

## **:HORizontal Command Subsystem**

### **:HORizontal:SCALE**

#### **Syntax**

:HORizontal:SCALE <scale\_value>

:HORizontal:SCALE?

#### **Description**

Set the scale of the main time base.

#### **Parameter**

<b>Name</b>	<b>Type</b>	<b>Range</b>	<b>Default Value</b>
<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 1.00kV} 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", "offset": 0 }, "sample": { "fullscreen": 1520, "slowmove": -1, "data len": 1520, "samplerate": "(500ks/s)", "type": "sample", "depmem": "10k" }, "channel": [ { "name": "ch1", "display": "on", "coupling": "ac", "probe": "10x", "scale": "5.00mv", "offset": 50, "frequency": 0, "inverse": "off" }, { "name": "ch2", "display": "on", "coupling": "ac", "probe": "10x", "scale": "10.0mv", "offset": 45, "frequency": 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

The 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**

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

### **Parameter list**

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

### **Example**

The 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  $\mu$ s.

**: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  $\mu$ s.

**: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