:HORIzontal Command Subsystem

:HORizontal:SCALe

Syntax
:HORIzontal:SCALe <scale_value>
:HORIzontal:SCALe?

Description
Set the scale of the main time base.

Parameter

Name	Type	Range	Default Value
<scale_value>	Discrete	Please refer to Explanation	----

Explanation：Default to set the main time base.

time base gear:
{5.0ns|10.0ns|20.0ns|50.0ns|100ns|200ns|500ns|1.0us|2.0us|5.0us|10us|20us|50us|
100us|200us|500us|1.0ms|2.0ms|5.0ms|10ms|20ms|50ms|100ms|200ms|500ms|1.0s|2.0s|
5.0s|10s|20s|50s|100s|200s|500s|1000s}

Return Format
The query returns the horizontal scale in character string.

Example
The command below sets the horizontal scale of channel 1 to 200us/div.
:HORizontal:SCALe 200us
The query below returns "200us".。
:HORizontal:SCALe?

:HORizontal:OFFSet

Syntax
:HORizontal:OFFset <value>
:HORizontal:OFFset?

Description
Set the Horizontal offset of the time base.

Parameter

Name	Type	Range	Default Value
<value>	Integer	Please refer to Explanation (indicating the number of grids to move horizontally)	0

Return Format

The query returns the offset in character string.

Explanation

If the current main time base is 500 us/div, and the horizontal offset is 2 div, then the horizontal offset time is 1.000 ms.

Example

The command below sets the horizontal offset of channel1 to 1 div.

:HORIzontal:OFFset 1

The query returns horizontal offset div.

If the current main time base is 500 us/div, and the horizontal offset time is 1.000 ms, the query below returns "2".

Query current channel waveform offset value

:HORizontal:OFFSet?

:ACQuire Command Subsystem

:ACQuire :MODe

Syntax

:ACQuire :MODe <type>

:ACQuire :MODe?

Description

Set the acquisition mode of the oscilloscope.

Parameter

Name	Type	Range	Default Value
<type>	Discrete	{SAMPle|PEAK}	SAMP

Return format

The query returns "SAMPle", "AVERage" or "PEAK".

Example

The command below selects the average acquisition mode.

:ACQuire:MODE AVERage

The query below returns "AVERage".

:ACQuire:MODE?

:ACQuire :DEPMem <mdep>

Syntax

:ACQuire :DEPMem <mdep>

:ACQuire :DEPMem?

Description

Set the number of waveform points that the oscilloscope can store in a single trigger sample.

Parameter

Name	Type	Range	Default Value
<mdep>	Discrete	{4K|8K}	4K

Return format

The query returns the actual number of points (integer).

Example

The command below sets the memory depth to "4K"。

:ACQuire :DEPMEM 4K

The query below returns the actual number of points, for example "4K"。

:ACQuire :DEPMEM?

:CH Command Subsystem

:CH<n>:DISPlay

Syntax

:CH<n>:DISPlay <bool>

:CH<n>:DISPlay?

Description

Turn the display of the channel on or off.

Parameter

Name	Type	Range	Default Value
\<n\>	Discrete	{1|2}	1
\<bool\>	Bool	{OFF|ON}	OFF

Return Format

The query returns "OFF" or "ON".

Example

The command below turns the display of channel1 on.

:CH1:DISPlay ON

The query returns "ON".

:CH1:DISPlay?

:CH\<n\>:COUPling

Syntax

:CH\<n\>:COUPling \<coupling\>

:CH\<n\>:COUPling?

Description

Set the coupling mode of the channel to "AC", "DC" or "GND".

Parameter

Name	Type	Range	Default Value
\<n\>	Discrete	{1|2}	1
\<coupling\>	Discrete	{AC|DC|GND}	DC

Return Format

The query returns "AC", "DC" or "GND".

Example

The command below sets the input coupling mode of channel 1 to "DC".

:CH1:COUPling DC

The query returns "DC".

:CH1:COUPling?

:CH\<n\>:PROBe

Syntax

:CH\<n\>:PROBe \<atten\>

:CH\<n\>:PROBe?

Description

Set the attenuation ratio of the probe.

Parameter

Name	Type	Range
\<n\>	Discrete	{1|2}
\<atten\>	Discrete	{1X|10X|100X|1000X}

Return Format

The query returns the attenuation ratio of the probe.

Example

The command below sets the attenuation ratio of the probe connected to channel1 to 10.

:CH1:PROBe 10X

The query returns "10X".

:CH1:PROBe?

:CH\<n\>:SCALe

Syntax

:CH\<n\>:SCALe \<scale\>

:CH\<n\>:SCALe?

Description

Set the vertical scale of the specified waveform display.

Parameter

Name	Type	Range	
\<n\>	Discrete	{1|2}	
\<scale\>	Discrete	X1	{10.0mV|20.0mV|50.0mV|100mV|200mV|500mV|1.00V|2.00V|5.00V|10.0V}
		X10	{100mV|200mV|500mV|1.00V|2.00V|5.00V|10.0V|20.0V|50.0V|100V}
		X100	{1.00V|2.00V|5.00V|10.0V|20.0V|50.0V|100V|200V|500V|1.0kV}
		X1000	{10.0V|20.0V|50.0V|100V|200V|500V|1.00kV|2.00kV|5.00kV|10.0kV}

Explanation

The attenuation ratio of the probe should be considered when setting the parameter. E.g., the attenuation ratio of the probe is 10X，if you want to set the vertical scale as 100mv，the command is:CH<n>:SCALe 100mV。

Return Format
The query returns the vertical scale in character string.

Example
The command below sets the vertical scale of channel 1 to 1V/div.
:CH1:SCALe 1 or 1v
The query returns "1v".
:CH1:SCALe?

:CH<n>:OFFSet

Syntax
:CH<n>:OFFSet <offset>
:CH<n>:OFFSet?

Description
Set the vertical offset of the specified waveform display.

Parameter

Name	Type	Range	Default Value
<n>	Discrete	{1|2}	None
<offset>	Integer	-200 to 200	0

Return Format
The query returns the offset div value in Integer.

Example
The command below sets the vertical offset of channel 1 to 1 div.
:CH1:OFFSet 1
The query below returns 1.
:CH1:OFFSet?

:Data Command Subsystem

Because of the huge size of the data get from Dada command, there are 4 bytes in the returned data to indicate the size of the returned data.

:DATa:WAVe:SCReen:HEAD?

Syntax

:DATa:WAVe:SCReen:HEAD?

Description

Get the file header of the screen waveform data file.

Return Format

The query returns a piece of text in JSON format.

Example

The command below return a piece of text as the following sample:
{"timebase":{"scale":"1.0ms","hoffset":0},"sample":{"fullscreen":1520,"slowmove":-1,"datalen":1520,"samplerate":"(500ks/s)","type":"sample","depmem":"10k"},"channel":[{"name":"ch1","display":"on","coupling":"ac","probe":"10x","scale":"5.00mv","offset":50,"frequence":0,"inverse":"off"},{"name":"ch2","display":"on","coupling":"ac","probe":"10x","scale":"10.0mv","offset":45,"frequence":0,"inverse":"off"}],"datatype":"screen","runstatus":"auto","trig":{"mode":"single","type":"edge","items":{"channel":"ch1","level":"32.0mv","edge":"rise","coupling":"dc","holdoff":"100ns"},"sweep":"auto"}}。

:DATa:WAVe:SCReen:CH\<x\>?

Syntax

:DATa:WAVe:SCReen:CH\<x\>?

Parameter

Name	Type	Range	Default Value
\<x\>	Discrete	{CH1|CH2}	无

Description

Get the screen waveform data of the specified channel.

Return format

The query returns the screen waveform data of the specified channel.

Explanation

The data point is recorded as 8-bit, a point uses two bytes, little-endian byte order.

Example

Reading flow of the screen waveform data:

:DATa:WAVe:SCReen:HEAD?
:DATa:WAVe:SCReen:CH1?
:DATa:WAVe:SCReen:CH2?

:TRIGger Command Subsystem

:TRIGger:STATus?

Syntax
:TRIGger: STATus?

Description
Query the current trigger status.

Parameter

Type	Range	Default Value	Type
Value	Discrete	{AUTo|READy|TRIG|SCAN|STOP }	None

Return Format
The query returns the current trigger status.

Example
:TRIGger: STATus?
The query below returns "AUTO".

:TRIGger:SINGle

:TRIGger:SINGle:SOURce

Syntax
:TRIGger:SINGle:SOURce <source>
:TRIGger:SINGle:SOURce?

Description
Select the source of SINGle EDGE trigger.

Parameter

Name	Type	Range	Default Value
<source>	Discrete	{CH1|CH2}	CH1

Return Format

The query returns "CH1"、"CH2"。

Example

The command below selects "CH2" as the source of SINGle EDGE trigger.

:TRIGger:SINGle:SOURce CH2

The query below returns "CH2"。

:TRIGger:SINGle:SOURce?

:TRIGger:SINGle:COUPling

Syntax

:TRIGger:SINGle:COUPling <coupling>

:TRIGger:SINGle:COUPling?

Description

Select the coupling mode under SINGle EDGE trigger.

Parameter

Name	Type	Range	Default Value
<coupling>	离散型	{DC|AC}	DC

Return Format

The query returns "DC"、"AC"。

Example

The command below selects "AC" as the coupling mode of SINGle EDGE trigger.

:TRIGger:SINGle:COUPling AC

The query below returns "AC"。

:TRIGger:SINGle:COUPling?

:TRIGger:SINGle:EDGe

Syntax

:TRIGger:SINGle::EDGe: <slope>

:TRIGger:SINGle::EDGe ?

Description

Select the slope of SINGle EDGE trigger.

Parameter

Name	Type	Range	Default Value
<slope>	Discrete	{RISE|FALL}	RISE

Return Format

The query returns "RISE"OR"FALL"。

Example

The command below selects "FALL" as the slope under SINGle EDGE trigger.

:TRIGger:SINGle:SLOPe FALL

The query below returns "FALL"。

:TRIGger:SINGle:SLOPe?

:TRIGger:SINGle:EDGe:LEVel

Syntax

:TRIGger:SINGle::EDGe:LEVel <level>

:TRIGger:SINGle::EDGe:LEVel?

Description

Set the trigger level under SINGle EDGE trigger.

Parameter

Name	Type	Unit	Default Value
<level>	Character string	uv, mv, v	无

Return Format

The query returns the trigger level in character string.

Example

he command below sets the trigger level of SINGle EDGE trigger in CH1 to 25mv.

:TRIGger:SINGle:SOURce CH1;

:TRIGger:SINGle::EDGe:LEVel 25mv

The query returns "25mv"。

:TRIGger:SINGle::EDGe:LEVel?

:TRIGger:SINGle:SWEep \<mode\>

Syntax

:TRIGger:SINGle:SWEep \<mode\>
:TRIGger:SINGle:SWEep?

Description

Select the trigger mode.

Parameter

Name	Type	Range	Default Value
\<mode\>	Discrete	{AUTO|NORMal|SINGle}	AUTO

Return Format

The query returns the current trigger mode.

Example

The command below selects normal as trigger mode.

:TRIGger:SINGle:SWEEp NORMal

The query below returns "NORMal".

:TRIGger:SINGle:SWEEp?

:MEASUrement Command Subsystem

:MEASurement:DISPlay

Syntax

:MEASurement:DISPlay \<bool\>
:MEASurement:DISPlay?

Description

Turn the display of measurement on or off.

Parameter

Name	Type	Range	Default Value
\<bool\>	Bool	{OFF|ON}	OFF

Return Format

The query returns "ON" or "OFF".

Example

The command below turns the display of measurement on.
:MEASurement:DISPlay ON
The query returns "ON"。
:MEASurement:DISPlay?

:MEASurement:CH\<n>:\<items>

Syntax

:MEASurement:CH\<n>:\<items>?

Description

Get the value of the channel measurement item.

Note: The inter-channel parameters are not included.

Parameter

Name	Type	Range	Default Value
\<n>	Discrete	{1|2}	1
\<items>	Discrete	{MAX|MIN|PKPK|VAMP|AVERage|PERiod|FREQuency}	--

Parameter list

Items(Voltage)	notation	Items（Time）	notation
MAX	Maximum	PERiod	Period
MIN	Minimum	FREQuency	Frequency
PKPK	Peak-to-peak		
VAMP	Amplitude		
AVERage	Average		

Example

he query below returns all the measurement values of CH1

:MEASurement:CH1:PERiod?

AG SCPI commands

:FUNCtion Command Subsystem

:FUNCtion

Syntax

:FUNCtion < waveform >
:FUNCtion?

Description

Set/query the waveform function for current channel when using the arbitrary function generator.

Parameter

Name	Type	Range	Default Value
<wave>	Discrete	{SINE|SQUare|RAMP|PULSe|AmpALT | AttALT |StairDn |tairUD |StairUp |Besselj Bessely| Sinc}	

Return Format

The query returns <waveform> for current channel in character string.

Explanation

For the multi-channel generator, this command work on the current selected channel by default. If you want to set other channels, you need to switch channel first (refer to the command :CHANnel, such as :CHANnel:CH2).

Example
:FUNCtion RAMP
:FUNCtion?

:FUNCtion:FREQuency

Syntax
:FUNCtion:FREQuency < frequency >
:FUNCtion:FREQuency?

Description

Set/query the output frequency of current channel when using the arbitrary function generator.

Parameter

<frequency>, floating point number that represents the frequency, in Hz.

Return Format

The query returns the frequency l in character string
Example return：1.000000e+04

Explanation

This command is not available when the waveform is DC or noise

Example
The command below sets the output frequency of current channel to 10 kHz
:FUNCtion:FREQuency 10000
Query the waveform frequency value of the current channel
:FUNCtion:FREQuency?

:FUNCtion:PERiod

Syntax
:FUNCtion:PERiod < period >
:FUNCtion:PERiod?

Description
Set/query the output period of current channel when using the arbitrary function generator.

Parameter
<period>, floating point number that represents the period, in seconds.

Return Format
The query returns the output period of current channel in scientific notation.
Example return：1.000000e-04

Explanation
This command is not available when the waveform is DC or noise.

Example
The command below sets the output period of current channel to 10 μs.
:FUNCtion:PERiod 1e-5
Query the waveform period value of the current channel
:FUNCtion:PERiod?

:FUNCtion:AMPLitude

Syntax
:FUNCtion:AMPLitude < amplitude >
:FUNCtion:AMPLitude?

Description
Set/query the amplitude (PK-PK) of output function for current channel when using the arbitrary function generator.

Parameter

<amplitude>, floating point number, in Vpp.

Return Format

The query returns the amplitude of current channel in scientific notation.

Example return：1.000000e+00

Explanation

This command is not available when the waveform is DC.

Example

The command below sets the amplitude of current channel to 1.5 Vpp.

:FUNCtion:AMPLitude 1.5

The query below returns the amplitude of current channel.

:FUNCtion:AMPLitude?

:FUNCtion:OFFSet

Syntax

:FUNCtion:OFFSet < offset >

:FUNCtion:OFFSet?

Description

Set/query the offset of output function for current channel when using the arbitrary function generator.

Parameter

<offset>, floating point number, in V.

Return Format

The query returns the offset of output function for current channel in scientific notation.

Example return：0.000000e+00

Example

The command below sets the offset for current channel to 1 V.

:FUNCtion:OFFSet 1

Query current channel waveform offset value

:FUNCtion:OFFSet?

:FUNCtion:HIGHt

Syntax

:FUNCtion:HIGHt <high level>

:FUNCtion:HIGHt?

Description
Set/query the high level of output function for current channel when using the arbitrary function generator.

Parameter
<high level>, floating point number, in V.

Return Format
The query returns the high level of output function for current channel in scientific notation.
Example return：5.000000e-01

Example
The command below sets the high level for current channel to 1 V.
:FUNCtion:HIGHt 1
Query the high-level voltage value of the current channel waveform
:FUNCtion:HIGHt?

:FUNCtion:LOW

Syntax
:FUNCtion:LOW <low level>
:FUNCtion:LOW?

Description
Set/query the low level of output function for current channel when using the arbitrary function generator.

Parameter
<low level>, floating point number, in V.

Return Format
The query returns the low level of output function for current channel in scientific notation.
Example return：-5.000000e-01

Example
The command below sets the low level for current channel to -1 V.
:FUNCtion:LOW -1
The query below returns the low level for current channel.
:FUNCtion:LOW?

:FUNCtion:SYMMetry

Syntax

:FUNCtion: SYMMetry < symmetry >
:FUNCtion: SYMMetry?

Description

Set/query the symmetry of ramp waveform as a percentage for current channel when using the arbitrary function generator.

Parameter

<symmetry>, integer that represents the symmetry, in %.

Return Format

The query returns the symmetry of ramp waveform for current channel in floating point number.
Example return：50.0

Example

The command below sets the symmetry of ramp waveform for current channel to 60%.
:FUNCtion:RAMP:SYMMetry 60
The query below returns the symmetry of ramp waveform for current channel.
:FUNCtion:RAMP:SYMMetry?

:FUNCtion:WIDTh

Syntax

:FUNCtion: WIDTh < width >
:FUNCtion: WIDTh?

Description

Set/query the pulse width for current channel when using the arbitrary function generator.

Parameter

<width>, floating point number, in seconds.

Return Format

The query returns the pulse width for current channel in scientific notation.
Example return：2.000000e-04

Example

The command below sets the pulse width for current channel to 20 μs.
:FUNCtion:PULSe:WIDTh 2e-5

The query below returns the pulse width for current channel.
:FUNCtion:PULSe:WIDTh?

:FUNCtion: DTYCycle

Syntax
:FUNCtion:PULSe:DTYCycle < duty cycle >
:FUNCtion:PULSe:DTYCycle?

Description
Set/query the duty cycle of the pulse waveform as a percentage for current channel when using the arbitrary function generator.

Parameter
<duty cycle>, floating point number, in %.

Return Format
The query returns the duty cycle of the pulse waveform for current channel in floating point number.
Example return：25.0

Example
The command below sets the duty cycle of the pulse waveform for current channel to 30%.
:FUNCtion:PULSe:DTYCycle 30
The query below returns the duty cycle of the pulse waveform for current channel.
:FUNCtion:PULSe:DTYCycle?

:FUNCtion:LOAD

Syntax
:FUNCtion:LOAD <bool>
:FUNCtion:LOAD?

Parameter
<bool>Bool data type
Can be ON/OFF

Return Format
Return <bool> string
The <bool> string returned by the query is such as: OFF

:CHANnel Command Subsystem

:CHANnel

Syntax
:CHANnel <bool>
:CHANnel?

Description
Set/query the current channel when using the arbitrary function generator.

Parameter
<bool>Bool data type
ON/OFF, Or 1/0

Return Format
Return <bool> string
The <bool> string returned by the query is such as: OFF

Example
:CHANnel ON
Set the output status of channel 1 to on

:CHANnel?
Set the output status of channel 1 to off