

Parameter

Name	Type	Range	Default
<amp>	Real	20 mV to 5 V	-
<range>	Discrete	{ALL 10 100 1K 10K 100K 1M 10M 25M 1000 10000 100000 1000000 10000000 25000000 1e1 1e2 1e3 1e4 1e5 1e6 1e7 2.5e7}	-

Remarks

- When <range> is set to ALL, it sets a uniform voltage amplitude for the sweep signals in all frequency ranges. The voltage amplitude of the sweep signal cannot be changed.
- When <range> is set to other parameter, the voltage amplitude of the sweep signal can be modified. You can set a voltage amplitude for the sweep signal whose frequency is greater than the selected value.

Return Format

The query returns the voltage amplitude of the sweep signal within the specified frequency range in scientific notation. The unit is V.

Example

```
:BODEplot:VOLTage 100,0.2 /*Sets the voltage amplitude of the
sweep signal whose frequency is greater than 100 Hz to 200 mV.*/
:BODEplot:VOLTage? 100 /*The query returns 2.000000E-1.*/
```

3.6 :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.

- Setting the bandwidth limit can reduce the noises in the displayed waveforms. For example, the signal under test is a pulse with high frequency oscillation. When the bandwidth limit is turned off, the high frequency components of the signal under test can pass the channel. When the bandwidth limit is turned on,

the high frequency components found in the signal under test that are greater than the limit are attenuated.

- You can remove unwanted signals by setting the coupling mode. For example, the signal under test is a square waveform with DC offset. AC coupling mode can block the DC components.
- When you use an oscilloscope to make actual measurements, a small offset that arises from the temperature drift of the component or external environment disturbance may occur on the zero-cross voltage of the channel, which will affect the measurement results of the vertical parameters. This series oscilloscope allows you to set an offset calibration voltage for calibrating the zero point of the corresponding channel so as to improve the accuracy of the measurement results.
- When the fine adjustment is enabled, you can further adjust the vertical scale within a relatively smaller range to improve vertical resolution, making it easier to view waveform details.

3.6.1 :CHANnel<n>:BWLimit

Syntax

```
:CHANnel<n>:BWLimit <val>
```

```
:CHANnel<n>:BWLimit?
```

Description

Sets or queries the bandwidth limit of the specified channel.

Parameter

Name	Type	Range	Default
<n>	Discrete	{1 2 3 4}	-
<val>	Discrete	Refer to <i>Remarks</i>	OFF

Remarks

This series supports 20 MHz bandwidth limit.

When set to OFF, the bandwidth limit is disabled.

Return Format

The query returns 20M or OFF.

Example

```
:CHANnel1:BWLimit 20M      /*Enables the 20MHz bandwidth limit.*/
:CHANnel1:BWLimit?         /*The query returns 20M.*/
```

3.6.2 :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

Description

- **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.*/
```

3.6.3 :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}}	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.*/
```

3.6.4 :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.*/
```

3.6.5 :CHANnel<n>:OFFSet**Syntax**

```
:CHANnel<n>:OFFSet <offset>
```

```
: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	Refer to <i>Remarks</i>	0 V

Remarks

The range of the channel vertical offset is related to the current vertical scale.

- $\pm 0.5 \text{ V}$ ($< 500 \text{ } \mu\text{V/div}$)
- $\pm 1 \text{ V}$ ($\geq 500 \text{ } \mu\text{V/div}$, $\leq 65 \text{ mV/div}$)
- $\pm 8 \text{ V}$ (65.01 mV/div , $\leq 260 \text{ mV/div}$)
- $\pm 20 \text{ V}$ (260.01 mV/div , $\leq 2.65 \text{ V/div}$)
- $\pm 100 \text{ V}$ (2.6501 V/div , $\leq 10 \text{ V/div}$)

You can use `:CHANnel<n>:SCALE` to set or query the vertical scale for the specified channel.

Return Format

The query returns the vertical offset in scientific notation.

Example

```
:CHANnel1:OFFSet 0.01 /*Sets the vertical offset of CH1 to 10 mV.*/
:CHANnel1:OFFSet? /*The query returns 1.000000E-02.*/
```

3.6.6 :CHANnel<n>:TCALibrate**Syntax**

```
:CHANnel<n>:TCALibrate <val>
```

:CHANnel<n>:TCALibrate?

Description

Sets or queries the delay calibration time (used to calibrate the zero offset of the corresponding channel) of the specified channel. The unit is s.

Parameter

Name	Type	Range	Default
<n>	Discrete	{1 2 3 4}	-
<val>	Real	-100 ns to 100 ns	0 s

Remarks

When the horizontal time base is greater than 10 μ s, the parameter <val> cannot be set.

Return Format

The query returns the delay calibration time in scientific notation.

Example

```
:CHANnel1:TCALibrate 0.00000002 /*Sets the delay calibration time
to 20 ns.*/
:CHANnel1:TCALibrate? /*The query returns 2.000000E-8.*/
```

3.6.7 :CHANnel<n>:SCALE

Syntax

:CHANnel<n>:SCALE <scale>

:CHANnel<n>:SCALE?

Description

Sets or queries the vertical scale of the specified channel. The default unit is V/div.

Parameter

Name	Type	Range	Default
<n>	Discrete	{1 2 3 4}	-
<scale>	Real	Refer to <i>Remarks</i>	50 mV

Remarks

The range of the channel vertical scale is related to the probe ratio.

- For the DHO800 series, when the probe ratio is 1X: 500 μ V/div to 10 V/div

- For the DHO900 series, when the probe ratio is 1X: 200 μ V/div to 10 V/div

You can use `:CHANnel<n>:PROBe` to set or query the probe ratio of the specified channel.

Return Format

The query returns the vertical scale in scientific notation. The unit is V/div.

Example

```
:CHANnel1:SCALe 0.1 /*Sets the vertical scale of CH1 to 0.1 V/div.*/
:CHANnel1:SCALe? /*The query returns 1.000000E-01.*/
```

3.6.8 :CHANnel<n>:PROBe

Syntax

`:CHANnel<n>:PROBe <atten>`

`:CHANnel<n>:PROBe?`

Description

Sets or queries the probe ratio of the specified channel.

Parameter

Name	Type	Range	Default
<n>	Discrete	{1 2 3 4}	-
<atten>	Discrete	{0.001 0.002 0.005 0.01 0.02 0.05 0.1 0.2 0.5 1 2 5 10 20 50 100 200 500 1000 2000 5000 10000 20000 50000}	1

Remarks

- The command sets the probe ratio, that is, multiplies the acquired signal by a specified number (not affect the actual amplitude of the signal).
- The set probe ratio affects the settable range of the current vertical scale.

Return Format

The query returns 0.001, 0.002, 0.005, 0.01, 0.02, 0.05, 0.1, 0.2, 0.5, 1, 2, 5, 10, 20, 50, 100, 200, 500, 1000, 2000, 5000, 10000, 20000, or 50000.

Example

```
:CHANnel1:PROBe 10 /*Sets the probe ratio of CH1 to 10X*/
:CHANnel1:PROBe? /*The query returns 10.*/
```

3.6.9 :CHANnel<n>:LABel:SHOW

Syntax

```
:CHANnel<n>:LABel:SHOW <bool>
```

```
:CHANnel<n>:LABel:SHOW?
```

Description

Sets or queries whether to display the label of the specified channel.

Parameter

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

Remarks

N/A

Return Format

The query returns 1 or 0.

Example

```
:CHANnel1:LABel:SHOW ON          /*Displays the label of the
specified channel.*/
:CHANnel1:LABel:SHOW?            /*The query returns 1.*/
```

3.6.10 :CHANnel<n>:LABel:CONTent

Syntax

```
:CHANnel<n>:LABel:CONTent <str>
```

```
:CHANnel<n>:LABel:CONTent?
```

Description

Sets or queries the label of the specified channel.

Parameter

Name	Type	Range	Default
<n>	Discrete	{1 2 3 4}	-
<str>	ASCII String	The label can contain English letters and numbers, as well as some symbols.	-

Remarks

N/A

Return Format

The query returns the label of the specified channel in strings.

Example

```
:CHANnel1:LABel:CONTent ch1          /*Sets the label of Channel 1 to
ch1.*/
:CHANnel1:LABel:CONTent? /*The query returns ch1.*/
```

3.6.11 :CHANnel<n>:UNITs

Syntax

```
:CHANnel<n>:UNITs <units>
```

```
:CHANnel<n>:UNITs?
```

Description

Sets or queries the amplitude display unit of the specified analog channel.

Parameter

Name	Type	Range	Default
<n>	Discrete	{1 2 3 4}	-
<units>	Discrete	{WATT AMPere VOLTage UNKNown}	VOLTage

Remarks

N/A

Return Format

The query returns VOLT, WATT, AMP, or UNKN.

Example

```
:CHANnel1:UNITs VOLTage          /*Sets the amplitude display unit of CH1
to VOLTage.*/
:CHANnel1:UNITs?                /*The query returns VOLT.*/
```

3.6.12 :CHANnel<n>:VERNier

Syntax

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

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

Description

Enables or disables the fine adjustment of the vertical scale of the specified channel; or queries the on/off status of the fine adjustment of the vertical scale of the specified channel.

Parameter

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

Remarks

N/A

Return Format

The query returns 1 or 0.

Example

```
:CHANnel1:VERNier ON /*Enables the fine adjustment of the
vertical scale of CH1.*/
:CHANnel1:VERNier? /*The query returns 1.*/
```

3.6.13 :CHANnel<n>:POSition

Syntax

```
:CHANnel<n>:POSition <offset>
```

```
:CHANnel<n>:POSition?
```

Description

Sets or queries the bias voltage of the specified channel. The default unit is V.

Parameter

Name	Type	Range	Default
<n>	Discrete	{1 2 3 4}	-
<offset>	Real	Refer to <i>Remarks</i>	0

Remarks

The range of the bias voltage of the specified channel is related to the vertical scale.

- $\pm 0.5 \text{ V}$ (<500 $\mu\text{V}/\text{div}$)
- $\pm 1 \text{ V}$ ($\geq 500 \mu\text{V}/\text{div}$ to 65 mV/div)

- ± 8 V (65.01 mV/div to 260 mV/div)
- ± 20 V (260.01 mV/div to 2.65 V/div)
- ± 100 V (2.6501 V/div to 10 V/div)

You can use `:CHANnel<n>:SCALE` to set or query the vertical scale of the specified channel.

Return Format

The query returns the bias voltage of the specified channel in scientific notation. The unit is V.

Example

```
:CHANnel1:POSition 10 /*Sets the bias voltage of CH1 to 10 V.*/
:CHANnel1:POSition? /*The query returns 1.000000E+01.*/
```

3.7 :COUNter Commands

:COUNter commands are used to set or query the measurement and statistic parameters for the frequency counter.

The frequency counter analysis function provides frequency, period, or edge event counter measurements on any analog channel.

3.7.1 :COUNter:CURRent?

Syntax

:COUNter:CURRent?

Description

Queries the measurement value of the frequency counter.

Parameter

N/A

Remarks

N/A

Return Format

The query returns the current measurement value of the frequency counter in scientific notation.

Example

```
N/A
```