Return Format

The query returns the title of the specified math operation window in strings.

Example

```
:MATH1:WINDow:TITLe? /*The query returns Math1 CH1*CH1 Scale:0U
Sa:2GSa/s.*/
```

3.16.39 :MATH<n>:LABel:SHOW

Syntax

:MATH<*n*>**:LABel:SHOW** <*bool*>

:MATH<*n*>**:LABel:SHOW?**

Description

Sets or queries whether to display the waveform label of the specified operation.

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

```
:MATH1:LABel:ENABle ON          /*Enables the display of the
label.*/
:MATH1:LABel:ENABle?            /*The query returns 1.*/
```

3.17 :MEASure Commands

:MEASure commands are used to set and query the parameters related to measurements.

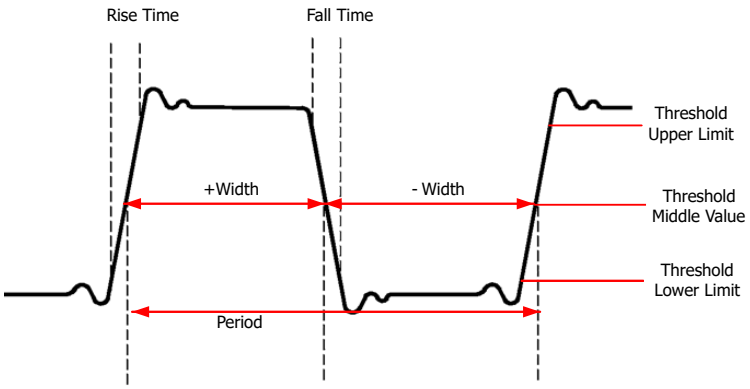
This oscilloscope allows you to set the measurement source, enable or disable the all measurement function, the statistical function, and etc.

Measurement Parameters

TIP

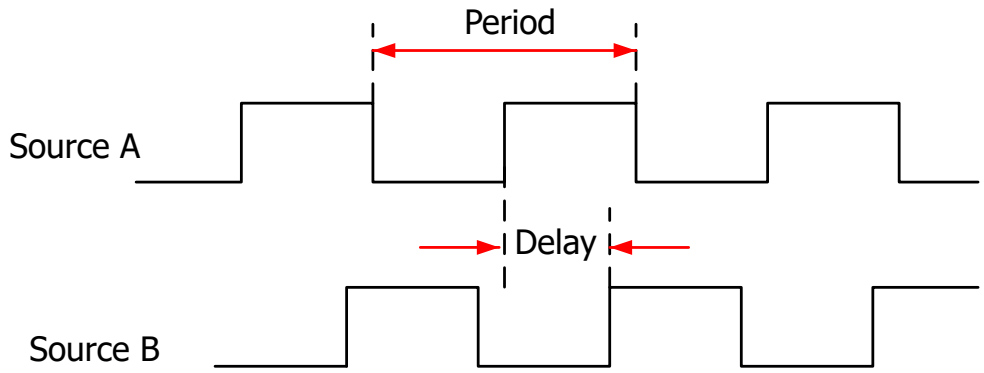
If there is no signal input for the current source or the measurement result is not within the valid range (too large or too small), then the measurement results are invalid.

Horizontal Parameters



- **Period (PERiod):** defined as the time between the middle threshold points of two consecutive, like-polarity edges.
- **Frequency (FREQuency):** defined as the reciprocal of period.
- **Rise Time (RTIMe):** indicates the time for the signal amplitude to rise from the threshold lower limit to the threshold upper limit.
- **Fall Time (FTIMe):** indicates the time for the signal amplitude to drop from the threshold upper limit to the threshold lower limit.
- **+Width (PWIDth):** indicates the time between the threshold middle value of a rising edge to the threshold middle value of the next falling edge.
- **-Width (NWIDth):** indicates the time between the threshold middle value of a falling edge to the threshold middle value of the next rising edge.
- **+Duty (PDUTy):** indicates the ratio of the positive pulse width to the period.
- **-Duty (NDUTy):** indicates the ratio of the negative pulse width to the period.
- **Tvmax (TVMAX):** indicates the time that corresponds to the maximum value of the waveform (Vmax).
- **Tvmin (TVMIN):** indicates the time that corresponds to the minimum value of the waveform (Vmin).

Delay and Phase Parameters

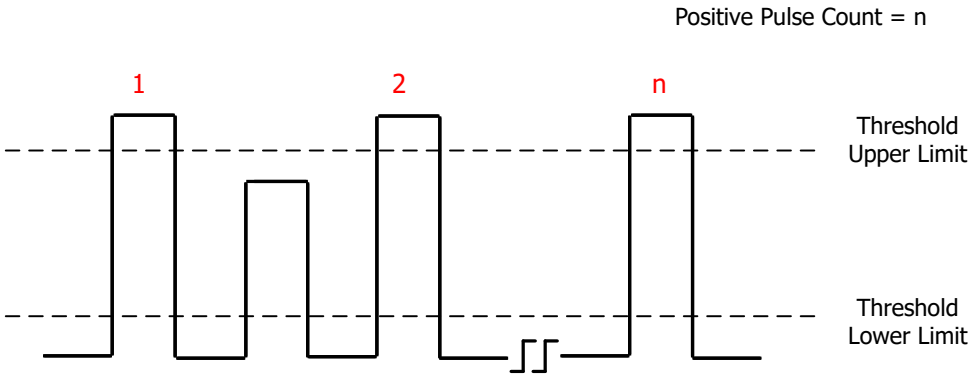


- **Delay(r-r) (RRDelay):** indicates the time difference between the threshold middle values of the rising edge of Source A and that of Source B. Negative delay indicates that the rising edge of Source A occurred after that of Source B.
- **Delay(f-f) (FFDelay):** indicates the time difference between the threshold middle values of the falling edge of Source A and that of Source B. Negative delay indicates that the falling edge of Source A occurred after that of Source B.
- **Delay(r-f) (RFDelay):** indicates the time difference between the threshold middle values of the rising edge of Source A and the falling edge of Source B. Negative delay indicates that the rising edge of Source A occurred after the falling edge of Source B.
- **Delay(f-r) (FRDelay):** indicates the time difference between the threshold middle values of the rising edge of Source A and that of Source B. Negative delay indicates that the falling edge of Source A occurred after the rising edge of Source B.
- **Phase(r-r) (RRPHase):** indicates the phase deviation between the threshold middle values of the rising edge of Source A and that of Source B.
- **Phase(f-f) (FFPHase):** indicates the phase deviation between the threshold middle values of the falling edge of Source A and that of Source B.
- **Phase(r-f) (RFPHase):** indicates the phase deviation between the threshold middle values of the rising edge of Source A and the falling edge of Source B.

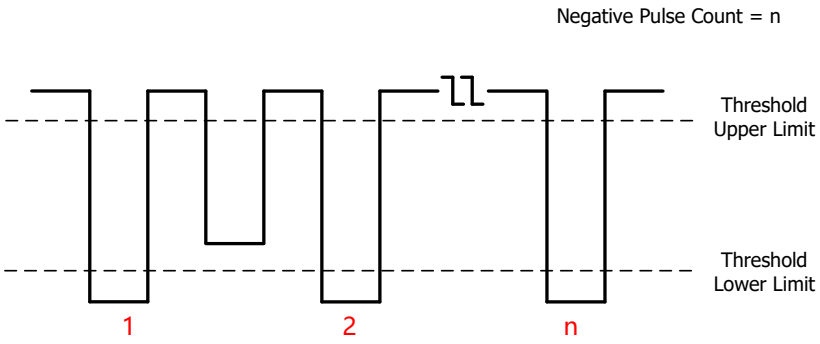
- **Phase(f-r) (FRPHase):** indicates the phase deviation between the threshold middle values of the rising edge of Source A and that of Source B.

Count Values

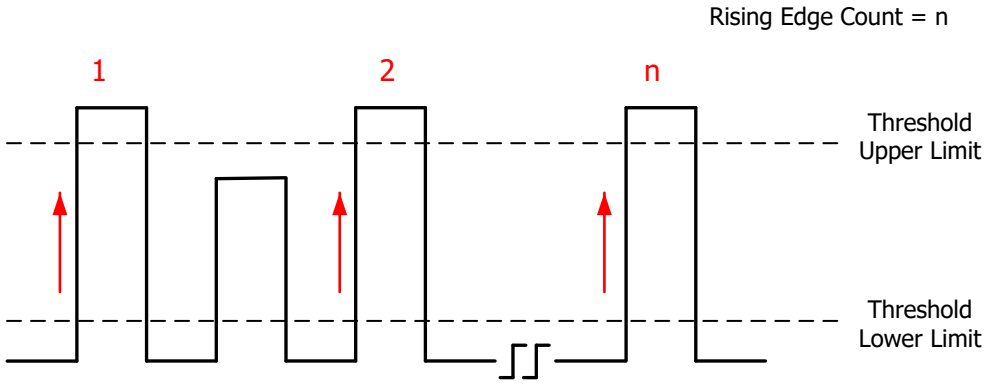
- **Positive Pulse Count (PPULses):** It is specified as the number of positive pulses that rise from under the threshold lower limit to above the threshold upper limit.



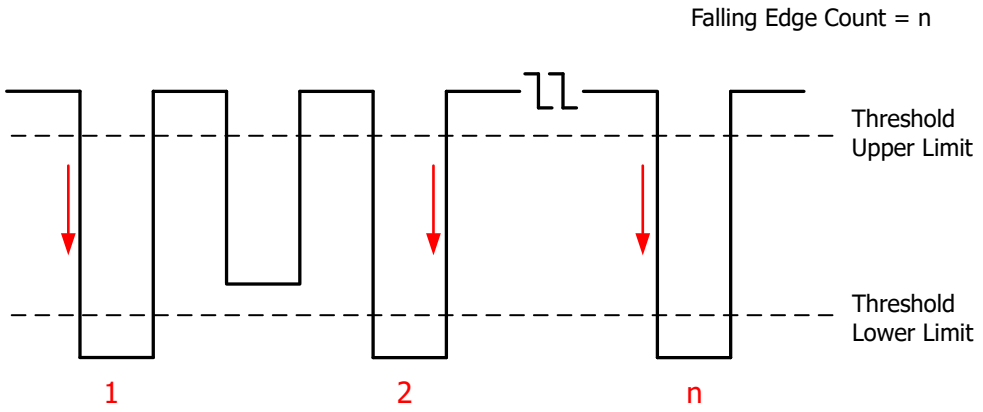
- **Negative Pulse Count (NPULses):** It is specified as the number of negative pulses that fall from above the threshold upper limit to below the threshold lower limit.



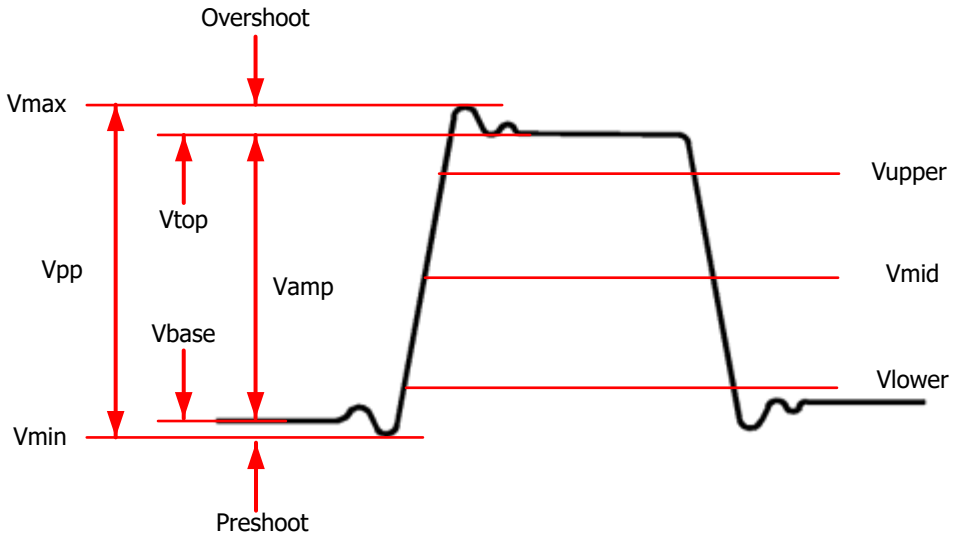
- **Rising Edge Count (PEDGes):** It is specified as the number of rising edges that rise from under the threshold lower limit to above the threshold upper limit.



- **Falling Edge Count (NEDGes):** It is specified as the number of falling edges that fall from above the threshold upper limit to below the threshold lower limit.



Voltage Parameters



- **Vmax (VMAX):** indicates the voltage value from the highest point of the waveform to the GND.

- **Vmin (VMIN):** indicates the voltage value from the lowest point of the waveform to the GND.
- **Vpp (VPP):** indicates the voltage value from the highest point to the lowest point of the waveform.
- **Vtop (VTOP):** indicates the voltage value from the flat top of the waveform to the GND.
- **Vbase (VBASe):** indicates the voltage value from the flat base of the waveform to the GND.
- **Vamp (VAMP):** indicates the voltage value from the top of the waveform to the base of the waveform.
- **Vupper (VUPPer):** indicates the actual voltage value that corresponds to the threshold maximum value.
- **Vmid (VMID)** indicates the actual voltage value that corresponds to the threshold middle value.
- **Vlower (VLOWer):** indicates the actual voltage value that corresponds to the threshold minimum value.
- **Vavg (ACRMs):** indicates the arithmetic average value on the whole waveform or in the gating area.
- **VRMS (VRMS):** indicates the root mean square value on the whole waveform or in the gating area.
- **Per.VRMS (PVRMs):** indicates the root mean square value within a period.
- **Overshoot (OVERshoot):** indicates the ratio of the difference between the maximum value and the top value of the waveform to the amplitude value.
- **Preshoot (PREShoot):** indicates the ratio of the difference between the minimum value and the base value of the waveform to the amplitude value.
- **AC RMS (VAVG):** indicates the root-mean-square value of the waveforms, with the DC component removed.

Other Parameters

- **Positive Slew Rate (PSLewrate):** On the rising edge, first calculate the difference between the high value and the low value, then use the difference to divide the corresponding time value to obtain the positive slew rate.
- **Negative Slew Rate (NSLewrate):** On the falling edge, first calculate the difference between the low value and the high value, then use the difference to divide the corresponding time value to obtain the negative slew rate.
- **Area (MARea):** indicates the area of the whole waveform within the screen. The unit is V*s. The area of the waveform above the zero reference (namely the vertical offset) is positive, and the area of the waveform below the zero reference is negative. The area measured is the algebraic sum of the area of the whole waveform within the screen.
- **Period Area (MPARea):** indicates the area of the first period of waveform on the screen. The unit is V*s. The area of the waveform above the zero reference (namely the vertical offset) is positive, and the area of the waveform below the zero reference is negative. The area measured is the algebraic sum of the whole period area.

Measurement Results

This oscilloscope can make a statistics and display the measurement results.

- **MAXimum:** the maximum value.
- **MINimum:** the minimum value.
- **CURRent:** the current value.
- **AVERages:** the average value.
- **DEViation:** the standard deviation.
- **CNT:** the count value.

3.17.1 :MEASure:SOURce

Syntax

:MEASure:SOURce <*source*>

:MEASure:SOURce?

Description

Sets or queries the channel source of the current measurement parameter.

Parameter

Name	Type	Range	Default
<source>	Discrete	{D0|D1|D2|D3|D4|D5|D6|D7|D8|D9|D10|D11|D12|D13|D14|D15|CHANnel1|CHANnel2|CHANnel3|CHANnel4|MATH1|MATH2|MATH3|MATH4}	CHANnel1

Remarks

This command has the same function as the *:MEASure:SETup:DSA* and *:MEASure:SETup:PSA* commands.

D0-D15 are only available for the DHO900 series.

Return Format

The query returns D0, D1, D2, D3, D4, D5, D6, D7, D8, D9, D10, D11, D12, D13, D14, D15, CHAN1, CHAN2, CHAN3, CHAN4, MATH1, MATH2, MATH3, or MATH4.

Example

```
:MEASure:SOURce CHANnel2    /*Sets the channel source of the
measurement parameter to CHANnel2.*/
:MEASure:SOURce?             /*The query returns CHAN2.*/
```

3.17.2 :MEASure:ITEM

Syntax

:MEASure:ITEM <*item*>[,<*src*>[,<*src*>]]

:MEASure:ITEM? <*item*>[,<*src*>[,<*src*>]]

Description

Measures any waveform parameter of the specified source, or queries the statistical results of any waveform parameter of the specified source.

Parameter

Name	Type	Range	Default
<item>	Discrete	{VMAX|VMIN|VPP|VTOP|VBASe|VAMP|VAVG|VRMS|OVERshoot|PREShoot|MARea|MPARea|PERiod|FREQuency|RTIMe|FTIMe|PWIDth|NWIDth|PDUTy|	-

Name	Type	Range	Default
		NDUTy|TVMAX|TVMIN| PSLewrate|NSLewrate|VUPPer| VMID|VLOWer|VARiance|PVRMs| PPULses|NPULses|PEDGes| NEDGes|RRDelay|RFDelay| FRDelay|FFDelay|RRPHase| RFPHase|FRPHase|FFPHase| ACRMs}	
<src>	Discrete	{D0|D1|D2|D3|D4|D5|D6|D7|D8| D9|D10|D11|D12|D13|D14|D15| CHANnel1|CHANnel2| CHANnel3|CHANnel4|MATH1| MATH2|MATH3|MATH4}	-

Remarks

- For detailed measurement items of <item>, refer to *Measurement Parameters*.
- The [,<src>[,<src>]] parameter is used to set the source of the measured parameter.
  - Only DHO900 series supports the digital channels D0-D15.
  - If the parameter <item> is set to PERiod, FREQuency, PWIDth, NWIDth, PDUTy, NDUTy, RRDelay, RFDelay, FRDelay, FFDelay, RRPHase, RFPHase, FRPHase, or FFPHase, the range of the parameter <src> is any one of the values in {D0|D1|D2|D3|D4|D5|D6|D7|D8|D9|D10|D11|D12|D13|D14|D15|CHANnel1|CHANnel2|CHANnel3|CHANnel4|MATH1|MATH2|MATH3|MATH4}.

    Otherwise, the range of <src> is {CHANnel1|CHANnel2|CHANnel3|CHANnel4|MATH1|MATH2|MATH3|MATH4}.
  - If the measured parameter is a single source, you only need to set one source. If this parameter is omitted, then the source is, by default, the one that you've selected in the last sent command (*:MEASure:SOURce*, *:MEASure:SETup:PSA*, or *:MEASure:SETup:DSA*).
  - If the measurement parameter is a dual channel source, observe the following rules to determine the source that you've selected. That is, if the parameter <src> is omitted, the first source is, by default, the one that

you've selected in the last sent command (*:MEASure:SOURce*, *:MEASure:SETup:PSA*, or *:MEASure:SETup:DSA*); the second source is, by default, the one that you've selected in the last sent command (*:MEASure:SETup:PSB* or *:MEASure:SETup:DSB*).

Return Format

The query returns the current measurement value in scientific notation.

Example

```
:MEASure:ITEM OVERshoot,CHANnel2   /*Enables the overshoot
measurement of CH2.*/
:MEASure:ITEM? OVERshoot,CHANnel2  /*The query returns
8.888889E-3.*/
```

3.17.3 :MEASure:CLEar

Syntax

`:MEASure:CLEar`

Description

Clears all the enabled measurement items.

Parameter

N/A

Remarks

N/A

Return Format

N/A

Example

```
N/A
```

3.17.4 :MEASure:AMSource

Syntax

`:MEASure:AMSource` <*chan*>

`:MEASure:AMSource?`

Description

Sets the source and displays all measurement values of the set source; or queries the channel source(s) of the all measurement function.

Parameter

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

Remarks

N/A

Return Format

The query returns CHAN1, CHAN2, CHAN3, CHAN4, or OFF.

Example

```
:MEASure:AMSource CHANnel1    /*Sets the source to CHANnel1.*/
:MEASure:AMSource?             /*The query returns CHAN1.*/
```

3.17.5 :MEASure:STATistic:COUNt

Syntax

:MEASure:STATistic:COUNt <*val*>

:MEASure:STATistic:COUNt?

Description

Sets or queries the statistics count.

Parameter

Name	Type	Range	Default
<val>	Integer	2 to 100,000	1,000

Remarks

N/A

Return Format

The query returns an integer ranging from 2 to 100,000.

Example

```
:MEASure:STATistic:COUNt 1000       /*Sets the statistics count to
1,000.*/
:MEASure:STATistic:COUNt?      /*The query returns 1000.*/
```

3.17.6 :MEASure:STATistic:DISPlay

Syntax

:MEASure:STATistic:DISPlay <*bool*>

:MEASure:STATistic:DISPlay?

Description

Enables or disables the statistical function; or queries the status of the statistical function.

Parameter

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

Remarks

When the statistical function is enabled, the instrument makes statistics of the measurement results for at most 10 measurement items that are turned on last time and displays the statistical results.

Return Format

The query returns 1 or 0.

Example

```
:MEASure:STATistic:DISPlay ON     /*Enables the statistical
function.*/
:MEASure:STATistic:DISPlay?       /*The query returns 1.*/
```

3.17.7 :MEASure:STATistic:RESet

Syntax

:MEASure:STATistic:RESet

Description

Clears the history statistics data and makes statistics again.

Parameter

N/A

Remarks

N/A

Return Format

N/A

Example

```
N/A
```

3.17.8 :MEASure:STATistic:ITEM

Syntax

:MEASure:STATistic:ITEM <*item*>[,<*src*>[,<*src*>]]

:MEASure:STATistic:ITEM?<*type*>,<*item*>[,<*src*>[,<*src*>]]

Description

Enables the statistical function of any waveform parameter of the specified source, or queries the statistical results of any waveform parameter of the specified source.

Parameter

Name	Type	Range	Default
<item>	Discrete	{VMAX|VMIN|VPP|VTOP|VBASe|VAMP|VAVG|VRMS|OVERshoot|PREShoot|MAREa|MPAREa|PERiod|FREQuency|RTIMe|FTIMe|PWIDth|NWIDth|PDUTy|NDUTy|TVMAX|TVMIN|PSLewrate|NSLewrate|VUPPer|VMID|VLOWer|VARiance|PVRMs|PPULses|NPULses|PEDGes|NEDGes|RRDelay|RFDelay|FRDelay|FFDelay|RRPHase|RFPHase|FRPHase|FFPHase|ACRMs}	-
<src>	Discrete	{D0|D1|D2|D3|D4|D5|D6|D7|D8|D9|D10|D11|D12|D13|D14|D15|CHANnel1|CHANnel2|CHANnel3|CHANnel4|MATH1|MATH2|MATH3|MATH4}	-
<type>	Discrete	{MAXimum|MINimum|CURRent|AVERages|DEViation|CNT}	-

Remarks

- For detailed measurement items of <item>, refer to *Measurement Parameters*.
- The [,<src>[,<src>]] parameter is used to set the source of the measured parameter.
  - Only DHO900 series supports the digital channels D0-D15.

- If the parameter <item> is set to PERiod, FREQuency, PWIDth, NWIDth, PDUTy, NDUTy, RRDelay, RFDelay, FRDelay, FFDelay, RRPHase, RFPHase, FRPHase, or FFPHase, the range of the parameter <src> is any one of the values in {D0|D1|D2|D3|D4|D5|D6|D7|D8|D9|D10|D11|D12|D13|D14|D15|CHANnel1|CHANnel2|CHANnel3|CHANnel4|MATH1|MATH2|MATH3|MATH4}.

  Otherwise, the range of <src> is {CHANnel1|CHANnel2|CHANnel3|CHANnel4|MATH1|MATH2|MATH3|MATH4}.
- If the measured parameter is a single source, you only need to set one source. If this parameter is omitted, then the source is, by default, the one that you've selected in the last sent command (*:MEASure:SOURce*, *:MEASure:SETup:PSA*, or *:MEASure:SETup:DSA*).
- If the measurement parameter is a dual channel source, observe the following rules to determine the source that you've selected. That is, if the parameter <src> is omitted, the first source is, by default, the one that you've selected in the last sent command (*:MEASure:SOURce*, *:MEASure:SETup:PSA*, or *:MEASure:SETup:DSA*); the second source is, by default, the one that you've selected in the last sent command (*:MEASure:SETup:PSB* or *:MEASure:SETup:DSB*).

- For the results of <type>, refer to *Measurement Results*.

Return Format

The query returns the statistical results in scientific notation.

Example

```
:MEASure:STATistic:ITEM VPP,CHANnel2   /*Enables the statistical
function of the peak-peak value of CH2.*/
:MEASure:STATistic:ITEM? MAXimum,VPP   /*Queries the maximum value.
The query returns 9.120000E-1.*/
```

3.17.9 :MEASure:SETup:MAX

Syntax

:MEASure:SETup:MAX <*value*>

:MEASure:SETup:MAX?

Description

Sets or queries the threshold level upper limit of the analog channel in auto measurement.

Parameter

Name	Type	Range	Default
<value>	Integer	Refer to *Remarks*	-

Remarks

The range of the threshold level upper limit is related to the current threshold middle value. You can send the *:MEASure:SETup:MID* command to set or query the threshold middle value of the current analog channel in auto measurement.

- When the threshold type is percentage, its range is from (threshold middle value + 1%) to 100%.
- When the threshold type is absolute, its range changes with the probe ratio. Its max. range is from -100 MV to 100 MV; and its min. range is from -20 V to 20 V.
- When the set upper limit is smaller than the current threshold middle value, a message "Set at lower limit" will be displayed, and the threshold middle value will not be modified automatically.

Return Format

The query returns an integer. When the threshold type is absolute, the default unit of the returned value is V.

Example

```
:MEASure:SETup:MAX 95     /*Sets the upper limit of the threshold
level to 95%.*/
:MEASure:SETup:MAX?       /*The query returns 95.*/
```

3.17.10 :MEASure:SETup:MID

Syntax

:MEASure:SETup:MID <*value*>

:MEASure:SETup:MID?

Description

Sets or queries the threshold level middle value of the analog channel in auto measurement.

Parameter

Name	Type	Range	Default
<value>	Integer	Refer to *Remarks*	-

Remarks

The set middle value must be smaller than the currently set upper limit and greater than the currently set lower limit.

You can send the *:MEASure:SETup:MAX* and *:MEASure:SETup:MIN* commands to set or query the threshold level upper limit and lower limit of the current analog channel in auto measurement.

Return Format

The query returns an integer. When the threshold type is absolute, the default unit of the returned value is V.

Example

```
:MEASure:SETup:MID 89     /*Sets the middle value of the threshold
level to 89%.*/
:MEASure:SETup:MID?       /*The query returns 89.*/
```

3.17.11 :MEASure:SETup:MIN

Syntax

:MEASure:SETup:MIN <*value*>

:MEASure:SETup:MIN?

Description

Sets or queries the threshold level lower limit of the analog channel in auto measurement.

Parameter

Name	Type	Range	Default
<value>	Integer	Refer to *Remarks*	-

Remarks

The range of the threshold level lower limit is related to the current threshold middle value. You can send the *:MEASure:SETup:MID* command to set or query the threshold middle value of the current analog channel in auto measurement.

- When the threshold type is percentage, its range is from 0% to (threshold middle value - 1%).

- When the threshold type is absolute, its range changes with the probe ratio. Its max. range is from -100 MV to 100 MV; and its min. range is from -20 V to 20 V.
- When the set lower limit is greater than the current threshold middle value, a message "Set at upper limit" will be displayed, and the threshold middle value will not be modified automatically.

Return Format

The query returns an integer. When the threshold type is absolute, the default unit of the returned value is V.

Example

```
:MEASure:SETup:MIN 53    /*Sets the lower limit of the threshold
level to 53%.*/
:MEASure:SETup:MIN?      /*The query returns 53.*/
```

3.17.12 :MEASure:SETup:PSA

Syntax

:MEASure:SETup:PSA <*source*>

:MEASure:SETup:PSA?

Description

Sets or queries Source A in the phase or delay measurement.

Parameter

Name	Type	Range	Default
<source>	Discrete	{D0|D1|D2|D3|D4|D5|D6|D7|D8|D9|D10|D11|D12|D13|D14|D15|CHANnel1|CHANnel2|CHANnel3|CHANnel4|MATH1|MATH2|MATH3|MATH4}	CHANnel1

Remarks

This command has the same function as the *:MEASure:SOURce* and *:MEASure:SETup:DSA* commands.

D0-D15 are only available for the DHO900 series.

Return Format

The query returns D0, D1, D2, D3, D4, D5, D6, D7, D8, D9, D10, D11, D12, D13, D14, D15, CHAN1, CHAN2, CHAN3, CHAN4, MATH1, MATH2, MATH3, or MATH4.

Example

```
:MEASure:SETup:PSA CHANnel1    /*Sets Source A of the phase
measurement to CHANnel1.*/
:MEASure:SETup:PSA?             /*The query returns CHAN1.*/
```

3.17.13 :MEASure:SETup:PSB

Syntax

:MEASure:SETup:PSB <*source*>

:MEASure:SETup:PSB?

Description

Sets or queries Source B in the phase or delay measurement.

Parameter

Name	Type	Range	Default
<source>	Discrete	{D0|D1|D2|D3|D4|D5|D6|D7|D8|D9|D10|D11|D12|D13|D14|D15|CHANnel1|CHANnel2|CHANnel3|CHANnel4|MATH1|MATH2|MATH3|MATH4}	CHANnel1

Remarks

This command has the same function as the *:MEASure:SETup:DSB* command.

D0-D15 are only available for the DHO900 series.

Return Format

The query returns D0, D1, D2, D3, D4, D5, D6, D7, D8, D9, D10, D11, D12, D13, D14, D15, CHAN1, CHAN2, CHAN3, CHAN4, MATH1, MATH2, MATH3, or MATH4.

Example

```
:MEASure:SETup:PSB CHANnel2    /*Sets Source B of the phase
measurement to CHANnel2.*/
:MEASure:SETup:PSB?             /*The query returns CHAN2.*/
```

3.17.14 :MEASure:SETup:DSA

Syntax

:MEASure:SETup:DSA <*source*>

:MEASure:SETup:DSA?

Description

Sets or queries Source A in the phase or delay measurement.

Parameter

Name	Type	Range	Default
<source>	Discrete	{D0|D1|D2|D3|D4|D5|D6|D7|D8|D9|D10|D11|D12|D13|D14|D15|CHANnel1|CHANnel2|CHANnel3|CHANnel4|MATH1|MATH2|MATH3|MATH4}	CHANnel1

Remarks

This command has the same function as the *:MEASure:SOURce* and *:MEASure:SETup:PSA* commands.

D0-D15 are only available for the DHO900 series.

Return Format

The query returns D0, D1, D2, D3, D4, D5, D6, D7, D8, D9, D10, D11, D12, D13, D14, D15, CHAN1, CHAN2, CHAN3, CHAN4, MATH1, MATH2, MATH3, or MATH4.

Example

```
:MEASure:SETup:DSA CHANnel1    /*Sets Source A of the delay
measurement to CHANnel1.*/
:MEASure:SETup:DSA?             /*The query returns CHAN1.*/
```

3.17.15 :MEASure:SETup:DSB

Syntax

:MEASure:SETup:DSB <*source*>

:MEASure:SETup:DSB

Description

Sets or queries Source B in the phase or delay measurement.

Parameter

Name	Type	Range	Default
<source>	Discrete	{D0|D1|D2|D3|D4|D5|D6|D7|D8|D9|D10|D11|D12|D13|D14|D15|CHANnel1|CHANnel2|CHANnel3|CHANnel4|MATH1|MATH2|MATH3|MATH4}	CHANnel1

Remarks

This command has the same function as the *:MEASure:SETup:PSB* command.

D0-D15 are only available for the DHO900 series.

Return Format

The query returns D0, D1, D2, D3, D4, D5, D6, D7, D8, D9, D10, D11, D12, D13, D14, D15, CHAN1, CHAN2, CHAN3, CHAN4, MATH1, MATH2, MATH3, or MATH4.

Example

```
:MEASure:SETup:DSB CHANnel2    /*Sets Source B of the delay
measurement to CHANnel2.*/
:MEASure:SETup:DSB?             /*The query returns CHAN2.*/
```

3.17.16 :MEASure:THReshold:SOURce

Syntax

:MEASure:THReshold:SOURce <*source*>

:MEASure:THReshold:SOURce?

Description

Sets or queries the threshold source.

Parameter

Name	Type	Range	Default
<source>	Discrete	{CHANnel1|CHANnel2|CHANnel3|CHANnel4|MATH1|MATH2|MATH3|MATH4}	CHANnel1

Remarks

Modifying the threshold will affect the measurement results of time, delay and phase parameters.

Return Format

The query returns CHAN1, CHAN2, CHAN3, CHAN4, MATH1, MATH2, MATH3, or MATH4.

Example

```
:MEASure:THReshold:SOURce CHANnel2    /*Sets the threshold source
to CHANnel2.*/
:MEASure:THReshold:SOURce?             /*The query returns CHAN2.*/
```

3.17.17 :MEASure:THReshold:TYPE

Syntax

:MEASure:THReshold:TYPE <*type*>

:MEASure:THReshold:TYPE?

Description

Sets or queries the measurement threshold type.

Parameter

Name	Type	Range	Default
<type>	Discrete	{PERCent|ABSolute}	PERCent

Remarks

N/A

Return Format

The query returns PERC or ABS.

Example

```
:MEASure:THReshold:TYPE ABSolute    /*Sets the threshold type to
ABSolute.*/
:MEASure:THReshold:TYPE?             /*The query returns ABS.*/
```

3.17.18 :MEASure:THReshold:DEFault

Syntax

`:MEASure:THReshold:DEFault`

Description

Sets the threshold level of the analog channel in auto measurement to a default value.

Parameter

N/A

Remarks

For the default threshold level in absolute, its upper limit and lower limit are + (vertical scale x 3) and -(vertical scale x 3), respectively.

Return Format

N/A

Example

```
N/A
```

3.17.19 :MEASure:AREA

Syntax

`:MEASure:AREA` <*area*>

:MEASure:AREA?

Description

Sets or queries the type of the measurement range.

Parameter

Name	Type	Range	Default
<area>	Discrete	{MAIN|ZOOM}	MAIN

Remarks

- **MAIN:** indicates that the measurement range is within the main time base region.
- **ZOOM:** indicates that the measurement range is within the zoomed time base region. Note that only when you enable the delayed sweep function first, can "Zoom" be enabled.

Return Format

The query returns MAIN, ZOOM.

Example

```
:MEASure:AREA ZOOM              /*Sets the type of the measurement
range to ZOOM.*/
:MEASure:AREA?                    /*The query returns ZOOM.*/
```

3.17.20 :MEASure:INDicator

Syntax

:MEASure:INDicator <*bool*>

:MEASure:INDicator?

Description

Sets or queries the on/off status of the measurement auto cursor.

Parameter

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

Remarks

N/A

Return Format

The query returns 1 or 0.

Example

```
:MEASure:INDicator ON   /*Sets the measurement auto cursor to be
on.*/
:MEASure:INDicator? /*The query returns 1.*/
```

3.17.21 :MEASure:COUNter:ENABle

Syntax

:MEASure:COUNter:ENABle <*bool*>

:MEASure:COUNter:ENABle?

Description

Sets or queries the on/off status of the frequency counter.

Parameter

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

Remarks

N/A

Return Format

The query returns 1 or 0.

Example

```
:MEASure:COUNter:ENABle ON    /*Enables the frequency counter.*/
:MEASure:COUNter:ENABle?      /*The query returns 1.*/
```

3.17.22 :MEASure:COUNter:SOURce

Syntax

:MEASure:COUNter:SOURce <*source*>

:MEASure:COUNter:SOURce?

Description

Sets or queries the measurement source for the frequency counter.

Parameter

Name	Type	Range	Default
<source>	Discrete	{D0|D1|D2|D3|D4|D5|D6|D7|D8|D9|D10|D11|D12|D13|D14|D15|CHANnel1|CHANnel2|CHANnel3|CHANnel4|EXT}	CHANnel1

Remarks

Only DHO900 series supports the digital channels D0-D15.

"EXT" is only available for DHO812 and DHO802.

Return Format

The query returns D0, D1, D2, D3, D4, D5, D6, D7, D8, D9, D10, D11, D12, D13, D14, D15, CHAN1, CHAN2, CHAN3, CHAN4, or EXT.

Example

```
:MEASure:COUNter:SOURce CHANnel4 /*Sets the measurement source of the frequency counter to CHANnel4.*/
:MEASure:COUNter:SOURce? /*The query returns CHAN4.*/
```

3.17.23 :MEASure:COUNter:VALue?

Syntax

`:MEASure:COUNter:VALue?`

Description

Queries the measurement results of the frequency counter.

Parameter

N/A

Remarks

N/A

Return Format

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

Example

```
:MEASure:COUNter:VALue?   /*The query returns 9.999996E-04.*/
```

3.17.24 :MEASure:AMP:TYPE

Syntax

:MEASure:AMP:TYPE <*val*>

:MEASure:AMP:TYPE?

Description

Sets or queries the amplitude method.

Parameter

Name	Type	Range	Default
<val>	Discrete	{AUTO|MANual}	MANual

Remarks

- **AUTO:** indicates the Auto method.
- **MANual:** indicates the Manual method.

Return Format

The query returns AUTO or MAN.

Example

```
:MEASure:AMP:TYPE MANual  /*Sets the amplitude method to MANual.*/
:MEASure:AMP:TYPE?  /*The query returns MAN.*/
```

3.17.25 :MEASure:AMP:MANual:TOP

Syntax

:MEASure:AMP:MANual:TOP <*val*>

:MEASure:AMP:MANual:TOP?

Description

Sets or queries the amplitude top value type for the manual amplitude method.

Parameter

Name	Type	Range	Default
<val>	Discrete	{HISTogram|MAXMin}	HISTogram

Remarks

- **HISTogram:** indicates the histogram type.

- **MAXMin:** indicates the Max-Min type.

Return Format

The query returns HIST or MAXM.

Example

```
:MEASure:AMP:MANual:TOP MAXMin   /*Sets the amplitude top value
type for the manual amplitude method to MAXMin.*/
:MEASure:AMP:MANual:TOP?    /*The query returns MAXM.*/
```

3.17.26 :MEASure:AMP:MANual:BASE

Syntax

:MEASure:AMP:MANual:BASE <*val*>

:MEASure:AMP:MANual:BASE?

Description

Sets or queries the amplitude base value type for the manual amplitude method.

Parameter

Name	Type	Range	Default
<val>	Discrete	{HISTogram|MAXMin}	HISTogram

Remarks

- **HISTogram:** indicates the histogram type.
- **MAXMin:** indicates the Max-Min type.

Return Format

The query returns HIST or MAXM.

Example

```
:MEASure:AMP:MANual:BASE MAXMin   /*Sets the amplitude base value
type for the manual amplitude method to MAXMin.*/
:MEASure:AMP:MANual:BASE?    /*The query returns MAXM.*/
```

3.17.27 :MEASure:CATegory

Syntax

:MEASure:CATegory <*val*>

:MEASure:CATegory?

Description

Sets or queries the measurement type.

Parameter

Name	Type	Range	Default
<val>	Integer	0 to 2	0

Remarks

0: horizontal; 1: vertical; 2: other.

Return Format

The query returns an integer ranging from 0 to 2.

Example

```
:MEASure:CATegory 1                /*Sets the measurement type to
Vertical.*/
:MEASure:CATegory?                 /*The query returns 1.*/
```

3.18 :QUICK Command

The **:QUICK** command is used to set and query the relevant parameters for quick operation shortcut keys.

3.18.1 :QUICk:OPERation

Syntax

:QUICk:OPERation <*type*>

:QUICk:OPERation?

Description

Sets or queries the type of the shortcut keys.

Parameter

Name	Type	Range	Default
<type>	Discrete	{SIMage|SWAVe|SSETup| AMEasure|SRESet|RECord| SSAVe}	SIMage

Remarks

- **SIMage:** indicates the screen image.
- **SWAVe:** indicates the waveform saving.

- **SSETup:** indicates the setup saving.
- **AMEasure:** indicates all measurement.
- **SRESet:** indicates statistics reset.
- **RECord:** indicates waveform recording.
- **SSAVe:** indicates saving group.

Return Format

The query returns SIM, SWAV, SSET, AME, REC, SSAV, or SRES.

Example

```
:QUICk:OPERation SWAVe        /*Sets the type of the shortcut key to
"save waveform".*/
:QUICk:OPERation?              /*The query returns SWAV.*/
```

3.19 :RECord Commands

The **:RECord** commands are used to set and query the parameters related to the waveform recording mode and frames.

Waveform recording/playing function allows you to record and play the waveforms, enabling you to analyze the waveforms better.

3.19.1 :RECord:WRECord:ENABle

Syntax

:RECord:WRECord:ENABle <*bool*>

:RECord:WRECord:ENABle?

Description

Enables or disables the waveform recording function; or queries the on/off status of the waveform recording function.

Parameter

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

Remarks

N/A

Return Format

The query returns 0 or 1.