Return Format

The query returns SIN, SQU, TRI, UPR, DNR, and NOIS.

Example

```
:SOURce:MOD:PM:INTernal:FUNCtion SQUare /*Sets the modulation
waveform of PM to Square.*/
:SOURce:MOD:PM:INTernal:FUNCtion? /*The query returns SQU.*/
```

3.26 :TIMebase Commands

:TIMebase commands are used to set the horizontal system. For example, you can enable the Zoom mode or set the horizontal time base mode.

Horizontal Time Base Mode

- **YT Mode:** By default, this series oscilloscope uses the YT mode for waveform display window. In YT mode, Y-axis indicates the Voltage and X-axis indicates the Time.
- **XY Mode:** In XY mode, both the X-axis and Y-axis indicate voltage. The XY mode converts the oscilloscope from a "Voltage-Time" display to a "Voltage-Voltage" display using two input channels. The XY mode can be used to measure the phase deviation occurred when the signal under test passes through a circuit network.
- **Roll Mode:** The roll mode causes the waveform to move across the screen from right to left. It allows you to view the acquired data without waiting for a complete acquisition. The Roll mode is automatically enabled when the horizontal time base is set to 50 ms/div or slower.

TIP

- If the Zoom mode is currently turned on, enabling the roll mode automatically turns off the Zoom mode.
- The following functions are not available when the roll mode is enabled: To Adjust the Horizontal Position (available when the oscilloscope run state is STOP), Zoom Mode (Delayed Sweep), Triggering the Oscilloscope, Protocol Decoding, Pass/Fail Test, Waveform Recording and Playing, Persistence Time, XY Mode, and Average.

3.26.1 :TIMebase:DELay:ENABle

Syntax

:TIMebase:DELay:ENABle <*bool*>

:TIMebase:DELay:ENABle?

Description

Turns on or off the delayed sweep; or queries the on/off status of the delayed sweep.

Parameter

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

Remarks

Delayed sweep can be used to enlarge a length of waveform horizontally to view waveform details.

Return Format

The query returns 1 or 0.

Example

```
:TIMebase:DELay:ENABle ON     /*Enables the delayed sweep.*/
:TIMebase:DELay:ENABle?       /*The query returns 1.*/
```

3.26.2 :TIMebase:DELay:OFFSet

Syntax

:TIMebase:DELay:OFFSet <*offset*>

:TIMebase:DELay:OFFSet?

Description

Sets or queries the offset of the delayed time base.

Parameter

Name	Type	Range	Default
<offset>	Real	-(LeftTime - DelayRange/2) to (RightTime - DelayRange/2)	0

Remarks

LeftTime = 5 × MainScale - MainOffset

RightTime = 5 × MainScale + MainOffset

DelayRange = 10 × DelayScale

Wherein, MainScale indicates the current main time base scale, MainOffset indicates the current main time base offset, and

DelayScale indicates the current delay time base scale.

Return Format

The query returns the offset of the delayed time base in scientific notation.

Example

```
:TIMebase:DELay:OFFSet 0.000002   /*Sets the offset of the delayed
time base to 2 μs.*/
:TIMebase:DELay:OFFSet?           /*The query returns 2.000000E-6.*/
```

3.26.3 :TIMebase:DELay:SCALe

Syntax

:TIMebase:DELay:SCALe <*scale*>

:TIMebase:DELay:SCALe?

Description

Sets or queries the scale of the delayed time base. The default unit is s/div.

Parameter

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

Remarks

- The maximum value of the parameter <scale> is the current scale of the main time base.
- The delayed time base scale can only be the maximum value or the values acquired by reducing the maximum value at 1-2-5 step. If the minimum value calculated according to the above formula is not one of the settable values, take the minimum settable value that is greater than the minimum value calculated.
- The default value of the delayed time base scale is determined by the scale in Main mode and its value is the next scale value in Main mode.

Return Format

The query returns the scale of the delayed time base in scientific notation.

Example

```
:TIMebase:DELay:SCALe 0.00000005   /*Sets the scale of the delayed
time base to 50 ns/div.*/
:TIMebase:DELay:SCALe?           /*The query returns 5.000000E-8.*/
```

3.26.4 :TIMebase[:MAIN][:OFFSet]

Syntax

:TIMebase[:MAIN][:OFFSet] <*offset*>

:TIMebase[:MAIN][:OFFSet]?

Description

Sets or queries the offset of the main time base. The default unit is s.

Parameter

Name	Type	Range	Default
<offset>	Real	Refer to *Remarks*	0

Remarks

- In RUN state, the offset range of the main time base is as follows:

  MainLeftTime = -5 x MainScale

  When MainScale ≤ 10 ms, MainRightTime = 1 s

  When 10 ms < MainScale < 10 s, MainRightTime = 100 x MainScale

  When MainScale < 200 s and MainScale ≥ 10 s, MainRightTime = 1 ks

  When MainScale ≥ 200s, MainRightTime = 5 x MainScale

  MainRightTime indicates the maximum offset value of the main time base; MainLeftTime indicates the minimum offset value of the main time base; MainScale is the current scale of the main time base.

- In Stop state, the offset range of the main time base is the same as that of the memory sampling.

Return Format

The query returns the offset of the main time base in scientific notation.

Example

```
:TIMebase:MAIN:OFFSet 0.0002   /*Sets the offset of the main time
base to 200 μs.*/
:TIMebase:MAIN:OFFSet?         /*The query returns 2.000000E-4.*/
```

3.26.5 :TIMebase[:MAIN]:SCALe

Syntax

:TIMebase[:MAIN]:SCALe <*scale*>

:TIMebase[:MAIN]:SCALe?

Description

Sets or queries the main time base scale.

Parameter

Name	Type	Range	Default
<scale>	Real	Refer to *Remarks*	5ns/div

Remarks

The range of <scale> is related to the bandwidth of the oscilloscope and the horizontal time base mode.

Return Format

The query returns the main time base scale in scientific notation.

Example

```
:TIMebase:MAIN:SCALe 0.0002   /*Sets the main time base scale to
200 μs/div.*/
:TIMebase:MAIN:SCALe?           /*The query returns 2.000000E-4.*/
```

3.26.6 :TIMebase:MODE

Syntax

`:TIMebase:MODE` <*mode*>

`:TIMebase:MODE?`

Description

Sets or queries the horizontal time base mode.

Parameter

Name	Type	Range	Default
<mode>	Discrete	{MAIN|XY|ROLL}	MAIN

Remarks

- **MAIN:** the current time base mode. When you send the **`:TIMebase:MODE MAIN`** command, the time base is set to YT mode.
- **XY:** indicates the XY mode. Run **`:TIMebase:MODE XY`** to configure the XY mode, and then run **`:TIMebase:MODE?`** to query the time base mode. The query returns MAIN.
- **ROLL:** indicates the Roll mode.

For details about different time base modes, refer to *Horizontal Time Base Mode*.

Return Format

The query returns MAIN or ROLL.

Example

```
:TIMebase:MODE ROLL    /*Sets the horizontal time base mode to
ROLL.*/
:TIMebase:MODE?      /*The query returns ROLL.*/
```

3.26.7 :TIMebase:HREFerence:MODE

Syntax

:TIMebase:HREFerence:MODE <*href*>

:TIMebase:HREFerence:MODE?

Description

Sets or queries the horizontal reference mode.

Parameter

Name	Type	Range	Default
<href>	Discrete	{CENTer|LB|RB|TRIG|USER}	CENTer

Remarks

- **CENTer:** when the horizontal time base is modified, the waveform displayed will be expanded or compressed horizontally relative to the screen center.
- **LB:** when the horizontal time base is modified, the waveform displayed will be expanded or compressed relative to the left border of the screen.
- **RB:** when the horizontal time base is modified, the waveform displayed will be expanded or compressed relative to the right border of the screen.
- **TRIG:** when the horizontal time base is modified, the waveform displayed will be expanded or compressed horizontally relative to the trigger position.
- **USER:** when the horizontal time base is modified, the waveform displayed will be expanded or compressed horizontally relative to the user-defined reference position.

Return Format

The query returns CENT, LB, RB, TRIG, or USER.

Example

```
:TIMebase:HREFerence:MODE TRIG          /*Sets the horizontal
reference mode to trigger position.*/
:TIMebase:HREFerence:MODE?              /*The query returns TRIG.*/
```

3.26.8 :TIMebase:HREFerence:POSition

Syntax

:TIMebase:HREFerence:POSition <*pos*>

:TIMebase:HREFerence:POSition?

Description

Sets or queries the user-defined reference position when the waveforms are expanded or compressed horizontally.

Parameter

Name	Type	Range	Default
<pos>	Integer	-500 to 500	0

Remarks

N/A

Return Format

The query returns an integer ranging from -500 to 500.

Example

```
:TIMebase:HREFerence:POSition 60      /*Sets the user-defined
reference position to 60.*/
:TIMebase:HREFerence:POSition?                /*The query returns
60.*/
```

3.26.9 :TIMebase:VERNier

Syntax

:TIMebase:VERNier <*bool*>

:TIMebase:VERNier?

Description

Enables or disables the fine adjustment function of the horizontal scale; or queries the on/off status of the fine adjustment function of the horizontal scale.

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

```
:TIMebase:VERNier ON            /*Sets the fine adjustment function
of the horizontal scale to ON.*/
:TIMebase:VERNier?               /*The query returns 1.*/
```

3.26.10 :TIMebase:HOTKeys

Syntax

`:TIMebase:HOTKeys` <*action*>

Description

Sets the running status.

Parameter

Name	Type	Range	Default
<action>	Discrete	{STOP|RUN|SINGle}	-

Remarks

- **STOP:** stops the measurement.
- **RUN:** runs the measurement.
- **SINGle:** indicates the single trigger measurement.

Return Format

N/A

Example

```
:TIMebase:HOTKeys RUN  /*Sets the operating status to RUN.*/
```

3.26.11 :TIMebase:ROLL

Syntax

:TIMebase:ROLL <*value*>

:TIMebase:ROLL?

Description

Sets or queries the status of the ROLL mode.

Parameter

Name	Type	Range	Default
<value>	Integer	{0|1}	1

Remarks

- **0:** disables the Auto ROLL mode.
- **1:** enables the Auto ROLL mode. The system enters the ROLL mode automatically when the time base is greater than or equal to 50 ms.

Return Format

The query returns 0 or 1.

Example

```
:TIMebase:ROLL 0     /*Disables the ROLL mode.*/
:TIMebase:ROLL?       /*The query returns 0.*/
```

3.26.12 :TIMebase:XY:ENABle

Syntax

:TIMebase:XY:ENABle <*bool*>

:TIMebase:XY:ENABle?

Description

Enables or disables the XY mode; or queries the on/off status of the XY mode.

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

```
:TIMebase:XY:ENABle OFF    /*Disables the XY mode.*/
:TIMebase:XY:ENABle?      /*The query returns 0.*/
```

3.26.13 :TIMebase:XY:X

Syntax

:TIMebase:XY:X <*s*>

:TIMebase:XY:X?

Description

Sets or queries the source channel of X coordinate when the horizontal time base mode is XY.

Parameter

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

Remarks

N/A

Return Format

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

Example

```
:TIMebase:XY:X CHANnel3          /*Sets the source channel of X
coordinate to CHANnel3.*/
:TIMebase:XY:X?                 /*The query returns CHAN3.*/
```

3.26.14 :TIMebase:XY:Y

Syntax

:TIMebase:XY:Y <*s*>

:TIMebase:XY:Y?

Description

Sets or queries the channel source of the Y coordinate when the horizontal time base mode is XY.

Parameter

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

Remarks

N/A

Return Format

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

Example

```
:TIMebase:XY:Y CHANnel3          /*Sets the channel source of the Y
coordinate to CHANnel3.*/
:TIMebase:XY:Y?                 /*The query returns CHAN3.*/
```

3.26.15 :TIMebase:XY:Z

Syntax

:TIMebase:XY:Z <*S*>

:TIMebase:XY:Z?

Description

Sets or queries Source Z in XY mode.

Parameter

Name	Type	Range	Default
<s>	Discrete	{NONE|CHANnel1|CHANnel2|CHANnel3|CHANnel4}	-

Remarks

N/A

Return Format

The query returns NONE, CHAN1, CHAN2, CHAN3, or CHAN4.

Example

```
:TIMebase:XY:Z CHANnel3          /*Sets Source Z in XY mode to
CHANnel3.*/
:TIMebase:XY:Z?         /*The query returns CHAN3.*/
```