Examples

```
:COUNter:TOTalize:ENABle ON /*Enables the statistical function of
the frequency counter.*/
:COUNter:TOTalize:ENABle? /*The query returns 1.*/
```

3.7.7 :COUNter:TOTalize:CLEar

Syntax

`:COUNter:TOTalize:CLEar`

Description

Clears the total count.

Parameter

N/A

Remarks

Available when "Totalize", "Frequency", or "Period" is selected under "Measure".

Return Format

N/A

Example

```
N/A
```

3.8 :CURSor Commands

The **Cursor** commands are used to measure the X axis values (e.g. Time) and Y axis values (e.g. Voltage) of the waveform on the screen.

Before making cursor measurements, connect the signal to the oscilloscope to acquire stable display. The cursor measurement function provides the following two cursors.

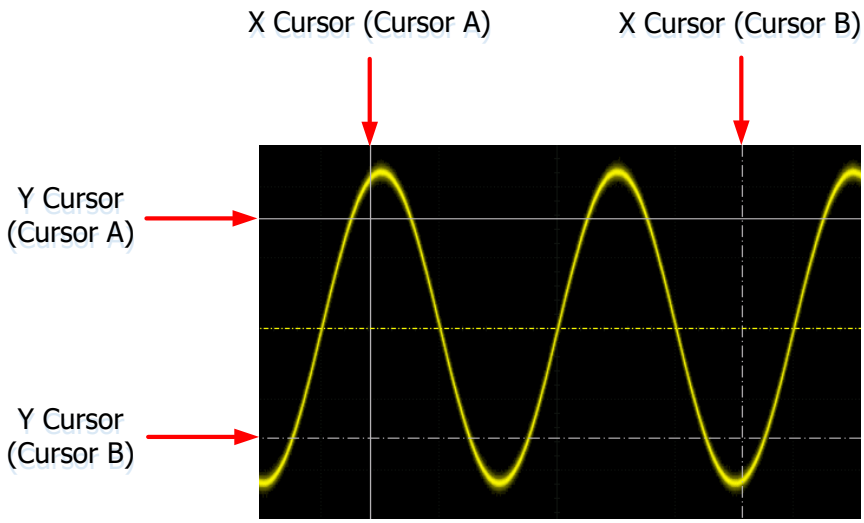

Figure 3.6 Cursors

- **X Cursor**

  X cursor is a vertical solid/dotted line that is used to make horizontal adjustments. It can be used to measure time (s) and frequency (Hz).

  - Cursor A is a vertical solid line and Cursor B is a vertical dotted line.
  - In the XY cursor mode, cursor X is used to measure the waveform amplitude of CH1.

- **Y Cursor**

  Y cursor is a horizontal solid/dotted line that is used to make vertical adjustments. It can be used to measure amplitude (the unit is the same as that of the source channel amplitude).

  - Cursor A is a horizontal solid line and Cursor B is a horizontal dotted line.
  - In XY cursor mode, cursor Y is used to measure the waveform amplitude of CH2.

Cursor Measurement Results

- AX: indicates the X value at Cursor A.
- AY: indicates the Y value at Cursor A.
- BX: indicates the X value at Cursor B.
- BY: indicates the Y value at Cursor B.
- ΔX: indicates the horizontal spacing between Cursor A and Cursor B.

- ΔY: indicates the vertical spacing between Cursor A and Cursor B.
- 1/ΔX: indicates the reciprocal of the horizontal spacing between Cursor A and Cursor B.

Cursor Mode

- **Manual Mode**

  In the manual cursor mode, you can adjust the cursor manually to measure the value of the waveforms of the specified source at the current cursor. If the settings for the parameter such as the cursor type and measurement source are different, the measurement results will be different for cursor measurement.

- **Track Mode**

  In the Track mode, you can adjust the two pairs of cursors (Cursor A and Cursor B) to measure the X and Y values on two different sources respectively. When the cursors are moved horizontally/vertically, the markers will position on the waveform automatically. When the waveform is expanded or compressed horizontally/vertically, the markers will track the points being marked at the last adjustment of the cursors.

- **XY Mode**

  By default, XY mode is unavailable. It is available only when the horizontal time base mode is "XY".

3.8.1 :CURSor:MODE

Syntax

`:CURSor:MODE` <*mode*>

`:CURSor:MODE?`

Description

Sets or queries the mode of the cursor measurement.

Parameter

Name	Type	Range	Default
<mode>	Discrete	{OFF|MANual|TRACk|XY}	OFF

Remarks

- **OFF:** disables the cursor measurement function.
- **MANual:** the manual mode of cursor measurement.

- **TRACk:** the track mode of cursor measurement.
- **XY:** the XY mode of cursor measurement. It is only valid when you select "XY" mode. You can use *:TIMebase:MODE* to query or set the mode.

For functions of different cursor measurement modes, refer to *Cursor Mode*.

Return Format

The query returns OFF, MAN, TRAC, or XY.

Example

```
:CURSor:MODE MANual /*Selects the manual mode of cursor
measurement.*/
:CURSor:MODE? /*The query returns MAN.*/
```

3.8.2 :CURSor:MEASure:INDicator

Syntax

:CURSor:MEASure:INDicator <*bool*>

:CURSor:MEASure:INDicator?

Description

Sets or queries the on/off status of the indicator for the measurement 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.

Example

```
:CURSor:MEASure:INDicator? ON   /*Sets the indicator for the
measurement function to ON.*/
:CURSor:MEASure:INDicator? /*The query returns 1.*/
```

3.8.3 :CURSor:MANual

3.8.3.1 :CURSor:MANual:TYPE

Syntax

:CURSor:MANual:TYPE <*type*>

:CURSor:MANual:TYPE?

Description

Sets or queries the cursor type in the manual mode of cursor measurement.

Parameter

Name	Type	Range	Default
<type>	Discrete	{TIME|AMPLitude}	TIME

Remarks

- **TIME:** indicates X cursor, which is often used to measure the time parameters.
- **AMPLitude:** indicates Y cursor, which is often used to measure the voltage parameters.

Return Format

The query returns TIME or AMPL.

Example

```
:CURSor:MANual:TYPE AMPLitude        /*Sets the cursor type to
AMPLitude.*/
:CURSor:MANual:TYPE?                 /*The query returns AMPL.*/
```

3.8.3.2 :CURSor:MANual:SOURce

Syntax

:CURSor:MANual:SOURce <*source*>

:CURSor:MANual:SOURce?

Description

Sets or queries the channel source of the manual mode of cursor measurement.

Parameter

Name	Type	Range	Default
<source>	Discrete	{CHANnel1|CHANnel2|CHANnel3|CHANnel4|MATH1|MATH2|MATH3|MATH4|NONE}	CHANnel1

Remarks

N/A

Return Format

The query returns CHAN1, CHAN2, CHAN3, CHAN4, MATH1, MATH2, MATH3, MATH4, or NONE.

Example

```
:CURSor:MANual:SOURce CHANnel2 /*Sets the channel source to
CHANnel2.*/
:CURSor:MANual:SOURce? /*The query returns CHAN2.*/
```

3.8.3.3 :CURSor:MANual:CAX

Syntax

:CURSor:MANual:CAX <*ax*>

:CURSor:MANual:CAX?

Description

Sets or queries the horizontal position of Cursor A in the manual mode of cursor measurement.

Parameter

Name	Type	Range	Default
<ax>	Real	Refer to *Remarks*	-

Remarks

The range of the horizontal position of Cursor A is determined by the current horizontal scale and position.

Return Format

The query returns the horizontal position of Cursor A scientific notation. The unit is s.

Example

```
:CURSor:MANual:CAX 0.00000001    /*Sets the horizontal position of
Cursor A to 10 ns.*/
:CURSor:MANual:CAX?       /*The query returns 1.000000E-8.*/
```

3.8.3.4 :CURSor:MANual:CAY

Syntax

:CURSor:MANual:CAY <*ay*>

:CURSor:MANual:CAY?

Description

Sets or queries the vertical position of Cursor A in the manual mode of cursor measurement.

Parameter

Name	Type	Range	Default
<ay>	Real	Refer to *Remarks*	-

Remarks

The range of the vertical position of Cursor A is determined by the current vertical scale and position.

Return Format

The query returns the vertical position of Cursor A in scientific notation. The unit is V.

Example

```
:CURSor:MANual:CAY 0.1    /*Sets the vertical position of Cursor A
to 0.1 V.*/
:CURSor:MANual:CAY?       /*The query returns 1.000000E-1.*/
```

3.8.3.5 :CURSor:MANual:CBX

Syntax

:CURSor:MANual:CBX <*bx*>

:CURSor:MANual:CBX?

Description

Sets or queries the horizontal position of Cursor B in the manual mode of cursor measurement.

Parameter

Name	Type	Range	Default
<bx>	Real	Refer to *Remarks*	-

Remarks

The range of the horizontal position of Cursor B is determined by the current horizontal scale and position.

Return Format

The query returns the horizontal position of Cursor B in scientific notation. The unit is s.

Example

```
:CURSor:MANual:CBX 0.00000001    /*Sets the horizontal position of
Cursor B to 10 ns.*/
:CURSor:MANual:CBX?       /*The query returns 1.000000E-8.*/
```

3.8.3.6 :CURSor:MANual:CBY

Syntax

:CURSor:MANual:CBY <*by*>

:CURSor:MANual:CBY?

Description

Sets or queries the vertical position of Cursor B in the manual mode of cursor measurement.

Parameter

Name	Type	Range	Default
<by>	Real	Refer to *Remarks*	-

Remarks

The range of the vertical position of Cursor B is determined by the current vertical scale and position.

Return Format

The query returns the vertical position of Cursor B in scientific notation. The unit is V.

Example

```
:CURSor:MANual:CBY 0.1    /*Sets the vertical position of Cursor B
to 0.1 V.*/
:CURSor:MANual:CBY?       /*The query returns 1.000000E-1.*/
```

3.8.3.7 :CURSor:MANual:AXValue?

Syntax

```
:CURSor:MANual:AXValue?
```

Description

Queries the X value at Cursor A in the manual mode of cursor measurement. The unit is determined by the horizontal unit selected for the currently corresponding channel.

Parameter

N/A

Remarks

N/A

Return Format

The query returns the X value at Cursor A in scientific notation.

Example

```
N/A
```

3.8.3.8 :CURSor:MANual:AYValue?

Syntax

```
:CURSor:MANual:AYValue?
```

Description

Queries the Y value at Cursor A in the manual mode of cursor measurement. The unit is determined by the currently selected vertical unit.

Parameter

N/A

Remarks

- The returned value is the same as the measurement value in the Cursor interface. Therefore, the unit is related to the vertical unit. When the vertical unit of cursor is set to Source, the unit of the returned value is the same as vertical unit of the channel.
- No value is returned when the cursor measurement value is invalid.

Return Format

The query returns the Y value at Cursor A in scientific notation.

Example

```
N/A
```

3.8.3.9 :CURSor:MANual:BXValue?

Syntax

```
:CURSor:MANual:BXValue?
```

Description

Queries the X value at Cursor B in the manual mode of cursor measurement. The unit is determined by the currently selected horizontal unit.

Parameter

N/A

Remarks

N/A

Return Format

The query returns the X value at Cursor B in scientific notation.

Example

```
N/A
```

3.8.3.10 :CURSor:MANual:BYValue?

Syntax

```
:CURSor:MANual:BYValue?
```

Description

Queries the Y value at Cursor B in the manual mode of cursor measurement. The unit is determined by the currently selected vertical unit.

Parameter

N/A

Remarks

- The returned value is the same as the measurement value in the Cursor interface. Therefore, the unit is related to the vertical unit. When the vertical

unit of cursor is set to Source, the unit of the returned value is the same as vertical unit of the channel.

- No value is returned when the cursor measurement value is invalid.

Return Format

The query returns the Y value at Cursor B in scientific notation.

Example

```
N/A
```

3.8.3.11 :CURSor:MANual:XDELta?

Syntax

```
:CURSor:MANual:XDELta?
```

Description

Queries the difference (ΔX) between the X value at Cursor A and the X value at Cursor B in the manual mode of cursor measurement. The unit is determined by the currently selected horizontal unit.

Parameter

N/A

Remarks

N/A

Return Format

The query returns the current difference in scientific notation.

Example

```
N/A
```

3.8.3.12 :CURSor:MANual:IXDelta?

Syntax

```
:CURSor:MANual:IXDelta?
```

Description

Queries the reciprocal (1/ΔX) of the absolute difference between the X value at Cursor A and the X value at Cursor B in the manual mode of cursor measurement. The unit is determined by the currently selected horizontal unit.

Parameter

N/A

Remarks

N/A

Return Format

The query returns 1/ΔX in scientific notation.

Example

```
N/A
```

3.8.3.13 :CURSor:MANual:YDELta?

Syntax

:CURSor:MANual:YDELta?

Description

Queries the difference (ΔY) between the Y value at Cursor A and the Y value at Cursor B in the manual mode of cursor measurement. The unit is determined by the currently selected vertical unit.

Parameter

N/A

Remarks

N/A

Return Format

The query returns the current difference in scientific notation.

Example

```
N/A
```

3.8.4 :CURSor:TRACk

3.8.4.1 :CURSor:TRACk:SOURce1

Syntax

:CURSor:TRACk:SOURce1 <*source*>

:CURSor:TRACk:SOURce1?

Description

Sets or queries the channel source of Cursor A in the track mode of cursor measurement.

Parameter

Name	Type	Range	Default
<source>	Discrete	{CHANnel1|CHANnel2| CHANnel3|CHANnel4|MATH1| MATH2|MATH3|MATH4|NONE}	CHANnel1

Remarks

When no channel is enabled, sending this command will enable the corresponding channel.

Return Format

The query returns CHAN1, CHAN2, CHAN3, CHAN4, MATH1, MATH2, MATH3, MATH4, or NONE.

Example

```
:CURSor:TRACk:SOURce1 CHANnel2    /*Sets the channel source to
CHANnel2.*/
:CURSor:TRACk:SOURce1?             /*The query returns CHAN2.*/
```

3.8.4.2 :CURSor:TRACk:SOURce2

Syntax

:CURSor:TRACk:SOURce2 <*source*>

:CURSor:TRACk:SOURce2?

Description

Sets or queries the channel source of Cursor B in the track mode of cursor measurement.

Parameter

Name	Type	Range	Default
<source>	Discrete	{CHANnel1|CHANnel2| CHANnel3|CHANnel4|MATH1| MATH2|MATH3|MATH4|NONE}	CHANnel1

Remarks

When no channel is enabled, sending this command will enable the corresponding channel.

Return Format

The query returns CHAN1, CHAN2, CHAN3, CHAN4, MATH1, MATH2, MATH3, MATH4, or NONE.

Example

```
:CURSor:TRACk:SOURce2 CHANnel2    /*Sets the channel source to
CHANnel2.*/
:CURSor:TRACk:SOURce2?             /*The query returns CHAN2.*/
```

3.8.4.3 :CURSor:TRACk:CAX

Syntax

:CURSor:TRACk:CAX <*ax*>

:CURSor:TRACk:CAX?

Description

Sets or queries the horizontal position of Cursor A in the track mode of cursor measurement.

Parameter

Name	Type	Range	Default
<ax>	Real	Refer to *Remarks*	-

Remarks

The range of the horizontal position of Cursor A is determined by the current horizontal scale and position.

Return Format

The query returns the horizontal position of Cursor A scientific notation. The unit is s.

Example

```
:CURSor:TRACk:CAX 1.000000E-8    /*Sets the horizontal position of
Cursor A to 10 ns.*/
:CURSor:TRACk:CAX?       /*The query returns 1.000000E-8.*/
```

3.8.4.4 :CURSor:TRACk:CBX

Syntax

:CURSor:TRACk:CBX <*bx*>

:CURSor:TRACk:CBX?

Description

Sets or queries the horizontal position of Cursor B in the track mode of cursor measurement.

Parameter

Name	Type	Range	Default
<bx>	Real	Refer to *Remarks*	-

Remarks

The range of the horizontal position of Cursor B is determined by the current horizontal scale and position.

Return Format

The query returns the horizontal position of Cursor B in scientific notation. The unit is s.

Example

```
:CURSor:TRACk:CBX 1.000000E-8    /*Sets the horizontal position of
Cursor B 10 ns.*/
:CURSor:TRACk:CBX?       /*The query returns 1.000000E-8.*/
```

3.8.4.5 :CURSor:TRACk:CAY

Syntax

:CURSor:TRACk:CAY <*ay*>

:CURSor:TRACk:CAY?

Description

Sets or queries the vertical position of Cursor A in the track mode of cursor measurement.

Parameter

Name	Type	Range	Default
<ay>	Real	Refer to *Remarks*	-

Remarks

The range of the vertical position of Cursor A is determined by the current vertical scale and position.

Return Format

The query returns the vertical position of Cursor A in scientific notation. The unit is V.

Example

```
:CURSor:TRACk:CAY 0.1     /*Sets the vertical position of Cursor A
to 0.1 V.*/
:CURSor:TRACk:CAY?        /*The query returns 1.000000E-1.*/
```

3.8.4.6 :CURSor:TRACk:CBY

Syntax

:CURSor:TRACk:CBY <*by*>

:CURSor:TRACk:CBY?

Description

Sets or queries the vertical position of Cursor B in the track mode of cursor measurement.

Parameter

Name	Type	Range	Default
<by>	Real	Refer to *Remarks*	-

Remarks

The range of the vertical position of Cursor B is determined by the current vertical scale and position.

Return Format

The query returns the vertical position of Cursor B in scientific notation. The unit is V.

Example

```
:CURSor:TRACk:CBY 0.1     /*Sets the vertical position of Cursor B
to 0.1 V.*/
:CURSor:TRACk:CBY?        /*The query returns 1.000000E-1.*/
```

3.8.4.7 :CURSor:TRACk:AXValue?

Syntax

:CURSor:TRACk:AXValue?

Description

Queries the X value at Cursor A in the track mode of cursor measurement. The unit is determined by the amplitude unit selected for the currently corresponding channel.

Parameter

N/A

Remarks

N/A

Return Format

The query returns the X value at Cursor A in scientific notation.

Example

```
N/A
```

3.8.4.8 :CURSor:TRACk:AYValue?

Syntax

```
:CURSor:TRACk:AYValue?
```

Description

Queries the Y value at Cursor A in the track mode of cursor measurement. The unit is the same as that selected for the current channel.

Parameter

N/A

Remarks

N/A

Return Format

The query returns the Y value at Cursor A in scientific notation.

Example

```
N/A
```

3.8.4.9 :CURSor:TRACk:BXValue?

Syntax

```
:CURSor:TRACk:BXValue?
```

Description

Queries the X value at Cursor B in the track mode of cursor measurement. The unit is determined by the amplitude unit selected for the currently corresponding channel.

Parameter

N/A

Remarks

N/A

Return Format

The query returns the X value at Cursor B in scientific notation.

Example

```
N/A
```

3.8.4.10 :CURSor:TRACk:BYValue?

Syntax

```
:CURSor:TRACk:BYValue?
```

Description

Queries the Y value at Cursor B in the track mode of cursor measurement. The unit is the same as that selected for the current channel.

Parameter

N/A

Remarks

N/A

Return Format

The query returns the Y value at Cursor B in scientific notation.

Example

```
N/A
```

3.8.4.11 :CURSor:TRACk:XDELta?

Syntax

```
:CURSor:TRACk:XDELta?
```

Description

Queries the difference (ΔX) between the X value at Cursor A and the X value at Cursor B in the track mode of cursor measurement.

Parameter

N/A

Remarks

N/A

Return Format

The query returns the current difference in scientific notation.

Example

```
N/A
```

3.8.4.12 :CURSor:TRACk:YDELta?

Syntax

:CURSor:TRACk:YDELta?

Description

Queries the difference (ΔY) between the Y value at Cursor A and the Y value at Cursor B in the track mode of cursor measurement. The unit is the same as that selected for the current channel.

Parameter

N/A

Remarks

N/A

Return Format

The query returns the current difference in scientific notation.

Example

```
N/A
```

3.8.4.13 :CURSor:TRACk:IXDelta?

Syntax

:CURSor:TRACk:IXDelta?

Description

Queries the reciprocal (1/ΔX) of the absolute difference between the X value at Cursor A and the X value at Cursor B in the track mode of cursor measurement. The default unit is Hz.

Parameter

N/A

Remarks

N/A

Return Format

The query returns 1/ΔX in scientific notation.

Example

```
N/A
```

3.8.4.14 :CURSor:TRACk:MODE

Syntax

:CURSor:TRACk:MODE <*mode*>

:CURSor:TRACk:MODE?

Description

Sets or queries the axis in the track mode of cursor measurement.

Parameter

Name	Type	Range	Default
<mode>	Discrete	{Y|X}	-

Remarks

N/A

Return Format

The query returns Y or X.

Example

```
:CURSor:TRACk:MODE X    /*Sets the axis in the track mode of
cursor measurement to X-axis.*/
:CURSor:TRACk:MODE?       /*The query returns X.*/
```

3.8.5 :CURSor:XY

The **:CURSor:XY** commands are only available when the horizontal time base mode is set to XY.

3.8.5.1 :CURSor:XY:AX

Syntax

:CURSor:XY:AX <*x*>

:CURSor:XY:AX?

Description

Sets or queries the horizontal position of Cursor A in the XY cursor measurement mode.

Parameter

Name	Type	Range	Default
<x>	Real	Related to the current vertical scale and position	-

Remarks

N/A

Return Format

The query returns the horizontal position of Cursor A in scientific notation.

Example

```
:CURSor:XY:AX 0.1     /*Sets the horizontal position of Cursor A to
100 mV.*/
:CURSor:XY:AX?        /*The query returns 1.000000E-1.*/
```

3.8.5.2 :CURSor:XY:BX

Syntax

:CURSor:XY:BX <*X*>

:CURSor:XY:BX?

Description

Sets or queries the horizontal position of Cursor B in the XY cursor measurement mode.

Parameter

Name	Type	Range	Default
<x>	Real	Related to the current vertical scale and position	-

Remarks

N/A

Return Format

The query returns the horizontal position of Cursor B in scientific notation.

Example

```
:CURSor:XY:BX 0.1     /*Sets the horizontal position of Cursor B to
100 mV.*/
:CURSor:XY:BX?        /*The query returns 1.000000E-1.*/
```

3.8.5.3 :CURSor:XY:AY

Syntax

:CURSor:XY:AY <*y*>

:CURSor:XY:AY?

Description

Sets or queries the vertical position of Cursor A in the XY cursor measurement mode.

Parameter

Name	Type	Range	Default
<y>	Real	Related to the current vertical scale and position	-

Remarks

N/A

Return Format

The query returns the vertical position of Cursor A in scientific notation.

Example

```
:CURSor:XY:AY 0.1     /*Sets the vertical position of Cursor A to
100 mV.*/
:CURSor:XY:AY?        /*The query returns 1.000000E-1.*/
```

3.8.5.4 :CURSor:XY:BY

Syntax

:CURSor:XY:BY <*y*>

:CURSor:XY:BY?

Description

Sets or queries the vertical position of Cursor B in the XY cursor measurement mode.

Parameter

Name	Type	Range	Default
<y>	Real	Related to the current vertical scale and position	-

Remarks

N/A

Return Format

The query returns the vertical position of Cursor B in scientific notation.

Example

```
:CURSor:XY:BY 0.1    /*Sets the vertical position of Cursor B to
100 mV.*/
:CURSor:XY:BY?       /*The query returns 1.000000E-1.*/
```

3.8.5.5 :CURSor:XY:AXValue?

Syntax

`:CURSor:XY:AXValue?`

Description

Queries the X value at Cursor A in the XY cursor measurement mode.

Parameter

N/A

Remarks

N/A

Return Format

The query returns the X value at Cursor A in scientific notation.

Example

```
N/A
```

3.8.5.6 :CURSor:XY:AYValue?

Syntax

`:CURSor:XY:AYValue?`

Description

Queries the X value at Cursor A in the XY cursor measurement mode.

Parameter

N/A

Remarks

N/A

Return Format

The query returns the Y value at Cursor A in scientific notation.

Example

```
N/A
```

3.8.5.7 :CURSor:XY:BXValue?

Syntax

```
:CURSor:XY:BXValue?
```

Description

Queries the X value at Cursor B in the XY cursor measurement mode.

Parameter

N/A

Remarks

N/A

Return Format

The query returns the X value at Cursor B in scientific notation.

Example

```
N/A
```

3.8.5.8 :CURSor:XY:BYValue?

Syntax

```
:CURSor:XY:BYValue?
```

Description

Queries the Y value at Cursor B in the XY cursor measurement mode.

Parameter

N/A

Remarks

N/A

Return Format

The query returns the Y value at Cursor B in scientific notation.

Example

```
N/A
```

3.8.5.9 :CURSor:XY:XDELta?

Syntax

```
:CURSor:XY:XDELta?
```

Description

Queries the difference (ΔX) between the X value at Cursor A and the X value at Cursor B in the XY cursor measurement.

Parameter

N/A

Remarks

N/A

Return Format

The query returns the current difference in scientific notation.

Example

```
N/A
```

3.8.5.10 :CURSor:XY:YDELta?

Syntax

```
:CURSor:XY:YDELta?
```

Description

Queries the difference (ΔY) between the Y value at Cursor A and the Y value at Cursor B in the XY cursor measurement. The unit is the same as that selected for the current channel.

Parameter

N/A

Remarks

N/A

Return Format

The query returns the current difference in scientific notation.

Example

```
N/A
```