Measurement Command Group

Measurement Overview

You use the commands in the Measurement Command Group to control the automated measurement system.

Up to eight automated measurements can be displayed on the screen. In the commands, these measurement readouts are named MEAS<x>, where <x> can be 1 through 8.

In addition to the eight displayed measurements, the measurement commands let you specify an additional measurement, `IMMed`. The immediate measurement has no front-panel equivalent. Immediate measurements are never displayed. Because they are computed only when needed, immediate measurements slow the waveform update rate less than displayed measurements.

Whether you use displayed or immediate measurements, you use the `VALue?` query to obtain measurement results.

Measurement commands can set and query measurement parameters. You can assign some parameters, such as waveform sources, differently for each measurement. Other parameters, such as reference levels, have only one value, which applies to all measurements.

Measurement Commands

Command	Description
MEASUrement?	Returns all measurement parameters
MEASUrement:GATING?	Returns the measurement gating setting
MEASUrement:GATING	Sets measurement gating
MEASUrement:IMMed?	Returns all immediate measurement setup parameters
MEASUrement:IMMed:DElay?	Returns information about the immediate delay measurement
MEASUrement:IMMed:DElay:DIREction?	Returns the search direction used for immediate delay measurements
MEASUrement:IMMed:DElay:DIREction	Sets the search direction to use for immediate delay measurements
MEASUrement:IMMed:DElay:EDGE[1]?	Returns the slope of the edge used for immediate delay "from" waveform measurements
MEASUrement:IMMed:DElay:EDGE[1]	Sets the slope of the edge used for immediate delay "from" waveform measurements
MEASUrement:IMMed:DElay:EDGE2?	Returns the slope of the edge used for immediate delay "to" waveform measurements
MEASUrement:IMMed:DElay:EDGE2	Sets the slope of the edge used for immediate delay "to" waveform measurements
MEASUrement:IMMed:SOURCE[1]?	Returns the "from" source for all single channel immediate measurements
MEASUrement:IMMed:SOURCE[1]	Sets the "from" source for all single channel immediate measurements
MEASUrement:IMMed:SOURCE2?	Returns the "to" source for all single channel immediate measurements
MEASUrement:IMMed:SOURCE2	Sets the "to" source for all single channel immediate measurements
MEASUrement:IMMed:TYPe?	Returns the type of the immediate measurement
MEASUrement:IMMed:TYPe	Sets the type of the immediate measurement
MEASUrement:IMMed:UNIts?	Returns the units of the immediate measurement
MEASUrement:IMMed:VALue?	Returns the value of the immediate measurement
MEASUrement:MEAS<n>:COUNt?	Returns the number of values accumulated since the last

	statistical reset
MEASUrement:MEAS<n>:MAXimum?	Returns the maximum value found since the last statistical reset
MEASUrement:MEAS<n>:MEAN?	Returns the mean value accumulated since the last statistical reset
MEASUrement:MEAS<n>:MINImum?	Returns the minimum value found since the last statistical reset
MEASUrement:MEAS<n>:STDdev?	Returns the standard deviation of values accumulated since the last statistical reset
MEASUrement:MEAS<x>?	Returns all measurement parameters for the displayed measurement
MEASUrement:MEAS<x>:DELay?	Returns the delay measurement parameters for specified measurement
MEASUrement:MEAS<x>:DELay:DIREction?	Returns the search direction used for delay measurements
MEASUrement:MEAS<x>:DELay:DIREction	Sets the search direction to use for delay measurements
MEASUrement:MEAS<x>:DELay:EDGE[1]?	Returns the slope of the edge used for delay "from" waveform measurements
MEASUrement:MEAS<x>:DELay:EDGE[1]	Sets the slope of the edge to use for delay "from" waveform measurements
MEASUrement:MEAS<x>:DELay:EDGE2?	Returns the slope of the edge used for "delay "to" waveform measurements
MEASUrement:MEAS<x>:DELay:EDGE2	Sets the slope of the edge to use for delay "to" waveform measurements
MEASUrement:MEAS<x>:SOURCE[1]?	Returns the channel from which measurements are taken
MEASUrement:MEAS<x>:SOURCE[1]	Sets the channel from which measurements are taken
MEASUrement:MEAS<x>:SOURCE[2]?	Returns the channel to which measurements are sent
MEASUrement:MEAS<x>:SOURCE[2]	Sets the channel to which measurements are sent
MEASUrement:MEAS<x>:STATE?	Returns whether the specified measurement slot is computed and displayed
MEASUrement:MEAS<x>:STATE	Sets whether the specified measurement slot is computed and displayed
MEASUrement:MEAS<x>:TYPe?	Returns the measurement<x> type
MEASUrement:MEAS<x>:TYPe	Sets the measurement<x> type

MEASUrement:MEAS<x>:UNIts?	Returns measurement<x> units
MEASUrement:MEAS<x>:VALue?	Returns the value of measurement<x>
MEASUrement:METHod?	Returns the method used for calculating reference levels
MEASUrement:METHod	Sets the method used for calculating reference levels
MEASUrement:REFLevel?	Returns reference level parameters
MEASUrement:REFLevel:ABSolute:HIGH?	Returns the top reference level for rise time
MEASUrement:REFLevel:ABSolute:HIGH	Sets the top reference level for rise time
MEASUrement:REFLevel:ABSolute:LOW?	Returns the low reference level for rise time
MEASUrement:REFLevel:ABSolute:LOW	Sets the low reference level for rise time
MEASUrement:REFLevel:ABSolute:MID?	Returns the mid reference level for measurements
MEASUrement:REFLevel:ABSolute:MID	Sets the mid reference level for measurements
MEASUrement:REFLevel:ABSolute:MID2?	Returns the mid reference level for delay "to" measurements
MEASUrement:REFLevel:ABSolute:MID2	Sets the mid reference level for delay "to" measurements
MEASUrement:REFLevel:METHod?	Returns the method for assigning high and low reference levels
MEASUrement:REFLevel:METHod	Sets the method for assigning high and low reference levels
MEASUrement:REFLevel:PERCent:HIGH?	Returns the top reference percent level for rise time
MEASUrement:REFLevel:PERCent:HIGH	Sets the top reference percent level for rise time
MEASUrement:REFLevel:PERCent:LOW?	Returns the low reference percent level for rise time
MEASUrement:REFLevel:PERCent:LOW	Sets the low reference percent level for rise time
MEASUrement:REFLevel:PERCent:MID?	Returns the mid reference percent level for waveform measurements
MEASUrement:REFLevel:PERCent:MID	Sets the mid reference percent level for waveform measurements
MEASUrement:REFLevel:PERCent:MID2?	Returns the mid reference percent level for second waveform measurements
MEASUrement:REFLevel:PERCent:MID2	Sets the mid reference percent level for second waveform measurements
MEASUrement:STATIstics:COUNt	Clears existing measurement

	statistics from memory
MEASUrement:STATIstics:MODE?	Returns which pair of statistical accumulations is displayed
MEASUrement:STATIstics:MODe	Turns management statistics on or off and sets which pair of statistical accumulations is displayed
MEASUrement:STATIstics:WEIghting?	Returns the 'time constant' for mean and standard deviation statistical accumulations
MEASUrement:STATIstics:WEIghting	Sets the 'time constant' for mean and standard deviation statistical accumulations

MEASUrement?

Description

This query-only command returns all measurement parameters in the following order: MEAS1, MEAS2, MEAS3, MEAS4, MEAS5, MEAS6, MEAS7, MEAS8, IMMED.

Group

Measurement

Syntax

`MEASUrement?`

Example

`MEASUrement?`

This query might return `:MEASUREMENT:GATING OFF`
`;METHOD HISTOGRAM;IMMED:TYPE UNDEFINED;UNITS "V"`
`;SOURCE1 CH1;SOURCE2 CH1;DELAY:EDGE1 RISE;EDGE2 RISE`
`;DIRECTION FORWARDS;:MEASUREMENT:MEAS1:STATE 0`
`;TYPE UNDEFINED;UNITS "V";SOURCE1 CH1;SOURCE2 CH1`
`;DELAY:EDGE1 RISE;EDGE2 RISE;DIRECTION FORWARDS;`
`:MEASUREMENT:MEAS2:STATE 0;TYPE UNDEFINED;UNITS "V"`
`;SOURCE1 CH1;SOURCE2 CH1;DELAY:EDGE1 RISE;EDGE2 RISE`
`;DIRECTION FORWARDS;:MEASUREMENT:MEAS3:STATE 0`
`;TYPE UNDEFINED;UNITS "V";SOURCE1 CH1;SOURCE2 CH1;DELAY`
`:EDGE1 RISE;EDGE2 RISE;DIRECTION FORWARDS;`
`:MEASUREMENT:MEAS4:STATE 0;TYPE UNDEFINED;UNITS "V"`
`;SOURCE1 CH1;SOURCE2 CH1;DELAY:EDGE1 RISE;EDGE2 RISE`
`;DIRECTION FORWARDS;:MEASUREMENT:MEAS5:STATE 0`
`;TYPE UNDEFINED;UNITS "V";SOURCE1 CH1;SOURCE2 CH1`
`;DELAY:EDGE1 RISE;EDGE2 RISE;DIRECTION FORWARDS;`
`:MEASUREMENT:MEAS6:STATE 0;TYPE UNDEFINED;UNITS "V"`
`;SOURCE1 CH1;SOURCE2 CH1;DELAY:EDGE1 RISE;EDGE2 RISE`
`;DIRECTION FORWARDS;:MEASUREMENT:MEAS7:STATE 0`
`;TYPE UNDEFINED;UNITS "V";SOURCE1 CH1;SOURCE2 CH1;DELAY`
`:EDGE1 RISE;EDGE2 RISE;DIRECTION FORWARDS;`
`:MEASUREMENT:MEAS8:STATE 0;TYPE UNDEFINED;UNITS "V"`
`;SOURCE1 CH1;SOURCE2 CH1;DELAY:EDGE1 RISE;EDGE2 RISE`
`;DIRECTION FORWARDS;:MEASUREMENT:REFLEVEL:METHOD PERCENT`
`;ABSOLUTE:HIGH 0.0000;LOW 0.0000;MID1 0.0000;MID2 0.0000;`
`:MEASUREMENT:REFLEVEL:PERCENT:HIGH 90.0000;LOW 10.0000`
`;MID1 50.0000;MID2 50.0000;:MEASUREMENT:STATISTICS:MODE`
`OFF;WEIGHTING 32`

MEASUrement:GATING

Description

This command specifies or returns the measurement gating setting. This command is equivalent to selecting Gating from the Measure menu and then clicking the desired Measurement Gating setting.

Group

Measurement

Syntax 1

`MEASUrement:GATING {ON|OFF|<NRf>|ZOOM|CURSOR}`

Syntax 2

`MEASUrement:GATING?`

Arguments

- `ON`

  This turns on measurement gating.

- `OFF`

  This turns off measurement gating.

- `<NRf>`

  A 0 turns off measurement gating; any other value turns on measurement gating.

- `ZOOM`

  This turns on gating, using the left and right edges of the zoom box.

- `CURSOR`

  This limits measurements to the portion of the waveform between the vertical bar cursors, even if they are off screen.

Example 1

`MEASUrement:GATING ON`

This command turns on measurement gating.

Example 2

`MEASUrement:GATING?`

This query might return `:MEASUREMENT:GATING CURSOR`, indicating that measurements are limited to the portion of the waveform between the vertical bar cursors.

MEASUrement:IMMed?

Description

This query-only command returns all immediate measurement setup parameters.

Group

Measurement

Syntax

`MEASUrement:IMMed?`

Example

`MEASUrement:IMMed?`

This query might return `:MEASUREMENT:IMMED:TYPE PERIOD;UNITS "s";SOURCE1 CH1;SOURCE2 CH1;DELAY:EDGE1 RISE;EDGE2 RISE;DIRECTION FORWARDS`

MEASURement:IMMed:DELay?

Description

This query-only command returns information about the immediate delay measurement. This command is equivalent to selecting Measurement Setup from the Measure menu, choosing the Time tab and then clicking the Delay button.

Group

Measurement

Syntax

`MEASUrement:IMMed:DELay?`

Example

`MEASUrement:IMMed:DELay?`

This query might return `:MEASUREMENT:IMMED:DELAY:EDGE1 RISE;EDGE2 RISE; DIRECTION FORWARDS`

MEASUrement:IMMed:DELay:DIREction

Description

This command sets or returns the starting point and direction that determines the delay "to" edge when taking an immediate delay measurement. Use the MEASUrement:IMMed:SOURCE2 command to specify the delay "to" waveform. This command is equivalent to selecting Measurement Setup from the Measure menu, choosing the Time tab, clicking the Delay button to display the delay settings and then clicking the desired Search Direction setting.

Group

Measurement

Related Commands

MEASUrement:IMMed:SOURCE2 (see page 235)

Syntax 1

`MEASUrement:IMMed:DELay:DIREction {BACKWards|FORWards}`

Syntax 2

`MEASUrement:IMMed:DELay:DIREction?`

Arguments

- `BACKWards`

  This starts the search at the end of the waveform and looks for the last rising or falling edge in the waveform.

- `FORWards`

  This starts the search at the beginning of the waveform and looks for the first rising or falling edge in the waveform.

Example 1

`MEASUrement:IMMed:DELay:DIREction FORWards`

This command starts searching from the beginning of the waveform record and looks for the first rising or falling edge.

Example 2

`MEASUrement:IMMed:DELay:DIREction?`

This query might return `:MEASUREMENT:IMMED:DELAY:DIRECTION BACKWARDS`, indicating that searching begins at the end of the waveform record and looks for the last rising or falling edge.

MEASUrement:IMMed:DELay:EDGE[1]

Description

This command sets or queries the slope of the edge that is used for the delay "from" waveform when taking an immediate delay measurement. Use the MEASUrement:IMMed:SOURCE1 command to specify the waveform. This command is equivalent to selecting Measurement Setup from the Measure menu, choosing the Time tab, clicking the Delay button to display the delay settings and then clicking the desired Delay Edge1 setting.

Group

Measurement

Related Commands

MEASUrement:IMMed:SOURCE1 (see page 234)

Syntax 1

```
MEASUrement:IMMed:DELay:EDGE[1] {FALL|RISe}
```

Syntax 2

```
MEASUrement:IMMed:DELay:EDGE[1]?
```

Arguments

- `FALL`

  This specifies the falling edge.

- `RISe`

  This specifies the rising edge.

Example 1

```
MEASUrement:IMMed:DELay:EDGE[1] RISe
```

This command specifies that the rising edge be used for the immediate delay measurement .

Example 2

```
MEASUrement:IMMed:DELay:EDGE[1]?
```

This query might return `MEASUREMENT:IMMED:DELAY:EDGE1 FALL`, indicating that the falling edge or negative edge of the waveform is used for the immediate delay measurement.

MEASUrement:IMMed:DELay:EDGE2

Description

This command sets or queries the slope of the edge that is used for the delay "to" waveform when taking an immediate delay measurement. Use the MEASUrement:IMMed:SOURCE2 command to specify the waveform. This command is equivalent to selecting Measurement Setup from the Measure menu, choosing the Time tab, clicking the Delay button to display the delay settings and then clicking the desired Delay Edge2 setting.

Group

Measurement

Related Commands

MEASUrement:IMMed:SOURCE2 (see page 235)

Syntax 1

`MEASUrement:IMMed:DELay:EDGE2 {FALL|RISe}`

Syntax 2

`MEASUrement:IMMed:DELay:EDGE2?`

Arguments

- `FALL`

  This specifies the falling edge.

- `RISe`

  This specifies the rising edge.

Example 1

`MEASUrement:IMMed:DELay:EDGE2 RISe`

This command specifies that the rising edge be used for the immediate delay measurement .

Example 2

`MEASUrement:IMMed:DELay:EDGE2?`

This query might return `MEASUREMENT:IMMED:DELAY:EDGE2 FALL`, indicating that the falling edge or negative edge of the waveform is used for the immediate delay measurement.

MEASUrement:IMMed:SOURCE[1]

Description

This command sets or queries the source for all single channel immediate measurements and specifies the source to measure "from" when taking an immediate delay measurement or phase measurement. This command is equivalent to selecting Measurement Setup from the Measure menu, choosing the Time tab, clicking the Delay button to display the delay settings and then clicking the desired Source1 (From) setting.

Group

Measurement

Related Commands

MEASUrement:IMMed:SOURCE2 (see page 235)

Syntax 1

```
MEASUrement:IMMed:SOURCE[1] {CH<x>|MATH<y>|REF<x>|HIStogram}
```

Syntax 2

```
MEASUrement:IMMed:SOURCE[1]?
```

Arguments

- `CH<x>`

  This is an input channel. The valid channel waveform range is from 1 through 4.

- `MATH<y>`

  This is a math waveform. The valid math waveform range is from 1 through 4.

- `REF<X>`

  This is a reference waveform. The valid reference waveform range is from 1 through 4.

- `HIStogram`

  This indicates histogram as the object to be measured.

Example 1

```
MEASUrement:IMMed:SOURCE[1] MATH1
```

This command specifies Math1 as the immediate measurement source .

Example 2

```
MEASUrement:IMMed:SOURCE{1}?
```

This query might return `:MEASUREMENT:IMMED:SOURCE1 CH3`, indicating that channel 3 is the immediate measurement source.

MEASUrement:IMMed:SOURCE2

Description
This command sets or queries the source for all single channel immediate measurements and specifies the source to measure "to" when taking an immediate delay measurement or phase measurement. This command is equivalent to selecting Measurement Setup from the Measure menu, choosing the Time tab, clicking the Delay button to display the delay settings and then clicking the desired Source2 (To) setting.

Group
Measurement

Related Commands
MEASUrement:IMMed:SOURCE[1] (see page 234)

Syntax 1
`MEASUrement:IMMed:SOURCE2 {CH<x>|MATH<y>|REF<x>}`

Syntax 2
`MEASUrement:IMMed:SOURCE2?`

Arguments

- `CH<x>`

  This is an input channel. The valid channel waveform range is from 1 through 4.

- `MATH<y>`

  This is a math waveform. The valid math waveform range is from 1 through 4.

- `REF<X>`

  This is a reference waveform. The valid reference waveform range is from 1 through 4.

Example 1
`MEASUrement:IMMed:SOURCE2 REF3`

This command sets the waveform in reference memory location 3 as the delay "to" source when making delay measurements.

Example 2
`MEASUrement:IMMed:SOURCE2?`

This query might return `:MEASUREMENT:IMMED:SOURCE2 MATH1`, indicating that Math1 is the immediate measurement source.

MEASUrement:IMMed:TYPe

Description

This command sets or queries the immediate measurement type.

Group

Measurement

Syntax 1

```
MEASUrement:IMMed:TYPE {AMPlitude|AREa|BURst|CARea|CMEam|
CRMs|DELay|FALL|FREQuency|HIGH|LOW|MAXimum|MEAN|MINImum|
NDUty|NOVershoot|NWIdth|PDUty|PERIod|PHAse|PK2Pk|POVershoot|
PWIdth|RISe|RMS}
```

Syntax 2

```
MEASUrement:IMMed:TYPe?
```

Arguments

- `AMPlitude`

  This is the high value minus the low value.

- `AREa`

  This is the area between the curve and ground over the entire waveform.

- `BURst`

  This is the time from the first MidRef crossing to the last MidRef crossing.

- `CARea`

  This is the area between the curve and ground over one cycle.

- `CMEan`

  This is the arithmetic mean over one cycle.

- `CRMs`

  This is the true Root Mean Square voltage over one cycle.

- `DELay`

  This is the time between the MidRef crossings of two different waveforms.

- `FALL`

  This is the time that it takes for the falling edge of a pulse to fall from a HighRef value to a LowRef value of its final value.

- `FREQuency`

  This is the reciprocal of the period measured in hertz.

- `HIGH`

  This is the 100% reference level.

- `LOW`

  This is the 0% reference level.

- `MAXimum`

  This is the highest amplitude (voltage).

- `MINImum`

  This is the lowest amplitude (voltage).

- `NDUty`

  This is the ratio of the negative pulse width to the signal period expressed as a percentage.

- `NOVershoot`

This is the negative overshoot, expressed as 100 x (Low - Minimum/Amplitude).

- `NWIdth`

  This is the distance (time) between MidRef (usually 50%) amplitude points of a negative pulse.

- `PDUty`

  This is the ratio of the positive pulse width to the signal period, expressed as a percentage.

- `PERIod`

  This is the time, in seconds, it takes for one complete signal cycle to happen.

- `PHAse`

  This is the amount of shift, expressed in degrees, from the selected waveform to the designated waveform.

- `PK2Pk`

  This is the absolute difference between the maximum and minimum amplitude.

- `POVershoot`

  This is the positive overshoot, expressed as 100 x (Maximum-High/Amplitude).

- `PWIdth`

  This is the distance (time) between MidRef (usually 50%) amplitude points of a positive pulse.

- `RISe`

  This is the time that it takes for the leading edge of a pulse to rise from a low reference value to a high reference value of its final value.

- `RMS`

  This is the true Root Mean Square voltage.

Example 1

`MEASUrement:IMMed:TYPe FREQuency`

This defines the immediate measurement to be a frequency measurement.

Example 2

`MEASUrement:IMMed:TYPe?`

This query might return `:MEASUREMENT:IMMED:TYPe RMS`, that the immediate measurement is the true Root Mean Square voltage.

MEASUrement:IMMed:UNIts?

Description
This query-only command returns the units of the immediate measurement.

Group
Measurement

Syntax
`MEASUrement:IMMed:UNIts?`

Example
`MEASUrement:IMMed:UNIts?`

This query might return `:MEASUREMENT:IMMED:UNIts "s"`, indicating that units for the immediate measurement are represented in seconds.

MEASUrement:IMMed:VALue?

Description

This query-only command returns the value of the measurement specified by the
MEASUrement:IMMed:TYPe command. The measurement is immediately taken on the source(s)
specified by a MEASUrement:IMMed:SOURCE command.

>   **Note:** A change to HORizontal:MAIn:SCALe or CH<x>:SCALe will not necessarily have taken affect if
>   followed by this command.

Group

Measurement

Related Commands

MEASUrement:IMMed:TYPe (see page 236), MEASUrement:IMMed:SOURCE[1] (see page 234),
MEASUrement:IMMed:SOURCE2 (see page 235), *ESR? (see page 320), ALLEV? (see page 329)

Syntax

`MEASUrement:IMMed:VALue?`

Example

`MEASUrement:IMMed:VALue?`

This query might return `:MEASUREMENT:IMMED:VALUE 9.9000E+37`. If the measurement has an error or
warning associated with it, then an item is added to the error queue. The error can be checked for with
the *ESR? and ALLEV? commands.

MEASUrement:MEAS\<n\>:COUNt?

Description

This query-only command returns the number of values accumulated for this measurement since the last statistical reset. Some values may have been ignored because they generated an error.

Group

Measurement

Syntax

`MEASUrement:MEAS<n>:COUNt?`

Example

`MEASUrement:MEAS3:COUNt?`

This query might return `:MEASUREMENT:MEAS3:COUNT 3.247000000E+03`

MEASUrement:MEAS<n>:MAXimum?

Description

This query-only command returns the maximum value found for this measurement since the last statistical reset.

Group

Measurement

Syntax

`MEASUrement:MEAS<n>:MAXimum?`

Example

`MEASUrement:MEAS3:MAXimum?`

This query might return `:MEASUREMENT:MEAS3:MAXIMUM 4.18E-9`

MEASUrement:MEAS\<n>:MEAN?

Description

This query-only command returns the mean value accumulated for this measurement since the last statistical reset.

Group

Measurement

Syntax

`MEASUrement:MEAS<n>:MEAN?`

Example

`MEASUrement:MEAS1:MEAN?`

This query might return `:MEASUREMENT:MEAS1:MEAN 514.71E-09`

MEASUrement:MEAS<n>:MINImum?

Description

This query-only command returns the minimum value found for this measurement since the last statistical reset.

Group

Measurement

Syntax

`MEASUrement:MEAS<n>:MINImum?`

Example

`MEASUrement:MEAS1:MINImum?`

This query might return `:MEASUREMENT:MEAS1:MINIMUM 1.75E-09`

MEASUrement:MEAS\<n>:STDdev?

Description

This query-only command returns the standard deviation of values accumulated for this measurement since the last statistical reset.

Group

Measurement

Syntax

`MEASUrement:MEAS<n>:STDdev?`

Example

`MEASUrement:MEAS1:STDdev?`

This query might return `:MEASUREMENT:MEAS1:STDDEV 21.0E-12`

MEASUrement:MEAS<x>?

Description

This query-only command returns all measurement parameters for the displayed measurement specified by x, which can range from 1 through 8. This query command is equivalent to selecting Measurement Setup from the Measure menu and viewing the Measurements table; then choosing the Time tab, clicking the Delay button and viewing the Delay Edge and Search Direction settings.

Group

Measurement

Syntax

`MEASUrement:MEAS<x>?`

Example

`MEASUrement:MEAS3?`

This query might return `:MEASUREMENT:MEAS3:STATE 0;TYPE PERIOD;UNITS "s";SOURCE1 CH1;DELAY:EDGE1 RISE;EDGE2 RISE;DIRECTION FORWARDS`

MEASUrement:MEAS<x>:DELay?

Description

This query-only command returns the delay measurement parameters for the measurement specified by <x>, which ranges from 1 through 8. Measurement parameters are presented in the following order: Edge1, Edge2 and Direction. This query command is equivalent to selecting Time from the Measure menu, choosing Delay and then viewing the Delay Edge and Search Direction settings.

Group

Measurement

Syntax 1

`MEASUrement:MEAS<x>:DELay?`

Example

`MEASUrement:MEAS3?`

This query might return `:MEASUREMENT:MEAS3:DELAY:EDGE1 RISE;EDGE2 RISE;DIRECTION FORWARDS`

MEASUrement:MEAS<x>:DELay:DIREction

Description

This command sets or queries the starting point and direction that determines the delay "to" edge when taking a delay measurement. Use the MEASUrement:MEAS<x>:SOURCE2 command to specify the waveform. This command is equivalent to selecting Time from the Measure menu, choosing Delay from the drop-down list and then clicking the desired Search Direction setting.

Group

Measurement

Related Commands

MEASUrement:MEAS<x>:SOURCE2 (see page 251), MEASUrement:MEAS<x>:DELay:EDGE2 (see page 249)

Syntax 1

```
MEASUrement:MEAS<x>:DELay:DIREction {BACKWards|FORWards}
```

Syntax 2

```
MEASUrement:MEAS<x>:DELay:DIREction?
```

Arguments

- `BACKWards`

  This means that the search starts at the end of the waveform and looks for the last rising or falling edge in the waveform. Use the MEASUrement:MEAS<x>:DELay:EDGE2 command to specify the slope of the edge.

- `FORWards`

  This means that the search starts at the beginning of the waveform and looks for the first rising or falling edge in the waveform. Use the MEASUrement:MEAS<x>:DELay:EDGE2 command to specify the slope of the edge.

Example 1

```
MEASUrement:MEAS3:DELay:DIREction BACKWards
```

This command starts searching from the end of the waveform record.

Example 2

```
MEASUrement:MEAS3DELay:DIREction?
```

This query might return `:MEASUREMENT:MEAS3:DELAY:DIRECTION BACKWARDS` indicating the current search direction.

MEASUrement:MEAS<x>:DELay:EDGE[1]

Description

This command sets or queries the slope of the edge that is used for the delay "from" waveform when taking a delay measurement. Use the MEASUrement:MEAS<x>:SOURCE[1] command to specify the waveform. This command is equivalent to selecting Time from the Measure menu, choosing Delay from the drop-down list and then clicking the desired Delay Edge1 setting.

Group

Measurement

Related Commands

MEASUrement:MEAS<x>:SOURCE[1] (see page 250)

Syntax 1

```
MEASUrement:MEAS<x>:DELay:EDGE[1] {FALL|RISe}
```

Syntax 2

```
MEASUrement:MEAS<x>:DELay:EDGE[1]?
```

Arguments

- FALL

  This specifies the falling edge of the waveform.

- RISe

  This specifies the rising edge of the waveform.

Example 1

```
MEASUrement:MEAS3:DELay:EDGE[1] RISe
```

This command specifies that the rising edge of the waveform be used for measurement 3.

Example 2

```
MEASUrement:MEAS1:DELay:EDGE[1]?
```

This query might return `:MEASUREMENT:MEAS1:DELAY:EDGE[1] FALL`, indicating that the falling edge of the waveform is being used for measurement 1.

MEASUrement:MEAS<x>:DELay:EDGE2

Description

This command sets or queries the slope of the edge that is used for the delay "to" waveform when taking a delay measurement. Use the MEASUrement:MEAS<x>:SOURCE2 command to specify the waveform. This command is equivalent to selecting Time from the Measure menu, choosing Delay from the drop-down list and then clicking the desired Delay Edge2 setting.

Group

Measurement

Related Commands

MEASUrement:MEAS<x>:SOURCE2 (see page 251)

Syntax 1

```
MEASUrement:MEAS<x>:DELay:EDGE2 {FALL|RISe}
```

Syntax 2

```
MEASUrement:MEAS<x>:DELay:EDGE2?
```

Arguments

- `FALL`

  This specifies the falling edge of the waveform.

- `RISe`

  This specifies the rising edge of the waveform.

Example 1

```
MEASUrement:MEAS3:DELay:EDGE2 RISe
```

This command specifies that the rising edge of the waveform be used for measurement 3.

Example 2

```
MEASUrement:MEAS1:DELay:EDGE2?
```

This query might return `:MEASUREMENT:MEAS1:DELAY:EDGE2 FALL`, indicating that the falling edge of the waveform is being used for measurement 1.

MEASUrement:MEAS<x>:SOURCE[1]

Description

This command sets or queries the source for all single channel measurements and specifies the source to measure "from" when taking a delay measurement or phase measurement. Measurements are specified by x, which ranges from 1 through 8. This command is equivalent to selecting Measurement Setup from the Measure menu and then choosing the desired measurement source.

Group

Measurement

Syntax 1

`MEASUrement:MEAS<x>:SOURCE[1] {CH<x>|MATH<y>|REF<x>|HIStogram}`

Syntax 2

`MEASUrement:MEAS<x>:SOURCE[1]?`

Arguments

- `CH<x>`

  This is an input channel. The valid channel waveform range is from 1 through 4.

- `MATH<y>`

  This is a math waveform. The valid math waveform range is from 1 through 4.

- `REF<x>`

  This is a reference waveform. The valid reference waveform range is from 1 through 4.

- `HIStogram`

  This is a histogram.

Example 1

`MEASUrement:MEAS2:SOURCE[1] MATH1`

This command specifies Math 1 as the measurement 2 source.

Example 2

`MEASUrement:MEAS1:SOURCE[1]?`

This query might return `:MEASUREMENT:MEAS1:SOURCE[1] MATH1`, indicating that Math1 is the measurement 2 source.

MEASUrement:MEAS<x>:SOURCE2

Description

This command sets or queries the source for all single channel measurements and specifies the reference source to measure "to" when taking a delay measurement or phase measurement. Measurements are specified by x, which ranges from 1 through 8. This command is equivalent to selecting Measurement Setup from the Measure menu, selecting a measurement type of either Phase or Delay, and then choosing the desired measurement source.

> **Tip:** Source2 measurements only apply to phase and delay measurement types, which require both a target (Source1) and reference (Source2) source.

Group

Measurement

Related Commands

MEASU:MEAS<x>:TYPe (see page 253)

Syntax 1

```
MEASUrement:MEAS<x>:SOURCE2 {CH<x>|MATH<y>|REF<x>}
```

Syntax 2

```
MEASUrement:MEAS<x>:SOURCE2?
```

Arguments

- `CH<x>`

  This is an input channel. The valid channel waveform range is from 1 through 4.

- `MATH<y>`

  This is a math waveform. The valid math waveform range is from 1 through 4.

- `REF<x>`

  This is a reference waveform . The valid reference waveform range is from 1 through 4.

Example 1

```
MEASUrement:MEAS4:SOURCE2 CH1
```

This command specifies CH1 as the delay "to" source when making delay measurement.

Example 2

```
MEASUrement:MEAS2:SOURCE2?
```

This query might return `:MEASUREMENT:MEAS2:SOURCE2 MATH1`, indicating that Math 1 is the measurement 2 source.

MEASUrement:MEAS<x>:STATE

Description

This command sets or queries whether the specified measurement slot is computed and displayed. The measurement slot is specified by x, which ranges from 1 through 8. This command is equivalent to selecting Measurement Setup from the Measure menu and then clicking the Display button.

For a measurement to display, you must have selected a source waveform and defined the measurement you want to take and display. You select the measurement using the MEASUrement:MEAS<x>:SOURCE[1] command. You define the measurement type using the MEASUrement:MEAS<x>:TYPe command.

Group

Measurement

Related Commands

MEASUrement:MEAS<x>:SOURCE[1] (see page 250), MEASUrement:MEAS<x>:TYPe (see page 253)

Syntax 1

`MEASUrement:MEAS<x>:STATE {OFF|ON|<NR1>}`

Syntax 2

`MEASUrement:MEAS<x>:STATE?`

Arguments

- `OFF`

  This disables calculation and display of the specified measurement slot.

- `ON`

  This enables calculation and display of the specified measurement slot.

- `<NR1>`

  A 0 disables calculation and display of the specified measurement slot; any other value enables calculation and display of the specified measurement slot.

Example 1

`MEASUrement:MEAS2:STATE ON`

This command computes and displays the measurement defined as measurement 2.

Example 2

`MEASUrement:MEAS1:STATE?`

This query might return `:MEASUREMENT:MEAS1:STATE 0`, indicating that measurement defined for measurement slot 1 is disabled.

MEASUrement:MEAS<x>:TYPe

Description

This command sets or queries the type of measurement that is defined for the specified measurement slot. The measurement slot is specified by x, which ranges from 1 through 4. This command is equivalent to selecting Measurement Setup from the Measure menu and then choosing the desired measurement type.

Group

Measurement

Syntax 1

```
MEASUrement:MEAS<x>:TYPe {AMPlitude|AREa|BURst|CARea|CMEam|CRMs|DELay|FALL
|FREQuency|HIGH||LOW|MAXimum|MEAN|MINImum|NDUty|NOVershoot|NwIdth|PDUty
|PERIod|PHAse|PK2Pk|POVershoot|PWIdth|RISe|RMS|UNDEFINED}
```

Syntax 2

```
MEASUrement:MEAS<x>:TYPe?
```

Arguments

- `AMPlitude`

  This measures the amplitude of the selected waveform.

- `AREa`

  This measures the voltage over time. The area is over the entire waveform or gated region and is measured in volt-seconds. The area measured above the ground is positive, while the area below ground is negative.

- `BURst`

  This measures the duration of a burst. The measurement is made over the entire waveform or gated region.

- `CARea`

  This measures the voltage over time. The area is over the first cycle in the waveform or the first cycle in the gated region and measured in volt-seconds. The area measured above ground is positive, while the area below ground is negative.

- `CMEam`

  This measures the arithmetic mean over the first cycle in the4 waveform or the first cycle in the gated region..

- `CRMs`

  This measures the true Root Mean Square voltage over the first cycle in the waveform or the first cycle in the gated region.

- `DELay`

  This measures the time between the middle reference point of the source waveform and the destination waveform.

- `FALL`

  This measures the time taken for the falling edge of the first pulse in the waveform or gated region to fall from a high reference value (default is 90%) to a low reference value (default is 10%).

- `FREQuency`

  This measures the first cycle in the waveform or gated region. Frequency is the reciprocal of the period and is measured in hertz (Hz), where 1 Hz = 1 cycle per second.

- `HIGH`

  This measures the High reference (100% level, sometimes called Topline) of a waveform.

  You can also limit the High measurement (normally taken over the entire waveform record) to a gated region on the waveform.

- `LOW`

  This measures the Low reference (0% level, sometimes called Baseline) of a waveform.

- `MAXimum`

  This finds the maximum amplitude. This value is the most positive peak voltage found. It is measured over the entire waveform or gated region.

- `MEAN`

  This amplitude measurement finds the arithmetic mean over the entire waveform or gated region.

- `MINImum`

  This amplitude measurement finds the minimum amplitude. This value is typically the most negative peak voltage. It is measured over the entire waveform or gated region.

- `NDUty`

  This measures the first cycle in the waveform or gated region. The negative duty cycle is the ratio of the negative pulse width to the signal period, expressed as a percentage.

- `NOVershoot`

  This amplitude measurement finds the negative overshoot value over the entire waveform or gated region.

- `NWIdth`

  This measures the first pulse in the waveform or gated region. This distance (time) is measured at the middle reference amplitude points of a negative pulse.

- `PDUty`

  This measures the first cycle in the waveform or gated region. The positive duty cycle is the ratio of the positive pulse width to the signal period, expressed as a percentage.

- `PERIod`

  This timing measurement finds the time it takes for the first complete waveform cycle to complete in the waveform or gated region. Period is the reciprocal of frequency and is measured in seconds.

- `PHAse`

  This measures the phase difference (amount of time a waveform leads or lags the reference waveform) between two waveforms. The measurement is made between the middle reference points of the two waveforms and is expressed in degrees, where 360° represents one waveform cycle.

- `PK2Pk`

  This peak-to-peak amplitude measurement finds the absolute difference between the maximum and minimum amplitude in the entire waveform or gated region.

- `POVershoot`

  This amplitude measurement finds the positive overshoot value over the entire waveform or gated region.

- `PWIdth`

  This measures the first pulse in the waveform or gated region. The distance (time) is measured at the middle reference amplitude points of a positive pulse.

- `RISe`

  This timing measurement finds the rise time of the waveform. The rise time is the time it takes for the leading edge of the first pulse encountered to rise from a low reference value (default is 10%) to a high reference value (default is 90%).

  Rise time = TimeRef High - TimeRef Low

  You can also limit the measurement (normally taken over the entire waveform record) to a gated region on the waveform.

- `RMS`

This amplitude measurement finds the true Root Mean Square voltage in the entire waveform or gated region.

- `UNDEFINED`

  This is the default measurement type, which indicates that a measurement type has not yet been chosen. Once a measurement type is chosen, measurements cannot be reset using this argument.

Example 1

`MEASUrement:MEAS2:TYPe FREQuency`

This command defines measurement 2 as a measurement of the frequency of a waveform.

Example 2

`MEASUrement:MEAS1:TYPe?`

This query might return `:MEASUREMENT:MEAS1:TYPE RMS`, indicating that measurement 1 is defined to measure the RMS value of a waveform.

MEASUrement:MEAS<x>:UNIts?

Description

This query-only command returns the units associated with the specified measurement.

Group

Measurement

Related Commands

MEASUrement:MEAS<x>:TYPe (see page 253)

Syntax

`MEASUrement:MEAS<x>:UNIts?`

Example

`MEASUrement:MEAS1:UNIts?`

This query might return `:MEASUREMENT:MEAS1:UNIts %`, indicating units for measurement 1 are set to percent.

MEASUrement:MEAS<x>:VALue?

Description

This query-only command returns the value that has been calculated for the measurement specified by <x>, which ranges from 1 through 8. This command is equivalent to selecting Display Statistics from the Measure menu and then choosing Value from the drop-down list to display *all* measurement values on-screen.

Note: This is the displayed value in the onscreen display. If measurement statistics are enabled, a new value is calculated with every waveform. In addition, this value is updated about every 1/3 second. If you are acquiring a long acquisition record, the oscilloscope may take longer to update.

Group

Measurement

Related Commands

MEASUrement:MEAS<x>:UNIts? (see page 256), *ESR? (see page 320), ALLEV? (see page 329)

Syntax

`MEASUrement:MEAS<x>:VALue?`

Example

`MEASUrement:MEAS1:VALue?`

This query might return `:MEASUREMENT:MEAS1:VALue 2.8740E-06.` If the measurement has an error or warning associated with it, then an item is added to the error queue. The error can be checked for with the *ESR? and ALLEV? commands.

MEASUrement:METHod

Description

This command sets or queries the method used to calculate the 0% and 100% reference level. This command is equivalent to selecting Reference Levels from the Measure menu and then choosing the desired Determine Base, Top Form setting.

Group

Measurement

Related Commands

MEASUrement:REFLevel:PERCent:HIGH (see page 265), MEASUrement:REFLevel:PERCent:LOW (see page 266), MEASUrement:REFLevel:PERCent:MID (see page 267), MEASUrement:REFLevel:PERCent:MID2 (see page 268)

Syntax 1

```
MEASUrement:METHod {HIStogram|MINMax)
```

Syntax 2

```
MEASUrement:METHod?
```

Arguments

- HIStogram

  This sets the high and low reference levels statistically using a histogram algorithm.

- MINMax

  This sets the high and low waveform levels to MAX and MIN, respectively.

Example 1

```
MEASUrement:METHod HIStogram
```

This command specifies that the high and low reference levels are set statistically.

Example 2

```
MEASUrement:METHod?
```

This query might return `:MEASUREMENT:METHOD MINMAX`, indicating that the reference levels are set to MIN and MAX.

MEASUrement:REFLevel?

Description

This query-only command returns the current reference level parameters. This command is equivalent to selecting Reference Levels from the Measure menu and then viewing the current Reference Levels settings.

Group

Measurement

Syntax

```
MEASUrement:REFLevel?
```

Example

```
MEASUrement:REFLevel?
```

This query might return `:MEASUREMENT:REFLEVEL:METHOD ABSOLUTE`
```
;ABSOLUTE:HIGH 0.0000E+00;LOW 0.0000E+00;MID1 0.0000E+00
;MID2 0.0000E+00;:MEASUREMENT:REFLEVEL:PERCENT:HIGH
9.0000E+01;LOW 1.0000+01;MID1 5.0000E+01;MID2 5.0000E+01
```

MEASUrement:REFLevel:ABSolute:HIGH

Description

This command sets or queries the high reference level, and is the upper reference level when MEASUrement:REFLevel:METHod is set to Absolute. Note that this command affects the results of rise and fall measurements. This command is equivalent to selecting Reference Levels from the Measure menu and then entering the Absolute High Ref value.

Group

Measurement

Related Commands

MEASUrement:REFLevel:METHod (see page 264), MEASUrement:IMMed:TYPe (see page 236), MEASUrement:MEAS<x>:TYPe (see page 253)

Syntax 1

`MEASUrement:REFLevel:ABSolute:HIGH <NR3>`

Syntax 2

`MEASUrement:REFLevel:ABSolute:HIGH?`

Argument

- `<NR3>`

  This is the high reference level, in volts. The default is 0.0 V.

Example 1

`MEASUrement:REFLevel:ABSolute:HIGH 1.71`

This command sets the high reference level to 1.71 V.

Example 2

`MEASUrement:REFLevel:ABSolute:HIGH?`

This query might return `:MEASUREMENT:REFLEVEL:ABSOLUTE:HIGH 1.7100E+00`, indicating that the absolute high reference level is set to 1.71 V.

MEASUrement:REFLevel:ABSolute:LOW

Description

This command sets or queries the low reference level, and is the lower reference level when MEASUrement:REFLevel:METHod is set to Absolute. Note that this command affects the results of rise and fall measurements. This command is equivalent to selecting Reference Levels from the Measure menu and then entering the Absolute Low Ref value.

Group

Measurement

Related Commands

MEASUrement:REFLevel:METHod (see page 264), MEASUrement:IMMed:TYPe (see page 236), MEASUrement:MEAS<x>:TYPe (see page 253)

Syntax 1

`MEASUrement:REFLevel:ABSolute:LOW <NR3>`

Syntax 2

`MEASUrement:REFLevel:ABSolute:LOW?`

Argument

- `<NR3>`

  This is the low reference level, in volts. The default is 0.0 V.

Example 1

`MEASUrement:REFLevel:ABSolute:LOW 0.0 V.`

This command sets the low reference level to 0.0 V.

Example 2

`MEASUrement:REFLevel:ABSolute:LOW?`

This query might return `:MEASUREMENT:REFLEVEL:ABSOLUTE:LOW 0.0000E+00`, indicating that the absolute low reference level is set to 0.0 V.

MEASUrement:REFLevel:ABSolute:MID

Description

This command sets or queries the mid reference level, and is the 50% reference level when MEASUrement:REFLevel:METHod is set to Absolute. Note that this command affects the results of period, frequency, delay, and all cyclic measurements. This command is equivalent to selecting Reference Levels from the Measure menu and then entering the Absolute Mid Ref value.

Group

Measurement

Related Commands

MEASUrement:REFLevel:METHod (see page 264)

Syntax 1

`MEASUrement:REFLevel:ABSolute:MID[1] <NR3>`

Syntax 2

`MEASUrement:REFLevel:ABSolute:MID[1]?`

Argument

- `<NR3>`

   This is the mid reference level, in volts. The default is 0.0 V.

Example 1

`MEASUrement:REFLevel:ABSolute:MID[1] .71`

This command sets the mid reference level to .71 V.

Example 2

`MEASUrement:REFLevel:ABSolute:MID[1]?`

This query might return `:MEASUREMENT:REFLEVEL:ABSOLUTE:MID 0.7100E+00,` indicating that the absolute mid1 reference level is set to .71 V.

MEASUrement:REFLevel:ABSolute:MID2

Description

This command sets or queries the mid reference level for the "to" waveform when taking a delay measurement, and is the 50% reference level when MEASUrement:REFLevel:METHod is set to Absolute. Note that this command affects the results of delay measurements. This command is equivalent to selecting Reference Levels from the Measure menu and then entering the Absolute Mid2 Ref value.

Group

Measurement

Related Commands

MEASUrement:REFLevel:METHod (see page 264)

Syntax 1

```
MEASUrement:REFLevel:ABSolute:MID2 <NR3>
```

Syntax 2

```
MEASUrement:REFLevel:ABSolute:MID2?
```

Argument

- `<NR3>`

  This is the mid reference level, in volts. The default is 0.0 V.

Example 1

```
MEASUrement:REFLevel:ABSolute:MID2 0.5
```

This command sets the mid reference level for the delay waveform to 0.5 V.

Example 2

```
MEASUrement:REFLevel:ABSolute:MID2?
```

This query might return `:MEASUREMENT:REFLEVEL:ABSOLUTE:MID2 0.5000E+00,` indicating that the absolute mid2 reference level is set to 0.5 V.

MEASUrement:REFLevel:METHod

Description

This command specifies or queries the reference level units used for measurement calculations. This command is equivalent to selecting Reference Levels from the Measure menu and then choosing the desired reference level from the Units group box.

Group

Measurement

Syntax 1

`MEASUrement:REFLevel:METHod {ABSolute|PERCent}`

Syntax 2

`MEASUrement:REFLevel:METHod?`

Arguments

- `ABSolute`

  This specifies that the reference levels are set explicitly using the MEASUrement:REFLevel:ABSolute commands. This method is useful when precise values are required. For instance, when designing to published interface specifications, such as RS-232-C.

- `PERCent`

  This specifies that the reference levels are calculated as a percent relative to HIGH and LOW. The percentages are defined using the MEASUrement:REFLevel:PERCent commands.

Example 1

`MEASUrement:REFLevel:METHod ABSolute`

This command specifies that explicit user-defined values are used for the reference levels.

Example 2

`MEASUrement:REFLevel:METHod?`

This query might return `:MEASUREMENT:REFLEVEL:METHOD PERCENT`, indicating that the reference level units used are calculated as a percent relative to HIGH and LOW.

MEASUrement:REFLevel:PERCent:HIGH

Description

This command sets or queries the percent (where 100% is equal to HIGH) that is used to calculate the high reference level when MEASUrement:REFLevel:METHod is set to Percent. Note that this command affects the results of rise and fall measurements. This command is equivalent to selecting Reference Levels from the Measure menu and then entering the Percentage High Ref value.

Group

Measurement

Related Commands

MEASUrement:REFLevel:METHod (see page 264), MEASUrement:IMMed:TYPe (see page 236), MEASUrement:MEAS<x>:TYPe (see page 253)

Syntax 1

```
MEASUrement:REFLevel:PERCent:HIGH <NR3>
```

Syntax 2

```
MEASUrement:REFLevel:PERCent:HIGH?
```

Argument

- `<NR3>`

  This is the high reference level, ranging from 0 to 100%. The default high reference level is 90%.

Example 1

```
MEASUrement:REFLevel:PERCent:HIGH 95
```

This command sets the high reference level to 95% of HIGH.

Example 2

```
MEASUrement:REFLevel:PERCent:HIGH?
```

This query might return `:MEASUREMENT:REFLEVEL:PERCENT:HIGH 90`, indicating that the percentage high reference level is set to 90% of HIGH.

MEASUrement:REFLevel:PERCent:LOW

Description

This command sets or queries the percent (where 100% is equal to HIGH) that is used to calculate the low reference level when MEASUrement:REFLevel:METHod is set to Percent. Note that this command affects the results of rise and fall measurements. This command is equivalent to selecting Reference Levels from the Measure menu and then entering the Percentage Low Ref value.

Group

Measurement

Related Commands

MEASUrement:REFLevel:METHod (see page 264), MEASUrement:IMMed:TYPe (see page 236), MEASUrement:MEAS<x>:TYPe (see page 253)

Syntax 1

```
MEASUrement:REFLevel:PERCent:LOW <NR3>
```

Syntax 2

```
MEASUrement:REFLevel:PERCent:LOW?
```

Argument

- `<NR3>`

  This is the low reference level, ranging from 0 to 100%. The default low reference level is 10%.

Example 1

```
MEASUrement:REFLevel:PERCent:LOW 15
```

This command sets the high reference level to 15% of HIGH.

Example 2

```
MEASUrement:REFLevel:PERCent:LOW?
```

This query might return `:MEASUREMENT:REFLEVEL:PERCENT:LOW 10`, indicating that the percentage high reference level is set to 10% of HIGH.

MEASUrement:REFLevel:PERCent:MID[1]

Description

This command sets or queries the percent (where 100% is equal to HIGH) that is used to calculate the mid reference level when MEASUrement:REFLevel:METHod is set to Percent. Note that this command affects the results of period, frequency, delay, and all cyclic measurements. This command is equivalent to selecting Reference Levels from the Measure menu and then entering the Percentage Mid Ref value.

Group

Measurement

Related Commands

MEASUrement:REFLevel:METHod (see page 264)

Syntax 1

```
MEASUrement:REFLevel:PERCent:MID[1] <NR3>
```

Syntax 2

```
MEASUrement:REFLevel:PERCent:MID[1]?
```

Argument

- `<NR3>`

    This is the mid reference level, ranging from 0 to 100%. The default mid reference level is 50%.

Example 1

```
MEASUrement:REFLevel:PERCent:MID[1] 60
```

This command sets the mid reference level to 60% of HIGH.

Example 2

```
MEASUrement:REFLevel:PERCent:MID[1]?
```

This query might return `:MEASUREMENT:REFLEVEL:PERCENT:MID 65,` indicating that the percentage mid reference level is set to 65% of HIGH.

MEASUrement:REFLevel:PERCent:MID2

Description

This command sets or queries the percent (where 100% is equal to HIGH) that is used to calculate the mid reference level for the second waveform specified when MEASUrement:REFLevel:METHod is set to Percent. Note that this command affects the results of delay measurements. This command is equivalent to selecting Reference Levels from the Measure menu and then entering the Percentage Mid2 Ref value.

Group

Measurement

Related Commands

MEASUrement:REFLevel:METHod (see page 264)

Syntax 1

```
MEASUrement:REFLevel:PERCent:MID2 <NR3>
```

Syntax 2

```
MEASUrement:REFLevel:PERCent:MID2?
```

Argument

- `<NR3>`

  This is the mid reference level, ranging from 0 to 100%. The default mid reference level is 50%.

Example 1

```
MEASUrement:REFLevel:PERCent:MID2 40
```

This command sets the mid2 reference level to 40% of HIGH.

Example 2

```
MEASUrement:REFLevel:PERCent:MID2?
```

This query might return `:MEASUREMENT:REFLEVEL:PERCENT:MID2 45`, indicating that the percentage mid2 reference level is set to 45% of HIGH.

MEASUrement:STATIstics:COUNt

Description

This command (no query form) clears existing measurement statistics from memory. This command is equivalent to selecting Reset Statistics from the Measure menu.

Group

Measurement

Related Commands

MEASUrement:STATIstics:MODe (see page 270)

Syntax

```
MEASUrement:STATIstics:COUNt {RESET}
```

Argument

- `RESET`

  This clears existing measurement statistics from memory.

Example

```
MEASUrement:STATIstics:COUNt RESET
```

This command clears existing measurement statistics from memory.

MEASUrement:STATIstics:MODe

Description

This command controls the operation and display of management statistics. This command is equivalent to selecting Measurement Setup from the Measure menu, clicking the Statistics button and then choosing the desired Measurement Format.

Group

Measurement

Related Commands

MEASUrement:STATIstics:WEIghting (see page 271)

Syntax 1

`MEASUrement:STATIstics:MODe {OFF|ALL|VALUEMean}`

Syntax 2

`MEASUrement:STATIstics:MODe?`

Arguments

- `OFF`

  This turns measurements off. This is the default value.

- `ALL`

  This turns on statistics and displays all statistics for each measurement.

- `VALUEMean`

  This turns on statistics and displays the value and the mean (μ) of each measurement.

Example 1

`MEASUrement:STATIstics:MODe OFF`

This command turns statistic measurements off.

Example 2

`MEASUrement:STATIstics:MODe?`

This query might return `:MEASUREMENT:STATISTICS:MODE ALL`, indicating that measurement statistics are turned on and all statistics are being displayed for each measurement.

MEASUrement:STATIstics:WEIghting

Description

This command sets or queries the 'time constant' for mean and standard deviation statistical accumulations. This command is equivalent to selecting Measurement Setup from the Measure menu, clicking the Statistics button and then entering the desired Weight n= value.

Group

Measurement

Related Commands

MEASUrement:STATIstics:MODE (see page 270)

Syntax 1

```
MEASUrement:STATIstics:WEIghting <NR1>
```

Syntax 2

```
MEASUrement:STATIstics:WEIghting?
```

Argument

- `<NR1>`

  This is the time constant for the mean and standard deviation statistical accumulations.

Example 1

```
MEASUrement:STATIstics:WEIghting 4
```

This command sets statistical weighting to 4.

Example 2

```
MEASUrement:STATIstics:WEIghting?
```

This query might return `:MEASUREMENT:STATISTICS:WEIGHTING 4`, indicating that measurement statistics weighting is currently set to 4.