DSO3000--SCPI Protocol document

Ver: 1.0.0.5

Sep. 2016

SCPI Command Overview

SCPI（Standard Commands for Programmable Instruments）It defines a set of programmable test and measurement instruments for controlling the standard syntax and commands.SCPI commands are ASCII strings, instrument passed through the physical transport layer.Chain of command keywords constitution, and some also need to include parameters.In the agreement, the command is defined as follows：CONFigure. In use, which you can write the full name, or you can just write the abbreviation contains only uppercase letters. Typically instrument for query feedback for ASCII code. When transferring large amounts of data, binary data can also be used.

1. Syntax

The command string usually starts with ":"; the keywords are separated by ":" and are followed by the parameter settings available; "?" is added at the end of the command string to indicate query; the command keywords and the first parameter are separated by space.

For example,

CHANnel1:BWLimit 20M

CHANnel1:BWLimit？

CHANnel1 is the root keyword of the command. BWLimit is the second-level keyword. The command string starts with ":" which is also used to separate the multiple-level keywords. 20M represents the parameters available for setting. "?" represents query.

2. Symbol Description

The following symbols will not be sent with the commands.

1. Braces {}

The parameters enclosed in the braces are optional and are usually separated by the vertical bar "|". When using the command, one of the parameters must be selected.

2. Vertical Bar |

The vertical bar is used to separate multiple parameters and one of the parameters must be selected when using the command.

3. Square Brackets []

The content in the square brackets can be omitted.

4. Triangle Brackets <>

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

3. Parameter Type

1、bool

The parameter could be 0, 1, OFF or ON. For example,

RUNning <bool>

RUNning?

Wherein,<bool>can be set to{ON}|{OFF}.

The query teturns ON or OFF.

2、Discrete

The parameter could be any of the values listed. For example,

CHANnel1:COUPling <type>

CHANnel1:COUPling?

Wherein,

<type>can be set to GND｜DC | AC。

The query returns the abbreviations GND、DC 或 AC

3、Integer

Do not use decimals parameter settings, otherwise an exception occurs.

4、Real

The parameter can be any real number，return the effective value range.For example,

CHANnel1:PROBe <atten>

CHANnel1:PROBe?

Wherein,

atten can be set to any real number 10，The query returns a real number in scientific notation: 1.000000e+01

5、String

The parameter should be the combinations of characters.For example,

SET:Serial <license>

Wherein,

<license> can be set to D43000518。

4、Command Abbreviation

All the commands are case-insensitive and you can use any of them. If abbreviation is used, all the capital letters in the command must be written completely.

For example,

CHANnel1:BWLimit? can be abbreviated to CHAN:BWL?

Oscilloscope section

1. CHANnel Commands

1.1 Bandwidth limitations CHANnel<n>: BWLimit

Suntax CHANnel<n>:BWLimit <type>

CHANnel<n>:BWLimit?

Description Set or query the bandwidth limit parameter of the specified channel.

Parameter <n> Discrete {1|2|3|4}

<type> Discrete {20M|OFF}

Explanation OFF: disable the bandwidth limit and the high frequency components of the signal under test can pass the channel.

20M: enable the bandwidth limit and the high frequency components of the signal under test that exceed 20 MHz are attenuated

Return The query returns 20M or OFF。

For example

CHANnel1:BWLimit 20M /*Enable the 20MHz bandwidth limit*/

CHANnel1:BWLimit？ /*The query returns 20M*/

1.2 Channel Coupling CHANnel<n>:COUPling

Suntax CHANnel<n>:COUPling <coupling>

CHANnel<n>:COUPling?

Description Set or query the coupling mode of the specified channel.

Parameter <n> Discrete {1|2|3|4}

<coupling> Discrete {AC|DC|GND} Default：DC

Explanation AC ： the DC commponents of the signal under test are

blocked.

DC ： the DC and AC components of the signal under test can both pass the channel.

GND： the DC and AC components the signal under test are both blocked.

Return The query returns AC,DC or GND

For example

CHANnel1:COUPling AC /*Select the AC coupling mode*/

CHANnel1:COUPling？ /*The query returns AC*/

1.3 Channel switch CHANnel<n>:DISPlay

Suntax CHANnel<n>:DISPlay <bool>

CHANnel<n>:DISPlay?

Description Enable or disable the specified channel or query the status of the specified channel.

Parameter <n> Discrete {1|2|3|4}

<bool> Bool {{OFF}|{ON}}

Explanation

Return The query returns ON or OFF.

For example CHANnel1:DISPlay ON /*Enable CH1*/

CHANnel1:DISPlay？ /*The query returns ON*/

1.4 Inverted waveform display CHANnel<n>:INVert

Suntax CHANnel<n>:INVert <bool>

CHANnel<n>:INVert?

Description Enable or disable the waveform invert of the specified channel or query the status of the waveform invert of the specified channel.

Parameter <n> Discrete {1|2|3|4}

<bool> Bool {{OFF}|{ON}}

Explanation When waveform invert is turned off, the waveform display is normal; when waveform invert is turned on, the waveform voltage values are inverted.

Return The query returns ON or OFF

For example

CHANnel1:INVert ON /*Enable the waveform invert of CH1*/

CHANnel1:INVert? /*The query returns ON*/

1.5 Waveform offset CHANnel<n>:OFFSet

Suntax CHANnel<n>:OFFSet <offset>

CHANnel<n>:OFFSet?

Description Set or query the vertical offset of the specified channel. The default unit is V.

Parameter <n> Discrete {1|2|3|4}

<offset> Real Related to the current vertical scale and probe ratio, When the probe ratio is 1X Vertical Scale：Voltage gear value mV/div：（-Voltage gear valuex 5）to（+Voltage gear valuex 5）

Return The query returns the vertical offset in scientific notation.

For example

CHANnel1:OFFSet 0.01 /*Set the vertical offset of CH1 to 10mV*/

CHANnel1:OFFSet? /*The query return 0.01*/

1.6 Channel voltage range CHANnel<n>:RANGe

Suntax CHANnel<n>:RANGe <range>

CHANnel<n>:RANGe?

Description Set or query the vertical range of the specified channel. The default unit is V.

Parameter <n> Discrete {1|2|3|4}

<range> Real Related to the probe ratio,When the probe ratio is 1X:1mV to 10V

Explanation This command indirectly modifies the vertical scale of the specified channel.

Return The query returns the vertical range in scientific notation.

For example

CHANnel1:RANGe 1 /*Set the vertical range of CH1to 1V*/

CHANnel1:RANGe? /*The query returns 1.000e+00*/

1.7 Channel voltage gear CHANnel<n>:SCALe

Suntax CHANnel<n>:SCALe <scale>

CHANnel<n>:SCALe?

Description Set or query the vertical scale of the specified channel. The default unit is V.

Parameter <n> Discrete {1|2|3|4}

<scale> Real Related to the probe ratio, When the probe ratio is 1X:1mV to 10V

Explanation

Return The query returns the vertical scale in scientific notation.

For example

CHANnel1:SCALe 1 /* Set the vertical scale of CH1to 1V*/

CHANnel1:SCALe? /* The query returns 1.000e+00*/

1.8 Channel probe ratio CHANnel<n>:PROBe

Suntax CHANnel<n>:PROBe <atten>

CHANnel<n>:PROBe?

Description	Set or query the probe ratio of the specified channel.
Parameter	<n> Discrete {1|2|3|4}
	<atten> Discrete {|1|10|100|1000|} Default: 10
Explanation	Setting the probe ratio refers to multiply the signal sampled with the specified ratio and then display the result (the actual amplitude of the signal will not be affected). Setting the probe ratio will affect the range of the vertical scale.
Return	The query returns the vertical scale in scientific notation.

For example

CHANnel1:PROBe 10 /*Set the probe ratio of CH1 to 10*/

CHANnel1:PROBe? /*The query returns 1.000e+01*/

2. TIMebase Commands

2.1 Main timebase offset TIMebase:MAIN:OFFSet

Suntax	TIMebase:MAIN:OFFSet <offset>
	TIMebase:MAIN:OFFSet?
Description	Set or query the main timbase offset. The default unit is s.
Parameter	<offset> Real -Screen/2 to 1s or -Screen/2 to 5000s
Explanation	--Roll mode
	RUN: This command is invalid.
	STOP: This command is invalid.
	--YT mode
	RUN:Timebase >= 200ms(namely the “Slow Sweep”).
	STOP: This command is invalid.
Return	The query returns the main timebase offset in scientific notation.

For example

TIMebase:MAIN:OFFSet 0.0002 /*Set the main timebase offset to 200ms*/

TIMebase:MAIN:OFFSet? /*The query returns 2.000000e-04*/

2.2 Main timebase scale TIMebase:MAIN:SCALe

Suntax TIMebase:MAIN:SCALe <scale_value>

TIMebase:MAIN:SCALe?

Description Set or query the main timebase scale. The default unit is s/div

Parameter <scale_value> Real

Explanation When the horizontal timebase mode is YT and the horizontal timebase is 200ms/div or larger(namely the "Slow Sweep" mode), this command is invalid when the oscilloscope is in the transition to the "Stop" state.

Return The query returns the main timebase scale in scientific notation.

For example

TIMebase:MAIN:SCALe 0.0002 /*Set the main timebase scale to 200ms/div*/

TIMebase:MAIN:SCALe? /* The query returns 2.000000e-04*/

3. TRIGger Commands

3.1 Trigger mode TRIGger:MODE

Suntax TRIGger:MODE <mode>

TRIGger:MODE?

Description Select or query the trigger type

Parameter <mode> Discrete EDGE|PULSe|VIDeo|SLOPe|TIMeout|

Explanation

Return The query returns EDGE、PULSe、VIDeo、SLOPe、TIMeout

For example

TRIGger:MODE SLOPe /*Select slope trigger*/

TRIGger:MODE? /*The query returns SLOPe*/

3.2 Trigger time TRIGger:TIME

Suntax TRIGger:TIME <time>

TRIGger:TIME?

Description Trigger time is the timing of trigger offset

Parameter <time> Real

Explanation The default unit is S

Return

For example

TRIGger:TIME 0.000003 /*Set trigger time is 3us*/

TRIGger:TIME? /* The query returns 3.000000e-06*/

3.3 Trigger status TRIGger:STATus?

Suntax TRIGger:STATus?

Description Query the current trigger status.

Return The query returns TRIGed(Have triggered), NOTRIG(No trigger)

For example TRIGger:STATus?

3.4 Trigger sweep TRIGger:SWEep

Suntax TRIGger:SWEep <mode>

TRIGger:SWEep?

Description Set or query the trigger mode.

Parameter <mode> Discrete {AUTO|NORMal|SINGle}

Explanation AUTO：auto trigger. NO matter whether the trigger condition is met, there is always waveform display.

NORMal：normal trigger. Display waveform when the trigger condition is met; otherwise, the oscilloscope holds the original waveform and waits for the next trigger.

SINGle：single trigger. The oscilloscope wait for a trigger and displays the waveform when the trigger condition is met and then stops.

Return The query returns AUTO; NORMal; SINGle.

For example TRIGger:SWEep SINGle /*Select single trigger mode*/

TRIGger:SWEep？ /*The query returns SINGle*/

3.5 Edge-triggered trigger source TRIGger:EDGe:SOURce

Suntax TRIGger:EDGe:SOURce <source>

TRIGger:EDGe:SOURce?

Description Set or query the trigger source in edge trigger.

Parameter

<source>Discrete{CHANnel1|CHANnel2|CHANnel3|CHANnel4|EXT/10 }

Explanation

Return The query returns CHANnel1、CHANnel2、CHANnel3、CHANnel4 or EXT/10

For example

TRIGger:EDGe:SOURce CHANnel1 /*Set the trigger source CH1*/

TRIGger:EDGe:SOURce? /*The query returns CHANnel1 */

3.6 Edge trigger polarity TRIGger:EDGe:POLarity

Suntax TRIGger:EDGe:POLarity <slope>

TRIGger:EDGe:POLarity?

Description Set or query the edge polarity in edge trigger.

Parameter <slope> Discrete {POSItive|NEGAtive|RFALl}

Explanation POSItive： rising edge

NEGAtive： falling edge

RFALl： rising/falling edge

Return The query returns "POSItive", "NEGAtive", "RFALl"

For example

TRIGger:EDGe:POLarity NEGAtive /*Set the edge type to falling edge*/

TRIGger:EDGe:POLarity？ /*The query returns NEGAtive */

3.7 Edge trigger level TRIGger:EDGe:LEVel

Suntax TRIGger:EDGe:LEVel <level>

TRIGger:EDGe:LEVel?

Description Set or query the trigger level in edge trigger. The unit is the same as the current amplitude unit of the signal source selected.

Parameter <level> Real

Explanation

Return The query returns the trigger level in scientific notation.

For example

TRIGger:EDGe:LEVel 0.16 /*Set the trigger level to 160mV*/

TRIGger:EDGe:LEVel？ /*The query returns 1.600000e-01 */

3.8 Trigger pulse source TRIGger:PULSe:SOURce

Suntax TRIGger:PULSe:SOURce <source>

TRIGger:PULSe:SOURce?

Description Set or query the trigger source in pulse width trigger.

Parameter

<source> Discrete {CHANnel1|CHANnel2|CHANnel3|CHANnel4}

Explanation

Return The query returns CHANnel1,CHANnel2,CHANnel3 or CHANnel4

For example

TRIGger:PULSe:SOURce CHANnel1 /*Set the trigger source to CH1*/

TRIGger:PULSe:SOURce？ /*The query returns CHANnel1 */

3.9 Pulse Trigger conditions TRIGger:PULSe:WHEN

Suntax TRIGger:PULSe:WHEN <when>

TRIGger:PULSe:WHEN?

Description Set or query the trigger condition in pulse width trigger.

Parameter <when> Discrete "EQUAl", "NEQUal","GREAt","LESS"

Explanation

Return The query returns "EQUAl", "NEQUal","GREAt","LESS"

For example

TRIGger:PULSe:WHEN EQUAl /*Set the trigger condition to EQUAl */

TRIGger:PULSe:WHEN？ /* The query returns EQUAl */

3.10 Trigger pulse width trigger value TRIGger:PULSe:WIDth

Suntax TRIGger:PULSe:WIDth <width>

TRIGger:PULSe:WIDth?

Description Set or query the pulse width in pulse width trigger. The default unit is s

Parameter <width> Real.

Explanation

Return The query returns the pulse width in scientific notation.

For example

TRIGger:PULSe:WIDth 0.000003 /*Set the pulse width to 3us*/

TRIGger:PULSe:WIDth? /* The query returns 3.000000e-06*/

3.11 Pulse trigger polarity TRIGger: PULSe:POLarity

Suntax TRIGger:PULSe:POLarity <polarity>

TRIGger:PULSe:POLarity?

Description Set or query the edge type in pulse width trigger.

Parameter <polarity> Discrete POSItive NEGAtive

Explanation

Return The query returns POSItive or NEGAtive

For example

TRIGger:PULSe:POLarity POSItive/* Set the pulse polarity to POSItive*/

TRIGger:PULSe:POLarity? /* The query returns POSItive */

3.12 Pulse Trigger level TRIGger:PULSe:LEVel

Suntax TRIGger:PULSe:LEVel <level>

TRIGger:PULSe:LEVel?

Description Set or query the trigger level in pulse width trigger. The unit is the same as the current amplitude unit.

Parameter <level> Real

Explanation

Return The query returns the trigger level in scientific notation.

For example

TRIGger:PULSe:LEVel 0.16 /*Set the trigger level to 160mV*/

TRIGger:PULSe:LEVel? /* The query returns 1.600000e-01*/

3.13 Trigger Slope trigger source TRIGger:SLOPe:SOURce

Suntax TRIGger:SLOPe:SOURce <source>

TRIGger:SLOPe:SOURce?

Description Set or query the trigger source in slope trigger.

Parameter

<source> Discrete {CHANnel1|CHANnel2|CHANnel3|CHANnel4}

Explanation

Return The query returns CHANnel1,CHANnel2,CHANnel3 or CHANnel4

For example

TRIGger:SLOPe:SOURce CHANnel1/*Set the trigger source to CH1*/

TRIGger:SLOPe:SOURce？ /* The query returns CHANnel1 */

3.14 Slope Trigger trigger condition TRIGger:SLOPe:WHEN

Suntax TRIGger:SLOPe:WHEN <when>

TRIGger:SLOPe:WHEN?

Description Set or query the trigger condition in slope trigger.

Parameter <when> Discrete "EQUAl, "NEQUal"GREAt,"LESS"

Explanation

Return The query returns "EQUAl, "NEQUal"GREAt,"LESS"

For example

TRIGger:SLOPe:WHEN EQUAl /*Set the trigger condition to EQUAl */

TRIGger:SLOPe:WHEN? /* The query returns EQUAl */

3.15 Slope Trigger trigger time TRIGger:SLOPe:TIME

Suntax TRIGger:SLOPe:TIME <time>

TRIGger:SLOPe:TIME?

Description Set or query the time value in slope trigger. The default unit is s

Parameter <time> Real

Explanation

Return The query returns the times value in scientific notation.

For example TRIGger:SLOPe:TIME 0.000003 /*Set the time value to 3us*/

TRIGger:SLOPe:TIME? /*The query returns 3.000000e-06*/

3.16 Slope trigger alevel TRIger:SLOPe:ALEVel

Suntax TRIGger:SLOPe:ALEVel <level>

TRIGger:SLOPe:ALEVel?

Description Set or query upper level value in slope trigger. The unit is

the same as the current amplitude unit.

Parameter Explanation <level> Real

Return The query returns the upper level value in scientific notation.

For example

TRIGger:SLOPe:ALEVel 0.16 /* Set the trigger level to 160mV*/

TRIGger:SLOPe:ALEVel? /* The query returns 1.600000e-01*/

3.17 Slope trigger blevel TRIger:SLOPe:BLEVel

Suntax TRIGger:SLOPe:BLEVel <level>

TRIGger:SLOPe:BLEVel?

Description Set or query down level value in slope trigger. The unit is the same as the current amplitude unit.

Parameter Explanation <level> Real

Return The query returns the down level value in scientific notation.

For example

TRIGger:SLOPe:BLEVel 0.16 /* Set the trigger level to 160mV*/

TRIGger:SLOPe:BLEVel? /* The query returns 1.600000e-01*/

3.18 Slope trigger polarity TRIGger:SLOPe:POLarity

Suntax TRIGger:SLOPe:POLarity <polarity>

TRIGger:SLOPe:POLarity?

Description Set or query the edge type in slope trigger.

Parameter Explanation <polarity> Discrete {POSItive|NEGAtive}

Return The query returns POSItive NEGAtive

For example

TRIGger:SLOPe:POLarity NEGAtive/*Set the pulse polarity to NEGAtive*/

TRIGger:SLOPe:POLarity? /* The query returns NEGAtive */

3.19 Trigger slope width trigger value TRIGger:SLOPe:WIDth

Suntax TRIGger:SLOPe:WIDthwidth>

TRIGger:SLOPe:WIDth

Description Set or query the slope width in pulse width trigger. The default unit is s

Parameter <width> Real

Explanation

Return The query returns the pulse width in scientific notation.

For example

TRIGger:SLOPe:WIDth 0.000003 /* Set the pulse width to 3us*/

TRIGger:SLOPe:WIDth? /*The query returns 3.000000e-06*/

3.20 Trigger video trigger source TRIGger:VIDeo:SOURce

Suntax TRIGger:VIDeo:SOURce <source>

TRIGger:VIDeo:SOURce?

Description Set or query the trigger source in video trigger.

Parameter

<source> Discrete {CHANnel1|CHANnel2|CHANnel3|CHANnel4}

Explanation

Return The query returns CHANnel1,CHANnel2,CHANnel3 or CHANnel4

For example

TRIGger:VIDeo:SOURce CHANnel1/* Set the trigger source to CH1*/

TRIGger:VIDeo:SOURce？ /*The query returns CHANnel1 */

3.21 Video trigger mode TRIGger:VIDeo:MODE

Suntax TRIGger:VIDeo:MODE <mode>

TRIGger:VIDeo:MODE?

Description Set or query the sync type in video trigger.

Parameter

<mode> Discrete {SCANLINE|LINENUM|ODDFIELD|EVENFIELD|ALLFIELD}

Explanation

SCANLINE	Scan line
LINENUM	Line Number
ODDFIELD	Odd field
EVENFIELD	Even field
ALLFIELD	All Fields

Return

For example TRIGger:VIDeo:MODE SCANLINE/*Set the sync type to SCANLINE*/

TRIGger:VIDeo:MODE？ /* The query returns SCANLINE*/

3.22 Video trigger time TRIGger:VIDeo:TIME

Suntax TRIGger:VIDeo:TIME <time>

TRIGger:VIDeo:TIME?

Description Set or query the time value in video trigger.

Parameter <time> Real

Explanation The default unit is S

Return

For example TRIGger:VIDeo:TIME 0.000003 /*Set the video value to 3 μs*/

TRIGger:VIDeo:TIME? /* The query returns 3.000000e-06*/

3.23 Video trigger level TRIGger:VIDeo:LEVel

Suntax TRIGger:VIDeo:LEVel <level>

TRIGger:VIDeo:LEVel?

Description Set or query video level value in slope trigger. The unit is the same as the current amplitude unit.

Parameter <level> Real

Explanation

Return The query returns the video level value in scientific notation.

For example

TRIGger:VIDeo:LEVel 0.16 /* Set the trigger level to 160mV*/

TRIGger:VIDeo:LEVel? /* The query returns 1.600000e-01*/

3.24 Video trigger polarity TRIGger:VIDeo:POLarity

Suntax TRIGger:VIDeo:POLarity <polarity>

TRIGger:VIDeo:POLarity?

Description Set or query the edge type in video trigger.

Parameter <polarity> Discrete POSItive NEGAtive

Explanation

Return The query returns POS or NEG

For example

TRIGger:VIDeo:POLarity POSItive /* Set the pulse polarity to POSTive*/

TRIGger:VIDeo:POLarity？ /* The query returns POSItive */

3.25 Video trigger line TRIGger:VIDeo:LINE

Suntax TRIGger:VIDeo:LINE <line>

TRIGger:VIDeo:LINE?

Description Set or query the line number when the sync type in video trigger is LINE.

Parameter <line> Integer

Explanation NTSC：1 to 525

PAL/SECAM：1 to 625

Return The query returns an integer.

For example

TRIGger:VIDeo:LINE 100 /*Set the line number to 100*/

TRIGger:VIDeo:LINE? /* The query returns 100*/

3.26 Video trigger standard TRIGger:VIDeo:STANdard

Suntax TRIGger:VIDeo:STANdard <standard>

TRIGger:VIDeo:STANdard?

Description Set or query the video standard in video trigger.

Parameter <standard> Discrete { NTSC | PAL/SECAM }

Explanation

Return

For example

TRIGger:VIDeo:STANdard NTSC/*Select NTSC video standard*/

TRIGger:VIDeo:STANdard? /* The query returns NTSC*/

3.27 Timeout trigger source TRIGger:TIMeout:SOURce

Suntax TRIGger:TIMeout:SOURce <source>

TRIGger:TIMeout:SOURce?

Description Set or query the trigger source in timeout trigger.

Parameter

<source> Discrete {CHANnel1|CHANnel2|CHANnel3|CHANnel4}

Explanation

Return The query returns CHANnel1,CHANnel2,CHANnel3 or CHANnel4

For example

TRIGger:TIMeout:SOURce CHANnel1/* Set the trigger source to CH1*/

TRIGger:TIMeout:SOURce? /* The query returns CHANnel1 */

3.28 Timeout trigger width TRIGger:TIMeout:WIDth

Suntax TRIGger:TIMeout:WIDth<width>

TRIGger:TIMeout:WIDth?

Description Set or query the timeout width in timeout trigger. The default unit is s

Parameter <width> Real

Explanation

Return The query returns the pulse width in scientific notation.

For example

TRIGger:TIMeout:WIDth 0.000003 /* Set the pulse width to 3us*/

TRIGger:TIMeout:WIDth? /* The query returns 3.000000e-06*/

3.29 Timeout trigger time TRIGger:TIMeout:TIME

Suntax TRIGger:TIMeout:TIMe <NR3>

TRIGger:TIMeout:TIMe?

Description Set or query the timeout time in timeout trigger. The default unit is s

Parameter <NR3> Real

Explanation The query returns the timeout time in scientific notation.

Return

For example

TRIGger:TIMeout:TIMe 0.002 /*Set the timeout time to 2ms*/

TRIGger:TIMeout:TIMe? /* The query returns 2.000000e-03*/

3.30 Timeout trigger level TRIGger:TIMeout:LEVel

Suntax TRIGger:TIMeout:LEVel <level>

TRIGger:TIMeout:LEVel?

Description Set or query the trigger level in timeout trigger. The unit is

the same as the current amplitude unit.

Parameter <level> Real

Explanation

Return The query returns the level value in scientific notation.

For example

TRIGger:TIMeout:LEVel 0.16 /* Set the trigger level to 160mV*/

TRIGger:TIMeout:LEVel? /* The query returns 1.600000e-01*/

3.31 Timeout trigger polarity TRIGger:TIMeout:POLarity

Suntax TRIGger:TIMeout:POLarity <polarity>

TRIGger:TIMeout:POLarity?

Description Set or query the edge type in timeout trigger

Parameter <polarity> Discrete {POSItive|NEGAtive}

Explanation

Return

For example

TRIGger:TIMeout:POLarity POSItive /*Set the pulse polarity to POSTive */

TRIGger:TIMeout:POLarity？ /* The query returns POSItive */

4. Acquire Commands

4.1 Acquire mode ACQuire:MODe

Suntax ACQuire:MODe <mode>

ACQuire:MODe？

Description Set or query The current acquire status

Parameter <mode> Discrete {ROLL|SCAN|NORMAL}

Explanation ROLL：scroll mode.

SCAN：scan mode.

NORMAL：normal mode.

Return

For example ACQuire:MODe SCAN /* Set the acquire status is SCAN*/

ACQuire:MODe? /* The query returns SCAN*/

4.2 Acquire depth ACQuire:MDEPth

Suntax ACQuire:MDEPth <mdep>

ACQuire:MDEPth?

Description Set or query the memory depth of the oscilloscope (namely the number of waveform points that can be stored in a single trigger sample). The default unit is pts (points)

Parameter <mdep> Discrete

Explanation The following equation describes the relationship among memory depth, sample rate, and sample time:

Memory Depth ＝ Sample Rate × Sample time

Memory depth corresponding index values are as follows:

Index value	Memory Depth 1.6K
0	16K
1	160K
2	1.6M
3	16M
4	32M
5	64M
6	128M

Return The query returns the actual number of points (integer) index value

For example ACQuire:MDEPth 2 /*Set the memory depth to 160K*/

ACQuire:MDEPth? /* The query returns 2*/

4.3 Acquire stop ACQuire:STOP

Suntax ACQuire:STOP

Description Trap collect raw data points。

Parameter

Explanation

Return

For example

ACQuire:STOP /* Interrupt reading raw data points collected */

5. Self-calibration Commands

5.1 Calibrate start CALibrate:STARt

Suntax CALibrate:STARt

Description The oscilloscope starts to execute self-calibration.

Parameter

Explanation The oscilloscope automatically calibration.

Return

For example CALibrate:STARt /*calibrate start*/

5.2 Calibrate state CALibrate:STATe？

Suntax CALibrate:STATe？

Description

Parameter The current state of calibrate.

Explanation String interpreted as follows:

data[0]: The current calibration channel mode.

data[1]: Currently it is calibrated channel.

data[2]-data[3]: The current index value being calibrated voltage gear.

data[4]: The calibration status of the current calibration.

data[5]: Currently the location of the calibration.n

data[6]: The results of the automatic calibration.

data[7]-data[9]: Reserved bits.

Return Returns a string currently being calibrated state.

For example CALibrate:STATe？ < 4307001000 >

5.3 Calibrate stop CALibrate:STOP

Suntax CALibrate:STOP

Description Interrupt the self-calibration at any time.

Parameter

Explanation Interrupt instruction of the calibration process.

Return

For example CALibrate:STOP /* Stop calibration status */

6. AUTOSET

Suntax AUTOSET

Description Enable the waveform auto setting function. The oscilloscope will automatically adjust the vertical scale, horizontal timebase, and trigger mode according to the input signal to realize optimum waveform display. This command is equivalent to pressing the AUTO key at the front panel.

Parameter

Explanation Theoretically, waveform auto setting function requires that the frequency of sine is no lower than 41Hz; the duty cycle should be greater than 1% and the amplitude must be at least 20mVpp for square (the probe ratio is 1X).

When the pass/fail function is enabled (see

the :MASK:ENABle command), if you sent this command, the oscilloscope will disable the pass/fail function firstly and then execute the waveform auto setting function.

When the waveform record function is enabled or during the playback of the recorded waveform, this command is invalid.

Return

For example

7. RUN/STOP Setting

Suntax RUNning <bool>

RUNning?

Description When the waveform record function is enabled or during the playback of the recorded waveform, these commands are invalid.

Parameter <bool> Bool {{0|OFF}|{1|ON}}

Explanation RUN The RUN command starts the oscilloscope

STOP the STOP command stops the oscilloscope

These commands are equivalent to pressing the RUN/STOP key at the front panel.

Return The query returns ON or OFF

For example RUNning ON /*Set oscilloscope status is RUN*/

RUNning? /* The query returns ON*/

8. Reset *RST

Suntax *RST

Description Restore the oscilloscope to factory settings.

Parameter

Explanation On this command, the scope restore factory settings

Return

For example *RST /* Reset */

9. Single trigger SINGle:Trig

Suntax SINGle:Trig

Description Set the oscilloscope to the single trigger mode.

Parameter

Explanation In the single trigger mode, the oscilloscope triggers once when the trigger conditions are met and then stops

When the waveform record function is enabled or during the playback of the recorded waveform, this command is invalid.

Return

For example SINGle:Trig /* Setting a trigger */

10. Get all of the one-time parameter setting state SETUp:ALL?

Suntax SETUp:ALL?

Description Get all at once state power needed.

Parameter

Explanation Gets a string of one-time state of the boot.

Return String contains the settings used between the state ";" separated.

For example

Remark

Channel Enable:(For more details, please see1.3 Channel switch CHANnel<n>:DISPlay).

Channel Coupling:(For more details, please see1.2 Channel Coupling CHANnel<n>:COUPling).

Channel bandwidth limit:(For more details, please see1.1 Bandwidth limitations CHANnel<n>: BWLimit).

Probe ratio:(For more details, please see1.8 Channel probe ratio CHANnel<n>:PROBe).

Voltage division:(For more details, please see1.7 Channel voltage gear CHANnel<n>:SCALe).

Channel Offset: Waveform with respect to the center line (zero, up is positive, down is negative) shift (a large cell represents 25 value), such as channel 1 offset value is 75, representing the upward shift in the centerline of three a large grid.

Channel inversion:(For more details, please see1.4 Inverted waveform display CHANnel<n>:INVert).

Operating status:(For more details, please see7. RUN/STOP Setting).

Acquisition mode:(For more details, please see4.1 Acquire mode ACQuire:MODe).

Acquisition type: Return Value There are three: NORMAL representative of the general collection; PEAK represents the peak collection; AVERAGE represents the average acquisition.

Trigger mode:(For more details, please see3.4 Trigger sweep TRIGger:SWEep).

When the base value:(For more details, please see2.2 Main timebase scale TIMebase:MAIN:SCALe).

Frequency meter channel source: the return value of five, the first four are 0-3, 1-4,4 representatives do not represent the channel meter off.

Sampling rate: value represents the current sample rate of return.

Memory depth:(For more details, please see4.2 Acquire depth ACQuire:MDEPth).

Trigger Type:(For more details, please see3.1 Trigger mode TRIGger:MODE).

Trigger Time:(For more details, please see3.2 Trigger time TRIGger:TIME).

Edge Trigger source:(For more details, please see3.5 Edge-triggered trigger source TRIGger:EDGe:SOURce).

Edge Trigger level:(For more details, please see3.7 Edge trigger level TRIGger:EDGe:LEVel).

Edge Trigger Polarity:(For more details, please see3.11 Pulse trigger polarity TRIGger: PULSe:POLarity).

Pulse Trigger source:(For more details, please see3.8 Trigger pulse source TRIGger:PULSe:SOURce).

Pulse Width trigger level:(For more details, please see3.12 Pulse Trigger level TRIGger:PULSe:LEVel).

Pulse Trigger Polarity:(For more details, please see3.11 Pulse trigger polarity TRIGger: PULSe:POLarity).

Pulse Trigger conditions:(For more details, please see3.9 Pulse Trigger conditions TRIGger:PULSe:WHEN).

Pulse width trigger:(For more details, please see3.10 Trigger pulse width trigger value TRIGger:PULSe:WIDth).

Overtime Trigger Source:(For more details, please see3.27 Timeout trigger source TRIGger:TIMeout:SOURce).

Timeout Trigger level:(For more details, please see3.30 Timeout trigger level TRIGger:TIMeout:LEVel).

Overtime Trigger Polarity:(For more details, please see3.31 Timeout trigger polarity TRIGger:TIMeout:POLarity).

Overtime Trigger Width:(For more details, please see3.28 Timeout trigger width TRIGger:TIMeout:WIDth).

Slope Trigger Source:(For more details, please see3.13 Trigger Slope trigger source TRIGger:SLOPe:SOURce).

Slope trigger level (1):(For more details, please see3.16 Slope trigger alevel TRIger:SLOPe:ALEVel).

Slope trigger level (2):(For more details, please see3.17 Slope trigger blevel TRIger:SLOPe:BLEVel).

Slope Trigger Polarity:(For more details, please see3.18 Slope trigger polarity TRIGger:SLOPe:POLarity).

Slope trigger condition:(For more details, please see3.14 Slope Trigger trigger condition TRIGger:SLOPe:WHEN).

Slope Trigger width:(For more details, please see3.10 Trigger pulse width trigger value TRIGger:PULSe:WIDth).

Video Trigger source:(For more details, please see3.20 Trigger video trigger source TRIGger:VIDeo:SOURce).

Video trigger level:(For more details, please see3.23 Video trigger level TRIGger:VIDeo:LEVel).

Video Trigger Polarity:(For more details, please see3.24 Video trigger polarity TRIGger:VIDeo:POLarity).

Video triggering standard:(For more details, please see3.26 Video trigger standard TRIGger:VIDeo:STANdard).

Video trigger mode:(For more details, please see3.21 Video trigger mode TRIGger:VIDeo:MODE).

Video trigger lines:(For more details, please see3.25 Video trigger line TRIGger:VIDeo:LINE).

Digital channels D0-D7 switch status:(For more details, please see1. LA D0-D7 switch status LA:POD1:STATe).

Digital channels D8-D15 switch status:(For more details, please see2. LA D8-D15 switch status LA:POD2:STATe).

D0-D7 digital channel threshold voltage:(For more details, please see3. LA Custom threshold voltage LA:POD1:THReshold:USERVolt).

D8-D15 digital channel threshold voltage:(For more details, please see4. LA Custom threshold voltage LA:POD2:THReshold:USERVolt).

11. WAVeform

11.1 Get display data WAVeform:DATA:DISP

Suntax WAVeform:DATA:DISP

Description	PC display screen display data.
Parameter	
Explanation	Get all the data display mode scanning, scrolling comprising
Return	Returns a string containing the waveform data packet header
For example	WAVeform:DATA:DISP /* Get display data */
Remark	Analytical see the waveform data packet Appendix

11.2 Get all the data WAVeform:DATA:ALL

Suntax	WAVeform:DATA:ALL
Description	Get any data storage case.
Parameter	
Explanation	All waveform data to obtain a large storage mode (memory depth> 1.6K) under.
Return	Returns a string containing the waveform data packet header
For example	WAVeform:DATA:ALL /* Get all data */
Remark	Analytical see the waveform data packet Appendix

12. SYSTem

12.1 Modify the system IP address SYSTem:IP

Suntax	SYSTem:IP <addr> SYSTem:IP?
Description	Set or query IP address of the system.
Parameter	<addr>：32-bit ip address
Explanation	When setting the IP address, 32 IP address, each with eight "," separated.

Return The query returns The current IP address.

For example

SYSTem:IP? 10.0.0.129 /* Get to the current IP address 10.0.0.129*/

SYSTem:IP 192,168,1,10 /* Set the current IP address to192.168.1.10*/

Remark Before you modify the IP address, you need to get about the current IP address

12.2 Get the system version number SYSTem:VERSion?

Suntax SYSTem:VERSion？

Description Query system version number

Parameter

Explanation The version number consists of three parts, namely 'arm' version information, 'fpga' version information, 'usb' version information.

Return The query returns current version number.

For example

SYSTem:VERSion?/*The query returns current version number is Ver001.001.001*/

Appendix

SCPI Agreement Remarks:

(1) all set to send commands only, not to acquire

(2) Get all commands sent reacquisition

(3) to obtain waveform data packet data [x] be interpreted as follows:

data[0]-data[1] (2 digits): #9

data[2]-data[10] (9 digits): Indicates that the current byte packet length

data[11] (1 digits): It indicates the current operating status

data[12] (1 digits): It indicates trigger status

data[13]-data[21] (9 digits): It represents the amount of data bytes of total length

data[22]-data[30] (9 digits): He said that it has uploaded the data length in bytes

data[31]-data[34] (4 digits): Represents the channel offset 1

data[35]-data[38] (4 digits): Represents the channel offset 2

data[39]-data[42] (4 digits): Represents the channel offset 3

data[43]-data[46] (4 digits): Represents the channel offset 4

data[47]-data[53] (7 digits): Represents the channel voltage 1

data[54]-data[60] (7 digits): Represents the channel voltage 2

data[61]-data[67] (7 digits): Represents the channel voltage 3

data[68]-data[74] (7 digits): Represents the channel voltage 4

data[75]-data[78] (4 digits): It represents the channel [1-4] Enable

data[79]-data[87] (9 digits): It indicates a sampling rate

data[88]-data[93] (6 digits): Represents a multiple sampling (only in memory depth> 1.6K suspended helpful)

data[94]-data[102] (9 digits): It displays the current trigger time frame

data[103]-data[111] (9 digits): The current frame display data acquisition start time point of the start point (> 1.6K pause when only useful in memory depth)

data[112]-data[126] (15 digits): Reserved bit

data[127] (1 digits): version number

data[128]-data[x] ： Indicates that the current waveform data corresponding to the data header