

Commands

Acquisition Command Group

Acquisition Overview

You use the commands in the Acquisition Command Group to set up the modes and functions that control how the instrument acquires the signals you input to the channels and processes them into waveforms.

Using these commands for acquiring waveforms, you can do the following:

- Start and stop acquisitions.
- Control whether each waveform is simply acquired, averaged, or enveloped over successive acquisitions of that waveform.
- Set the controls or conditions that start and stop acquisitions.
- Determine the action the system takes upon completing an acquisition, such as saving all waveforms and taking a measurement when the acquisition is stopped.
- Control acquisition of acquired channel waveforms.
- Set acquisition parameters.

Acquisition Commands

Command	Description
ACQUIRE?	Returns acquisition parameters
ACQUIRE:MODE?	Returns acquisition mode
ACQUIRE:MODE	Sets acquisition mode
ACQUIRE:NUMAcq?	Returns the number of acquisitions that have occurred
ACQUIRE:NUMAVg?	Returns number of acquisitions for an averaged waveform
ACQUIRE:NUMAVg	Sets number of acquisitions for an averaged waveform
ACQUIRE:NUMEnv?	Returns number of acquisitions for envelope waveform
ACQUIRE:NUMEnv	Sets number of acquisitions for envelope waveform
ACQUIRE:REPEt?	Returns whether repetitive signal acquisition mode on
ACQUIRE:REPEt	Enables or disables repetitive signal acquisition mode
ACQUIRE:STATE?	Returns acquisition state
ACQUIRE:STATE	Starts or stops acquisitions
ACQUIRE:STOPAfter?	Returns whether the acquisition is continuous or single sequence
ACQUIRE:STOPAfter	Sets whether the acquisition is continuous or single sequence
FASTAcq?	Returns the Fast Acquisition state
FASTAcq:STATE?	Returns the Fast Acquisition state
FASTAcq:STATE	Enables or disables Fast Acquisition mode

ACQuire:MODE

Description

This command sets or queries the acquisition mode of the oscilloscope. This affects all live waveforms. This command is equivalent to selecting Horizontal/Acquisition from the Horiz/Acq menu and then choosing the desired mode from the Acquisition Mode group box.

Waveforms are the displayed data point values taken from acquisition intervals. Each acquisition interval represents a time duration set by the horizontal scale (time per division). The oscilloscope sampling system always samples at the maximum rate and so an acquisition interval may include more than one sample. The acquisition mode (which you set using this ACQuire:MODE command) determines how the final value of the acquisition interval is generated from the many data samples.

Group

Acquisition

Related Commands

ACQuire:NUMAVg (see page 23), ACQuire:NUMenv (see page 24), CURVe? (see page 467)

Syntax 1

```
ACQuire:MODE{SAMPLE|PEAKdetect|HIRes|AVERage|ENVELOpe}
```

Syntax 2

```
ACQuire:MODE?
```

Arguments

- **SAMPLE**
Specifies that the displayed data point value is simply the first sampled value that is taken during the acquisition interval. In sample mode, all waveform data has 8 bits of precision. You can request 16 bit data with a CURVe? query but the lower-order 8 bits of data will be zero. **SAMPLE** is the default mode. For more information about the CURVe query, see page 467.
- **PEAKdetect**
Specifies the display of high-low range of the samples taken from a single waveform acquisition. The high-low range is displayed as a vertical column that extends from the highest to the lowest value sampled during the acquisition interval. **PEAKdetect** mode can reveal the presence of aliasing or narrow spikes.
- **HIRes**
Specifies Hi Res mode where the displayed data point value is the average of all the samples taken during the acquisition interval. This is a form of averaging, where the average comes from a single waveform acquisition. The number of samples taken during the acquisition interval determines the number of data values that compose the average.
- **AVERage**
Specifies averaging mode, in which the resulting waveform shows an average of **SAMPLE** data points from several separate waveform acquisitions. The oscilloscope processes the number of waveforms you specify into the acquired waveform, creating a running exponential average of the input signal. The number of waveform acquisitions that go into making up the average waveform is set or queried using the ACQuire:NUMAVg command. For more information about the ACQuire:NUMACg command, see page 23.
- **ENVELOpe**
Specifies envelope mode, where the resulting waveform shows the **PEAKdetect** range of data points from several separate waveform acquisitions. The number of waveform acquisitions that go into making up the envelope waveform is set or queried using the ACQuire:NUMENV command. For more information about the ACQuire:NUMENV command, see page 24.

Example 1

```
ACQuire:MODE ENVELOpe
```

Sets the acquisition mode to display a waveform that is an envelope of many individual waveform acquisitions.

Example 2

ACQuire:MODE?

This command might return :ACQuire:MODE AVERAGE, indicating that the displayed waveform is the average of the specified number of waveform acquisitions.

ACQuire:NUMACq?

Description

This query-only command returns the number of waveform acquisitions that have occurred since starting acquisition with the ACQuire:STATE RUN command. This value is reset to zero when any acquisition, horizontal, or vertical arguments that affect the waveform are changed. The maximum number of acquisitions that can be counted is $2^{63}-1$. The oscilloscope stops counting when this number is reached. This is the same value that displays in the upper center of the screen when the acquisition system is stopped.

Note: In FastFrame or InstaVu modes, the oscilloscope updates the acquisition count in groups of counts.

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Acquisition

Related Commands

ACQuire:STATE (see page 26)

Syntax

ACQuire:NUMACq?

Example

ACQuire:NUMACq?

This command might return :ACQUIRE:NUMACQ 350, indicating that 350 acquisitions have occurred since executing the ACQuire:STATE RUN command.

ACQuire:NUMAVg

Description

This command sets or queries the number of waveform acquisitions that make up an averaged waveform. Use the ACQuire:MODE command to enable the Average mode. Sending this command is equivalent to selecting Horizontal/Acquisition Setup from the Horiz/Acq menu, selecting the Acquisition tab, and then choosing Average from the Acquisition Mode group box. Then enter the desired number of waveforms that will be used to make up an averaged waveform in the # of Wfms box.

Group

Acquisition

Related Commands

ACQuire:MODE (see page 20)

Syntax 1

ACQuire:NUMAVg <NRf>

Syntax 2

ACQuire:NUMAVg?

Arguments

- NRf

This is the number of waveform acquisitions to average.

Example 1

ACQuire:NUMAVg 10

This command specifies that 10 waveform averages will be performed before exponential averaging starts.

Example 2

ACQuire:NUMAVg?

This command might return :ACQUIRE:NUMAVG 75, indicating that there are 75 acquisitions specified for averaging.

ACQuire:NUMEnv

Description

This command sets or queries the number of waveform acquisitions that make up an envelope waveform. Sending this command is equivalent to setting the Envelope count in the Acquisition Mode side menu.

Group

Acquisition

Syntax 1

```
ACQuire:NUMEnv {<NRf> | INFIinite}
```

Syntax 2

```
ACQuire:NUMEnv?
```

Arguments

- NRf

This is the number of waveform acquisitions to be enveloped.

Example 1

```
ACQuire:NUMEnv 10
```

This command specifies that an enveloped waveform will show the result of combining 10 separately acquired waveforms.

Example 2

```
ACQuire:NUMEnv?
```

This command might return :ACQUIRE:NUMENV 0, indicating that acquisitions are acquired infinitely for enveloped waveforms.

ACQUIRE:REPET

Description

This command sets or queries whether repetitive mode is on or off. This is equivalent to setting Equivalent Time Auto/Off in the Acquisition control window. When the oscilloscope is in real-time operation, this setting has no effect.

The ACQUIRE:REPET command specifies the behavior of the acquisition system during equivalent-time operation. When repetitive mode is on, the acquisition system will continue to acquire waveform data until the waveform record is filled with acquired data. When repetitive mode is off, horizontal scale and record length settings will be restricted to those settings that will be achievable with real-time acquisition.

Group

Acquisition

Syntax 1

```
ACQUIRE:REPET {OFF|ON|<NR1>}
```

Syntax 2

```
ACQUIRE:REPET?
```

Arguments

- OFF
This argument disables repetitive mode.
- ON
This argument enables repetitive mode.
- NR1
A 0 disables repetitive mode ; any other value enables repetitive mode.

Example 1

```
ACQUIRE:REPET 1
```

This command enables repetitive mode.

Example 2

```
ACQUIRE:REPET?
```

This query might return :ACQUIRE:REPET OFF, indicating that repetitive mode is disabled.

ACQuire:STATE

Description

This command starts or stops acquisitions. When state is set to ON or RUN, a new acquisition will be started. If the last acquisition was a single acquisition sequence, a new single sequence acquisition will be started. If the last acquisition was continuous, a new continuous acquisition will be started.

If RUN is issued in the middle of completing a single sequence acquisition (for examples, averaging or enveloping), the acquisition sequence is restarted, and any accumulated data is discarded. Also, the oscilloscope resets the number of acquisitions. If the RUN argument is issued while in continuous mode, a reset occurs and acquired data continues to acquire.

Sending this command is equivalent to pressing the front-panel RUN/STOP button.

Group

Acquisition

Related Commands

ACQuire:STOPAfter (see page 27)

Syntax 1

```
ACQuire:STATE{OFF|ON|RUN|STOP|<NR1>}
```

Syntax 2

```
ACQuire:STATE?
```

Arguments

- OFF
This argument stops acquisitions.
- STOP
This argument stops acquisitions.
- ON
This argument starts acquisitions.
- RUN
This argument starts acquisitions.
- NR1
0 stops acquisitions; any other value starts acquisitions.

Example 1

```
ACQuire:STATE RUN
```

This command starts the acquisition of waveform data and resets the count of the number of acquisitions.

Example 2

```
ACQuire:STATE?
```

This query might return :ACQUIRE:STATE 0, indicating that the acquisition is stopped

ACQuire:STOPAfter

Description

This command sets or queries whether the oscilloscope continually acquires acquisitions or acquires a single sequence. This command is equivalent to pressing **SINGLE** from the front-panel.

Group

Acquisition

Related Commands

ACQuire:STATE (see page 26), ACQuire:REPEt (see page 25)

Syntax 1

```
ACQuire:STOPAfter {RUNSTop|SEquence}
```

Syntax 2

```
ACQuire:STOPAfter?
```

Arguments

- `RUNSTop`
Specifies that the oscilloscope will continually acquire data, if ACQuire:STATE is turned on.
- `SEquence`
Specifies that the next acquisition will be a single-sequence acquisition.

Example 1

```
ACQuire:STOPAfter RUNSTOP
```

This command sets the oscilloscope to continually acquire data.

Example 2

```
ACQuire:STOPAfter?
```

This query might return `:ACQUIRE:STOPAFTER SEQUENCE`, indicating that the next acquisition the oscilloscope makes will be of the single-sequence type.

ACQuire?

Description

This query-only command returns the following current acquisition parameters:

- Stop after
- Acquisition state
- Mode
- Number of envelopes
- Number of averages
- Repetitive signals

Group

Acquisition

Related Commands

ACQuire:MODe (see page 20), ACQuire:NUMACq (see page 22), ACQuire:NUMAVg (see page 23), ACQuire:NUMenv (see page 24), ACQuire:REPEt (see page 25), ACQuire:STATE (see page 26), ACQuire:STOPAfter (see page 27)

Syntax

ACQuire?

Example

ACQuire?

This query might return the following string for the current acquisition parameters:

```
:ACQUIRE:STOPAFTER RUNSTOP;STATE 1;MODE SAMPLE;NUMENV 10;NUMAVG 16;REPET ON
```

FASTAcq?

Description

This query-only command returns the state of Fast Acquisition. This command is equivalent to the **FASTACQ** button on the front panel.

Group

Acquisition

Syntax

FASTAcq?

Example

FASTAcq?

This query might return the following string for the current acquisition parameters:

:FASTACQ:STATE 0

FASTAcq:STATE

Description

This command sets or queries the state of Fast Acquisition. This command is equivalent to the **FASTACQ** button on the front panel.

Group

Acquisition

Syntax 1

`FASTAcq:STATE {ON|OFF|<NR1>}`

Syntax 2

`FASTAcq:STATE?`

Arguments

- **ON**
This enables Fast Acquisition mode.
- **OFF**
This disables Fast Acquisition mode.
- **<NR1>**
A 0 disables Fast Acquisition mode; any other value enables Fast Acquisition mode.

Example 1

`FASTAcq:STATE ON`

This command enables the FastAcq operation.

Example 2

This query might return `:FASTACQ:STATE 1`, indicating that the Fast Acquisition state is currently active.