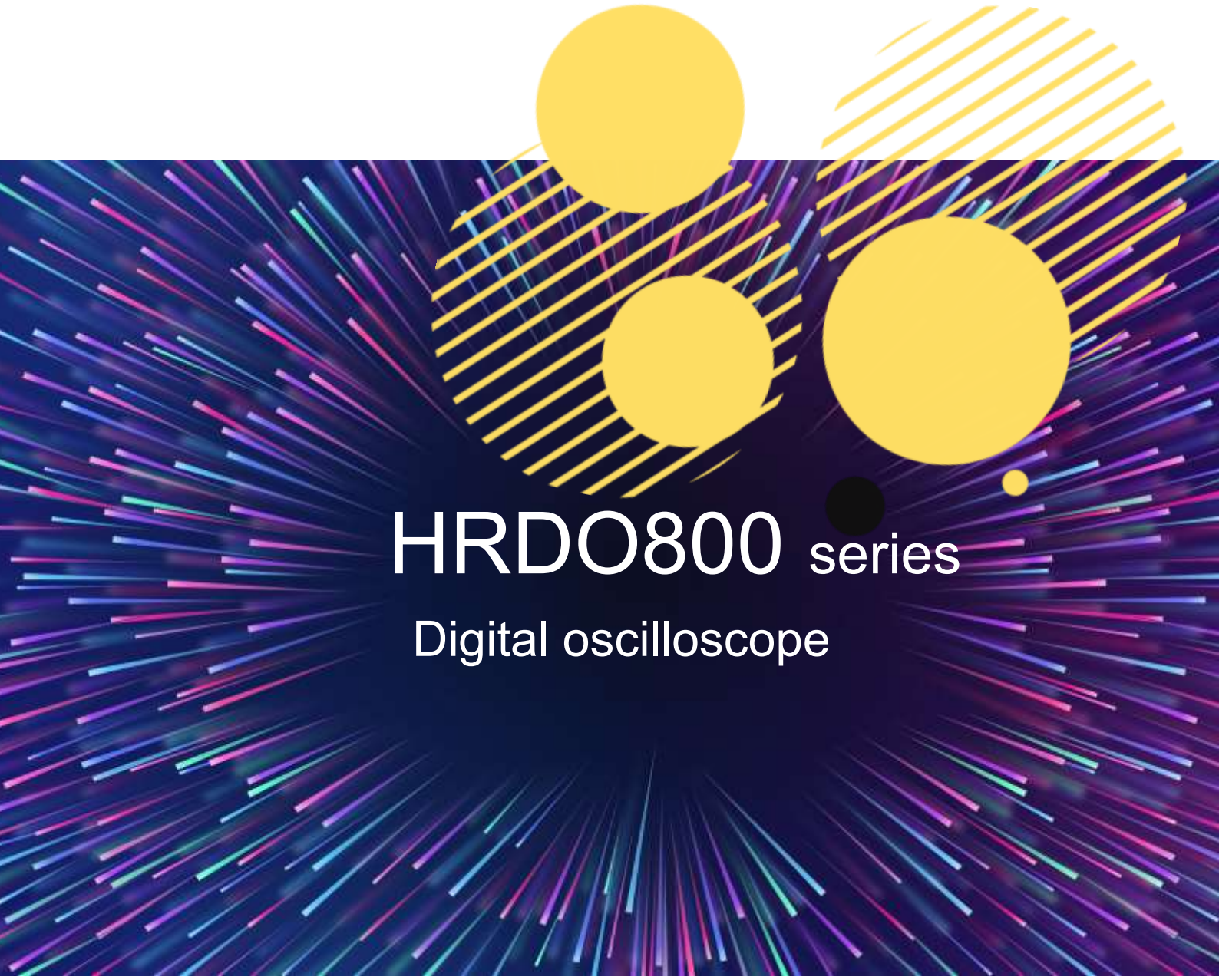
Hantek



Programming Guide

202609

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1 Document overview

This document describes how to quickly understand the front and back panels, user interfaces, and basic operation methods of the HRDO800 series digital oscilloscopes.

Tip:

The latest version of this manual can be downloaded at (http://www.hantek.com).

Document number:

202606

Software version:

Software upgrade may change or increase product functionalities, please pay attention to Hantek website for the latest version.

Document format conventions:

1 Virtual keys and main interface icons

Use **[name]** to represent virtual keys and main interface icons. For example, **[Utility]** is for 

.

2 Menu

Use "menu text (bold) + color" to represent a label or a menu option. For example, **Sound** means turn on or off sound of the machine operation.

3 Operation steps

Use "->" to represent the next step. For example, **[Utility] -> Language** means click **Utility** label before clicking **Language** menu.

Document content conventions:

HRDO800 series tablet oscilloscope consists of the following models. Unless otherwise specified, this manual uses HRDO834XG as an example to describe the HRDO800 series and basic operations.

Model	Channel	Sampling Rate	Bandwidth	Signal Source
HRDO802X	2	1.25GSa/s	80MHz	-
HRDO804X	4	1.25GSa/s	80MHz	-
HRDO812X	2	1.25GSa/s	120MHz	-

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Model	Channel	Sampling Rate	Bandwidth	Signal Source
HRDO822X	2	1.25GSa/s	250MHz	-
HRDO824X	4	1.25GSa/s	250MHz	-
HRDO832X	2	1.25GSa/s	300MHz	-
HRDO834X	4	1.25GSa/s	300MHz	-
HRDO802XG	2	1.25GSa/s	80MHz	1
HRDO804XG	4	1.25GSa/s	80MHz	1
HRDO812XG	2	1.25GSa/s	120MHz	1
HRDO814XG	4	1.25GSa/s	120MHz	1
HRDO822XG	2	1.25GSa/s	250MHz	1
HRDO824XG	4	1.25GSa/s	250MHz	1
HRDO832XG	2	1.25GSa/s	300MHz	1
HRDO834XG	4	1.25GSa/s	300MHz	1
HRDO824X	4	1.25GSa/s	250MHz	-

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2 SCPI Command Overview

SCPI (Standard Commands for Programmable Instruments) is a standardized instrument programming language that is built upon the existing standard IEEE 488.1 and IEEE 488.2 and conforms to various standards, such as the floating point operation rule in IEEE 754 standard, ISO 646 7-bit coded character set for information interchange (equivalent to ASCII programming). The SCPI commands provide a hierarchical tree structure, and consist of multiple subsystems. Each command subsystem consists of one root keyword and one or more sub-keywords.

Syntax

The command line usually starts with a colon; the keywords are separated by colons, and following the keywords are the parameter settings available. The command ending with a quotation mark indicates querying a certain function and returns the query results. The keywords of the command and the first parameter are separated by a space.
For example:
:ACQuire:TYPE <type>
:ACQuire:TYPE?
ACQuire is the root keyword of the command, TYPE is the second-level keyword. The command line starts with a colon ":", and different levels of keywords are also separated by colons. <type> indicates a settable parameter. The command ending with a quotation mark "?" indicates querying a certain function. The command keywords :ACQuire:TYPE and the parameter <type> are separated by a space.
In some commands with parameters, ", " is often used to separate multiple parameters.
For example:
[:TRACe[<n>]]:DATA:VALue volatile, <points>, <data>

Symbol Description

The following symbols are not sent with the commands.

1. Braces { }

The contents in the braces can contain one or multiple parameters. These parameters can be omitted or used for several times. Parameters are usually separated by the vertical bar "|". When using the command, you must select one of the parameters.

2. Vertical Bar |

The vertical bar is used to separate multiple parameters. When using the command, you must select one of the parameters.

3. Square Brackets [ ]

The contents in the square brackets can be omitted.

4. Angle Brackets < >

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The parameter enclosed in the angle brackets must be replaced by an effective value.

Parameter Type

1. Bool

The parameter can be set to ON, OFF, 1, or 0. For example:
:MEASure:ADISplay <bool>
:MEASure:ADISplay?
Wherein, <bool> can be set to {{1|ON}|{0|OFF}}. The query returns 1 or 0.

2. Discrete

The parameter can be any of the values listed. For example:
:ACQuire:TYPE <type>
:ACQuire:TYPE?
Wherein,
- <type> can be set to NORMal|AVERages|PEAK|HRESolution.
- The query returns an abbreviated form: NORM, AVER, PEAK or HRES.

3. Integer

Unless otherwise specified, the parameter can be any integer (NR1 format) within the effective value range.



NOTE

Do not set the parameter to a decimal, otherwise, errors will occur.

For example:
:DISPlay:GBRightness <brightness>
:DISPlay:GBRightness?
Wherein, <brightness> can be set to an integer ranging from 0 to 100. The query returns an integer ranging from 0 to 100.

4. Real

The parameter can be any real number within the effective value range, and this command accepts parameter input in decimal (NR2 format) and scientific notation (NR3 format). For example:
:TRIGger:TIMeout:TIME <time>
:TRIGger:TIMeout:TIME?
Wherein, <time> can be set to any real number ranging from 1.6E-8 (that is, 16 ns) to 1E+1 (that is, 10 s). The query returns a real number in scientific notation.

5. ASCII String

The parameter can be the combinations of ASCII characters. For example:
:SYSTem:OPTion:INSTall <license>
Wherein,< license > can be set to PDUY9N9QTS9PQSWPLAETRD3UJHYA

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Command Abbreviation

All the commands are case-insensitive. They can all be in upper case or in lower case. If abbreviation is used, you must input all the capital letters in the command. For example:
:DISPlay:GBRightness?
can be abbreviated to
:DISP:GBR?

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3 Command System

This chapter introduces the syntax, functions, parameters, and usage of each HRDO800 command.

NOTE

1. Unless otherwise specified, the descriptions in this manual HRDO834XGas an example to illustrate the commands of the HRDO800 series.
2. For the parameter setting command (time, frequency, amplitude, etc.), the digital oscilloscope can only recognize the numbers, unable to recognize the unit sent together with them. The unit of the parameter is a default one. For the default units of various parameters, refer to the descriptions for the specified command.

3.1 General commands

General commands are used to query basic instrument information or perform commonly used basic operations. These commands usually start with "*" and the length of the command keyword is 3 characters.

3.1.1 *CLS

Syntax

*CLS

Description

Clear the values of all event registers to zero while clearing the error queue.

Parameter

N/A

Remarks

N/A

Return Format

N/A

Example

*CLS /*Clear all status registers and error queues.*/

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3.1.2 *ESE

Syntax

*ESE <value>
*ESE?

Description

Set or query the value of the standard event status enable register.

Parameter

Name	Type	Range	Default
<value>	Real	0-255	——

Remarks

N/A

Return Format

The query returns an integer between 0 and 255.

Example

*ESE 255 /*Enable all events.*/
*ESE? /*The query returns 255*/

3.1.3 *ESR

Syntax

*ESR <value>
*ESR?

Description

Set, query, and clear the value of the standard event status register.

Parameter

Name	Type	Range	Default
<value>	Real	0-255	——

Remarks

N/A

Return Format

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The query returns an integer between 0 and 255.

Example

```
*ESR 0          /*Set the register value to 0.*/
*ESR?           /*The query returns 0*/
```

3.1.4 *IDN?

Syntax

*IDN?

Description

Query the ID string of the instrument.

Parameter

N/A

Remarks

N/A

Return Format

Query returns HANTEK, <model>, <serial number>, <software version>.
Among them,
<model>: Instrument model;
<serial number>: instrument serial number;
<software version>: Instrument software version.

Example

```
*IDN?           /*HANTEK, HRDO800,  CN2642000000035,  (2026.03.25)*/
```

3.1.5 *OPC

Syntax

*OPC
*OPC?

Description

Set an OPC message to be generated in the standard event status register upon completion of the current operation.
Query whether the current operation is completed (1 = completed, 0 = not completed).

Parameter

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N/A

Remarks

N/A

Return Format

The query returns 1 or 0.

Example

```
*OPC          /*Set the operation completion bit*/
*OPC?         /*The query returns 1*/
```

3.1.6 *RST

Syntax

*RST

Description

Restore the instrument to its factory default state.

Parameter

N/A

Remarks

N/A

Return Format

N/A

Example

```
*RST          /*Restore the instrument to its factory default state*/
```

3.1.7 *SRE

Syntax

*SRE <value>
*SRE?

Description

Set and query the value of the service request enable register.

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Parameter

Name	Type	Range	Default
<value>	Real	0-255	——

Remarks

N/A

Return Format

The query returns an integer between 0 and 255.

Example

```
*SRE 255        /* Enable all service requests.*/
*SRE?           /*The query returns 255*/
```

3.1.8 *STB?

Syntax

*STB?

Description

Query the value of the status byte register (including MSS master and status).

Parameter

N/A

Remarks

N/A

Return Format

The query returns an integer between 0 and 255.

Example

```
*STB?           /*The query returns 0*/
```

3.1.9 *TST?

Syntax

*TST?

Description

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Perform internal self-testing and return the results.

Parameter

N/A

Remarks

N/A

Return Format

The query returns 0 (pass) or non-0 (failure).

Example

*TST? /*The query returns 0*/

3.1.10 *WAI

Syntax

*WAI

Description

Execute subsequent commands only after all pending operations are completed.

Parameter

N/A

Remarks

N/A

Return Format

N/A

Example

*WAI /*Wait for all operations to complete*/

3.1.11 *RCL

Syntax

*RCL <n>

Description

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Call up the instrument settings at the specified location (similar to RECall).

Parameter

Name	Type	Range	Default
<n>	Real	1-10	——

Remarks

N/A

Return Format

The query returns an integer between 1 and 10.

Example

RCL 1 / Call setting 1.*/

3.1.12 :RUNing

Syntax

*RUNing

Description

The command starts the oscilloscope running.

Parameter

N/A

Remarks

N/A

Return Format

N/A

Example

RUNing / The oscilloscope starts running */

3.1.13 :STOP

Syntax

*STOP

Description

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Stop the oscilloscope acquisition.

Parameter

N/A

Remarks

N/A

Return Format

N/A

Example

STOP / The oscilloscope stops data acquisition*/

3.1.14 :AUToset

Syntax

*AUToset

Description

Automatically set oscilloscope parameters (range, trigger, horizontal settings, etc.).

Parameter

N/A

Remarks

N/A

Return Format

N/A

Example

AUToset / Oscilloscope Auto Setup */

3.2 :CHANnel<n> Commands

The :CHANnel<n> commands are used to set or query the bandwidth limit, coupling, vertical scale, vertical offset, and other vertical system parameters of the analog channel.

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3.2.1 :CHANnel<n>:BWLimit

Syntax

:CHANnel<n>:BWLimit <type>
:CHANnel<n>:BWLimit?

Description

Set or query the bandwidth limit parameters for the specified channel.

Parameter

Name	Type	Range	Default
<n>	Discrete	{1|2|3|4}	——
<type>	Discrete	{{1|ON}|{0|OFF}}	OFF

Remarks

- OFF: Disable bandwidth limitation, allowing high-frequency components contained in the measured signal to pass through.
- ON: Open the 20M bandwidth limit, and high-frequency components greater than 20M in the measured signal will be attenuated.

Return Format

Query returns 0 or 1.

Example

```
:CHANnel1:BWLimit 1          /* Turn on 20MHz bandwidth limit*/
:CHANnel1:BWLimit?           /*Query return 20M*/
```

3.2.2 :CHANnel<n>:COUPling

Syntax

:CHANnel<n>:COUPling <coupling>
:CHANnel<n>:COUPling?

Description

Sets or queries the coupling mode of the specified channel.

Parameter

Name	Type	Range	Default
<n>	Discrete	{1|2|3|4}	——
<coupling>	Discrete	{AC|DC|GND}	DC

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Remarks

AC: the DC components of the signal under test are blocked.
DC: both DC and AC components of the signal under test can pass through the channel.
GND: both DC and AC components of the signal under test are blocked.

Return Format

The query returns AC, DC, or GND.

Example

```
:CHANnel1:COUPling AC        /*Selects the AC coupling mode.*/
:CHANnel1:COUPling?          /*The query returns AC.*/
```

3.2.3 :CHANnel<n>:DISPlay

Syntax

:CHANnel<n>:DISPlay <bool>
:CHANnel<n>:DISPlay?

Description

Enables or disables the specified channel; or queries the on/off status of the specified channel.

Parameter

Name	Type	Range	Default
<n>	Discrete	{1|2|3|4}	——
<bool>	Bool	{{1|ON}|{0|OFF}}	CH1:1|ON

Remarks

N/A

Return Format

The query returns 1 or 0.

Example

```
:CHANnel1:DISPlay ON         /*Enables CH1.*/
:CHANnel1:DISPlay?           /*The query returns 1.*/
```

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3.2.4 :CHANnel<n>:INVert

Syntax

:CHANnel<n>:INVert <bool>
:CHANnel<n>:INVert?

Description

Turns on or off the waveform invert for the specified channel; or queries the on/off status of the waveform invert for the specified channel.

Parameter

Name	Type	Range	Default
<n>	Discrete	{1|2|3|4}	--
<bool>	Bool	{{1|ON}|{0|OFF}}	0|OFF

Remarks

When the waveform invert is turned off, the waveform is displayed normally; when the waveform invert is turned on, the voltage values of the displayed waveform are inverted.

Return Format

The query returns 1 or 0.

Example

:CHANnel1:INVert ON /*Enables the waveform invert for CH1.*/
:CHANnel1:INVert? /*The query returns 1.*/

3.2.5 :CHANnel<n>:OFFSet

Syntax

:CHANnel<n>:OFFSet <offset> [<suffix>]
:CHANnel<n>:OFFSet?

Description

Sets or queries the vertical offset of the specified channel. The default unit is V.

Parameter

Name	Type	Range	Default
<n>	Discrete	{1|2|3|4}	--
<offset>	Real	500μV/div~20mV/div, ±400mV	0V (probe ratio

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Name	Type	Range	Default
		50mV/div~200mV/div, ±2V 500mV/div~2V/div, ±40V 5V/div~10V/div, ±50V	1X)
<suffix>	Discrete	{V|mV}	-

Remarks

The vertical displacement value set is influenced by the vertical gear and probe ratio. The range of legal values varies with the set vertical gear and probe ratio values. If you set a value that is offset beyond the legal value range, the offset value will automatically be set to the closest legal value.

Return Format

The query returns the vertical offset in scientific notation.

Example

```
:CHANnel1:OFFSet 1V      /* Set the vertical offset of CH1 to 1V. */
:CHANnel1:OFFSet?        /* Query returns 1*/
```

3.2.6 :CHANnel<n>:RANGe

Syntax

:CHANnel<n>:RANGe <range> [<suffix>]
:CHANnel<n>:RANGe?

Description

Set or query the vertical range of a specified channel.

Parameter

Name	Type	Range	Default
<n>	Discrete	{1|2|3|4}	--
<range>	Real	Integer	-
<suffix>	Discrete	{V|mV}	-

Remarks

The :CHANnel<n>:RANGe command sets the full-scale vertical axis for the specified channel.

Return Format

Query to return vertical range values in scientific notation.

Example

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```
:CHANnel1:RANGe 1V      /* Set the vertical range of CH1 to 1V. */
:CHANnel1:RANGe?        /* Query returns 1*/
```

3.2.7 :CHANnel<n>:SCALe

Syntax

:CHANnel<n>:SCALe <scale> [<suffix>]
:CHANnel<n>:SCALe?

Description

Set or query the vertical scale of the specified channel.

Parameter

Name	Type	Range	Default
<n>	Discrete	{1|2|3|4}	-
<scale>	Real	Integer	-
<suffix>	Discrete	{V|mV}	-

Remarks

The :CHANnel<n>:SCALe command sets the vertical scale per division for the specified channel.
The configurable range of vertical positions is related to the currently set probe ratio..

Return Format

Query to return vertical level values in scientific notation.

Example

```
:CHANnel1:SCALe 1V      /* Set the vertical range of CH1 to 1V */
:CHANnel1:SCALe?        /* Query returns 1 */
```

3.2.8 :CHANnel<n>:PROBe

Syntax

:CHANnel<n>:PROBe <atten>
:CHANnel<n>:PROBe?

Description

Set or query the probe ratio for the specified channel.

Parameter

Name	Type	Range	Default

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Name	Type	Range	Default
<n>	Discrete	{1|2|3|4}	——
<atten>	Discrete	{X1|X10|X100|X1000}	X1

Remarks

- Set the probe ratio to display the collected signal multiplied by a specified multiple (without affecting the actual amplitude of the signal).
- Set the probe ratio to affect the adjustable range of the current vertical gear.

Return Format

Query returns the probe attenuation ratio in scientific counting form.

Example

```
:CHANnel1:PROBe 10        /* Set the attenuation ratio of CH1 probe to 10X */
:CHANnel1:PROBe?          /* Query returns 1.000000 e+01*/
```

3.2.9 :CHANnel<n>:VERNier

Syntax

```
:CHANnel<n>:VERNier <bool>
:CHANnel<n>:VERNier?
```

Description

Turn on or off the fine tuning function for the specified channel vertical gear, or query the status of the fine tuning function for the specified channel vertical gear.

Parameter

Name	Type	Range	Default
<n>	Discrete	{1|2|3|4}	——
<bool>	Bool	{{1|ON}|{0|OFF}}	0|OFF

Remarks

The fine-tuning setting is turned off by default. At this time, you can only set the vertical gear in steps of 1-2 to 5, namely 500u, 1mV, 2mV, 5mV, 10mV... 10V (probe ratio is 1X). When fine-tuning settings are turned on, you can further adjust the vertical gear within a smaller range to improve vertical resolution. If the amplitude of the input waveform is slightly greater than the full scale in the current gear, and the amplitude displayed in the next gear waveform is slightly lower, fine tuning can be used to improve the waveform display amplitude, which is conducive to observing signal details.

Return Format

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Query returns 1 or 0.

Example

```
:CHANnel1:VERNier ON          /* Turn on the fine adjustment function of CH1 vertical gear */
:CHANnel1:VERNier?            /* Query returns 1*/
```

3.3 :TIMebase Commands

The TIMebase command is used to set the horizontal system, such as turning on delayed scanning, setting the horizontal time base mode, etc.

3.3.1 :TIMebase:WINDow:ENABle

Syntax

```
:TIMebase:WINDow:ENABle <bool>
:TIMebase:WINDow:ENABle?
```

Description

Turn on or off the dual window function, or check the dual window status.

Parameter

Name	Type	Range	Default
<bool>	Bool	{{1|ON}|{0|OFF}}	0

Remarks

The dual window mode can be used to horizontally zoom in on a waveform for viewing waveform details.

Return Format

Query returns 1 or 0.

Example

```
:TIMebase:WINDow:ENABle ON          /* Turn on delayed scanning */
:TIMebase:WINDow:ENABle?            /* Query returns 1*/
```

3.3.2 :TIMebase:WINDow:POSition

Syntax

```
:TIMebase:WINDow:POSition <pos value>
```


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:TIMebase:WINDow:POSition?

Description

Set or query the horizontal position of the main scanning zoom view.

Parameter

Name	Type	Range	Default
<pos value >	Bool	Value of horizontal position	--

Remarks

The main scanning range and main scanning horizontal position determine the range of this command, and the value of this command must keep the zoomed view window within the main scanning range.

Return Format

Return the position of the current horizontal window in the zoomed in view in scientific counting format.

Example

```
:TIMebase:WINDow:POSition 0.001        /* Set horizontal position 0.001s */
:TIMebase:WINDow:POSition?             /* Query returns 1.000e-03*/
```

3.3.3 :TIMebase:WINDow:SCALe

Syntax

:TIMebase:WINDow:SCALe <scale_value>
:TIMebase:WINDow:SCALe?

Description

Set or query the main time base gear, with a default unit of s/div.

Parameter

Name	Type	Range	Default
<scale>	Integer	The current microsecond count of each cell in the child window	-

Remarks

The main scan scale determines the range of this command, with the maximum value being half of the main scan scale.

Return Format

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Query returns the main time base level in scientific counting form.

Example

```
:TIMebase:WINDow:SCALe 1          /* Set the main time base gear to 1μs/div */
:TIMebase:WINDow:SCALe?               /* Query returned 1.000000e+00*/
```

3.3.4 :TIMebase:WINDow:RANGe

Syntax

:TIMebase:WINDow:RANGe <range_value>
:TIMebase:WINDow:RANGe?

Description

Set or query the full-scale horizontal time of the sub-window.

Parameter

Name	Type	Range	Default
<range_value>	Integer	Range value (in seconds)	-

Remarks

The main scan range determines the scope of this command, with the maximum value being half of the main scan range.

Return Format

Return the current window time base range setting in scientific notation.

Example

```
:TIMebase:WINDow:RANGe 1          /* Set the horizontal range of the child window */
:TIMebase:WINDow:RANGe?               /* Query returned 1.000000e+00*/
```

3.3.5 :TIMebase:POSition

Syntax

:TIMebase:POSition <pos value>
:TIMebase:POSition?

Description

Set or query the main time base offset.

Parameter

Name	Type	Range	Default

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Name	Type	Range	Default
< pos value >	Integer	offset value	--

Remarks

N/A

Return Format

Return the main time base offset value in scientific counting format.

Example

```
:TIMebase:POSition 0.0002        /* Set the main time base offset to 200us */
:TIMebase:POSition?              /* Query returned 2.000000e-04*/
```

3.3.6 :TIMebase:SCALe

Syntax

```
:TIMebase:SCALe < scale value>
:TIMebase:SCALe?
```

Description

Set or query the horizontal scale (seconds/bars) of the main window.

Parameter

Name	Type	Range	Default
< scale value >	Integer	The current seconds per grid in the main window	--

Remarks

N/A

Return Format

Return the main window timing gear in scientific counting format.

Example

```
:TIMebase:SCALe 0.0002          /* Set the main time base offset to 200us */
:TIMebase:SCALe?            /* Query returned 2.000000e-04*/
```

3.3.7 :TIMebase:RANGe

Syntax

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:TIMebase:RANGe < range value>
:TIMebase:RANGe?

Description

Set or query the full-scale horizontal time of the main window.

Parameter

Name	Type	Range	Default
< range value >	Integer	range value	--

Remarks

N/A

Return Format

Return the full-scale time base range of the main window in scientific counting form.

Example

```
:TIMebase:RANGe 0.0002      /* Set the main time base gear to 200us*/
:TIMebase:RANGe?            /* Query returned 2.000000e-04*/
```

3.3.8 :TIMebase:MODE

Syntax

:TIMebase:MODE <value>
:TIMebase:MODE?

Description

Set or query horizontal time base mode.

Parameter

Name	Type	Range	Default
< value >	Integer	MAIN | XY | ROLL	--

Remarks

- Main: YT mode
- XY: XY mode
- ROLL: ROLL mode

Return Format

Query returns MAIN, XY, or ROLL.

Example

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```
:TIMebase:MODE XY        /* Set the horizontal time base mode to XY */
:TIMebase:MODE?          /* Query returned XY*/
```

3.3.9 :TIMebase:XY:XSOUrce

Syntax

:TIMebase:XY:XSOUrce <source>
:TIMebase:XY:XSOUrce?

Description

Source x when setting or querying XY mode.

Parameter

Name	Type	Range	Default
<source>	Integer	<CHANnel1|CHANnel2|CHANnel3|CHANnel4>	CHANnel1

Remarks

N/A

Return Format

The query returns CHANnel1, CHANnel2, CHANnel3, CHANnel4.

Example

```
:TIMebase:XY:XSOUrce CHANnel1        /* Set the source x to CH1 */
:TIMebase:XY:XSOUrce?                /* Query returned CHANnel1*/
```

3.3.10 :TIMebase:XY:YSOUrce

Syntax

:TIMebase:XY:YSOUrce <source>
:TIMebase:XY:YSOUrce?

Description

Source Y when setting or querying XY mode.

Parameter

Name	Type	Range	Default
<source>	Integer	<CHANnel1|CHANnel2|CHANnel3|CHANnel4>	CHANnel1

Remarks

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N/A

Return Format

The query returns CHANnel1, CHANnel2, CHANnel3, CHANnel4.

Example

```
:TIMebase:XY:YSOUrce CHANnel1        /* Set the source Y to CH1 */
:TIMebase:XY:YSOUrce?                /* Query returned CHANnel1*/
```

3.4 :ACQuire Commands

The :ACQuire commands are used to set the memory depth of the oscilloscope, the acquisition mode, the average times, as well as query the current sample rate.

3.4.1 :ACQuire:POINts

Syntax

:ACQuire:POINts <Value>
:ACQuire:POINts?

Description

Set or query storage depth.

Parameter

Name	Type	Range	Default
<Value	Discrete	5K|500K|2.5M|5M|25M|50M|125M	5K

Remarks

N/A

Return Format

Query and return the numerical value of storage depth.

Example

```
:ACQuire:POINts 5000        /* Set storage depth to 5k */
:ACQuire:POINts?            /* Query returns 5000 */
```

3.4.2 :ACQuire:TYPE

Syntax

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:ACQuire:TYPE <value>
:ACQuire:TYPE?

Description

Set or query the acquisition method for oscilloscope sampling.

Parameter

Name	Type	Range	Default
<value	Discrete	{NORMal|AVERages|PEAK|HRESolution}	NORMal

Remarks

- NORMAL: In this mode, the oscilloscope samples the signal at equal time intervals to reconstruct the waveform. For most waveforms, using this mode can produce the best display effect.
- AVERAges: In this mode, the oscilloscope averages multiple sampled waveforms to reduce random noise on the input signal and improve vertical resolution. The average number of times can be set by the: ACQuire: AVERAges command. The higher the average frequency, the smaller the noise and the higher the vertical resolution, but the displayed waveform also responds slower to waveform changes.
- PEAK (peak detection): In this mode, the oscilloscope collects the maximum and minimum values of the sampling interval signal to obtain the envelope of the signal or narrow pulses that may be lost. Using this mode can avoid signal aliasing, but the displayed noise is relatively high.
- HRESolution (High Resolution): This mode uses a supersampling technique to average adjacent points of the sampled waveform, reducing random noise on the input signal and producing a smoother waveform on the screen. Usually used when the sampling rate of a digital converter is higher than the storage rate of the acquisition memory.

Return Format

The query returns NORM, AVERAge, PEAK, or HRESolution.

Example

```
:ACQuire:TYPE AVERages          /* Set the acquisition method to average */
:ACQuire:TYPE?                  /* Query returns AVERAge */
```

3.4.3 :ACQuire:SRATe?

Syntax

:ACQuire:SRATe?

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Description

Query the current sampling rate, with a default unit of Sa/s.

Parameter

N/A

Remarks

- The sampling rate refers to the frequency at which the oscilloscope samples the signal, which is the number of waveform points sampled per second.
- The relationship between sampling rate, storage depth, and waveform length satisfies the following equation:
  Storage depth=sampling rate × Waveform length.

Return Format

The query returns the sampling rate in real form.

Example

```
:ACQuire:SRATe?              /* Query returned 1.250e+06*/
```

3.4.4 :ACQuire:COUNt

Syntax

```
:ACQuire:COUNt <value>
:ACQuire:COUNt?
```

Description

Set or query the number of points that need to be averaged in average mode.

Parameter

Name	Type	Range	Default
<value	Discrete	4|8|16|32|64|128	4

Remarks

N/A

Return Format

Return the current average point count.

Example

```
:ACQuire:COUNt 64            /* Set average points to 64*/
:ACQuire:COUNt?              /* Query returns 64 */
```


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3.5 :TRIGger Commands

The TRIGGer command is used to set the triggering system of the oscilloscope.

3.5.1 :TRIGger:MODE

Syntax

:TRIGger:MODE <mode>
:TRIGger:MODE?

Description

Select or query the trigger type.

Parameter

Name	Type	Range	Default
<mode>	Discrete	<EDGE|PULSe|SLOPe|TIMeout|WINdow|INTerval|UNDerthrow|UART|LIN|CAN|SPI|IIC>	EDGE

Remarks

N/A

Return Format

Return EDGE, PULSe, SLOPe, TIMeout, WINdow, INTerval, UNDerthrow, UART, LIN, CAN, SPI, IIC.

Example

```
:TRIGger:MODE SLOPe        /* Set the trigger type to slope trigger */
:TRIGger:MODE?             /* Query returns SLOPE */
```

3.5.2 :TRIGger:STATus?

Syntax

:TRIGger:STATus?

Description

Query the current triggering status.

Parameter

N/A

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Remarks

N/A

Return Format

Query returns TRIGed，NOTRIG.

Example

:TRIGger:STATus? /* Query returns TRIGed */

3.5.3 :TRIGger:SWEep

Syntax

:TRIGger:SWEep <sweep>
:TRIGger:SWEep?

Description

Set or query the triggering method.

Parameter

Name	Type	Range	Default
<sweep>	Discrete	{AUTO|NORMal|SINGle}	AUTO

Remarks

- AUTO: Automatically triggered，with waveform display regardless of whether the triggering conditions are met.
- NORMAL: Normal trigger，displaying the waveform when the triggering conditions are met，maintaining the original waveform display when the triggering conditions are not met，and waiting for the next trigger.
- Single: Single trigger，the oscilloscope waits for triggering，displays the waveform when the triggering conditions are met，and then stops.

Return Format

Query returns AUTO NORM or SING.

Example

:TRIGger:SWEep SINGle /* Choose a single trigger method */
:TRIGger:SWEep? /* Query returns SING */

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3.5.4 :TRIGger:HOLDoff

Syntax

:TRIGger:HOLDoff <value>
:TRIGger:HOLDoff?

Description

Set or query the trigger release time, with a default unit of seconds.

Parameter

Name	Type	Range	Default
<value>	Real	16ns-10s	1us

Remarks

Trigger holdoff can stabilize triggering of complex waveforms (such as pulse series). The holdoff time is the period during which the oscilloscope waits to re-enable the trigger circuit and will not trigger until the holdoff time has elapsed.

Return Format

Query to return the trigger suppression time in scientific notation.

Example

```
:TRIGger:HOLDoff 1          /* Set the trigger release time to 1ms */
:TRIGger:HOLDoff?           /* Query returns 1.000000 e-03*/
```

3.5.5 :TRIGger:FORCe

Syntax

:TRIGger:FORCe

Description

Set the oscilloscope to forced trigger.

Parameter

N/A

Remarks

This command will make the oscilloscope capture the waveform even to meet the trigger condition.

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Return Format

N/A

Example

:TRIGger:FORCe /* Set the oscilloscope to forced trigger.*/

3.5.6 :TRIGger:EXTernal:LEVel

Syntax

:TRIGger:EXTernal:LEVel <level>
:TRIGger:EXTernal:LEVel?

Description

Set or query the trigger level of the external trigger channel.

Parameter

Name	Type	Range	Default
<level>	Real	-1.3V-6.5V	-

Remarks

Setting a value outside the legal range will return an error.

Return Format

Query to return the level value in decimal form.

Example

:TRIGger:EXTernal:LEVel 1 /* Set the trigger release time to 1V */
:TRIGger:EXTernal:LEVel? /* Query returns 1.00*/

3.5.7 :TRIGger:EDGe:SOURce

Syntax

:TRIGger:EDGe:SOURce <source>
:TRIGger:EDGe:SOURce?

Description

Set or query the edge-triggered trigger source.

Parameter

Name	Type	Range	Default

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Name	Type	Range	Default
<source>	Discrete	{CHANnel1|CHANnel2|CHANnel3|CHANnel4|EXT}	CHANnel1

Remarks

When a digital channel is used as a trigger source channel, the digital probe must be connected to the oscilloscope.

Return Format

Query returns CHANnel1，CHANnel2，CHANnel3，CHANnel4，EXT.

Example

```
:TRIGger:EDGe:SOURce CHANnel1        /* Set the trigger source to CH1*/
:TRIGger:EDGe:SOURce?                /* Query returns CHANnel1*/
```

3.5.8 :TRIGger:EDGe:SLOPe

Syntax

:TRIGger:EDGe:SLOPe <slope>
:TRIGger:EDGe:SLOPe?

Description

Set or query the edge type triggered by the edge.

Parameter

Name	Type	Range	Default
<slope>	Discrete	{RISIng|FALLing|EITHer}	RISIng

Remarks

- RISING: Rising edge
- FALLING: Falling edge
- EITHer: Any edge

Return Format

Query returns RISIng，FALLing，EITHer.

Example

```
:TRIGger:EDGe:SLOPe FALLing          /* Set the edge type to the falling edge */
:TRIGger:EDGe:SLOPe?                 /* Query returns FALLing */
```

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3.5.9 :TRIGger:EDGe:LEVel

Syntax

:TRIGger:EDGe:LEVel <level>
:TRIGger:EDGe:LEVel?

Description

Set or query the triggering level when the edge is triggered, with the unit consistent with the current amplitude unit of the selected signal source.

Parameter

Name	Type	Range	Default
<level>	Real	Trigger level value (in volts)	0

Remarks

This setting command is only valid when the selected signal source is an analog channel.

Return Format

Query to return the trigger level value in scientific counting form.

Example

:TRIGger:EDGe:LEVel 0.16 /* Set the trigger level to 160mV */
:TRIGger:EDGe:LEVel? /* Query returns 1.600000 e-01*/

3.5.10 :TRIGger:PULSe:SOURce

Syntax

:TRIGger:PULSe:SOURce <source>
:TRIGger:PULSe:SOURce?

Description

Set or query the trigger source for pulse width triggering.

Parameter

Name	Type	Range	Default
<source>	Discrete	{CHANnel1|CHANnel2|CHANnel3|CHANnel4}	CHANnel1

Remarks

N/A

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Return Format

Query returns CHANnel1， CHANnel2， CHANnel3， CHANnel4.

Example

```
:TRIGger:PULSe:SOURce CHANnel1          /* Set the trigger source to CH1*/
:TRIGger:PULSe:SOURce?                  /* Query returns CHANnel1*/
```

3.5.11 :TRIGger:PULSe:POLarity

Syntax

:TRIGger:PULSe:POLarity <polarity>
:TRIGger:PULSe:POLarity?

Description

Set or query the triggering polarity of pulse width triggering.

Parameter

Name	Type	Range	Default
<polarity>	Discrete	{POSItive | NEGAtive}	POSItive

Remarks

- POSItive: Positive polarity
- NEGActive: Negative polarity

Return Format

Query returns POSItive，NEGAtive.

Example

```
:TRIGger:PULSe:POLarity POSItive        /* Set the triggering polarity to positive
polarity */
:TRIGger:PULSe:POLarity?                /* Query returns POSItive */
```

3.5.12 :TRIGger:PULSe:WHEN

Syntax

:TRIGger:PULSe:WHEN <when>
:TRIGger:PULSe:WHEN?

Description

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Set or query the triggering conditions for pulse width triggering.

Parameter

Name	Type	Range	Default
<when>	Discrete	{EQUAl|NEQUal|GREAt|LESS }	EQUAl

Remarks

- Equall=(equal to time value): can only be triggered when the positive or negative pulse width of the input signal is equal to the set pulse width. [Pulse width error is 5%]
- NEQUAL= (Not equal to time value): Only when the positive or negative pulse width of the input signal is not equal to the set pulse width，can it trigger 【 Pulse width error is 5% 】.
- GREat>(greater than time value): Only when the positive or negative pulse width of the input signal is greater than the set pulse width can it trigger [pulse width error is 5%].
- LESS<(less than time value): Only when the positive or negative pulse width of the input signal is less than the set pulse width can it trigger [pulse width error is 5%].

Return Format

Query returns EQUAl，NEQUal，GREAt，LESS.

Example

```
:TRIGger:PULSe:WHEN LESS        /* Set the trigger condition to LESS */
:TRIGger:PULSe:WHEN?            /* Query returns LESS */
```

3.5.13 :TRIGger:PULSe:WIDTh

Syntax

:TRIGger:PULSe:WIDTh <width>
:TRIGger:PULSe:WIDTh?

Description

Set or query the pulse width value when triggered，with a default unit of s.

Parameter

Name	Type	Range	Default
<width>	Real	8ns-10s	20ns

Remarks

This command is applicable to trigger conditions.

Return Format

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Query returns the pulse width value in scientific counting form.

Example

```
:TRIGger:PULSe:WIDTh 0.000003        /* Set the pulse width value to 3 μ s */
:TRIGger:PULSe:WIDTh?                /* Query returned 3.000000 e-06*/
```

3.5.14 :TRIGger:PULSe:LEVel

Syntax

:TRIGger:PULSe:LEVel <level>
:TRIGger:PULSe:LEVel?

Description

Set or query the triggering level when pulse width is triggered, with the unit consistent with the current amplitude unit.

Parameter

Name	Type	Range	Default
<level>	Real	(-5 × VerticalScale - OFFSet)- (5 × VerticalScale - OFFSet)	0

Remarks

This setting command is only valid when the selected signal source is an analog channel.

Return Format

Query to return the trigger level value in scientific counting form.

Example

```
:TRIGger:PULSe:LEVel 0.16            /* Set the trigger level to 160mV */
:TRIGger:PULSe:LEVel?                /* Query returns 1.600000 e-01*/
```

3.5.15 :TRIGger:SLOPe:SOURce

Syntax

:TRIGger:SLOPe:SOURce <source>
:TRIGger:SLOPe:SOURce?

Description

Set or query the trigger source for slope triggering.

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Parameter

Name	Type	Range	Default
<source>	Discrete	{CHANnel1|CHANnel2|CHANnel3|CHANnel4}	CHANnel1

Remarks

Can only be triggered for analog channels.

Return Format

Query returns CHANnel1， CHANnel2， CHANnel3， CHANnel4.

Example

```
:TRIGger:SLOPe:SOURce CHANnel2      /* Set the trigger source to CH2*/
:TRIGger:SLOPe:SOURce?              /* Query returns CHANnel2*/
```

3.5.16 :TRIGger:SLOPe:POLarity

Syntax

```
:TRIGger:SLOPe:POLarity <polarity>
:TRIGger:SLOPe:POLarity?
```

Description

Set or query the edge type triggered by slope.

Parameter

Name	Type	Range	Default
<polarity>	Discrete	{POSItive|NEGAtive}	POSItive

Remarks

- POSItive: Rising edge triggered
- NEGActive: Falling edge triggered

Return Format

Query returns POSItive，NEGAtive.

Example

```
:TRIGger:SLOPe:POLarity POSItive    /* Set rising edge trigger */
:TRIGger:SLOPe:POLarity?            /* Query returns POSItive */
```


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3.5.17 :TRIGger:SLOPe:WHEN

Syntax

:TRIGger:SLOPe:WHEN <when>
:TRIGger:SLOPe:WHEN?

Description

Set or query the triggering conditions for slope triggering.

Parameter

Name	Type	Range	Default
<when>	Discrete	{ EQUAl|NEQUal|GREAt|LESS }	EQUAl

Remarks

- Equall=(equal to time value): can only be triggered when the positive or negative pulse width of the input signal is equal to the set pulse width. [Pulse width error is 5%]
- NEQUAL= (Not equal to time value): Only when the positive or negative pulse width of the input signal is not equal to the set pulse width，can it trigger 【 Pulse width error is 5% 】.
- GREat>(greater than time value): Only when the positive or negative pulse width of the input signal is greater than the set pulse width can it trigger [pulse width error is 5%].
- LESS<(less than time value): Only when the positive or negative pulse width of the input signal is less than the set pulse width can it trigger [pulse width error is 5%].

Return Format

Query returns EQUAl，NEQUal，GREAt，LESS.

Example

```
:TRIGger:SLOPe:WHEN LESS        /* Set the trigger condition to LESS */
:TRIGger:SLOPe:WHEN?            /* Query returns LESS */
```

3.5.18 :TRIGger:SLOPe:WIDTH

Syntax

:TRIGger:SLOPe:WIDTH <time>
:TRIGger:SLOPe:WIDTH?

Description

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Set or query the time value when the slope is triggered. The default unit is s.

Parameter

Name	Type	Range	Default
<time>	Real	8ns-10s	20ns

Remarks

This command is applicable to trigger conditions.

Return Format

Query returns a time value in scientific counting form.

Example

:TRIGger:SLOPe:WIDTH 0.000003 /* Set the time value to 3 μ s */
:TRIGger:SLOPe:WIDTH? /* Query returned 3.000000 e-06*/

3.5.19 :TRIGger:SLOPe:ALEVel

Syntax

:TRIGger:SLOPe:ALEVel <level>
:TRIGger:SLOPe:ALEVel?

Description

Set or query the upper limit of the triggering level when the slope is triggered, with the unit consistent with the current amplitude unit.

Parameter

Name	Type	Range	Default
<level>	Real	(-5 × VerticalScale - OFFSet)- (5 × VerticalScale - OFFSet)	2V

Remarks

This setting command is only valid when the selected signal source is an analog channel.

Return Format

Query to return the trigger level upper limit in scientific counting form.

Example

:TRIGger:SLOPe:ALEVel 0.16 /* Set the upper limit of the trigger level to 160mV */
:TRIGger:SLOPe:ALEVel? /* Query returns 1.600000 e-01*/

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3.5.20 :TRIGger:SLOPe:BLEVel

Syntax

:TRIGger:SLOPe:BLEVel <level>
:TRIGger:SLOPe:BLEVel?

Description

Set or query the lower limit of the triggering level when the slope is triggered, with the unit consistent with the current amplitude unit.

Parameter

Name	Type	Range	Default
<level>	Real	(-5 × VerticalScale - OFFSet)- (5 × VerticalScale - OFFSet)	2V

Remarks

This setting command is only valid when the selected signal source is an analog channel.

Return Format

Query to return the lower limit of trigger level in scientific counting form.

Example

:TRIGger:SLOPe:BLEVel 0.16 /* Set the trigger level lower limit to 160mV */
:TRIGger:SLOPe:BLEVel? /* Query returns 1.600000 e-01*/

3.5.21 :TRIGger:TIMeout:SOURce

Syntax

:TRIGger:TIMeout:SOURce <source>
:TRIGger:TIMeout:SOURce?

Description

Set or query the trigger source triggered by timeout.

Parameter

Name	Type	Range	Default
<source>	Discrete	{CHANnel1|CHANnel2|CHANnel3|CHANnel4}	CHANnel1

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Remarks

When the digital channel is used as the trigger source channel，the digital probe must be connected to the oscilloscope.

Return Format

Query returns CHANnel1， CHANnel2， CHANnel3， CHANnel4.

Example

```
:TRIGger:TIMeout:SOURce CHANnel2          /* Set the trigger source to CH2*/
:TRIGger:TIMeout:SOURce?                  /* Query returns CHANnel2*/
```

3.5.22 :TRIGger:TIMeout:LEVel

Syntax

```
:TRIGger:TIMEout:LEVel <level>
:TRIGger:TIMEout:LEVel?
```

Description

Set or query the triggering level when timeout is triggered.

Parameter

Name	Type	Range	Default
<level>	Real	(-5 × VerticalScale - OFFSet)- (5 × VerticalScale - OFFSet)	0

Remarks

This setting command is only valid when the selected signal source is an analog channel.

Return Format

Returns the trigger level value in scientific counting form.

Example

```
:TRIGger:TIMEout:LEVel 0.16          /* Set the trigger level to 160mv */
:TRIGger:TIMEout:LEVel?              /* Query returns 1.600000 e-01*/
```

3.5.23 :TRIGger:TIMeout:WIDth

Syntax

```
:TRIGger:TIMeout:WIDth <value>
```


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:TRIGger:TIMeout:WIDth?

Description

Set or query the timeout triggered by timeout. The default unit is s.

Parameter

Name	Type	Range	Default
<value>	Real	8ns-10s	200ns

Remarks

N/A

Return Format

Query returns the timeout value in scientific counting form.

Example

```
:TRIGger:TIMeout:WIDth 0.002        /* Set the timeout time to 2ms */
:TRIGger:TIMeout:WIDth?             /* Query returns 2.000000 e-03*/
```

3.5.24 :TRIGger:TIMeout:POLarity

Syntax

:TRIGger:TIMeout:POLarity <polarity>
:TRIGger:TIMeout:POLarity?

Description

Set or query the edge type triggered by timeout.

Parameter

Name	Type	Range	Default
<slope>	Discrete	{POSitive|NEGative}	POSitive

Remarks

- Positive: Start timing by triggering the level on the rising edge of the input signal.
- NEGative: Start timing by triggering the level on the falling edge of the input signal.

Return Format

Query and return POSItiveor NEGAtive.

Example

```
:TRIGger:TIMeout:POLarity NEGative      /* Set the edge type to the falling edge */
```

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:TRIGger:TIMeout:POLarity? /* Query returns NEGAtive*/

3.5.25 :TRIGger:WINDOw:SOURce

Syntax

:TRIGger:WINDOw:SOURce <source>
:TRIGger:WINDOw:SOURce?

Description

Set or query the trigger source of the window.

Parameter

Name	Type	Range	Default
<source>	Discrete	{CHANnel1|CHANnel2|CHANnel3|CHANnel4}	CHANnel1

Remarks

N/A

Return Format

The query returns CHANnel1， CHANnel2， CHANnel3， CHANnel4.

Example

:TRIGger:WINDOw:SOURce CHANnel2 /* Set the trigger source to CH2 */
:TRIGger:WINDOw:SOURce? /* Query returns CHANnel2*/

3.5.26 :TRIGger:WINDOw:ALEVel

Syntax

:TRIGger:WINDOw:ALEVel <level>
:TRIGger:WINDOw:ALEVel?

Description

Set or query the trigger level when the window is triggered.

Parameter

Name	Type	Range	Default
<level>	full mold	(-5 × VerticalScale - OFFSet)~(5 × VerticalScale - OFFSet)	0

Remarks

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This setting command is only valid when the selected signal source is an analog channel.

Return Format

Return the trigger level value in scientific notation.

Example

```
:TRIGger:WINDOw:ALEVel 0.16          /* Set the trigger level to 160mv.*/
:TRIGger:WINDOw:ALEVel?              /* Query returns 1.600000e-01*/
```

3.5.27 :TRIGger:WINDOw:BLEVel

Syntax

:TRIGger:WINDOw:BLEVel <level>
:TRIGger:WINDOw:BLEVel?

Description

Set or query the trigger level when the window is triggered.

Parameter

Name	Type	Range	Default
<level>	full mold	(-5 × VerticalScale - OFFSet)-(5 × VerticalScale - OFFSet)	0

Remarks

This setting command is only valid when the selected signal source is an analog channel.

Return Format

Return the trigger level value in scientific notation.

Example

```
:TRIGger:WINDOw:BLEVel 0.16          /* Set the trigger level to 160mv.*/
:TRIGger:WINDOw:BLEVel?              /* Query returns 1.600000e-01*/
```

3.5.28 :TRIGger:INTERVAl:SOURce

Syntax

:TRIGger:INTERVAl:SOURce <source>
:TRIGger:INTERVAl:SOURce?

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Description

Set or query the trigger source of interval triggering.

Parameter

Name	Type	Range	Default
<source>	Discrete	{CHANnel1|CHANnel2|CHANnel3|CHANnel4}	CHANnel1

Remarks

Only the simulated channel can be used as a trigger source.

Return Format

The query returns CHANnel1，CHANnel2，CHANnel3，CHANnel4.

Example

```
:TRIGger:INTERVAl:SOURce CHANnel2          /* Set the trigger source to CH2 */
:TRIGger:INTERVAl:SOURce?          /* Query returns CHANnel2*/
```

3.5.29 :TRIGger:INTERVAl:SLOp

Syntax

```
:TRIGger:INTERVAl:SLOp <slop>
:TRIGger:INTERVAl:SLOp?
```

Description

Set or query the edge type of interval-triggered events.

Parameter

Name	Type	Range	Default
<slop>	Discrete	{RISIng|FALLing}	RISIng

Remarks

- RISING: Rising edge trigger.
- FALLING: Falling edge trigger.

Return Format

The query returns RISIng or FALLing.

Example

```
:TRIGger:INTERVAl:SLOp RISIng        /*Set the edge type to rising edge*/
:TRIGger:INTERVAl:SLOp?              /*Query returns RISIng */
```


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3.5.30 :TRIGger:INTERVAl:WHEN

Syntax

:TRIGger:INTERVAl:WHEN <when>
:TRIGger:INTERVAl:WHEN?

Description

Set or query the trigger conditions for interval triggering.

Parameter

Name	Type	Range	Default
<when>	Discrete	{EQUAl|NEQUal|GREAt|LESS}	EQUAl

Remarks

- EQUAl = (Equal to time value): Trigger only when the width of the positive pulse or negative pulse of the input signal is equal to the set pulse width. [Pulse width error is 5%]
- NEQUal != (Not equal to time value): Trigger only when the width of the positive pulse or negative pulse of the input signal is not equal to the set pulse width. [Pulse width error is 5%]
- GREAt > (Greater than time value): Trigger only when the width of the positive pulse or negative pulse of the input signal is greater than the set pulse width. [Pulse width error is 5%]
- LESS < (Less than time value): Trigger only when the width of the positive pulse or negative pulse of the input signal is less than the set pulse width. [Pulse width error is 5%]

Return Format

The query returns EQUAl, NEQUal, GREAt, LESS.

Example

```
:TRIGger:INTERVAl:WHEN LESS      /*Set the trigger condition to LESS*/
:TRIGger:INTERVAl:WHEN?          /* Query returns LESS */
```

3.5.31 :TRIGger:INTERVAl:TIME

Syntax

:TRIGger:INTERVAl:TIME <value>
:TRIGger:INTERVAl:TIME?

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Description

Set or query the timeout for interval-triggered operations, with the default unit being seconds.

Parameter

Name	Type	Range	Default
<value>	Floating-point	8ns-10s	200ns

Remarks

N/A.

Return Format

Query to return time values in scientific notation.

Example

```
:TRIGger:INTERVAl:TIME 0.002        /*Set the time to 2ms*/
:TRIGger:INTERVAl:TIME?             /* Query returns 2.000000e-03*/
```

3.5.32 :TRIGger:INTERVAl:ALEVel

Syntax

```
:TRIGger:INTERVAl:ALEVel <level>
:TRIGger:INTERVAl:ALEVel?
```

Description

Set or query the trigger level when the interval trigger is activated.

Parameter

Name	Type	Range	Default
<level>	Floating-point	(-5 × VerticalScale - OFFSet)–(5 × VerticalScale - OFFSet)	0

Remarks

This setting command is only valid when the selected information source is a simulated channel.

Return Format

Return the trigger level value in scientific notation.

Example

```
:TRIGger:INTERVAl:ALEVel 0.16       /*Set the trigger level to 160mv*/
```


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:TRIGger:INTERVAl:ALEVel? /* Query returns 1.600000e-01*/

3.5.33 :TRIGger:UNDER_Am:SOURce

Syntax

:TRIGger:UNDER_Am:SOURce <source>
:TRIGger:UNDER_Am:SOURce?

Description

Set or query the trigger source of underflow triggering.

Parameter

Name	Type	Range	Default
<source>	Discrete	{CHANnel1|CHANnel2|CHANnel3|CHANnel4}	CHANnel1

Remarks

Only the simulated channel can be used as a trigger source.

Return Format

The query returns CHANnel1, CHANnel2，CHANnel3，CHANnel4.

Example

:TRIGger:UNDER_Am:SOURce CHANnel2 /* Set the trigger source to CH2*/
:TRIGger:UNDER_Am:SOURce? /* Query returns CHANnel2*/

3.5.34 :TRIGger:UNDER_Am:POLarity

Syntax

:TRIGger:UNDER_Am:POLarity <polarity>
:TRIGger:UNDER_Am:POLarity?

Description

Set or query the edge type triggered by underflow.

Parameter

Name	Type	Range	Default
<polarity>	Discrete	{POSitive | NEGative}	POSitive

Remarks

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- Positive: Positive polarity trigger.
- Negative: Negative polarity trigger.

Return Format

The query returns POSItive, NEGAtive.

Example

```
:TRIGger:UNDER_Am:POLarity NEGative  /*Set the pulse polarity to negative polarity*/
:TRIGger:UNDER_Am:POLarity?                /* Query returns NEGative */
```

3.5.35 :TRIGger:UNDER_Am:WHEN

Syntax

```
:TRIGger:UNDER_Am:WHEN <when>
:TRIGger:UNDER_Am:WHEN?
```

Description

Set or query the trigger conditions for underflow triggers.

Parameter

Name	Type	Range	Default
<when>	Discrete	{EQUAl|NEQUal|GREAt|LESS }	EQUAl

Remarks

- Equall=(equal to time value): can only be triggered when the positive or negative pulse width of the input signal is equal to the set pulse width. [Pulse width error is 5%]
- NEQUAL= (Not equal to time value): Only when the positive or negative pulse width of the input signal is not equal to the set pulse width，can it trigger 【 Pulse width error is 5% 】.
- GREat>(greater than time value): Only when the positive or negative pulse width of the input signal is greater than the set pulse width can it trigger [pulse width error is 5%].
- LESS<(less than time value): Only when the positive or negative pulse width of the input signal is less than the set pulse width can it trigger [pulse width error is 5%].

Return Format

Query returns EQUAL，NEQUal, GREAt, LESS.

Example

```
:TRIGger:UNDER_Am:WHEN LESS        /* Set qualifiers to LESS */
:TRIGger:UNDER_Am:WHEN?            /* Query returns LESS */
```


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3.5.36 :TRIGger:UNDER_Am:TIME

Syntax

:TRIGger:UNDER_Am:TIME <value>
:TRIGger:UNDER_Am:TIME?

Description

Set or query the timeout for underflow triggers, with the default unit being seconds.

Parameter

Name	Type	Range	Default
<value>	Real	8ns-10s	200ns

Remarks

N/A

Return Format

Query to return the timeout time value in scientific notation.

Example

:TRIGger: UNDER_Am:TIME 0.002 /*Set the timeout to 2ms*/
:TRIGger: UNDER_Am:TIME? /* Query returned 2.000000e-03*/

3.5.37 :TRIGger:UNDER_Am:ALEVel

Syntax

:TRIGger:UNDER_Am:ALEVel <level>
:TRIGger:UNDER_Am:ALEVel?

Description

Set or query the trigger level when an underflow trigger occurs.

Parameter

Name	Type	Range	Default
<level>	Real	(-5 × VerticalScale - OFFSet)- (5 × VerticalScale - OFFSet)	0

Remarks

This setting command is only valid when the selected source is an analog channel.

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Return Format

Return the trigger level value in scientific notation.

Example

```
:TRIGger: UNDER_Am:ALEVel 0.16          /*Set the trigger level to 160mv*/
:TRIGger: UNDER_Am:ALEVel?          /* Query returns 1.600000 e-01*/
```

3.5.38 :TRIGger:UNDER_Am:BLEVel

Syntax

```
:TRIGger:UNDER_Am:BLEVel <level>
:TRIGger:UNDER_Am:BLEVel?
```

Description

Set or query the trigger level when an underflow trigger occurs.

Parameter

Name	Type	Range	Default
<level>	Real	(-5 × VerticalScale - OFFSet)- (5 × VerticalScale - OFFSet)	0

Remarks

This setting command is only valid when the selected source is an analog channel.

Return Format

Return the trigger level value in scientific notation.

Example

```
:TRIGger:UNDER_Am:BLEVel 0.16          /*Set the trigger level to 160mv*/
:TRIGger:UNDER_Am:BLEVel?          /* Query returns 1.600000 e-01*/
```

3.5.39 :TRIGger:UART:SOURce

Syntax

```
:TRIGger:UART:SOURce <source>
:TRIGger:UART:SOURce?
```

Description

Set or query the trigger source for UART.

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Parameter

Name	Type	Range	Default
<source>	Discrete	{CHANnel1|CHANnel2|CHANnel3|CHANnel4}	CHANnel1

Remarks

N/A.

Return Format

Query returns CHANnel1，CHANnel2，CHANnel3，CHANnel4.

Example

```
:TRIGger:UART:SOURce CHANnel1        /* Set the trigger source to CH1*/
:TRIGger:UART:SOURce?                /*Query returns CHANnel1*/
```

3.5.40 :TRIGger:UART:CONdition

Syntax

```
:TRIGger:UART:CONdition <condition>
:TRIGger:UART:CONdition?
```

Description

Set or query the conditions for UART trigger.

Parameter

Name	Type	Range	Default
<when>	Discrete	{START|STOP|READ_DATA|PARITY_ERR|COM_ERR }	START

Remarks

- START: When the UART start bit appears，it is triggered in the middle of the bit.
- STOP: When the UART stop bit appears，it is triggered in the middle of the bit. Regardless of whether the tested device stops at positions 1，1.5，or 2，this machine will install one position for processing.
- READ_DATA: The normal data reception is completed，and the received UART data is equal to the user set data，which is triggered at the stop bit.
- PARITY_ERR: When the data is received normally and there is an error in the parity check of the data，it is triggered at the stop bit.
- COM_ERR: Triggered when an error occurs when the data is not stopped at the beginning of the verification bit.

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Return Format

Query returns START, STOP, READ_DATA, PARITY_ERR, COM_ERR.

Example

```
:TRIGger:UART:CONdition START          /* Set the trigger condition to START */
:TRIGger:UART:CONdition?               /* Query returns START */
```

3.5.41 :TRIGger:UART:BAUD

Syntax

```
:TRIGger:UART:BAUD <baud>
:TRIGger:UART:BAUD?
```

Description

Set or query the baud rate triggered by UART. The default unit is bps.

Parameter

Name	Type	Range	Default
< baud_rate >	Discrete	{110|300|600|1200|2400|4800|9600|14400|19200|38400|57600|115200|230400|380400|460400|Custom}	Custom

Remarks

N/A

Return Format

Query returns an integer.

Example

```
:TRIGger:UART:BAUD 4800      /* Set the baud rate to 4.8kbps */
:TRIGger:UART:BAUD?          /* Query returns 4800*/
```

3.5.42 :TRIGger:UART:ALEVel

Syntax

```
:TRIGger:UART:ALEVel <level>
:TRIGger:UART:ALEVel?
```

Description

Set or query the triggering level when UART is triggered, with the unit consistent with

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the current amplitude unit.

Parameter

Name	Type	Range	Default
<level>	Real	(-5 × VerticalScale - OFFSet)- (5 × VerticalScale - OFFSet)	0

Remarks

This setting command is only valid when the selected signal source is an analog channel.

Return Format

Query to return trigger level in scientific counting form.

Example

```
:TRIGger:UART:ALEVel 0.16      /* Set the trigger level to 160mV*/
:TRIGger:UART:ALEVel?          /* Query returns 1.600000 e-01*/
```

3.5.43 :TRIGger:UART:DATA

Syntax

```
:TRIGger:UART:DATA <data>
:TRIGger:UART:DATA?
```

Description

Set or query the data value when UART trigger condition is data.

Parameter

Name	Type	Range	Default
<data>	Discrete	$0\text{-}2^{n}-1$	0

Remarks

n is the current data width, with a range of 5, 6, 7, or 8.

Return Format

Query returns an integer.

Example

```
:TRIGger:UART:DATA 8      /* Set the data value to 8*/
:TRIGger:UART:DATA?       /* Query returns 8*/
```

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3.5.44 :TRIGger:UART:WIDTh

Syntax

:TRIGger:UART:WIDTh <width>
:TRIGger:UART:WIDTh?

Description

Set or query the data bit width when UART trigger condition is set to data.

Parameter

Name	Type	Range	Default
<width>	Discrete	{5|6|7|8}	5

Remarks

N/A

Return Format

Query returns 5, 6, 7, or 8.

Example

:TRIGger:UART:WIDTh 5 /* Set the data bit width to 5*/
:TRIGger:UART:WIDTh? /* Query returns 5*/

3.5.45 :TRIGger:UART:PARity

Syntax

:TRIGger:UART:PARity <parity>
:TRIGger:UART:PARity?

Description

Set or query the verification method when the UART trigger condition is an error frame or verification error.

Parameter

Name	Type	Range	Default
< parity >	Discrete	{NONE|ODD|EVEN}	NONE

Remarks

When the triggering condition is a verification error, the verification method cannot be set to NONE. In this case, the verification method defaults to odd verification.

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Return Format

Query returns NONE ODD or EVEN.

Example

```
:TRIGger:UART:PARIty EVEN      /* Set the verification method to even verification */
:TRIGger:UART:PARIty?                  /* Query returns EVEN */
```

3.5.46 :TRIGger:UART:WHEN

Syntax

```
:TRIGger:UART:WHEN <when>
:TRIGger:UART:WHEN?
```

Description

Set or query the trigger conditions for UART.

Parameter

Name	Type	Range	Default
<when>	Discrete	{EQUAl|NEQUal|GREAt|LESS }	EQUAl

Remarks

- EQUAl = (Equal to time value): Trigger only when the width of the positive or negative pulse of the input signal equals the set pulse width. [Pulse width tolerance is 5%]
- NEQUal != (Not equal to time value): Trigger only when the width of the positive or negative pulse of the input signal does not equal the set pulse width. [Pulse width tolerance is 5%]
- GREAt > (Greater than time value): Trigger only when the width of the positive or negative pulse of the input signal is greater than the set pulse width. [Pulse width tolerance is 5%]
- LESS < (Less than time value): Trigger only when the width of the positive or negative pulse of the input signal is less than the set pulse width. [Pulse width tolerance is 5%].

Return Format

The query returns EQUAl, NEQUAl, GREAt, LESS.

Example

```
:TRIGger:UART:WHEN LESS      /* Set the trigger condition to LESS */
:TRIGger:UART:WHEN?                  /* Query returns LESS */
```

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3.5.47 :TRIGger:UART:IDLe

Syntax

:TRIGger:UART:IDLe <when>
:TRIGger:UART:IDLe?

Description

Set or query the UART trigger idle level parameters.

Parameter

Name	Type	Range	Default
<when>	Discrete	{HIGH|LOW}	HIGH

Remarks

HIGH: High level.
LOW: Low level.

Return Format

Query returns HIGH or LOW.

Example

:TRIGger:UART:IDLe LOW /* Set the idle level to LOW */
:TRIGger:UART:IDLe? /* Query returns LOW */

3.5.48 :TRIGger:LIN:SOURce

Syntax

:TRIGger:LIN:SOURce <source>
:TRIGger:LIN:SOURce?

Description

Set or query the trigger source for LIN triggering.

Parameter

Name	Type	Range	Default
<source>	Discrete	{CHANnel1|CHANnel2|CHANnel3|CHANnel4}	CHANnel1

Remarks

When the digital channel is used as the trigger source channel, the digital probe must be connected to the oscilloscope.

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Return Format

Query returns CHANnel1，CHANnel2，CHANnel3，CHANnel4.

Example

```
:TRIGger:LIN:SOURce CHANnel1        /* Set the trigger source to CH1*/
:TRIGger:LIN:SOURce?                /* Query returns CHANnel1*/
```

3.5.49 :TRIGger:LIN:IDLe

Syntax

:TRIGger:LIN:IDLe <idle>
:TRIGger:LIN:IDLe?

Description

Set or query the idle level triggered by LIN.

Parameter

Name	Type	Range	Default
<idle>	Discrete	{LOW|HIGH}	HIGH

Remarks

N/A.

Return Format

Query returns LOW, HIGH.

Example

```
:TRIGger:LIN:IDLe LOW               /*Set idle low level*/
:TRIGger:LIN:IDLe?                  /* Query returns LOW */
```

3.5.50 :TRIGger:LIN:BAUd

Syntax

:TRIGger:LIN:BAUd <baud>
:TRIGger:LIN:BAUd?

Description

Set or query the baud rate triggered by LIN. The default unit is bps.

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Parameter

Name	Type	Range	Default
<baud>	Discrete	{110|300|600|1200|2400|4800|9600|14400|19200|38400|57600|115200|230400|460400|Custom}	115200

Remarks

N/A

Return Format

Query returns an integer.

Example

:TRIGger:LIN:BAUd 4800 /* Set the baud rate to 4.8kbps */
:TRIGger:LIN:BAUd? /* Query returns 4800*/

3.5.51 :TRIGger:LIN:CONdition

Syntax

:TRIGger:LIN:CONdition <condition>
:TRIGger:LIN:CONdition?

Description

Set or query the triggering conditions for LIN triggering.

Parameter

Name	Type	Range	Default
<condition>	Discrete	<INTERVAL_FIELD|SYNC_FIELD|ID_FIELD| DATA|IDENTIFIER|ID_DATA >	INTERVAL_FIELD

Remarks

- Interval Field → Triggered on the edge after the LIN interval ends.
- Synchronization Field → Triggered when LIN synchronization field data reception is completed.
- ID Field → Triggered when LIN ID field data reception is completed.
- Synchronization Error → Triggered when LIN synchronization field data reception is completed but the synchronization field data is not equal to 0x55.
- Identifier → Triggered when LIN ID field data reception is completed and the ID data equals the user-set ID.
- ID and Data → Triggered when LIN data is received normally and both the ID and data equal the user-set values.

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Return Format

Query returns INTERVAL_FIELD，SYNC_FIELD，ID_FIELD， DATA，IDENTIFIER，ID_DATA.

Example

```
:TRIGger:LIN:CONdition INTERVAL_FIELD      /* Set the trigger condition to end the interval field */
:TRIGger:LIN:CONdition?                    /* Query returns INTERVAL_FIELD */
```

3.5.52 :TRIGger:LIN:ID

Syntax

:TRIGger:LIN:ID <id>
:TRIGger:LIN:ID?

Description

Set or query the identifier triggered by LIN.

Parameter

Name	Type	Range	Default
< id>	Discrete	Six digits	-

Remarks

N/A

Return Format

Query returns an integer.

Example

```
:TRIGger:LIN:ID 25      /* Set identifier to 25*/
:TRIGger:LIN:ID?            /* Query returns 25*/
```

3.5.53 :TRIGger:LIN:VALId

Syntax

:TRIGger:LIN:VALId <index> <bool>
:TRIGger:LIN:VALId? <index>

Description

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Set or query LIN trigger data masking parameters.

Parameter

Name	Type	Range	Default
<index>	Discrete	0-3	-
<bool>	Discrete	<0|1>	-

Remarks

N/A

Return Format

The query returns 0, 1.

Example

```
:TRIGger:LIN:VALId 0 1      /* Filter out data with index 0*/
:TRIGger:LIN:VALId? 0       /* Query returns 1*/
```

3.5.54 :TRIGger:LIN:DATA

Syntax

```
:TRIGger:LIN:DATA <index> <data>
:TRIGger:LIN:DATA? <index>
```

Description

Set or query the data value of LIN trigger.

Parameter

Name	Type	Range	Default
<data>	Discrete	8-bit	-
<index>	Discrete	Data index 0-3	-

Remarks

N/A

Return Format

Query returns an integer.

Example

```
:TRIGger:LIN:DATA 2 10      /*Set the data at index 2 to 10*/
:TRIGger:LIN:DATA? 2        /* Query returns 10*/
```


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3.5.55 :TRIGger:LIN:ALEVel

Syntax

:TRIGger:LIN:ALEVel <level>
:TRIGger:LIN:ALEVel?

Description

Set or query the triggering level when LIN is triggered.

Parameter

Name	Type	Range	Default
<level>	Real	(-5 × VerticalScale - OFFSet)- (5 × VerticalScale - OFFSet)	0

Remarks

This setting command is only valid when the channel source of the data cable is an analog channel.

Return Format

Query to return the trigger level value in scientific counting form.

Example

:TRIGger:LIN:ALEVel 0.16 /* Set the trigger level to 160mV */
:TRIGger:LIN:ALEVel? /* Query returns 1.600000 e-01*/

3.5.56 :TRIGger:CAN:SOURce

Syntax

:TRIGger:CAN:SOURce <source>
:TRIGger:CAN:SOURce?

Description

Set or query the trigger source triggered by CAN.

Parameter

Name	Type	Range	Default
<source>	Discrete	{CHANnel1|CHANnel2|CHANnel3|CHANnel4}	CHANnel1

Remarks

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N/A.

Return Format

Query returns CHANnel1，CHANnel2，CHANnel3，CHANnel4.

Example

```
:TRIGger:CAN:SOURce CHANnel1        /* Set the trigger source to CH1*/
:TRIGger:CAN:SOURce?                /* Query returns CHANnel1*/
```

3.5.57 :TRIGger:CAN:IDLe

Syntax

:TRIGger:CAN:IDLe <idle>
:TRIGger:CAN:IDLe?

Description

Set or query the idle level triggered by CAN.

Parameter

Name	Type	Range	Default
<source>	Discrete	{LOW|HIGH}	HIGH

Remarks

N/A.

Return Format

Query returns LOW, HIGH.

Example

```
:TRIGger:CAN:IDLe LOW               /*Set idle low level*/
:TRIGger:CAN:IDLe?                  /* Query returns LOW */
```

3.5.58 :TRIGger:CAN:BAUd

Syntax

:TRIGger:CAN:BAUd <baud>
:TRIGger:CAN:BAUd?

Description

Set or query the baud rate triggered by CAN. The default unit is bps.

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Parameter

Name	Type	Range	Default
<baud>	Discrete	<10000|20000|33300|50000|62500|83300|100000|125000|250000|500000|800000|1000000|Custom>	125000

Remarks

N/A

Return Format

Query returns an integer.

Example

```
:TRIGger:CAN:BAUd 4800        /* Set the baud rate to 4.8kbps */
:TRIGger:CAN:BAUd?            /* Query returns 4800*/
```

3.5.59 :TRIGger:CAN:CONdition

Syntax

:TRIGger:CAN:CONdition <condition>
:TRIGger:CAN:CONdition?

Description

Set or query the triggering conditions for CAN triggering.

Parameter

Name	Type	Range	Default
<condition>	Discrete	<FRAM_STARE|FRAM_REMO_ID|FRAM_DATA_ID|REMO/DATA_ID|DATA_ID/DATA|FRAM_REE|ERR_ALL|ACK_ERR|FRAM_OVERLOAD >	START_BIT

Remarks

N/A

Return Format

Query returns FRAM_STARE|FRAM_REMO_ID|FRAM_DATA_ID|REMO/DATA_ID|DATA_ID/DATA|FRAM_REE|ERR_ALL|ACK_ERR|FRAM_OVERLOAD.

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Example

:TRIGger:CAN:CONdition FRAM_STARE /* Set the trigger condition to FRAM_STARE */
:TRIGger:CAN:CONdition? /* Query returns FRAM_STARE */

3.5.60 :TRIGger:CAN:ID

Syntax

:TRIGger:CAN:ID <id>
:TRIGger:CAN:ID?

Description

Set or query the identifier triggered by CAN.

Parameter

Name	Type	Range	Default
<id>	Discrete	0-28	1

Remarks

N/A

Return Format

The query returns an integer.

Example

:TRIGger:CAN:ID 25 /* Set the identifier to 25*/
:TRIGger:CAN:ID? /* Query returns 25*/

3.5.61 :TRIGger:CAN:VALId

Syntax

:TRIGger:CAN:VALId <index> <bool>
:TRIGger:CAN:VALId? <index>

Description

Set or query CAN trigger data shielding parameters.

Parameter

Name	Type	Range	Default
<index>	Discrete	0-3	-

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Name	Type	Range	Default
<bool>	Discrete	<0|1>	-

Remarks

N/A

Return Format

The query returns 0, 1.

Example

```
:TRIGger:CAN:VALId 0 1          /* Filter out data with index 0*/
:TRIGger:CAN:VALId? 0           /* Query returns 1*/
```

3.5.62 :TRIGger:CAN:DATA

Syntax

```
:TRIGger:CAN:DATA <index> <data>
:TRIGger:CAN:DATA? <index>
```

Description

Set or query the data value of CAN trigger.

Parameter

Name	Type	Range	Default
<data>	Discrete	8 bit	-
<intex>	Discrete	0-3	-

Remarks

N/A

Return Format

The query returns an integer.

Example

```
:TRIGger:CAN:DATA 2 10          /*Set the data with index 2 to 10*/
:TRIGger:CAN:DATA? 2            /* Query returns 10*/
```

3.5.63 :TRIGger:CAN:ALEVel

Syntax

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:TRIGger:CAN:ALEVel <level>
:TRIGger:CAN:ALEVel?

Description

Set or query the trigger level when the CAN is triggered.

Parameter

Name	Type	Range	Default
<level>	Real	(-5 × VerticalScale - OFFSet)- (5 × VerticalScale - OFFSet)	0

Remarks

This setting command is only valid when the channel source of the data line is an analog channel.

Return Format

Query to return the trigger level value in scientific counting form.

Example

:TRIGger:CAN:ALEVel 0.16 /* Set the trigger level to 160mV */
:TRIGger:CAN:ALEVel? /* Query returns 1.600000 e-01*/

3.5.64 :TRIGger:SPI:SDA:SOURce

Syntax

:TRIGger:SPI:SDA:SOURce <source>
:TRIGger:SPI:SDA:SOURce?

Description

Set or query the channel source for SPI triggered data lines.

Parameter

Name	Type	Range	Default
<source>	Discrete	{CHANnel1|CHANnel2|CHANnel3|CHANnel4}	CHANnel2

Remarks

The clock source and data source cannot be set to the same signal source at the same time.

Return Format

Query returns CHANnel1，CHANnel2，CHANnel3，CHANnel4.

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Example

```
:TRIGger:SPI:SDA:SOURce CHANnel2          /* Set the channel source of the data
cable to CH2*/
:TRIGger:SPI:SDA:SOURce?                  /* Query returns CHANnel2*/
```

3.5.65 :TRIGger:SPI:SCL:SOURce

Syntax

```
:TRIGger:SPI:SCL:SOURce <source>
:TRIGger:SPI:SCL:SOURce?
```

Description

Set or query the channel source of the clock triggered by SPI.

Parameter

Name	Type	Range	Default
<source>	Discrete	{CHANnel1|CHANnel2|CHANnel3|CHANnel4}	CHANnel1

Remarks

The clock source and data source cannot be set to the same signal source at the same time.

Return Format

Query returns CHANnel1，CHANnel2，CHANnel3，CHANnel4.

Example

```
:TRIGger:SPI:SCL:SOURce CHANnel1          /* Set the channel source of the clock
line to CH1*/
:TRIGger:SPI:SCL:SOURce?                      /* Query returns CHANnel1*/
```

3.5.66 :TRIGger:SPI:SCK

Syntax

```
:TRIGger:SPI:SCK <slope>
:TRIGger:SPI:SCK?
```

Description

Set or query the Type of clock edge triggered by SPI.

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Parameter

Name	Type	Range	Default
<slope>	Discrete	{Rising|Falling}	POSitive

Remarks

- Rising: Sample the SDA data at the rising edge of the clock.
- Falling: Sample the SDA data at the falling edge of the clock.

Return Format

Query returns Rising, Falling.

Example

```
:TRIGger:SPI:SCK Falling        /* Set the clock edge type to Falling* /
:TRIGger:SPI:SCK?                    /* Query returns Falling */
```

3.5.67 :TRIGger:SPI:WIDTh

Syntax

```
:TRIGger:SPI:WIDTh <width>
:TRIGger:SPI:WIDTh?
```

Description

Set or query the data bit width of the data channel triggered by SPI.

Parameter

Name	Type	Range	Default
<width>	Integer	4-32	4

Remarks

N/A

Return Format

Query returns an integer.

Example

```
:TRIGger:SPI:WIDTh 4        /*Set the data bit width to 4*/
:TRIGger:SPI:WIDTh?         /* Query returns 4*/
```


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3.5.68 :TRIGger:SPI:DATA

Syntax

:TRIGger:SPI:DATA <data>
:TRIGger:SPI:DATA?

Description

Set or query the data value under SPI trigger.

Parameter

Name	Type	Range	Default
<data>	Discrete	0-（2^{32}-1）	-

Remarks

N/A

Return Format

The query returns an integer.

Example

:TRIGger:SPI:DATA 20 /* Set the data to 20 */
:TRIGger:SPI:DATA? /*Query returns 20*/

3.5.69 :TRIGger:SPI:MASK

Syntax

:TRIGger:SPI:MASK <mask>
:TRIGger:SPI:MASK?

Description

Set or query the masking value triggered by SPI.

Parameter

Name	Type	Range	Default
<data>	Discrete	0-（2^{32}-1）	-

Remarks

N/A

Return Format

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The query returns an integer.

Example

```
:TRIGger:SPI:MASK 20          /* Set the data to 20 */
:TRIGger:SPI:MASK?            /*Query returns 20*/
```

3.5.70 :TRIGger:SPI:OVERtime

Syntax

:TRIGger:SPI:OVERtime <value>
:TRIGger:SPI:OVERtime?

Description

Set or query the SPI-triggered timeout value.

Parameter

Name	Type	Range	Default
<data>	Discrete	Timeout value (in seconds)	-

Remarks

N/A

Return Format

Return the time value in scientific notation.

Example

```
:TRIGger:SPI:OVERtime 0.000003          /* Set the data to 3us */
:TRIGger:SPI:OVERtime?                  /*Query returns3.000000e-06*/
```

3.5.71 :TRIGger:SPI:ALEVel

Syntax

:TRIGger:SPI:ALEVel <level>
:TRIGger:SPI:ALEVel?

Description

Set or query the triggering level of the clock channel when SPI is triggered, with the unit consistent with the current amplitude unit.

Parameter

Name	Type	Range	Default

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Name	Type	Range	Default
<level>	Real	(-5 × VerticalScale - OFFSet)- (5 × VerticalScale - OFFSet)	0

Remarks

This setting command is only valid when the channel source of the clock line is an analog channel.

Return Format

Query to return trigger level in scientific counting form.

Example

```
:TRIGger:SPI:ALEVel 0.16        /* Set the trigger level to 160mV */
:TRIGger:SPI:ALEVel?            /* Query returns 1.600000 e-01*/
```

3.5.72 :TRIGger:SPI:BLEVel

Syntax

:TRIGger:SPI:BLEVel <level>
:TRIGger:SPI:BLEVel?

Description

Set or query the triggering level of the data channel when SPI is triggered, with the unit consistent with the current amplitude unit.

Parameter

Name	Type	Range	Default
<level>	Real	(-5 × VerticalScale - OFFSet)- (5 × VerticalScale - OFFSet)	0

Remarks

This setting command is only valid when the channel source of the data cable is an analog channel.

Return Format

Query to return trigger level in scientific counting form.

Example

```
:TRIGger:SPI:BLEVel 0.16        /* Set the trigger level to 160mV */
:TRIGger:SPI:BLEVel?            /* Query returns 1.600000 e-01*/
```

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3.5.73 :TRIGger:IIC:SDA:SOURce

Syntax

:TRIGger:IIC:SDA:SOURce <source>
:TRIGger:IIC:SDA:SOURce?

Description

Set or query the channel source of the I2C triggered data line.

Parameter

Name	Type	Range	Default
<source>	Discrete	{CHANnel1|CHANnel2|CHANnel3|CHANnel4}	CHANnel2

Remarks

The clock source and data source cannot be set to the same signal source at the same time.

Return Format

Query returns CHANnel1，CHANnel2，CHANnel3，CHANnel4.

Example

:TRIGger:IIC:SDA:SOURce CHANnel1 /* Set the data source to CH1*/
:TRIGger:IIC:SDA:SOURce? /* Query returns CHANnel1*/

3.5.74 :TRIGger:IIC:SCL:SOURce

Syntax

:TRIGger:IIC:SCL:SOURce <source>
:TRIGger:IIC:SCL:SOURce?

Description

Set or query the channel source of the clock triggered by I2C.

Parameter

Name	Type	Range	Default
<source>	Discrete	{CHANnel1|CHANnel2|CHANnel3|CHANnel4}	CHANnel1

Remarks

The clock source and data source cannot be set to the same signal source at the same

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time.

Return Format

Query returns CHANnel1，CHANnel2，CHANnel3，CHANnel4.

Example

```
:TRIGger:IIC:SCL:SOURce CHANnel2      /* Set the clock source to CH2*/
:TRIGger:IIC:SCL:SOURce?              /* Query returns CHANnel2*/
```

3.5.75 :TRIGger:IIC:CONditon

Syntax

```
:TRIGger:IIC:CONdition <condition>
:TRIGger:IIC:CONdition?
```

Description

Set or query the triggering conditions for IIC triggering.

Parameter

Name	Type	Range	Default
< condition >	Discrete	{ START|STOP|ACK_LOST|ADDR_NO_ACK|RESTART|READ_DATA }	START

Remarks

N/A.

Return Format

Query returns START| STOP| ACK_LOST| ADDR_NO_ACK| RESTART| READ_DATA.

Example

```
:TRIGger:IIC:CONdition START      /* Set the trigger condition to frame start */
:TRIGger:IIC:CONdition?           /* Query returns START */
```

3.5.76 :TRIGger:IIC:ADDer

Syntax

```
:TRIGger:IIC:ADDer <addr>
:TRIGger:IIC:ADDer?
```

Description

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Set or query the address triggered by IIC.

Parameter

Name	Type	Range	Default
<addr>	Integer	0-255	0

Remarks

Setting a value outside the legal range will return an error.

Return Format

Query to return the address value in decimal form.

Example

:TRIGger:IIC:ADDer 96 /* Set the address value to 0x60 */
:TRIGger:IIC:ADDer? /* Query returns 0x60 */

3.5.77 :TRIGger:IIC:DATA

Syntax

:TRIGger:IIC:DATA <index> <data>
:TRIGger:IIC:DATA? <index>

Description

Set or query the IIC trigger data value.

Parameter

Name	Type	Range	Default
<data>	Discrete	8 bit	-
<index>	Discrete	0-8	-

Remarks

N/A

Return Format

The query returns an integer.

Example

:TRIGger:IIC:DATA 2 10 /*Set the data with index 2 to 10*/
:TRIGger:IIC:DATA? 2 /* Query returns 10*/

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3.5.78 :TRIGger:IIC:VALId

Syntax

:TRIGger:IIC:VALId <index> <bool>
:TRIGger:IIC:VALId? <index>

Description

Set or query IIC trigger data shielding parameters.

Parameter

Name	Type	Range	Default
<bool>	Discrete	<0|1>	-
<index>	Discrete	0-3	-

Remarks

N/A

Return Format

The query returns an integer.

Example

:TRIGger:IIC:VALId 0 1 /*Set the data with index 0 as blocked*/
:TRIGger:IIC:VALId? 0 /* Query returns 1*/

3.5.79 :TRIGger:IIC:ALEVel

Syntax

:TRIGger:IIC:ALEVel <level>
:TRIGger:IIC:ALEVel?

Description

Set or query the trigger level of the IIC clock line when triggering, with the unit consistent with the current amplitude unit.

Parameter

Name	Type	Range	Default
<level>	Real	(-5 × VerticalScale - OFFSet)- (5 × VerticalScale - OFFSet)	0

Remarks

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This setting command is only valid when the channel source of the clock line is an analog channel.

Return Format

Query to return trigger level in scientific counting form.

Example

```
:TRIGger:IIC:ALEVel 0.16        /* Set the trigger level to 160mV */
:TRIGger:IIC:ALEVel?            /* Query returns 1.600000 e-01*/
```

3.5.80 :TRIGger:IIC:BLEVel

Syntax

:TRIGger:IIC:BLEVel <level>
:TRIGger:IIC:BLEVel?

Description

Set or query the triggering level of the data line when I2C is triggered, with the unit consistent with the current amplitude unit.

Parameter

Name	Type	Range	Default
<level>	Real	(-5 × VerticalScale - OFFSet)- (5 × VerticalScale - OFFSet)	0

Remarks

For VerticalScale, please refer to: CHANnel<n>:SCALe command. For OFF Set, please refer to: CHANnel<n>:OFFSet command. This setting command is only valid when the channel source of the data cable is an analog channel.

Return Format

Query to return trigger level in scientific counting form.

Example

```
:TRIGger:IIC:BLEVel 0.16        /* Set the trigger level to 160mV*/
:TRIGger:IIC:BLEVel?            /* Query returns 1.600000 e-01*/
```


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3.6 :Calibration commands

3.6.1 :CALibrate:STARt

Syntax

:CALibrate:STARt

Description

The oscilloscope begins to perform self calibration operations.

Parameter

N/A

Remarks

- The self calibration operation can quickly make the oscilloscope reach the optimal working state to obtain the most accurate measurement values.
- Before performing self calibration, please ensure that all channels are not connected to signals until the self calibration operation is completed.
- During the self calibration process, most of the button functions have been disabled.

Return Format

Returns the current calibration status.

Example

:CALibrate:STARt /* Oscilloscope calibration enabled */

3.6.2 :CALibrate:STATus?

Syntax

:CALibrate:STATus?

Description

Return the current calibration status.

Parameter

N/A

Remarks

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N/A

Return Format

N/A

Example

:CALibrate:STATus? /* Query calibration status */

3.6.3 :CALibrate:QUIT

Syntax

:CALibrate:QUIT

Description

Abandon self calibration operation at any time.

Parameter

N/A

Remarks

N/A

Return Format

N/A

Example

:CALibrate:QUIT /* Exit self calibration */

3.6.4 :CALibrate:GET:TEMPerture?

Syntax

:CALibrate:GET:TEMPerture?

Description

Abandon self calibration operation at any time.

Parameter

N/A

Remarks

N/A

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Return Format

The query returns a real number.

Example

:CALibrate:GET:TEMPerture? /* Query return value */

3.6.5 :CALibrate:GET:CONDition?

Syntax

:CALibrate:GET:CONDition?

Description

Query the stage status of the self-calibration process.

Parameter

N/A

Remarks

N/A

Return Format

The query returns an integer.

Example

:CALibrate:GET:CONDition? /* Query return value */

3.7 :MATH Commands

The MATH command is used to set various calculation functions for waveform between channels.

3.7.1 :MATH:DISPlay

Syntax

:MATH:DISPlay <bool>
:MATH:DISPlay?

Description

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Turn on or off the mathematical operation function or query the status of the mathematical operation function.

Parameter

Name	Type	Range	Default
<bool>	Bool	{{1|ON}|{0|OFF}}	0|OFF

Remarks

N/A

Return Format

Query returns 1 or 0.

Example

```
:MATH:DISPlay ON        /* Open mathematical operation function */
:MATH:DISPlay?          /* Query returns 1*/
```

3.7.2 :MATH:OPERator

Syntax

```
:MATH:OPERator <opt>
:MATH:OPERator?
```

Description

Set or query operators for mathematical operations.

Parameter

Name	Type	Range	Default
<opt>	Discrete	{ADD|SUBTract|MULTiply|DIVision|FFT}	ADD

Remarks

When REF is selected as the Parameter for the: MATH: SOURce1 and/or: MATH: SOURce2 commands，this command is used to set the operator for the outer layer operation of the combination operation. The range of<opt>is {ADD|SUBtract|Multiply|DIVision|FFT}.

Return Format

Query returns ADD，SUBTract，MULTiply，DIVision，FFT.

Example

```
:MATH:OPERator ADD      /* Set the mathematical operator to sum */
:MATH:OPERator?         /* Query returns ADD */
```


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3.7.3 :MATH:SOURce1

Syntax

:MATH:SOURce1 <source>
:MATH:SOURce1?

Description

Set or query the source A for algebraic operations.

Parameter

Name	Type	Range	Default
<source>	Discrete	{CHANnel1|CHANnel2|CHANnel3|CHANnel4}	CHANnel1

Remarks

For algebraic operations, this command is used to set the source A.

Return Format

Query returns CHANnel1，CHANnel2，CHANnel3，CHANnel4.

Example

:MATH:SOURce1 CHANnel2 /* Set the source A of algebraic operations to CH2*/
:MATH:SOURce1? /* Query returns CHANnel2*/

3.7.4 :MATH:SOURce2

Syntax

:MATH:SOURce2 <source>
:MATH:SOURce2?

Description

Set or query the source B for the outer layer operation of algebraic/combinatorial operations.

Parameter

Name	Type	Range	Default
<source>	Discrete	{CHANnel1|CHANnel2|CHANnel3|CHANnel4}	CHANnel1

Remarks

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This command is only applicable to algebraic operations (with two sources) and composite operations where the outer operation is an algebraic operation. For composite operations where the outer operation is an algebraic operation, this command is used to set the source B of the outer operation.

Return Format

Query returns CHANnel1，CHANnel2，CHANnel3，CHANnel4.

Example

```
:MATH:SOURce2 CHANnel2      /*Set the source B of algebraic operations to CH2*/
:MATH:SOURce2?                    /* Query returns CHANnel2*/
```

3.7.5 :MATH:SCALe

Syntax

```
:MATH:SCALe <scale>
:MATH:SCALe?
```

Description

Set or query the vertical range of the operation result，with units related to the currently selected operator and the unit selected by the source.

Parameter

Name	Type	Range	Default
<scale>	Real	in steps of 1-2 to 5	1.00V

Remarks

The adjustable range of the vertical gear is related to the currently selected operator and the gear of the signal channel. For integral and differential operations，it is also related to the current horizontal time base.

Return Format

Retrieve the vertical range of the current calculation result in scientific counting form.

Example

```
:MATH:SCALe 2        /* Set the vertical gear to 2V*/
:MATH:SCALe?         /* Query returns 2.000000 e+00*/
```

3.7.6 :MATH:OFFSet

Syntax

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:MATH:OFFSet <offs>
:MATH:OFFSet?

Description

Set or query the vertical offset of the operation result, with units related to the currently selected operator and the unit selected by the source.

Parameter

Name	Type	Range	Default
<offs>	Real	It is related to the vertical gear of the calculation result (-1000 x MathVerticalScale) to (1000 x MathVerticalScale), with a step of MathVerticalScale/50	0.00V

Remarks

MathVerticalScale is the vertical gear of the calculation result, which can be set by the: MATH:SCALe command.

Return Format

Query returns the vertical offset of the current operation result in scientific counting form.

Example

```
:MATH:OFFSet 2        /* Set the vertical offset to 2V */
:MATH:OFFSet?         /* Query returns 2.000000 e+00*/
```

3.7.7 :MATH:FFT:SOURce

Syntax

:MATH:FFT:SOURce <src>
:MATH:FFT:SOURce?

Description

Set or query the source of FFT operations/filters.

Parameter

Name	Type	Range	Default
<src>	Discrete	{CHANnel1|CHANnel2|CHANnel3|CHANnel4}	CHANnel1

Remarks

N/A

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Return Format

Query returns CHANnel1，CHANnel2，CHANnel3，CHANnel4.

Example

```
:MATH:FFT:SOURce CHANnel1        /* Set the source of FFT operation to CH1*/
:MATH:FFT:SOURce?                /* Query returns CHANnel1*/
```

3.7.8 :MATH:FFT:WINDow

Syntax

```
:MATH:FFT:WINDow <window>
:MATH:FFT:WINDow?
```

Description

Set or query window functions for FFT operations.

Parameter

Name	Type	Range	Default
< window >	Discrete	{RECTangle|HANNing|HAMMing|BLACkman|TRIangle| |FLATtop}	RECTangle

Remarks

The use of window functions can effectively reduce spectral leakage effects.
Each window function is suitable for measuring different waveforms and needs to be selected based on the measured waveform and its characteristics.

Return Format

Query returns RECTangle，HANNing，HAMMing，BLACkman，TRIangle，FLATtop.

Example

```
:MATH:FFT:WINDow BLACkman        /* Set the window function for FFT operation to
Blackman */
:MATH:FFT:WINDow?                    /* Query returns BLAC */
```

3.7.9 :MATH:FFT:UNIT

Syntax

```
:MATH:FFT:UNIT <unit>
:MATH:FFT:UNIT?
```


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Description

Set or query the vertical unit of FFT operation results.

Parameter

Name	Type	Range	Default
<unit>	Discrete	{VRMS|DB}	VRMS

Remarks

N/A

Return Format

Query returns VRMS or DB.

Example

```
:MATH:FFT:UNIT VRMS      /* Set the vertical unit of FFT operation result to VRMS */
:MATH:FFT:UNIT?          /* Query returns VRMS */
```

3.7.10 :MATH:FFT:HSCale

Syntax

```
:MATH:FFT:HSCale <hsc>
:MATH:FFT:HSCale?
```

Description

Set or query the frequency range of FFT operation results，with a default unit of Hz.

Parameter

Name	Type	Range	Default
<hsc>	Real	{78120|781250|390620|156250}	781.25KHz

Remarks

N/A.

Return Format

Query returns the current frequency range in scientific counting form.

Example

```
:MATH:FFT:HSCale 781250      /* Set the frequency range of FFT operation results to
781.25kHz */
:MATH:FFT:HSCale?            /*Query returned 7.8120000e+05*/
```

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3.7.11 :MATH:FFT:HCENter

Syntax

:MATH:FFT:HCENter <cent>
:MATH:FFT:HCENter?

Description

Set or query the center frequency of the FFT operation result, which corresponds to the horizontal center of the screen. The default unit is Hz.

Parameter

Name	Type	Range	Default
<cent>	Real	Reference Marks	125MHz

Remarks

- When the FFT mode is TRACe (trajectory), the range of is 0 to (0.4 x FFT sampling rate); Among them, The FFT sampling rate is the screen sampling rate (i.e. 100/horizontal time base). When the FFT mode is MEMory (memory), the range of is 0 to (0.5 x FFT sampling rate); Among them, The FFT sampling rate is the memory sampling rate (ACQuire: SRATe?).
- The set step is the horizontal gear/50 of the current FFT calculation result.

Return Format

Query returns the current center frequency in scientific counting form.

Example

:MATH:FFT:HCENter 10000000 /* Set the center frequency of the FFT operation result to 10MHz */
:MATH:FFT:HCENter? /* Query returns 1.000000 e+07*/

3.8 Waveform Data Command Subsystem

3.8.1 :WAVeform:DATA:ALL?

Syntax

:WAVeform:DATA:ALL?

Description

Read waveform data.

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Parameter

N/A

Remarks

The first time this command is issued, the data[x] is parsed as follows:
data[0]-data[1] (2-digit number): #9
Data[2]-data[10] (9-digit number): Represents the byte length of the current data packet
Data[11]-data[19] (9-digit number): Represents the total byte length of the data volume
Data[20]-data[28] (9-digit number): Represents the byte length of the uploaded data
Data[29] (1-digit number): Represents the current running status
Data[30] (1-digit number): Represents the trigger status
Data[75]-data[78] (4-digit number): Represents the enable status of channels [1-4]
Data[79]-data[87] (9-digit number): Represents the sampling rate
Data[88]-data[93] (6-digit number): Represents the sampling multiple
Data[94]-data[102] (9-digit number): Represents the display trigger time of the current frame
Data[103]-data[111] (9-digit number): Represents the acquisition start time point of the data starting point of the current frame display
Data[112]-data[127] (16-digit number): Reserved bits
When this command is issued again before the current data is read completely, the waveform data data[x] is parsed as follows:
data[0]-data[1] (2-digit number): #9
Data[2]-data[10] (9-digit number): Represents the byte length of the current data packet
Data[11]-data[19] (9-digit number): Represents the total byte length of the data volume
Data[20]-data[28] (9-digit number): Represents the byte length of the uploaded data
Data[29]-data[x]: Represents the current data

Return Format

N/A.

Example

:WAVeform:DATA:ALL? /*Read waveform data*/

3.9 :DISPlay Commands

The DISPlay command can set the waveform display type, afterglow time, waveform brightness, screen display grid type, and grid brightness.

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3.9.1 :DISPlay:TYPE

Syntax

:DISPlay:TYPE <type>
:DISPlay:TYPE?

Description

Set or query the display method of waveforms on the screen.

Parameter

Name	Type	Range	Default
<type>	Discrete	{VECTors|DOTS}	VECTors

Remarks

- VECTors: Displayed by connecting lines between sampling points. This mode provides the most realistic waveform in most cases. It is convenient to view the steep edges of waveforms (such as square waves).
- DOTS: Directly display sampling points. You can visually see each sampling point and use the cursor to measure the X and Y values of that point.

Return Format

The query returns VECTors, DOTS.

Example

```
:DISPlay:TYPE DOTS        /* Select display method */
:DISPlay:TYPE?            /* Query returns DOTS */
```

3.9.2 :DISPlay:WBRightness

Syntax

:DISPlay:WBRightness <value>
:DISPlay:WBRightness?

Description

Set or query the brightness of waveform display on the screen.

Parameter

Name	Type	Range	Default
<value>	Integer	0-100	100

Remarks

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N/A

Return Format

Query returns an integer between 0 and 100.

Example

```
:DISPlay:WBRightness 50          /* Set waveform brightness to 50%*/
:DISPlay:WBRightness?       /* Query returns 50*/
```

3.9.3 :DISPlay:GRID

Syntax

```
:DISPlay:GRID <grid>
:DISPlay:GRID?
```

Description

Set or query the grid type displayed on the screen.

Parameter

Name	Type	Range	Default
<grid>	Discrete	{DOTS|DOTTed|REAL}	DOTTed

Remarks

- DOTTED: Grid type displayed as dots.
- REAL: Grid type displayed as lines.
- DOTS: Turn off the background grid.

Return Format

Query returns DOTS，DOTTed，REAL.

Example

```
:DISPlay:GRID DOTTed       /* Set grid type to DOTTED */
:DISPlay:GRID?             /* Query Return DOTTed */
```

3.9.4 :DISPlay:GBRightness

Syntax

```
:DISPlay:GBRightness <brightness>
:DISPlay:GBRightness?
```

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Description

Set or query the brightness of the screen grid.

Parameter

Name	Type	Range	Default
<brightness>	Integer	0-100	0

Remarks

N/A

Return Format

Query returns an integer between 0 and 100.

Example

```
:DISPlay:GBRightness 60        /* Set the screen grid brightness to 60%*/
:DISPlay:GBRightness?          /* Query returns 60*/
```

3.10 :CURSor Commands

The CURSOR command is used to measure the X-axis value (such as time) and Y-axis value (such as voltage) of the screen waveform.

3.10.1 :CURSor:MODE

Syntax

```
:CURSor:MODE <mode>
:CURSor:MODE?
```

Description

Set or query the mode of cursor measurement.

Parameter

Name	Type	Range	Default
<mode>	Discrete	{OFF|MANual|TRACk}	OFF

Remarks

- OFF: Turn off the cursor measurement function.
- MANual: Turn on the manual cursor measurement mode.
- TRACk: Turn on the cursor tracking measurement mode.

Return Format

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Query returns OFF，MANual，TRACK.

Example

```
:CURSor:MODE MANual          /* Select manual cursor measurement mode */
:CURSor:MODE?                /* Query returns MANual */
```

3.10.2 :CURSor:MANual:TYPE

Syntax

:CURSor:MANual:TYPE <type>
:CURSor:MANual:TYPE?

Description

Set or query the cursor type for manual cursor measurement.

Parameter

Name	Type	Range	Default
<type>	Discrete	{X|Y|XY}	X

Remarks

- X: Select the X-shaped cursor. The X-shaped cursor consists of a vertical solid line (cursor A) and a vertical dashed line (cursor B), commonly used to measure time parameters.
- Y: Select the Y-shaped cursor. The Y-shaped cursor consists of a horizontal solid line (cursor A) and a horizontal dashed line (cursor B), commonly used to measure voltage parameters.
- XY: Select the XY-type cursor.

Return Format

Query returns X ,Y or XY.

Example

```
:CURSor:MANual:TYPE X        /* Select X-shaped cursor */
:CURSor:MANual:TYPE?         /* Query returns X */
```

3.10.3 :CURSor:MANual:SOURce

Syntax

:CURSor:MANual:SOURce <source>
:CURSor:MANual:SOURce?

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Description

Set or query the channel source for manual cursor measurement.

Parameter

Name	Type	Range	Default
<source>	Discrete	{CHANnel1|CHANnel2|CHANnel3|CHANnel4|MATH}	CHANnel1

Remarks

Only the currently open channel can be selected as the channel source.

Return Format

Query returns CHANnel1，CHANnel2，CHANnel3，CHANnel4，MATH.

Example

```
:CURSor:MANual:SOURce CHANnel2        /* Set channel source to CH2*/
:CURSor:MANual:SOURce?                /* Query returns CHANnel2*/
```

3.10.4 :CURSor:MANual:AX

Syntax

```
:CURSor:MANual:AX <x>
:CURSor:MANual:AX?
```

Description

Set or query the horizontal position of cursor A during manual cursor measurement.

Parameter

Name	Type	Range	Default
<x>	Integer	0-770	600

Remarks

The cursor's horizontal and vertical positions are defined by the pixel coordinates of the screen.

Return Format

Query returns an integer between 0 and 770.

Example

```
:CURSor:MANual:AX 200        /* Set the horizontal position of cursor A to 200*/
:CURSor:MANual:AX?           /* Query returns 200*/
```


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3.10.5 :CURSor:MANual:AXValue?

Syntax

:CURSor:MANual:AXValue?

Description

When querying manual cursor measurements，the X value at cursor A. The unit is determined by the currently selected horizontal unit.

Parameter

N/A

Remarks

N/A

Return Format

Query returns the X value at the current cursor A in scientific counting form.

Example

:CURSor:MANual:AXValue? /* Query returned -4.000000 e-06*/

3.10.6 :CURSor:MANual:BX

Syntax

:CURSor:MANual:BX <x>
:CURSor:MANual:BX?

Description

Set or query the horizontal position of cursor B during manual cursor measurement.

Parameter

Name	Type	Range	Default
<x>	Integer	0-770	400

Remarks

The cursor's horizontal and vertical positions are defined by the pixel coordinates of the screen.

Return Format

Query returns an integer between 0 and 770.

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Example

```
:CURSor:MANual:BX 200          /* Set the horizontal position of cursor B to 200*/
:CURSor:MANual:BX?             /* Query returns 200*/
```

3.10.7 :CURSor:MANual:BXValue?

Syntax

:CURSor:MANual:BXValue?

Description

When querying manual cursor measurements, the X value at cursor B. The unit is determined by the currently selected horizontal unit.

Parameter

N/A

Remarks

N/A

Return Format

Query returns the X value at the current cursor B in scientific counting form.

Example

```
:CURSor:MANual:BXValue?        /* Query returns 4.000000e-06*/
```

3.10.8 :CURSor:MANual:AY

Syntax

:CURSor:MANual:AY <y>
:CURSor:MANual:AY?

Description

Set or query the vertical position of cursor A during manual cursor measurement.

Parameter

Name	Type	Range	Default
<y>	Integer	0-400	179

Remarks

The cursor's horizontal and vertical positions are defined by the pixel coordinates of the

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screen.

Return Format

The query returns an integer between 0 and 400.

Example

```
:CURSor:MANual:AY 200          /* Set the vertical position of cursor A to 200*/
:CURSor:MANual:AY?             /* Query returns 200*/
```

3.10.9 :CURSor:MANual:AYValue?

Syntax

:CURSor:MANual:AYValue?

Description

When querying manual cursor measurements, the Y value at cursor A. The unit is determined by the currently selected vertical unit.

Parameter

N/A

Remarks

N/A

Return Format

Query to return the Y value at Cursor A in scientific notation.

Example

```
:CURSor:MANual:AYValue?        /* Query returns 2.000000 e+00*/
```

3.10.10 :CURSor:MANual:BY

Syntax

:CURSor:MANual:BY <y>
:CURSor:MANual:BY?

Description

When setting or querying manual cursor measurements, the vertical position of cursor B.

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Parameter

Name	Type	Range	Default
<y>	Integer	0-400	299

Remarks

The cursor's horizontal and vertical positions are defined by the pixel coordinates of the screen.

Return Format

The query returns an integer between 0 and 400.

Example

```
:CURSor:MANual:BY 200        /* Set the vertical position of cursor B to 200*/
:CURSor:MANual:BY?           /* Query returns 200*/
```

3.10.11 :CURSor:MANual:BYValue?

Syntax

:CURSor:MANual:BYValue?

Description

When querying manual cursor measurements, the Y value at cursor B. The unit is determined by the currently selected vertical unit.

Parameter

N/A

Remarks

N/A

Return Format

Query the Y value at the current cursor position B, which is returned in scientific notation.

Example

```
:CURSor:MANual:BYValue?      /* Query returned -2.000000 e+00*/
```

3.10.12 :CURSor:TRACk:SOURceA

Syntax

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:CURSor:TRACk:SOURceA <source>
:CURSor:TRACk:SOURceA?

Description

When setting up or querying cursor tracking measurements, the channel source for Cursor A measurement.

Parameter

Name	Type	Range	Default
<source>	Discrete	{CHANnel1|CHANnel2|CHANnel3|CHANnel4|MATH}	CHANnel1

Remarks

Only the currently open channel can be selected as the channel source.

Return Format

The query returns CHANnel1，CHANnel2，CHANnel3，CHANnel4，MATH.

Example

:CURSor:TRACk:SOURceA CHANnel1 /* Set channel source CH1*/
:CURSor:TRACk:SOURceA? /* Query returns CHANnel1*/

3.10.13 :CURSor:TRACk:SOURceB

Syntax

:CURSor:TRACk:SOURceB <source>
:CURSor:TRACk:SOURceB?

Description

When setting up or querying cursor tracking measurements, the channel source for Cursor B measurement.

Parameter

Name	Type	Range	Default
<source>	Discrete	{CHANnel1|CHANnel2|CHANnel3|CHANnel4|MATH}	CHANnel1

Remarks

Only the currently open channel can be selected as the channel source.

Return Format

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The query returns CHANnel1，CHANnel2，CHANnel3，CHANnel4，MATH.

Example

```
:CURSor:TRACk:SOURceB CHANnel1          /* Set channel source CH1*/
:CURSor:TRACk:SOURceB?                  /* Query returns CHANnel1*/
```

3.10.14 :CURSor:TRACk:AX

Syntax

```
:CURSor:TRACk:AX <x>
:CURSor:TRACk:AX?
```

Description

Set or query the horizontal position of cursor A when tracking measurements.

Parameter

Name	Type	Range	Default
<x>	Integer	0-770	400

Remarks

The cursor's horizontal and vertical positions are defined by the pixel coordinates of the screen.

Return Format

Query returns an integer between 0 and 770.

Example

```
:CURSor:TRACk:AX 200          /* Set the horizontal position of cursor A to 200*/
:CURSor:TRACk:AX?             /* Query returns 200*/
```

3.10.15 :CURSor:TRACk:AXValue?

Syntax

```
:CURSor:TRACK:AXValue?
```

Description

When querying cursor tracking measurement, get the X value at Cursor A. The default unit is s.

Parameter

N/A

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Remarks

N/A

Return Format

Query to return the X value at cursor A in scientific notation.

Example

:CURSor:TRACK:AXValue? /* Query returned -4.000000e-06*/

3.10.16 :CURSor:TRACk:AY

Syntax

:CURSor:TRACk:AY <y>
:CURSor:TRACk:AY?

Description

When querying cursor tracking measurement, get the vertical position of cursor A.

Parameter

Name	Type	Range	Default
<y>	Integer	0-400	179

Remarks

The cursor's horizontal and vertical positions are defined by the pixel coordinates of the screen.

Return Format

Query returns an integer between 0 and 400.

Example

:CURSor:TRACk:AY 200 /*Set the vertical position of cursor A to 200 */
:CURSor:TRACk:AY? /* Query returns 200*/

3.10.17 :CURSor:TRACk:AYValue?

Syntax

:CURSor:TRACK:AYValue?

Description

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When querying manual cursor measurement, get the Y value at cursor A. The unit is determined by the currently selected vertical unit.

Parameter

N/A

Remarks

N/A

Return Format

Query the Y value at the current cursor position A, which is returned in scientific notation.

Example

```
:CURSor:TRACK:AYValue?          /* Query returned2.000000e+00*/
```

3.10.18 :CURSor:TRACk:BX

Syntax

```
:CURSor:TRACk:BX <x>
:CURSor:TRACk:BX?
```

Description

Set or query the horizontal position of cursor B when tracking cursor measurements.

Parameter

Name	Type	Range	Default
<x>	Integer	0-770	600

Remarks

The cursor's horizontal and vertical positions are defined by the pixel coordinates of the screen.

Return Format

The query returns an integer between 0 and 770.

Example

```
:CURSor:TRACk:BX 200          /* Set the horizontal position of cursor B to 200*/
:CURSor:TRACk:BX?             /* Query returns 200*/
```


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3.10.19 :CURSor:TRACk:BXValue?

Syntax

:CURSor:TRACK:BXValue?

Description

When querying cursor tracking measurement, get the X value at Cursor B. The default unit is s.

Parameter

N/A

Remarks

N/A

Return Format

Query to return the X value at cursor B in scientific notation.

Example

:CURSor:TRACK:BXValue? /* Query returned 4.000000e-06*/

3.10.20 :CURSor:TRACk:BY

Syntax

:CURSor:TRACk:BY <y>
:CURSor:TRACk:BY?

Description

When querying cursor tracking measurement, get the vertical position of cursor B.

Parameter

Name	Type	Range	Default
<y>	Integer	0-400	299

Remarks

The cursor's horizontal and vertical positions are defined by the pixel coordinates of the screen.

Return Format

Query returns an integer between 0 and 400.

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Example

```
:CURSor:TRACk:BY 200          /*Set the vertical position of cursor B to 200 */
:CURSor:TRACk:BY?             /* Query returns 200*/
```

3.10.21 :CURSor:TRACk:BYValue?

Syntax

:CURSor:TRACK:BYValue?

Description

When querying manual cursor measurement, get the Y value at cursor B. The unit is determined by the currently selected vertical unit.

Parameter

N/A

Remarks

N/A

Return Format

Query the Y value at the current cursor position B, which is returned in scientific notation.

Example

```
:CURSor:TRACK:BYValue?        /* Query returned2.000000e+00*/
```

3.11 :MEASure Commands

3.11.1 :MEASure:ENABle

Syntax

:MEASure:ENABle <bool>
:MEASure:ENABle?

Description

Set or query the source of information for the current measurement parameter.

Parameter

Name	Type	Range	Default

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Name	Type	Range	Default
<bool>	bool	{{1|ON}|{0|OFF}}	0

Remarks

N/A

Return Format

The query returns ON or OFF.

Example

:MEASure:ENABle ON /*Open measurement*/
:MEASure:ENABle? /* Query returns ON*/

3.11.2 :MEASure:SOURce

Syntax

:MEASure:SOURce <source>
:MEASure:SOURce?

Description

Set or query the source of information for the current measurement parameter.

Parameter

Name	Type	Range	Default
<sour>	Discrete	{CHANnel1|CHANnel2|CHANnel3|CHANnel4}	CHANnel1

Remarks

Only the currently open channels are optional.

Return Format

Query and return CHANnel1，CHANnel2，CHANnel3，CHANnel4.

Example

:MEASure:SOURce CHANnel2 /* Set the Parameter measurement source to CH2*/
:MEASure:SOURce? /* Query returns CHANnel2*/

3.11.3 :MEASure:ADISplay

Syntax

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:MEASure:ADISplay <bool>
:MEASure:ADISplay?

Description

Turn all measurements on or off, or query the current status of all measurements.

Parameter

Name	Type	Range	Default
<sour>	Discrete	{{1|ON}|{0|OFF}}	0

Remarks

N/A.

Return Format

Query and return ON，OFF.

Example

:MEASure:ADISplay ON /*Open all measurements*/
:MEASure:ADISplay? /* Query returns ON*/

3.11.4 :MEASure:CHANnel<n>:ITEM

Syntax

:MEASure:CHANnel<n>:ITEM <type>
:MEASure:CHANnel<n>:ITEM?

Description

Query the measurement results of the specified parameters.

Parameter

Name	Type	Range	Default
<item>	Discrete	{|FREQuency|PERiod|VAVG|VMAX|VMIN|VPP|VTOP|VMID|VBASE|VAMP|RMS|OVERshoot|PRESHoot|PERIodRMS|PERIodMEAN|RTIMe|FTIMe|PPULess|NPULses|PDUTy|NDUTy|FRR|FFF|FOVshoot|RPREshoot|BNIDth|FRF|FFR|LRR|LRF|LFR|LFF	——

Remarks

N/A.

Return Format

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Query returns the current measurement value in scientific counting form.

Example

:MEASure:CHANnel1:ITEM VPP /*Open the VPP measurement for channel1*/
:MEASure:CHANnel1:ITEM? VPP /* Query returned 8.888889e-03*/

3.11.5 :MEASure:GATE:ENABle

Syntax

:MEASure:GATE:ENABle <bool>
:MEASure:GATE:ENABle?

Description

Set or query the current door lock status.

Parameter

Name	Type	Range	Default
<bool>	bool	{{1|ON}|{0|OFF}}	0

Remarks

N/A.

Return Format

The query returns ON or OFF.

Example

:MEASure:GATE:ENABle ON /*Open measurement */
:MEASure:GATE:ENABle? /* Query returned ON*/

3.11.6 :MEASure:GATE:AY

Syntax

:MEASure:GATE:AY <value>
:MEASure:GATE:AY?

Description

Set or query the value of cursor A (horizontal position).

Parameter

Name	Type	Range	Default

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Name	Type	Range	Default
<value>	real	0-400	179

Remarks

N/A.

Return Format

The query returns an integer between 0 and 400.

Example

```
:MEASure:GATE:AY 200      /* Set the value of cursor A to 200*/
:MEASure:GATE:AY?         /* Query returned 200*/
```

3.11.7 :MEASure:GATE:BY

Syntax

```
:MEASure:GATE:BY <value>
:MEASure:GATE:BY?
```

Description

Set or query the value of cursor B (horizontal position).

Parameter

Name	Type	Range	Default
<value>	real	0-400	179

Remarks

N/A.

Return Format

The query returns an integer between 0 and 400.

Example

```
:MEASure:GATE:BY 200      /* Set the value of cursor B to 200*/
:MEASure:GATE:BY?         /* Query returned 200*/
```

3.12 :MASK Commands

The MASK command is used to set and query the relevant parameters in pass/fail tests.

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3.12.1 :MASK:ENABle

Syntax

:MASK:ENABle <bool>
:MASK:ENABle?

Description

Turn on or off the pass/fail testing function, or query the status of the pass/fail testing function.

Parameter

Name	Type	Range	Default
<bool>	Bool	{{1|ON }|{0|OFF}}	0|OFF

Remarks

The pass/fail test function is invalid in the following situations: horizontal time base mode in XY or Roll mode, slow scan mode (i.e. horizontal time base in YT mode, horizontal time base in 200ms/div or slower), and waveform recording.

Return Format

Query returns ON or OFF.

Example

:MASK:ENABle ON /* Enable pass/fail testing function */
:MASK:ENABle? /* Query returns ON*/

3.12.2 :MASK:SOURce

Syntax

:MASK:SOURce <source>
:MASK:SOURce?

Description

Set or query the measurement source for pass/fail tests.

Parameter

Name	Type	Range	Default
<source>	Discrete	{CHANnel1|CHANnel2|CHANnel3|CHANnel4}	CHANnel1

Remarks

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This command can only set open channels and can send the: CHANnel<n>: DISPlay command to open the desired channel.

Return Format

Query returns CHANnel1，CHANnel2，CHANnel3，CHANnel4.

Example

:MASK:SOURce CHANnel2 /* Set the measurement source for pass/fail tests to CH2*/
:MASK:SOURce? /* Query returns CHANnel2*/

3.12.3 :MASK:MDISplay

Syntax

:MASK:MDISplay <bool>
:MASK:MDISplay?

Description

When the pass/fail test is opened，turn on or off statistical information，or query the status of statistical information.

Parameter

Name	Type	Range	Default
<bool>	Bool	{{1|ON}|{0|OFF}}	0|OFF

Remarks

- Before executing this command，it is necessary to send the MASK: ENABLE command to enable the pass/fail test function.
- When the statistical information is opened，the test results shown in the following figure will be displayed in the upper right corner of the screen.
- Can send: MASK: PASSed?, : MASK:FAILed? And: MASK: TOTAL? Command query test results.

Return Format

Query returns ON or OFF.

Example

:MASK:MDISplay ON /* Open Statistics */
:MASK:MDISplay? /* Query returns ON*/

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3.12.4 :MASK:OUTPut

Syntax

:MASK:OUTPut <bool>
:MASK:OUTPut?

Description

Turn on or off the sound prompt when testing fails, or check the status of the sound prompt.

Parameter

Name	Type	Range	Default
<bool>	Bool	{{1|ON}|{0|OFF}}	0|OFF

Remarks

- Off: When a failed waveform is detected, there is a display and output, but the buzzer does not sound an alarm, and the buzzer is turned off.
- Open: When a failed waveform is detected, there is a display and output, and the buzzer emits an audible alarm (independent of the sound switch status), and the buzzer opens.

Return Format

Query returns ON and OFF.

Example

```
:MASK:OUTPut ON          /* Turn on sound prompt (buzzer on)*/
:MASK:OUTPut?            /* Query returns ON*/
```

3.12.5 :MASK:SOOutput

Syntax

:MASK:SOOutput <bool>
:MASK:SOOutput?

Description

Turn on or off stop output, or query the status of stop output.

Parameter

Name	Type	Range	Default

Name	Type	Range	Default
<bool>	Bool	{{1|ON}|{0|OFF}}	0|OFF

Remarks

- Open: When a failed waveform is detected, the oscilloscope will stop testing and enter the "STOP" state. At this point, the screen remains displaying the measurement results (if the display is turned on), and the rear panel [Trigger Out] (if enabled) only outputs one pulse.
- Off: Even if a failed waveform is detected, the oscilloscope will continue to test, and the test results on the screen are constantly updated. The Trigger Out on the rear panel will output pulses every time a failed waveform is detected.

Return Format

Query returns ON and OFF.

Example

```
:MASK:SOOutput ON        /* Turn on stop output */
:MASK:SOOutput?          /* Query returns ON*/
```

3.12.6 :MASK:X

Syntax

:MASK:X <value>
:MASK:X?

Description

Set or query the horizontal adjustment parameters in the pass/fail test rules, with a default unit of div.

Parameter

Name	Type	Range	Default
<value>	Real	0.02 to 4, with a step of 0.01 within the range of values	0.24

Remarks

N/A

Return Format

Query returns the current horizontal adjustment parameter in scientific counting form.

Example

```
:MASK:X 0.28        /* Set the horizontal adjustment parameter to 0.28div */
```


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:MASK:X? /* Query returned 2.800000 e-01*/

3.12.7 :MASK:Y

Syntax

:MASK:Y <value>
:MASK:Y?

Description

Set or query the vertical adjustment parameters in the pass/fail test rules, with a default unit of div.

Parameter

Name	Type	Range	Default
<value>	Real	0.04 to 5.12, with a step of 0.01 within the range of values	0.04

Remarks

N/A

Return Format

Query returns the current vertical adjustment parameter in scientific counting form.

Example

:MASK:Y 0.36 /* Set the vertical adjustment parameter to 0.36div */
:MASK:Y? /* Query returned 3.600000 e-01*/

3.12.8 :MASK:CREate

Syntax

:MASK:CREate

Description

Create a pass/fail test rule by adjusting the parameters horizontally and vertically based on the current settings.

Parameter

N/A

Remarks

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This command is only valid when the pass/fail test function is turned on (: MASK: ENABLE) and not running (: MASK: OPERate).

Return Format

N/A

Example

:MASK:CREate /* Create pass/fail test rules*/

3.13 :SYSTem Commands

3.13.1 :SYSTem:GAM?

Syntax

:SYSTem:GAM?

Description

Query the number of grids in the horizontal direction of the instrument screen.

Parameter

N/A

Remarks

The query returns a fixed 12.

Return Format

N/A

Example

:SYSTem:GAM? /* The query returns a grid count of 12*/

3.13.2 :SYSTem:RAM?

Syntax

:SYSTem:RAM?

Description

Query the number of analog channels of the instrument.

Parameter

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N/A

Remarks

The query returns a fixed 4.

Return Format

N/A

Example

:SYSTem:RAM? /* The query returns 4 channels */

3.14 [:SOURce] Commands

The [:SOURce[<n>]] command is used to set parameters related to the built-in signal source. When <n> is 1, it refers to the corresponding built-in signal source channel. If <n> is omitted or :SOURce[<n>] is used, the default operation is performed on signal source 1. This setting is only supported on machines with signal source functionality.

3.14.1 :DDS:SWITch

Syntax

:DDS:SWITch <bool>
:DDS:SWITch?

Description

Set or query the signal source status.

Parameter

Name	Type	Range	Default
<bool>	Bool	{{1|ON}|{0|OFF}}	ON

Remarks

N/A

Return Format

Query returns OFF or ON.

Example

:DDS:SWITch ON /*Turn on keyboard lock function* /
:DDS:SWITch? /* Query returns ON */

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3.14.2 :DDS:TYPE

Syntax

:DDS:TYPE <type>
:DDS:TYPE?

Description

Set or query the waveform type of the signal source.

Parameter

Name	Type	Range	Default
<type>	Real	{SINE|SQUAre|RAMP|EXP|NOISe|DC|ARB1|ARB2|ARB3|ARB4}	SINE

Remarks

N/A

Return Format

Query returns SINE,SQUAre,RAMP,EXP,NOISe,DC,ARB1,ARB2,ARB3,ARB4.

Example

```
:DDS:TYPE SINE      /*Set the signal source waveform type to sine wave */
:DDS:TYPE?          /* Query returns SINE*/
```

3.14.3 :DDS:FREQ

Syntax

:DDS:FREQ <freq>
:DDS:FREQ?

Description

Set or query the frequency of the signal source signal.

Parameter

Name	Type	Range	Default
<freq>	Real	0Hz-25MHz	1kHz

Remarks

N/A

Return Format

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Query to return frequency in scientific notation.

Example

```
:DDS:FREQ 1000          /* Set the output frequency of source 1 to 1kHz */
:DDS:FREQ?              /* Query returned 1.0000000 e+03*/
```

3.14.4 :DDS:AMP

Syntax

:DDS:AMP <amp>
:DDS:AMP?

Description

Set or query the amplitude of the signal source signal.

Parameter

Name	Type	Range	Default
<amp>	Real	0-7V	1.5V

Remarks

N/A

Return Format

Query to return the amplitude in scientific notation.

Example

```
:DDS:AMP 1              /*Set the signal source waveform amplitude to 1V */
:DDS:AMP?               /* Query returned 1.000000 e+00*/
```

3.14.5 :DDS:OFFSet

Syntax

:DDS:OFFSet <offset>
:DDS:OFFSet?

Description

Set or query the offset of the signal source signal.

Parameter

Name	Type	Range	Default

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Name	Type	Range	Default
<offset>	real	-3.5V-+3.5V	-

Remarks

N/A.

Return Format

Query returns ON,OFF.

Example

:DDS:OFFSet 0.5 /*Set the signal source waveform offset to 0.5V */
:DDS:OFFSet? /* Query returns 5.00000e-01*/

3.14.6 :DDS:DUTY

Syntax

:DDS:DUTY <duty>
:DDS:DUTY?

Description

Set or query the duty cycle of the signal source signal.

Parameter

Name	Type	Range	Default
<duty>	Real	0-99	50

Remarks

N/A

Return Format

Query to return the duty cycle value.

Example

:DDS:DUTY 50 /*Set the signal source signal duty cycle to 50%**/
:DDS:DUTY? /* Query returns 50*/

3.14.7 :DDS:WAVE:MODE

Syntax

:DDS:WAVE:MODE <bool>
:DDS:WAVE:MODE?

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Description

Set or query the signal source modulation status.

Parameter

Name	Type	Range	Default
<bool>	Real	{{1|ON}|{0|OFF}	ON

Remarks

N/A.

Return Format

The query returns ON, OFF.

Example

```
:DDS:WAVE:MODE ON        /*Turn on the signal source modulation */
:DDS:WAVE:MODE?          /* Query returns ON*/
```

3.14.8 :DDS:MODE:TYPE

Syntax

```
:DDS:MODE:TYPE <type>
:DDS:MODE:TYPE?
```

Description

Set or query the signal source modulation type.

Parameter

Name	Type	Range	Default
<type>	Real	{AM|FM}	AM

Remarks

N/A.

Return Format

Query returns AM,FM.

Example

```
:DDS:MODE:TYPE AM        /* Set the signal source modulation type to AM */
:DDS:MODE:TYPE?          /* Query returns AM*/
```

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3.14.9 :DDS:MODE:WAVE:TYPE

Syntax

:DDS:MODE:WAVE:TYPE <type>
:DDS:MODE:WAVE:TYPE?

Description

Set or query the modulation wave type when setting up signal source modulation.

Parameter

Name	Type	Range	Default
<type>	Real	{SINE|SQUAre|RAMP}	SINE

Remarks

N/A

Return Format

Query returns SINE, SQUARE, and RAMP.

Example

:DDS:MODE:WAVE:TYPE SINE /*Set the signal source modulation wave type to SINE*/
:DDS:MODE:WAVE:TYPE? /* Query returns SINE */

3.14.10 :DDS:MODE:FREQ

Syntax

:DDS:MODE:FREQ <freq>
:DDS:MODE:FREQ?

Description

Set or query the frequency of the modulated wave when setting or querying signal source modulation.

Parameter

Name	Type	Range	Default
<freq>	real	0-50KHz	-

Remarks

N/A.

Return Format

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Query to return frequency in scientific notation.

Example

```
:DDS:MODE:FREQ 1000          /*Set the signal source modulation wave frequency to
1KHz*/
:DDS:MODE:FREQ?              /* Query returns 1.00000e+03*/
```

3.14.11 :DDS:MODE:DEPThordeviation

Syntax

:DDS:MODE:DEPThordeviation <value>
:DDS:MODE:DEPThordeviation?

Description

Set or query the deviation or depth of signal source modulation.

Parameter

N/A

Remarks

N/A.

Return Format

When the modulation type is AM, querying returns the modulation depth value.
When the modulation type is FM, querying returns the deviation.

Example

```
Modulation type is AM
:DDS:MODE:DEPThordeviation 50      /*Set the modulation depth to 50*/
:DDS:MODE:DEPThordeviation?            /* Query returns 50 */
Modulation type is FM
:DDS:MODE:DEPThordeviation 1000  /*Set the deviation to 1KHz*/
:DDS:MODE:DEPThordeviation?            /* Query returns 1000 */
```

3.14.12 :DDS:BURSt:SWITch

Syntax

:DDS:BURSt:SWITch <bool>
:DDS:BURSt:SWITch?

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Description

Set or query the signal source burst status.

Parameter

Name	Type	Range	Default
<bool>	Real	{{1|ON}|{0|OFF}}	ON

Remarks

N/A.

Return Format

Query returns ON,OFF.

Example

```
:DDS:BURSt:SWITch ON          /*Turn on the signal source burst*/
:DDS:BURSt:SWITch?        /* Query returns ON*/
```

3.14.13 :DDS:BURSt:TYPE

Syntax

```
:DDS:BURSt:TYPE <type>
:DDS:BURSt:TYPE?
```

Description

Set or query the signal source burst type.

Parameter

Name	Type	Range	Default
<type>	Real	{N_CYCLE|INFInit }	N_CYCLE

Remarks

N/A.

Return Format

Query returns N_CYCLE, INFInit.

Example

```
:DDS:BURSt:TYPE N_CYCLE          /*Set the burst type to N_CYCLE*/
:DDS:BURSt:TYPE?                 /* Query returns N_CYCLE */
```


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3.14.14 :DDS:BURSt:CNT

Syntax

:DDS:BURSt:CNT <CNT>
:DDS:BURSt:CNT?

Description

Set or query the number of signal source signal cycles.

Parameter

Name	Type	Range	Default
<cnt>	Real	0-1024	0

Remarks

N/A.

Return Format

Query returns an integer.

Example

:DDS:BURSt:CNT 2 /*Set the number of cycles to 2 */
:DDS:BURSt:CNT? /* Query returns 2*/

3.14.15 :DDS:BURSt:SRC

Syntax

:DDS:BURSt:SRC <src>
:DDS:BURSt:SRC?

Description

Set or query the signal source burst source.

Parameter

Name	Type	Range	Default
<cnt>	Real	{EXT|MANU}	-

Remarks

N/A.

Return Format

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The query returns EXT, MANU.

Example

```
:DDS:BURSt:SRC EXT      /*Set the burst source to external*/
:DDS:BURSt:SRC?         /* Query returns EXT*/
```

3.14.16 :DDS:BURSt:SLOPE

Syntax

:DDS:BURSt:SLOPE <slope>
:DDS:BURSt:SLOPE?

Description

Set or query the signal source trigger edge.

Parameter

Name	Type	Range	Default
<slope>	Real	{RAISING| FALLING}	-

Remarks

N/A.

Return Format

The query returns RAISING，FALLING.

Example

```
:DDS:BURSt:SLOPE FALLING        /* Set the trigger edge to the falling edge */
:DDS:BURSt:SLOPE?               /* Query returns FALLING */
```

3.14.17 :DDS:BURSt:GATE:POLArity

Syntax

:DDS:BURSt:GATE:POLArity <slope>
:DDS:BURSt:GATE:POLArity?

Description

Set or query the signal source burst gating polarity.

Parameter

Name	Type	Range	Default
<slope>	Real	{POSITIVE|NEGATIVE}	-

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Remarks

N/A.

Return Format

The query returns POSITIVE，NEGATIVE.

Example

```
:DDS:BURSt:GATE:POLArity NEGATIVE        /* Set the gate polarity to negative */
:DDS:BURSt:GATE:POLArity?                /* Query returns NEGATIVE */
```

3.14.18 :DDS:BURSt:TRIGger

Syntax

:DDS:BURSt:TRIGger

Description

Send a signal source burst once.

Parameter

N/A

Remarks

N/A

Return Format

N/A

Example

N/A

3.14.19 :DDS:ARB:DAC16:BIN

Syntax

:DDS:ARB:DAC16:BIN

Description

Download waveform data. <binary_block_data> indicates binary data to be downloaded. <binary_block_data> is a binary data block starting with the # symbol, such as \"#508192\" binary data. The \"5\" after the # indicates that 5 characters represent the

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data length information, and \"8192\" indicates that there are 8192 bytes of binary data. Each waveform point corresponds to a 2-byte binary number (for example, point 1024 corresponds to the binary number 0x0400; since the low byte comes first and the high byte comes after, it is 0004). Therefore, the number of bytes must be even. Note: The number of arbitrary wave waveform points must be 4096.

Parameter

N/A

Remarks

N/A

Return Format

N/A

Example

N/A

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