
                  >MORETHAN

(Set) →  
→ (Query)

|                                      |                                                                                                                                                      |             |
|--------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| <b>:TRIGger:BUS:B1:LIN:DATa:SIZE</b> |                                                                                                                                                      |             |
| Description                          | Sets or returns the length of the data string in bytes for the LIN trigger.<br>Note: Only applicable when the condition is set to DATA or IDANDDATA. |             |
| Syntax                               | :TRIGger:BUS:B1:LIN:DATa:SIZE {<NR1> ?}                                                                                                              |             |
| Parameter/<br>Return parameter       | <NR1>                                                                                                                                                | 1~8 (bytes) |
| Example                              | :TRIGger:BUS:B1:LIN:DATa:SIZE?<br>>1<br><br>:TRIGger:BUS:B1:LIN:DATa:SIZE 2<br><br>:TRIGger:BUS:B1:LIN:DATa:SIZE?<br>>2                              |             |

(Set) →  
→ (Query)

|                                       |                                                                                                                                                     |                                                                                                                                                                                            |
|---------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>:TRIGger:BUS:B1:LIN:DATa:VALue</b> |                                                                                                                                                     |                                                                                                                                                                                            |
| Description                           | Sets or returns the binary data string to be used for the LIN trigger.<br><br>Note: Only applicable when the condition is set to DATA or IDANDDATA. |                                                                                                                                                                                            |
| Related<br>Commands                   | :TRIGger:BUS:B1:LIN:DATa:SIZE                                                                                                                       |                                                                                                                                                                                            |
| Syntax                                | :TRIGger:BUS:B1:LIN:DATa:VALue {<string> ?}                                                                                                         |                                                                                                                                                                                            |
| Parameter/<br>Return parameter        | <string>                                                                                                                                            | The size of the string depends on the data size setting. The string must be enclosed in double quotes, "string".<br><br>String contents:<br>x = don't care<br>1 = binary 1<br>0 = binary 0 |

Example           :TRIGger:BUS:B1:LIN:DATA:SIZE 1  
                   :TRIGger:BUS:B1:LIN:DATA:VALue "01010X1X"  
                   :TRIGger:BUS:B1:LIN:DATA:VALue?  
                   >01010X1X

Set →

→ Query

:TRIGger:BUS:B1:LIN:ERRTYPE

Description       Sets or returns the error type be used for the LIN trigger.

Syntax            :TRIGger:BUS:B1:LIN:ERRTYPE  
                   {SYNC|PARItY|CHeCKsum|?}

|                                |          |                                      |
|--------------------------------|----------|--------------------------------------|
| Parameter/<br>Return parameter | SYNC     | Sets the LIN error type to SYNC.     |
|                                | PARItY   | Sets the LIN error type to parity.   |
|                                | CHeCKsum | Sets the LIN error type to checksum. |

Example           :TRIGger:BUS:B1:LIN:ERRTYPE?  
                   >SYNC  
                   :TRIGger:BUS:B1:LIN:ERRTYPE CHECKSUM  
                   :TRIGger:BUS:B1:LIN:ERRTYPE?  
                   >CHECKSUM

Set →

→ Query

:TRIGger:BUS:B1:LIN:IDentifier:VALue

Description       Sets or returns the identifier string to be used for the LIN trigger.  
                   Note: Only applicable when the condition is set to ID or IDANDDATA.

Syntax            :TRIGger:BUS:B1:LIN:IDentifier:VALue {<string>|?}

|                                |          |                                                                                                                  |
|--------------------------------|----------|------------------------------------------------------------------------------------------------------------------|
| Parameter/<br>Return parameter | <string> | The size of the string depends on the data size setting. The string must be enclosed in double quotes, "string". |
|--------------------------------|----------|------------------------------------------------------------------------------------------------------------------|

String contents:

x = don't care

1 = binary 1

0 = binary 0

Example

:TRIGger:BUS:B1:LIN:CONDition ID

:TRIGger:BUS:B1:LIN:IDentifier:VALue "00X1X01X"

:TRIGger:BUS:B1:LIN:IDentifier:VALue?

>01100X1X01X

# System Commands

|                    |     |
|--------------------|-----|
| :SYSTem:LOCK ..... | 155 |
| :SYSTem:ERRor..... | 155 |

:SYSTem:LOCK

Set

→

→

Query

|                  |                                                 |                 |
|------------------|-------------------------------------------------|-----------------|
| Description      | Turns the panel lock on off.                    |                 |
| Syntax           | :SYSTem:LOCK {OFF   ON   ? }                    |                 |
| Parameter        | OFF                                             | System lock off |
|                  | ON                                              | System lock on  |
| Return parameter | Returns the status of the panel lock (ON, OFF). |                 |
| Example          | :SYSTem:LOCK ON<br>Turns the panel lock on.     |                 |

:SYSTem:ERRor

Set

→

→

Query

|                  |                                                                    |  |
|------------------|--------------------------------------------------------------------|--|
| Description      | Queries the error queue. See the appendix on page 240 for details. |  |
| Syntax           | :SYSTem:ERRor?                                                     |  |
| Return parameter | Returns the last message in the error queue.                       |  |
| Example          | :SYSTem:ERRor?<br>+0, "No error."                                  |  |

## Save/Recall Commands

|                                 |     |
|---------------------------------|-----|
| :RECALL:SETUp .....             | 156 |
| :RECALL:WAVEform .....          | 156 |
| :SAVE:IMAGe .....               | 157 |
| :SAVE:IMAGe:FILEFormat .....    | 157 |
| :SAVE:IMAGe:INKSaver .....      | 158 |
| :SAVE:SETUp .....               | 158 |
| :SAVE:WAVEform .....            | 159 |
| :SAVE:WAVEform:FILEFormat ..... | 160 |

### :RECALL:SETUp



|             |                                                                                                                                                                |                                                                             |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| Description | Recalls setup settings from memory or USB.                                                                                                                     |                                                                             |
| Syntax      | :RECALL:SETUp {S1~S20   <file path>("Disk:/xxx.SET", "USB:/xxx.SET")}                                                                                          |                                                                             |
| Parameter   | S1~S20                                                                                                                                                         | Recall Set1~Set20                                                           |
|             | <file path>                                                                                                                                                    | Recall a file from the DSO internal files system or from a USB flash drive. |
| Example     | :RECALL:SETUp S1<br>Recalls setup setting S1 from memory.<br>:RECALL:SETUp "Disk:/DS0001.SET"<br>Recall the setup setting DS0001.SET from the internal memory. |                                                                             |

### :RECALL:WAVEform



|             |                                                                                |  |
|-------------|--------------------------------------------------------------------------------|--|
| Description | Recalls a waveform from wave1~wave20 or from file to REF1~4.                   |  |
| Note        | Detail CSV files cannot be recalled.                                           |  |
| Syntax      | :RECALL:WAVEform {W<n>   <file path>("Disk:/xxx.LSF", "USB:/xxx.LSF")}, REF<X> |  |

|           |             |                                                                                                        |
|-----------|-------------|--------------------------------------------------------------------------------------------------------|
| Parameter | n           | 1~20 (Wave1~wave20)                                                                                    |
|           | <file page> | Filename in file path. Example:<br>"Disk:/xxx.LSF", "USB:/xxx.LSF",<br>"Disk:/xxx.CSV", "USB:/xxx.CSV" |
|           | <X>         | 1,2,3,4 (REF1, REF2, REF3, REF4)                                                                       |

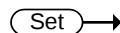
**Example** :RECALL:WAVEform W1, REF1  
Recalls the waveform stored in Wave1 to reference 1.

### :SAVE:IMAGe



|                  |                                                                           |                              |
|------------------|---------------------------------------------------------------------------|------------------------------|
| Description      | Saves a screen image to the assigned file path with a specified filename. |                              |
| Syntax           | :SAVE:IMAGe {<file path> ("Disk:/xxx.PNG", "USB:/xxx.BMP")}               |                              |
| Related commands | :SAVE:IMAGe:FILEFormat<br>:SAVE:IMAGe:INKSaver                            |                              |
| Parameter        | xxx.PNG or xxx.BMP                                                        | File name (8 characters max) |

**Example** :SAVE:IMAGe "Disk:/pic1.PNG"  
Saves a screen image named pic1.png to the root directory (Disk:/) of the scope.  
:SAVE:IMAGe "USB:/pic1.BMP"  
Saves a screen image named pic1.bmp to the root directory of the external USB flash disk.



### :SAVE:IMAGe:FILEFormat



|                  |                                        |  |
|------------------|----------------------------------------|--|
| Description      | Sets the file format for image.        |  |
| Syntax           | :SAVE:IMAGe:FILEFormat {PNG   BMP   ?} |  |
| Related commands | :SAVE:IMAGe<br>:SAVE:IMAGe:INKSaver    |  |

|                  |                                                                  |                             |
|------------------|------------------------------------------------------------------|-----------------------------|
| Parameter        | PNG                                                              | Sets the file format to PNG |
|                  | BMP                                                              | Sets the file format to BMP |
| Return parameter | Returns the file format (PNG, BMP).                              |                             |
| Example          | :SAVe:IMAGe:FILEFormat PNG<br>Sets the image file format to PNG. |                             |

Set →

### :SAVe:IMAGe:INKSaver

→ Query

|                  |                                                |                     |
|------------------|------------------------------------------------|---------------------|
| Description      | Turns Ink Saver on or off.                     |                     |
| Syntax           | :SAVe:IMAGe:INKSaver {OFF   ON  ?}             |                     |
| Related commands | :SAVe:IMAGe<br>:SAVe:IMAGe:FILEFormat          |                     |
| Parameter        | OFF                                            | Turns Inksaver off. |
|                  | ON                                             | Turns Inksaver on.  |
| Return parameter | Returns Ink Saver status (ON, OFF).            |                     |
| Example          | :SAVe:IMAGe:INKSaver ON<br>Turns Ink Saver on. |                     |

### :SAVe:SETUp

Set →

|             |                                                                                      |                                                     |
|-------------|--------------------------------------------------------------------------------------|-----------------------------------------------------|
| Description | Saves the current setup to internal memory (Set1~Set20) or the designated file path. |                                                     |
| Syntax      | :SAVe:SETUp {<file path> ("Disk:/xxx.SET", "USB:/xxx.SET)   S1~S20}                  |                                                     |
| Parameter   | S1~S20                                                                               | Saves the setup to Set1~Set20                       |
|             | File path                                                                            | Saves the setup to disk to the specified file path. |

|         |                                                                                                                                                                                                |
|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Example | :SAVe:SETUp S1<br>Saves the current setup to Set1 in internal memory.<br>:SAVe:SETUp "Disk:/DS0001.SET"<br>Saves the current setup to DS0001.SET in the root directory of the internal memory. |
|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

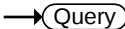
## :SAVe:WAVEform



|                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |           |                       |     |                                  |        |              |     |                                        |           |                                                                                                                                         |
|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-----------------------|-----|----------------------------------|--------|--------------|-----|----------------------------------------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------|
| Description      | Saves a waveform to internal memory or to a designated file path.                                                                                                                                                                                                                                                                                                                                                                                   |           |                       |     |                                  |        |              |     |                                        |           |                                                                                                                                         |
| Related commands | :SAVe:WAVEform:FILEFormat                                                                                                                                                                                                                                                                                                                                                                                                                           |           |                       |     |                                  |        |              |     |                                        |           |                                                                                                                                         |
| Syntax           | :SAVe:WAVEform {CH1~REF4, REF<X> }   {CH1~REF4, W1~W20}   {CH1~ALL, file path}                                                                                                                                                                                                                                                                                                                                                                      |           |                       |     |                                  |        |              |     |                                        |           |                                                                                                                                         |
| Parameter        | <table> <tr> <td>CH1~REF4,</td><td>CH1~CH4, Math, REF1~4</td></tr> <tr> <td>&lt;X&gt;</td><td>1,2,3,4 (REF1, REF2, REF3, REF4)</td></tr> <tr> <td>W1~W20</td><td>Wave1~Wave20</td></tr> <tr> <td>ALL</td><td>All the displayed waveforms on screen.</td></tr> <tr> <td>File path</td><td>Saves the waveform(s) to disk or USB to the specified file path. (LSF or CSV, but note that detail CSV can't be recalled to the scope.)</td></tr> </table> | CH1~REF4, | CH1~CH4, Math, REF1~4 | <X> | 1,2,3,4 (REF1, REF2, REF3, REF4) | W1~W20 | Wave1~Wave20 | ALL | All the displayed waveforms on screen. | File path | Saves the waveform(s) to disk or USB to the specified file path. (LSF or CSV, but note that detail CSV can't be recalled to the scope.) |
| CH1~REF4,        | CH1~CH4, Math, REF1~4                                                                                                                                                                                                                                                                                                                                                                                                                               |           |                       |     |                                  |        |              |     |                                        |           |                                                                                                                                         |
| <X>              | 1,2,3,4 (REF1, REF2, REF3, REF4)                                                                                                                                                                                                                                                                                                                                                                                                                    |           |                       |     |                                  |        |              |     |                                        |           |                                                                                                                                         |
| W1~W20           | Wave1~Wave20                                                                                                                                                                                                                                                                                                                                                                                                                                        |           |                       |     |                                  |        |              |     |                                        |           |                                                                                                                                         |
| ALL              | All the displayed waveforms on screen.                                                                                                                                                                                                                                                                                                                                                                                                              |           |                       |     |                                  |        |              |     |                                        |           |                                                                                                                                         |
| File path        | Saves the waveform(s) to disk or USB to the specified file path. (LSF or CSV, but note that detail CSV can't be recalled to the scope.)                                                                                                                                                                                                                                                                                                             |           |                       |     |                                  |        |              |     |                                        |           |                                                                                                                                         |
| Example 1        | :SAVe:WAVEform CH1, REF2<br>Saves the channel1 waveform to REF2.                                                                                                                                                                                                                                                                                                                                                                                    |           |                       |     |                                  |        |              |     |                                        |           |                                                                                                                                         |
| Example 2        | :SAVe:WAVEform:FILEFormat LSF<br>:SAVe:WAVEform ALL, "Disk:/ALL001"<br>Sets the file format to LSF. A folder named "ALL001" is created and saves all displayed waveforms to the "ALL001" directory in the LSF format.                                                                                                                                                                                                                               |           |                       |     |                                  |        |              |     |                                        |           |                                                                                                                                         |

**Example 3**           :SAVE:WAVEform:FILEFormat FCSV  
                       :SAVE:WAVEform ALL, "Disk:/ALL002"  
 Sets the file format to FCSV(fast CSV format). It then saves the all channel's waveforms to the root directory (Disk:/) of the internal flash disk in the CSV format (with the filename ALL002.CSV).

**Example 4**           :SAVE:WAVEform:FILEFormat LSF  
                       :SAVE:WAVEform CH2, "Disk:/DS0003.LSF"  
 Save the channel 2's waveform to the root directory (Disk:/) of the internal flash disk in the LSF format with DS0003.LSF as the filename.

:SAVE:WAVEform:FILEFormat  

|                  |                                                   |                                                                                              |
|------------------|---------------------------------------------------|----------------------------------------------------------------------------------------------|
| Description      | Sets the waveform savefile format.                |                                                                                              |
| Syntax           | :SAVE:WAVEform:FILEFormat {LSF   DCSV   FCSV   ?} |                                                                                              |
| Parameter        | LSF                                               | Sets the file format to the GDS 2000E's internal file format, LSF. (xxx.LSF) (no support LA) |
|                  | DCSV                                              | Sets the file format to detail CSV. (xxx.CSV)                                                |
|                  | FCSV                                              | Sets the file format to fast CSV. (xxx.CSV)                                                  |
| Return parameter | Returns the file format (LSF , DCSV, FCSV).       |                                                                                              |

**Example**           :SAVE:WAVEform:FILEFormat LSF  
 Sets the file format to LSF.

# Ethernet Commands

:ETHERnet:DHCP .....161

:ETHERnet:DHCP

Set

Query

|             |                                     |                 |
|-------------|-------------------------------------|-----------------|
| Description | Sets or queries the DHCP settings.  |                 |
| Syntax      | :ETHERnet:DHCP { OFF   ON   ? }     |                 |
| Parameter   | ON                                  | Turns DHCP on.  |
|             | OFF                                 | Turns DHCP off. |
| Example     | :ETHERnet:DHCP ON<br>Turns DHCP on. |                 |

# Time Commands

:DATE .....162

:DATE Set →

|             |                                                                                                                                                       |                                                                                                                                             |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Sets the system date and time.                                                                                                                        |                                                                                                                                             |
| Syntax      | :DATE {<string>}                                                                                                                                      |                                                                                                                                             |
| Parameter   | <string>                                                                                                                                              | <p>“YYYYMMDDhhmmss”</p> <p>Where:</p> <p>YYYY: year</p> <p>MM: month</p> <p>DD: day</p> <p>hh: hour</p> <p>mm: minute</p> <p>ss: second</p> |
| Example     | <p>:DATE “20140802142830”</p> <p>Sets the time and date as:</p> <p>Year: 2014, Month: 08, Day: 02, Hour: 14 (2PM),</p> <p>Minute: 28, Second: 30.</p> |                                                                                                                                             |

## Bus Decode Commands

---

|                                   |     |
|-----------------------------------|-----|
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|                          |     |
|--------------------------|-----|
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## :BUS1

→ Query

Description Returns the supported BUS types.

Syntax :BUS1?

Return Parameter Returns the supported bus types.

Example BUS1?  
I2C,SPI,UART, CAN, LIN

Set →

## :BUS1:STATE

→ Query

Description Sets or queries the state of the bus.

Syntax :BUS1:STATE { OFF | ON | ? }

Related commands :BUS1:TYPe

|                            |     |                    |
|----------------------------|-----|--------------------|
| Parameter/Return parameter | OFF | Turns the bus off. |
|                            | ON  | Turns the bus on.  |

Example :BUS1:STATE ON  
Turns the bus on.

Set →

## :BUS1:TYPe

→ Query

Description Sets or queries the type of bus.

Syntax :BUS1:TYPe { UART | I2C | SPI | CAN | LIN | ? }

Related commands :BUS1:STATE

|                            |      |                                        |
|----------------------------|------|----------------------------------------|
| Parameter/Return parameter | UART | Sets the bus to UART mode.             |
|                            | I2C  | Sets the bus to I <sup>2</sup> C mode. |

|  |     |                           |
|--|-----|---------------------------|
|  | SPI | Sets the bus to SPI mode. |
|  | CAN | Sets the bus to CAN mode. |
|  | LIN | Sets the bus to LIN mode. |

Example :BUS1:TYPe SPI  
Sets the bus to SPI mode.

:BUS1:INPut

Set →

→ Query

|                            |                                    |                                       |
|----------------------------|------------------------------------|---------------------------------------|
| Description                | Sets or returns the analog source. |                                       |
| Syntax                     | :BUS1:INPut {ANALog   ?}           |                                       |
| Parameter/Return parameter | ANALog                             | Sets the source to the analog inputs. |
| Example1                   | :BUS1:INPut?<br>>ANALOG            |                                       |

Set →

→ Query

:BUS1:I2C:ADDReSS:RWINClude

|                  |                                                                                         |                              |
|------------------|-----------------------------------------------------------------------------------------|------------------------------|
| Description      | Sets or queries whether the read/write bit is included in the I <sup>2</sup> C address. |                              |
| Syntax           | :BUS1:I2C:ADDReSS:RWINClude { OFF   ON   ? }                                            |                              |
| Related commands | :BUS1:STATE                                                                             |                              |
| Parameter        | OFF                                                                                     | The R/W bit is not included. |
|                  | ON                                                                                      | The R/W bit is included.     |
| Return parameter | 0                                                                                       | The R/W bit is not included. |
|                  | 1                                                                                       | The R/W bit is included.     |

Example :BUS1:I2C:ADDReSS:RWINClude ON  
Includes the R/W bit in the I<sup>2</sup>C address.

**:BUS1:I2C:SCLK:SOURce**

Set →  
→ Query

|                            |                                                                             |                        |
|----------------------------|-----------------------------------------------------------------------------|------------------------|
| Description                | Sets or queries which channel is used for the I <sup>2</sup> C SCLK source. |                        |
| Syntax                     | :BUS1:I2C:SCLK:SOURce { CH1   CH2   CH3   CH4   ? }                         |                        |
| Parameter/Return parameter | CH1 to CH4                                                                  | Analog channels 1 ~ 4. |
| Example                    | :BUS1:I2C:SCLK:SOURce CH1<br>Sets channel 1 as the SCLK source.             |                        |

**:BUS1:I2C:SDA:SOURce**

Set →  
→ Query

|                            |                                                                            |                        |
|----------------------------|----------------------------------------------------------------------------|------------------------|
| Description                | Sets or queries which channel is used for the I <sup>2</sup> C SDA source. |                        |
| Syntax                     | :BUS1:I2C:SDA:SOURce { CH1   CH2   CH3   CH4   ? }                         |                        |
| Parameter/Return parameter | CH1 to CH4                                                                 | Analog channels 1 ~ 4. |
| Example                    | :BUS1:I2C:SDA:SOURce CH1<br>Sets channel 1 as the SDA source.              |                        |

**:BUS1:UART:BITRate**

Set →  
→ Query

|                            |                                    |                      |       |            |
|----------------------------|------------------------------------|----------------------|-------|------------|
| Description                | Sets or queries the UART bit rate. |                      |       |            |
| Syntax                     | :BUS1:UART:BITRate { <NR1>   ? }   |                      |       |            |
| Parameter/Return parameter | <NR1>                              | UART bit rate (0~31) |       |            |
|                            | <NR1>                              | Rate (bps)           | <NR1> | Rate (bps) |
|                            | 0                                  | 50                   | 16    | 15200      |
|                            | 1                                  | 75                   | 17    | 19200      |
|                            | 2                                  | 110                  | 18    | 28800      |
|                            | 3                                  | 134                  | 19    | 31250      |

|    |       |    |         |
|----|-------|----|---------|
| 4  | 150   | 20 | 38400   |
| 5  | 300   | 21 | 56000   |
| 6  | 600   | 22 | 57600   |
| 7  | 1200  | 23 | 76800   |
| 8  | 1800  | 24 | 115200  |
| 9  | 2000  | 25 | 128000  |
| 10 | 2400  | 26 | 230400  |
| 11 | 3600  | 27 | 460800  |
| 12 | 4800  | 28 | 921600  |
| 13 | 7200  | 29 | 1382400 |
| 14 | 9600  | 30 | 1843200 |
| 15 | 14400 | 31 | 2764800 |

Example :BUS1:UART:BITRate 10  
Sets the bit rate to 2400.

### :BUS1:UART:DATABits

Set →

→ Query

|                            |                                                 |                                |  |
|----------------------------|-------------------------------------------------|--------------------------------|--|
| Description                | Sets or queries the number UART data for bus 1. |                                |  |
| Syntax                     | :BUS1:UART:DATABits { 5   6   7   8   9   ? }   |                                |  |
| Parameter/Return parameter | 5                                               | 5 data bits in the UART frame. |  |
|                            | 6                                               | 6 data bits in the UART frame. |  |
|                            | 7                                               | 7 data bits in the UART frame. |  |
|                            | 8                                               | 8 data bits in the UART frame. |  |

Example :BUS1:UART:DATABits 7  
Sets the UART frame to 7 bits.

### :BUS1:UART:PARItY

Set →

→ Query

|             |                                      |  |  |
|-------------|--------------------------------------|--|--|
| Description | Sets or queries the UART bus parity. |  |  |
| Syntax      | :BUS1:UART:PARItY { <NR1>   ? }      |  |  |

|                            |       |                                            |
|----------------------------|-------|--------------------------------------------|
| Parameter/Return parameter | <NR1> | 0: None<br>1: Odd parity<br>2: Even parity |
|----------------------------|-------|--------------------------------------------|

Example :BUS1:UART:PARity 1  
Sets the parity to odd.

:BUS1:UART:PACKet

Set →

→ Query

Description Sets or queries the UART packet setting.

Syntax :BUS1:UART:PACKet {<NR1> | ? }

|                            |       |                 |
|----------------------------|-------|-----------------|
| Parameter/Return parameter | <NR1> | 0: Off<br>1: On |
|----------------------------|-------|-----------------|

Example :BUS1:UART:PACKet 1  
Turns UART packets on.

Set →

→ Query

:BUS1:UART:EOFPacket

Description Sets or queries the EOF character for the UART packet setting.

Syntax :BUS1:UART:EOFPacket <NR1>

|                            |       |                                                                                             |
|----------------------------|-------|---------------------------------------------------------------------------------------------|
| Parameter/Return parameter | <NR1> | 0: NULL<br>1: LF (line feed)<br>2: CR (carriage return)<br>3: SP (space character)<br>4: FF |
|----------------------------|-------|---------------------------------------------------------------------------------------------|

Example :BUS1:UART:EOFPacket 2  
Sets the OEF character to CR.

Set →

→ Query

:BUS1:UART:TX:SOURce

Description Sets or queries which channel is used for the UART Tx source.

|                            |                                                              |                            |
|----------------------------|--------------------------------------------------------------|----------------------------|
| Syntax                     | :BUS1:UART:TX:SOURce { OFF   CH1   CH2   CH3   CH4   ? }     |                            |
| Parameter/Return parameter | OFF                                                          | Off, no Tx source          |
|                            | CH1 to CH4                                                   | Analog channels CH1 to CH4 |
| Example                    | :BUS1:UART:TX:SOURce CH1<br>Sets channel 1 as the Tx source. |                            |

**:BUS1:UART:RX:SOURce**

|                            |                                                               |                            |
|----------------------------|---------------------------------------------------------------|----------------------------|
| Description                | Sets or queries which channel is used for the UART Rx source. |                            |
| Syntax                     | :BUS1:UART:RX:SOURce { OFF   CH1   CH2   CH3   CH4   ? }      |                            |
| Parameter/Return parameter | OFF                                                           | Off, no Rx source          |
|                            | CH1 to CH4                                                    | Analog channels CH1 to CH4 |
| Example                    | :BUS1:UART:RX:SOURce CH1<br>Sets channel 1 as the Rx source.  |                            |

**:BUS1:SPI:SCLK:POLARity**

|                            |                                                                    |                                    |
|----------------------------|--------------------------------------------------------------------|------------------------------------|
| Description                | Sets or queries the polarity of the SCLK line for the SPI bus.     |                                    |
| Syntax                     | :BUS1:SPI:SCLK:POLARity { FALL   RISE   ? }                        |                                    |
| Parameter/Return parameter | FALL                                                               | Sets the polarity to falling edge. |
|                            | RISE                                                               | Sets the polarity to rising edge.  |
| Example                    | :BUS1:SPI:SCLK:POLARity FALL<br>Sets the polarity to falling edge. |                                    |

**:BUS1:SPI:SS:POLARity**

|             |                                                              |  |
|-------------|--------------------------------------------------------------|--|
| Description | Sets or queries the polarity of the SS line for the SPI bus. |  |
|-------------|--------------------------------------------------------------|--|

|                            |                                                              |                      |
|----------------------------|--------------------------------------------------------------|----------------------|
| Syntax                     | :BUS1:SPI:SS:POLARity { LOW   HIGH   ? }                     |                      |
| Parameter/Return parameter | LOW                                                          | Active low polarity  |
|                            | HIGH                                                         | Active high polarity |
| Example                    | :BUS1:SPI:SS:POLARity LOW<br>Sets the SS line to active low. |                      |

Set →

→ Query

:BUS1:SPI:WORDSize

|                            |                                                                |                      |
|----------------------------|----------------------------------------------------------------|----------------------|
| Description                | Sets the number of bits per word for the SPI bus.              |                      |
| Syntax                     | :BUS1:SPI:WORDSize {<NR1>   ? }                                |                      |
| Parameter/Return parameter | <NR1>                                                          | Bits per word (4~32) |
|                            |                                                                |                      |
| Example                    | :BUS1:SPI:WORDSize 4<br>Sets the word size to 4 bits per word. |                      |

Set →

→ Query

:BUS1:SPI:BITORder

|                            |                                                                              |                                      |
|----------------------------|------------------------------------------------------------------------------|--------------------------------------|
| Description                | Sets or queries the bit order for the SPI bus.                               |                                      |
| Syntax                     | :BUS1:SPI:BITORder {<NR1>   ? }                                              |                                      |
| Parameter/Return parameter | <NR1>                                                                        | 0: MSB bit first<br>1: LSB bit first |
|                            |                                                                              |                                      |
| Example                    | :BUS1:SPI:BITORder?<br>0<br>The bit order is currently set as MSB bit first. |                                      |

Set →

→ Query

:BUS1:SPI:SCLK:SOURce

|             |                                                                |  |
|-------------|----------------------------------------------------------------|--|
| Description | Sets or queries which channel is used for the SPI SCLK source. |  |
| Syntax      | :BUS1:SPI:SCLK:SOURce { CH1   CH2   CH3   CH4   ? }            |  |

|                            |            |                            |
|----------------------------|------------|----------------------------|
| Parameter/Return parameter | CH1 to CH4 | Analog channels CH1 to CH4 |
|----------------------------|------------|----------------------------|

Example :BUS1:SPI:SCLK:SOURce CH1  
Sets channel 1 as the SPI SCLK source.

:BUS1:SPI:SS:SOURce  

|             |                                                              |  |
|-------------|--------------------------------------------------------------|--|
| Description | Sets or queries which channel is used for the SPI SS source. |  |
|-------------|--------------------------------------------------------------|--|

|        |                                                   |  |
|--------|---------------------------------------------------|--|
| Syntax | :BUS1:SPI:SS:SOURce { CH1   CH2   CH3   CH4   ? } |  |
|--------|---------------------------------------------------|--|

|                            |            |                            |
|----------------------------|------------|----------------------------|
| Parameter/Return parameter | CH1 to CH4 | Analog channels CH1 to CH4 |
|----------------------------|------------|----------------------------|

Example :BUS1:SPI:SS:SOURce CH1  
Sets channel 1 as the SPI SS source.

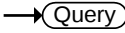
:BUS1:SPI:MOSI:SOURce  

|             |                                                                |  |
|-------------|----------------------------------------------------------------|--|
| Description | Sets or queries which channel is used for the SPI MOSI source. |  |
|-------------|----------------------------------------------------------------|--|

|        |                                                           |  |
|--------|-----------------------------------------------------------|--|
| Syntax | :BUS1:SPI:MOSI:SOURce { OFF   CH1   CH2   CH3   CH4   ? } |  |
|--------|-----------------------------------------------------------|--|

|                            |            |                            |
|----------------------------|------------|----------------------------|
| Parameter/Return parameter | CH1 to CH4 | Analog channels CH1 to CH4 |
|                            | OFF        | No MOSI source.            |

Example :BUS1:SPI:MOSI:SOURce CH1  
Sets channel 1 as the SPI MOSI source.

:BUS1:SPI:MISO:SOURce  

|             |                                                                |  |
|-------------|----------------------------------------------------------------|--|
| Description | Sets or queries which channel is used for the SPI MISO source. |  |
|-------------|----------------------------------------------------------------|--|

|        |                                                           |  |
|--------|-----------------------------------------------------------|--|
| Syntax | :BUS1:SPI:MISO:SOURce { OFF   CH1   CH2   CH3   CH4   ? } |  |
|--------|-----------------------------------------------------------|--|

|                            |            |                            |
|----------------------------|------------|----------------------------|
| Parameter/Return parameter | CH1 to CH4 | Analog channels CH1 to CH4 |
|----------------------------|------------|----------------------------|

|           |     |                 |
|-----------|-----|-----------------|
| parameter | OFF | No MISO source. |
|-----------|-----|-----------------|

Example :BUS1:SPI:MISO:SOURce CH1  
Sets channel CH1 as the SPI MISO source.

:BUS1:DISplay:FORMAT (Set) →  
→ (Query)

|             |                                                                               |
|-------------|-------------------------------------------------------------------------------|
| Description | Sets or queries the display format for the bus, either binary or hexadecimal. |
|-------------|-------------------------------------------------------------------------------|

|        |                                                           |
|--------|-----------------------------------------------------------|
| Syntax | :BUS1:DISplay:FORMAT { BINary   HEXadecimal   ASCII   ? } |
|--------|-----------------------------------------------------------|

|                            |             |                    |
|----------------------------|-------------|--------------------|
| Parameter/Return parameter | BINary      | Binary format      |
|                            | HEXadecimal | Hexadecimal format |

Example : BUS1:DISplay:FORMAT BINary  
Sets the display format to binary.

:LISTer:DATA → (Query)

|             |                                                      |
|-------------|------------------------------------------------------|
| Description | Returns the Event Table data as a binary block data. |
|-------------|------------------------------------------------------|

|        |               |
|--------|---------------|
| Syntax | :LISTer:DATA? |
|--------|---------------|

Return Parameter Returns the event table as binary block data. The binary block data contains comma separated data with new lines at the end of each row.

:BUS1:CAN:SOURce (Set) →  
→ (Query)

|             |                                       |
|-------------|---------------------------------------|
| Description | Sets or returns the CAN input source. |
|-------------|---------------------------------------|

|        |                                                |
|--------|------------------------------------------------|
| Syntax | :BUS1:CAN:SOURce { CH1   CH2   CH3   CH4   ? } |
|--------|------------------------------------------------|

|                            |           |                       |
|----------------------------|-----------|-----------------------|
| Parameter/Return parameter | CH1 ~ CH4 | Analog channel source |
|----------------------------|-----------|-----------------------|

Example :BUS1:CAN:SOURCE?  
>CH1  
Returns the CAN source.

**:BUS1:CAN:PROBe** Set →  
→ Query

|                            |                                                                                |          |
|----------------------------|--------------------------------------------------------------------------------|----------|
| Description                | Sets or returns the signal type of the CAN bus.                                |          |
| Syntax                     | :BUS1:CAN:PROBe {CANH   CANL   TX   RX   ? }                                   |          |
| Parameter/Return parameter | CANH                                                                           | CAN-High |
|                            | CANL                                                                           | CAN-Low  |
|                            | TX                                                                             | Transmit |
|                            | RX                                                                             | Receive  |
| Example                    | :BUS1:CAN:PROBe?<br>>CANH<br>:BUS1:CAN:PROBe CANL<br>:BUS1:CAN:PROBe?<br>>CANL |          |

**:BUS1:CAN:SAMPLEpoint** → Query

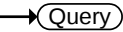
|                  |                                                                           |
|------------------|---------------------------------------------------------------------------|
| Description      | Returns the sample point of the CAN bus.                                  |
| Syntax           | :BUS1:CAN:SAMPLEpoint?                                                    |
| Return Parameter | Returns the sample point of the CAN bus as a percentage of the bit time.  |
| Example          | :BUS1:CAN:SAMPLEpoint?<br>50<br>Returns the sample point as a percentage. |

**:BUS1:CAN:BITRate** Set →  
→ Query

|                  |                                                                                                   |         |
|------------------|---------------------------------------------------------------------------------------------------|---------|
| Description      | Sets or returns the bit rate of the CAN bus.                                                      |         |
| Syntax           | :BUS1:CAN:BITRate<br>{RATE10K RATE20K RATE50K RATE125K RATE250K <br>RATE500K RATE800K RATE1M   ?} |         |
| Parameter/Return | RATE10K                                                                                           | 10 kbps |

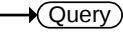
|           |          |          |
|-----------|----------|----------|
| parameter | RATE20K  | 20 kbps  |
|           | RATE50K  | 50 kbps  |
|           | RATE125K | 125 kbps |
|           | RATE250K | 250 kbps |
|           | RATE500K | 500 kbps |
|           | RATE800K | 800 kbps |
|           | RATE1M   | 1 Mbps   |

Example      :BUS1:CAN:BITRate?  
                  >RATE250K  
                  :BUS1:CAN:BITRate rate10k  
                  :BUS1:CAN:BITRate?  
                  >RATE10K

:BUS1:LIN:BITRate  

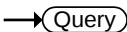
|                            |                                              |                                      |
|----------------------------|----------------------------------------------|--------------------------------------|
| Description                | Sets or returns the bit rate of the LIN bus. |                                      |
| Syntax                     | :BUS1:LIN:BITRate {<NR1>   ?}                |                                      |
| Parameter/Return parameter | <NR1>                                        | 1200, 2400, 4800, 9600, 10417, 19200 |

Example      :BUS1:LIN:BITRate 9600  
                  Sets the LIN bit rate to 9600 kbps.

:BUS1:LIN:IDFormat  

|                            |                                        |                                    |
|----------------------------|----------------------------------------|------------------------------------|
| Description                | Sets or returns the LIN ID format.     |                                    |
| Syntax                     | :BUS1:LIN:IDFormat {NOPARity PARity ?} |                                    |
| Parameter/Return parameter | NOPARity                               | Don't include parity bits with Id. |
|                            | PARity                                 | Include parity bits with Id.       |

Example      :BUS1:LIN:IDFormat?  
                  NOPARITY  
                  Returns the ID format.

**:BUS1:LIN:POLARity**

|                            |                                                            |                       |
|----------------------------|------------------------------------------------------------|-----------------------|
| Description                | Sets or returns the LIN polarity.                          |                       |
| Syntax                     | :BUS1:LIN:POLARity {NORMal INVerted ?}                     |                       |
| Parameter/Return parameter | NORMal                                                     | Normal LIN polarity   |
|                            | INVerted                                                   | Inverted LIN polarity |
| Example                    | :BUS1:LIN:POLARity?<br>NORMAL<br>Returns the LIN polarity. |                       |



**:BUS1:LIN:SAMPLEpoint**

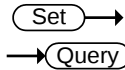
|                  |                                                                           |  |
|------------------|---------------------------------------------------------------------------|--|
| Description      | Returns the sample point.                                                 |  |
| Syntax           | :BUS1:LIN:SAMPLEpoint?                                                    |  |
| Return Parameter | Returns the sample point of the LIN bus as a percentage.                  |  |
| Example          | :BUS1:LIN:SAMPLEpoint?<br>50<br>Returns the sample point as a percentage. |  |




**:BUS1:LIN:SOURce**

|                            |                                                      |                       |
|----------------------------|------------------------------------------------------|-----------------------|
| Description                | Sets or returns the LIN data source.                 |                       |
| Syntax                     | :BUS1:LIN:SOURce {CH1   CH2   CH3   CH4   ? }        |                       |
| Parameter/Return parameter | CH1 ~ CH4                                            | Analog channel source |
| Example                    | :BUS1:LIN:SOURCE?<br>>CH1<br>Returns the LIN source. |                       |

**:BUS1:LIN:STANDARD**



|                            |                                                           |                          |
|----------------------------|-----------------------------------------------------------|--------------------------|
| Description                | Sets or returns the LIN standard.                         |                          |
| Syntax                     | :BUS1:LIN:STANDARD {V1X V2X BOTH ?}                       |                          |
| Parameter/Return parameter | V1X                                                       | Lin standard version 1.x |
|                            | V2X                                                       | Lin standard version 2.x |
|                            | BOTH                                                      | Both standards           |
| Example                    | :BUS1:LIN:STANDARD?<br>>BOTH<br>Returns the LIN standard. |                          |

# Mark Commands

|                   |     |
|-------------------|-----|
| :MARK .....       | 177 |
| :MARK:CREATE..... | 177 |
| :MARK:DELEte..... | 178 |

## :MARK



|                  |                                             |                       |
|------------------|---------------------------------------------|-----------------------|
| Description      | Move to next or previous event mark.        |                       |
| Syntax           | :MARK { NEXT   PREvious }                   |                       |
| Related commands | :MARK:CREATE                                |                       |
|                  | :MARK:DELEte                                |                       |
| Parameter        | NEXT                                        | Move to next mark     |
|                  | PREvious                                    | Move to previous mark |
| Example          | :MARK NEXT<br>Moves to the next event mark. |                       |

## :MARK:CREATE



|                  |                                                                                                                       |                                        |
|------------------|-----------------------------------------------------------------------------------------------------------------------|----------------------------------------|
| Description      | Creates a mark on the waveform at the current position or creates a mark for all the events for the current waveform. |                                        |
| Syntax           | :MARK:CREATE { CURREnt   ALL }                                                                                        |                                        |
| Related commands | :MARK                                                                                                                 |                                        |
|                  | :MARK:DELEte                                                                                                          |                                        |
| Parameter        | CURREnt                                                                                                               | Creates a mark at the current position |
|                  | ALL                                                                                                                   | Creates a mark for all the events.     |
| Example          | :MARK:CREATE CURREnt<br>Creates a mark at the current position.                                                       |                                        |

## :MARK:DELEte



|                  |                                                          |                          |
|------------------|----------------------------------------------------------|--------------------------|
| Description      | Deletes the current mark or all the marks on a waveform. |                          |
| Syntax           | :MARK:DELEte { CURRent   ALL }                           |                          |
| Related commands | :MARK                                                    |                          |
|                  | :MARK:CREATE                                             |                          |
| Parameter        | CURRent                                                  | Deletes the current mark |
|                  | ALL                                                      | Deletes all the marks    |
| Example          | :MARK:DELEte CURRent                                     |                          |
|                  | Deletes the current mark.                                |                          |

## Search Commands

|                                                        |     |
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|                                                  |     |
|--------------------------------------------------|-----|
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## :SEARCH:COPY



|             |                                                                                                           |                                                   |
|-------------|-----------------------------------------------------------------------------------------------------------|---------------------------------------------------|
| Description | Copies the search settings to the trigger settings or copies the trigger settings to the search settings. |                                                   |
| Syntax      | :SEARCH:COPY {SEARCHtotrigger TRIGgertosearch}                                                            |                                                   |
| Parameter   | SEARCHtotrigger                                                                                           | Copy the search setting to the trigger settings.  |
|             | TRIGgertosearch                                                                                           | Copy the trigger settings to the search settings. |
| Example     | :SEARCH:COPY SEARCHtotrigger<br>Copies the search settings to the trigger settings.                       |                                                   |

:SEARCH:STATE

Set

→

→

Query

|                            |                                                           |                               |
|----------------------------|-----------------------------------------------------------|-------------------------------|
| Description                | Sets or queries whether the Search function is on or off. |                               |
| Syntax                     | :SEARCH:STATE { OFF   ON   ? }                            |                               |
| Parameter/Return parameter | OFF                                                       | Turn the Search function on.  |
|                            | ON                                                        | Turn the Search function off. |
| Example                    | :SEARCH:STATE ON<br>Turn Search on.                       |                               |

:SEARCH:TOTAL

→

Query

|                  |                                                                    |                   |
|------------------|--------------------------------------------------------------------|-------------------|
| Description      | Returns the total number of events found from the search function. |                   |
| Syntax           | :SEARCH:TOTAL?                                                     |                   |
| Return parameter | <NR1>                                                              | Number of events. |
| Example          | :SEARCH:TOTAL?<br>5                                                |                   |

:SEARCH:TRIGger:TYPe

Set

→

→

Query

|                            |                                                                                  |                       |
|----------------------------|----------------------------------------------------------------------------------|-----------------------|
| Description                | Sets or queries the search trigger type.                                         |                       |
| Syntax                     | :SEARCH:TRIGger:TYPe { EDGe   PULSEWidth   RUNT   RISEFall   FFTPeak   BUS   ? } |                       |
| Parameter/Return parameter | EDGe                                                                             | Edge trigger          |
|                            | PULSEWidth                                                                       | Pulse width trigger   |
|                            | RUNT                                                                             | Runt trigger          |
|                            | RISEFall                                                                         | Rise and Fall trigger |
|                            | FFTPeak                                                                          | FFT Peak trigger      |
|                            | BUS                                                                              | Bus trigger           |

**Example** :SEARCH:TRIGger:TYPe EDGE  
Sets the search trigger to the edge type.

Set →

**:SEARCH:TRIGger:SOURce**

→ Query

**Description** Sets or queries the search trigger source.

**Syntax** :SEARCH:TRIGger:SOURce {CH1 | CH2 | CH3 | CH4 | ? }

**Parameter/Return parameter** CH1 to CH4 Channel 1 to Channel 4

**Example** :SEARCH:TRIGger:SOURce CH1  
Sets the search trigger source as CH1.

Set →

**:SEARCH:TRIGger:EDGE:SLOP**

→ Query

**Description** Sets or queries the search trigger slope.

**Syntax** :SEARCH:TRIGger:EDGE:SLOP { RISe | FALL | EITheR | ? }

**Related commands** :SEARCH:TRIGger:TYPe

|                  |        |                                |
|------------------|--------|--------------------------------|
| <b>Parameter</b> | RISe   | Rising slope                   |
|                  | FALL   | Falling slope                  |
|                  | EITheR | Either rising or falling slope |

**Return parameter** Returns the trigger slope.

**Example** :SEARCH:TRIGger:EDGE:SLOP FALL  
Sets the search trigger slope to falling.

Set →

**:SEARCH:TRIGger:LEVel**

→ Query

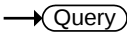
**Description** Sets or queries the search trigger level.

**Syntax** :SEARCH:TRIGger:LEVel {TTL | ECL| SETTO50 | <NRf> | ? }

|                  |                                                                             |                                                                   |
|------------------|-----------------------------------------------------------------------------|-------------------------------------------------------------------|
| Related commands | :SEARCH:TRIGger:TYPE                                                        |                                                                   |
| Parameter        | <NRf>                                                                       | Trigger level value                                               |
|                  | TTL                                                                         | Sets the search trigger level to TTL.                             |
|                  | ECL                                                                         | Sets the search trigger level to ECL.                             |
|                  | SETTO50                                                                     | Sets the search trigger level to the User level (50% by default). |
| Return parameter | <NR3>                                                                       | Returns the trigger.                                              |
| Example1         | :SEARCH:TRIGger:LEVel TTL<br>Sets the search trigger level to TTL.          |                                                                   |
| Example2         | :SEARCH:TRIGger:LEVel 3.30E-1<br>Sets the search trigger level to 330mV/mA. |                                                                   |

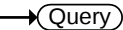
:SEARCH:TRIGger:HLEVel  

|                  |                                                                                   |                                        |
|------------------|-----------------------------------------------------------------------------------|----------------------------------------|
| Description      | Sets or queries the high level search trigger.                                    |                                        |
| Note             | Applicable for Rise and Fall/Pulse Runt search triggers.                          |                                        |
| Syntax           | :SEARCH:TRIGger:HLEVel { <NRf>   ?}                                               |                                        |
| Related commands | :SEARCH:TRIGger:TYPE                                                              |                                        |
| Parameter        | <NRf>                                                                             | High level value.                      |
| Return parameter | <NR3>                                                                             | Returns the high level search trigger. |
| Example          | :SEARCH:TRIGger:HLEVel 3.30E-1<br>Sets the high level search trigger to 330mV/mA. |                                        |

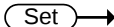
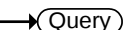
:SEARCH:TRIGger:LLEVel  

|             |                                                   |  |
|-------------|---------------------------------------------------|--|
| Description | Sets or queries the low level search trigger.     |  |
| Note        | Applicable for Rise and Fall/Pulse Runt triggers. |  |
| Syntax      | :SEARCH:TRIGger:LLEVel { <NRf>   ?}               |  |

|                  |                                                                                   |                        |
|------------------|-----------------------------------------------------------------------------------|------------------------|
| Related commands | :SEARCH:TRIGger:TYPE                                                              |                        |
| Parameter        | <NRF>                                                                             | Low level value.       |
| Return parameter | <NR3>                                                                             | Returns the low level. |
| Example          | :SEARCH:TRIGger:LLEVel -3.30E-3<br>Sets the low level search trigger to 330mV/mA. |                        |

:SEARCH:TRIGger:PULSEWidth:POLarity  

|                  |                                                                                            |                   |
|------------------|--------------------------------------------------------------------------------------------|-------------------|
| Description      | Sets or queries the pulse width search trigger polarity.                                   |                   |
| Syntax           | :SEARCH:TRIGger:PULSEWidth:POLarity {POSitive   NEGative   ?}                              |                   |
| Related commands | :SEARCH:TRIGger:TYPE                                                                       |                   |
| Parameter        | POSitive                                                                                   | Positive polarity |
|                  | NEGative                                                                                   | Negative polarity |
| Return parameter | Returns the pulse width polarity.                                                          |                   |
| Example          | :SEARCH:TRIGger:PULSEWidth:POLarity POSitive<br>Sets the pulse width polarity to positive. |                   |

:SEARCH:TRIGger:RUNT:POLarity  

|                  |                                                                  |  |
|------------------|------------------------------------------------------------------|--|
| Description      | Sets or queries the Pulse Runt search trigger polarity.          |  |
| Syntax           | :SEARCH:TRIGger:RUNT:POLarity {POSitive   NEGative   EITHER   ?} |  |
| Related commands | :SEARCH:TRIGger:TYPE                                             |  |

|           |          |                               |
|-----------|----------|-------------------------------|
| Parameter | POSitive | Positive polarity             |
|           | NEGative | Negative polarity             |
|           | EITher   | Positive or negative polarity |

Return parameter Returns the pulse runt search trigger polarity.

Example :SEARCH:TRIGger:RUNT:POLarity POSitive  
Sets the Pulse Runt search trigger polarity to positive.

:SEARCH:TRIGger:RISEFall:SLOP

Set →

→ Query

Description Sets or queries the slope of the Rise and Fall search trigger.

Syntax :SEARCH:TRIGger:RISEFall:SLOP { RISE | FALL | EITher | ? }

Related commands :SEARCH:TRIGger:TYPE

|           |        |                                |
|-----------|--------|--------------------------------|
| Parameter | RISe   | Rising slope                   |
|           | FALL   | Falling slope                  |
|           | EITher | Either rising or falling slope |

Return parameter Returns the rise & fall slope.

Example :SEARCH:TRIGger:RISEFall :SLOP RISE  
Sets the Rise & Fall search trigger slope to rising.

:SEARCH:TRIGger:PULSe:WHEn

Set →

→ Query

Description Sets or queries the pulse width search trigger conditions.

Syntax :SEARCH:TRIGger:PULSe:WHEn { MOREthan | LESSthan | EQual | UNEQual | ? }

Related commands :SEARCH:TRIGger:TYPE  
:SEARCH:TRIGger:PULSe:TIME

|           |          |   |
|-----------|----------|---|
| Parameter | MOREthan | > |
|           | LESSthan | < |
|           | Equal    | = |
|           | UNEQual  | ≠ |

Return parameter Returns the pulse width search trigger conditions.

Example :SEARCH:TRIGger:PULSe:WHEn UNEQual  
Sets the pulse width search trigger conditions to not equal to (≠).

Set →

→ Query

**:SEARCH:TRIGger:PULSe:TIME**

Description Sets or queries the pulse width search trigger time.

Syntax :SEARCH:TRIGger:PULSe:TIME {<NRf> | ?}

Related commands :SEARCH:TRIGger:TYPe  
:SEARCH:TRIGger:PULSe:WHEn

Parameter <NRf> Pulse width time (4ns~10s)

Return parameter <NR3> Returns the pulse width time in seconds.

Example :SEARCH:TRIGger:PULSe:TIME 4.00E-5  
Sets the pulse width search trigger to 40.0us.

Set →

→ Query

**:SEARCH:TRIGger:RUNT:WHEn**

Description Sets or queries the pulse runt search trigger conditions.

Syntax :SEARCH:TRIGger:RUNT:WHEn {MOREthan | LESSthan | Equal | UNEQual | ?}

Related commands :SEARCH:TRIGger:TYPe  
:SEARCH:TRIGger:RUNT:TIME

Parameter MOREthan >  
LESSthan <

|         |   |
|---------|---|
| Equal   | = |
| UNEQual | ≠ |

Return parameter Returns the pulse runt search trigger conditions.

Example :SEARCH:TRIGger:RUNT:WHEn UNEQual  
Sets the pulse runt search trigger condition to unequal (≠).

:SEARCH:TRIGger:RUNT:TIME

Set →

→ Query

Description Sets or queries the pulse runt search trigger time.

Syntax :SEARCH:TRIGger:RUNT:TIME {<NRf> | ? }

Related commands :SEARCH:TRIGger:TYPE  
:SEARCH:TRIGger:RUNT:WHEn

Parameter <NRf> Pulse runt time (4nS to 10S)

Return Parameter <NR3> Returns the runt time in seconds.

Example :SEARCH:TRIGger:RUNT:TIME 4.00E-5  
Sets the pulse runt time to 40.0uS.

:SEARCH:TRIGger:RISEFall:WHEn

Set →

→ Query

Description Sets or queries the rise and fall search trigger conditions.

Syntax :SEARCH:TRIGger:RISEFall:WHEn {MOREthan | LESSthan | EQual | UNEQual | ? }

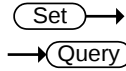
Related commands :SEARCH:TRIGger:TYPE  
:SEARCH:TRIGger:RISEFall:TIME

|           |          |   |
|-----------|----------|---|
| Parameter | MOREthan | > |
|           | LESSthan | < |
|           | EQual    | = |
|           | UNEQual  | ≠ |

Return parameter Returns the rise and fall search trigger condition.

**Example** :SEARCH:TRIGger:RISEFall:WHEn UNEQual  
Sets the rise and fall search trigger condition to unequal (≠).

**:SEARCH:TRIGger:RISEFall:TIME**

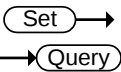


|                  |                                                                                         |                                            |
|------------------|-----------------------------------------------------------------------------------------|--------------------------------------------|
| Description      | Sets or queries the rise and fall time.                                                 |                                            |
| Syntax           | :SEARCH:TRIGger:RISEFall:TIME {<NRf>   ? }                                              |                                            |
| Related commands | :SEARCH:TRIGger:TYPE<br>:SEARCH:TRIGger:RISEFall:WHEn                                   |                                            |
| Parameter        | <NRf>                                                                                   | Rise and Fall time (4nS to 10S)            |
| Return Parameter | <NR3>                                                                                   | Returns the rise and fall time in seconds. |
| Example          | :SEARCH:TRIGger:RISEFall:TIME 4.00E-5<br>Sets the trigger rise and fall time to 40.0us. |                                            |

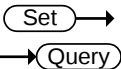
**:SEARCH:TRIGger:BUS:TYPE**



|                  |                                   |           |
|------------------|-----------------------------------|-----------|
| Description      | Returns the current bus type.     |           |
| Syntax           | :SEARCH:TRIGger:BUS:TYPE?         |           |
| Return parameter | 12C                               | I2C mode  |
|                  | SPI                               | SPI mode  |
|                  | UART                              | UART mode |
|                  | CAN                               | CAN mode  |
|                  | LIN                               | LIN mode  |
| Example          | :SEARCH:TRIGger:BUS:TYPE?<br>UART |           |

:SEARCH:TRIGger:BUS:B1:I2C:CONDition


|                  |                                                                                                                    |                                                                               |
|------------------|--------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|
| Description      | Sets or queries the I <sup>2</sup> C search trigger conditions.                                                    |                                                                               |
| Syntax           | :SEARCH:TRIGger:BUS:B1:I2C:CONDition<br>{START   STOP   REPEATstart   ACKMISS   ADDRess   DATA   ADDRANDDATA   ? } |                                                                               |
| Parameter        | START                                                                                                              | Set Start as the I <sup>2</sup> C search trigger condition.                   |
|                  | STOP                                                                                                               | Set Stop as the I <sup>2</sup> C search trigger condition.                    |
|                  | REPEATstart                                                                                                        | Set Repeat of Start as the I <sup>2</sup> C search trigger condition.         |
|                  | ACKMISS                                                                                                            | Set Missing Acknowledgement as the I <sup>2</sup> C search trigger condition. |
|                  | ADDRess                                                                                                            | Set Address as the I <sup>2</sup> C search trigger condition.                 |
|                  | DATA                                                                                                               | Set Data as the I <sup>2</sup> C search trigger condition.                    |
|                  | ADDRANDDATA                                                                                                        | Set Address and Data as the I <sup>2</sup> C search trigger condition.        |
| Return parameter | Returns the I <sup>2</sup> C bus search trigger condition.                                                         |                                                                               |
| Example          | :SEARCH:TRIGger:BUS:B1:I2C:CONDition ADDRess<br>Set Address as the I <sup>2</sup> C search trigger condition.      |                                                                               |

:SEARCH:TRIGger:BUS:B1:I2C:ADDRess

  
:MODE

|             |                                                                                             |  |
|-------------|---------------------------------------------------------------------------------------------|--|
| Description | Sets or queries the I <sup>2</sup> C addressing mode (7 or 10 bits) for the search trigger. |  |
| Syntax      | :SEARCH:TRIGger:BUS:B1:I2C:ADDRess:MODE<br>{ADDR7   ADDR10   ? }                            |  |

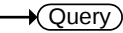
Related commands :SEARCH:TRIGger:BUS:B1:I2C:CONDition

|           |        |                   |
|-----------|--------|-------------------|
| Parameter | ADDR7  | 7 bit addressing  |
|           | ADDR10 | 10 bit addressing |

|                  |   |                   |
|------------------|---|-------------------|
| Return Parameter | 0 | 7 bit addressing  |
|                  | 1 | 10 bit addressing |

Example :SEARCH:TRIGger:BUS:B1:I2C:ADDRess:MODE? 0  
The addressing mode is current set to 7 bits.

:SEARCH:TRIGger:BUS:B1:I2C:ADDRess :TYPE

Description Sets the I<sup>2</sup>C bus address type, or queries what the setting is for the search trigger.

Syntax :SEARCH:TRIGger:BUS:B1:I2C:ADDRess:TYPE {GENeralcall | STARtbyte | HSmode | EEPROM | CBUS | ?}

Related commands :SEARCH:TRIGger:BUS:B1:I2C:CONDition

|           |             |                                             |
|-----------|-------------|---------------------------------------------|
| Parameter | GENeralcall | Set a general call address (0000 000 0).    |
|           | STARtbyte   | Set a start byte address. (0000 000 1)      |
|           | HSmode      | Set a high-speed mode address. (0000 1xx x) |
|           | EEPROM      | Set an EEPROM address. (1010 xxx x)         |
|           | CBUS        | Set a CBUS address. (0000 001 x)            |

Return Parameter Returns the address type

Example :SEARCH:TRIGger:BUS:B1:I2C:ADDRess:TYPE? CBUS

:SEARCH:TRIGger:BUS:B1:I2C:ADDRes  
:VALue

Set →  
→ Query

**Description** Sets or queries the I<sup>2</sup>C bus address value when the I<sup>2</sup>C search trigger is set to trigger on Address or Address/Data.

**Syntax** :SEARCH:TRIGger:BUS:B1:I2C:ADDRes:VALue  
{<string> | ? }

**Related commands** :SEARCH:TRIGger:BUS:B1:I2C:ADDRes:MODE

**Parameter** <string> 7/10 characters, must be enclosed in double quotes "string".  
x = don't care  
1 = binary 1  
0 = binary 0

**Return Parameter** Returns the address value in binary.

**Example 1** :SEARCH:TRIGger:BUS:B1:I2C:ADDRes:MODE  
ADDR7  
:SEARCH:TRIGger:BUS:B1:I2C:ADDRes:VALue  
"xxx0101"  
Sets the address to XXX0101

**Example 2** :SEARCH:TRIGger:BUS:B1:I2C:ADDRes:VALue?  
XXX0101

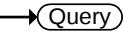
:SEARCH:TRIGger:BUS:B1:I2C:ADDRes  
:DIRection

Set →  
→ Query

**Description** Sets or queries the address bit as read write or don't care for the search function.

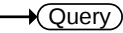
**Note** This setting only applies when the I<sup>2</sup>C search trigger is set to trigger on Address or Address/Data

|                  |                                                                                         |                                   |
|------------------|-----------------------------------------------------------------------------------------|-----------------------------------|
| Syntax           | :SEARCH:TRIGger:BUS:B1:I2C:ADDReSS:DIRection<br>{ READ   WRITE   NOCARE   ? }           |                                   |
| Related commands | :SEARCH:TRIGger:BUS:B1:I2C:CONDition                                                    |                                   |
| Parameter        | READ                                                                                    | Set read as the data direction.   |
|                  | WRITE                                                                                   | Set write as the data direction.  |
|                  | NOCARE                                                                                  | Set either as the data direction. |
| Return Parameter | Returns the direction (READ, WRITE, NOCARE).                                            |                                   |
| Example          | :SEARCH:TRIGger:BUS:B1:I2C:ADDReSS:DIRection<br>READ<br><br>Sets the direction to READ. |                                   |

**:SEARCH:TRIGger:BUS:B1:I2C:DATA:SIZE**

|                  |                                                                                                              |                                |
|------------------|--------------------------------------------------------------------------------------------------------------|--------------------------------|
| Description      | Sets or queries the data size in bytes for the I <sup>2</sup> C bus.                                         |                                |
| Note             | This setting only applies when the I <sup>2</sup> C search trigger is set to trigger on Data or Address/Data |                                |
| Syntax           | :SEARCH:TRIGger:BUS:B1:I2C:DATA:SIZE {<NR1>   ? }                                                            |                                |
| Related commands | :SEARCH:TRIGger:BUS:B1:I2C:CONDition                                                                         |                                |
| Parameter        | <NR1>                                                                                                        | Number of data bytes (1 to 5). |
| Return parameter | <NR1>                                                                                                        | Returns the number of bytes.   |
| Example          | :SEARCH:TRIGger:BUS:B1:I2C:DATA:SIZE 3<br><br>Sets the number of bytes to 3.                                 |                                |

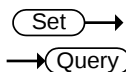



**:SEARCH:TRIGger:BUS:B1:I2C:DATA:VALUE**

|             |                                                                                                                                                            |  |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| Description | Sets or queries the triggering data value for the I <sup>2</sup> C bus when the I <sup>2</sup> C search trigger is set to trigger on Data or Address/Data. |  |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|--|

|                  |                                                                                                                            |                                                                                                                                                                                                       |
|------------------|----------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Syntax           | :SEARCH:TRIGger:BUS:B1:I2C:DATA:VALue<br>{<string>   ? }                                                                   |                                                                                                                                                                                                       |
| Related commands | :SEARCH:TRIGger:BUS:B1:I2C:DATA:SIZE                                                                                       |                                                                                                                                                                                                       |
| Parameter        | <string>                                                                                                                   | <p>The number of characters in the string depends on the data size setting. The string must be enclosed in double quotes, "string".</p> <p>x = don't care</p> <p>1 = binary 1</p> <p>0 = binary 0</p> |
| Return Parameter | Returns the data value.                                                                                                    |                                                                                                                                                                                                       |
| Example 1        | :SEARCH:TRIGger:BUS:B1:I2C:DATA:SIZE 1<br>:SEARCH:TRIGger:BUS:B1:I2C:DATA:VALue<br>"1x1x0101"<br>Sets the value to XXX0101 |                                                                                                                                                                                                       |
| Example 2        | :SEARCH:TRIGger:BUS:B1:I2C:DATA:VALue?<br>1X1X0101                                                                         |                                                                                                                                                                                                       |

:SEARCH:TRIGger:BUS:B1:UART  
:CONDition

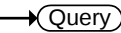


|             |                                                                                                                                              |                                                       |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|
| Description | Sets or queries the UART search triggering condition.                                                                                        |                                                       |
| Syntax      | :SEARCH:TRIGger:BUS:B1:UART:CONDition<br>{ RXSTArt   RXDATA   RXENDPacket   TXSTArt   TXDATA   TXENDPacket   TXPARItYerr   RXPARItYerr   ? } |                                                       |
| Parameter   | RXSTArt                                                                                                                                      | Set search trigger on the RX Start Bit.               |
|             | RXDATA                                                                                                                                       | Set search trigger on RX Data.                        |
|             | RXENDPacket                                                                                                                                  | Set search trigger on the RX End of Packet condition. |

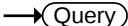
|              |                                                       |
|--------------|-------------------------------------------------------|
| RXPARIttyerr | Set search trigger on RX Parity error condition.      |
| TXSTArt      | Set search trigger on the TX Start Bit.               |
| TXDATA       | Set search trigger on TX Data.                        |
| TXENDPacket  | Set search trigger on the TX End of Packet condition. |
| TXPARIttyerr | Set search trigger on TX Parity error condition.      |

**Return Parameter** Returns the search triggering condition.

**Example** :SEARCH:TRIGger:BUS:B1:UART:CONDition TXDATA  
Sets the UART bus to trigger on Tx Data for the search function.

:SEARCH:TRIGger:BUS:B1:UART:RX:DATA:    
SIZE

|                         |                                                                                     |                              |
|-------------------------|-------------------------------------------------------------------------------------|------------------------------|
| <b>Description</b>      | Sets or queries the number of bytes for UART data.                                  |                              |
| <b>Note</b>             | This setting only applies when the UART search trigger is set to trigger on Rx Data |                              |
| <b>Syntax</b>           | :SEARCH:TRIGger:BUS:B1:UART:RX:DATA:SIZE {<NR1>   ?}                                |                              |
| <b>Related commands</b> | :SEARCH:TRIGger:BUS:B1:UART:CONDition                                               |                              |
| <b>Parameter</b>        | <NR1>                                                                               | Number of bytes (1 to 10).   |
| <b>Return parameter</b> | <NR1>                                                                               | Returns the number of bytes. |
| <b>Example</b>          | :SEARCH:TRIGger:BUS:B1:UART:RX:DATA:SIZE 5<br>Sets the number of bytes to 5.        |                              |

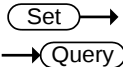
:SEARCH:TRIGger:BUS:B1:UART:RX:DATA: VALue  

|                  |                                                                                                                                                                                  |                                                                                                                                                                                                       |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description      | Sets or queries the search triggering data value for the UART bus when the bus is set to trigger on Rx Data.                                                                     |                                                                                                                                                                                                       |
| Syntax           | :SEARCH:TRIGger:BUS:B1:UART:RX:DATA:VALue {<string>   ? }                                                                                                                        |                                                                                                                                                                                                       |
| Related commands | :SEARCH:TRIGger:BUS:B1:UART:RX:DATA:SIZE                                                                                                                                         |                                                                                                                                                                                                       |
| Parameter        | <string>                                                                                                                                                                         | <p>The number of characters in the string depends on the data size setting. The string must be enclosed in double quotes, "string".</p> <p>x = don't care</p> <p>1 = binary 1</p> <p>0 = binary 0</p> |
| Return Parameter | Returns the data value.                                                                                                                                                          |                                                                                                                                                                                                       |
| Example1         | :SEARCH:TRIGger:BUS:B1:UART:CONDition RXDATA<br>:SEARCH:TRIGger:BUS:B1:UART:RX:DATA:SIZE 1<br>:SEARCH:TRIGger:BUS:B1:UART:RX:DATA:VALue "1x1x0101"<br>Sets the value to 1x1x0101 |                                                                                                                                                                                                       |
| Example 2        | :SEARCH:TRIGger:BUS:B1:UART:RX:DATA:VALue? 1X1X0101                                                                                                                              |                                                                                                                                                                                                       |

:SEARCH:TRIGger:BUS:B1:UART:TX:DATA :SIZE  

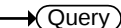
|             |                                                                                     |
|-------------|-------------------------------------------------------------------------------------|
| Description | Sets or queries the number of bytes for UART data.                                  |
| Note        | This setting only applies when the UART search trigger is set to trigger on Tx Data |

|                  |                                                                              |                              |
|------------------|------------------------------------------------------------------------------|------------------------------|
| Syntax           | :SEARCH:TRIGger:BUS:B1:UART:TX:DATA:SIZE {<NR1>   ?}                         |                              |
| Related commands | :SEARCH:TRIGger:BUS:B1:UART:CONDition                                        |                              |
| Parameter        | <NR1>                                                                        | Number of bytes (1 to 10).   |
| Return parameter | <NR1>                                                                        | Returns the number of bytes. |
| Example          | :SEARCH:TRIGger:BUS:B1:UART:TX:DATA:SIZE 5<br>Sets the number of bytes to 5. |                              |

:SEARCH:TRIGger:BUS:B1:UART:TX:DATA: VALue 

|                  |                                                                                                                                                                                    |                                                                                                                                                                                                       |
|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description      | Sets or queries the search triggering data value for the UART bus when the bus is set to trigger on Tx Data.                                                                       |                                                                                                                                                                                                       |
| Syntax           | :SEARCH:TRIGger:BUS:B1:UART:TX:DATA:VALue {<string>   ?}                                                                                                                           |                                                                                                                                                                                                       |
| Related commands | :SEARCH:TRIGger:BUS:B1:UART:TX:DATA:SIZE                                                                                                                                           |                                                                                                                                                                                                       |
| Parameter        | <sting>                                                                                                                                                                            | <p>The number of characters in the string depends on the data size setting. The string must be enclosed in double quotes, "string".</p> <p>x = don't care</p> <p>1 = binary 1</p> <p>0 = binary 0</p> |
| Return Parameter | Returns the data value.                                                                                                                                                            |                                                                                                                                                                                                       |
| Example 1        | <pre>:SEARCH:TRIGger:BUS:B1:UART:CONDition TXDATA :SEARCH:TRIGger:BUS:B1:UART:TX:DATA:SIZE 1 :SEARCH:TRIGger:BUS:B1:UART:TX:DATA:VALue "1x1x0101" Sets the value to 1x1x0101</pre> |                                                                                                                                                                                                       |

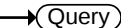
Example 2 :SEARCH:TRIGger:BUS:B1:UART:TX:DATA:VALue?  
1X1X0101

:SEARCH:TRIGger:BUS:B1:SPI:CONDition  

|             |                                                                         |                                                                               |
|-------------|-------------------------------------------------------------------------|-------------------------------------------------------------------------------|
| Description | Sets or queries the SPI search triggering condition.                    |                                                                               |
| Syntax      | :SEARCH:TRIGger:BUS:B1:SPI:CONDition {SS   MISO   MOSI   MISOMOSI   ? } |                                                                               |
| Parameter   | SS                                                                      | Set to trigger on the Slave Selection condition.                              |
|             | MISO                                                                    | Set to trigger on the Master-In Slave-Out condition.                          |
|             | MOSI                                                                    | Set to trigger on the Master-Out Slave-In condition.                          |
|             | MISOMOSI                                                                | Set to trigger on the Master-In Slave-Out and Master-Out Slave-In conditions. |

Return Parameter Returns the triggering condition.

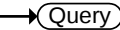
Example :SEARCH:TRIGger:BUS:B1:SPI:CONDition MISO  
Sets the SPI bus to trigger on MISO.

:SEARCH:TRIGger:BUS:B1:SPI:DATA:SIZE  

|                  |                                                                                                    |                            |
|------------------|----------------------------------------------------------------------------------------------------|----------------------------|
| Description      | Sets or queries the number of words for SPI data for the search function.                          |                            |
| Note             | This setting only applies when the SPI search trigger is set to trigger on MISO, MOSI or MISO/MOSI |                            |
| Syntax           | :SEARCH:TRIGger:BUS:B1:SPI:DATA:SIZE {<NR1>   ?}                                                   |                            |
| Related commands | :SEARCH:TRIGger:BUS:B1:SPI:CONDition                                                               |                            |
| Parameter        | <NR1>                                                                                              | Number of words (1 to 32). |

|                  |       |                              |
|------------------|-------|------------------------------|
| Return parameter | <NR1> | Returns the number of words. |
|------------------|-------|------------------------------|

|         |                                                                            |
|---------|----------------------------------------------------------------------------|
| Example | :SEARCH:TRIGger:BUS:B1:SPI:DATA:SIZE 10<br>Sets the number of words to 10. |
|---------|----------------------------------------------------------------------------|

:SEARCH:TRIGger:BUS:B1:SPI:DATA:MISO:  VALue 

|             |                                                                                                                       |
|-------------|-----------------------------------------------------------------------------------------------------------------------|
| Description | Sets or queries the search triggering data value for the SPI bus when the bus is set to trigger on MISO or MISO/MOSI. |
|-------------|-----------------------------------------------------------------------------------------------------------------------|

|        |                                                            |
|--------|------------------------------------------------------------|
| Syntax | :SEARCH:TRIGger:BUS:B1:SPI:DATA:MISO:VALue {<string>   ? } |
|--------|------------------------------------------------------------|

|                  |                                      |
|------------------|--------------------------------------|
| Related commands | :SEARCH:TRIGger:BUS:B1:SPI:DATA:SIZE |
|------------------|--------------------------------------|

|           |         |                                                                                                                                                                                                       |
|-----------|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameter | <sting> | <p>The number of characters in the string depends on the data size setting. The string must be enclosed in double quotes, "string".</p> <p>x = don't care</p> <p>1 = binary 1</p> <p>0 = binary 0</p> |
|-----------|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                  |                         |
|------------------|-------------------------|
| Return Parameter | Returns the data value. |
|------------------|-------------------------|

|           |                                                                                                                                                                            |
|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Example 1 | :SEARCH:TRIGger:BUS:B1:SPI:CONDition MISO<br>:SEARCH:TRIGger:BUS:B1:SPI:DATA:SIZE 2<br>:SEARCH:TRIGger:BUS:B1:SPI:DATA:MISO:VALue "1x1x0101"<br>Sets the value to 1x1x0101 |
|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|           |                                                      |
|-----------|------------------------------------------------------|
| Example 2 | :SEARCH:TRIGger:BUS:B1:SPI:DATA:MISO:VALue? 1X1X0101 |
|-----------|------------------------------------------------------|

:SEARCH:TRIGger:BUS:B1:SPI:DATA:MOSI: VALue

Set →  
→ Query

**Description** Sets or queries the search triggering data value for the SPI bus when the bus is set to trigger on MOSI or MISO/MOSI.

**Syntax** :SEARCH:TRIGger:BUS:B1:SPI:DATA:MOSI:VALue {<string> | ? }

**Related commands** :SEARCH:TRIGger:BUS:B1:SPI:DATA:SIZE

|                  |          |                                                                                                                                                                                                       |
|------------------|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Parameter</b> | <string> | <p>The number of characters in the string depends on the data size setting. The string must be enclosed in double quotes, "string".</p> <p>x = don't care</p> <p>1 = binary 1</p> <p>0 = binary 0</p> |
|------------------|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**Return Parameter** Returns the data value.

**Example1** :SEARCH:TRIGger:BUS:B1:SPI:CONDition MOSI  
:SEARCH:TRIGger:BUS:B1:SPI:DATA:SIZE 2  
:SEARCH:TRIGger:BUS:B1:SPI:DATA:MOSI:VALue "1x1x0101"  
Sets the value to 1x1x0101

**Example2** :SEARCH:TRIGger:BUS:B1:SPI:DATA:MOSI:VALue? 1X1X0101

Set →  
→ Query

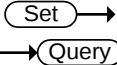
:SEARCH:TRIGger:BUS:B1:CAN:CONDition

**Description** Sets or returns the CAN search trigger condition.

|                             |                                                                                                              |                                                              |
|-----------------------------|--------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|
| Syntax                      | :SEARCH:TRIGger:BUS:B1:CAN:CONDition<br>{SOF FRAMEtype Identifier DATA IDANDDATA EOF <br>ACKMISS STUFFERR ?} |                                                              |
| Parameter/ Return parameter | SOF                                                                                                          | Sets search to trigger on a start of frame                   |
|                             | FRAMEtype                                                                                                    | Sets search to trigger on the type of frame                  |
|                             | Identifier                                                                                                   | Sets search to trigger on a matching identifier              |
|                             | DATA                                                                                                         | Sets search to trigger on matching data                      |
|                             | IDANDDATA                                                                                                    | Sets search to trigger on matching identifier and data field |
|                             | EOF                                                                                                          | Sets search to trigger on the end of frame                   |
|                             | ACKMISS                                                                                                      | Sets search to trigger on a missing acknowledge              |
|                             | STUFFERR                                                                                                     | Sets search to trigger on a bit stuffing error               |

Example1 :SEARCH:TRIGger:BUS:B1:CAN:CONDition SOF  
Triggers search on a start of frame.

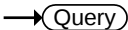
Example2 :SEARCH:TRIGger:BUS:B1:CAN:CONDition?  
>SOF

:SEARCH:TRIGger:BUS:B1:CAN:FRAMEtype 

|                             |                                                                        |                                     |
|-----------------------------|------------------------------------------------------------------------|-------------------------------------|
| Description                 | Sets or returns the frame type for the CAN FRAMEType search trigger.   |                                     |
| Syntax                      | :SEARCH:TRIGger:BUS:B1:CAN:FRAMEtype<br>{DATA REMOte ERRor OVERLoad ?} |                                     |
| Parameter/ Return parameter | DATA                                                                   | Sets the frame type to data frame   |
|                             | REMOte                                                                 | Sets the frame type to remote frame |
|                             | ERRor                                                                  | Sets the frame type to error frame  |

|          |                                 |
|----------|---------------------------------|
| OVERLoad | Sets the frame type to overload |
|----------|---------------------------------|

Example :SEARCH:TRIGger:BUS:B1:CAN:FRAMeType DATA  
Sets the frame type to DATA.

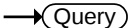
SEARCH:TRIGger:BUS:B1:CAN:IDentifier:   
MODE 

|             |                                                      |
|-------------|------------------------------------------------------|
| Description | Sets or returns the CAN identifier mode for the bus. |
|-------------|------------------------------------------------------|

|        |                                                                  |
|--------|------------------------------------------------------------------|
| Syntax | :SEARCH:TRIGger:BUS:B1:CAN:IDentifier:MODE {STANdard EXTended ?} |
|--------|------------------------------------------------------------------|

|                                |          |                          |
|--------------------------------|----------|--------------------------|
| Parameter/<br>Return parameter | STANdard | Standard addressing mode |
|                                | EXTended | Extended addressing mode |

Example :SEARCH:TRIGger:BUS:B1:CAN:IDentifier:MODE?>STANDARD  
:SEARCH:TRIGger:BUS:B1:CAN:IDentifier:MODE EXTENDED  
:SEARCH:TRIGger:BUS:B1:CAN:IDentifier:MODE?>EXTENDED

:SEARCH:TRIGger:BUS:B1:CAN:IDentifier:   
VALue 

|             |                                                                                                                                                                  |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Sets or returns the identifier string used for the CAN search trigger.<br><br>Note: Only applicable when the search trigger condition is set to ID or IDANDDATA. |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|        |                                                          |
|--------|----------------------------------------------------------|
| Syntax | :SEARCH:TRIGger:BUS:B1:CAN:IDentifier:VALue {<string> ?} |
|--------|----------------------------------------------------------|

|                     |                                            |
|---------------------|--------------------------------------------|
| Related<br>Commands | :SEARCH:TRIGger:BUS:B1:CAN:IDentifier:MODE |
|---------------------|--------------------------------------------|

|                                |          |                                                                                                                                                                                                               |
|--------------------------------|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameter/<br>Return parameter | <string> | <p>The size of the string depends on the data size setting. The string must be enclosed in double quotes, "string".</p> <p>String contents:</p> <p>x = don't care</p> <p>1 = binary 1</p> <p>0 = binary 0</p> |
|--------------------------------|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Example

```
:SEARCH:TRIGger:BUS:B1:CAN:CONDition ID
:SEARCH:TRIGger:BUS:B1:CAN:IDentifier:MODe
STANDARD
:SEARCH:TRIGger:BUS:B1:CAN:IDentifier:VALue
"01100X1X01X"
:SEARCH:TRIGger:BUS:B1:CAN:IDentifier:VALue?
>01100X1X01X
```

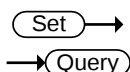
:SEARCH:TRIGger:BUS:B1:CAN:IDentifier      (Set) →  
:DIRection      → (Query)

|                                |                                                                       |                                   |
|--------------------------------|-----------------------------------------------------------------------|-----------------------------------|
| Description                    | Sets or queries the address bit as read, write or don't care.         |                                   |
| Syntax                         | :SEARCH:TRIGger:BUS:B1:CAN:IDentifier:DIRection {READ WRITE NOCARE ?} |                                   |
| Parameter/<br>Return parameter | READ                                                                  | Sets read as the data direction   |
|                                | WRITE                                                                 | Sets write as the data direction  |
|                                | NOCARE                                                                | Sets either as the data direction |

Example2

```
:SEARCH:TRIGger:BUS:B1:CAN:IDentifier:DIRection?
>WRITE
:SEARCH:TRIGger:BUS:B1:CAN:IDentifier:DIRection
READ
:SEARCH:TRIGger:BUS:B1:CAN:IDentifier:DIRection?
>READ
```

:SEARCH:TRIGger:BUS:B1:CAN:DATa:  
QUALifier



|                                |                                                                                                                                                                              |                                                                                    |
|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| Description                    | Sets or returns the CAN data qualifier.<br>Note: Only applicable when the search triggering condition is set to DATA or IDANDDATA.                                           |                                                                                    |
| Syntax                         | :SEARCH:TRIGger:BUS:B1:CAN:DATa:QUALifier<br>{LESSthan MOREthan EQual UNEQual LESSEQual M<br>OREEQual ?}                                                                     |                                                                                    |
| Parameter/<br>Return parameter | LESSthan                                                                                                                                                                     | Sets search to trigger when the data is less than the qualifier value.             |
|                                | MOREthan                                                                                                                                                                     | Sets search to trigger when the data is greater than the qualifier value.          |
|                                | EQual                                                                                                                                                                        | Sets search to trigger when the data is equal to the qualifier value.              |
|                                | UNEQual                                                                                                                                                                      | Sets search to trigger when the data is not equal to the qualifier value.          |
|                                | LESSEQual                                                                                                                                                                    | Sets search to trigger when the data is less than or equal to the qualifier value. |
|                                | MOREEQual                                                                                                                                                                    | Sets search to trigger when the data is more than or equal to the qualifier value. |
| Example                        | <pre>:SEARCH:TRIGger:BUS:B1:CAN:DATa:QUALifier? &gt;EQUAL  :SEARCH:TRIGger:BUS:B1:CAN:DATa:QUALifier MOREthan  :SEARCH:TRIGger:BUS:B1:CAN:DATa:QUALifier? &gt;MORETHAN</pre> |                                                                                    |

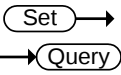
:SEARCH:TRIGger:BUS:B1:CAN:DATA:SIZE (Set) →  
→ (Query)

|                                |                                                                                                                                                             |             |
|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Description                    | Sets or returns the length of the data string in bytes for the CAN search trigger.<br>Note: Only applicable when the condition is set to DATA or IDANDDATA. |             |
| Syntax                         | :SEARCH:TRIGger:BUS:B1:CAN:DATA:SIZE {<NR1> ?}                                                                                                              |             |
| Parameter/<br>Return parameter | <NR1>                                                                                                                                                       | 1~8 (bytes) |
| Example                        | :SEARCH:TRIGger:BUS:B1:CAN:DATA:SIZE?<br>>1<br>:SEARCH:TRIGger:BUS:B1:CAN:DATA:SIZE 2<br>:SEARCH:TRIGger:BUS:B1:CAN:DATA:SIZE?<br>>2                        |             |

:SEARCH:TRIGger:BUS:B1:CAN:DATA:VALue (Set) →  
→ (Query)

|                                |                                                                               |                                                                                                                                                                                            |
|--------------------------------|-------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description                    | Sets or returns the binary data string to be used for the CAN search trigger. |                                                                                                                                                                                            |
| Related Commands               | :SEARCH:TRIGger:BUS:B1:CAN:DATA:SIZE                                          |                                                                                                                                                                                            |
| Syntax                         | :SEARCH:TRIGger:BUS:B1:CAN:DATA:VALue {<string> ?}                            |                                                                                                                                                                                            |
| Parameter/<br>Return parameter | <string>                                                                      | The size of the string depends on the data size setting. The string must be enclosed in double quotes, "string".<br><br>String contents:<br>x = don't care<br>1 = binary 1<br>0 = binary 0 |

Example           :SEARCH:TRIGger:BUS:B1:CAN:DATA:SIZE 1  
                   :SEARCH:TRIGger:BUS:B1:CAN:DATA:VALue  
                   "01010X1X"  
                   :SEARCH:TRIGger:BUS:B1:CAN:DATA:VALue?  
                   >01010X1X



:SEARCH:TRIGger:BUS:B1:LIN:CONDition →

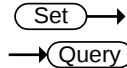
|             |                                                   |
|-------------|---------------------------------------------------|
| Description | Sets or returns the LIN search trigger condition. |
|-------------|---------------------------------------------------|

|        |                                                                                                      |
|--------|------------------------------------------------------------------------------------------------------|
| Syntax | :SEARCH:TRIGger:BUS:B1:LIN:CONDition<br>{SYNCField IDentifier DATA IDANDDATA WAKEup SLEEPEP ERRor ?} |
|--------|------------------------------------------------------------------------------------------------------|

|                                |            |                                                                    |
|--------------------------------|------------|--------------------------------------------------------------------|
| Parameter/<br>Return parameter | SYNCField  | Sets the LIN search trigger condition to the sync field.           |
|                                | IDentifier | Sets the LIN search trigger condition to identifier field.         |
|                                | DATA       | Sets the LIN search trigger condition to the data field.           |
|                                | IDANDDATA  | Sets the LIN search trigger condition to identifier and data field |
|                                | WAKEup     | Sets the LIN search trigger condition to wake up.                  |
|                                | SLEEP      | Sets the LIN search trigger condition to sleep.                    |
|                                | ERRor      | Sets the LIN search trigger condition to error.                    |

Example           :SEARCH:TRIGger:BUS:B1:LIN:CONDition?  
                   >IDANDDATA  
                   :SEARCH:TRIGger:BUS:B1:LIN:CONDition DATA  
                   :SEARCH:TRIGger:BUS:B1:LIN:CONDition?  
                   >DATA

:SEARCH:TRIGger:BUS:B1:LIN:DATa:  
QUALifier

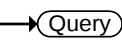


|                                |                                                                                                                                                                                  |                                                                                    |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| Description                    | Sets or returns the LIN data qualifier.<br>Note: Only applicable when the search trigger condition is set to DATA or IDANDDATA.                                                  |                                                                                    |
| Syntax                         | :SEARCH:TRIGger:BUS:B1:LIN:DATa:QUALifier<br>{LESSthan MOREthan Equal UNEQual LESSEQual M<br>OREEQual ?}                                                                         |                                                                                    |
| Parameter/<br>Return parameter | LESSthan                                                                                                                                                                         | Sets search to trigger when the data is less than the qualifier value.             |
|                                | MOREthan                                                                                                                                                                         | Sets search to trigger when the data is greater than the qualifier value.          |
|                                | Equal                                                                                                                                                                            | Sets search to trigger when the data is equal to the qualifier value.              |
|                                | UNEQual                                                                                                                                                                          | Sets search to trigger when the data is not equal to the qualifier value.          |
|                                | LESSEQual                                                                                                                                                                        | Sets search to trigger when the data is less than or equal to the qualifier value. |
|                                | MOREEQual                                                                                                                                                                        | Sets search to trigger when the data is more than or equal to the qualifier value. |
| Example                        | :SEARCH:TRIGger:BUS:B1:LIN:DATa:QUALifier?<br>>EQUAL<br><br>:SEARCH:TRIGger:BUS:B1:LIN:DATa:QUALifier<br>MOREthan<br><br>:SEARCH:TRIGger:BUS:B1:LIN:DATa:QUALifier?<br>>MORETHAN |                                                                                    |

|                                             |                                                                                                                                                             |                                     |
|---------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
|                                             |                                                                                                                                                             | <div>Set →</div> <div>→ Query</div> |
| <b>:SEARCH:TRIGger:BUS:B1:LIN:DATa:SIZE</b> |                                                                                                                                                             |                                     |
| Description                                 | Sets or returns the length of the data string in bytes for the LIN search trigger.<br>Note: Only applicable when the condition is set to DATA or IDANDDATA. |                                     |
| Syntax                                      | :SEARCH:TRIGger:BUS:B1:LIN:DATa:SIZE {<NR1> ?}                                                                                                              |                                     |
| Parameter/<br>Return parameter              | <NR1>                                                                                                                                                       | 1~8 (bytes)                         |
| Example                                     | :SEARCH:TRIGger:BUS:B1:LIN:DATa:SIZE?<br>>1<br><br>:SEARCH:TRIGger:BUS:B1:LIN:DATa:SIZE 2<br><br>:SEARCH:TRIGger:BUS:B1:LIN:DATa:SIZE?<br>>2                |                                     |

|                                              |                                                                                                                                                        |                                                                                                                                                                                            |
|----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                              |                                                                                                                                                        | <div>Set →</div> <div>→ Query</div>                                                                                                                                                        |
| <b>:SEARCH:TRIGger:BUS:B1:LIN:DATa:VALue</b> |                                                                                                                                                        |                                                                                                                                                                                            |
| Description                                  | Sets or returns the binary data string to be used for the LIN search trigger.<br>Note: Only applicable when the condition is set to DATA or IDANDDATA. |                                                                                                                                                                                            |
| Related Commands                             | :SEARCH:TRIGger:BUS:B1:LIN:DATa:SIZE                                                                                                                   |                                                                                                                                                                                            |
| Syntax                                       | :SEARCH:TRIGger:BUS:B1:LIN:DATa:VALue {<string> ?}                                                                                                     |                                                                                                                                                                                            |
| Parameter/<br>Return parameter               | <string>                                                                                                                                               | The size of the string depends on the data size setting. The string must be enclosed in double quotes, "string".<br><br>String contents:<br>x = don't care<br>1 = binary 1<br>0 = binary 0 |

Example :SEARCH:TRIGger:BUS:B1:LIN:DATA:SIZE 1  
:SEARCH:TRIGger:BUS:B1:LIN:DATA:VALue  
"01010X1X"  
:SEARCH:TRIGger:BUS:B1:LIN:DATA:VALue?  
>01010X1X

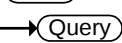
:SEARCH:TRIGger:BUS:B1:LIN:ERRTYPE  

Description Sets or returns the error type to be used for the LIN search trigger.

Syntax :SEARCH:TRIGger:BUS:B1:LIN:ERRTYPE  
{SYNC|PARity|CHecksum|?}

|                                |          |                                      |
|--------------------------------|----------|--------------------------------------|
| Parameter/<br>Return parameter | SYNC     | Sets the LIN error type to SYNC.     |
|                                | PARity   | Sets the LIN error type to parity.   |
|                                | CHecksum | Sets the LIN error type to checksum. |

Example :SEARCH:TRIGger:BUS:B1:LIN:ERRTYPE?  
>SYNC  
:SEARCH:TRIGger:BUS:B1:LIN:ERRTYPE CHECKSUM  
:SEARCH:TRIGger:BUS:B1:LIN:ERRTYPE?  
>CHECKSUM

:SEARCH:TRIGger:BUS:B1:LIN:IDentifier:   
VALue 

Description Sets or returns the identifier string to be used for the LIN search trigger.  
Note: Only applicable when the condition is set to ID or IDANDDATA.

Syntax :SEARCH:TRIGger:BUS:B1:LIN:IDentifier:VALue  
{<string>|?}

|                                |          |                                                                                                                  |
|--------------------------------|----------|------------------------------------------------------------------------------------------------------------------|
| Parameter/<br>Return parameter | <string> | The size of the string depends on the data size setting. The string must be enclosed in double quotes, "string". |
|--------------------------------|----------|------------------------------------------------------------------------------------------------------------------|

|  |  |                                                                    |
|--|--|--------------------------------------------------------------------|
|  |  | String contents:<br>x = don't care<br>1 = binary 1<br>0 = binary 0 |
|--|--|--------------------------------------------------------------------|

|         |                                                                                                                                                                      |
|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Example | :SEARCH:TRIGger:BUS:B1:LIN:CONDition ID<br>:SEARCH:TRIGger:BUS:B1:LIN:IDentifier:VALue<br>"00X1X01X"<br>:SEARCH:TRIGger:BUS:B1:LIN:IDentifier:VALue?<br>>01100X1X01X |
|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|  |  |                                     |
|--|--|-------------------------------------|
|  |  | <div>Set →</div> <div>→ Query</div> |
|--|--|-------------------------------------|

|                                |                                                                               |                                            |
|--------------------------------|-------------------------------------------------------------------------------|--------------------------------------------|
| <hr/>                          |                                                                               |                                            |
| Description                    | Sets or returns the FFT peak method type.                                     |                                            |
| Related Commands               | :SEARCH:TRIGger:TYPE<br>:SEARCH:FFTPeak:METHod:MPEak<br>:SEARCH:TRIGger:LEVel |                                            |
| Syntax                         | :SEARCH:FFTPeak:METHod {MPEak   LEVel   ?}                                    |                                            |
| Parameter/<br>Return parameter | MPEak                                                                         | Sets the peak method to the Max Peak type. |
|                                | LEVel                                                                         | Sets the peak methods to the Level type.   |

|         |                                                                                                                                                                              |
|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Example | :SEARCH:FFTPeak:METHod LEVel<br>:SEARCH:FFTPeak:METHod?<br>>LEVEL<br>:SEARCH:TRIGger:LEVel?<br>>1.000E+00<br>:SEARCH:TRIGger:LEVel 2<br>:SEARCH:TRIGger:LEVel?<br>>2.000E+00 |
|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|  |  |                                     |
|--|--|-------------------------------------|
|  |  | <div>Set →</div> <div>→ Query</div> |
|--|--|-------------------------------------|

|                  |                                                                                                                                                                                                   |                               |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|
| Description      | Sets the active peak number (1 ~ 10) or return the frequency of the active peak number.                                                                                                           |                               |
| Related Commands | :SEARCH:TRIGger:TYPe<br>:SEARCH:FFTPeak:METhod                                                                                                                                                    |                               |
| Syntax           | :SEARCH:FFTPeak:METhod:MPEak {<NR1>   ?}                                                                                                                                                          |                               |
| Parameter        | <NR1>                                                                                                                                                                                             | Active peak number.           |
| Return parameter | <NR3>                                                                                                                                                                                             | Frequency of the active peak. |
| Example          | :SEARCH:FFTPeak:METhod MPEak<br>:SEARCH:FFTPeak:METhod?<br>>MPEAK<br>:SEARCH:FFTPeak:METhod:MPEak?<br>>1.000E+00<br>:SEARCH:FFTPeak:METhod:MPEak 2<br>:SEARCH:FFTPeak:METhod:MPEak?<br>>2.000E+00 |                               |

Set →

→ Query

## :SEARCH:FFTPeak:SINFo

|                                |                                                                                                  |                              |
|--------------------------------|--------------------------------------------------------------------------------------------------|------------------------------|
| Description                    | Sets or returns the State Info to “Mark” or “Peak”.                                              |                              |
| Related Commands               | :SEARCH:TRIGger:TYPe                                                                             |                              |
| Syntax                         | :SEARCH:FFTPeak:SINFo {MARK   PEAK   ?}                                                          |                              |
| Parameter/<br>Return parameter | MARK                                                                                             | Sets the State Info to Mark. |
|                                | PEAK                                                                                             | Sets the State Info to Peak. |
| Example                        | :SEARCH:FFTPeak:SINFo?<br>>PEAK<br>:SEARCH:FFTPeak:SINFo mark<br>:SEARCH:FFTPeak:SINFo?<br>>MARK |                              |

## Label Commands

|                                |     |
|--------------------------------|-----|
| :CHANnel<X>:LABel.....         | 211 |
| :CHANnel<X>:LABel:DISPlay..... | 212 |
| :REF<X>:LABel.....             | 212 |
| :REF<X>:LABel:DISPlay.....     | 213 |
| :BUS1:LABel.....               | 214 |
| :BUS1:LABel:DISPlay.....       | 214 |
| :SET<X>:LABel.....             | 215 |

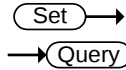
:CHANnel<X>:LABel

Set →

→ Query

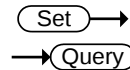
|                  |                                                                     |                                                                                                                                                                                                      |
|------------------|---------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description      | Sets or returns the file label for the selected channel.            |                                                                                                                                                                                                      |
| Syntax           | :CHANnel<X>:LABel {<string>   ?}                                    |                                                                                                                                                                                                      |
| Related commands | :CHANnel<X>:LABel:DISPlay                                           |                                                                                                                                                                                                      |
| Parameter        | <X>                                                                 | Channel 1, 2, 3, 4                                                                                                                                                                                   |
|                  | <string>                                                            | The string must be no more than 8 characters and only contain alphanumeric characters in addition to period, dash and underscore characters. The string must be enclosed in double quotes, "string". |
| Return parameter | <string>                                                            | Returns the label for the selected channel. No return indicates that there has not been a file label assigned for the selected channel.                                                              |
| Example1         | :CHANnel1:LABel "CH1_lab"<br>Sets the channel 1 label as "CH1_lab". |                                                                                                                                                                                                      |
| Example2         | :CHANnel1:LABel?<br>CH1_lab                                         |                                                                                                                                                                                                      |

:CHANnel<X>:LABel:DISPlay



|                  |                                                                                                                                                                                                                    |                                                    |
|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|
| Description      | Turns the label on/off for the selected channel or returns its status.                                                                                                                                             |                                                    |
| Syntax           | :CHANnel<X>:LABel:DISPlay { OFF   ON   ? }                                                                                                                                                                         |                                                    |
| Related commands | :CHANnel<X>:LABel                                                                                                                                                                                                  |                                                    |
| Parameter        | <X>                                                                                                                                                                                                                | Channel 1, 2, 3, 4                                 |
|                  | OFF                                                                                                                                                                                                                | Turns the file label off for the selected channel. |
|                  | ON                                                                                                                                                                                                                 | Turns the file label on for the selected channel.  |
| Return parameter | Returns the status of the file label for the selected channel (ON, OFF).                                                                                                                                           |                                                    |
| Example          | <pre>:CHANnel1:LABel "CH1" :CHANnel1:LABel:DISPlay ON :CHANnel1:LABel:DISPlay? ON</pre> <p>Sets the channel 1 label to "CH1" and then turns the label display on. The query return shows that the label is on.</p> |                                                    |

:REF<X>:LABel



|                  |                                                                     |                |
|------------------|---------------------------------------------------------------------|----------------|
| Description      | Sets or returns the file label for the selected reference waveform. |                |
| Syntax           | :REF<X>:LABel {<string>   ?}                                        |                |
| Related commands | :REF<X>:LABel:DISPlay                                               |                |
| Parameter        | <X>                                                                 | REF 1, 2, 3, 4 |

|                  |          |                                                                                                                                                                                                      |
|------------------|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                  | <string> | The string must be no more than 8 characters and only contain alphanumeric characters in addition to period, dash and underscore characters. The string must be enclosed in double quotes, "string". |
| Return parameter | <string> | Returns the label for the selected reference waveform. No return indicates that there has not been a file label assigned for the selected reference waveform.                                        |

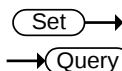
Example1 :REF1:LABel "REF1\_lab"

Sets the REF1 label as "REF1\_lab".

Example2 :REF1:LABel?

REF1\_lab

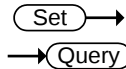
:REF<X>:LABel:DISPlay



|                  |                                                                                   |                                                               |
|------------------|-----------------------------------------------------------------------------------|---------------------------------------------------------------|
| Description      | Turns the label on/off for the selected reference waveform or returns its status. |                                                               |
| Syntax           | :REF<X>:LABel:DISPlay { OFF   ON   ? }                                            |                                                               |
| Related commands | :REF<X>:LABel                                                                     |                                                               |
| Parameter        | <X>                                                                               | Reference waveform 1, 2, 3, 4                                 |
|                  | OFF                                                                               | Turns the file label off for the selected reference waveform. |
|                  | ON                                                                                | Turns the file label on for the selected reference waveform.  |

Return parameter Returns the status of the file label for the selected reference waveform (ON, OFF).

Example :REF1:LABel "REF1"  
 :REF1:LABel:DISPlay ON  
 :REF1:LABel:DISPlay?  
 ON  
 Sets the label for reference waveform 1 to "REF1" and then turns the label display on. The query return shows that the label is on.

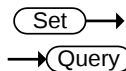


## :BUS1:LABel

|                  |                                             |                                                                                                                                                                                                      |
|------------------|---------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description      | Sets or returns the file label for the bus. |                                                                                                                                                                                                      |
| Syntax           | :BUS1:LABel {<string>   ?}                  |                                                                                                                                                                                                      |
| Related commands | :BUS1:LABel:DISPlay                         |                                                                                                                                                                                                      |
| Parameter        | <string>                                    | The string must be no more than 8 characters and only contain alphanumeric characters in addition to period, dash and underscore characters. The string must be enclosed in double quotes, "string". |
| Return parameter | <string>                                    | Returns the label for the bus. No return indicates that there has not been a file label assigned for bus.                                                                                            |

Example1 :BUS1:LABel "Bus"  
 Sets the bus label as "Bus".

Example2 :BUS1:LABel?  
 Bus

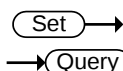


## :BUS1:LABel:DISPlay

|             |                                                           |  |
|-------------|-----------------------------------------------------------|--|
| Description | Turns the label on/off for the bus or returns its status. |  |
| Syntax      | :BUS1:LABel:DISPlay { OFF   ON   ? }                      |  |

|                  |                                                                                                                                                                                                          |                                       |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|
| Related commands | :BUS1:LABel                                                                                                                                                                                              |                                       |
| Parameter        | OFF                                                                                                                                                                                                      | Turns the file label off for the bus. |
|                  | ON                                                                                                                                                                                                       | Turns the file label on for the bus.  |
| Return parameter | Returns the status of the file label for the bus (ON, OFF).                                                                                                                                              |                                       |
| Example          | <pre>:BUS1:LABel "Bus" :BUS1:LABel:DISPlay ON :BUS1:LABel:DISPlay? ON</pre> <p>Sets the label for the bus to "Bus" and then turns the label display on. The query return shows that the label is on.</p> |                                       |

## :SET<X>:LABel



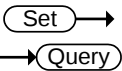
|                  |                                                                                    |                                                                                                                                                                                                      |
|------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description      | Sets or returns the file label for the selected setup.                             |                                                                                                                                                                                                      |
| Syntax           | :SET<X>:LABel {<string>   ?}                                                       |                                                                                                                                                                                                      |
| Related commands | :SET<X>:LABel:DISPlay                                                              |                                                                                                                                                                                                      |
| Parameter        | <X>                                                                                | Setup number 1 to 20                                                                                                                                                                                 |
|                  | <string>                                                                           | The string must be no more than 8 characters and only contain alphanumeric characters in addition to period, dash and underscore characters. The string must be enclosed in double quotes, "string". |
| Return parameter | <string>                                                                           | Returns the label for the selected setup. No return indicates that there has not been a file label assigned for the selected setup.                                                                  |
| Example1         | <pre>:SET1:LABel "SET1_lab"</pre> <p>Sets the label for setup 1 as "SET1_lab".</p> |                                                                                                                                                                                                      |

Example2       :SET1:LABel?  
                  SET1\_lab

# Segment Commands

|                                      |     |
|--------------------------------------|-----|
| :SEGMENTS:STATE .....                | 217 |
| :SEGMENTS:CURRENT .....              | 218 |
| :SEGMENTS:TOTALNUM .....             | 218 |
| :SEGMENTS:TIME .....                 | 219 |
| :SEGMENTS:DISPALL .....              | 219 |
| :SEGMENTS:MEASURE:MODE .....         | 219 |
| :SEGMENTS:MEASURE:PLOT:SOURCE .....  | 220 |
| :SEGMENTS:MEASURE:PLOT:DIVIDE .....  | 220 |
| :SEGMENTS:MEASURE:PLOT:SELECT .....  | 221 |
| :SEGMENTS:MEASURE:PLOT:RESULTS ..... | 221 |
| :SEGMENTS:MEASURE:TABLE:SOURCE ..... | 222 |
| :SEGMENTS:MEASURE:TABLE:SELECT ..... | 222 |
| :SEGMENTS:MEASURE:TABLE:LIST .....   | 223 |
| :SEGMENTS:MEASURE:TABLE:SAVE .....   | 223 |
| :SEGMENTS:SAVE .....                 | 223 |
| :SEGMENTS:SAVE:SOURCE .....          | 224 |
| :SEGMENTS:SAVE:SELECT:START .....    | 224 |
| :SEGMENTS:SAVE:SELECT:END .....      | 225 |

## :SEGMENTS:STATE



|                                |                                                                  |                                 |
|--------------------------------|------------------------------------------------------------------|---------------------------------|
| Description                    | Turns the segmented memory function on/off or queries its state. |                                 |
| Syntax                         | :SEGMENTS:STATE { OFF   ON   ? }                                 |                                 |
| Related commands               | :RUN<br>:STOP                                                    |                                 |
| Parameter/<br>Return parameter | OFF                                                              | Turns the segmented memory off. |
|                                | ON                                                               | Turns the segmented memory on.  |
| Example1                       | :SEGMENTS:STATE ON<br>Turns segmented memory on.                 |                                 |

(Set) →  
→ (Query)

|                                |                                                                                                                                                                                                     |          |                               |          |                               |       |         |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-------------------------------|----------|-------------------------------|-------|---------|
| <b>:SEGMents:CURRent</b>       |                                                                                                                                                                                                     |          |                               |          |                               |       |         |
| Description                    | Sets or queries the current segment. The total number of segments depends on the record length.                                                                                                     |          |                               |          |                               |       |         |
| Syntax                         | :SEGMents:CURRent<br>{SETTOMIN SETTOMAX <NR1> ?}                                                                                                                                                    |          |                               |          |                               |       |         |
| Related commands               | :SEGMents:STATE<br>:SEGMents:TOTalnum                                                                                                                                                               |          |                               |          |                               |       |         |
| Parameter/<br>Return parameter | <table> <tr> <td>SETTOMIN</td><td>Current segment = min segment</td></tr> <tr> <td>SETTOMAX</td><td>Current segment = max segment</td></tr> <tr> <td>&lt;NR1&gt;</td><td>1~29000</td></tr> </table> | SETTOMIN | Current segment = min segment | SETTOMAX | Current segment = max segment | <NR1> | 1~29000 |
| SETTOMIN                       | Current segment = min segment                                                                                                                                                                       |          |                               |          |                               |       |         |
| SETTOMAX                       | Current segment = max segment                                                                                                                                                                       |          |                               |          |                               |       |         |
| <NR1>                          | 1~29000                                                                                                                                                                                             |          |                               |          |                               |       |         |
| Example1                       | :SEGMents:CURRent 10<br>Sets the current segment to segment number 10.                                                                                                                              |          |                               |          |                               |       |         |

(Set) →  
→ (Query)

|                                |                                                                                                                                                                                               |          |                            |          |                            |       |         |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------------------------|----------|----------------------------|-------|---------|
| <b>:SEGMents:TOTalnum</b>      |                                                                                                                                                                                               |          |                            |          |                            |       |         |
| Description                    | Sets or queries the total number of segments for the segmented memory function. The total number of segments depends on the record length.                                                    |          |                            |          |                            |       |         |
| Syntax                         | :SEGMents:TOTalnum<br>{SETTOMIN SETTOMAX <NR1> ?}                                                                                                                                             |          |                            |          |                            |       |         |
| Related commands               | :SEGMents:STATE<br>:SEGMents:CURRent                                                                                                                                                          |          |                            |          |                            |       |         |
| Parameter/<br>Return parameter | <table> <tr> <td>SETTOMIN</td><td>Sets to the minimum number</td></tr> <tr> <td>SETTOMAX</td><td>Sets to the maximum number</td></tr> <tr> <td>&lt;NR1&gt;</td><td>1~29000</td></tr> </table> | SETTOMIN | Sets to the minimum number | SETTOMAX | Sets to the maximum number | <NR1> | 1~29000 |
| SETTOMIN                       | Sets to the minimum number                                                                                                                                                                    |          |                            |          |                            |       |         |
| SETTOMAX                       | Sets to the maximum number                                                                                                                                                                    |          |                            |          |                            |       |         |
| <NR1>                          | 1~29000                                                                                                                                                                                       |          |                            |          |                            |       |         |
| Example1                       | :SEGMents:TOTalnum SETTOMAX<br>Sets the number of segments to max number (29000).                                                                                                             |          |                            |          |                            |       |         |

**:SEGMents:TIME**

→ Query

|                  |                                                                           |
|------------------|---------------------------------------------------------------------------|
| Description      | Returns the time of the current segment in relation to the first segment. |
| Syntax           | :SEGMents:TIME?                                                           |
| Related commands | :SEGMents:STATE<br>:SEGMents:CURREnt                                      |
| Return parameter | The segment time as <NR3>.                                                |
| Example          | :SEGMents:TIME?<br>>8.040E-03<br>Returns the segment time.                |

**:SEGMents:DISPALL**

Set →

→ Query

|                                |                                                                                                                                                                 |     |                                     |    |                                    |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-------------------------------------|----|------------------------------------|
| Description                    | Sets or queries whether all the segments are displayed on the screen.                                                                                           |     |                                     |    |                                    |
| Syntax                         | :SEGMents:DISPALL {OFF ON ?}                                                                                                                                    |     |                                     |    |                                    |
| Related commands               | :SEGMents:STATE<br>:SEGMents:CURREnt                                                                                                                            |     |                                     |    |                                    |
| Parameter/<br>Return parameter | <table border="1"> <tr> <td>OFF</td><td>Turns the display all function off.</td></tr> <tr> <td>ON</td><td>Turns the display all function on.</td></tr> </table> | OFF | Turns the display all function off. | ON | Turns the display all function on. |
| OFF                            | Turns the display all function off.                                                                                                                             |     |                                     |    |                                    |
| ON                             | Turns the display all function on.                                                                                                                              |     |                                     |    |                                    |
| Example1                       | :SEGMents:DISPALL ON<br>Turns the display all function on.                                                                                                      |     |                                     |    |                                    |

**:SEGMents:MEASure:MODE**

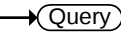
Set →

→ Query

|                  |                                           |
|------------------|-------------------------------------------|
| Description      | Sets or queries the measurement mode.     |
| Syntax           | :SEGMents:MEASure:MODE {OFF PLOT TABLE ?} |
| Related commands | :MEASurement:MEAS<x>                      |

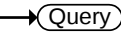
|                                |       |                                                                           |
|--------------------------------|-------|---------------------------------------------------------------------------|
| Parameter/<br>Return parameter | OFF   | Disables the automatic measurement function for the segments measurement. |
|                                | PLOT  | Sets the measurement mode to Statistics.                                  |
|                                | TABLE | Sets the measurement mode to a measurement list.                          |

Example :SEGMents:MEASure:MODE?  
>PLOT  
Returns the measurement mode as Statistics.

:SEGMents:MEASure:PLOT:SOURce  

|                                |                                            |                                      |
|--------------------------------|--------------------------------------------|--------------------------------------|
| Description                    | Sets or queries the statistics source.     |                                      |
| Syntax                         | :SEGMents:MEASure:PLOT:SOURce {<NR1>   ? } |                                      |
| Related commands               | :SEGMents:MEASure:MODE                     |                                      |
|                                | :SEGMents:MEASure:PLOT:DIVide              |                                      |
|                                | :SEGMents:MEASure:PLOT:SElect              |                                      |
|                                | :SEGMents:MEASure:PLOT:RESults             |                                      |
| Parameter/<br>Return parameter | <NR1>                                      | 1~8 (Automatic measurement item 1~8) |

Example1 :SEGMents:MEASure:PLOT:SOURce 1  
Sets the source as auto measurement item 1.

:SEGMents:MEASure:PLOT:DIVide  

|                  |                                                                 |  |
|------------------|-----------------------------------------------------------------|--|
| Description      | Sets or queries the number of bins for the statistics function. |  |
| Syntax           | :SEGMents:MEASure:PLOT:DIVide {<NR1>   ? }                      |  |
| Related commands | :SEGMents:MEASure:PLOT:SOURce                                   |  |
|                  | :SEGMents:MEASure:PLOT:SElect                                   |  |

|                                |       |      |
|--------------------------------|-------|------|
| Parameter/<br>Return parameter | <NR1> | 1~20 |
|--------------------------------|-------|------|

Example1 :SEGMents:MEASure:PLOT:DIVide 5  
Sets the number of bins to 5 for the statistics function.

:SEGMents:MEASure:PLOT:SElect  

|                  |                                                                |                                            |
|------------------|----------------------------------------------------------------|--------------------------------------------|
| Description      | Sets or queries which bin to view the statics of.              |                                            |
| Syntax           | :SEGMents:MEASure:PLOT:SElect {<NR1>   ? }                     |                                            |
| Related commands | :SEGMents:MEASure:PLOT:SOURce<br>:SEGMents:MEASure:PLOT:DIVide |                                            |
| Parameter        | <NR1>                                                          | 1~20<br>(cannot exceed the number of bins) |

Return parameter Return the bin number as <NR3>.

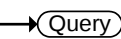
Example1 :SEGMents:MEASure:PLOT:SElect 5  
Set to bin number 5.

:SEGMents:MEASure:PLOT:RESults 

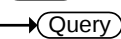
|                  |                                                                                                                                                   |  |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|--|
| Description      | Returns the results of the currently selected bin for the statistics measurement.                                                                 |  |
| Note             | At least one automatic measurement must be turned on.                                                                                             |  |
| Syntax           | :SEGMents:MEASure:PLOT:RESults?                                                                                                                   |  |
| Related commands | :SEGMents:STATE<br>:SEGMents:MEASure:MODE PLOT<br>:SEGMents:MEASure:PLOT:SOURce<br>:SEGMents:MEASure:PLOT:DIVide<br>:SEGMents:MEASure:PLOT:SElect |  |

Return parameter Returns the statistics measurements as a string.

Example :SEGMents:STATE ON  
STOP  
:SEGMents:MEASure:MODE PLOT  
:SEGMents:MEASure:PLOT:SOURce 1  
:SEGMents:MEASure:PLOT:DIVide 10  
:SEGMents:MEASure:PLOT:SElect 1  
:SEGMents:MEASure:PLOT:RESults?  
> MAX,1.000kHz;MIN,1.000kHz;MEAN,1.000kHz;  
Bin Statistics,1 of 10;Percent,10.00%;Count,1;  
Measured,10;Unmeasured,0;Bin Range,  
1.000kHz~1.000kHz;  
Plots the results for automatic measurement #1,  
bin 1 of 10.

:SEGMents:MEASure:TABLE:SOURce  

|                                |                                                                                          |                |
|--------------------------------|------------------------------------------------------------------------------------------|----------------|
| Description                    | Sets or queries the source of the measurement list.                                      |                |
| Syntax                         | :SEGMents:MEASure:TABLE:SOURce {CH1   CH2   CH3   CH4   ? }                              |                |
| Related commands               | :SEGMents:MEASure:MODE<br>:SEGMents:MEASure:TABLE:SElect<br>:SEGMents:MEASure:TABLE:LIST |                |
| Parameter/<br>Return parameter | CH1~CH4                                                                                  | Channel 1 to 4 |
| Example1                       | :SEGMents:MEASure:TABLE:SOURce CH1<br>Sets the source to CH1.                            |                |

:SEGMents:MEASure:TABLE:SElect  

|             |                                                             |  |
|-------------|-------------------------------------------------------------|--|
| Description | Sets or queries a segment to view in the measurement table. |  |
| Syntax      | :SEGMents:MEASure:TABLE:SElect {<NR1>   ? }                 |  |

|                  |                                                                |
|------------------|----------------------------------------------------------------|
| Related commands | :SEGMents:TOTalnum                                             |
| Parameter        | <NR1> 1~29000                                                  |
| Return parameter | Returns the number of segments as <NR3>.                       |
| Example1         | :SEGMents:MEASure:TABLE:SElect 10<br>Select segment number 10. |

**:SEGMents:MEASure:TABLE:LIST**

→ Query

|                  |                                                                                                                                                                     |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description      | Returns the measurement results of each segment in the list.                                                                                                        |
| Syntax           | :SEGMents:MEASure:TABLE:LIST?                                                                                                                                       |
| Return parameter | Returns the measurements results as a string for each segment.                                                                                                      |
| Example          | :SEGMents:MEASure:TABLE:LIST?<br>>"GW GDS-2074E, serial number PXXXXXX,<br>version V1.11",Segment Summary : CH1, Seg.,Pk-<br>Pk (V),Pk-Pk (V),1,8.00m,8.00m.....etc |

**:SEGMents:MEASure:TABLE:SAVe**

Set →

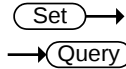
|             |                                                          |
|-------------|----------------------------------------------------------|
| Description | Saves the list of segment automatic measurement results. |
| Syntax      | :SEGMents:MEASure:TABLE:SAVe                             |

**:SEGMents:SAVe**

Set →

|                  |                                                                                   |
|------------------|-----------------------------------------------------------------------------------|
| Description      | Saves the segments.                                                               |
| Syntax           | :SEGMents:SAVe                                                                    |
| Related Commands | :SEGMents:SAVe:SOURce<br>:SEGMents:SAVe:SElect:START<br>:SEGMents:SAVe:SElect:END |

Example           :SEGMents:SAVe:SOURce CH1  
                       :SEGMents:SAVe:SElect:STARt 1  
                       :SEGMents:SAVe:SElect:END 10  
                       :SEGMents:SAVe



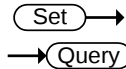
**:SEGMents:SAVe:SOURce**

Description       Sets or queries the source segment waveform to save.

Syntax            :SEGMents:SAVe:SOURce {CH1 | CH2 | CH3 | CH4 | ? }

|                                |         |                 |
|--------------------------------|---------|-----------------|
| Parameter/<br>Return parameter | CH1~CH4 | Channel 1 to 4. |
|--------------------------------|---------|-----------------|

Example           :SEGMents:SAVe:SOURce CH1  
                       >Sets the source to CH1.



**:SEGMents:SAVe:SElect:STARt**

Description       Sets or queries the starting segment to save from. The number of possible segments depends on the record length.

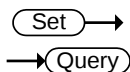
Syntax            :SEGMents:SAVe:SElect:STARt {SETTOMIN | SETTOMAX | <NR1> | ? }

Related commands       :SEGMents:TOTalnum

|                                |          |                                               |
|--------------------------------|----------|-----------------------------------------------|
| Parameter/<br>Return parameter | SETTOMIN | Sets the starting segment to min segment.     |
|                                | SETTOMAX | Sets the starting segment to the max segment. |
|                                | <NR1>    | Sets the segment to 1~29000                   |

Example           :SEGMents:SAVe:SElect:STARt 2  
                       Sets the starting segment to segment number 2.

## :SEGMents:SAVe:SElect:END



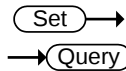
|                                |                                                                                                                |                                               |
|--------------------------------|----------------------------------------------------------------------------------------------------------------|-----------------------------------------------|
| Description                    | Sets or queries the ending segment to save from. The number of possible segments depends on the record length. |                                               |
| Syntax                         | :SEGMents:SAVe:SElect:END<br>{SETTOMIN   SETTOMAX   <NR1>   ? }                                                |                                               |
| Related commands               | :SEGMents:TOTalnum                                                                                             |                                               |
| Parameter/<br>Return parameter | SETTOMIN                                                                                                       | Sets the starting segment to min segment.     |
|                                | SETTOMAX                                                                                                       | Sets the starting segment to the max segment. |
|                                | <NR1>                                                                                                          | Sets the segment to 1~29000.                  |
| Return parameter               | <NR3>                                                                                                          | Returns the ending segment as NR3.            |
| Example                        | :SEGMents:SAVe:SElect:END 10<br>Sets the ending segment to segment number 10.                                  |                                               |

## DVM Commands

The DVM commands are only available when the optional DVM software is installed.

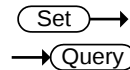
|                   |     |
|-------------------|-----|
| :DVM:STATE .....  | 226 |
| :DVM:SOURce ..... | 226 |
| :DVM:MODE.....    | 227 |
| :DVM:VALue .....  | 227 |

### :DVM:STATE



|                                |                                             |                                         |
|--------------------------------|---------------------------------------------|-----------------------------------------|
| Description                    | Sets or queries the DVM state to on or off. |                                         |
| Syntax                         | :DVM:STATE {OFF   ON   ? }                  |                                         |
| Related commands               | :DVM:SOURce<br>:DVM:MODE                    |                                         |
| Parameter/<br>Return parameter | OFF<br>ON                                   | Turns the DVM off.<br>Turns the DVM on. |
| Example                        | :DVM:STATE ON<br>Turns the DVM state on.    |                                         |

### :DVM:SOURce



|                                |                                                      |                 |
|--------------------------------|------------------------------------------------------|-----------------|
| Description                    | Sets or queries the source of the DVM.               |                 |
| Syntax                         | :DVM:SOURce {CH1 CH2 CH3 CH4 ?}                      |                 |
| Related commands               | :DVM:STATE<br>:DVM:MODE                              |                 |
| Parameter/<br>Return parameter | CH1~CH4                                              | Channel 1 to 4. |
| Example                        | :DVM:SOURce CH1<br>Sets the DVM source to channel 1. |                 |

:DVM:MODE

Set

→

→

Query

|                                |                                                  |                               |
|--------------------------------|--------------------------------------------------|-------------------------------|
| Description                    | Sets or queries the DVM mode.                    |                               |
| Syntax                         | :DVM:MODE {ACRMS DC DCRMS DUTY FREQuency ?}      |                               |
| Related commands               | :DVM:SOURce<br>:DVM:STATE                        |                               |
| Parameter/<br>Return parameter | ACRMS                                            | Sets the mode to AC RMS       |
|                                | DC                                               | Sets the mode to DC           |
|                                | DCRMS                                            | Sets the mode to DC RMS       |
|                                | DUTY                                             | Sets the mode to AC Duty      |
|                                | FREQuency                                        | Sets the mode to AC frequency |
| Example                        | :DVM:MODE DUTY<br><br>Sets the DVM mode to DUTY. |                               |

:DVM:VALue

→

Query

|                  |                                                           |  |
|------------------|-----------------------------------------------------------|--|
| Description      | Returns the measurement value of the selected mode.       |  |
| Syntax           | :DVM:VALue?                                               |  |
| Related commands | :DVM:SOURce<br>:DVM:STATE<br>:DVD:MODE                    |  |
| Return parameter | Returns the measurement value as <NR3>.                   |  |
| Example          | :DVM:VALue?<br><br>>8.410E-04<br>Returns the measurement. |  |

## Go\_NoGo Commands

The GoNoGo APP must first be launched (or use the command, “:GONogo:SCript”) before any of the Go\_NoGo or Template commands can be used.

|                                  |     |
|----------------------------------|-----|
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| :GONogo:EXECute .....            | 228 |
| :GONogo:FUNCTion.....            | 229 |
| :GONogo:NGCount .....            | 229 |
| :GONogo:NGDefine.....            | 229 |
| :GONogo:SOURce .....             | 230 |
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| :TEMPlate:MODE .....             | 231 |
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| :TEMPlate:TOLerance.....         | 233 |
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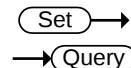
### :GONogo:CLear



|             |                             |
|-------------|-----------------------------|
| Description | Clears the Go/NoGo counter. |
|-------------|-----------------------------|

|        |               |
|--------|---------------|
| Syntax | :GONogo:CLear |
|--------|---------------|

### :GONogo:EXECute



|             |                                                                |
|-------------|----------------------------------------------------------------|
| Description | Enables or disables the Go/NoGo function or queries its state. |
|-------------|----------------------------------------------------------------|

|        |                            |
|--------|----------------------------|
| Syntax | :GONogo:EXECute {OFF ON ?} |
|--------|----------------------------|

|                  |                                           |          |
|------------------|-------------------------------------------|----------|
| Parameter/       | OFF                                       | Disabled |
| Return Parameter | ON                                        | Enabled  |
| Example          | :GONogo:EXECute OFF<br>Turns Go/NoGo off. |          |

**:GONogo:FUNCTION**



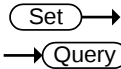
|             |                                                                                       |
|-------------|---------------------------------------------------------------------------------------|
| Description | Initializes the Go/NoGo APP. This must be run after the Go/NoGo APP has been started. |
| Syntax      | :GONogo:FUNCTION                                                                      |

**:GONogo:NGCount**



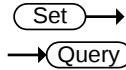
|                  |                                                                                   |
|------------------|-----------------------------------------------------------------------------------|
| Description      | Returns the Go/NoGo counter.                                                      |
| Syntax           | :GONogo:NGCount{?}                                                                |
| Return parameter | Returns a string in the following format “number of violations,total tests”       |
| Example          | :GONogo:NGCount?<br>> 3,25<br>Indicates that 3 violations occurred over 25 tests. |

**:GONogo:NGDefine**



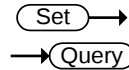
|                                |                                                                |                                                                                   |
|--------------------------------|----------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Description                    | Sets the Go/NoGo “When” conditions.                            |                                                                                   |
| Syntax                         | :GONogo:NGDefine {EXITs ENTers ?}                              |                                                                                   |
| Parameter/<br>Return Parameter | EXITs                                                          | Sets the NoGo condition to when the input signal exceeds the limit boundary.      |
|                                | ENTers                                                         | Sets the NoGo condition to when the input signal stays within the limit boundary. |
| Example                        | :GONogo:NGDefine EXITs<br>Sets the Go/NoGo condition to EXITs. |                                                                                   |

## :GONogo:SOURce



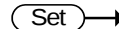
|                                |                                               |  |
|--------------------------------|-----------------------------------------------|--|
| Description                    | Sets the source for the Go/NoGo signal.       |  |
| Syntax                         | :GONogo:SOURce {CH1 CH2 CH3 CH4 ?}            |  |
| Parameter/<br>Return Parameter | CH1~CH4                                       |  |
| Example                        | :GONogo:SOURce CH1<br>Sets the source to CH1. |  |

## :GONogo:VIOLation



|                                |                                                          |                              |
|--------------------------------|----------------------------------------------------------|------------------------------|
| Description                    | Sets or returns actions for the Go/NoGo violations.      |                              |
| Syntax                         | :GONogo:VIOLation {STOP   CONTinue   ?}                  |                              |
| Parameter/<br>Return Parameter | STOP                                                     | The waveform will be frozen. |
|                                | CONTinue                                                 | Ignore the violation.        |
| Example                        | :GONogo:VIOLation STOP<br>Sets violation action to STOP. |                              |

## :GONogo:SCRipt



|                                |                                                             |                            |
|--------------------------------|-------------------------------------------------------------|----------------------------|
| Description                    | Activates/Deactivates the Go/NoGo APP or queries its state. |                            |
| Syntax                         | :GONogo:SCRipt {OFF   ON   ?}                               |                            |
| Parameter/<br>Return Parameter | ON                                                          | Turns Go/NoGo APP on.      |
|                                | OFF                                                         | Turns the Go/NoGo APP off. |
| Example                        | :GONogo:SCRipt?<br>>ON<br>The Go/NoGo script is on.         |                            |

:TEMPlate:MODE Set →  
→ Query

|                                |                                                        |                  |
|--------------------------------|--------------------------------------------------------|------------------|
| Description                    | Sets or returns the Go/NoGo template mode.             |                  |
| Syntax                         | :TEMPlate:MODE {MAXimum MINimum AUTO ?}                |                  |
| Parameter/<br>Return Parameter | MAXimum                                                | Maximum template |
|                                | MINimum                                                | Minimum template |
|                                | AUTO                                                   | Auto template    |
| Example                        | :TEMPlate:MODE AUTO<br>Sets the template mode to AUTO. |                  |

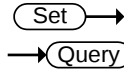
:TEMPlate:MAXimum Set →  
→ Query

|                                |                                                                                           |                         |
|--------------------------------|-------------------------------------------------------------------------------------------|-------------------------|
| Description                    | Defines or queries which waveform memory (REF1 or W1~W20) is set to the maximum template. |                         |
| Syntax                         | :TEMPlate:MAXimum {REF1 W1~W20 ?}                                                         |                         |
| Parameter/<br>Return Parameter | REF1                                                                                      | Reference one           |
|                                | W1~W20                                                                                    | Waveform memory 1 to 20 |
| Example                        | :TEMPlate:MAXimum REF1<br>Saves the maximum template to REF1.                             |                         |

:TEMPlate:MINimum Set →  
→ Query

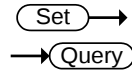
|                                |                                                                                           |                         |
|--------------------------------|-------------------------------------------------------------------------------------------|-------------------------|
| Description                    | Defines or queries which waveform memory (REF1 or W1~W20) is set to the minimum template. |                         |
| Syntax                         | :TEMPlate:MINimum {REF2 W1~W20 ?}                                                         |                         |
| Parameter/<br>Return Parameter | REF2                                                                                      | Reference one           |
|                                | W1~W20                                                                                    | Waveform memory 1 to 20 |
| Example                        | :TEMPlate:MINimum REF2<br>Saves the minimum template to REF2.                             |                         |

**:TEMPlate:POSition:MAXimum**



|                  |                                                                                              |                                                     |
|------------------|----------------------------------------------------------------------------------------------|-----------------------------------------------------|
| Description      | Sets or queries the position of the maximum template.                                        |                                                     |
| Syntax           | :TEMPlate:POSition:MAXimum {<NR2> ?}                                                         |                                                     |
| Parameter        | <NR2>                                                                                        | Desired template position (-12.0 ~ +12.0 divisions) |
| Return parameter | Returns the position in the following format:<br>“<NR2>Div”                                  |                                                     |
| Example          | :TEMPlate:POSition:MAXimum 3.00<br><br>Sets the maximum template position to 3.00 divisions. |                                                     |

**:TEMPlate:POSition:MINimum**



|                  |                                                                                              |                                                     |
|------------------|----------------------------------------------------------------------------------------------|-----------------------------------------------------|
| Description      | Sets or queries the position of the minimum template.                                        |                                                     |
| Syntax           | :TEMPlate:POSition:MINimum {<NR2> ?}                                                         |                                                     |
| Parameter        | <NR2>                                                                                        | Desired template position (-12.0 ~ +12.0 divisions) |
| Return parameter | Returns the position in the following format:<br>“<NR2>Div”                                  |                                                     |
| Example          | :TEMPlate:POSition:MINimum 3.00<br><br>Sets the minimum template position to 3.00 divisions. |                                                     |

**:TEMPlate:SAVe:MAXimum**



|             |                             |  |
|-------------|-----------------------------|--|
| Description | Saves the maximum template. |  |
| Syntax      | :TEMPlate:SAVe:MAXimum      |  |

**:TEMPlate:SAVe:MINimum****Set** →

|             |                             |
|-------------|-----------------------------|
| Description | Saves the maximum template. |
|-------------|-----------------------------|

|        |                        |
|--------|------------------------|
| Syntax | :TEMPlate:SAVe:MINimum |
|--------|------------------------|

**:TEMPlate:TOLerance****Set** →→ **Query**

|             |                                                |
|-------------|------------------------------------------------|
| Description | Sets or queries the tolerance as a percentage. |
|-------------|------------------------------------------------|

|        |                               |
|--------|-------------------------------|
| Syntax | :TEMPlate:TOLerance {<NR2> ?} |
|--------|-------------------------------|

|                                |       |                                       |
|--------------------------------|-------|---------------------------------------|
| Parameter/<br>Return Parameter | <NR2> | The auto tolerance range (0.4% ~ 40%) |
|--------------------------------|-------|---------------------------------------|

|         |                                                      |
|---------|------------------------------------------------------|
| Example | :TEMPlate:TOLerance 10<br>Sets the tolerance to 10%. |
|---------|------------------------------------------------------|

**:TEMPlate:SAVe:AUTO****Set** →

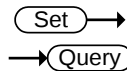
|             |                                                          |
|-------------|----------------------------------------------------------|
| Description | Saves the AUTO template (maximum and minimum templates). |
|-------------|----------------------------------------------------------|

|        |                     |
|--------|---------------------|
| Syntax | :TEMPlate:SAVe:AUTO |
|--------|---------------------|

## Data Logging Commands

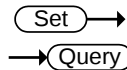
|                         |     |
|-------------------------|-----|
| :DATALOG:STATE .....    | 234 |
| :DATALOG:SOURce .....   | 234 |
| :DATALOG:SAVe .....     | 235 |
| :DATALOG:INTerval ..... | 235 |
| :DATALOG:DURation ..... | 236 |

### :DATALOG:STATE



|                                |                                                     |                             |
|--------------------------------|-----------------------------------------------------|-----------------------------|
| Description                    | Sets or queries the state of the data logging app.  |                             |
| Syntax                         | :DATALOG:STATE {OFF ON ?}                           |                             |
| Related commands               | :DATALOG:SOURce                                     |                             |
|                                | :DATALOG:SAVe                                       |                             |
|                                | :DATALOG:INTerval                                   |                             |
|                                | :DATALOG:DURation                                   |                             |
| Parameter/<br>Return parameter | OFF                                                 | Turns the data logging off. |
|                                | ON                                                  | Turns the data logging on.  |
| Example                        | :DATALOG:STATE ON<br>Turns the data logging app on. |                             |

### :DATALOG:SOURce



|                  |                                                  |                      |
|------------------|--------------------------------------------------|----------------------|
| Description      | Sets or queries the data logging source channel. |                      |
| Syntax           | :DATALOG:SOURce {CH1~CH4 all ?}                  |                      |
| Related commands | :DATALOG:STATE                                   |                      |
|                  | :DATALOG:SAVe                                    |                      |
|                  | :DATALOG:INTerval                                |                      |
|                  | :DATALOG:DURation                                |                      |
| Parameter/Return | CH1 ~CH4                                         | Channel 1, 2, 3 or 4 |

|           |     |                         |
|-----------|-----|-------------------------|
| parameter | all | All displayed channels. |
|-----------|-----|-------------------------|

Example :DATALOG:SOURce CH1  
Sets the source to CH1.

## :DATALOG:SAVe

Set →

→ Query

|                            |                                                                             |                    |
|----------------------------|-----------------------------------------------------------------------------|--------------------|
| Description                | Sets or queries the save format as image or waveform.                       |                    |
| Syntax                     | :DATALOG:SAVe {IMAGe WAVEform ?}                                            |                    |
| Related commands           | :DATALOG:STATE<br>:DATALOG:SOURce<br>:DATALOG:INTerval<br>:DATALOG:DURation |                    |
| Parameter/Return parameter | IMAGe                                                                       | Save as images.    |
|                            | WAVEform                                                                    | Save as waveforms. |
| Example                    | :DATALOG:SAVe WAVEform<br>Sets the save format to waveform.                 |                    |

Set →

→ Query

## :DATALOG:INTerval

|                  |                                                                                                                                                                           |  |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| Description      | Sets or queries the recording interval time in seconds. The interval times that can be set are dependent on the settings of the DATALOG:SOURCE and DATALOG:SAVE commands. |  |
| Syntax           | :DATALOG:INTerval {<NR1> ?}                                                                                                                                               |  |
| Related commands | :DATALOG:STATE<br>:DATALOG:SOURce<br>:DATALOG:SAVe<br>:DATALOG:DURation                                                                                                   |  |



# Remote Disk Commands

|                             |     |
|-----------------------------|-----|
| :REMOTEDisk:IPADdress ..... | 237 |
| :REMOTEDisk:PATHName .....  | 237 |
| :REMOTEDisk:USERName .....  | 237 |
| :REMOTEDisk:PASSWord .....  | 238 |
| :REMOTEDisk:MOUNT.....      | 238 |
| :REMOTEDisk:AUTOMount.....  | 239 |

:REMOTEDisk:IPADdress

Set

Query

|                                |                                                                                            |                                                             |
|--------------------------------|--------------------------------------------------------------------------------------------|-------------------------------------------------------------|
| Description                    | Sets or returns the IP address of remote disk.                                             |                                                             |
| Syntax                         | :REMOTEDisk:IPADdress {<string> ?}                                                         |                                                             |
| Parameter/<br>Return parameter | <string>                                                                                   | IP address enclosed in double quotes.<br>Eg., 172.16.20.255 |
| Example                        | :REMOTEDisk:IPADdress "172.16.20.255"<br>Sets the remote disk IP address as 172.16.20.255. |                                                             |

:REMOTEDisk:PATHName

Set

Query

|                                |                                                                             |                                                              |
|--------------------------------|-----------------------------------------------------------------------------|--------------------------------------------------------------|
| Description                    | Sets or returns the file path of the remote disk.                           |                                                              |
| Syntax                         | :REMOTEDisk:PATHName {<string> ?}                                           |                                                              |
| Parameter/<br>Return parameter | <string>                                                                    | File path in enclosed in double quotes<br>eg., "remote_disk" |
| Example                        | :REMOTEDisk:PATHName "remote_disk"<br>Sets the file path to c:/remote_disk. |                                                              |

:REMOTEDisk:USERName

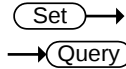
Set

Query

|             |                                                           |  |
|-------------|-----------------------------------------------------------|--|
| Description | Sets or queries the account username for the remote disk. |  |
| Syntax      | :REMOTEDisk:USERName {<string>   ? }                      |  |

|                            |          |                                                       |
|----------------------------|----------|-------------------------------------------------------|
| Parameter/Return parameter | <string> | User name enclosed in double quotes eg., "User_Name". |
|----------------------------|----------|-------------------------------------------------------|

Example :REMOTEDisk:USERName "User\_Name"  
Sets the account name as User\_Name.



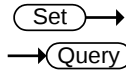
:REMOTEDisk:PASSWord

Description Sets or queries the account password for the remote disk.

Syntax :REMOTEDisk:PASSWord {<string> | ? }

|                            |          |                                                              |
|----------------------------|----------|--------------------------------------------------------------|
| Parameter/Return parameter | <string> | Username password enclosed in double quotes eg., "Password". |
|----------------------------|----------|--------------------------------------------------------------|

Example :REMOTEDisk:PASSWord "Password"  
Sets the account password as Password.



:REMOTEDisk:MOUNT

Description Turns remote disk on/off or queries its state.

Syntax :REMOTEDisk:MOUNT { OFF | ON | ? }

|                            |     |                     |
|----------------------------|-----|---------------------|
| Parameter/Return parameter | OFF | Unmount remote disk |
|                            | ON  | Mount remote disk   |

Example :REMOTEDisk:IPADdress "172.16.5.154"  
:REMOTEDisk:PATHName "remote\_disk"  
:REMOTEDisk:USERName "guest"  
:REMOTEDisk:PASSWord "password"  
:REMOTEDisk:MOUNT ON  
Sets the remote disk parameters and mounts the remote disk.

:REMOTEDisk:AUTOMount

Set

Query

|                            |                                                                                             |                                                  |
|----------------------------|---------------------------------------------------------------------------------------------|--------------------------------------------------|
| Description                | Turns automount on/off or queries its state. The remote disk must be configured beforehand. |                                                  |
| Syntax                     | :REMOTEDisk:AUTOMount { OFF   ON   ? }                                                      |                                                  |
| Parameter/Return parameter | OFF                                                                                         | Don't mount the remote disk at start up.         |
|                            | ON                                                                                          | Automatically mount the remote disk on start up. |
| Example                    | :REMOTEDisk:AUTOMount ON<br>Turns the automount function on.                                |                                                  |

# A PPENDX

## Error messages

| Description                             | The following error messages may be returned from the :SYSTem:ERRor? query. For details see page 155.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                   |                 |                       |                           |                      |                           |                         |                         |                               |                           |                              |                                |                                   |                          |                                    |                                         |                            |                                     |                            |                         |                                  |                      |                        |                         |                            |
|-----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|-----------------|-----------------------|---------------------------|----------------------|---------------------------|-------------------------|-------------------------|-------------------------------|---------------------------|------------------------------|--------------------------------|-----------------------------------|--------------------------|------------------------------------|-----------------------------------------|----------------------------|-------------------------------------|----------------------------|-------------------------|----------------------------------|----------------------|------------------------|-------------------------|----------------------------|
| List of error messages                  | <table><tr><th>Error number, "Error Description"</th></tr><tr><td>+0, "No error."</td></tr><tr><td>-100, "Command error"</td></tr><tr><td>-101, "Invalid character"</td></tr><tr><td>-102, "Syntax error"</td></tr><tr><td>-103, "Invalid separator"</td></tr><tr><td>-104, "Data type error"</td></tr><tr><td>-105, "GET not allowed"</td></tr><tr><td>-108, "Parameter not allowed"</td></tr><tr><td>-109, "Missing parameter"</td></tr><tr><td>-110, "Command header error"</td></tr><tr><td>-111, "Header separator error"</td></tr><tr><td>-112, "Program mnemonic too long"</td></tr><tr><td>-113, "Undefined header"</td></tr><tr><td>-114, "Header suffix out of range"</td></tr><tr><td>-115, "Unexpected number of parameters"</td></tr><tr><td>-120, "Numeric data error"</td></tr><tr><td>-121, "Invalid character in number"</td></tr><tr><td>-123, "Exponent too large"</td></tr><tr><td>-124, "Too many digits"</td></tr><tr><td>-128, "Numeric data not allowed"</td></tr><tr><td>-130, "Suffix error"</td></tr><tr><td>-131, "Invalid suffix"</td></tr><tr><td>-134, "Suffix too long"</td></tr><tr><td>-138, "Suffix not allowed"</td></tr></table> | Error number, "Error Description" | +0, "No error." | -100, "Command error" | -101, "Invalid character" | -102, "Syntax error" | -103, "Invalid separator" | -104, "Data type error" | -105, "GET not allowed" | -108, "Parameter not allowed" | -109, "Missing parameter" | -110, "Command header error" | -111, "Header separator error" | -112, "Program mnemonic too long" | -113, "Undefined header" | -114, "Header suffix out of range" | -115, "Unexpected number of parameters" | -120, "Numeric data error" | -121, "Invalid character in number" | -123, "Exponent too large" | -124, "Too many digits" | -128, "Numeric data not allowed" | -130, "Suffix error" | -131, "Invalid suffix" | -134, "Suffix too long" | -138, "Suffix not allowed" |
| Error number, "Error Description"       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                   |                 |                       |                           |                      |                           |                         |                         |                               |                           |                              |                                |                                   |                          |                                    |                                         |                            |                                     |                            |                         |                                  |                      |                        |                         |                            |
| +0, "No error."                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                   |                 |                       |                           |                      |                           |                         |                         |                               |                           |                              |                                |                                   |                          |                                    |                                         |                            |                                     |                            |                         |                                  |                      |                        |                         |                            |
| -100, "Command error"                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                   |                 |                       |                           |                      |                           |                         |                         |                               |                           |                              |                                |                                   |                          |                                    |                                         |                            |                                     |                            |                         |                                  |                      |                        |                         |                            |
| -101, "Invalid character"               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                   |                 |                       |                           |                      |                           |                         |                         |                               |                           |                              |                                |                                   |                          |                                    |                                         |                            |                                     |                            |                         |                                  |                      |                        |                         |                            |
| -102, "Syntax error"                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                   |                 |                       |                           |                      |                           |                         |                         |                               |                           |                              |                                |                                   |                          |                                    |                                         |                            |                                     |                            |                         |                                  |                      |                        |                         |                            |
| -103, "Invalid separator"               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                   |                 |                       |                           |                      |                           |                         |                         |                               |                           |                              |                                |                                   |                          |                                    |                                         |                            |                                     |                            |                         |                                  |                      |                        |                         |                            |
| -104, "Data type error"                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                   |                 |                       |                           |                      |                           |                         |                         |                               |                           |                              |                                |                                   |                          |                                    |                                         |                            |                                     |                            |                         |                                  |                      |                        |                         |                            |
| -105, "GET not allowed"                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                   |                 |                       |                           |                      |                           |                         |                         |                               |                           |                              |                                |                                   |                          |                                    |                                         |                            |                                     |                            |                         |                                  |                      |                        |                         |                            |
| -108, "Parameter not allowed"           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                   |                 |                       |                           |                      |                           |                         |                         |                               |                           |                              |                                |                                   |                          |                                    |                                         |                            |                                     |                            |                         |                                  |                      |                        |                         |                            |
| -109, "Missing parameter"               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                   |                 |                       |                           |                      |                           |                         |                         |                               |                           |                              |                                |                                   |                          |                                    |                                         |                            |                                     |                            |                         |                                  |                      |                        |                         |                            |
| -110, "Command header error"            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                   |                 |                       |                           |                      |                           |                         |                         |                               |                           |                              |                                |                                   |                          |                                    |                                         |                            |                                     |                            |                         |                                  |                      |                        |                         |                            |
| -111, "Header separator error"          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                   |                 |                       |                           |                      |                           |                         |                         |                               |                           |                              |                                |                                   |                          |                                    |                                         |                            |                                     |                            |                         |                                  |                      |                        |                         |                            |
| -112, "Program mnemonic too long"       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                   |                 |                       |                           |                      |                           |                         |                         |                               |                           |                              |                                |                                   |                          |                                    |                                         |                            |                                     |                            |                         |                                  |                      |                        |                         |                            |
| -113, "Undefined header"                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                   |                 |                       |                           |                      |                           |                         |                         |                               |                           |                              |                                |                                   |                          |                                    |                                         |                            |                                     |                            |                         |                                  |                      |                        |                         |                            |
| -114, "Header suffix out of range"      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                   |                 |                       |                           |                      |                           |                         |                         |                               |                           |                              |                                |                                   |                          |                                    |                                         |                            |                                     |                            |                         |                                  |                      |                        |                         |                            |
| -115, "Unexpected number of parameters" |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                   |                 |                       |                           |                      |                           |                         |                         |                               |                           |                              |                                |                                   |                          |                                    |                                         |                            |                                     |                            |                         |                                  |                      |                        |                         |                            |
| -120, "Numeric data error"              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                   |                 |                       |                           |                      |                           |                         |                         |                               |                           |                              |                                |                                   |                          |                                    |                                         |                            |                                     |                            |                         |                                  |                      |                        |                         |                            |
| -121, "Invalid character in number"     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                   |                 |                       |                           |                      |                           |                         |                         |                               |                           |                              |                                |                                   |                          |                                    |                                         |                            |                                     |                            |                         |                                  |                      |                        |                         |                            |
| -123, "Exponent too large"              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                   |                 |                       |                           |                      |                           |                         |                         |                               |                           |                              |                                |                                   |                          |                                    |                                         |                            |                                     |                            |                         |                                  |                      |                        |                         |                            |
| -124, "Too many digits"                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                   |                 |                       |                           |                      |                           |                         |                         |                               |                           |                              |                                |                                   |                          |                                    |                                         |                            |                                     |                            |                         |                                  |                      |                        |                         |                            |
| -128, "Numeric data not allowed"        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                   |                 |                       |                           |                      |                           |                         |                         |                               |                           |                              |                                |                                   |                          |                                    |                                         |                            |                                     |                            |                         |                                  |                      |                        |                         |                            |
| -130, "Suffix error"                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                   |                 |                       |                           |                      |                           |                         |                         |                               |                           |                              |                                |                                   |                          |                                    |                                         |                            |                                     |                            |                         |                                  |                      |                        |                         |                            |
| -131, "Invalid suffix"                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                   |                 |                       |                           |                      |                           |                         |                         |                               |                           |                              |                                |                                   |                          |                                    |                                         |                            |                                     |                            |                         |                                  |                      |                        |                         |                            |
| -134, "Suffix too long"                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                   |                 |                       |                           |                      |                           |                         |                         |                               |                           |                              |                                |                                   |                          |                                    |                                         |                            |                                     |                            |                         |                                  |                      |                        |                         |                            |
| -138, "Suffix not allowed"              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                   |                 |                       |                           |                      |                           |                         |                         |                               |                           |                              |                                |                                   |                          |                                    |                                         |                            |                                     |                            |                         |                                  |                      |                        |                         |                            |

-140, "Character data error"  
-141, "Invalid character data"  
-144, "Character data too long"  
-148, "Character data not allowed"  
-150, "String data error"  
-151, "Invalid string data"  
-158, "String data not allowed"  
-160, "Block data error"  
-161, "Invalid block data"  
-168, "Block data not allowed"  
-170, "Expression error"  
-171, "Invalid expression"  
-178, "Expression data not allowed"  
-180, "Macro error"  
-181, "Invalid outside macro definition"  
-183, "Invalid inside macro definition"  
-184, "Macro parameter error"  
  
-200, "Execution error"  
-201, "Invalid while in local"  
-202, "Settings lost due to rtl"  
-203, "Command protected"  
-210, "Trigger error"  
-211, "Trigger ignored"  
-212, "Arm ignored"  
-213, "Init ignored"  
-214, "Trigger deadlock"  
-215, "Arm deadlock"  
-220, "Parameter error"  
-221, "Settings conflict"  
-222, "Data out of range"  
-223, "Too much data"  
-224, "Illegal parameter value"  
-225, "Out of memory"  
-226, "Lists not same length"  
-230, "Data corrupt or stale"  
-231, "Data questionable"  
-232, "Invalid format"  
-233, "Invalid version"  
-240, "Hardware error"

- 241, "Hardware missing"
- 250, "Mass storage error"
- 251, "Missing mass storage"
- 252, "Missing media"
- 253, "Corrupt media"
- 254, "Media full"
- 255, "Directory full"
- 256, "File name not found"
- 257, "File name error"
- 258, "Media protected"
- 260, "Expression error"
- 261, "Math error in expression"
- 270, "Macro error"
- 271, "Macro syntax error"
- 272, "Macro execution error"
- 273, "Illegal macro label"
- 274, "Macro parameter error"
- 275, "Macro definition too long"
- 276, "Macro recursion error"
- 277, "Macro redefinition not allowed"
- 278, "Macro header not found"
- 280, "Program error"
- 281, "Cannot create program"
- 282, "Illegal program name"
- 283, "Illegal variable name"
- 284, "Program currently running"
- 285, "Program syntax error"
- 286, "Program runtime error"
- 290, "Memory use error"
- 291, "Out of memory"
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- 310, "System error"
- 311, "Memory error"
- 312, "PUD memory lost"
- 313, "Calibration memory lost"
- 314, "Save/recall memory lost"

- 315, "Configuration memory lost"
- 320, "Storage fault"
- 321, "Out of memory"
- 330, "Self-test failed"
- 340, "Calibration failed"
- 350, "Queue overflow"
- 360, "Communication error"
- 361, "Parity error in program message"
- 362, "Framing error in program message"
- 363, "Input buffer overrun"
- 365, "Time out error"
  
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- 420, "Query UNTERMINATED"
- 430, "Query DEADLOCKED"
- 440, "Query UNTERMINATED after indefinite response"

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