



# **Automation Command Reference Manual**

for

**WaveRunner Oscilloscopes**



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### Introduction

This manual provides a comprehensive reference of all the commands available to a controlling application when using WaveRunner oscilloscopes. Automation enables the controlling application to run on the instrument itself.

#### PLEASE NOTE THE FOLLOWING:

- Available commands include ones for purchased options you may or may not have on your oscilloscope. For more information, contact your local LeCroy sales office for more information about options available for your instrument.
- While we encourage the use of our code examples provided in our manuals, cutting and pasting code samples directly from this .pdf manual into scripts **cause syntax errors** (typically illegal ASCII quotation characters). Carefully review code sample formatting during reuse.

The information in this manual is split into **Control** and **Processor** sections, each with their own table of contents.

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**LECROY.XSTREAMDSO***app*

This is the root of the automation hierarchy, all other nodes are accessed from this point.

AutoSetup	Action
ClearSweeps	Action
Exit	Action
FirmwareVersion	String
Height	Property
HideClock	Bool
InstrumentID	String
InstrumentModel	String
Left	Property
Maximize	Action
Minimize	Action
Quit()	Method
ResetPreferences	Action
Restore	Action
SetToDefaultSetup	Action
Shutdown	Action
Sleep([in] double timeoutMilliseconds)	Method
Top	Property
TouchScreenEnable	Bool
WaitUntilIdle([in] double timeoutSeconds)	Method
Width	Property
Windowed	Action
WindowState	Property

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Popup a dialog containing the instrument model
MsgBox "Model is: " & app.InstrumentModel
```

**AutoSetup****Action****Description**

Starts an AutoSetup operation. When input channels are visible, AutoSetup operates only on those visible channels. If no channels are visible, all channels are affected by AutoSetup. With more than one channel visible, the first visible channel in numerical order, that has a detectable signal applied to it, is automatically set up for edge triggering.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Start an Auto-Setup process.
app.AutoSetup
```

**ClearSweeps****Action****Description**

Clears all accumulated sweeps for all subsystems. These include Channel Pre-Processing, Math, Measure, and Display Persistence. Note that subsystem-specific clear sweeps controls are also available. For the details please refer to the ClearSweeps control for each subsystem.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Clear all accumulated sweeps for all subsystems.
app.ClearSweeps
```

**Exit****Action****Description**

Equivalent to app.Quit() method.

**FirmwareVersion****String**

**Range** Any number of characters

**Description**

Queries the firmware version of the instrument in the form - "1.0.0 (build 12345)"

**Example**

```
' Microsoft Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Query the firmware version number of the instrument.
MsgBox "Firmware Version is: " + app.FirmwareVersion
```

**Height****Property****Description**

Sets/Queries the height in pixels of the instrument display on the PC screen.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the height of the instrument window to 400 pixels.
app.Height = 400
```

**HideClock****Bool****Description**

Hides/Shows the clock that resides in the lower-right corner of the display of the instrument.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Hide the clock for 3 seconds.
app.HideClock = True
app.Sleep(3000)
app.HideClock = False
```

<b>InstrumentID</b>	<i>String</i>
<b>Range</b> Any number of characters	
<b>Description</b> Reads the complete ID of the instrument in the format: "LECROY,WM8500,WM000001,0.0.0", which includes the maker, the instrument model number, the serial number, and the version number.	
<b>Example</b> <pre>' Visual Basic Script Set app = CreateObject("LeCroy.XStreamDSO")  ' Present the ID of the instrument. MsgBox app.InstrumentID</pre>	
<b>InstrumentModel</b>	<i>String</i>
<b>Range</b> Any number of characters	
<b>Description</b> Queries the model number of the instrument.	
<b>Example</b> <pre>' Visual Basic Script Set app = CreateObject("LeCroy.XStreamDSO")  ' Present the model number of the instrument. MsgBox app.InstrumentModel</pre>	
<b>Left</b>	<i>Property</i>
<b>Description</b> Sets/Queries the position in pixels of the left edge of the instrument display on the PC screen. The position is measured from the left edge of the screen to the left edge of the instrument window.	
<b>Example</b> <pre>' Visual Basic Script Set app = CreateObject("LeCroy.XStreamDSO") ' Set the position of the left edge of the instrument window to 100 pixels. app.Left = 100</pre>	
<b>Maximize</b>	<i>Action</i>
<b>Description</b> Maximize the instrument window to fill the underlying desktop. Equivalent to app.WindowState = 1	

---

### Minimize

*Action*

#### Description

Minimizes the instrument window to reveal the underlying desktop. It will display a small window in the bottom right corner of the display, which when clicked will restore the window to full-screen mode. To programmatically restore the window refer to the app.WindowState control.

#### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Minimize the instrument display.
app.Minimize
```

---

### Quit()

*Method*

#### Description

Closes the instrument application. The instrument will prompt the user with an 'Are you sure?' dialog before closing down. Note that until the user responds to the dialog, control via Automation will be blocked.

#### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Quit the instrument application with a confirmation prompt.
app.Quit
```

---

### ResetPreferences

*Action*

#### Description

Resets all scope preferences to their default states. The set includes the current remote communications port, the color palette settings, etc. but does not include the main DSO controls such as V/Div, T/Div, etc. These main instrument controls can be reset using the SetToDefaultSetup control.

#### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Reset all instrument preferences.
app.ResetPreferences
```

---

### Restore

*Action*

#### Description

Restore the instrument display to its position and size before the last minimize request.

### SetToDefaultSetup

*Action*

#### Description

Restores the instrument setup to its default state. Note that certain settings will not be restored to the default state. These are the user preferences, such as the current remote communications port, and the color settings, which may be reset, if required, using the ResetPreferences action.

#### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Restore the instrument to its default state.
app.SetToDefaultSetup
```

### Shutdown

*Action*

#### Description

Shuts down the instrument. It will prompt the user with an 'Are you sure?' dialog before shutting down. Note that until the user responds to the dialog, control via Automation will be blocked.

#### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Shut down the instrument with a confirmation prompt.
app.Shutdown
```

### Sleep([in] double timeoutMilliseconds)

*Method*

#### Description

Causes the main execution thread of the instrument application to sleep for the specified time period, defined in milliseconds.

#### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

MsgBox "Sleeping for 10 seconds..."
app.Sleep(10000)
MsgBox "Sleep finished"
```

### Top

*Property*

#### Description

Sets/Queries the position in pixels of the top edge of the instrument display on the PC screen. The position is measured downwards from the top of the screen to the top of the instrument window.

#### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the position of the top edge of the instrument window to 100 pixels.
app.Top = 100
```

**TouchScreenEnable*****Bool*****Description**

Sets/Queries the state of the touch-screen enable control. This is equivalent to the front-panel Touch Screen button.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Disable touch-screen if it is enabled.
if app.TouchScreenEnable = True then
    app.TouchScreenEnable = False
End if
```

**WaitUntilIdle([in] double timeoutSeconds)*****Method*****Description**

Waits until either the application is idle or the specified timeout expires, specified in seconds. This evaluates to True if the application completes before the timeout expires, and to False if a timeout occurs.

When Trigger mode is Auto or Run, the application is never Idle. In this case the call to WaitUntilIdle returns after the next acquisition and any configured processing.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Wait with a timeout of five seconds.
app.WaitUntilIdle(5)
```

**Width*****Property*****Description**

Sets/Queries the width in pixels of the instrument display on the PC screen.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the width of the instrument window to 800 pixels.
app.Width = 800
```

**Windowed*****Action*****Description**

Places the instrument application in windowed mode (as opposed to full-screen mode). Places the application in the upper-part of the display screen with a sizable border.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the instrument display into the windowed mode.
app.Windowed
```

**WindowState***Property***Description**

Sets/Queries the state of the PC window used by the instrument display.

- 0 windowed
- 1 full screen
- 2 minimized

Trying to set values greater than 2 or less than 0 will result in the value 0 (windowed) being set.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the instrument window state to windowed.
app.WindowState = 0
```

**ACQUISITION***app.Acquisition*

This group of variables controls the input channels C1, C2, C3 and C4, the timebase, the trigger, and the Aux Output.

Names of the form app.Acquisition.Channels.xxxx are aliases of simpler names which are described in this section of the manual. Examples of alias pairs are as follows -

app.Acquisition.Channels("Cx") is equivalent to app.Acquisition.Cx

app.Acquisition.Channels(1) is equivalent to app.Acquisition.C1

app.Acquisition.Channels("Cx").Out.Result is equivalent to app.Acquisition.Cx.Out.Result

Acquire([in] double timeoutSeconds, [in] long bForceTriggerOnTimeout)	Method
Calibrate	Action
CalibrateAll	Action
CalNeeded	Integer
ClearSweeps	Action
HorOffset	Double
TriggerMode	Enum

**Acquire([in] double timeoutSeconds, [in] long bForceTriggerOnTimeout)***Method***Description**

Action/Query. Takes a single acquisition. The first of the two arguments specifies a timeout; the second, which is optional, specifies whether or not to force a trigger when the timeout occurs.

Evaluates to True if a trigger occurred, or False if a timeout occurred.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")
' Start an acquisition, wait for up to 5 seconds for a trigger
' event, force a software trigger if a hardware trigger is not
' detected before the 5 second timeout expires.
triggerDetected = app.Acquisition.Acquire(5, true)
```

**Calibrate***Action***Description**

Initiates a full calibration of the acquisition system of the instrument.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Start a calibration.
app.Acquisition.Calibrate
```

**CalibrateAll***Action***CalNeeded***Integer*

**Range** From -2147483648 to 2147483647 step 1

**Description**

Query: Indicates whether calibration is required or not.

Based on hexadecimal bit value, it provides following information:

0x00000001: Front end calibration is required  
 0x00000002: Digitizers delay matching is required  
 0x00000004: Digitizers gain matching is required  
 0x00000008: Trigger level calibration is required  
 0xFFFFFFFF(-1): All of above calibrations are required

**ClearSweeps***Action***Description**

Resets any accumulated average data or persistence data for channel waveforms (C1..C4). Valid only when one or more channels have waveform averaging or persistence enabled in their pre-processing settings. Note that an average may be reset on an individual basis using app.Acquisition.Cx.ClearSweeps control.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Clear accumulated sweeps for channels C1...C4
app.Acquisition.ClearSweeps

' Clear accumulated sweeps for only C1
app.Acquisition.C1.ClearSweeps
```

**HorOffset***Double*

**Range** From -2.5e-007 to 2.5e-007 step 1e-009

**Description**

same as "app.Acquisition.Horizontal.HorOffset.cvar"



**TriggerMode***Enum***Description**

Sets/Queries the trigger mode, using values from the following list - Auto, Norm, Normal, Single, Stopped.

Auto: After a timeout, if a real hardware trigger is not received, then force a trigger so there are automatically lots of updates.

Normal: Accepts triggers as rapidly as the system permits, but likewise will wait "forever" for a trigger, without updating anything.

Single: Arm the acquisition system to acquire once, and do not rearm automatically after. Once a trigger is received and the data processed, the instrument finishes in the "Stopped" state.

Stop: Finishes the current acquisition and does not re-arm.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Place the instrument in stopped mode and take one acquisition.
app.Acquisition.TriggerMode = "Stopped"
app.Acquisition.Acquire(5)
```

**Values**

Auto	Auto-trigger
Normal	Normal Trigger
Single	Single Trigger
Stopped	No trigger possible, Stopped

**AUXOUTPUT***app.Acquisition.AuxOutput*

Controls for the Auxilliary output BNC, which can be programmed as a simple square-wave signal source, or as a pulse which is asserted when various events occur, including Trigger Enabled, Trigger Out, and Pass/Fail.

Amplitude	Double
AuxInCoupling	Enum
AuxMode	Enum
CalMode	Enum
Frequency	DoubleLockstep
Mode	Enum

**Example**

```
' Microsoft Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Setup the Auxiliary output to be a squarewave with an amplitude
' of 500mV a frequency of 5kHz
app.Acquisition.AuxOutput.Mode = "Square"
app.Acquisition.AuxOutput.Amplitu
```

**Amplitude***Double*

**Range** From 0.05 to 1 step 0.001

### Description

Sets/Queries the amplitude of the signal on the AUX OUT connector. Note that this is the amplitude of the signal into a 1Mohm load. Into 50 ohms the output voltage will be halved (since the source impedance is nominally 50 ohms). Units are Volts.

### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the amplitude of the signal from the AUX OUT connector
' to 0.6 V into 1 megohm, or 0.3 V into 50 ohms.
app.Acquisition.AuxOutput.Amplitude = 0.6
```

## AuxInCoupling

*Enum*

### Description

Sets the input coupling for the Auxiliary input path.

### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the coupling of the Auxiliary socket, when used as an input, to
ground.
' In this condition, no input signal reaches the instrument.
app.Acquisition.AuxOutput.AuxInCoupling = "GND"
```

### Values

DC50	DC, 50ohms coupling
GND	Grounded

## AuxMode

*Enum*

### Description

Configures AUX Output type in WR and WS series of scopes.

### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the Auxiliary output to trigger output signal.
app.Acquisition.AuxOutput.AuxMode = "TriggerOut"
```

### Values

Off	No output
PassFail	Pulse on Pass fail condition
TriggerEnabled	Trigger enabled signal from trigger circuitry.
TriggerOut	Internal trigger output signal from trigger circuitry

**CalMode***Enum***Description**

Configures Cal Output type in WR and WS series of scopes.

**Example**

```
' Followoing example will set CAL output to 1 KHz, 0.5V square wave.
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set cal output to Square wave
app.Acquisition.AuxOutput.CalMode = "Square"

' Set cal output amplitude to 0.5 V with 1 MOhm impedance
app.Acquisition.AuxOutput.Amplitude = "0.5"

' Set cal output frequency to 1 KHz
app.Acquisition.AuxOutput.Frequency = "1000"
```

**Values**

DCLevel	DC Level with 1 Mohm o/p impedance
Off	Off
Square	Square wave

**Frequency***DoubleLockstep*

**Range** From 250 to 1e+006 step 10, locked to 1 2.5 5, fine grain allowed=false, on=false

**Description**

This control only has effect when the AuxOutput mode is "Square".

Sets/Queries the auxiliary output frequency of the squarewave. Units are Hertz.

Note that WaveMaster models (and derivatives) have a limit of 5MHz, WavePro 7000 models (and derivatives) have a limit of 1MHz.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the frequency of the signal from the AUX OUT
' connector to 1 MHz.
app.Acquisition.AuxOutput.Frequency = 1e6
```

**Mode***Enum***Description**

Sets/Queries the output mode of the AUX OUT connector. (Applicable to WM, SDA, DDA, WP series of scopes)

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the output of the AUX OUT connector to output
' a pulse on a pre-determined Pass-Fail decision.
app.Acquisition.AuxOutput.Mode = "PassFail"
```

**Values**

DCLevel	Emit a DC level
Off	Output Disabled
PassFail	Pulse-out controlled by Pass/Fail system
Square	Square-wave signal generator
TriggerEnabled	Pulse-out when trigger is enabled
TriggerOut	Pulse-out when trigger occurs

**CHANNELS***app.Acquisition.Channels*

This group of variables controls the acquisition channels C1, C2, C3 and C4.

Names of the form app.Acquisition.Channels.xxxx are aliases of simpler names which are described in the section of the manual which is devoted to app.Acquisition. Examples of alias pairs are as follows -

app.Acquisition.Channels("Cx") is equivalent to app.Acquisition.Cx  
 app.Acquisition.Channels(1) is equivalent to app.Acquisition.C1  
 app.Acquisition.Channels("Cx").Out.Result is equivalent to app.Acquisition.Cx.Out.Result

**Example**

```
Set app = CreateObject("LeCroy.XStreamDSO")

For X = 1 To 4
    app.Acquisition.Channels(X).VerScale = 0.2
Next
```

**CX***app.Acquisition.Cx*

This group of variables controls the input channels C1, C2, C3 and C4.

Names of the form app.Acquisition.Channels.xxxx are aliases of simpler names which are described in the section of the manual which is devoted to app.Acquisition. Examples of alias pairs are as follows -

app.Acquisition.Channels("Cx") is equivalent to app.Acquisition.Cx  
 app.Acquisition.Channels("Cx").Out.Result is equivalent to app.Acquisition.Cx.Out.Result

AverageSweeps	Integer
AxisXRotation	Integer
AxisYRotation	Integer
BandwidthLimit	Enum
ClearSweeps	Action

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Coupling	Enum
Deskew	Double
EnhanceResType	Enum
FindScale	Action
InterpolateType	Enum
Invert	Bool
LabelsPosition	String
LabelsText	String
Persist3DQuality	Enum
Persisted	Bool
Persistence3d	Bool
PersistenceMonoChrome	Bool
PersistenceSaturation	Integer
PersistenceTime	Enum
ProbeAttenuation	Double
ProbeName	String
ShowLastTrace	Bool
UseGrid	String
VerOffset	Double
VerScale	DoubleLockstep
VerScaleVariable	Bool
View	Bool
ViewDecode	Bool
ViewLabels	Bool

### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Setup Channel C1
app.Acquisition.C1.VerScale = 0.5
app.Acquisition.C1.VerOffset = 0.0
app.Acquisition.C1.Coupling = "DC50"

' Setup Channel C2
app.Acquisition.C2.VerScale = 0.1
```

### AverageSweeps

*Integer*

**Range** From 1 to 1000000 step 1

#### Description

Sets/Queries the number of averaging sweeps for input channel Cx. This is distinct from the math function app.Math.Fx. If the number of sweeps is 1 (the default value), the data will not be averaged.

#### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the number of sweeps for channel C1 to 25.
app.Acquisition.C1.AverageSweeps = 25
```

**AxisXRotation***Integer***Range** From -90 to 90 step 1**Description**

Sets/Queries the state of the X Axis rotation control, used only in 3-D persistence modes to control the viewing position. See the general description above for a discussion of the locked and unlocked persistence modes.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the rotation about the X-axis to 35 degrees for trace C3.
app.Acquisition.C3.AxisXRotation = 35
```

**AxisYRotation***Integer***Range** From -90 to 90 step 1**Description**

Sets/Queries the state of the Y Axis rotation control, used only in 3-D persistence modes to control the viewing position. See the general description above for a discussion of the locked and unlocked persistence modes.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the rotation about the Y-axis to 25 degrees for trace C3.
app.Acquisition.C3.AxisYRotation = 25
```

**BandwidthLimit***Enum***Description**

Sets/Queries the bandwidth limit for input channel Cx, in Hz. Note that this control is an enum, and therefore requires a string value, and not a scalar value.  
Note that bandwidth limit choices vary between DSO models.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the bandwidth limit for C2 to 20 MHz.
app.Acquisition.C2.BandwidthLimit = "20MHz"
```

**Values**

200MHz	
20MHz	
Full	

**ClearSweeps***Action***Description**

Clears all accumulated average data and persistence data for this channel. See `app.Acquisition.ClearSweeps` for a control that clears accumulated data for channels 1..4, or `app.ClearSweeps` for a control that clears accumulated data for all subsystems (including Math/Measure/Display, etc.)

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Reset channel C1
app.Acquisition.C1.ClearSweeps

' Reset channels C1..C4
app.Acquisition.ClearSweeps
```

**Coupling***Enum***Description**

Sets/Queries the input coupling of input channel Cx.  
Note that coupling choices vary between instrument models. WavePro 7000 instruments for example support AC1M and DC1M modes in addition to DC50 and GND choices.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Inspect the input coupling for channel C2
CoupleC2 = app.Acquisition.C2.Coupling

' Set the coupling to DC, 50 ohms
app.Acquisition.C2.Coupling = "DC50"
```

**Values**

AC1M	
DC1M	
DC50	
Gnd	

**Deskew***Double*

**Range** From -4.5e-007 to 4.5e-007 step 1e-012

**Description**

Sets/Queries the deskew of input channel Cx to produce a required alignment with another trace.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")
```

**EnhanceResType****Enum****Description**

Enhance resolution setting (Noise Filter). Set to 'None' to turn off the filter.

**Values**

0.5bits	
1.5bits	
1bits	
2.5bits	
2bits	
3bits	
None	

**FindScale****Action****Description**

Starts FindScale operation for this channel. This operation will adjust channel's v/div and offset control such that the signal is visible on the screen with in +/- 3 div.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

'Find vertical scale of channel 1
app.Acquisition.C1.FindScale
```

**InterpolateType****Enum****Description**

Sets/Queries the type of interpolation used for input channel Cx. Note that Sinx/x interpolation increases the size of the trace by a factor of 10, beware when using this option with long records.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the interpolation for channel C3 to (sin x)/x
app.Acquisition.C3.InterpolateType = "Sinxx"
```

**Values**

Linear	Linear interpolation
Sinxx	Sinx/x interpolation

**Invert****Bool****Description**

Sets/Queries whether input channel Cx is inverted.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set channel C2 to be inverted.
app.Acquisition.C2.Invert = True
```



**LabelsPosition****String****Range** Any number of characters**Description**

Sets / Queries the horizontal position of the label attached to the acquisition trace Cx. The unit of measurement is the unit of the horizontal scale. The measurement is made from the trigger point. Note that this control is a string, not a numeric value. This allows multiple labels to be positioned, as shown in the example below.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Add a couple of labels to trace C1, one at 0ns, and one at 55ns
app.SetToDefaultSetup
app.Acquisition.C1.ViewLabels = True
app.Acquisition.C1.LabelsPosition = "0.0,55e-9"
app.Acquisition.C1.LabelsText = "Hello,World"
```

**LabelsText****String****Range** Any number of characters**Persist3DQuality****Enum****Description**

Sets/Queries the state of the 3D Persistence quality control, which controls the way that the persistence trace is rendered. See the general description above for a discussion of the locked and unlocked persistence modes.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set persistence 3-D to shaded for trace C2.

app.Acquisition.C2.Persist3DQuality = "Shaded"
```

**Values**

Shaded	
Solid	
WireFrame	

**Persisted*****Bool*****Description**

Sets/Queries the persisted state of the waveform. If the Display.LockPersistence control is set to 'AllLocked' then the persisted state of all displayed waveforms will be the same. If the Display.LockPersistence control is set to 'PerTrace' then the persisted state of each waveform may be independently controlled.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set persistence on for trace C1
app.Display.LockPersistence = "PerTrace"
app.Acquisition.C1.Persisted = True
```

**Persistence3d*****Bool*****Description**

Sets/Queries the 3D persistence state. If True, then the persistence display for this channel will be displayed as a three dimensional surface map. See the general description above for a discussion of the locked and unlocked persistence modes.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set persistence plot as 3-D for trace C1
app.Acquisition.C1.Persistence3D = True
```

**PersistenceMonoChrome*****Bool*****Description**

Sets/Queries the monochrome persistence state. If True, then the persistence display for this channel will be monochromatic, whether 2-D or 3-D. See the general description above for a discussion of the locked and unlocked persistence modes.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set persistence monochrome on for trace C4.
app.Acquisition.C4.PersistenceMonoChrome = True
```

**PersistenceSaturation*****Integer***

**Range** From 0 to 100 step 1

**Description**

Sets/Queries the saturation threshold for persisted waveforms.  
All information at this level or above will be recorded with the same color or intensity.  
See the general description above for a discussion of the locked and unlocked persistence modes.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the persistence saturation level for trace C1.
app.Acquisition.C1.PersistenceSaturation = 60
```

**PersistenceTime***Enum***Description**

Sets/Queries the state of the Persistence Time control. Controls the persistence decay time for this trace. See the general description above for a discussion of the locked and unlocked persistence modes.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the persistence time for the persistence trace of channel C1 to 10
seconds.
app.Acquisition.C1.PersistenceTime = "10s"
```

**Values**

0.5s	
10s	
1s	
20s	
2s	
5s	
Infinite	

**ProbeAttenuation***Double*

**Range** From 1e-006 to 10000 step 1e-006

**Description**

Sets/Queries the probe attenuation. The probe attenuation is the factor by which the signal is made smaller, for example, 10 means that the probe divides by 10, and is referred to as a ÷10 probe. Note that certain passive probes may be marked as 'x10', even though they actually divide the input signal by a factor of 10.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the probe attenuation for channel C1 to 100
app.Acquisition.C1.ProbeAttenuation = 100
```

**ProbeName***String*

**Range** Any number of characters

**Description**

Queries the name of connected probe.

**ShowLastTrace****Bool****Description**

Sets/Queries the state of the Show Last Trace control. If True then when this trace is displayed in persistence mode the last acquired waveform will be superimposed on the accumulating persistence map.

See the general description above for a discussion of the locked and unlocked persistence modes.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Makes the last acquired trace invisible for the
' persistence trace of channel C1.
app.Acquisition.C1.ShowLastTrace = False
```

**UseGrid****String**

**Range** Any number of characters

**Description**

Sets/Queries the graticule on which the trace is displayed. Typical values include:

YT1..YT8: one of the YT graticules used in Single, Dual, Quad, and Octal display modes.

NotOnGrid: not displayed on any graticule.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Switch to dual grid mode, place C1 on the lower graticule
' and C2 on the upper graticule.
app.Display.GridMode = "Dual"
app.Acquisition.C1.UseGrid = "YT2"
app.Acquisition.C2.UseGrid = "YT1"
```

**VerOffset****Double**

**Range** From -1 to 1 step 0.0005

**Description**

Sets/Queries the vertical offset of input channel Cx. The setting resolution in volts lies in the range 0.25% to 0.5%, depending on the numerical value.

Note that the available offset range is dependent upon the current V/Div setting, and also the instrument model.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the vertical offset for C1 to 10 mV.
app.Acquisition.C1.VerOffset = 0.01
```

**VerScale***DoubleLockstep*

**Range** From 0.002 to 10 step 0.0005, locked to 1 2 5, fine grain allowed=true, on=false

**Description**

Sets/Queries the vertical scale (in Volts/Division) of an input channel. When variable gain (VerScaleVariable control) is disabled, the control will clip values to a 1..2..5 sequence. When variable gain is enabled, the setting resolution lies in the range 1% to 2%, depending upon the numerical value.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set C1 to a scale of 250mV/Div in Variable Scale mode
app.Acquisition.C1.VerScaleVariable = True
app.Acquisition.C1.VerScale = 0.25
```

**VerScaleVariable***Bool***Description**

Sets/Queries the state of the variable vertical scale control for channel Cx. When the variable scale is enabled, the setting resolution lies in the range 1% to 2%, depending on the numerical value. If a knowledge of the exact value is important, the value should be read back after a setting has been made.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the variable vertical scale for C1 to On.
app.Acquisition.C1.VerScaleVariable = True
```

**View***Bool***Description**

Sets/Queries the channel's 'Viewed' state. When True the channel waveform is displayed on one of the display graticules. Note that even when a channel is not visible it may be used as a source for Math, Measure, etc.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Make channel C3 visible.
app.Acquisition.C3.View = True
```

**ViewDecode***Bool*

**ViewLabels***Bool***Description**

Sets/Queries whether the user-defined labels for the trace are visible.  
See Also: LabelsPosition and LabelsText controls.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Show the user-defined label for trace C2.
app.Acquisition.C2.ViewLabels = True
```

**RESULT***app.Acquisition.Cx.Out.Result*

Properties of the type xxxx.Out.Result.yyyy are those of the last completed acquisition. They are not affected if other controls are changed after that acquisition was completed. This distinction between "Out.Result" properties and other controls is most important when the trigger mode is Single or Stopped. You should treat "Out.Result" properties as read-only.

Several of these properties mention the 'frame', this is the term used to describe the visible portion of the trace, which is generally smaller than the acquired waveform. The frame could be used for example to display a 500pt. window onto a 1Mpt. Trace, or vertically it could be used to show the 'center' 10mV of a 100mV pk trace.

For a full overview of the properties of waveform (or other ) results, please see Chapter 1.

**HORIZONTAL***app.Acquisition.Horizontal*

This group of variables controls the timebase, the sampling, and the trigger delay.

AcquiredSegments	Integer
AcquisitionDuration	Double
ActiveChannels	Enum
ExtClockFrequency	Double
ExtCoupling	Enum
HorOffset	Double
HorOffsetOrigin	Double
HorScale	DoubleLockstep
HorUnits	String
MaxSamples	DoubleLockstep
NumPoints	Integer
NumSegments	Integer
ReferenceClock	Enum
SampleClock	Enum
SampleMode	Enum
SamplingRate	Double
SequenceTimeout	Double
SequenceTimeoutEnable	Bool
SetExtClockFrequency	Bool

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SmartMemory	Enum
Source	Enum
TimePerPoint	Double
UseLegacyDefault	Enum

### AcquiredSegments

*Integer*

**Range** From 0 to 100000 step 1

### AcquisitionDuration

*Double*

**Range** From 1e-012 to 1e+012 step 1e-015

#### Description

Queries the duration of the last completed acquisition. The result may depend on the spacing of the triggers in sequence mode, and it may depend on the number of averages when a channel is in averaging mode.

#### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Obtain the duration of the last completed acquisition.
AcqDuration = app.Acquisition.Horizontal.AcquisitionDuration
MsgBox AcqDuration
```

### ActiveChannels

*Enum*

#### Description

Sets/Queries the number of active DSO input channels.  
Note that this is a string value, the allowed values are "4", "2" and "Auto", and 0, 1, and 2. Beware of using 2 as a numerical value for 2 channels: you will get Auto mode instead.

#### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the instrument to use two channels.
app.Acquisition.Horizontal.ActiveChannels = "2"
```

#### Values

2	Use all channels
4	
Auto	Maximize sample rate based upon the # displayed channels

### ExtClockFrequency

*Double*

**Range** From 0.001 to 100000 step 0.001

**ExtCoupling***Enum***Description**

Specific to WR and WS series of the scope.  
Sets/Queries coupling of external trigger/clock input.

**Values**

DC1M	
DC50	

**HorOffset***Double*

**Range** From -0.0005 to 2.5e-007 step 1e-009

**Description**

Sets/Queries the horizontal position of the trigger time, relative to the origin set by HorOffsetOrigin, in seconds. Positive to the right, negative to the left. The setting resolution is about 1% to 2%.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the horizontal trigger offset to 200 ns.
app.Acquisition.Horizontal.HorOffset = 2.0e-7
```

**HorOffsetOrigin***Double*

**Range** From 0 to 10 step 1

**Description**

Sets/Queries the origin, in graticule divisions, of the time scale in which HorOffset is measured. The value 0 corresponds to the left edge of the graticule. The value 10 corresponds to the right edge of the graticule. Requesting a value outside the range will select the nearest allowed value.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the origin of the horizontal trigger offset to 4.0 divisions.
app.Acquisition.Horizontal.HorOffsetOrigin = 4.0
```

**HorScale***DoubleLockstep*

**Range** From 2e-010 to 1000 step 5e-010, locked to 1 2 5, fine grain allowed=false, on=false

**Description**

Sets/Queries the horizontal scale in time per division.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the horizontal acquisition scale to 200 ns/div.
app.Acquisition.Horizontal.HorScale = 2.0e-7
```



### HorUnits

*String*

**Range** Any number of characters

#### Description

Queries the units in which the horizontal scale is measured.

#### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Obtain the units of the horizontal scale.
HorizUnit = app.Acquisition.Horizontal.HorUnits
```

### MaxSamples

*DoubleLockstep*

**Range** From 500 to 5e+007 step 1000, locked to 1 2.5 5, fine grain allowed=false, on=false

#### Description

Sets/Queries the maximum permissible number of samples to be used in the acquisition memories. At the faster sample rates, the actual number used may be less than this maximum.

#### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the available memory length per channel to 500
app.Acquisition.Horizontal.MaxSamples = 500
```

### NumPoints

*Integer*

**Range** From 2 to 100000000 step 1

#### Description

Queries the number of samples in the current setting of the acquisition memory. For sequence mode, this refers to the number of samples per segment, not to the number in the complete set. Use MaxSamples to limit the number of samples acquired.

#### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Obtain the number of points being used in the acquisition memory.
NumberOfPoints = app.Acquisition.Horizontal.NumPoints
MsgBox NumberOfPoints
```

**NumSegments***Integer***Range** From 2 to 10000 step 1**Description**

Sets/Queries the number of segments in the sequence mode of acquisition. Only valid when SampleMode = "Sequence"

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Enable sequence mode and capture 500 segments
app.Acquisition.Horizontal.SampleMode = "Sequence"
app.Acquisition.Horizontal.NumSegments = 500
```

**ReferenceClock***Enum***Description**

Sets/Queries the source of the acquisition reference clock.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the source of the reference clock to External.
app.Acquisition.Horizontal.ReferenceClock = "EXT"
```

**Values**

EXT	External reference (use rear-panel BNC)
INT	Internal reference clock

**SampleClock***Enum***Description**

Sets/Queries the source for the sample clock.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the sample clock to expect an external source.
app.Acquisition.Horizontal.SampleClock = "External"
```

**Values**

INT	
-----	--

**SampleMode***Enum***Description**

Sets/Queries the mode of acquisition as real-time or sequence or random interleaved sampling. Note that RIS mode and sequence mode are not available over the entire range of time-bases, and are not available simultaneously.

WaveExpert differences: CIS and SEQ are the only timebase modes.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the mode of acquisition to random interleaved sampling.
app.Acquisition.Horizontal.SampleMode = "RIS"
' WaveExpert example
app.Acquisition.Horizontal.SampleMode = "CIS"
```

**Values**

RealTime	
Sequence	
WStream	

**SamplingRate***Double*

**Range** From 500 to 5e+009 step (2 digits)

**Description**

Queries the sampling rate. This is the effective sampling rate of the traces, rather than the sample rate of the ADCs.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Inspect the effective sampling rate of the signal.
SamplingRate = app.Acquisition.Horizontal.SamplingRate
```

**SequenceTimeout***Double*

**Range** From 0.01 to 100 step 0.01

**Description**

Sets/Queries the timeout in segment mode of acquisition if insufficient triggers are received.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the sequence mode timeout to 10 seconds
app.Acquisition.Horizontal.SequenceTimeout = 10.0
```

**SequenceTimeoutEnable****Bool****Description**

Sets/Queries the enabling of the sequence mode timeout.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Enable the sequence mode timeout.
app.Acquisition.Horizontal.SequenceTimeoutEnable = True
```

**SetExtClockFrequency****Bool****SmartMemory****Enum****Description**

Sets the mode of memory management to one of the two modes -

SetMaximumMemory - Maximizes the memory length for the given timebase setting, limited by the maximum length that is compatible with the maximum sample rate that the DSO can achieve.

FixedSampleRate - Keeps the sample rate the same when the timebase is changed, limited by the maximum sample rate that the DSO can achieve.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the Smart memory mode as fixed sample rate.
app.Acquisition.Horizontal.SmartMemory = "FixedSampleRate"
```

**Values**

SetMaximumMemory	Keeps the sample rate the same when the timebase is changed
------------------	---

**Source****Enum****Values**

C1	
C2	
C3	
C4	
Digital	
Ext	
ExtDivide10	
Line	

**TimePerPoint***Double***Range** From 1e-012 to 1e+012 step 1e-012**Description**

Queries the time interval between successive samples in the acquisition.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Obtain the time per point of the acquisition.
timePerPt = app.Acquisition.Horizontal.TimePerPoint
MsgBox timePerPt
```

**UseLegacyDefault***Enum***Values**

Never	
No	
Yes	

**TRIGGER***app.Acquisition.Trigger*

This group of cvars controls all aspects of the trigger, except for trigger delay, which is in Acquisition.Horizontal.

Names of the form app.Acquisition.Trigger.Sources.xxxx are aliases of simpler names which are described in this section of the manual. Examples of alias pairs are as follows -

app.Acquisition.Trigger.Sources("Cx") is equivalent to app.Acquisition.Trigger.Cx  
 app.Acquisition.Trigger.Sources("Ext") is equivalent to app.Acquisition.Trigger.Ext  
 app.Acquisition.Trigger.Sources("Line") is equivalent to app.Acquisition.Trigger.Line

Please see under Acquisition.Channels("Cx") for a programming example.

HoldoffType	Enum
PatternType	Enum
ProbeName	String
Source	Enum
Type	Enum
ZeroLevel	Action

**HoldoffType***Enum***Description**

Sets/Queries type of hold-off trigger.

**Values**

Events	Holdoff by events, specified in HoldoffEvents
Off	No Trigger Holdoff
Time	Holdoff by time, specified in HoldoffTime

**PatternType***Enum***Description**

Sets/Queries the pattern (Logic) trigger type.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the pattern trigger type to Nand.
app.Acquisition.Trigger.Type = "Logic"
app.Acquisition.Trigger.PatternType = "Nand"
```

**Values**

And	
Nand	
Nor	
Or	

**ProbeName***String*

**Range** Any number of characters

**Description**

The name of the probe connected to the Ext trigger input  
("None" if no probe is present)

**Source***Enum***Description**

Sets/Queries the trigger source.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the trigger source to external.
app.Acquisition.Trigger.Source = "Ext"
```

**Values**

C1	
C2	
C3	
C4	
D0	
D1	
D10	
D11	
D12	
D13	
D14	
D15	
D16	
D17	
D18	
D19	
D2	
D20	
D21	
D22	
D23	
D24	
D25	
D26	
D27	
D28	
D29	
D3	
D30	
D31	
D32	
D33	
D34	
D35	
D4	

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D5	
D6	
D7	
D8	
D9	
Ext	
ExtDivide10	
Line	

### Type

*Enum*

#### Description

Sets/Queries the trigger type (mode).

#### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the trigger type to glitch.
app.Acquisition.Trigger.Type = "Glitch"
```

#### Values

Dropout	
Edge	
Glitch	
Interval	
Logic	
Qualify	
Runt	
Serial	
SlewRate	
State	
TV	
Width	

### ZeroLevel

*Action*

#### Description

Sets the trigger level to zero volts.

#### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the trigger level to zero volts.
app.Acquisition.Trigger.ZeroLevel
```

## CX

*app.Acquisition.Trigger.Cx*

This group of variables controls triggering from the input channels C1, C2, C3 and C4.

InputImpedance	Enum
----------------	------



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Level	Double
Level2	Double
PatternState	Enum
Slope	Enum
WindowSize	Double

### InputImpedance

*Enum*

#### Description

Reads the input impedance of channel C1, in Ohms

#### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Read the input impedance of C1 trigger.
ZinC1 = app.Acquisition.Trigger.C1.InputImpedance
MsgBox ZinC1
```

#### Values

50	
----	--

### Level

*Double*

**Range** From -0.205 to 0.205 step 0.0005

#### Description

Sets/Queries the trigger level for the internal trigger from channel Cx. The setting resolution ranges from about 1.5% to about 2.5%, depending on the numerical value.

#### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the trigger level to 55 mV for triggering on channel C1.
app.Acquisition.Trigger.C1.Level = 0.055
```

### Level2

*Double*

**Range** From -0.205 to 0.205 step 0.0005

**PatternState****Enum****Description**

Sets/Queries the pattern state for the input channel Cx. Only valid when the trigger mode is set to 'Logic'.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the pattern state for channel C1 to low.
app.Acquisition.Trigger.C1.PatternState = "Low"
```

**Values**

DontCare	
High	
Low	

**Slope****Enum****Description**

Sets/Queries the direction of the transition to be used for internal triggering from channel Cx.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the direction of the transition as negative
' for triggering on channel C1.
app.Acquisition.Trigger.C1.Slope = "Negative"
```

**Values**

Either	
Negative	
Positive	
Window	

**WindowSize****Double**

**Range** From 0.02 to 0.205 step 0.0005

**DIGITAL***app.Acquisition.Trigger.Digital*

Coupling	Enum
InputImpedance	Enum
Level	Double
Level2	Double
PatternState	Enum
Slope	Enum
WindowSize	Double

**Coupling***Enum***Values****InputImpedance***Enum***Values**

50	
----	--

**Level***Double***Range** From -1 to 1 step 0.001**Level2***Double***Range** From -1 to 1 step 0.001**PatternState***Enum***Values**

DontCare	
High	
Low	

**Slope***Enum***Values**

Either	
Negative	
Positive	
Window	

**WindowSize***Double***Range** From -1 to 1 step 0.001**EXT***app.Acquisition.Trigger.Ext*

This group of variables controls the external trigger.

Coupling	Enum
InputImpedance	Enum
Level	Double
Level2	Double
PatternState	Enum
Slope	Enum
WindowSize	Double

**Coupling***Enum*

**Description**

Sets/Reads the input coupling of the external trigger input.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Read the input coupling of the external trigger input.
ZinCoupling = app.Acquisition.Trigger.Ext.Coupling
MsgBox ZinCoupling
```

**Values**

AC	
DC	
HFREJ	
LFREJ	

**InputImpedance***Enum***Description**

Reads the input impedance of the external trigger.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Read the input impedance of external trigger input.
ZinExt = app.Acquisition.Trigger.Ext.InputImpedance
MsgBox ZinExt
```

**Values**

50	
----	--

**Level***Double*

**Range** From -0.41 to 0.41 step 0.001

**Description**

Sets/Queries the trigger level for the external trigger.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the trigger level to 55 mV for triggering from
' the external trigger socket.
app.Acquisition.Trigger.Ext.Level = 0.055
```

**Level2***Double*

**Range** From -0.41 to 0.41 step 0.001

**PatternState***Enum***Description**

Sets/Queries the pattern state for the external trigger input.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the pattern state to low for triggering from
' the external trigger socket.
app.Acquisition.Trigger.Ext.PatternState = "Low"
```

**Values**

DontCare	
High	
Low	

**Slope***Enum***Description**

Sets/Queries the direction of the transition used for the external trigger.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the direction of the transition as positive for triggering
' from the external trigger socket.
app.Acquisition.Trigger.Ext.Slope = "Positive"
```

**Values**

Either	
Negative	
Positive	
Window	

**WindowSize***Double*

**Range** From 0.04 to 0.41 step 0.001

**SERIAL***app.Acquisition.Trigger.Serial*

LevelAbsolute	Double
LevelHighAbsolute	Double
Protocol	Enum

**LevelAbsolute***Double*

**Range** From 0 to 5 step 0.1

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### Description

Defines the threshold level applied to Serial data inputs (Data, Clock, CS)

### LevelHighAbsolute

*Double*

**Range** From 0 to 5 step 0.1

### Description

Defines the upper threshold level applied to tri-modal Serial Data protocol inputs (FlexRay)

### Protocol

*Enum*

### Description

Defines the actual active trigger Serial standard (Protocol)

### Values

CAN	
FLX	
I2C	
I2S	
LIN	
MIL1553	
RS232	
SPI	
UART	

## I2C

*app.Acquisition.Trigger.Serial.I2C*

AckCondition	Enum
AddressLength	Enum
AddressValue	BitPattern
AddressWithRW	Bool
AtPosition	Enum
ByteBitOrder	Enum
DefaultLevel	Double
Direction	Enum
FrameCondition	Enum
NeedDualLevels	Bool
NeededSources	Enum
PatternLength	Integer
PatternOperator	Enum
PatternValue	BitPattern
PatternValue2	BitPattern
SupportsDigital	Bool
ViewingMode	Enum

### AckCondition

*Enum*

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### Values

Ack	
DontCare	
NoAck	

### AddressLength

*Enum*

### Values

10Bits	
7Bits	

### AddressValue

*BitPattern*

**Range** MaxBits=10 NumBits=8 NumBytes=1 AllowedBitValues=01X PaddingChar=X  
PadAlign=Left SizeAlign=BitFix Format=Ehex

### AddressWithRW

*Bool*

### AtPosition

*Enum*

### Values

DontCare	
Value	

### ByteBitOrder

*Enum*

### Values

LSB	
MSB	

### DefaultLevel

*Double*

**Range** From -1.79769e+308 to 1.79769e+308 step 0.001

### Direction

*Enum*

### Values

DontCare	
Read	
Write	

**FrameCondition***Enum***Values**

Addr	
AddrData	
EEPROM	
FrameLength	
NoAck	
Restart	
Start	
Stop	

**NeedDualLevels***Bool***NeededSources***Enum***Values**

ClockSource	
DataSource	

**PatternLength***Integer***Range** From 0 to 12 step 1**PatternOperator***Enum***Values**

Equal	
Greater	
GreaterOrEqual	
InRange	
NotEqual	
OutRange	
Smaller	
SmallerOrEqual	

**PatternValue***BitPattern***Range** MaxBits=96 NumBits=8 NumBytes=1 AllowedBitValues=01X PaddingChar=X  
PadAlign=Left SizeAlign=ByteVar Format=Ehex**PatternValue2***BitPattern***Range** MaxBits=96 NumBits=8 NumBytes=1 AllowedBitValues=01 PaddingChar=0  
PadAlign=Left SizeAlign=ByteVar Format=Ehex**SupportsDigital***Bool*



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### ViewingMode

*Enum*

#### Values

Binary	
Hex	

### CAN

*app.Acquisition.Trigger.Serial.Protocol (Standard = "CAN")*

AdaptedSamplingPoint	Double
AddressFormat	Enum
AddressOperator	Enum
AddressValue	BitPattern
AddressValue2	BitPattern
BitRate	Double
ByteOrder	Enum
DefaultLevel	Double
NeedDualLevels	Bool
NeededSources	Enum
NumSamplingPoints	Enum
PatternBitLength	Integer
PatternBitPos	Integer
PatternOperator	Enum
PatternValue	BitPattern
PatternValue2	BitPattern
RequestedSamplingPoint	Double
SignType	Enum
SupportsDigital	Bool
SymbolDBC	FileName
SymbolicOperator	Enum
SynchJumpWidth	Integer
TriggerCondition	Enum
Tseg1	Integer
Tseg2	Integer
ViewingMode	Enum

### AdaptedSamplingPoint

*Double*

**Range** From 20 to 90 step 0.01

### AddressFormat

*Enum*

#### Values

ALL	
EXT	
STD	

**AddressOperator***Enum***Values**

Equal	
Greater	
GreaterOrEqual	
InRange	
NotEqual	
OutOfRange	
Smaller	
SmallerOrEqual	

**AddressValue***BitPattern*

**Range** MaxBits=29 NumBits=11 NumBytes=2 AllowedBitValues=01X PaddingChar=X  
PadAlign=Left SizeAlign=BitFix Format=Ehex

**AddressValue2***BitPattern*

**Range** MaxBits=29 NumBits=11 NumBytes=2 AllowedBitValues=01 PaddingChar=1  
PadAlign=Left SizeAlign=BitFix Format=Ehex

**BitRate***Double*

**Range** From 10000 to 1e+006 step 1

**ByteOrder***Enum***Values**

Intel	
Motorola	

**DefaultLevel***Double*

**Range** From -1.79769e+308 to 1.79769e+308 step 0.001

**NeedDualLevels***Bool***NeededSources***Enum***Values**

DataSource	
------------	--

**NumSamplingPoints***Enum***Values**

1	
3	

**PatternBitLength***Integer***Range** From 0 to 64 step 1**PatternBitPos***Integer***Range** From 0 to 63 step 1**PatternOperator***Enum***Values**

Equal	
Greater	
GreaterOrEqual	
InRange	
NotEqual	
OutRange	
Smaller	
SmallerOrEqual	

**PatternValue***BitPattern***Range** MaxBits=64 NumBits=8 NumBytes=1 AllowedBitValues=01X PaddingChar=X  
PadAlign=Left SizeAlign=BitFix Format=Ehex**PatternValue2***BitPattern***Range** MaxBits=64 NumBits=8 NumBytes=1 AllowedBitValues=01 PaddingChar=0  
PadAlign=Left SizeAlign=BitFix Format=Ehex**RequestedSamplingPoint***Double***Range** From 20 to 90 step 0.01**SignType***Enum***Values**

SignedInt	
UnsignedInt	

**SupportsDigital***Bool***SymbolIDBC***FileName***Range** Any number of characters

**SymbolicOperator***Enum***Values**

Equal	
Greater	
GreaterOrEqual	
InRange	
NotEqual	
OutOfRange	
Smaller	
SmallerOrEqual	

**SynchJumpWidth***Integer***Range** From 1 to 4 step 1**TriggerCondition***Enum***Values**

All	
Error	
ID	
IdData	
Remote	

**Tseg1***Integer***Range** From 3 to 16 step 1**Tseg2***Integer***Range** From 2 to 8 step 1**ViewingMode***Enum***Values**

Binary	
Hex	
Sym	

**FLX***app.Acquisition.Trigger.Serial.Protocol (Standard = "FLX")*

BitRate	Double
ByteBitOrder	Enum
CycleCountOperator	Enum
CycleCountValue	Integer
CycleCountValue2	Integer
DefaultLevel	Double

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FrameIDOperator	Enum
FrameIDValue	BitPattern
FrameIDValue2	BitPattern
NeedDualLevels	Bool
NeededSources	Enum
NullFrameInd	Enum
PatternLength	Integer
PatternOperator	Enum
PatternValue	BitPattern
PatternValue2	BitPattern
PayloadChannel	Enum
PayloadPreamble	Enum
RepetitionFactor	Enum
StartupFrameInd	Enum
SupportsDigital	Bool
SymbolCAS	Bool
SymbolCID	Bool
SymbolWakeup	Bool
SyncFrameInd	Enum
TriggerCondition	Enum
TrigOnBadBSS	Bool
TrigOnBadDTS	Bool
TrigOnBadFES	Bool
TrigOnBadFSS	Bool
TrigOnBadSymbol	Bool
TrigOnHeaderCRCError	Bool
TrigOnPayloadCRCError	Bool
ViewingMode	Enum

### BitRate

*Double*

**Range** From 2.5e+006 to 1e+007 step 500000

### ByteBitOrder

*Enum*

#### Values

LSB	
MSB	

**CycleCountOperator***Enum***Values**

Equal	
Greater	
GreaterOrEqual	
InRange	
NotEqual	
OutOfRange	
Smaller	
SmallerOrEqual	

**CycleCountValue***Integer***Range** From 0 to 63 step 1**CycleCountValue2***Integer***Range** From 0 to 63 step 1**DefaultLevel***Double***Range** From -1.79769e+308 to 1.79769e+308 step 0.001**FramelDOperator***Enum***Values**

Equal	
Greater	
GreaterOrEqual	
InRange	
NotEqual	
OutOfRange	
Smaller	
SmallerOrEqual	

**FramelDValue***BitPattern***Range** MaxBits=11 NumBits=11 NumBytes=2 AllowedBitValues=01X PaddingChar=X  
PadAlign=Left SizeAlign=BitFix Format=Ehex**FramelDValue2***BitPattern***Range** MaxBits=11 NumBits=11 NumBytes=2 AllowedBitValues=01 PaddingChar=0  
PadAlign=Left SizeAlign=BitFix Format=Ehex**NeedDualLevels***Bool*

**NeededSources***Enum***Values**

DataSource	
------------	--

**NullFrameInd***Enum***Values**

One	
Zero	

**PatternLength***Integer***Range** From 0 to 12 step 1**PatternOperator***Enum***Values**

Equal	
Greater	
GreaterOrEqual	
InRange	
NotEqual	
OutRange	
Smaller	
SmallerOrEqual	

**PatternValue***BitPattern***Range** MaxBits=96 NumBits=8 NumBytes=1 AllowedBitValues=01X PaddingChar=X  
PadAlign=Left SizeAlign=ByteVar Format=Ehex**PatternValue2***BitPattern***Range** MaxBits=96 NumBits=8 NumBytes=1 AllowedBitValues=01 PaddingChar=0  
PadAlign=Left SizeAlign=ByteVar Format=Ehex**PayloadChannel***Enum***Values**

ChannelA	
ChannelB	

**PayloadPreamble***Enum***Values**

One	
Zero	

**RepetitionFactor*****Enum*****Values**

1	
16	
2	
32	
4	
64	
8	

**StartupFrameInd*****Enum*****Values**

One	
Zero	

**SupportsDigital*****Bool*****SymbolCAS*****Bool*****SymbolCID*****Bool*****SymbolWakeup*****Bool*****SyncFrameInd*****Enum*****Values**

One	
Zero	

**TriggerCondition*****Enum*****Values**

Errors	
Frame	
Symbol	
TSS	

**TrigOnBadBSS*****Bool*****TrigOnBadDTS*****Bool*****TrigOnBadFES*****Bool*****TrigOnBadFSS*****Bool*****TrigOnBadSymbol*****Bool***



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**TrigOnHeaderCRCError** *Bool*

**TrigOnPayloadCRCError** *Bool*

**ViewingMode** *Enum*

### Values

Binary	
Hex	

## I2C

*app.Acquisition.Trigger.Serial.Protocol (Standard = "I2C")*

AckCondition	Enum
AddressLength	Enum
AddressValue	BitPattern
AddressWithRW	Bool
AtPosition	Enum
ByteBitOrder	Enum
DefaultLevel	Double
Direction	Enum
FrameCondition	Enum
NeedDualLevels	Bool
NeededSources	Enum
PatternLength	Integer
PatternOperator	Enum
PatternValue	BitPattern
PatternValue2	BitPattern
SupportsDigital	Bool
ViewingMode	Enum

**AckCondition** *Enum*

### Values

Ack	
NoAck	

**AddressLength** *Enum*

### Values

10Bits	
7Bits	

**AddressValue** *BitPattern*

**Range** MaxBits=10 NumBits=8 NumBytes=1 AllowedBitValues=01X PaddingChar=X  
PadAlign=Left SizeAlign=BitFix Format=Ehex

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**AddressWithRW** *Bool*

**AtPosition** *Enum*

**Values**

Value	
-------	--

**ByteBitOrder** *Enum*

**Values**

LSB	
MSB	

**DefaultLevel** *Double*

**Range** From -1.79769e+308 to 1.79769e+308 step 0.001

**Direction** *Enum*

**Values**

Read	
Write	

**FrameCondition** *Enum*

**Values**

Addr	
AddrData	
EEPROM	
FrameLength	
NoAck	
Restart	
Start	
Stop	

**NeedDualLevels** *Bool*

**NeededSources** *Enum*

**Values**

ClockSource	
DataSource	

**PatternLength** *Integer*

**Range** From 0 to 12 step 1

**PatternOperator***Enum***Values**

Equal	
Greater	
GreaterOrEqual	
InRange	
NotEqual	
OutOfRange	
Smaller	
SmallerOrEqual	

**PatternValue***BitPattern*

**Range** MaxBits=96 NumBits=8 NumBytes=1 AllowedBitValues=01X PaddingChar=X  
PadAlign=Left SizeAlign=ByteVar Format=Ehex

**PatternValue2***BitPattern*

**Range** MaxBits=96 NumBits=8 NumBytes=1 AllowedBitValues=01 PaddingChar=0  
PadAlign=Left SizeAlign=ByteVar Format=Ehex

**SupportsDigital***Bool***ViewingMode***Enum***Values**

Binary	
Hex	

**I2S***app.Acquisition.Trigger.Serial.Protocol (Standard = "I2S")*

AudioChannel	Enum
BitsInChannel	Integer
ByteBitOrder	Enum
ChipSelCondition	Enum
ClockPol	Enum
DefaultLevel	Double
EnableInterFrame	Bool
I2SCondition	Enum
I2SVariant	Enum
NeedDualLevels	Bool
NeededSources	Enum
PatternBitsLen	Integer
PatternLength	Integer
PatternOperator	Enum
PatternValue	BitPattern
PatternValue2	BitPattern

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StartBitInChannel	Integer
SupportsDigital	Bool
TimeOutLenInNanoSec	Double
ViewingMode	Enum
WSFrameStart	Enum

### AudioChannel

*Enum*

#### Values

Left	
Right	

### BitsInChannel

*Integer*

**Range** From 1 to 32 step 1

### ByteBitOrder

*Enum*

#### Values

LSB	
MSB	

### ChipSelCondition

*Enum*

#### Values

Auto	
Manual	
None	

### ClockPol

*Enum*

#### Values

Negative	
Positive	

### DefaultLevel

*Double*

**Range** From -1.79769e+308 to 1.79769e+308 step 0.001

### EnableInterFrame

*Bool*

**I2SCondition***Enum***Values**

Clip	
Data	
FallingEdge	
Glitch	
Mute	
RisingEdge	

**I2SVariant***Enum***Values**

I2S	
LJ	
RJ	

**NeedDualLevels***Bool***NeededSources***Enum***Values**

ClockSource	
CSSource	
DataSource	

**PatternBitsLen***Integer***Range** From 1 to 32 step 1**PatternLength***Integer***Range** From 0 to 8 step 1**PatternOperator***Enum***Values**

Equal	
Greater	
GreaterOrEqual	
InRange	
NotEqual	
OutRange	
Smaller	
SmallerOrEqual	

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### PatternValue

*BitPattern*

**Range** MaxBits=32 NumBits=32 NumBytes=4 AllowedBitValues=01X PaddingChar=X  
PadAlign=Right SizeAlign=BitVar Format=Ehex

### PatternValue2

*BitPattern*

**Range** MaxBits=32 NumBits=32 NumBytes=4 AllowedBitValues=01 PaddingChar=0  
PadAlign=Right SizeAlign=BitVar Format=Ehex

### StartBitInChannel

*Integer*

**Range** From 0 to 31 step 1

### SupportsDigital

*Bool*

### TimeoutLenInNanoSec

*Double*

**Range** From 4e-008 to 0.0026214 step 4e-008

### ViewingMode

*Enum*

#### Values

Binary	
Hex	

### WSFrameStart

*Enum*

#### Values

Falling	
Rising	

## LIN

*app.Acquisition.Trigger.Serial.Protocol (Standard = "LIN")*

AddressOperator	Enum
AddressValue	BitPattern
AddressValue2	BitPattern
BitRate	Double
DefaultLevel	Double
NeedDualLevels	Bool
NeededSources	Enum
PatternLength	Integer
PatternOperator	Enum
PatternValue	BitPattern
PatternValue2	BitPattern
SupportsDigital	Bool
TriggerCondition	Enum
ViewingMode	Enum

**AddressOperator***Enum***Values**

Equal	
Greater	
GreaterOrEqual	
InRange	
NotEqual	
OutOfRange	
Smaller	
SmallerOrEqual	

**AddressValue***BitPattern*

**Range** MaxBits=6 NumBits=6 NumBytes=1 AllowedBitValues=01X PaddingChar=X  
PadAlign=Left SizeAlign=BitFix Format=Ehex

**AddressValue2***BitPattern*

**Range** MaxBits=6 NumBits=6 NumBytes=1 AllowedBitValues=01 PaddingChar=0  
PadAlign=Left SizeAlign=BitFix Format=Ehex

**BitRate***Double*

**Range** From 300 to 20000 step 1

**DefaultLevel***Double*

**Range** From -1.79769e+308 to 1.79769e+308 step 0.001

**NeedDualLevels***Bool***NeededSources***Enum***Values**

DataSource	
------------	--

**PatternLength***Integer*

**Range** From 0 to 8 step 1

**PatternOperator***Enum***Values**

Equal	
Greater	
GreaterOrEqual	
InRange	
NotEqual	
OutOfRange	
Smaller	
SmallerOrEqual	

**PatternValue***BitPattern*

**Range** MaxBits=96 NumBits=8 NumBytes=1 AllowedBitValues=01X PaddingChar=X  
PadAlign=Left SizeAlign=ByteVar Format=Ehex

**PatternValue2***BitPattern*

**Range** MaxBits=96 NumBits=8 NumBytes=1 AllowedBitValues=01 PaddingChar=0  
PadAlign=Left SizeAlign=ByteVar Format=Ehex

**SupportsDigital***Bool***TriggerCondition***Enum***Values**

Break	
Error	
FramelD	
IDData	

**ViewingMode***Enum***Values**

Binary	
Hex	

**MIL1553***app.Acquisition.Trigger.Serial.Protocol (Standard = "MIL1553")*

BitRate	Double
C1_ModeCode	Enum
C1_ModeCodeOP	Enum
C1_RTAddress	BitPattern
C1_RTAddress2	BitPattern
C1_RTAddressOP	Enum
C1_RTSubAddress	BitPattern
C1_RTSubAddress2	BitPattern
C1_RTSubAddressOP	Enum



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C1_WordCount	Integer
C1_XmitRcv	Enum
C2_ModeCode	Enum
C2_ModeCodeOP	Enum
C2_RTAddress	BitPattern
C2_RTAddress2	BitPattern
C2_RTAddressOP	Enum
C2_RTSubAddress	BitPattern
C2_RTSubAddress2	BitPattern
C2_RTSubAddressOP	Enum
C2_WordCount	Integer
C2_XmitRcv	Enum
D_PatternBitLength	Integer
D_PatternBitPos	Integer
D_PatternOperator	Enum
D_PatternValue	BitPattern
D_PatternValue2	BitPattern
DefaultLevel	Double
IMGTimeFrom	Double
IMGTimeOperator	Enum
IMGTimeTo	Double
NeedDualLevels	Bool
NeededSources	Enum
RespTimeFrom	Double
RespTimeOperator	Enum
RespTimeTo	Double
RHSRatio	Integer
S1_BcastRcvdBit	Enum
S1_BusyBit	Enum
S1_DynBusCtrlBit	Enum
S1_InstrBit	Enum
S1_MsgErrorBit	Enum
S1_RTAddress	BitPattern
S1_RTAddress2	BitPattern
S1_RTAddressOP	Enum
S1_SRQBit	Enum
S1_SubSystFlagBit	Enum
S1_TermFlagBit	Enum
S2_BcastRcvdBit	Enum
S2_BusyBit	Enum
S2_DynBusCtrlBit	Enum
S2_InstrBit	Enum
S2_MsgErrorBit	Enum
S2_RTAddress	BitPattern
S2_RTAddress2	BitPattern
S2_RTAddressOP	Enum

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S2_SRQBit	Enum
S2_SubSystFlagBit	Enum
S2_TermFlagBit	Enum
SupportsDigital	Bool
TrigOnBadManchesterEncoding	Bool
TrigOnBadWordCount	Bool
TrigOnIdleError	Bool
TrigOnInvalidSync	Bool
TrigOnNonContiguousData	Bool
TrigOnParityError	Bool
TrigOnStatusAddressMismatch	Bool
TrigOnSyncError	Bool
Type	Enum
TypeTransfer	Enum

### BitRate

*Double*

**Range** From 500000 to 4e+007 step 1000

**C1\_ModeCode***Enum***Values**

0DynamicBusControl	
10Reserved	
11Reserved	
12Reserved	
13Reserved	
14Reserved	
15Reserved	
16TransmitVectorWord	
17Synchronize	
18TransmitLastComman	
19TransmitBITWord	
1Synchronize	
20SelectedTransmitterSh	
21OverrideSelectedTran	
22Reserved	
23Reserved	
24Reserved	
25Reserved	
26Reserved	
27Reserved	
28Reserved	
29Reserved	
2TransmitStatusWord	
30Reserved	
31Reserved	
3InitiateSelfTest	
4TransmitterShutdown	
5OverrideTransmitterShu	
6InhibitTerminalFlag	
7OverrideInhibitTerminal	
8ResetRemoteTerminal	
9Reserved	

**C1\_ModeCodeOP***Enum***Values**

Equal	
Greater	
GreaterOrEqual	
NotEqual	
Smaller	
SmallerOrEqual	

## C1\_RTAddress

*BitPattern*

**Range** MaxBits=5 NumBits=5 NumBytes=1 AllowedBitValues=01X PaddingChar=X  
PadAlign=Left SizeAlign=BitFix Format=Ehex

## C1\_RTAddress2

*BitPattern*

**Range** MaxBits=5 NumBits=5 NumBytes=1 AllowedBitValues=01 PaddingChar=0  
PadAlign=Left SizeAlign=BitFix Format=Ehex

## C1\_RTAddressOP

*Enum*

### Values

Equal	
Greater	
GreaterOrEqual	
InRange	
NotEqual	
OutOfRange	
Smaller	
SmallerOrEqual	

## C1\_RTSubAddress

*BitPattern*

**Range** MaxBits=5 NumBits=5 NumBytes=1 AllowedBitValues=01X PaddingChar=X  
PadAlign=Left SizeAlign=BitFix Format=Ehex

## C1\_RTSubAddress2

*BitPattern*

**Range** MaxBits=5 NumBits=5 NumBytes=1 AllowedBitValues=01 PaddingChar=0  
PadAlign=Left SizeAlign=BitFix Format=Ehex

## C1\_RTSubAddressOP

*Enum*

### Values

Equal	
Greater	
GreaterOrEqual	
InRange	
NotEqual	
OutOfRange	
Smaller	
SmallerOrEqual	

## C1\_WordCount

*Integer*

**Range** From 0 to 31 step 1

**C1\_XmitRcv***Enum***Values**

0	
1	
X	

**C2\_ModeCode***Enum***Values**

0DynamicBusControl	
10Reserved	
11Reserved	
12Reserved	
13Reserved	
14Reserved	
15Reserved	
16TransmitVectorWord	
17Synchronize	
18TransmitLastComman	
19TransmitBITWord	
1Synchronize	
20SelectedTransmitterSh	
21OverrideSelectedTran	
22Reserved	
23Reserved	
24Reserved	
25Reserved	
26Reserved	
27Reserved	
28Reserved	
29Reserved	
2TransmitStatusWord	
30Reserved	
31Reserved	
3InitiateSelfTest	
4TransmitterShutdown	
5OverrideTransmitterShu	
6InhibitTerminalFlag	
7OverrideInhibitTerminal	
8ResetRemoteTerminal	
9Reserved	

**C2\_ModeCodeOP***Enum***Values**

Equal	
Greater	
GreaterOrEqual	
NotEqual	
Smaller	
SmallerOrEqual	

**C2\_RTAddress***BitPattern*

**Range** MaxBits=5 NumBits=5 NumBytes=1 AllowedBitValues=01X PaddingChar=X  
PadAlign=Left SizeAlign=BitFix Format=Ehex

**C2\_RTAddress2***BitPattern*

**Range** MaxBits=5 NumBits=5 NumBytes=1 AllowedBitValues=01 PaddingChar=0  
PadAlign=Left SizeAlign=BitFix Format=Ehex

**C2\_RTAddressOP***Enum***Values**

Equal	
Greater	
GreaterOrEqual	
InRange	
NotEqual	
OutOfRange	
Smaller	
SmallerOrEqual	

**C2\_RTSubAddress***BitPattern*

**Range** MaxBits=5 NumBits=5 NumBytes=1 AllowedBitValues=01X PaddingChar=X  
PadAlign=Left SizeAlign=BitFix Format=Ehex

**C2\_RTSubAddress2***BitPattern*

**Range** MaxBits=5 NumBits=5 NumBytes=1 AllowedBitValues=01 PaddingChar=0  
PadAlign=Left SizeAlign=BitFix Format=Ehex

**C2\_RTSubAddressOP***Enum***Values**

Equal	
Greater	
GreaterOrEqual	
InRange	
NotEqual	
OutOfRange	
Smaller	
SmallerOrEqual	

**C2\_WordCount***Integer***Range** From 0 to 31 step 1**C2\_XmitRcv***Enum***Values**

0	
1	
X	

**D\_PatternBitLength***Integer***Range** From 0 to 16 step 1**D\_PatternBitPos***Integer***Range** From 0 to 511 step 1**D\_PatternOperator***Enum***Values**

Equal	
Greater	
GreaterOrEqual	
InRange	
NotEqual	
OutOfRange	
Smaller	
SmallerOrEqual	

**D\_PatternValue***BitPattern***Range** MaxBits=16 NumBits=8 NumBytes=1 AllowedBitValues=01X PaddingChar=X  
PadAlign=Left SizeAlign=ByteVar Format=Ehex

**D\_PatternValue2***BitPattern*

**Range** MaxBits=16 NumBits=8 NumBytes=1 AllowedBitValues=01 PaddingChar=0  
PadAlign=Left SizeAlign=ByteVar Format=Ehex

**DefaultLevel***Double*

**Range** From -1.79769e+308 to 1.79769e+308 step 0.001

**IMGTimeFrom***Double*

**Range** From 0 to 3.2752e-005 step 8e-009

**IMGTimeOperator***Enum***Values**

Greater	
InRange	
OutRange	
Smaller	

**IMGTimeTo***Double*

**Range** From 0 to 3.2752e-005 step 8e-009

**NeedDualLevels***Bool***NeededSources***Enum***Values**

DataSource	
------------	--

**RespTimeFrom***Double*

**Range** From 0 to 3.2752e-005 step 8e-009

**RespTimeOperator***Enum***Values**

Greater	
InRange	
OutRange	
Smaller	

**RespTimeTo***Double*

**Range** From 0 to 3.2752e-005 step 8e-009

**RHSRatio***Integer*

**Range** From 0 to 100 step 1



**S1\_BcastRcvdBit***Enum***Values**

0	
1	
X	

**S1\_BusyBit***Enum***Values**

0	
1	
X	

**S1\_DynBusCtrlBit***Enum***Values**

0	
1	
X	

**S1\_InstrBit***Enum***Values**

0	
1	
X	

**S1\_MsgErrorBit***Enum***Values**

0	
1	
X	

**S1\_RTAddress***BitPattern*

**Range** MaxBits=5 NumBits=5 NumBytes=1 AllowedBitValues=01X PaddingChar=X  
PadAlign=Left SizeAlign=BitFix Format=Ehex

**S1\_RTAddress2***BitPattern*

**Range** MaxBits=5 NumBits=5 NumBytes=1 AllowedBitValues=01 PaddingChar=0  
PadAlign=Left SizeAlign=BitFix Format=Ehex

**S1\_RTAddressOP***Enum***Values**

Equal	
Greater	
GreaterOrEqual	
InRange	
NotEqual	
OutOfRange	
Smaller	
SmallerOrEqual	

**S1\_SRQBit***Enum***Values**

0	
1	
X	

**S1\_SubSystFlagBit***Enum***Values**

0	
1	
X	

**S1\_TermFlagBit***Enum***Values**

0	
1	
X	

**S2\_BcastRcvdBit***Enum***Values**

0	
1	
X	

**S2\_BusyBit***Enum***Values**

0	
1	
X	

**S2\_DynBusCtrlBit***Enum***Values**

0	
1	
X	

**S2\_InstrBit***Enum***Values**

0	
1	
X	

**S2\_MsgErrorBit***Enum***Values**

0	
1	
X	

**S2\_RTAddress***BitPattern*

**Range** MaxBits=5 NumBits=5 NumBytes=1 AllowedBitValues=01X PaddingChar=X  
PadAlign=Left SizeAlign=BitFix Format=Ehex

**S2\_RTAddress2***BitPattern*

**Range** MaxBits=5 NumBits=5 NumBytes=1 AllowedBitValues=01 PaddingChar=0  
PadAlign=Left SizeAlign=BitFix Format=Ehex

**S2\_RTAddressOP***Enum***Values**

Equal	
Greater	
GreaterOrEqual	
InRange	
NotEqual	
OutOfRange	
Smaller	
SmallerOrEqual	

**S2\_SRQBit***Enum***Values**

0	
1	
X	

**S2\_SubSystFlagBit***Enum***Values**

0	
1	
X	

**S2\_TermFlagBit***Enum***Values**

0	
1	
X	

**SupportsDigital***Bool***TrigOnBadManchesterEncoding***Bool***TrigOnBadWordCount***Bool***TrigOnIdleError***Bool***TrigOnInvalidSync***Bool***TrigOnNonContiguousData***Bool***TrigOnParityError***Bool***TrigOnStatusAddressMismatch***Bool***TrigOnSyncError***Bool***Type***Enum***Values**

Error	
Timing	
Transfer	
Word	

**TypeTransfer***Enum***Values**

All	
BCRTRcv	
Modecommand	
ModecommandDataRcv	
ModecommandDataXmit	
RTBCXmit	
RTRT	

**RS232***app.Acquisition.Trigger.Serial.Protocol (Standard = "RS232")*

AtPosition	Enum
BitRate	Double
ByteBitOrder	Enum
DefaultLevel	Double
FrameDelimiter	Enum
InterFrameMinBits	Integer
NeedDualLevels	Bool
NeededSources	Enum
NumDataBits	Integer
ParityType	Enum
PatternLength	Integer
PatternOperator	Enum
PatternPosition	Integer
PatternValue	BitPattern
PatternValue2	BitPattern
Polarity	Enum
RS232Mode	Bool
StopBitLength	Enum
SupportsDigital	Bool
TrigOnBadParity	Bool
UARTCondition	Enum
ViewingMode	Enum

**AtPosition***Enum***Values**

Value	
-------	--

**BitRate***Double***Range** From 300 to 1e+007 step 1

**ByteBitOrder***Enum***Values**

LSB	
-----	--

**DefaultLevel***Double***Range** From -1.79769e+308 to 1.79769e+308 step 0.001**FrameDelimiter***Enum***Values**

Manual	
None	

**InterFrameMinBits***Integer***Range** From 1 to 65535 step 1**NeedDualLevels***Bool***NeededSources***Enum***Values**

DataSource	
------------	--

**NumDataBits***Integer***Range** From 5 to 8 step 1**ParityType***Enum***Values**

Even	
None	
Odd	

**PatternLength***Integer***Range** From 0 to 12 step 1

**PatternOperator***Enum***Values**

Equal	
Greater	
GreaterOrEqual	
InRange	
NotEqual	
OutRange	
Smaller	
SmallerOrEqual	

**PatternPosition***Integer***Range** From -1 to 2047 step 1**PatternValue***BitPattern***Range** MaxBits=96 NumBits=8 NumBytes=1 AllowedBitValues=01X PaddingChar=X  
PadAlign=Left SizeAlign=ByteVar Format=Ehex**PatternValue2***BitPattern***Range** MaxBits=96 NumBits=8 NumBytes=1 AllowedBitValues=01 PaddingChar=0  
PadAlign=Left SizeAlign=ByteVar Format=Ehex**Polarity***Enum***Values**

IdleLow	
---------	--

**RS232Mode***Bool***StopBitLength***Enum***Values**

1.5bit	
1bit	
2bits	

**SupportsDigital***Bool***TrigOnBadParity***Bool***UARTCondition***Enum***Values**

Data	
------	--

**ViewingMode***Enum***Values**

Binary	
Hex	

**SPI***app.Acquisition.Trigger.Serial.Protocol (Standard = "SPI")*

ByteBitOrder	Enum
ChipSelCondition	Enum
ClockPhase	Enum
ClockPolarity	Enum
CSPolarity	Enum
DefaultLevel	Double
EnableInterFrame	Bool
NeedDualLevels	Bool
NeededSources	Enum
PatternBitLength	Integer
PatternBitPos	Integer
PatternOperator	Enum
PatternValue	BitPattern
PatternValue2	BitPattern
SignType	Enum
SPIVariant	Enum
SupportsDigital	Bool
TimeOutLen	Double
ViewingMode	Enum

**ByteBitOrder***Enum***Values**

LSB	
MSB	

**ChipSelCondition***Enum***Values**

Auto	
Manual	



**ClockPhase***Enum***Values**

0	
1	

**ClockPolarity***Enum***Values**

0	
1	

**CSPolarity***Enum***Values**

ActiveHigh	
ActiveLow	

**DefaultLevel***Double***Range** From -1.79769e+308 to 1.79769e+308 step 0.001**EnableInterFrame***Bool***NeedDualLevels***Bool***NeededSources***Enum***Values**

ClockSource	
CSSource	
DataSource	

**PatternBitLength***Integer***Range** From 0 to 96 step 1**PatternBitPos***Integer***Range** From 0 to 95 step 1

**PatternOperator***Enum***Values**

Equal	
Greater	
GreaterOrEqual	
InRange	
NotEqual	
OutOfRange	
Smaller	
SmallerOrEqual	

**PatternValue***BitPattern*

**Range** MaxBits=96 NumBits=8 NumBytes=1 AllowedBitValues=01X PaddingChar=X  
PadAlign=Left SizeAlign=BitVar Format=Ehex

**PatternValue2***BitPattern*

**Range** MaxBits=96 NumBits=8 NumBytes=1 AllowedBitValues=01 PaddingChar=0  
PadAlign=Left SizeAlign=BitVar Format=Ehex

**SignType***Enum***Values**

SignedInt	
UnsignedInt	

**SPIVariant***Enum***Values**

DDR	
SIOP	
SPI	
SSPI	

**SupportsDigital***Bool***TimeOutLen***Double*

**Range** From 4e-008 to 0.0026214 step 4e-008

**ViewingMode***Enum***Values**

Binary	
Hex	

**UART**

*app.Acquisition.Trigger.Serial.Protocol (Standard = "UART")*

## Automation Command and Query Reference Manual - Control Reference

AtPosition	Enum
Bit9State	Enum
BitRate	Double
ByteBitOrder	Enum
DefaultLevel	Double
FrameDelimiter	Enum
InterFrameMinBits	Integer
NeedDualLevels	Bool
NeededSources	Enum
NumDataBits	Integer
ParityType	Enum
PatternLength	Integer
PatternOperator	Enum
PatternPosition	Integer
PatternValue	BitPattern
PatternValue2	BitPattern
Polarity	Enum
StopBitLength	Enum
SupportsDigital	Bool
TrigOnBadParity	Bool
UARTCondition	Enum
ViewingMode	Enum

### AtPosition

*Enum*

#### Values

Value	
-------	--

### Bit9State

*Enum*

#### Values

0	
1	
X	

### BitRate

*Double*

Range From 300 to 1e+007 step 1

### ByteBitOrder

*Enum*

#### Values

LSB	
MSB	

## Automation Command and Query Reference Manual - Control Reference

### DefaultLevel

*Double*

**Range** From -1.79769e+308 to 1.79769e+308 step 0.001

### FrameDelimiter

*Enum*

#### Values

Manual	
None	

### InterFrameMinBits

*Integer*

**Range** From 1 to 65535 step 1

### NeedDualLevels

*Bool*

### NeededSources

*Enum*

#### Values

DataSource	
------------	--

### NumDataBits

*Integer*

**Range** From 5 to 9 step 1

### ParityType

*Enum*

#### Values

Even	
None	
Odd	

### PatternLength

*Integer*

**Range** From 0 to 12 step 1

### PatternOperator

*Enum*

#### Values

Equal	
Greater	
GreaterOrEqual	
InRange	
NotEqual	
OutOfRange	
Smaller	
SmallerOrEqual	

### PatternPosition

*Integer*

**Range** From -1 to 2047 step 1

## Automation Command and Query Reference Manual - Control Reference

### PatternValue

*BitPattern*

**Range** MaxBits=96 NumBits=8 NumBytes=1 AllowedBitValues=01X PaddingChar=X  
PadAlign=Left SizeAlign=ByteVar Format=Ehex

### PatternValue2

*BitPattern*

**Range** MaxBits=96 NumBits=8 NumBytes=1 AllowedBitValues=01 PaddingChar=0  
PadAlign=Left SizeAlign=ByteVar Format=Ehex

### Polarity

*Enum*

#### Values

IdleHigh	
IdleLow	

### StopBitLength

*Enum*

#### Values

1.5bit	
1bit	
2bits	

### SupportsDigital

*Bool*

### TrigOnBadParity

*Bool*

### UARTCondition

*Enum*

#### Values

Data	
------	--

### ViewingMode

*Enum*

#### Values

Binary	
Hex	

## CURSORS

*app.Cursors*

This set of variables controls the cursor system.

Track	Bool
Type	Enum
View	Bool
XPos1	Double
XPos2	Double
YPos1	Double
YPos2	Double

**Track*****Bool*****Description**

Sets/Queries the state of tracking of a pair of cursors. If tracking is enabled then when the first cursor is moved, the second will track at a constant distance from it.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set cursors tracking on.
app.Cursors.Track = True
```

**Type*****Enum*****Description**

Sets/Queries the currently selected type of cursor.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the cursor type to vertical relative.
app.Cursors.View = "On"
app.Cursors.Type = "VertRel"
```

**Values**

HorizAbs	Single cursor, position specified in time
HorizRel	Dual cursors, positions specified in time
VertAbs	Single cursor, position specified in divisions vertically
VertRel	Dual cursors, positions specified in divisions vertically

**View*****Bool*****Description**

Sets/Queries visibility of the cursors.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Make the cursors visible.
app.Cursors.View = "On"
```

**XPos1*****Double***

**Range** From -1.79769e+308 to 1.79769e+308 step 0

**Description**

Sets/Queries the horizontal position of the first cursor, in the units of the horizontal variable.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the horizontal position of the first cursor to 50 ns.
app.Cursors.XPos1 = 50e-9
```

**XPos2***Double***Range** From -1.79769e+308 to 1.79769e+308 step 0**Description**

Sets/Queries the horizontal position of the second cursor, in the units of the horizontal variable.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the horizontal position of the second cursor to 4.5 ms.
app.Cursors.XPos2 = 4.5e-3
```

**YPos1***Double***Range** From -3.99 to 3.99 step 0.01**Description**

Sets/Queries the vertical position of the first cursor, in graticule divisions.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the vertical position of the first cursor.
app.Cursors.YPos1 = 3.4
```

**YPos2***Double***Range** From -3.99 to 3.99 step 0.01**Description**

Sets/Queries the vertical position of the second cursor, in graticule divisions.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the vertical position of the second cursor.
app.Cursors.YPos2 = 2.1
```

**DISPLAY***app.Display*

This set of variables controls the properties of the screen display of the instrument.

AxisLabels	Bool
AxisXRotation	Integer
AxisYRotation	Integer
C1Color	Color
C1PrintColor	Color
C2Color	Color
C2PrintColor	Color
C3Color	Color
C3PrintColor	Color
C4Color	Color

## Automation Command and Query Reference Manual - Control Reference

C4PrintColor	Color
ClearSweeps	Action
DisplayMode	Enum
F1Color	Color
F1PrintColor	Color
F2Color	Color
F2PrintColor	Color
F3Color	Color
F3PrintColor	Color
F4Color	Color
F4PrintColor	Color
FactoryDefault	Action
GridIntensity	Integer
GridMode	Enum
GridOnTop	Bool
LockPersistence	Enum
M1Color	Color
M1PrintColor	Color
M2Color	Color
M2PrintColor	Color
M3Color	Color
M3PrintColor	Color
M4Color	Color
M4PrintColor	Color
Persist3DQuality	Enum
Persisted	Bool
Persistence3d	Bool
PersistenceLastTrace	Bool
PersistenceMonoChrome	Bool
PersistenceSaturation	Integer
PersistenceStyle	Enum
PersistenceTime	Enum
PreviewPrintColors	Action
ResetAll	Action
SegmentMode	Enum
TraceIntensity	Double
TraceStyle	Enum

### AxisLabels

**Bool**

#### Description

Sets/Queries the visibility of the labels that show the horizontal and vertical limits of each grid.

#### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")
```



```
' Show the axis labels.
app.Display.AxisLabels = True
```

---

### AxisXRotation

*Integer*

**Range** From -90 to 90 step 1

#### Description

Sets/Queries the rotation angle, about the X-axis, of the 3-D persistence display. The X-axis runs horizontally in the plane of the screen. Positive or negative angles may be used. Positive or negative angles may be used, in the range - 90 to + 90 degrees. Zero produces a direct plan, viewed perpendicularly. Zero produces a direct plan view, if Y rotation is also zero.

#### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the rotation about the X axis to 45 degrees.
app.Display.AxisXRotation = 45
```

---

### AxisYRotation

*Integer*

**Range** From -90 to 90 step 1

#### Description

Sets/Queries the rotation angle, about the Y-axis, of the 3-D persistence display. The Y-axis runs vertically in the plane of the screen. Positive or negative angles may be used, in the range - 90 to + 90 degrees.

A positive angle makes the left side look closer than the right side. Zero produces a direct plan view, if X rotation is also zero.

#### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the rotation about the Y axis to 35 degrees.
app.Display.AxisYRotation = 35
```

---

### C1Color

*Color*

**Range** From 0 to 16777215

#### Description

Sets/Queries the color of trace C1, using a number in the range 0 to FFFFFFFF in hexadecimal. The possible colors are made from any combination of the primary colors, which are set in hexadecimal as Blue = &HFF0000, Green = &HFF00, Red = &HFF. The value may be entered in decimal or in hexadecimal, though hexadecimal is usually more convenient. Note that if the intensity of a color is to be reduced or increased by a numerical factor, an AND operation must be used afterwards, to prevent corruption of other primary colors.

#### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

Red = &Hff: Green = &H80: Blue = &H00

' Set the color of channel C1 trace to orange
app.Display.C1Color = (Blue * &H10000) + (Green * &H100) + Red
```

---

### C1PrintColor

*Color*

**Range** From 0 to 16777215

#### Description

Sets/Queries the color, in the printing palette, of trace C1, using a number in the range 0 to FFFFFFFF in hexadecimal. The primary colors are Blue = &HFF0000, Green = &HFF00, Red = &HFF in hexadecimal.

The value may be entered in decimal or in hexadecimal.

#### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

Red = &Hff: Green = &H80: Blue = &H00

' Set the color of channel C1 trace to orange for printing.
app.Display.C1PrintColor = (Blue * &H10000) + (Green * &H100) + Red
```

---

### C2Color

*Color*

**Range** From 0 to 16777215

#### Description

Please see C1Color.

---

### C2PrintColor

*Color*

**Range** From 0 to 16777215

#### Description

Please see C1Printcolor.

---

### C3Color

*Color*

**Range** From 0 to 16777215

#### Description

Please see C1Color.

---

### C3PrintColor

*Color*

**Range** From 0 to 16777215

#### Description

Please see C1Printcolor.

---

### C4Color

*Color*

**Range** From 0 to 16777215

#### Description

Please see C1Color.

**C4PrintColor***Color***Range** From 0 to 16777215**Description**

Please see C1Printcolor.

**ClearSweeps***Action***Description**

Initiates the Clear Sweeps operation. Clears history only for persistence traces, see the main Clear Sweeps control 'app.ClearSweeps', or the ClearSweeps control in other subsystems for other options.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Initiate a clear sweeps action for persistence traces.
app.Display.ClearSweeps
```

**DisplayMode***Enum***Description**

Sets/Queries the display mode as either "Scope", showing the normal instrument screen, or "WebEdit", showing the web processor editing panel. Note that WebEdit mode is available only with certain software options, including XMATH and XMAP.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Switch to WebEdit mode
app.Display.DisplayMode = "WebEdit"
```

**Values**

Scope	
WebEdit	

**F1Color***Color***Range** From 0 to 16777215**Description**

Please see C1Color.

**F1PrintColor***Color***Range** From 0 to 16777215**Description**

Please see C1Printcolor.

**F2Color***Color***Range** From 0 to 16777215**Description**

Please see C1Color.

---

### F2PrintColor

*Color*

**Range** From 0 to 16777215

**Description**

Please see C1Printcolor.

---

### F3Color

*Color*

**Range** From 0 to 16777215

**Description**

Please see C1Color.

---

### F3PrintColor

*Color*

**Range** From 0 to 16777215

**Description**

Please see C1Printcolor.

---

### F4Color

*Color*

**Range** From 0 to 16777215

**Description**

Please see C1Color.

---

### F4PrintColor

*Color*

**Range** From 0 to 16777215

**Description**

Please see C1Printcolor.

---

### FactoryDefault

*Action*

**Description**

Restores the display of the instrument to the factory default settings

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Restore the display to the factory pre-set state.
app.Display.FactoryDefault
```

**GridIntensity***Integer***Range** From 0 to 100 step 1**Description**

Sets/Queries the grid intensity as a percentage of the maximum value, with a resolution of 1%.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the grid intensity to 60% of the maximum.
app.Display.GridIntensity = 60
```

**GridMode***Enum***Description**

Sets/Queries the grid mode. The commands "Single" and "Dual", for example, set the grid mode until countermanded. "Auto" allows the instrument to set the grid mode most suitable for the current number of visible traces.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Enter Octal grid mode
app.Display.GridMode = "Octal"
```

**Values**

Auto	Automatically choose grid mode, one trace per grid
Dual	Dual grid mode
Octal	Octal grid mode
Quad	Quad grid mode
Single	Single grid mode
XY	XY grid mode
XYDual	XY + Dual grid mode
XYSingle	XY + Single grid mode

**GridOnTop***Bool***Description**

Sets/Queries whether the grid lines lie over the traces or vice versa.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the grid lines to be over the trace lines.
app.Display.GridOnTop = True
```

**LockPersistence***Enum***Description**

Sets/Queries whether the persistence states of the visible traces are locked together or separate.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the persistence display to per trace, not locked.
app.Display.LockPersistence = "PerTrace"
```

**Values**

AllLocked	
PerTrace	

**M1Color***Color*

**Range** From 0 to 16777215

**Description**

Please see C1Color.

**M1PrintColor***Color*

**Range** From 0 to 16777215

**Description**

Please see C1Printcolor.

**M2Color***Color*

**Range** From 0 to 16777215

**Description**

Please see C1Color.

**M2PrintColor***Color*

**Range** From 0 to 16777215

**Description**

Please see C1Printcolor.

**M3Color***Color*

**Range** From 0 to 16777215

**Description**

Please see C1Color.

**M3PrintColor***Color*

**Range** From 0 to 16777215

**Description**

Please see C1Printcolor.

**M4Color***Color***Range** From 0 to 16777215**Description**

Please see C1Color.

**M4PrintColor***Color***Range** From 0 to 16777215**Description**

Please see C1Printcolor.

**Persist3DQuality***Enum***Description**

Sets/Queries the type of 3D plot that is displayed

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the type of the 3-D persistence plot.
app.Display.Persist3DQuality = "WireFrame"
```

**Values**

Shaded	
Solid	
WireFrame	

**Persisted***Bool***Description**

Sets/Queries whether persistence mode is in use. If the previously set persistence mode is per trace, the persisted cvar will be set as true by this command, even if none of the traces has been set to persistence mode.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Read the state of persistence mode.
Persist = app.Display.Persisted
```

**Persistence3d***Bool***Description**

Sets/Queries whether the persistence 3-D mode is activated.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the 3-D display to off.
app.Display.Persistence3d = False
```

**PersistenceLastTrace*****Bool*****Description**

Sets/Queries whether the last created trace is shown over the persistence trace.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the persistence display to show the last trace
' on top of the persistence trace.
app.Display.PersistenceLastTrace = True
```

**PersistenceMonoChrome*****Bool*****Description**

Sets/Queries whether the persistence mode is monochrome.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the persistence mode as color.
app.Display.PersistenceMonoChrome = False
```

**PersistenceSaturation*****Integer***

**Range** From 0 to 100 step 1

**Description**

Sets/Queries the population level, relative to the maximum possible level, at which the persistence traces reach maximum intensity, and above which there are no further changes in color or intensity.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the persistence saturation level to 60%.
app.Display.PersistenceSaturation = 60
```

**PersistenceStyle*****Enum*****Description**

Sets/Queries the type of persistence trace displayed.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the persistence style to color graded.
app.Display.PersistenceStyle = "ColorGraded"
```

**Values**

3d	
Analog	
ColorGraded	



**PersistenceTime***Enum***Description**

Sets/Queries decay time for trace persistence, expressed as a number of seconds, or as "infinity".

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the persistence time to 10 seconds.
app.Display.PersistenceTime = "10s"
```

**Values**

0.5s	
10s	
1s	
20s	
2s	
5s	
Infinite	

**PreviewPrintColors***Action***Description**

Show the instrument display in the current color scheme selected for printing.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Show the current color scheme selected for printing.
app.Display.PreviewPrintColors
```

**ResetAll***Action***Description**

Turns off persistence on any traces where it has been set on.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Reset all persistence traces to non-persisted mode.
app.Display.ResetAll
```

**SegmentMode***Enum***Description**

Sets/Queries the display mode for segmented input channels. All visible channels are set to the same display mode by a single command.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the display mode for segments in C2 to perspective.
app.Acquisition.C2.SegmentMode = "Perspective"
```

**Values**

Adjacent	All segments displayed end-to-end, left to right
Mosaic	Segments displayed in a mosaic, top-left to bottom right
Overlay	Segments are overlaid, similar to persistence
Perspective	Segments are displayed in a perspective view
Waterfall	Successive segments are displayed with increasing vertical offset

**TraceIntensity***Double*

**Range** From 1 to 100 step 1

**Description**

Control the intensity of traces.

**TraceStyle***Enum***Description**

Sets/Queries the style in which traces are drawn.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Read the state of the persistence mode.
TraceStyle = app.Display.TraceStyle
```

**Values**

Line	Connect adjacent samples with straight lines
Points	Show only the sample points

**ELECTRICALTELECOM***app.ElectricalTelecom*

Root Automation node to control Electrical Telecom (ET-PMT) package. This package is performing Pulse Mask Test on different SONET/SDH standards.

ClearSweeps	Action
Polarity	Enum
Run	Action
Setup	Action
Source	Enum

## Automation Command and Query Reference Manual - Control Reference

Standard	Enum
Stop	Action
StopAfter	Integer
StopTesting	Bool
VerticalAlign	Action

### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.WaveMasterApplication.1")

'Select an stadard, run the test and get results after a while
app.ElectricalTelecom.Standard = "E1Tp"
app.ElectricalTelecom.Source = "C2"
app.ElectricalTelecom.Setup
app.ElectricalTelecom.Run
app.Sleep 10000
app.ElectricalTelecom.Pause
passed = CStr(app.ElectricalTelecom.NumPass)
tested = CStr(app.ElectricalTelecom.NumTested)
MsgBox passed + " passed of " + tested + " tests"
```

## ClearSweeps

**Action**

### Description

The ClearSweeps allows you to reset the sweep count and start testing over again.

### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.WaveMasterApplication.1")

'Select an stadard, run the test and clear the counter after a while
app.ElectricalTelecom.Standard = "E1Coax"
app.ElectricalTelecom.Setup
app.ElectricalTelecom.Run
app.Sleep 5000
app.ElectricalTelecom.Pause
app.Sleep 5000
app.ElectricalTelecom.ClearSweeps
```

**Polarity****Enum****Description**

In many electrical standards, such as DS-1, alternate “ones” are inverted. Each time a one is transmitted it is either a positive or negative going pulse depending upon the polarity of the previous one. This type of coding is referred to as AMI (alternate mark inversion). The Polarity control allows you to select which polarity (positive or negative) pulse to test.

The STS-3E and STM-1E standards use CMI (code mark inversion) pulse coding. In CMI coding, a one remains high for the full bit period while a zero has a transition to the low state in the middle of the bit period. The Polarity control allows you to select whether a 1 or 0 is to be tested.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.WaveMasterApplication.1")

'Select a stadard and set polarity to 'neg'
app.ElectricalTelecom.Standard = "ElCoax"
app.ElectricalTelecom.Polarity = "neg"
app.ElectricalTelecom.Setup
```

**Values**

neg	Negative pulse
pos	Positive pulse

**Run****Action****Description**

The Setup button applies the appropriate settings to the oscilloscope for testing the selected standard. Different standards require a particular termination, and an error message will appear at the bottom of the oscilloscope screen if the wrong (or no) adapter is present. However, this error will not prevent the instrument from making the measurement; that is, measurements can be made without the specific adapters. But if the signal is out of range for the standard, the setup operation will generate an error message and the Run button will be grayed out. The signal will appear on the screen, but no testing will be possible.

Before the Setup button is pressed, the Run and Clear Sweeps buttons appear grayed out.

These buttons become available (not grayed out) upon successful completion of a setup. At that time, a Re-Align button will replace the Setup button.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.WaveMasterApplication.1")

'Select an stadard and run the test
app.ElectricalTelecom.Standard = "ElCoax"
app.ElectricalTelecom.Setup
app.ElectricalTelecom.Run
app.Sleep 5000
app.ElectricalTelecom.Pause 'pause the test after 5 seconds
app.Sleep 5000
app.ElectricalTelecom.Run 'and continue after 5 other seconds
```

**Setup****Action****Description**

After the Telecom Standard has been chosen, the Source set, the 'Setup' command will perform all acquisition setup, make the appropriate alignments and make test ready to run.

This is one of the action to control the state machine of Mask Testing : Setup, ReAlign, Stop, Pause, Run and VerticalAlign.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.WaveMasterApplication.1")

'Select an stadard and run the test
app.ElectricalTelecom.Standard = "ElCoax"
app.ElectricalTelecom.Setup
app.ElectricalTelecom.Run
app.Sleep 5000
app.ElectricalTelecom.Pause    'pause the test after 5 seconds
```

**Source****Enum****Description**

Specify on which channel (C1 to C4) the electrical signal to be tested is connected.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.WaveMasterApplication.1")

'Select an stadard and the source
app.ElectricalTelecom.Standard = "ElCoax"
app.ElectricalTelecom.Source = "C4"
app.ElectricalTelecom.Setup
```

**Values**

C1	
C2	
C3	
C4	

**Standard***Enum***Description**

Select the Telecom Standards that will be used to make alignments and mask test.  
 Available standards are listed in the 'Standard' field of this database :  
 D:\Masks\PulseMasksProp.mdb. (whithout spaces and special characters).

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.WaveMasterApplication.1")

'Select an stadard and the source
app.ElectricalTelecom.Standard = "E1Coax"
app.ElectricalTelecom.Source = "C4"
app.ElectricalTelecom.Setup
```

**Values**

DS1	ANSI T1 DS1 standard on 100 ohm line (using AP100)
DS3	ANSI T1 DS3 standard on 75 ohm coax (using PP090 probe)
E1coax	ITU-T E1 on 75 ohm coax (using PP090 probe)
E1TP	ITU-T E1 on 120 ohm twisted pairs (using AP120 probe)
E2	ITU-T E2 on 75 ohm coax (using PP090 probe)
E3	ITU-T E3 on 75 ohm coax (using PP090 probe)
E4	ITU-T E4 on 75 ohm coax (using PP090 probe)
Off	
STM1E	ITU-T STM-1E on 75 ohm coax (using PP090 probe)
STS1	ANSI T1 STS-1 on 75 ohm coax (using PP090 probe)
STS3E	ANSI T1 STS-3E on 75 ohm coax (using PP090 probe)

**Stop***Action***Description**

Stop the test and reset counters. After this command, a new 'Setup' must be made.  
 This is one of the action to control the state machine of Mask Testing : Setup, ReAlign, Stop, Pause, Run and VerticalAlign.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.WaveMasterApplication.1")

'Select an stadard and run the test
app.ElectricalTelecom.Standard = "E1Coax"
app.ElectricalTelecom.Setup
app.ElectricalTelecom.Run
app.Sleep 5000
app.ElectricalTelecom.Pause 'pause the test after 5 seconds
app.Sleep 5000
app.ElectricalTelecom.Stop 'Stop the test
```

**StopAfter***Integer***Range** From 1 to 1000000000 step 1**Description**

If app.ElectricalTelecom.StopTesting is "On", this specify the number of sweeps that will be done before test will be stopped. After that, counters could be read.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.WaveMasterApplication.1")

'Select an stadard, run the test and stop after 1000 sweeps
app.ElectricalTelecom.Standard = "ElCoax"
app.ElectricalTelecom.Source = "C2"
app.ElectricalTelecom.Polarity = "pos"
app.ElectricalTelecom.StopAfter = 1000
app.ElectricalTelecom.StopTesting = "On"
app.ElectricalTelecom.Setup
app.ElectricalTelecom.Run
do while app.ElectricalTelecom.TestState <> "Pause"
    app.Sleep 500
loop
passed = CStr(app.ElectricalTelecom.NumPass)
tested = CStr(app.ElectricalTelecom.NumTested)
MsgBox passed + " passed of " + tested + " tests"
```

**StopTesting***Bool***Description**

If this mode is "On", the test will stop after 'app.ElectricalTelecom.StopAfter' sweeps.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.WaveMasterApplication.1")

'Select an stadard, run the test and stop after 1000 sweeps
app.ElectricalTelecom.Standard = "ElCoax"
app.ElectricalTelecom.Source = "C2"
app.ElectricalTelecom.Polarity = "pos"
app.ElectricalTelecom.StopAfter = 1000
app.ElectricalTelecom.StopTesting = "On"
app.ElectricalTelecom.Setup
app.ElectricalTelecom.Run
do while app.ElectricalTelecom.TestState <> "Pause"
    app.Sleep 500
loop
passed = CStr(app.ElectricalTelecom.NumPass)
tested = CStr(app.ElectricalTelecom.NumTested)
MsgBox passed + " passed of " + tested + " tests"
```

**VerticalAlign***Action***Description**

For test that allow that, it's possible to perform a Vertical re-alignment .

**ET***app.ElectricalTelecom.ET*

Aligned waveform output of Electrical Telecom package. From there, all it's diplay settings can be changed. See "executive setup" chapter for more details.

## Automation Command and Query Reference Manual - Control Reference

AxisXRotation	Integer
AxisYRotation	Integer
BipolarLevel	Double
ClearSweeps	Action
LabelsPosition	String
LabelsText	String
LFCutoff	Double
Persist3DQuality	Enum
Persisted	Bool
Persistence3d	Bool
PersistenceMonoChrome	Bool
PersistenceSaturation	Integer
PersistenceTime	Enum
ShowLastTrace	Bool
Source	Enum
UseGrid	String
View	Bool
ViewLabels	Bool

---

### AxisXRotation

*Integer*

**Range** From -90 to 90 step 1

---

### AxisYRotation

*Integer*

**Range** From -90 to 90 step 1

#### Description

This control is used only when Persisted is true and Persistence3d is true. It controls rotation about the Y axis of the view being persisted.

---

### BipolarLevel

*Double*

**Range** From -100 to 100 step 1e-005

---

### ClearSweeps

*Action*

#### Description

Clear any accumulated result data. Useful for example to restart an average, or parameter statistics.

---

### LabelsPosition

*String*

**Range** Any number of characters

#### Description

Sets / Queries the horizontal position of the label attached to the acquisition trace Cx. The unit of measurement is the unit of the horizontal scale. The measurement is made from the trigger point. Note that this control is a string, not a numeric value. This allows multiple labels to be positioned, as shown in the example below.



**LabelsText****String****Range** Any number of characters**LFCutoff****Double****Range** From 1 to 5e+010 step 4**Persist3DQuality****Enum****Description**

This control only has an effect when Persisted is true and Persistence3D is true. It controls whether the 3D view is shown as a wire frame (which can be monochrome or color graded), a solid (also can be monochrome or color graded), or a shaded solid (always monochrome). For WireFrame or Solid, if monochrome the brightness increases with height; if color graded the color changes from purple to red with height. "Shaded" present the solid as if it were lit from the upper left.

**Values**

Shaded	
Solid	
WireFrame	

**Persisted****Bool****Description**

Sets/Queries the persisted state of the waveform. If the Display.LockPersistence control is set to 'AllLocked' then the persisted state of all displayed waveforms will be the same. If the Display.LockPersistence control is set to 'PerTrace' then the persisted state of each waveform may be independently controlled.

**Persistence3d****Bool****Description**

Changes the persistence map from a two-dimensional surface with brightness or color indicating the third dimension, to a perspective rendering of a three dimensional object, where the third dimension is shown as height above the surface formed by points which are not lit. In 3d, that surface is same color or brightness as points with one or very few hits so that the surface is visible; but that means points with one or very few hits cannot be distinguished from the background. See also Persist3DQuality, which controls the appearance of the 3D object.

**PersistenceMonoChrome****Bool****Description**

When this control is false (the default state), persistence is color graded. When this control is set to true, persistence is monochrome, in the color of the trace, and increasing number of hits is shown as increasing brightness. This control only has an effect when Persisted is true.

**PersistenceSaturation****Integer****Range** From 0 to 100 step 1**Description**

Sets/Queries the saturation threshold for persisted waveforms.  
All information at this level or above will be recorded with the same color or intensity.  
See the general description above for a discussion of the locked and unlocked persistence modes.

**PersistenceTime***Enum***Description**

Sets/Queries the state of the Persistence Time control. Controls the persistence decay time for this trace. See the general description above for a discussion of the locked and unlocked persistence modes.

**Values**

0.5s	
10s	
1s	
20s	
2s	
5s	
Infinite	

**ShowLastTrace***Bool***Description**

Sets/Queries the state of the Show Last Trace control. If True then when this trace is displayed in persistence mode the last acquired waveform will be superimposed on the accumulating persistence map.

See the general description above for a discussion of the locked and unlocked persistence modes.

**Source***Enum***Values**

C1	
C2	
C3	
C4	

**UseGrid***String*

**Range** Any number of characters

**View***Bool***Description**

Sets/Queries the trace's 'Viewed' state. When true, the trace is displayed on one of the display graticules. Note that even when a trace is not visible, it may be used as a source for Math, Measure, etc.

**ViewLabels***Bool***Description**

Sets/Queries whether the user-defined labels for the trace are visible.  
See Also: LabelsPosition and LabelsText controls.

**RESULT***app.ElectricalTelecom.ET.Out.Result*

# HARDCOPY

*app.HardCopy*

This set of variables controls the transfer of information about the screen display to destinations such as disc files, internal memories, printers and remote computers.

Destination	Enum
EMailMessage	String
GridAreaOnly	Bool
HardcopyArea	Enum
Orientation	Enum
PreferredFilename	String
Print	Action
PrintLogo	Bool
SelectedPrinter	Enum
StripChart	Bool
StripChartFactor	Enum
UseColor	Enum

## Destination

*Enum*

### Description

Sets/Queries the destination for hard copy.

### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the destination for hard copy to e-mail.
app.Hardcopy.Destination = "EMail"
```

### Values

Clipboard	Send to clipboard for pasting into other applications
EMail	Send image in an E-Mail
File	Store image in a file
Printer	Print to a local, or networked printer
Remote	Special case used for remote printing, not usually used

## EMailMessage

*String*

**Range** Any number of characters

### Description

Sets/Queries the e-mail message.

### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Create the e-mail message - "Results for run 89".
app.Hardcopy.EMailMessage = "Results for run 89"
```

**GridAreaOnly****Bool****Description**

Sets/Queries whether hard copy is of grid area only.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Read the status of Grid Area Only.
GridArea = app.Hardcopy.GridAreaOnly
```

**HardcopyArea****Enum****Description**

Sets/Queries the area of the screen to be included in a hard copy.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Select the DSO screen area for hard copy.
app.Hardcopy.HardCopyArea = "DSOWindow"
```

**Values**

DSOWindow	Include only the DSO window
FullScreen	Include the full display screen
GridAreaOnly	Include the grid area only (doesn't include menus)

**Orientation****Enum****Description**

Sets/Queries the orientation for hard copy to landscape.

Valid only when emitting to a printer as opposed to a file, the clipboard, or an E-Mail.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the orientation for hardcopy to landscape.
app.Hardcopy.Orientation = "Landscape"
```

**Values**

Landscape	
Portrait	

<b>PreferredFilename</b>	<i>String</i>
<b>Range</b> Any number of characters	
<b>Description</b> Sets/Queries the preferred file name to use for hard copy.	
<b>Example</b> <pre>' Visual Basic Script Set app = CreateObject("LeCroy.XStreamDSO")  ' Set the preferred filename to PrintFile. app.Hardcopy.PreferredFilename = "PrintFile"</pre>	
<b>Print</b>	<i>Action</i>
<b>Description</b> Initiates a hard copy.	
<b>Example</b> <pre>' Visual Basic Script Set app = CreateObject("LeCroy.XStreamDSO")  ' Initiate a hard copy. app.Hardcopy.Print</pre>	
<b>PrintLogo</b>	<i>Bool</i>
<b>Description</b> Control whether the LeCroy logo will be superimposed on hardcopies.	
<b>SelectedPrinter</b>	<i>Enum</i>
<b>Description</b> Sets/Queries the selection of the printer for hard copy. Note that whitespace and punctuation are removed from the string.	
<b>Example</b> <pre>' Visual Basic Script Set app = CreateObject("LeCroy.XStreamDSO")  ' Select BarbondaleTintJet as the printer for hardcopy app.Hardcopy.SelectedPrinter = "BarbondaleTintJet"</pre>	
<b>Values</b>	
<b>StripChart</b>	<i>Bool</i>
<b>Description</b> Sets/Queries the status of strip chart mode of printing. Valid only when emitting to the internal printer.	

**StripChartFactor***Enum***Description**

Sets/Queries the scale factor for strip chart printing. Valid only when emitting to the internal printer.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the strip chart scale to 5 cm/division.
app.Hardcopy.StripChartFactor = "5cmdiv"
```

**Values**

100cmdiv	
10cmdiv	
1cmdiv	
200cmdiv	
20cmdiv	
2cmdiv	
50cmdiv	
5cmdiv	

**UseColor***Enum***Description**

Defines the color scheme to be used when printing.

**Values**

BW	Optimized for black and white printers
Print	Use print colors (white background)
Std	As presented on DSO display

**LABNOTEBOOK***app.LabNotebook*

Provides access to the 'LabNotebook' feature. This allows the entire scope state (Waveforms, Setups, Display Images) to be stored, annotated, recalled, emailed, etc.

AttachFilesToEmail	Bool
BackupDatabase	Action
BackupFilename	String
BackupFolder	FileName
BackupToFolder	Action
BackupToMemoryStick	Action
ClearFilter	Action
CompactDatabase	Action
ConnectToFPHardCopy	Bool
CreateReport	Action
DeleteAll	Action
DeleteRecord	Action
EmailRecord	Action

## Automation Command and Query Reference Manual - Control Reference

FilterRecords	Action
FlashBackToRecord	Action
Format	Enum
HardcopyArea	Enum
InternalView	Action
MyLabNotebookMD	FileName
NextRecord	Action
PreviousRecord	Action
PrintRecord	Action
PromptBeforeSaving	Bool
RecordList	Enum
ReportLogo	FileName
ReportsDirectory	FileName
Save	Action
ScribbleBeforeSaving	Bool
StartNew	Action
UseDefaultLogo	Bool
UseDefaultTemplate	Bool
UsePrintColor	Bool
ViewRecord	Action
XSLTemplate	FileName

### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Save the current state of the DSO into the Notebook
app.LabNotebook.ScribbleBeforeSaving = False
app.LabNotebook.PromptBeforeSaving = False
app.LabNotebook.Save

' Create a PDF report, and store it in the root of drive
C:app.LabNotebook.ReportsDirectory = "C:\\"
app.LabNotebook.Format = "PDF"
app.LabNotebook.CreateReport

' Send the report in an email
app.Preferences.Email.Mode = "SMTP"
app.Preferences.Email.DefaultRecipient = "somebody@somewhere.com"
app.LabNotebook.EMailRecord
```

### AttachFilesToEmail

**Bool**

#### Description

If true, the DSO Setup, and all enabled waveforms will be attached to any emailed report.

### BackupDatabase

**Action**

#### Description

Backup the current LabNotebook database. Note that this control will present a modal dialog, prompting for the backup filename and folder.  
Use the BackupToFolder control to skip the dialog.

<b>BackupFilename</b>	<i>String</i>
<b>Range</b> Any number of characters	
<b>Description</b> Contains the filename into which the LabNotebook is stored, when the BackupDatabase request is made.	
<b>BackupFolder</b>	<i>FileName</i>
<b>Range</b> Any number of characters	
<b>Description</b> Contains the folder into which the LabNotebook is stored, when the BackupDatabase request is made.	
<b>BackupToFolder</b>	<i>Action</i>
<b>Description</b> Create a backup of the current LabNotebook database into the file specified by the BackupFolder/BackupFilename controls.	
<b>BackupToMemoryStick</b>	<i>Action</i>
<b>Description</b> Create a backup of the current LabNotebook database into a file on an attached memory stick.	
<b>ClearFilter</b>	<i>Action</i>
<b>Description</b> Clear the NoteBook entry filter.	
<b>CompactDatabase</b>	<i>Action</i>
<b>Description</b> Compact the LabNotebook database. Useful if entries have been deleted from the database, to reclaim disk space.	
<b>ConnectToFPHardCopy</b>	<i>Bool</i>
<b>Description</b> If True, the front-panel 'Print Screen' button is overridden to create a LabNotebook entry instead of its normal function.	
<b>CreateReport</b>	<i>Action</i>
<b>Description</b> Create a report (PDF/RTF/HTML) of the currently selected notebook entry.	
<b>DeleteAll</b>	<i>Action</i>
<b>Description</b> Delete all LabNotebook entries. Note that this action will popup a modal dialog, requesting confirmation.	



**DeleteRecord***Action***Description**

Delete the currently selected LabNotebook record.  
Note that this will popup a modal dialog requesting confirmation.

**EmailRecord***Action***Description**

Email the currently selected record, in the selected format (PDF/RTF/HTML), to the recipient specified in the email setup (app.Preferences.Email).

**FilterRecords***Action***Description**

Popup a dialog proposing various filtering methods, including date, and/or keyword based filters.

**FlashBackToRecord***Action***Description**

Restore (FlashBack) the scope to the state that it was in when the current lab notebook entry was saved.  
This may include the setup, and active waveforms.

**Format***Enum***Description**

File Format in which exported reports are saved.

**Values**

HTML	
PDF	Adobe Acrobat file
RTF	Rich-text file (MS Wordpad, Word, etc.)

**HardcopyArea***Enum***Description**

Defines the region of the display that is stored when creating a new entry in the notebook.

**Values**

DSOWindow	Contents of DSO window, incl. dialog + menu bar
FullScreen	Entire windows display area
GridAreaOnly	Grid area only

**InternalView***Action***Description**

View the selected Lab Notebook entry within the DSO's graticule area.  
Contrast with the 'ViewRecord' control, which presents the selected Lab Notebook entry in an external HTML browser.

<b>MyLabNotebookMD</b>	<i>FileName</i>
<b>Range</b> Any number of characters	
<b>Description</b> Filename of the currently active Lab Notebook database.	
<b>NextRecord</b>	<i>Action</i>
<b>Description</b> Move to (select) the next entry in the notebook.	
<b>PreviousRecord</b>	<i>Action</i>
<b>Description</b> Move to (select) the previous entry in the notebook.	
<b>PrintRecord</b>	<i>Action</i>
<b>Description</b> Print the selected Lab Notebook entry. This action will present a popup allowing the target printer to be selected .	
<b>PromptBeforeSaving</b>	<i>Bool</i>
<b>Description</b> If true, the DSO will prompt the interactive user for a summary, and description, before the notebook entry is created.	
<b>RecordList</b>	<i>Enum</i>
<b>Description</b> The list of entries in the Lab Notebook, named using a GUID.	
<b>Values</b>	
<b>ReportLogo</b>	<i>FileName</i>
<b>Range</b> Any number of characters	
<b>Description</b> Contains the full pathname of the logo which will appear on Lab Notebook pages.	
<b>ReportsDirectory</b>	<i>FileName</i>
<b>Range</b> Any number of characters	
<b>Description</b> The directory in which Lab Notebook reports are created.	
<b>Save</b>	<i>Action</i>
<b>Description</b> Initiate the creation of a new Lab Notebook entry.	

**ScribbleBeforeSaving****Bool****Description**

If True, the DSO will allow the interactive user to 'scribble' (annotate) the report page before it is saved.

**StartNew****Action****Description**

Start a new Lab Notebook. This action will prompt the interactive user for the filename of the new Lab Notebook database file.

**UseDefaultLogo****Bool****Description**

If True, the default logo is used on Lab Notebook pages. If False, the logo specified by the ReportLogo control is used instead.

**UseDefaultTemplate****Bool****Description**

If True, the default xsl template is used when creating reports from Lab Notebook pages.  
If False, the template file specified by the XSLTemplate control is used instead.

**UsePrintColor****Bool****Description**

If True, 'print colors' are used when storing an image of the display. These use a white background, as opposed to black, to save toner/ink.

**ViewRecord****Action****Description**

View the selected Lab Notebook entry in an external HTML browser.  
Contrast with the 'ViewInternal' control, which presents the selected Lab Notebook entry within the DSO's graticule area.

**XSLTemplate****FileName**

**Range** Any number of characters

**Description**

Filename of the XSL template used in creating reports from Lab Notebook pages.

**LOGICANALYZER***app.LogicAnalyzer*

CombinedChannels	Enum
LevelC1	Double
LevelC2	Double
LevelC3	Double
LevelC4	Double
LevelExt	Double
LineNames	String
MSxxHysteresis0	Double
MSxxHysteresis1	Double

## Automation Command and Query Reference Manual - Control Reference

MSxxHysteresis2	Double
MSxxHysteresis3	Double
MSxxLogicFamily0	Enum
MSxxLogicFamily1	Enum
MSxxLogicFamily2	Enum
MSxxLogicFamily3	Enum
MSxxThreshold0	Double
MSxxThreshold1	Double
MSxxThreshold2	Double
MSxxThreshold3	Double

### CombinedChannels

*Enum*

#### Description

Select MS-500 operation mode. In "2Combine", sampling rate is up to 2 GS/s and you can use up to 18 digital input lines. In "NoCombine", sampling rate is up to 1 GS/s and you can use up to 36 digital input lines.

#### Values

2Combine	
NoCombine	

### LevelC1

*Double*

**Range** From -0.205 to 0.205 step 0.0005

#### Description

The threshold level determines how the input signal is interpreted. Input voltages less than the threshold are converted to '0'. Input voltages greater than the threshold are converted to '1'. In this case, input is analog Channel 1.

### LevelC2

*Double*

**Range** From -0.205 to 0.205 step 0.0005

### LevelC3

*Double*

**Range** From -0.205 to 0.205 step 0.0005

### LevelC4

*Double*

**Range** From -0.205 to 0.205 step 0.0005

### LevelExt

*Double*

**Range** From -0.41 to 0.41 step 0.001

### LineNames

*String*

**Range** Any number of characters

#### Description

List of Digital Line Names

**MSxxHysteresis0***Double***Range** From 0.5 to 0.5 step 0.02**Description**

The minimum high voltage level is user definable by the hysteresis control up to 1.4 V above the threshold. The maximum low voltage level is user definable by the hysteresis control up to 1.4 V below the threshold. The minimum hysteresis is 100 mV.

**MSxxHysteresis1***Double***Range** From 0.5 to 0.5 step 0.02**MSxxHysteresis2***Double***Range** From 0.5 to 0.5 step 0.02**MSxxHysteresis3***Double***Range** From 0.5 to 0.5 step 0.02**MSxxLogicFamily0***Enum***Description**

You can select various Logic Families, or select User Defined and define a custom threshold crossing.

**Values**

CMOS2.5V	
CMOS3.3V	
CMOS5V	
ECL	
LVDS	
PECL5V	
TTL	
UserDefined	

**MSxxLogicFamily1***Enum***Values**

CMOS2.5V	
CMOS3.3V	
CMOS5V	
ECL	
LVDS	
PECL5V	
TTL	
UserDefined	

**MSxxLogicFamily2***Enum***Values**

CMOS2.5V	
CMOS3.3V	
CMOS5V	
ECL	
LVDS	
PECL5V	
TTL	
UserDefined	

**MSxxLogicFamily3***Enum***Values**

CMOS2.5V	
CMOS3.3V	
CMOS5V	
ECL	
LVDS	
PECL5V	
TTL	
UserDefined	

**MSxxThreshold0***Double***Range** From 1.5 to 1.5 step 0.02**Description**

If you select User Defined Logic Family, then you will be able to define the voltage level of threshold. The threshold level determines how the input signal is interpreted. Input voltages less than the threshold are converted to '0'. Input voltages greater than the threshold are converted to '1'.

**MSxxThreshold1***Double***Range** From 1.5 to 1.5 step 0.02**MSxxThreshold2***Double***Range** From 1.5 to 1.5 step 0.02**MSxxThreshold3***Double***Range** From 1.5 to 1.5 step 0.02**DIGITALX***app.LogicAnalyzer.Digitalx*

BusName	String
Digital0	Bool
Digital1	Bool

## Automation Command and Query Reference Manual - Control Reference

Digital2	Bool
Digital3	Bool
Digital4	Bool
Digital5	Bool
Digital6	Bool
Digital7	Bool
Digital8	Bool
DisplayMode	Enum
LineHeight	Double
LineNames	String
UseGrid	String
VerPosition	Double
View	Bool

**BusName** *String*

**Range** Any number of characters

**Digital0** *Bool*

**Digital1** *Bool*

**Digital2** *Bool*

**Digital3** *Bool*

**Digital4** *Bool*

**Digital5** *Bool*

**Digital6** *Bool*

**Digital7** *Bool*

**Digital8** *Bool*

**DisplayMode** *Enum*

**Values**

Collapse	
Expand	

**LineHeight** *Double*

**Range** From 0.2 to 10 step 0.02

**LineNames** *String*

**Range** Any number of characters

**UseGrid***String***Range** Any number of characters**VerPosition***Double***Range** From -3.8 to 10 step 0.05**View***Bool***Description**

Sets/Queries the trace's 'Viewed' state. When true, the trace is displayed on one of the display graticules. Note that even when a trace is not visible, it may be used as a source for Math, Measure, etc.

**RESULT***app.LogicAnalyzer.Digitalx.Out.Result***TRIGGER***app.LogicAnalyzer.Trigger*

DigitalPatternArrayLogic0	Enum
DigitalPatternArrayLogic1	Enum
DigitalPatternArrayLogic10	Enum
DigitalPatternArrayLogic11	Enum
DigitalPatternArrayLogic12	Enum
DigitalPatternArrayLogic13	Enum
DigitalPatternArrayLogic14	Enum
DigitalPatternArrayLogic15	Enum
DigitalPatternArrayLogic16	Enum
DigitalPatternArrayLogic17	Enum
DigitalPatternArrayLogic18	Enum
DigitalPatternArrayLogic19	Enum
DigitalPatternArrayLogic2	Enum
DigitalPatternArrayLogic20	Enum
DigitalPatternArrayLogic21	Enum
DigitalPatternArrayLogic22	Enum
DigitalPatternArrayLogic23	Enum
DigitalPatternArrayLogic24	Enum
DigitalPatternArrayLogic25	Enum
DigitalPatternArrayLogic26	Enum
DigitalPatternArrayLogic27	Enum
DigitalPatternArrayLogic28	Enum
DigitalPatternArrayLogic29	Enum
DigitalPatternArrayLogic3	Enum
DigitalPatternArrayLogic30	Enum
DigitalPatternArrayLogic31	Enum
DigitalPatternArrayLogic32	Enum



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DigitalPatternArrayLogic33	Enum
DigitalPatternArrayLogic34	Enum
DigitalPatternArrayLogic35	Enum
DigitalPatternArrayLogic4	Enum
DigitalPatternArrayLogic5	Enum
DigitalPatternArrayLogic6	Enum
DigitalPatternArrayLogic7	Enum
DigitalPatternArrayLogic8	Enum
DigitalPatternArrayLogic9	Enum
MSxxDigitalTriggerSet	Enum
MSxxDigitalTriggerType	Enum
PatternType	Enum
StateBottomArrayC1	Enum
StateBottomArrayC2	Enum
StateBottomArrayC3	Enum
StateBottomArrayC4	Enum
StateBottomArrayExt	Enum

### DigitalPatternArrayLogic0

*Enum*

#### Description

Allows to select a value for digital line 0 of Logic Pattern Trigger. Value can be Zero, One, Don't Care, Rising Edge, Falling Edge or Either Edge.

#### Values

DontCare	
EitherEdge	
FallingEdge	
One	
RisingEdge	
Zero	

### DigitalPatternArrayLogic1

*Enum*

#### Values

DontCare	
EitherEdge	
FallingEdge	
One	
RisingEdge	
Zero	

**DigitalPatternArrayLogic10***Enum***Values**

DontCare	
EitherEdge	
FallingEdge	
One	
RisingEdge	
Zero	

**DigitalPatternArrayLogic11***Enum***Values**

DontCare	
EitherEdge	
FallingEdge	
One	
RisingEdge	
Zero	

**DigitalPatternArrayLogic12***Enum***Values**

DontCare	
EitherEdge	
FallingEdge	
One	
RisingEdge	
Zero	

**DigitalPatternArrayLogic13***Enum***Values**

DontCare	
EitherEdge	
FallingEdge	
One	
RisingEdge	
Zero	

**DigitalPatternArrayLogic14***Enum***Values**

DontCare	
EitherEdge	
FallingEdge	
One	
RisingEdge	
Zero	

**DigitalPatternArrayLogic15***Enum***Values**

DontCare	
EitherEdge	
FallingEdge	
One	
RisingEdge	
Zero	

**DigitalPatternArrayLogic16***Enum***Values**

DontCare	
EitherEdge	
FallingEdge	
One	
RisingEdge	
Zero	

**DigitalPatternArrayLogic17***Enum***Values**

DontCare	
EitherEdge	
FallingEdge	
One	
RisingEdge	
Zero	

**DigitalPatternArrayLogic18***Enum***Values**

DontCare	
EitherEdge	
FallingEdge	
One	
RisingEdge	
Zero	

**DigitalPatternArrayLogic19***Enum***Values**

DontCare	
EitherEdge	
FallingEdge	
One	
RisingEdge	
Zero	

**DigitalPatternArrayLogic2***Enum***Values**

DontCare	
EitherEdge	
FallingEdge	
One	
RisingEdge	
Zero	

**DigitalPatternArrayLogic20***Enum***Values**

DontCare	
EitherEdge	
FallingEdge	
One	
RisingEdge	
Zero	

**DigitalPatternArrayLogic21***Enum***Values**

DontCare	
EitherEdge	
FallingEdge	
One	
RisingEdge	
Zero	

**DigitalPatternArrayLogic22***Enum***Values**

DontCare	
EitherEdge	
FallingEdge	
One	
RisingEdge	
Zero	

**DigitalPatternArrayLogic23***Enum***Values**

DontCare	
EitherEdge	
FallingEdge	
One	
RisingEdge	
Zero	

**DigitalPatternArrayLogic24***Enum***Values**

DontCare	
EitherEdge	
FallingEdge	
One	
RisingEdge	
Zero	

**DigitalPatternArrayLogic25***Enum***Values**

DontCare	
EitherEdge	
FallingEdge	
One	
RisingEdge	
Zero	

**DigitalPatternArrayLogic26***Enum***Values**

DontCare	
EitherEdge	
FallingEdge	
One	
RisingEdge	
Zero	

**DigitalPatternArrayLogic27***Enum***Values**

DontCare	
EitherEdge	
FallingEdge	
One	
RisingEdge	
Zero	

**DigitalPatternArrayLogic28***Enum***Values**

DontCare	
EitherEdge	
FallingEdge	
One	
RisingEdge	
Zero	

**DigitalPatternArrayLogic29***Enum***Values**

DontCare	
EitherEdge	
FallingEdge	
One	
RisingEdge	
Zero	

**DigitalPatternArrayLogic3***Enum***Values**

DontCare	
EitherEdge	
FallingEdge	
One	
RisingEdge	
Zero	

**DigitalPatternArrayLogic30***Enum***Values**

DontCare	
EitherEdge	
FallingEdge	
One	
RisingEdge	
Zero	

**DigitalPatternArrayLogic31***Enum***Values**

DontCare	
EitherEdge	
FallingEdge	
One	
RisingEdge	
Zero	

**DigitalPatternArrayLogic32***Enum***Values**

DontCare	
EitherEdge	
FallingEdge	
One	
RisingEdge	
Zero	

**DigitalPatternArrayLogic33***Enum***Values**

DontCare	
EitherEdge	
FallingEdge	
One	
RisingEdge	
Zero	

**DigitalPatternArrayLogic34***Enum***Values**

DontCare	
EitherEdge	
FallingEdge	
One	
RisingEdge	
Zero	

**DigitalPatternArrayLogic35***Enum***Values**

DontCare	
EitherEdge	
FallingEdge	
One	
RisingEdge	
Zero	



**DigitalPatternArrayLogic4***Enum***Values**

DontCare	
EitherEdge	
FallingEdge	
One	
RisingEdge	
Zero	

**DigitalPatternArrayLogic5***Enum***Values**

DontCare	
EitherEdge	
FallingEdge	
One	
RisingEdge	
Zero	

**DigitalPatternArrayLogic6***Enum***Values**

DontCare	
EitherEdge	
FallingEdge	
One	
RisingEdge	
Zero	

**DigitalPatternArrayLogic7***Enum***Values**

DontCare	
EitherEdge	
FallingEdge	
One	
RisingEdge	
Zero	

**DigitalPatternArrayLogic8***Enum***Values**

DontCare	
EitherEdge	
FallingEdge	
One	
RisingEdge	
Zero	

**DigitalPatternArrayLogic9***Enum***Values**

DontCare	
EitherEdge	
FallingEdge	
One	
RisingEdge	
Zero	

**MSxxDigitalTriggerSet***Enum***Description**

Allows to select a value for all digital lines of Logic Pattern Trigger. Value can be Zero, One, Don't Care, Rising Edge, Falling Edge or Either Edge.

**Values**

Dontcare	
EitherEdge	
FallingEdge	
One	
RisingEdge	
Zero	

**MSxxDigitalTriggerType***Enum***Description**

Logic - permits creation of a simple or complex analog/digital cross-pattern trigger condition with a mix of 0,1, rising edge, falling edge, either edge, or don't care conditions on up to 5 analog channels and 18/36 digital lines.

Logic Bus - permits creation of a digital trigger that corresponds to a hexadecimal bus value for up to 18/36 digital bits.

**Values**

Logic	
LogicBus	

**PatternType***Enum***Description**

Logical combination between Logic Pattern inputs. Note that only the "And" condition is available when any digital input is in use. Note that multiple digital edges are OR-combined.

**Values**

And	
Nand	
Nor	
Or	

**StateBottomArrayC1***Enum***Description**

Allows to select a value for one analog input of Logic Pattern Trigger. Value can be Low, High or Don't Care.

**Values**

High	
Low	

**StateBottomArrayC2***Enum***Values**

High	
Low	

**StateBottomArrayC3***Enum***Values**

High	
Low	

**StateBottomArrayC4***Enum***Values**

High	
Low	

**StateBottomArrayExt***Enum***Values**

High	
Low	

**MATH***app.Math*

Variables of the form app.Math.xxxx control the mathematical functions F1 through F8.

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Names of the form `app.Math.Functions("Fx").xxxx` are aliases of simpler names which are described in this section of the manual. Examples of alias pairs are as follows -

`app.Math.Functions("Fx")` is equivalent to `app.Math.Fx`

`app.Math.Functions("Fx").Out.Result` is equivalent to `app.Math.Fx.Out.Result`

`app.Math.Functions("Fx").Zoom` is equivalent to `app.Math.Zoom.Fx`

Please see under `Acquisition.Channels` for a programming example.

ClearSweeps	Action
ResetAll	Action
ShowZoomMenu	Action

### ClearSweeps

*Action*

#### Description

Clear sweeps for history functions such as average, histogram and trend. See also the general 'app.ClearSweeps' control which clears accumulated data for all subsystems, including persistence, measurement statistics, etc.

#### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Clear sweeps for all history functions.
app.Math.ClearSweeps
```

### ResetAll

*Action*

#### Description

Reset the math subsystem to its default state.

All currently selected math operators, and other settings will be lost.

### ShowZoomMenu

*Action*

#### Description

Present the Zoom setup Menu (to setup the Zoom (Z) traces).

## FUNCTIONS

*app.Math.Functions*

Names of the form `app.Math.Functions("Fx").xxxx` are aliases of simpler names which are described in the section of the manual which is devoted to `app.Math`. Examples of alias pairs are as follows -

`app.Math.Functions("Fx")` is equivalent to `app.Math.Fx`

`app.Math.Functions("Fx").Out.Result` is equivalent to `app.Math.Fx.Out.Result`

`app.Math.Functions("Fx").Zoom` is equivalent to `app.Math.Zoom.Fx`

Please see under `Acquisition.Channels` for a programming example.

## FX

*app.Math.Fx*

This set of variables controls the math functions F1 through F8.

AxisXRotation	Integer
AxisYRotation	Integer

## Automation Command and Query Reference Manual - Control Reference

ClearSweeps	Action
DoResetZoom	Action
DoStoreToMemoryTrace	Action
Equation	String
LabelsPosition	String
LabelsText	String
MathMode	Enum
Operator1	Enum
Persist3DQuality	Enum
Persisted	Bool
Persistence3d	Bool
PersistenceMonoChrome	Bool
PersistenceSaturation	Integer
PersistenceTime	Enum
ShowLastTrace	Bool
Source1	Enum
UseGrid	String
View	Bool
ViewLabels	Bool

### AxisXRotation

*Integer*

**Range** From -90 to 90 step 1

#### Description

Sets/Queries the state of the X Axis rotation control, used only in 3d persistence modes to control the apparent viewing position. See the general description above for a discussion of the locked and unlocked persistence modes.

#### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

Set the rotation about the X-axis to 35 degrees for trace F3.
app.Acquisition.F3.AxisXRotation = 35
```

### AxisYRotation

*Integer*

**Range** From -90 to 90 step 1

#### Description

Sets/Queries the state of the Y Axis rotation control, used only in 3d persistence modes to control the apparent viewing position. See the general description above for a discussion of the locked and unlocked persistence modes.

#### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

Set the rotation about the Y-axis to 25 degrees for trace F3.
app.Acquisition.F3.AxisYRotation = 25
```

---

**ClearSweeps***Action***Description**

Clears accumulated data for a single function trace.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Reset accumulation for trace F1
app.Math.F1.ClearSweeps
```

---

**DoResetZoom***Action***Description**

Resets the zoom state of math trace Fx.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Reset zoom of math function F3.
app.Math.F3.DoResetZoom
```

---

**DoStoreToMemoryTrace***Action***Description**

Store data from math function Fx to a memory trace.  
Destination for F1 will be M1, F2 will be M2, etc.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Store math function F2 to a memory trace.
app.Math.F2.DoStoreToMemoryTrace
```

---

**Equation***String*

**Range** Any number of characters

**Description**

Queries the equation which defines the math function Fx.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Read the definition of math function F3.
EquationF3 = app.Math.F3.Equation
MsgBox EquationF3
```

**LabelsPosition***String***Range** Any number of characters**Description**

Sets / Queries the horizontal position of the label attached to the trace Fx. The unit of measurement is the unit of the horizontal scale. The measurement is made from the trigger point.

Note that this control is a string, not a numeric value. This allows multiple labels to be positioned, as shown in the example below.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Add a couple of labels to trace F1, one at 0ns, and one at 55ns
app.SetToDefaultSetup
app.Math.F1.View = True
app.Math.F1.ViewLabels = True
app.Math.F1.LabelsPosition = "0.0, 55e-9"
app.Math.F1.LabelsText = "Hello,World"
```

**LabelsText***String***Range** Any number of characters**Description**

Sets / Queries the text that appears in labels attached to acquisition trace Cx. Multiple labels may be specified by using comma as a delimiter. See the documentation on LabelsPosition for an example of use.

**MathMode***Enum***Description**

Sets/Queries the math mode.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the mode of the math function F1
app.Math.F1.MathMode = "TwoOperators"
```

**Values**

Graphing	Graphing mode, chain a measurement and a graphing operator
OneOperator	Single math operator
TwoOperators	Chain two math operators
WebEdit	

**Operator1***Enum***Description**

Sets/Queries the first operator of math function Fx. When MathMode = "OneOperator", this is the only math operator, when MathMode = "TwoOperator", this is the first of two operators. Note that when MathMode = "Graph", this control has no effect.

Note also that the list of available math operators varies depending upon the instrument model number, and the list of installed software options.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Define the first operator of math function F1 as an Average
app.Math.F1.View = True
app.Math.F1.MathMode = "OneOperator"
app.Math.F1.Operator1 = "Average"
```

**Values**

AbsoluteValue	
Average	
Boxcar	
Copy	
Correlation	
Demodulate	
Derivative	
Deskew	
Difference	
EnhancedResolution	
Envelope	
ExcelMath	
Exp	
Exp10	
FastWavePort	
FFT	
Filter	
Floor	
Histogram	
Htie2BER	
I2SToWform	
Integral	
Interpolate	
Invert	
ISIPatt	
Ln	
Log10	
LowPassIIR	
MathcadMath	
MATLABWaveform	
Null	



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PersistenceHistogram	
PersistenceTraceMean	
PersistenceTraceRange	
PersistenceTraceSigma	
Product	
Ratio	
Reciprocal	
Reframe	
Rescale	
Roof	
SegmentSelect	
SeqBuilder	
SequenceAverage	
SinXOverX	
Sparse	
Square	
SquareRoot	
Sum	
Track	
Trend	
Trk	
WaveScript	
Zoom	

### Persist3DQuality

*Enum*

#### Description

Sets/Queries the state of the 3D Persistence quality control. Control the way that the persistence trace is rendered. See the general description above for a discussion of the locked and unlocked persistence modes.

#### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set persistence 3-D to shaded for trace F1
app.Math.F1.Persist3DQuality = "Shaded"
```

#### Values

Shaded	
Solid	
WireFrame	

---

**Persisted*****Bool*****Description**

Sets/Queries the persisted state of the function waveform. If the Display.LockPersistence control is set to 'AllLocked' then the persisted state of all displayed waveforms will be the same. If the Display.LockPersistence control is set to 'PerTrace' then the persisted state of each waveform may be independently controlled.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set persistence on for trace F3.
app.Math.F3.Persisted = True
```

---

**Persistence3d*****Bool*****Description**

Sets/Queries the 3D persistence state. If True, then the persistence display for this channel will be displayed as a three dimensional surface map. See the general description above for a discussion of the locked and unlocked persistence modes.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

Set persistence plot as 3-D for trace F4.
app.Acquisition.F4.Persistence3D = True
```

---

**PersistenceMonoChrome*****Bool*****Description**

Sets/Queries the monochrome persistence state. If True, then the persistence display for this channel will be monochromatic, whether 2-D or 3-D. See the general description above for a discussion of the locked and unlocked persistence modes.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set persistence monochrome on for trace F1
app.Math.F1.PersistenceMonoChrome = True
```

---

**PersistenceSaturation*****Integer***

**Range** From 0 to 100 step 1

**Description**

Sets/Queries the saturation threshold for persisted waveforms. All information at this level or above will be recorded with the same color or intensity. See the general description above for a discussion of the locked and unlocked persistence modes.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the persistence saturation level for trace F1.
app.Math.F1.PersistenceSaturation = 40
```

**PersistenceTime***Enum***Description**

Sets/Queries the state of the Persistence Time control. Controls the persistence decay time for this trace. See the general description above for a discussion of the locked and unlocked persistence modes.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the persistence time for the trace F1 to 10 seconds.
app.Math.F1.PersistenceTime = "10s"
```

**Values**

0.5s	
10s	
1s	
20s	
2s	
5s	
Infinite	

**ShowLastTrace***Bool***Description**

Sets/Queries the state of the Show Last Trace control. If True then when this trace is displayed in persistence mode the last acquired waveform will be superimposed on the accumulating persistence map. See the general description above for a discussion of the locked and unlocked persistence modes.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Do not show the last trace for the persistence trace of trace F1.
app.Math.F1.ShowLastTrace = False
```

**Source1***Enum***Description**

Sets/Queries the first source of the first operator in Fx. Note that the two possible sources of Operator1 are Source1 and Source2, Source3 is the second source to Operator2, with the first source of Operator2 being the output of Operator1.

Note that the list of available sources is dependent upon the instrument model, and it's installed software options.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Define the first source of math function F1 as C3.
app.Math.F1.Source1 = "C3"
```

**Values**

BadBits	
BadBits2	
Bits	
Bits2	
C1	
C2	
C3	
C4	
Decode1	
Decode2	
Decode3	
Decode4	
Digital1	
Digital2	
Digital3	
Digital4	
dvdT	
E100Dta	
E10Dta	
EnetDta	
ET	
Eye	
Eye2	
F2	
F3	
F4	
FiltData	
FiltJit	
FiltSlv	
FLXEye	
Harm	
I	

## Automation Command and Query Reference Manual - Control Reference

M1	
M2	
M3	
M4	
Mod	
P1	
P2	
P3	
P4	
P5	
P6	
P7	
P8	
PointA	
PointB	
PointC	
PointD	
PointF	
PointH	
PRBS	
Pwr	
R	
ScanHisto	
ScanOverlay	
SigQual	
SineRemovedData	
SlvDtaJit	
SpecAn	
V	
Z1	
Z2	
Z3	
Z4	
Z5	
Z6	
Z7	
Z8	

**UseGrid***String***Range** Any number of characters**Description**

Sets/Queries the grid in use for the math trace Fx.  
See also app.Acquisition.Cx.UseGrid.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Place math trace F3 on grid YT4.
app.Math.F3.UseGrid = "YT4"
```

**View***Bool***Description**

Sets/Queries whether the trace of math function Fx is visible. Note that even when math traces are not visible, but are being used as inputs to other math functions and/or measurements, they are computed.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Show math trace F3.
app.Math.F3.View = True
```

**ViewLabels***Bool***Description**

Sets/Queries whether trace labels, defined with LabelsText and LabelsPosition controls, are shown.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Show the user-defined trace label for trace F1
app.Math.F1.ViewLabels = True
```

**OPERATOR1SETUP***app.Math.Fx.Operator1Setup*

This node is dynamically created, and will contain the controls for the operator currently selected into Operator1. See the Math/Measure Control reference at the end of this manual for a list of these controls.

**RESULT***app.Math.Fx.Out.Result*

Properties of the type xxxx.Out.Result.yyyy are those of the last completed acquisition. They are not affected if other cvars are changed after that acquisition was completed. This distinction between "Out.Result" properties and other cvars is most important when the trigger mode is Single or Stopped. You should treat "Out.Result" properties as read-only.

For a detailed description of all properties available for the output of a Math Function, please see Chapter 1.

## ZOOM

*app.Math.Fx.Zoom*

This set of variables controls the zoom functions for math trace Fx.

CenterSelectedSegment	Integer
HorPos	Double
HorZoom	Double
NumSelectedSegments	DoubleLockstep
VariableHorZoom	Bool
VariableVerZoom	Bool
VerPos	Double
VerZoom	Double

### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Turn on trace F1, will default to Zoom-Only
app.Math.F1.View = True
app.Math.F1.Source1 = "C1"

' Zoom trace F1 by a factor of 2 horizontally and vertically
app.Math.F1.Zoom.Rese
```

### CenterSelectedSegment

*Integer*

**Range** From 1 to 1 step 1

### HorPos

*Double*

**Range** From -0.5 to 0.5 step (8 digits)

#### Description

Sets/Queries the horizontal position of center of the grid on the zoomed trace Fx. The unit of measurement is the screen width, that is, 0.3 means a shift of three of the ten divisions. A positive value moves the trace to the left.

### HorZoom

*Double*

**Range** From 0.1 to 1e+006 step (8 digits)

#### Description

Sets/Queries the horizontal magnification of the trace Fx. The magnification will be in a 1 2 5 10 sequence unless variable horizontal magnification has been set.

### NumSelectedSegments

*DoubleLockstep*

**Range** From 1 to 1 step 1, locked to 1 2 5, fine grain allowed=true, on=false

**VariableHorZoom****Bool****Description**

Sets/Queries the ability to zoom horizontally by a continuously variable factor. Note that if a horizontal zoom of 0.9 is set, while variable zoom is off, the horizontal zoom will be set to 1.0. If the variable zoom is then enabled, the factor of 0.9 will have been remembered, and it will be used. Note that the previous value will not be remembered during a power-cycle.

**VariableVerZoom****Bool****Description**

Sets/Queries the ability to zoom vertically by a continuously variable factor. Note that if a vertical zoom of 0.9 is set, while variable zoom is off, the vertical zoom will be set to 1.0. If the variable zoom is then enabled, the factor of 0.9 will have been remembered, and it will be used. Note that the previous value will not be remembered during a power-cycle.

**VerPos****Double**

**Range** From -1.5 to 1.5 step (8 digits)

**Description**

Sets/Queries the vertical position of center of the grid on the zoomed trace Fx. The unit of measurement is the screen height, that is, 0.375 means a shift of three of the eight divisions. A positive value moves the trace downwards.

**VerZoom****Double**

**Range** From 0.1 to 100 step (8 digits)

**Description**

Sets/Queries the vertical magnification of the trace Fx. The magnification will be in a 1 2 5 10 sequence unless VariableVerZoom has been set to True, in which case it will be continuously variable.

**XY***app.Math.XY*

This set of variables controls the display of data in X vs. Y mode. Only Valid when the instrument is in XY, XYSingle, or XYDual display modes.

AxisXRotation	Integer
AxisYRotation	Integer
ClearSweeps	Action
InputX	Enum
InputY	Enum
Persist3DQuality	Enum
Persisted	Bool
Persistence3d	Bool
PersistenceMonoChrome	Bool
PersistenceSaturation	Integer
PersistenceTime	Enum
ShowLastTrace	Bool

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")
```



```
' Switch to XY+Dual Grid Mode
app.Display.GridMode = "XYDual"

' Configure XY to show C1 vs. C2 in 3D Persistence mode
app.Math.XY.InputX = "C1"
app.Math.XY.InputY = "C2"
app.Math
```

---

### AxisXRotation

*Integer*

**Range** From -90 to 90 step 1

#### Description

Sets/Queries the state of the X Axis rotation control, used only in 3-D persistence modes to control the viewing position. See the general description above for a discussion of the locked and unlocked persistence modes.

---

### AxisYRotation

*Integer*

**Range** From -90 to 90 step 1

#### Description

Sets/Queries the state of the Y Axis rotation control, used only in 3-D persistence modes to control the viewing position. See the general description above for a discussion of the locked and unlocked persistence modes.

---

### ClearSweeps

*Action*

#### Description

Clears persistence X-Y plot.

**InputX***Enum***Description**

Sets/Queries the name of the input channel for the X axis of the X-Y plot.

**Values**

BadBits	
BadBits2	
Bits	
Bits2	
C1	
C2	
C3	
C4	
Digital1	
Digital2	
Digital3	
Digital4	
dvdT	
E100Dta	
E10Dta	
EnetDta	
ET	
Eye	
Eye2	
F1	
F2	
F3	
F4	
FiltData	
FiltJit	
FiltSlv	
FLXEye	
Harm	
I	
M1	
M2	
M3	
M4	
Mod	
PointA	
PointB	
PointC	
PointD	
PointF	
PointH	
PRBS	

## Automation Command and Query Reference Manual - Control Reference

---

Pwr	
R	
ScanHisto	
ScanOverlay	
SigQual	
SineRemovedData	
SlvDtaJit	
SpecAn	
V	
Z1	
Z2	
Z3	
Z4	
Z5	
Z6	
Z7	
Z8	

**InputY***Enum***Description**

Sets/Queries the name of the input channel for the Y axis of the X-Y plot.

**Values**

BadBits	
BadBits2	
Bits	
Bits2	
C1	
C2	
C3	
C4	
Digital1	
Digital2	
Digital3	
Digital4	
dvdT	
E100Dta	
E10Dta	
EnetDta	
ET	
Eye	
Eye2	
F1	
F2	
F3	
F4	
FiltData	
FiltJit	
FiltSlv	
FLXEye	
Harm	
I	
M1	
M2	
M3	
M4	
Mod	
PointA	
PointB	
PointC	
PointD	
PointF	
PointH	
PRBS	

## Automation Command and Query Reference Manual - Control Reference

Pwr	
R	
ScanHisto	
ScanOverlay	
SigQual	
SineRemovedData	
SlvDtaJit	
SpecAn	
V	
Z1	
Z2	
Z3	
Z4	
Z5	
Z6	
Z7	
Z8	

### Persist3DQuality

**Enum**

#### Description

Sets/Queries the state of the 3D Persistence quality control. Controls the way that the persistence trace is rendered. See the general description above for a discussion of the locked and unlocked persistence modes.

#### Values

Shaded	
Solid	
WireFrame	

### Persisted

**Bool**

#### Description

Sets/Queries the persisted state of the X-Y plot. If the Display.LockPersistence control is set to 'AllLocked' then the persisted state of all displayed waveforms will be the same. If the Display.LockPersistence control is set to 'PerTrace' then the persisted state of each waveform may be independently controlled.

### Persistence3d

**Bool**

#### Description

Sets/Queries the 3D persistence state. If True, then the persistence display for the X-Y plot will be displayed as a three dimensional surface map.

See the general description above for a discussion of the locked and unlocked persistence modes.

### PersistenceMonoChrome

**Bool**

#### Description

Sets/Queries the monochrome persistence state. If True, then the persistence display for the X-Y plot will be monochromatic, whether 2-D or 3-D. See the general description above for a discussion of the locked and unlocked persistence modes.

**PersistenceSaturation***Integer***Range** From 0 to 100 step 1**Description**

Sets/Queries the saturation threshold for persisted X-Y plot. All information at this level or above will be recorded with the same color or intensity. See the general description above for a discussion of the locked and unlocked persistence modes.

**PersistenceTime***Enum***Description**

Sets/Queries the state of the Persistence Time control. Controls the persistence decay time for the Xy persistence. See the general description above for a discussion of the locked and unlocked persistence modes.

**Values**

0.5s	
10s	
1s	
20s	
2s	
5s	
Infinite	

**ShowLastTrace***Bool***Description**

Sets/Queries the state of the Show Last Trace control. If True then when this trace is displayed in persistence mode the last acquired waveform will be superimposed on the accumulating persistence map.

See the general description above for a discussion of the locked and unlocked persistence modes.

**RESULT***app.Math.XY.Out.Result*

Properties of the type xxxx.Out.Result.yyyy are those of the last completed acquisition. They are not affected if other cvars are changed after that acquisition was completed. This distinction between "Out.Result" properties and other cvars is most important when the trigger mode is Single or Stopped. You should treat "Out.Result" properties as read-only.

Note that this XY result object is very similar, but not identical to the result object exposed by the channel and math traces. The differences are due to the fact that the XY trace returns pairs of data values, one for X, one for Y.

For a detailed description of all properties available for the output of an XY trace, please see Chapter 1.

**MEASURE***app.Measure*

Variables of the form app.Measure control the parameters P1 through P8, and their associated statistical results and histograms.

Names of the forms app.Measure.Measure("Premote").xxxx and app.Measure.Measure("Px").xxxx are aliases of simpler names which are described in this section of the manual. Examples of alias pairs are as follows -

## Automation Command and Query Reference Manual - Control Reference

app.Measure.Measure("Premote").OutResult is equivalent to app.Measure."Premote".OutResult  
app.Measure.Measure("Px").Statistics is equivalent to app.Measure.Px.Statistics  
Please see under Acquisition.Channels for a programming example.

ClearAll	Action
ClearAllHelpMarkers	Action
ClearSweeps	Action
HelpMarkers	Enum
HistoOn	Bool
MeasureSet	Enum
SetGateToDefault	Action
ShowAllHelpMarkers	Action
ShowMeasure	Bool
StatsOn	Bool
StdGateStart	Double
StdGateStop	Double
StdSource	Enum

### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' get into the custom parameter mode
app.Measure.MeasureMode = "MyMeasure"
app.Measure.ClearAll
app.Measure.StatsOn = True
app.Measure.HistoOn = False

' Configure P1 to measure a
```

---

### ClearAll

**Action**

#### Description

Resets all parameter setups, turning each of the parameters view to "off", the MeasurementType to "measure" and the selected paramEngine to "Null".

---

### ClearAllHelpMarkers

**Action**

#### Description

Force all 'HelpMarkers' off.  
(HelpMarkers are the on-trace annotation of measurement setup and results)

---

### ClearSweeps

**Action**

#### Description

Clears the accumulated statistics for parameters P1 to P8 as well as the accumulated statistics for their associated histicons.

**HelpMarkers***Enum***Description**

Sets/Queries the level of detail for help markers (if indeed any of the selected parameter definitions have help markers).

These markers are displayed on the source traces, and only if those traces are viewed simultaneously with the parameter measurements.

Note: this setting is global for all Px

**Values**

Detailed	Detailed help markers
Off	No help markers
Simple	Simple help markers

**HistoOn***Bool***Description**

Sets/Queries the visibility of the histicons of the parameters which are viewed.

**MeasureSet***Enum***Description**

Defines the mode in which the measurement system is working.

**Values**

MyMeasure	Custom list, each chosen from the list of available measurements.
StdHorizontal	Standard Horizontal Measurements
StdVertical	Standard Vertical Measurements

**SetGateToDefault***Action***Description**

Sets the measure gate to its default state. Valid only when in either Std. Vertical or Std. Horizontal measurement modes. For MyMeasure see the equivalent controls under Px.

**ShowAllHelpMarkers***Action***Description**

Force all 'HelpMarkers' on.  
(HelpMarkers are the on-trace annotation of measurement setup and results)

**ShowMeasure***Bool***Description**

Defines whether the measure results table is displayed or not.

**StatsOn***Bool***Description**

Sets/Queries the visibility of parameter statistics. Note: the statistics are accumulated whether the view of them is on or not, so you needn't have StatsOn = "On" to collect statistics.



### StdGateStart

*Double*

**Range** From 0 to 10 step 0.01

#### Description

Sets/Queries the position of the left hand limit of the measure gate (n divisions).

Valid only when in either Std. Vertical or Std. Horizontal measurement modes. For MyMeasure see the equivalent controls under Px.

---

### StdGateStop

*Double*

**Range** From 0 to 10 step 0.01

#### Description

Sets/Queries the position of the right hand limit of the measure gate (in divisions). Valid only when in either Std. Vertical or Std. Horizontal measurement modes. For MyMeasure see the equivalent controls under Px.

**StdSource***Enum***Description**

Sets/Queries the channel which is the source of ALL standard voltage or time parameters. Note that when in 'My Measure' mode each parameter has it's own Source selection, and this setting is ignored.

**Values**

BadBits	
BadBits2	
Bits	
Bits2	
C1	
C2	
C3	
C4	
D0	
D1	
D10	
D11	
D12	
D13	
D14	
D15	
D16	
D17	
D18	
D19	
D2	
D20	
D21	
D22	
D23	
D24	
D25	
D26	
D27	
D28	
D29	
D3	
D30	
D31	
D32	
D33	
D34	
D35	
D4	
D5	

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D6	
D7	
D8	
D9	
Decode1	
Decode2	
Decode3	
Decode4	
dvdt	
E100Dta	
E10Dta	
EnetDta	
ET	
Eye	
Eye2	
F1	
F2	
F3	
F4	
FiltData	
FiltJit	
FiltSlv	
FLXEye	
FLXEye	
Harm	
I	
M1	
M2	
M3	
M4	
Mod	
PointA	
PointB	
PointC	
PointD	
PointF	
PointH	
PRBS	
Pwr	
R	
ScanHisto	
ScanOverlay	
SigQual	
SineRemovedData	
SlvDtaJit	
SpecAn	

V	
Z1	
Z2	
Z3	
Z4	
Z5	
Z6	
Z7	
Z8	

### MEASURE

*app.Measure.Measure*

Names of the forms `app.Measure.Measure("Premote").xxxx` and `app.Measure.Measure("Px").xxxx` are aliases of simpler names which are described in the section of the manual which is devoted to `app.Measure`. Examples of alias pairs are as follows -

`app.Measure.Measure("Premote").OutResult` is equivalent to `app.Measure."Premote".OutResult`

`app.Measure.Measure("Px").Statistics` is equivalent to `app.Measure.Px.Statistics`

Please see under `app.Acquisition.Channels("Cx")` for a programming example.

### RESULT

*app.Measure.PRemote.histo.Result*

### RESULT

*app.Measure.PRemote.last.Result*

### RESULT

*app.Measure.PRemote.max.Result*

### RESULT

*app.Measure.PRemote.mean.Result*

### RESULT

*app.Measure.PRemote.min.Result*

### RESULT

*app.Measure.PRemote.num.Result*

## RESULT

*app.Measure.PRemote.sdev.Result*

## STATISTICS

*app.Measure.PRemote.Statistics*

## PX

*app.Measure.Px*

This set of variables controls the parameters P1 through P8, (when the MeasureMode is "MyMeasure", otherwise these are predefined) and the statistical results and histicons which depend on them.

FindLevel	Action
FindRange	Action
GateByRange	Bool
GateByWform	Bool
GateStart	Double
GateStop	Double
HelpAlwaysOn	Bool
LevelType	Enum
LowerLimit	Double
MeasurementType	Enum
ParamEngine	Enum
PassWhen	Enum
PercentLevel	Double
Source1	Enum
UpperLimit	Double

### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

app.Measure.MeasureMode = "MyMeasure"

' Set parameter P1 to math on parameters.
App.Measure.P1.MeasurementType = "math"
```

### FindLevel

*Action*

### FindRange

*Action*

### GateByRange

*Bool*

#### Description

If True, only measurements who's value(s) fall between the limits defined by the LowerLimit and UpperLimit controls, are accepted.

**GateByWform****Bool****Description**

If True, measurements are gated by the state of the waveform defined by the WformSource control.

**GateStart****Double**

**Range** From 0 to 10 step 0.01

**Description**

Sets/Reads the position of the left hand edge of the measure gate for parameter Px.

**GateStop****Double**

**Range** From 0 to 10 step 0.01

**Description**

Sets/Reads the position of the right hand edge of the measure gate for parameter Px.

**HelpAlwaysOn****Bool****Description**

Defines whether Help Marters are always displayed for this measurement, even when the measurement dialog is closed.

**LevelType****Enum****Values**

Absolute	
Percent	

**LowerLimit****Double**

**Range** From -1e+010 to 1e+010 step (4 digits)

**MeasurementType****Enum****Description**

Sets/Queries the measurement type of the parameter Px.

**Values**

math	Measurement is a mathematical combination of one or two other Py,Pz
measure	Standard measurement mode (parametric of a trace waveform)
WebEdit	Measurement is defined using the Processing Web Editor

**ParamEngine***Enum***Description**

Sets/Queries the parameter (measurement on a trace) for Px. This setting applies only if the MeasurementType control is set to "measure".

**Values**

100BTfall	
100BTrise	
100BTTIE	
100BTTj	
10BTH	
10BTJ	
Amplitude	
AmplitudeAsymmetry	
Analog2Protocol	
ApparentPower	
Area	
AutoCorrelationSignalTo	
Base	
BurstWidth	
CANLoad	
CANMsgBR	
CANMsgNum	
CANtoAnalog	
CANtoCAN	
CANtoValue	
Cycles	
Delay	
DeltaDelay	
DeltaMessages	
DeltaPeriodAtLevel	
DeltaTimeAtLevel	
DeltaTriggerTime	
DeltaWidthAtLevel	
DOV	
Duration	
DutyAtLevel	
DutyCycle	
DutyCycleDistortion	
EdgeAtLevel	
EMCIVPulse	
EMCt2Val	
EOvshN	
EOvshP	
ExcelParam	
ExtinctionRatio	

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EyeAmplitude	
EyeAvgPower	
EyeBER	
EyeCrossing	
EyeHeight	
EyeOneLevel	
EyeQFactor	
EyeWidth	
EyeZeroLevel	
Fall	
Fall8020	
FallAtLevel	
FastMultiWPort	
FirstPoint	
Frequency	
FrequencyAtLevel	
FullWidthAtHalfMaximum	
FullWidthAtXX	
GapWidth	
GBM1FGDroop	
GBM1HJDroop	
HalfPeriod	
HistogramAmplitude	
HistogramBase	
HistogramMaximum	
HistogramMean	
HistogramMedian	
HistogramMid	
HistogramMinimum	
HistogramRms	
HistogramSdev	
HistogramTop	
HoldTime	
HParmScript	
I2StoValue	
LastPoint	
LevelAtX	
LocalBase	
LocalBaselineSeparation	
LocalMaximum	
LocalMinimum	
LocalNumber	
LocalPeakToPeak	
LocalTimeAtMaximum	
LocalTimeAtMinimum	
LocalTimeBetweenEvent	



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LocalTimeBetweenPeaks	
LocalTimeBetweenTrough	
LocalTimeOverThreshold	
LocalTimePeakToTrough	
LocalTimeTroughToPeak	
LocalTimeUnderThreshol	
MathcadParam	
MATLABParameter	
Maximum	
MaximumPopulation	
Mean	
Median	
Minimum	
Mode	
NarrowBandPhase	
NarrowBandPower	
NCycleJitter	
NonLinearTransitionShift	
npoints	
Null	
NumberOfModes	
OvershootNegative	
OvershootPositive	
Overwrite	
ParamScript	
PEAKMAG	
Peaks	
PeakToPeak	
Percentile	
Period	
PeriodAtLevel	
Phase	
PopulationAtX	
PowerFactor	
Protocol2Analog	
Protocol2Protocol	
Protocol2Value	
ProtocolBitrate	
ProtocolLoad	
ProtocolNumMessages	
PW50	
PW50Negative	
PW50Positive	
Range	
RealPower	
Resolution	

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Rise	
Rise2080	
RiseAtLevel	
RootMeanSquare	
SAS	
Setup	
Skew	
Slew	
StandardDeviation	
TAA	
TAANegative	
TAAPositive	
TIE	
TimeAtCAN	
TimeAtLevel	
TimeAtProtocol	
Top	
TotalPopulation	
tUpS	
Width	
WidthAtLevel	
WidthNegative	
XAtMaximum	
XAtMinimum	
XAtPeak	

PassWhen

Enum

Values

High	
Low	

PercentLevel

Double

Range    From 0 to 100 step 1

**Source1***Enum***Description**

Sets/Queries the first trace source of the parameter Px. Used only when MeasurementType = "measure", for MeasurementType = "math", refer to PSource1.

**Values**

BadBits2	
Bits2	
C1	
C2	
C3	
C4	
D0	
D1	
D10	
D11	
D12	
D13	
D14	
D15	
D16	
D17	
D18	
D19	
D2	
D20	
D21	
D22	
D23	
D24	
D25	
D26	
D27	
D28	
D29	
D3	
D30	
D31	
D32	
D33	
D34	
D35	
D4	
D5	
D6	
D7	

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D8	
D9	
Decode1	
Decode2	
Decode3	
Decode4	
dvdt	
E100Dta	
E10Dta	
EnetDta	
ET	
Eye2	
F1	
F2	
F3	
F4	
FiltData	
FiltJit	
FiltSiv	
FLXEye	
FLXEye	
Harm	
I	
M1	
M2	
M3	
M4	
Mod	
PointA	
PointB	
PointC	
PointD	
PointF	
PointH	
Pwr	
R	
ScanHisto	
ScanOverlay	
SigQual	
SineRemovedData	
SivDtaJit	
SpecAn	
V	
Z1	
Z2	
Z3	

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Z4	
Z5	
Z6	
Z7	
Z8	

UpperLimit

Double

Range

From -1e+010 to 1e+010 step (4 digits)

RESULT

app.Measure.Px.histo.Result

RESULT

app.Measure.Px.last.Result

RESULT

app.Measure.Px.max.Result

RESULT

app.Measure.Px.mean.Result

RESULT

app.Measure.Px.min.Result

RESULT

app.Measure.Px.num.Result

OPERATOR

app.Measure.Px.Operator

This path specifies that the selected ParamEngine or ArithEngine control variables are "here"

RESULT

app.Measure.Px.Out.Result

Properties of the type xxxx.Out.Result.yyyy are those of the last completed acquisition. They are not affected if other

cvars are changed after that acquisition was completed. This distinction between "Out.Result" properties and other cvars is most important when the trigger mode is Single or Stopped. You should treat "Out.Result" properties as read-only.

## RESULT

*app.Measure.Px.sdev.Result*

## STATISTICS

*app.Measure.Px.Statistics*

This set of variables controls the statistical summaries that are provided for all the parameters.

## MEMORY

*app.Memory*

Variables of the form `app.Memory.xxxx` control the memories M1 through M4.

Names of the form `app.Memory.Memories("Mx").xxxx` are aliases of simpler names which are described in this section of the manual. Examples of alias pairs are as follows -

`app.Memory.Memories("Mx").Out.Result` is equivalent to `app.Memory.Mx.Out.Result`

`app.Memory.Memories("Mx").Zoom` is equivalent to `app.Memory.Mx.Zoom`

Please see under `app.Acquisition.Channels("Cx")` for a programming example.

ClearAllMem	Action
-------------	--------

### ClearAllMem

*Action*

#### Description

Clears the contents of all trace memories.

#### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Clear the contents of all trace memories.
app.Memory.ClearAllMem
```

## MEMORIES

*app.Memory.Memories*

Names of the form `app.Memory.Memories("Mx").xxxx` are aliases of simpler names which are described in the section of the manual which is devoted to `app.Memory`. Examples of alias pairs are as follows -

`app.Memory.Memories("Mx").Out.Result` is equivalent to `app.Memory.Mx.Out.Result`

`app.Memory.Memories("Mx").Zoom` is equivalent to `app.Memory.Mx.Zoom`

Please see under `Acquisition.Channels` for a programming example.

## MX

*app.Memory.Mx*

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This set of variables controls the memories M1 through M4.

ClearMem	Action
Copy	Action
LabelsPosition	String
LabelsText	String
Source1	Enum
UseGrid	String
UserText	String
View	Bool
ViewLabels	Bool

---

### ClearMem

*Action*

#### Description

Initiates a clear memory operation for memory Mx.

---

### Copy

*Action*

#### Description

Copy the trace specified by the Source1 control into this memory.

---

### LabelsPosition

*String*

**Range** Any number of characters

#### Description

Sets / Queries the horizontal position of the label attached to the acquisition trace Cx. The unit of measurement is the unit of the horizontal scale. The measurement is made from the trigger point. Note that this control is a string, not a numeric value. This allows multiple labels to be positioned, as shown in the example below.

---

### LabelsText

*String*

**Range** Any number of characters

**Source1***Enum***Description**

Source trace for Copy operations (see 'Copy' control)

**Values**

BadBits	
BadBits2	
Bits	
Bits2	
C1	
C2	
C3	
C4	
Digital1	
Digital2	
Digital3	
Digital4	
dvdT	
E100Dta	
E10Dta	
EnetDta	
ET	
Eye	
Eye2	
F1	
F2	
F3	
F4	
FiltData	
FiltJit	
FiltSiv	
FLXEye	
Harm	
I	
M2	
M3	
M4	
Mod	
PointA	
PointB	
PointC	
PointD	
PointF	
PointH	
PRBS	
Pwr	



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R	
ScanHisto	
ScanOverlay	
SigQual	
SineRemovedData	
SlvDtaJit	
SpecAn	
V	
Z1	
Z2	
Z3	
Z4	
Z5	
Z6	
Z7	
Z8	

### UseGrid

*String*

**Range** Any number of characters

#### Description

Sets/Queries the grid used for memory trace Mx.

#### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set memory trace M2 to use grid YT3.
app.Memory.M2.UseGrid = "YT3"
```

### UserText

*String*

**Range** Any number of characters

#### Description

Text field, used to attach arbitrary comments to a memory waveform.

### View

*Bool*

#### Description

Sets/Queries whether memory trace Mx is visible.

### ViewLabels

*Bool*

#### Description

Sets/Queries whether labels are visible for trace Mx.

## RESULT

*app.Memory.Mx.Out.Result*

See app.Acquisition.Cx.Out.Result for a definition of methods and properties used to access the Mx waveform result.

## ZOOM

*app.Memory.Mx.Zoom*

This set of variables controls zooming of the memory traces M1 through M4.

CenterSelectedSegment	Integer
HorPos	Double
HorZoom	Double
NumSelectedSegments	DoubleLockstep
VariableHorZoom	Bool
VariableVerZoom	Bool
VerPos	Double
VerZoom	Double

### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Save C1 into M1
app.SaveRecall.Waveform.SaveTo = "Memory"
app.SaveRecall.Waveform.SaveSource = "C1"
app.SaveRecall.Waveform.SaveDestination = "M1"
app.SaveRecall.Waveform.DoSave
```

### CenterSelectedSegment

*Integer*

**Range** From 1 to 1 step 1

### HorPos

*Double*

**Range** From -0.5 to 0.5 step (8 digits)

#### Description

Sets/Queries the horizontal position of center of the grid on the zoomed trace Mx. The unit of measurement is the screen width, that is, 0.3 means a shift of three of the ten divisions. A positive value moves the trace to the left.

### HorZoom

*Double*

**Range** From 0.1 to 1e+006 step (8 digits)

#### Description

Sets/Queries the horizontal magnification of the trace Mx. The magnification will be in a 1 2 5 10 sequence unless variable horizontal magnification has been set.

### NumSelectedSegments

*DoubleLockstep*

**Range** From 1 to 1 step 1, locked to 1 2 5, fine grain allowed=true, on=false

### VariableHorZoom

*Bool*

#### Description

Sets/Queries the ability to zoom horizontally by a continuously variable factor as opposed to a factor that follows a 1, 2, 5 sequence.

**VariableVerZoom****Bool****Description**

Sets/Queries the ability to zoom vertically by a continuously variable factor as opposed to a factor that follows a 1, 2, 5 sequence.

**VerPos****Double**

**Range** From -1.5 to 1.5 step (8 digits)

**Description**

Sets/Queries the vertical position of center of the grid on the zoomed trace Mx. The unit of measurement is the screen height, that is, 0.375 means a shift of three of the eight divisions. A positive value moves the trace downwards.

**VerZoom****Double**

**Range** From 0.1 to 100 step (8 digits)

**Description**

Sets/Queries the vertical magnification of the trace Mx. The magnification will be in a 1 2 5 10 sequence unless variable vertical magnification has been set.

**PASSFAIL***app.PassFail*

Names of the forms `app.PassFail("Qremote").xxxx` and `app.PassFail("Qx").xxxx` are aliases of simpler names which are described in this section of the manual. Examples of alias pairs are as follows -

`app.PassFail.PassFail("Qremote").Operator` is equivalent to `app.PassFail.Qremote.Operator`

`app.PassFail.PassFail("Qx").Out.Result` is equivalent to `app.PassFail.Qx.Out.Result`

Please see under `app.Acquisition.Channels("Cx")` for a programming example.

ActionOn	Enum
Alarm	Bool
EnableActions	Bool
PredefinedConditions	Enum
PrintScreen	Bool
Pulse	Bool
Save	Bool
Stop	Bool
StopAfter	Integer
StopTesting	Bool
SummaryView	Bool
Testing	Bool

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Setup Parameter P1 to be the amplitude of C1
app.Measure.MeasureMode = "MyMeasure"
app.Measure.P1.ParamEngine = "Ampl"
app.Measure.P1.Source1 = "C1"
app.Measure.P1.View = True
```

**ActionOn****Enum**

### Description

Sets/Queries whether a Pass condition or a Fail condition will initiate the pre-selected actions.

### Values

Fail	
Pass	

## Alarm

*Bool*

### Description

Sets/Queries whether Alarm is included in the PassFail actions.

## EnableActions

*Bool*

### Description

Sets/Queries whether the selected actions will be executed if the selected PassFail condition is met.

## PredefinedConditions

*Enum*

### Description

Sets/Queries the logical criteria that must be met in a pass-fail test. For example, the condition AnyTrue means that the pass-fail criterion is met if at least one of the test conditions results in a True result.

### Values

AllFalse	
AllQ1ToQ4OrAllQ5ToQ8	
AllTrue	
AnyFalse	
AnyQ1ToQ4AndAnyQ5T	
AnyTrue	

## PrintScreen

*Bool*

### Description

Sets/Queries whether Print Screen is included in the PassFail actions.

## Pulse

*Bool*

### Description

Sets/Queries whether Pulse is included in the PassFail actions. This action emits a pulse from the Aux output socket.

## Save

*Bool*

### Description

Sets/Queries whether Save is included in the PassFail actions.

## Stop

*Bool*

### Description

Sets/Queries whether Stop is included in the PassFail actions.

## StopAfter

*Integer*

**Range** From 1 to 1000000000 step 1

### Description

Sets/Queries the maximum number of sweeps that will be acquired before testing is halted.

## StopTesting

*Bool*

### Description

If Enabled, testing will stop after a number of sweeps defined by the StopAfter control.

## SummaryView

*Bool*

### Description

Summary view

## Testing

*Bool*

### Description

Sets/Queries whether PassFail testing is on.

## RESULT

*app.PassFail.LastPass.Result*

## RESULT

*app.PassFail.NumPassed.Result*

## QX

*app.PassFail.Qx*

This set of variables controls the tests Q1 through Q8 in the pass fail system.

ClearSweeps	Action
ConditionEngine	Enum
Equation	String
PSource1	Enum
ShortDescription	String
View	Bool
WSource2	Enum

## ClearSweeps

*Action*

### Description

ClearSweeps

**ConditionEngine***Enum***Description**

Sets/Queries whether pass-fail test Qx uses mask testing or parameter comparison.

**Values**

BoolPassThru	
DualParamCompare	
MaskTestCondition	
ParameterCompare	

**Equation***String*

**Range** Any number of characters

**Description**

Inspects the equation for pass-fail test Qx. A typical equation would be "All P3 < 0.7071".

**PSource1***Enum***Description**

PSource1

**Values**

AvgAB	
ClkJit	
DOVN	
DOVP	
DroopFG	
DroopHJ	
Dstr	
DtaJit	
E10BTHarm	
E10BTPeak	
E85BTJit	
E8BTJit	
EDCD	
FitMasks	
FLXAsymDelay	
FLXAsymDelay	
FLXFrameTSSLengthCa	
FLXFrameTSSLengthCa	
FLXJitter	
FLXJitter	
FLXPropDelay	
FLXPropDelay	
LFall	
LRise	
Mask2Hits	
Mask2Out	
MaskHits	
MaskOut	
MaxRF	
MinRF	
NonMonotonic	
OverN	
OverP	
P1	
P2	
P3	
P4	
P5	
P6	
P7	
P8	

PeakMagA	
PeakMagB	
PeakMagC	
PeakMagD	
PkPkClkJit	
PkPkDtaJit	
PkPkFiltJit	
PkPkFiltSlv	
PkPkSlaveJit	
PkPkSlvDta	
SAS	
SlaveJit	
TIE	
TotJitN	
TotJitP	
UFall	
URise	

ShortDescriptionString

RangeAny number of characters

DescriptionShortDescription

ViewBool

DescriptionSets/Queries whether pass-fail test Qx is visible.



**WSource2***Enum***Description**

WSource2

**Values**

BadBits	
BadBits2	
Bits	
Bits2	
C1	
C2	
C3	
C4	
dvdt	
E100Dta	
E10Dta	
EnetDta	
ET	
Eye	
Eye2	
F1	
F2	
F3	
F4	
FiltData	
FiltJit	
FiltSlv	
FLXEye	
FLXEye	
Harm	
I	
M1	
M2	
M3	
M4	
Mod	
PointA	
PointB	
PointC	
PointD	
PointF	
PointH	
PRBS	
Pwr	
R	
ScanHisto	

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ScanOverlay	
SigQual	
SineRemovedData	
SlvDtaJit	
SpecAn	
V	
Z1	
Z2	
Z3	
Z4	
Z5	
Z6	
Z7	
Z8	

### RESULT

*app.PassFail.Qx.Out.Result*

Properties of the type xxxx.Out.Result.yyyy are those of the last completed acquisition. They are not affected if other cvars are changed after that acquisition was completed. This distinction between "Out.Result" properties and other cvars is most important when the trigger mode is Single or Stopped. You should treat "Out.Result" properties as read-only.

### RESULT

*app.PassFail.Rate.Result*

### RESULT

*app.PassFail.Tests.Result*

### PREFERENCES

*app.Preferences*

This set of variables controls user preferences for the instrument setup and operation.

AudibleFeedback	Bool
EnhancedPrecisionMode	Bool
HorOffsetControl	Enum
Language	Enum
OffsetControl	Enum
Performance	Enum

**AudibleFeedback**

***Bool***

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### Description

Sets/Queries whether audible feedback is enabled, to sound when a control is touched.

### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Turn on the audible feedback function.
app.Preferences.AudibleFeedback = True
```

## EnhancedPrecisionMode

*Bool*

### Description

EnhancedPrecisionMode

## HorOffsetControl

*Enum*

### Description

HorOffsetControl.

### Values

Div	
Time	

## Language

*Enum*

### Description

Language

### Values

ChineseSimplified	
English	
French	
German	
Italian	
Japanese	
Korean	

## OffsetControl

*Enum*

### Description

Sets/Queries whether Vertical Offset constant in Volts or Divisions when the vertical scale control is changed.

### Values

Div	
Volts	

**Performance***Enum***Description**

Sets/Queries the variable value that control the Optimization of the instrument in terms of analysis or display.

When set to Analysis the display is given low priority and will update less frequently. Use this mode where analysis performance is much more important than display rate.

**Values**

Analysis	
AnalysisMid	
Default	
Display	
DisplayMid	

**EMAIL***app.Preferences.Email*

This set of variables controls user preferences for the instrument e-mail system.

E-Mail may be sent when the hardcopy button is pressed when the hardcopy system is appropriately configured. Two standards are supported, SMTP (Simple Mail Transport Protocol), and MAPI (Messaging Application Programming Interface).

DefaultRecipient	String
Mode	Enum
OriginatorAddress	String
SendTestMail	Action
SMTPServer	String

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Configure the originator and recipient addresses, replace these with
' appropriate values for your corporate network.
app.Preferences.Email.DefaultRecipient = "recipientAddress@do
```

**DefaultRecipient***String*

**Range** Any number of characters

**Description**

Sets/Queries the default recipient of e-mail transmissions.

**Mode***Enum***Description**

Sets/Queries the transmission mode for e-mail.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set e-Mail mode to MAPI.
app.Preferences.EMail.Mode = "MAPI"
```

**Values**

MAPI	Messaging Application Programming Interface (Uses Outlook Express by default)
SMTP	Simple Mail Transfer Protocol, requires an SMTP server

**OriginatorAddress***String*

**Range** Any number of characters

**Description**

Sets/Queries the originator address for e-mail. This may be any address, and will be used when the recipient replies to a mail, note that the instrument doesn't necessarily have to have it's own E-Mail account in order to use this.

**SendTestMail***Action***Description**

Sends a message by e-mail to test the system.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Send an e-Mail message to test the system.
app.Preferences.EMail.SendTestMail
```

**SMTPServer***String*

**Range** Any number of characters

**Description**

Sets/Queries the name of the SMTP Server for e-mail. Ask your system administrator if you are unsure of what value to set this to.

**RECALLSETUPLOCK***app.RecallSetupLock***SAVERECALL***app.SaveRecall*

Controls for the Save/Recall subsystem. Includes nodes for saving and recalling both Waveforms and Panels (Setups).

ShowLSIBExport

Action

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ShowSaveTable	Action
---------------	--------

---

**ShowLSIBExport****Action**

---

**ShowSaveTable****Action**

## SETUP

*app.SaveRecall.Setup*

---

Controls for Saving and Recalling instrument setups.

DoRecallDefaultNvlPanel	Action
DoRecallDefaultPanel	Action
DoRecallPanel	Action
DoSavePanel	Action
InternalName1	String
InternalName2	String
InternalName3	String
InternalName4	String
InternalName5	String
InternalName6	String
PanelDir	FileName
PanelFilename	FileName
RecallInternal1	Action
RecallInternal2	Action
RecallInternal3	Action
RecallInternal4	Action
RecallInternal5	Action
RecallInternal6	Action
SaveInternal1	Action
SaveInternal2	Action
SaveInternal3	Action
SaveInternal4	Action
SaveInternal5	Action
SaveInternal6	Action

### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Reset to default setup
app.SaveRecall.Setup.DoRecallDefaultPanel

' Store the current setup into the first of the 6 setup stores.
app.SaveRecall.Setup.InternalName1 = "My Setup1"
```

---

**DoRecallDefaultNvlPanel****Action**

### Description

Recalls the factory set NVL (preference) panel settings. These are controls which are not affected when the default panel is recalled, and includes items such as the color preferences, remote control

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preferences, etc. Use with care!, especially when invoking via the VBS? Remote command via GPIB or TCP/IP, which could result in the controller being disconnected when the default port is selected.

### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Recall the factory default nvl panel settings.
app.SaveRecall.Setup.DoRecallDefaultNvlPanel
```

---

### DoRecallDefaultPanel

**Action**

#### Description

Recalls the factory set panel settings.

#### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Recall the factory default panel settings.
app.SaveRecall.Setup.DoRecallDefaultPanel
```

---

### DoRecallPanel

**Action**

#### Description

Recall the panel file named in the PanelFilename control.

#### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Create the filename for the next panel setup to be recalled.
app.SaveRecall.Setup.PanelFilename = "Setup89"

' Recall the panel setup from the named file.
app.SaveRecall.Setup.DoRecallPanel
```

---

### DoSavePanel

**Action**

#### Description

Saves the current panel settings to the previously specified file. If the filename already exists, the file will be over-written without a prompt.

#### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Create the filename for the next panel setup save.
app.SaveRecall.Setup.PanelFilename = "TestSave"

' Save the panel setup to the named file.
app.SaveRecall.Setup.DoSavePanel
```

---

### InternalName1

**String**

**Range** Any number of characters

#### Description

Sets/Queries the name of internal panel setup memory 1.

<b>InternalName2</b>	<i>String</i>
<b>Range</b> Any number of characters	
<b>Description</b> Please see InternalName1.	
<b>InternalName3</b>	<i>String</i>
<b>Range</b> Any number of characters	
<b>Description</b> Please see InternalName1.	
<b>InternalName4</b>	<i>String</i>
<b>Range</b> Any number of characters	
<b>Description</b> Please see InternalName1.	
<b>InternalName5</b>	<i>String</i>
<b>Range</b> Any number of characters	
<b>Description</b> Please see InternalName1.	
<b>InternalName6</b>	<i>String</i>
<b>Range</b> Any number of characters	
<b>Description</b> Please see InternalName1.	
<b>PanelDir</b>	<i>FileName</i>
<b>Range</b> Any number of characters	
<b>Description</b> Directory in which setups are stored/recalled.	
<b>PanelFilename</b>	<i>FileName</i>
<b>Range</b> Any number of characters	
<b>Description</b> Sets/Queries the current filename for saving a panel setup. Note that a '.lss' extension is automatically appended if not supplied.	



### RecallInternal1

*Action*

#### Description

Recall the settings which are stored in internal panel memory 1.

#### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Recall the settings from internal panel memory 1.
app.SaveRecall.Setup.RecallInternal1
```

---

### RecallInternal2

*Action*

#### Description

Please see RecallInternal1.

---

### RecallInternal3

*Action*

#### Description

Please see RecallInternal1.

---

### RecallInternal4

*Action*

#### Description

Please see RecallInternal1.

---

### RecallInternal5

*Action*

#### Description

Please see RecallInternal1.

---

### RecallInternal6

*Action*

#### Description

Please see RecallInternal1.

---

### SaveInternal1

*Action*

#### Description

Saves the current instrument settings into internal panel memory 1.

#### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Save the current settings into internal panel memory 1.
app.SaveRecall.Setup.SaveInternal1
```

---

### SaveInternal2

*Action*

#### Description

Please see SaveInternal1.

---

### SaveInternal3

*Action*

#### Description

Please see SaveInternal1.

**SaveInternal4***Action***Description**

Please see SaveInternal1.

**SaveInternal5***Action***Description**

Please see SaveInternal1.

**SaveInternal6***Action***Description**

Please see SaveInternal1.

**TABLE***app.SaveRecall.Table*

Delimiter	Enum
DoSave	Action
SaveSource	Enum
TableDir	FileName
TableFormat	Enum
TableTitle	String

**Delimiter***Enum***Values**

Comma	
Semicolon	
Space	
Tab	

**DoSave***Action***SaveSource***Enum***Values**

AllDisplayed	
--------------	--

**TableDir***FileName***Range** Any number of characters**TableFormat***Enum***Values**

ASCII	
Excel	

**TableTitle*****String*****Range** Any number of characters**UTILITIES***app.SaveRecall.Utilities*

Controls used to manage files and folders, including the ability to create and delete folders, and the ability to delete files.

CreateDir	Action
DeleteAll	Action
DeleteFile	Action
Directory	FileName

**CreateDir*****Action*****Description**

Creates the directory specified in the Directory control.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Create a named directory
app.SaveRecall.Utilities.Directory = "C:\MyDir"
app.SaveRecall.Utilities.CreateDir
```

**DeleteAll*****Action*****Description**

Deletes all files in the directory specified by the Directory control without a cautionary prompt.  
Use with care! Files cannot be recovered if deleted accidentally.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Delete all files without showing a yes/no prompt.
app.SaveRecall.Utilities.Directory = "C:\MyDir"
app.SaveRecall.Utilities.DeleteAll
```

**DeleteFile*****Action*****Description**

Deletes the file named by the Filename control

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Delete the named file
app.SaveRecall.Utilities.Filename = "C:\MyDir\MyFile.txt"
app.SaveRecall.Utilities.DeleteFile
```

**Directory***FileName***Range** Any number of characters**Description**

Defines the directory which will be used for the operations in this automation node.

**WAVEFORM***app.SaveRecall.Waveform*

Contains controls used for saving and recalling waveforms.

Delimiter	Enum
DoRecall	Action
DoSave	Action
RecallDestination	Enum
RecallFrom	Enum
RecallSource	Enum
SaveDestination	Enum
SaveSource	Enum
SaveTo	Enum
TraceTitle	String
WaveFormat	Enum
WaveformDir	FileName

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Save C1 into M1
app.SaveRecall.Waveform.SaveTo = "Memory"
app.SaveRecall.Waveform.SaveSource = "C1"
app.SaveRecall.Waveform.SaveDestination = "M1"
app.SaveRecall.Waveform.DoSave
```

**Delimiter***Enum***Description**

Sets/Queries the delimiter to use when saving data in ASCII text mode.

**Values**

Comma	
Semicolon	
Space	
Tab	

**DoRecall***Action***Description**

Recall waveform data into a trace memory. Source may be either an internal memory (M1..M4), or a file on a mass-storage device, depending on the state of the 'RecallFrom' control.

**DoSave***Action***Description**

Save waveform data into an internal memory, or file on a mass-storage device, using the pre-specified source and destination.

**RecallDestination***Enum***Description**

Sets/Queries the destination for waveform recall. When the DoRecall action is executed the waveform will be transferred into this destination trace.

**Values**

M1	
M2	
M3	
M4	

**RecallFrom***Enum***Description**

Sets/Queries the type of source for waveform recall.

**Values**

File	Recall from file on a mass-storage device
Memory	Recall from one of the internal memories (M1..M4)

**RecallSource***Enum***Description**

Sets/Queries the source for recalling waveform data. Used only when recalling from an internal memory with RecallSource = "Memory".

**Values**

M1	
M2	
M3	
M4	

**SaveDestination***Enum***Description**

Sets/Queries the destination to which waveform data will be saved. Used only when the SaveTo = "Memory".

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Setup to store trace C2 into M4 and perform the save operation
app.SaveRecall.Waveform.SaveTo = "Memory"
app.SaveRecall.Waveform.SaveSource = "C2"
app.SaveRecall.Waveform.SaveDestination = "M4"
app.SaveRecall.Waveform.DoSave
```

**Values**

M1	
M2	
M3	
M4	

**SaveSource***Enum***Description**

Sets/Queries the source from which waveform data will be saved.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the destination to memory for waveform save.
app.SaveRecall.Waveform.SaveTo = "Memory"
' Set the source to C2, for saving a waveform.
app.SaveRecall.Waveform.SaveSource = "C2"
' Set the destination to memory M4, for saving a waveform.
app.SaveRecall.Waveform.SaveDestination = "M4"
' Save waveform data as previously specified.
app.SaveRecall.Waveform.DoSave
```

**Values**

AllDisplayed	
BadBits	
BadBits2	
Bits	
Bits2	
C1	
C2	
C3	
C4	
Digital1	
Digital2	
Digital3	
Digital4	
dvdT	
E100Dta	
E10Dta	
EnetDta	
ET	
Eye	
Eye2	
F1	
F2	
F3	
F4	
FiltData	
FiltJit	
FiltSlv	
FLXEye	
FLXEye	
Harm	
I	

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M1	
M2	
M3	
M4	
Mod	
PointA	
PointB	
PointC	
PointD	
PointF	
PointH	
PRBS	
Pwr	
R	
ScanHisto	
ScanOverlay	
SigQual	
SineRemovedData	
SlvDtaJit	
SpecAn	
V	
Z1	
Z2	
Z3	
Z4	
Z5	
Z6	
Z7	
Z8	

### SaveTo

*Enum*

#### Description

Sets/Queries type of destination for waveform save.

#### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the destination to Memory for waveform save.
app.SaveRecall.Waveform.SaveTo = "Memory"
```

#### Values

File	Save into file on a mass-storage device
Memory	Save into an internal memory (M1..M4)



**TraceTitle***String***Range** Any number of characters**Description**

Sets/Queries the title (prefix) to use when naming saved traces. This prefix will have the family (sequence) number appended to it when forming the filename.

**WaveFormat***Enum***Description**

Sets/Queries the format to use when saving waveform data into a file. 'Binary' is the most efficient, storing one or two bytes per data sample, depending upon the number of significant bits. When in ASCII mode, the Subformat and Delimiter controls define the data format.

**Values**

ASCII	Plain ASCII files with choice of various delimiters
Audio	
Binary	LeCroy's standard binary waveform format
Excel	
MathCad	
MATLAB	

**WaveformDir***FileName***Range** Any number of characters**Description**

Sets/Queries the directory for storing waveform files.

**SDA***app.SDA*

Controls used for SDA (Serial Data Analysis) models only.

AnyHasClientChanged	Action
BERParamsOn	Bool
BERPow10	Integer
CDRon	Bool
ClearSweeps	Action
ClkJitterDisplay	Enum
ClockModeOn	Bool
CompensateForMissingEdges	Bool
CompensateNoise	Bool
CustomPLL2PoleDamping	Double
CustomPLL2PoleDamping2	Double
CustomPLL2PoleNaturalFreq	Double
CustomPLL2PoleNaturalFreq2	Double
CustomPLLFilterNumPoles	Integer
CustomPLLFilterPoleFreq	Double
CustomPLLFilterZeroFreq	Double
CustomPLLTransportDelay	Double

## Automation Command and Query Reference Manual - Control Reference

DataSource	Enum
DataSource2	Enum
DataSource3	Enum
Deskew	Double
DoRecallDefaultPanel	Action
DSTB	Enum
DSTBN	Enum
DSTBP	Enum
ErrorMapOn	Bool
ExecutiveListChanged	Action
EyeGate	Enum
EyeMode	Enum
EyeThresholdFind	Action
EyeThresholdType	Enum
FilterType	Enum
FindFrequency	Action
FindNoise	Action
FindPattern	Action
FrameMode	Enum
FrequencyMultiplier	Integer
FSBWrite	Enum
InstrumentNoise	Double
IntervalsEdgeEdge	Integer
IntervalType	Enum
JitterClockWizard	Action
JitterMeasurement	Enum
MaskTestGrid	Action
MaskTypeEye2	Enum
PatternLength	Integer
PermitGTHalfUI	Bool
PLLCutOff	Integer
PIIFBDIMMEqnImage	Image
PLLFrequency	Double
PLLOn	Bool
PLLprompt	String
PLLType	Enum
ReferenceFrequency	Double
RefPercentLevel	Double
RefSource	Enum
RefThresholdFind	Action
RefThresholdType	Enum
RescaleSpectrum	Action
RunThenStop	Action
SDAJitterWizard	Action
SDAMode	Enum
ShowBathtub	Bool

## Automation Command and Query Reference Manual - Control Reference

ShowDDjHisto	Bool
ShowEyeDiagram	Bool
ShowFailLocation	Bool
ShowJitterHisto	Bool
ShowJitterTrack	Bool
ShowMask	Bool
ShowPjSpectrum	Bool
ShowQScaleFit	Bool
ShowSnCycle	Bool
ShowTopDialog	Action
SignalFrequency	Double
SignalMode	Enum
SignalType	Enum
SummaryGrid	Action
TIEPercentLevel	Double
TIESignalType	Enum
TIESlope	Enum
TransitionDensity	Double
UpdateVerticalNoise	Action
UseAllEdges	Bool

---

### AnyHasClientChanged

*Action*

---

### BERParamsOn

*Bool*

#### Description

Sets/Queries whether the bit error rate parameters are shown.

#### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the BER parameters on.
app.SDA.BERParamsOn = True
```

---

### BERPow10

*Integer*

**Range** From -16 to -1 step 1

---

### CDRon

*Bool*

---

### ClearSweeps

*Action*

#### Description

Clear any accumulated result data. Useful for example to restart an average, or parameter statistics.

**ClkJitterDisplay***Enum***Values**

Bathtub	
FilteredJitter	
JitterHistogram	
nCyclevsN	

**ClockModeOn***Bool***CompensateForMissingEdges***Bool***CompensateNoise***Bool***CustomPLL2PoleDamping***Double***Range** From 0.5 to 2 step 0.001**CustomPLL2PoleDamping2***Double***Range** From 0.5 to 2 step 0.001**CustomPLL2PoleNaturalFreq***Double***Range** From 208333 to 3e+008 step 1000**CustomPLL2PoleNaturalFreq2***Double***Range** From 208333 to 3e+008 step 1000**CustomPLLFilterNumPoles***Integer***Range** From 1 to 2 step 1**CustomPLLFilterPoleFreq***Double***Range** From 100000 to 3e+008 step 1000**CustomPLLFilterZeroFreq***Double***Range** From 100000 to 6e+008 step 100000**CustomPLLTransportDelay***Double***Range** From 0 to 1 step 1e-015

**DataSource***Enum***Description**

Sets/Queries the data source trace for SDA.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the instrument into SDA mode.
app.SDA.SDAMode = "MaskTest"
' Set the data source as trace C3.
app.SDA.DataSource = "C3"
```

**Values**

C1	
C2	
C3	
C4	
F1	
F2	
F3	
F4	
M1	
M2	
M3	
M4	
Z1	
Z2	
Z3	
Z4	
Z5	
Z6	
Z7	
Z8	

**DataSource2***Enum***Values**

C1	
C2	
C3	
C4	
F1	
F2	
F3	
F4	
M1	
M2	
M3	
M4	
Z1	
Z2	
Z3	
Z4	

**DataSource3***Enum***Values**

C1	
C2	
C3	
C4	
F1	
F2	
F3	
F4	
M1	
M2	
M3	
M4	
Z1	
Z2	
Z3	
Z4	

**Deskew***Double***Range** From -1e-008 to 1e-008 step 1e-012**DoRecallDefaultPanel***Action*

**DSTB***Enum***Values**

C1	
C2	
C3	
C4	
F1	
F2	
F3	
F4	
M1	
M2	
M3	
M4	
Z1	
Z2	
Z3	
Z4	

**DSTBN***Enum***Values**

C1	
C2	
C3	
C4	
F1	
F2	
F3	
F4	
M1	
M2	
M3	
M4	
Z1	
Z2	
Z3	
Z4	

**DSTBP***Enum***Values**

C1	
C2	
C3	
C4	
F1	
F2	
F3	
F4	
M1	
M2	
M3	
M4	
Z1	
Z2	
Z3	
Z4	

**ErrorMapOn***Bool***Description**

Sets/Queries whether the error map is on.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the error map on.
app.SDA.ErrorMapOn = True
```

**ExecutiveListChanged***Action*



**EyeGate***Enum***Values**

C1	
C2	
C3	
C4	
F1	
F2	
F3	
F4	
M1	
M2	
M3	
M4	
Z1	
Z2	
Z3	
Z4	

**EyeMode***Enum***Description**

Sets/Queries the type of eye diagram.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the eye mode as traditional.
app.SDA.EyeMode = "Traditional"
```

**Values**

FSB	
Gated	
Sequential	
Traditional	
Transition	

**EyeThresholdFind***Action***EyeThresholdType***Enum***Values**

Absolute	
Percent	

**FilterType***Enum***Values**

PCleG2Hhi	
PCleG2Hlo	
UserSpecified	

**FindFrequency***Action***Description**

Instruct the instrument to find the frequency of the signal.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Find the frequency.
app.SDA.FindFrequency
```

**FindNoise***Action***FindPattern***Action***FrameMode***Enum***Values**

Header	
Off	
Size	
SizeandHeader	
SONET	
WithOverhead	
WithOverheadAndCount	

**FrequencyMultiplier***Integer*

**Range** From 1 to 1 step 1

**FSBWrite***Enum***Values**

Data1	
Data2	
Data3	

**InstrumentNoise***Double*

**Range** From 0 to 0.05 step 1e-005

**IntervalsEdgeEdge***Integer*

**Range** From 1 to 100000 step 1

**IntervalType***Enum***Values**

EDGEREF	
---------	--

**JitterClockWizard***Action***JitterMeasurement***Enum***Values**

Advanced	
Basic	
Djbreakdown	
Off	

**MaskTestGrid***Action***MaskTypeEye2***Enum***Values**

Absolute	
Normalized	

**PatternLength***Integer***Range** From 1 to 2147483647 step 1**PermitGTHalfUI***Bool***PLLCutOff***Integer***Range** From 10 to 1000000 step 1**PIIFBDIMMEqnImage***Image***PLLFrequency***Double***Range** From 1250 to 1.25e+008 step 1**PLLOn***Bool***Description**

Sets/Queries use of a PLL to track the clock frequency.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the PLL off.
app.SDA.PLLOn = False
```

## Automation Command and Query Reference Manual - Control Reference

### PLLprompt

*String*

**Range** Any number of characters

### PLLType

*Enum*

#### Values

Custom	
DVI	
FBDIMM	
GOLDEN	

### ReferenceFrequency

*Double*

**Range** From 90000 to 4e+010 step 1

### RefPercentLevel

*Double*

**Range** From 0 to 100 step 1

### RefSource

*Enum*

#### Values

C1	
C2	
C3	
C4	
F1	
F2	
F3	
F4	
M1	
M2	
M3	
M4	
Z1	
Z2	
Z3	
Z4	
Z5	
Z6	
Z7	
Z8	

### RefThresholdFind

*Action*

**RefThresholdType***Enum***Values**

Absolute	
Percent	

**RescaleSpectrum***Action***RunThenStop***Action***SDAJitterWizard***Action***SDAMode***Enum***Description**

Sets/Queries the mode of operation of the instrument.

Values: Scope, MaskTest, Jitter, BER, Clock, Summary for SDA+ASDA

Values: Scope, MaskTest for SDM

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the instrument into Mask Test mode.
app.SDA.SDAMode = "MaskTest"
```

**Values**

MaskTest	
Scope	

**ShowBathtub***Bool***ShowDDjHisto***Bool***ShowEyeDiagram***Bool***ShowFailLocation***Bool***Description**

Sets/Queries whether mask failures are to be shown by markers.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Show locations of failures.
app.SDA.ShowFailLocation = True
```

**ShowJitterHisto***Bool***ShowJitterTrack***Bool***ShowMask***Bool*

---

ShowPjSpectrum	<i>Bool</i>
----------------	-------------

---

ShowQScaleFit	<i>Bool</i>
---------------	-------------

---

ShowSnCycle	<i>Bool</i>
-------------	-------------

---

ShowTopDialog	<i>Action</i>
---------------	---------------

---

SignalFrequency	<i>Double</i>
-----------------	---------------

**Range** From 90000 to 4e+010 step 1

**Description**

Sets/Queries the signal frequencies.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the signal frequency to 15 MHz.
app.SDA.SignalFrequency = 15e6
```

---

SignalMode	<i>Enum</i>
------------	-------------

**Description**

Values for this control depend upon SDA standard set by SignalType control.

**Values**

Receiver	
TransAbs	
TransNrm	

**SignalType***Enum***Description**

Sets/Queries the signal type for SDA.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the instrument into SDA mode.
app.SDA.SDAMode = "MaskTest"
' Set signal type as STM16.
app.SDA.SignalType = "STM16"
```

**Values**

1000BaseCX	
1000BaseLX	
1000BaseSX	
Custom	
DVI	
FC1063	
FC133	
FC266	
FC531	
FlexRay10.0Mbitss	
FlexRay2.5Mbitss	
FlexRay5.0Mbitss	
FSB533Mhz	
FSB667Mhz	
FSB800Mhz	
HDMI1.3148.5MHz	
HDMI1.325MHz	
HDMI1.327MHz	
HDMI1.374.25MHz	
IEEE1394b	
OC1	
OC12	
OC3	
RapidIOLPSerial	
RapidIOParallel	
STM1Optical	
STM4Optical	
STS1Eye	
STS3	
USB2.0	

**SummaryGrid***Action*

**TIEPercentLevel***Double***Range** From 0 to 100 step 1**TIESignalType***Enum***Values**

Clock	
Data	

**TIESlope***Enum***Values**

Both	
Neg	
Pos	

**TransitionDensity***Double***Range** From 0.1 to 1 step 0.01**UpdateVerticalNoise***Action***UseAllEdges***Bool***BADBITS***app.SDA.BadBits*

AxisXRotation	Integer
AxisYRotation	Integer
BitsInLocator	Integer
C1ReceiverStandard	Enum
C2ReceiverStandard	Enum
C3ReceiverStandard	Enum
C4ReceiverStandard	Enum
ClearSweeps	Action
ClockTIESlope	Enum
EyeMode	Enum
EyeThresholdType	Enum
FailCursorsOn	Bool
FailedList	Enum
FailedListEye2	Enum
FailedSymbolsFilter	Enum
FailedSymbolsFilterEye2	Enum
LabelsPosition	String
LabelsText	String
MaskFailX	Double
MaskFailXEy2	Double



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MaskFailY	Double
MaskFailYEye2	Double
MaxFailures	Integer
MeasurementMode	Enum
MonochromeEye	Enum
PercentLevel	Integer
Persist3DQuality	Enum
Persisted	Bool
Persistence3d	Bool
PersistenceMonoChrome	Bool
PersistenceSaturation	Integer
PersistenceTime	Enum
Saturation	Integer
ShowFailLocation	Bool
ShowLastTrace	Bool
SignalFrequency	Double
SignalMode	Enum
SliceWidth	Integer
Stop	Bool
TrackMaskFail	Action
UseGrid	String
VerAutoFit	Bool
ViewLabels	Bool
XMargin	Integer
YMargin	Integer

### AxisXRotation

*Integer*

**Range** From -90 to 90 step 1

#### Description

Using SDA.BadBits.Persisted, please refer to the corresponding variable in Display.

### AxisYRotation

*Integer*

**Range** From -90 to 90 step 1

#### Description

Using SDA.BadBits.Persisted, please refer to the corresponding variable in Display.

### BitsInLocator

*Integer*

**Range** From 1 to 101 step 2

#### Description

Number of bits to display in the Mask Test bottom grid where the bit that failed the mask shows in the center of the grid. For example, BitsInLocator = 5 means that 2 bits before and 2 bits after the failing bit are going to display in the bottom grid.

**C1ReceiverStandard***Enum***Description**

Read only. Indicates what reference receiver filter the optical to electrical converter uses on the SDA signal.

**Values**

DISABLED	
FC1063	
FC2125	
L1000BASE	
OC12	
OC3	
OC48	
OTHER	

**C2ReceiverStandard***Enum***Description**

Read only. Indicates what reference receiver filter the optical to electrical converter uses on the SDA signal.

**Values**

DISABLED	
FC1063	
FC2125	
L1000BASE	
OC12	
OC3	
OC48	
OTHER	

**C3ReceiverStandard***Enum***Description**

Read only. Indicates what reference receiver filter the optical to electrical converter uses on the SDA signal.

**Values**

DISABLED	
FC1063	
FC2125	
L1000BASE	
OC12	
OC3	
OC48	
OTHER	

**C4ReceiverStandard***Enum***Description**

Read only. Indicates what reference receiver filter the optical to electrical converter uses on the SDA signal.

**Values**

DISABLED	
FC1063	
FC2125	
L1000BASE	
OC12	
OC3	
OC48	
OTHER	

**ClearSweeps***Action***Description**

Using SDA.BadBits.Persisted, please refer to the corresponding variable in Acquisition.Cx

**ClockTIESlope***Enum***Description**

Set the preferred edge for eye diagram alignment.

**Values**

Both	
Negative	
Positive	

**EyeMode***Enum***Description**

Using SDA.BadBits, refer to the corresponding variable in SDA.

**Values**

FSB	
Gated	
Sequential	
Traditional	
Transition	

**EyeThresholdType***Enum***Description**

Threshold type for Eye Diagram TIE level. Change the Eye Diagram TIE settings to match the expected eye crossings. For example, SDA default for eye crossing at 50%. The user can set it to EyeThresholdType = Percent and PercentLevel=32.

**Values**

Absolute	
Percent	

**FailCursorsOn***Bool***Description**

Turn on/off round cursors around points in the eye diagram that penetrate the mask.

**FailedList***Enum***Description**

Read the indices of the bits the failed the mask test.

**Values****FailedListEye2***Enum***Values****FailedSymbolsFilter***Enum***Description**

Set what failed indices to get in the FailedList. Values: All, NearXY. For NearXY, see MaskFailX and MaskFailY.

**Values****FailedSymbolsFilterEye2***Enum***Values****LabelsPosition***String*

**Range** Any number of characters

**Description**

Using SDA.BadBits.Persisted, please refer to the corresponding variable in Acquisition.Cx

**LabelsText***String*

**Range** Any number of characters

**Description**

Using SDA.BadBits.Persisted, please refer to the corresponding variable in Acquisition.Cx

**MaskFailX***Double***Range** From 0 to 1 step 0.01**Description**

Shows the relative horizontal position of the selected mask failure cursors. For example, the user clicks on a mask failure cursors in the middle of the display. MaskFailX shows the selected horizontal position that would be 0.5.

**MaskFailXEye2***Double***Range** From 0 to 1 step 0.01**MaskFailY***Double***Range** From 0 to 1 step 0.01**Description**

Shows the relative vertical position of the selected mask failure cursors. For example, the user clicks on a mask failure cursors in the middle of the display. MaskFailY shows the selected vertical position that would be 0.5.

**MaskFailYEye2***Double***Range** From 0 to 1 step 0.01**MaxFailures***Integer***Range** From 1 to 10000 step 1**Description**

Set the number of failed bits to display in FailedList.

**MeasurementMode***Enum***Description**

Display a set of parameters measuring various properties of the eye diagram.

**Values**

Amplitude	
Eye	
MaskTest	
Off	
Timing	

**MonochromeEye***Enum***Values**

Colorgraded	
Monochrome	

**PercentLevel***Integer***Range** From 0 to 100 step 1

**Persist3DQuality***Enum***Description**

Using SDA.BadBits.Persisted, please refer to the corresponding variable in Acquisition.Cx

**Values**

Shaded	
Solid	
WireFrame	

**Persisted***Bool***Description**

Using SDA.BadBits.Persisted, please refer to the corresponding variable in Acquisition.Cx

**Persistence3d***Bool***Description**

Using SDA.BadBits.Persisted, please refer to the corresponding variable in Acquisition.Cx

**PersistenceMonoChrome***Bool***Description**

Using SDA.BadBits.Persisted, please refer to the corresponding variable in Acquisition.Cx

**PersistenceSaturation***Integer*

**Range** From 0 to 100 step 1

**Description**

Using SDA.BadBits.Persisted, please refer to the corresponding variable in Acquisition.Cx

**PersistenceTime***Enum***Description**

Using SDA.BadBits.Persisted, please refer to the corresponding variable in Acquisition.Cx

**Values**

0.5s	
10s	
1s	
20s	
2s	
5s	
Infinite	

**Saturation***Integer*

**Range** From 0 to 100 step 1

**ShowFailLocation***Bool***Description**

Using SDA.BadBits, refer to the corresponding variable in SDA.

**ShowLastTrace***Bool***Description**

Using SDA.BadBits.Persisted, please refer to the corresponding variable in Acquisition.Cx

**SignalFrequency***Double*

**Range** From 90000 to 4e+010 step 1

**Description**

Using SDA.BadBits, refer to the corresponding variable in SDA.

**SignalMode***Enum***Values**

Receiver	
TransAbs	
TransNrm	

**SliceWidth***Integer*

**Range** From 0 to 100 step 1

**Description**

Eye Diagram measurement aid. Applies a vertical slice around the middle of the eye diagram for narrowing measurement areas.

**Stop***Bool***Description**

Stop acquisition when the signal penetrates the mask.

**TrackMaskFail***Action***Description**

Using SDA.BadBits, refer to the corresponding variable in SDA.

**UseGrid***String*

**Range** Any number of characters

**Description**

Using SDA.BadBits.Persisted, please refer to the corresponding variable in Acquisition.Cx

**VerAutoFit***Bool***Description**

Using SDA.BadBits, refer to the corresponding variable in SDA.

**ViewLabels***Bool***Description**

Using SDA.BadBits.Persisted, please refer to the corresponding variable in Acquisition.Cx

**XMargin***Integer***Range** From 0 to 100 step 1**Description**

Inflate the mask horizontally. Values: 0-100 in percent. 0 Means original mask; 100% means the mask stretches all the way over the horizontal span.

**YMargin***Integer***Range** From 0 to 100 step 1**Description**

Inflate the mask vertically. Values: 0-100 in percent. 0 Means original mask; 100% means the mask stretches all the way over the vertical span.

**RESULT***app.SDA.BadBits.Out.Result***BITS***app.SDA.Bits*

AxisXRotation	Integer
AxisYRotation	Integer
ClearSweeps	Action
LabelsPosition	String
LabelsText	String
Persist3DQuality	Enum
Persisted	Bool
Persistence3d	Bool
PersistenceMonoChrome	Bool
PersistenceSaturation	Integer
PersistenceTime	Enum
ShowLastTrace	Bool
UseGrid	String
View	Bool
ViewLabels	Bool

**AxisXRotation***Integer***Range** From -90 to 90 step 1**Description**

Using SDA.Bits.View, please refer to the corresponding variable in Acquisition.Cx



**AxisYRotation***Integer***Range** From -90 to 90 step 1**Description**

Using SDA.Bits.View, please refer to the corresponding variable in Acquisition.Cx

**ClearSweeps***Action***Description**

Using SDA.Bits.View, please refer to the corresponding variable in Acquisition.Cx

**LabelsPosition***String***Range** Any number of characters**Description**

Using SDA.Bits.View, please refer to the corresponding variable in Acquisition.Cx

**LabelsText***String***Range** Any number of characters**Description**

Using SDA.Bits.View, please refer to the corresponding variable in Acquisition.Cx

**Persist3DQuality***Enum***Description**

Using SDA.Bits.View, please refer to the corresponding variable in Acquisition.Cx

**Values**

Shaded	
Solid	
WireFrame	

**Persisted***Bool***Description**

Using SDA.Bits.View, please refer to the corresponding variable in Acquisition.Cx

**Persistence3d***Bool***Description**

Using SDA.Bits.View, please refer to the corresponding variable in Acquisition.Cx

**PersistenceMonoChrome***Bool***Description**

Using SDA.Bits.View, please refer to the corresponding variable in Acquisition.Cx

**PersistenceSaturation***Integer***Range** From 0 to 100 step 1**Description**

Using SDA.Bits.View, please refer to the corresponding variable in Acquisition.Cx

**PersistenceTime****Enum****Description**

Using SDA.Bits.View, please refer to the corresponding variable in Acquisition.Cx

**Values**

0.5s	
10s	
1s	
20s	
2s	
5s	
Infinite	

**ShowLastTrace****Bool****Description**

Using SDA.Bits.View, please refer to the corresponding variable in Acquisition.Cx

**UseGrid****String**

**Range** Any number of characters

**Description**

Using SDA.Bits.View, please refer to the corresponding variable in Acquisition.Cx

**View****Bool****Description**

Using SDA.Bits.View, please refer to the corresponding variable in Acquisition.Cx

**ViewLabels****Bool****Description**

Using SDA.Bits.View, please refer to the corresponding variable in Acquisition.Cx

**RESULT***app.SDA.Bits.Out.Result*

Properties of the type xxxx.Out.Result.yyyy are those of the last completed acquisition. They are not affected if other cvars are changed after that acquisition was completed. This distinction between "Out.Result" properties and other cvars is most important when the trigger mode is Single or Stopped. You should treat "Out.Result" properties as read-only.

**EYE***app.SDA.Eye*

AxisXRotation	Integer
AxisYRotation	Integer
ClearSweeps	Action
LabelsPosition	String
LabelsText	String

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Persist3DQuality	Enum
Persisted	Bool
Persistence3d	Bool
PersistenceMonoChrome	Bool
PersistenceSaturation	Integer
PersistenceTime	Enum
ShowLastTrace	Bool
UseGrid	String
View	Bool
ViewLabels	Bool

### AxisXRotation

*Integer*

**Range** From -90 to 90 step 1

#### Description

Using SDA.Eye, please refer to the corresponding variable in Acquisition.Cx.

### AxisYRotation

*Integer*

**Range** From -90 to 90 step 1

#### Description

Using SDA.Eye, please refer to the corresponding variable in Acquisition.Cx.

### ClearSweeps

*Action*

#### Description

Using SDA.Eye, please refer to the corresponding variable in Acquisition.Cx.

### LabelsPosition

*String*

**Range** Any number of characters

#### Description

Using SDA.Eye, please refer to the corresponding variable in Acquisition.Cx.

### LabelsText

*String*

**Range** Any number of characters

#### Description

Using SDA.Eye, please refer to the corresponding variable in Acquisition.Cx.

### Persist3DQuality

*Enum*

#### Description

Using SDA.Eye, please refer to the corresponding variable in Acquisition.Cx.

#### Values

Shaded	
Solid	
WireFrame	

## Persisted

*Bool*

### Description

Using SDA.Eye, please refer to the corresponding variable in Acquisition.Cx.

## Persistence3d

*Bool*

### Description

Using SDA.Eye, please refer to the corresponding variable in Acquisition.Cx.

## PersistenceMonoChrome

*Bool*

### Description

Using SDA.Eye, please refer to the corresponding variable in Acquisition.Cx.

## PersistenceSaturation

*Integer*

**Range** From 0 to 100 step 1

### Description

Using SDA.Eye, please refer to the corresponding variable in Acquisition.Cx.

## PersistenceTime

*Enum*

### Description

Using SDA.Eye, please refer to the corresponding variable in Acquisition.Cx.

### Values

0.5s	
10s	
1s	
20s	
2s	
5s	
Infinite	

## ShowLastTrace

*Bool*

### Description

Using SDA.Eye, please refer to the corresponding variable in Acquisition.Cx.

## UseGrid

*String*

**Range** Any number of characters

### Description

Using SDA.Eye, please refer to the corresponding variable in Acquisition.Cx.

## View

*Bool*

### Description

Using SDA.Eye, please refer to the corresponding variable in Acquisition.Cx.

**ViewLabels*****Bool*****Description**

Using SDA.Eye, please refer to the corresponding variable in Acquisition.Cx.

**RESULT***app.SDA.Eye.Out.Result*

Properties of the type xxxx.Out.Result.yyyy are those of the last completed acquisition. They are not affected if other cvars are changed after that acquisition was completed. This distinction between "Out.Result" properties and other cvars is most important when the trigger mode is Single or Stopped. You should treat "Out.Result" properties as read-only.

**FINDFREQUENCYREFERENCE***app.SDA.FindFreqReference*

ClearSweeps	Action
FindFrequencyConfirm	Action
SignalType	Enum
View	Bool

**ClearSweeps*****Action*****Description**

Clear any accumulated result data. Useful for example to restart an average, or parameter statistics.

**FindFrequencyConfirm*****Action*****SignalType*****Enum*****Values**

Clock	
Data	

**View*****Bool*****Description**

Sets/Queries the trace's 'Viewed' state. When true, the trace is displayed on one of the display graticules. Note that even when a trace is not visible, it may be used as a source for Math, Measure, etc.

**RESULT***app.SDA.FindFreqReference.Out.Result***FINDFREQUENCYSTREAM***app.SDA.FindFreqStream*

ClearSweeps	Action
-------------	--------

## Automation Command and Query Reference Manual - Control Reference

FindFrequencyConfirm	Action
SignalType	Enum
View	Bool

### ClearSweeps

**Action**

#### Description

Clear any accumulated result data. Useful for example to restart an average, or parameter statistics.

### FindFrequencyConfirm

**Action**

### SignalType

**Enum**

#### Values

Clock	
Data	

### View

**Bool**

#### Description

Sets/Queries the trace's 'Viewed' state. When true, the trace is displayed on one of the display graticules. Note that even when a trace is not visible, it may be used as a source for Math, Measure, etc.

## RESULT

*app.SDA.FindFreqStream.Out.Result*

## FINDLEVELREFERENCE

*app.SDA.FindLevelReference*

ClearSweeps	Action
ThresholdFindConfirm	Action
View	Bool

### ClearSweeps

**Action**

#### Description

Clear any accumulated result data. Useful for example to restart an average, or parameter statistics.

### ThresholdFindConfirm

**Action**

### View

**Bool**

#### Description

Sets/Queries the trace's 'Viewed' state. When true, the trace is displayed on one of the display graticules. Note that even when a trace is not visible, it may be used as a source for Math, Measure, etc.

---

**RESULT***app.SDA.FindLevelReference.Out.Result*

---

---

**FINDLEVELSTREAM***app.SDA.FindLevelStream*

---

ClearSweeps	Action
ThresholdFindConfirm	Action
View	Bool

---

**ClearSweeps***Action***Description**

Clear any accumulated result data. Useful for example to restart an average, or parameter statistics.

---

**ThresholdFindConfirm***Action*

---

**View***Bool***Description**

Sets/Queries the trace's 'Viewed' state. When true, the trace is displayed on one of the display graticules. Note that even when a trace is not visible, it may be used as a source for Math, Measure, etc.

---

**RESULT***app.SDA.FindLevelStream.Out.Result*

---

---

**MASK2HITS***app.SDA.Mask2Hits*

---

ClearSweeps	Action
View	Bool

---

**ClearSweeps***Action***Description**

Clear any accumulated result data. Useful for example to restart an average, or parameter statistics.

---

**View***Bool***Description**

Sets/Queries the trace's 'Viewed' state. When true, the trace is displayed on one of the display graticules. Note that even when a trace is not visible, it may be used as a source for Math, Measure, etc.

---

**RESULT***app.SDA.Mask2Hits.Out.Result*

---

## MASK2OUT

*app.SDA.Mask2Out*

ClearSweeps	Action
View	Bool

### ClearSweeps

**Action**

#### Description

Clear any accumulated result data. Useful for example to restart an average, or parameter statistics.

### View

**Bool**

#### Description

Sets/Queries the trace's 'Viewed' state. When true, the trace is displayed on one of the display graticules. Note that even when a trace is not visible, it may be used as a source for Math, Measure, etc.

## RESULT

*app.SDA.Mask2Out.Out.Result*

## MASKHITS

*app.SDA.MaskHits*

ClearSweeps	Action
View	Bool

### ClearSweeps

**Action**

#### Description

Clear any accumulated result data. Useful for example to restart an average, or parameter statistics.

### View

**Bool**

#### Description

Sets/Queries the trace's 'Viewed' state. When true, the trace is displayed on one of the display graticules. Note that even when a trace is not visible, it may be used as a source for Math, Measure, etc.

## RESULT

*app.SDA.MaskHits.Out.Result*

## MASKOUT

*app.SDA.MaskOut*



## Automation Command and Query Reference Manual - Control Reference

ClearSweeps	Action
View	Bool

### ClearSweeps

*Action*

#### Description

Clear any accumulated result data. Useful for example to restart an average, or parameter statistics.

### View

*Bool*

#### Description

Sets/Queries the trace's 'Viewed' state. When true, the trace is displayed on one of the display graticules. Note that even when a trace is not visible, it may be used as a source for Math, Measure, etc.

## RESULT

*app.SDA.MaskOut.Out.Result*

## PRBS

*app.SDA.PRBS*

AxisXRotation	Integer
AxisYRotation	Integer
ClearSweeps	Action
LabelsPosition	String
LabelsText	String
Persist3DQuality	Enum
Persisted	Bool
Persistence3d	Bool
PersistenceMonoChrome	Bool
PersistenceSaturation	Integer
PersistenceTime	Enum
RiseTime	Double
ShowLastTrace	Bool
SignalFrequency	Double
UseGrid	String
View	Bool
ViewLabels	Bool

### AxisXRotation

*Integer*

**Range** From -90 to 90 step 1

#### Description

Using SDA.PRBS, please refer to the corresponding variable in Acquisition.Cx.

**AxisYRotation***Integer***Range** From -90 to 90 step 1**Description**

Using SDA.PRBS, please refer to the corresponding variable in Acquisition.Cx.

**ClearSweeps***Action***Description**

Using SDA.PRBS, please refer to the corresponding variable in Acquisition.Cx.

**LabelsPosition***String***Range** Any number of characters**Description**

Using SDA.PRBS, please refer to the corresponding variable in Acquisition.Cx.

**LabelsText***String***Range** Any number of characters**Description**

Using SDA.PRBS, please refer to the corresponding variable in Acquisition.Cx.

**Persist3DQuality***Enum***Description**

Using SDA.PRBS, please refer to the corresponding variable in Acquisition.Cx.

**Values**

Shaded	
Solid	
WireFrame	

**Persisted***Bool***Description**

Using SDA.PRBS, please refer to the corresponding variable in Acquisition.Cx.

**Persistence3d***Bool***Description**

Using SDA.PRBS, please refer to the corresponding variable in Acquisition.Cx.

**PersistenceMonoChrome***Bool***Description**

Using SDA.PRBS, please refer to the corresponding variable in Acquisition.Cx.

**PersistenceSaturation***Integer***Range** From 0 to 100 step 1**Description**

Using SDA.PRBS, please refer to the corresponding variable in Acquisition.Cx.

**PersistenceTime***Enum***Description**

Using SDA.PRBS, please refer to the corresponding variable in Acquisition.Cx.

**Values**

0.5s	
10s	
1s	
20s	
2s	
5s	
Infinite	

**RiseTime***Double*

**Range** From 1e-015 to 1 step 1e-015

**Description**

Sets/Queries the rise time of the signal.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Inspect the rise time of the signal.
RiseTime = app.SDA.PRBS.RiseTime
```

**ShowLastTrace***Bool***Description**

Using SDA.PRBS, please refer to the corresponding variable in Acquisition.Cx.

**SignalFrequency***Double*

**Range** From 90000 to 4e+010 step 1

**Description**

Please see the corresponding variable in app.Measure.Px.Operator (ParamEngine = "Dperiod@level").

**UseGrid***String*

**Range** Any number of characters

**Description**

Using SDA.PRBS, please refer to the corresponding variable in Acquisition.Cx.

**View***Bool***Description**

Using SDA.PRBS, please refer to the corresponding variable in Acquisition.Cx.

**ViewLabels***Bool***Description**

Using SDA.PRBS, please refer to the corresponding variable in Acquisition.Cx.

## RESULT

*app.SDA.PRBS.Out.Result*

Properties of the type xxxx.Out.Result.yyyy are those of the last completed acquisition. They are not affected if other cvars are changed after that acquisition was completed. This distinction between "Out.Result" properties and other cvars is most important when the trigger mode is Single or Stopped. You should treat "Out.Result" properties as read-only.

## SDASTATUS

*app.SDA.SDAStatus*

DataSource	Enum
SignalFrequency	Double

### DataSource

*Enum*

#### Values

C1	
C2	
C3	
C4	
F1	
F2	
F3	
F4	
M1	
M2	
M3	
M4	
Z1	
Z2	
Z3	
Z4	
Z5	
Z6	
Z7	
Z8	

### SignalFrequency

*Double*

Range From 90000 to 4e+010 step 1

## TIE

*app.SDA.TIE*

ClearSweeps	Action
ClockModeOn	Bool

## Automation Command and Query Reference Manual - Control Reference

CompensateForMissingEdges	Bool
CustomPLLTransportDelay	Double
Deskew	Double
EyeThresholdType	Enum
IntervalsEdgeEdge	Integer
PermitGTHalfUI	Bool
PLLType	Enum
ReferenceFrequency	Double
RefPercentLevel	Double
RefThresholdType	Enum
SDAMode	Enum
SignalFrequency	Double
TIEPercentLevel	Double
TIESlope	Enum
UseAllEdges	Bool
View	Bool

### ClearSweeps

**Action**

#### Description

Clear any accumulated result data. Useful for example to restart an average, or parameter statistics.

### ClockModeOn

**Bool**

### CompensateForMissingEdges

**Bool**

### CustomPLLTransportDelay

**Double**

**Range** From 0 to 1 step 1e-015

### Deskew

**Double**

**Range** From -1e-008 to 1e-008 step 1e-012

### EyeThresholdType

**Enum**

#### Description

Sets/Queries whether the eye threshold is measured in absolute units or percentage.

#### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the eye threshold to percent.
app.SDA.TIE.EyeThresholdType = "Absolute"
```

#### Values

Absolute	
Percent	

**IntervalsEdgeEdge***Integer***Range** From 1 to 100000 step 1**PermitGTHalfUI***Bool***PLLType***Enum***Values**

Custom	
DVI	
FBDIMM	
GOLDEN	
PCIEXPRESS	

**ReferenceFrequency***Double***Range** From 90000 to 4e+010 step 1**RefPercentLevel***Double***Range** From 0 to 100 step 1**RefThresholdType***Enum***Values**

Absolute	
Percent	

**SDAMode***Enum***Values**

MaskTest	
Scope	

**SignalFrequency***Double***Range** From 90000 to 4e+010 step 1**Description**

Sets/Queries the signal frequency for TIE.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the signal frequency to 2.00 MHz
app.SDA.TIE.SignalFrequency = 2.0e6
```

**TIEPercentLevel***Double***Range** From 0 to 100 step 1

**TIESlope***Enum***Values**

Both	
Neg	
Pos	

**UseAllEdges***Bool***View***Bool***Description**

Sets/Queries the visibility of the function.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Show the TIE function.
app.SDA.TIE.View = True
```

**RESULT***app.SDA.TIE.Out.Result*

Properties of the type xxxx.Out.Result.yyyy are those of the last completed acquisition. They are not affected if other cvars are changed after that acquisition was completed. This distinction between "Out.Result" properties and other cvars is most important when the trigger mode is Single or Stopped. You should treat "Out.Result" properties as read-only.

**TIEF***app.SDA.TIEF*

BitRate	Double
ClearSweeps	Action
View	Bool

**BitRate***Double*

**Range** From 90000 to 4e+010 step 1

**ClearSweeps***Action***Description**

Clear any accumulated result data. Useful for example to restart an average, or parameter statistics.

**View***Bool***Description**

Sets/Queries the trace's 'Viewed' state. When true, the trace is displayed on one of the display graticules. Note that even when a trace is not visible, it may be used as a source for Math, Measure, etc.

**RESULT***app.SDA.TIEF.Out.Result***SERIALDECODE***app.SerialDecode*

The Serial Decode Tab is the entry point for all of the decoders supported in LeCroy scopes

AnnotationPositionPreference	Enum
LinkedToTrigger1	Bool
LinkedToTrigger2	Bool
LinkedToTrigger3	Bool
LinkedToTrigger4	Bool
SelectDecoder	Enum

**AnnotationPositionPreference***Enum***Values**

OnNoisyTrace	
OnTrace	

**LinkedToTrigger1***Bool***LinkedToTrigger2***Bool***LinkedToTrigger3***Bool***LinkedToTrigger4***Bool***SelectDecoder***Enum***Values**

Decode1	
Decode2	
Decode3	
Decode4	

**8B10B***app.SerialDecode.Decode[n].Protocol (Protocol = "8B10B")*

BitRate	Double
ColumnState	String
FilteredSymbolList	String
LevelPercent	Double
LevelType	Enum
PrimitiveFile	FileName
PrimitiveSource	Enum



## Automation Command and Query Reference Manual - Control Reference

ViewingMode	Enum
-------------	------

### BitRate

*Double*

**Range** From 1000 to 1e+010 step 0.0001

### ColumnState

*String*

**Range** Any number of characters

### FilteredSymbolList

*String*

**Range** Any number of characters

### LevelPercent

*Double*

**Range** From 0 to 100 step 0.1

### LevelType

*Enum*

#### Values

Absolute	
Percent	

### PrimitiveFile

*FileName*

**Range** Any number of characters

### PrimitiveSource

*Enum*

#### Values

8b10b	
Others	
PCIE	
PCIE20	
SAS	
SATA	
USB3	
XAUI	

### ViewingMode

*Enum*

#### Values

Hexadecimal	
Symbolic	

## AUDIOI2S

*app.SerialDecode.Decode[n].Protocol (Protocol = "AudioI2S")*

Annotate	Enum
----------	------

## Automation Command and Query Reference Manual - Control Reference

BitOrder	Enum
BitsInChannel	Integer
BitsPerByte	Integer
ByteSlicer	Enum
ClockLevelPercent	Double
ClockLevelType	Enum
ClockPhase	Enum
ColumnState	String
Conversion	Enum
CSLevelPercent	Double
CSLevelType	Enum
CSLockMode	Enum
Csoffset	Integer
CSPolarity	Enum
DataLevelPercent	Double
DataLevelType	Enum
IgnoreCS	Bool
MinSamplesPerBit	Integer
ViewingMode	Enum

### Annotate

*Enum*

#### Values

All	
Left	
Right	

### BitOrder

*Enum*

#### Values

LSB	
MSB	

### BitsInChannel

*Integer*

**Range** From 1 to 32 step 1

### BitsPerByte

*Integer*

**Range** From 2 to 32 step 1

**ByteSlicer***Enum***Values**

CSbased	
CSbasedMulti	
HolebasedMulti	
NoHole	
Std	
UserCol	

**ClockLevelPercent***Double***Range** From 0 to 100 step 0.1**ClockLevelType***Enum***Values**

Absolute	
Percent	

**ClockPhase***Enum***Values**

Negative	
Positive	

**ColumnState***String***Range** Any number of characters**Conversion***Enum***Values**

Binary	
Binary2Cpl	

**CSLevelPercent***Double***Range** From 0 to 100 step 0.1**CSLevelType***Enum***Values**

Absolute	
Percent	

## Automation Command and Query Reference Manual - Control Reference

### CSLockMode

*Enum*

#### Values

Falling	
Rising	

### CSoffset

*Integer*

**Range** From 0 to 31 step 1

### CSPolarity

*Enum*

#### Values

ActiveHigh	
ActiveLow	

### DataLevelPercent

*Double*

**Range** From 0 to 100 step 0.1

### DataLevelType

*Enum*

#### Values

Absolute	
Percent	

### IgnoreCS

*Bool*

### MinSamplesPerBit

*Integer*

**Range** From 4 to 100 step 1

### ViewingMode

*Enum*

#### Values

Binary	
dB	
Dec	
Hex	

## AUDIOLJ

*app.SerialDecode.Decode[n].Protocol (Protocol = "AudioLJ")*

Annotate	Enum
BitOrder	Enum
BitsInChannel	Integer
BitsPerByte	Integer
ByteSlicer	Enum
ClockLevelPercent	Double
ClockLevelType	Enum

## Automation Command and Query Reference Manual - Control Reference

ClockPhase	Enum
ColumnState	String
Conversion	Enum
CSLevelPercent	Double
CSLevelType	Enum
CSLockMode	Enum
CSOffset	Integer
CSPolarity	Enum
DataLevelPercent	Double
DataLevelType	Enum
IgnoreCS	Bool
MinSamplesPerBit	Integer
ViewingMode	Enum

### Annotate

*Enum*

#### Values

All	
Left	
Right	

### BitOrder

*Enum*

#### Values

LSB	
MSB	

### BitsInChannel

*Integer*

**Range** From 1 to 32 step 1

### BitsPerByte

*Integer*

**Range** From 2 to 32 step 1

### ByteSlicer

*Enum*

#### Values

CSbased	
CSbasedMulti	
HolebasedMulti	
NoHole	
Std	
UserCol	

### ClockLevelPercent

*Double*

**Range** From 0 to 100 step 0.1

**ClockLevelType***Enum***Values**

Absolute	
Percent	

**ClockPhase***Enum***Values**

Negative	
Positive	

**ColumnState***String***Range** Any number of characters**Conversion***Enum***Values**

Binary	
Binary2Cpl	

**CSLevelPercent***Double***Range** From 0 to 100 step 0.1**CSLevelType***Enum***Values**

Absolute	
Percent	

**CSLockMode***Enum***Values**

Falling	
Rising	

**CSOffset***Integer***Range** From 0 to 31 step 1**CSPolarity***Enum***Values**

ActiveHigh	
ActiveLow	

## Automation Command and Query Reference Manual - Control Reference

### DataLevelPercent

*Double*

**Range** From 0 to 100 step 0.1

### DataLevelType

*Enum*

#### Values

Absolute	
Percent	

### IgnoreCS

*Bool*

### MinSamplesPerBit

*Integer*

**Range** From 4 to 100 step 1

### ViewingMode

*Enum*

#### Values

Binary	
dB	
Dec	
Hex	

## AUDIORJ

*app.SerialDecode.Decode[n].Protocol (Protocol = "AudioRJ")*

Annotate	Enum
BitOrder	Enum
BitsInChannel	Integer
BitsPerByte	Integer
ByteSlicer	Enum
ClockLevelPercent	Double
ClockLevelType	Enum
ClockPhase	Enum
ColumnState	String
Conversion	Enum
CSLevelPercent	Double
CSLevelType	Enum
CSLockMode	Enum
Csoffset	Integer
CSPolarity	Enum
DataLevelPercent	Double
DataLevelType	Enum
IgnoreCS	Bool
MinSamplesPerBit	Integer
ViewingMode	Enum

**Annotate***Enum***Values**

All	
Left	
Right	

**BitOrder***Enum***Values**

LSB	
MSB	

**BitsInChannel***Integer***Range** From 1 to 32 step 1**BitsPerByte***Integer***Range** From 2 to 32 step 1**ByteSlicer***Enum***Values**

CSbased	
CSbasedMulti	
HolebasedMulti	
NoHole	
Std	
UserCol	

**ClockLevelPercent***Double***Range** From 0 to 100 step 0.1**ClockLevelType***Enum***Values**

Absolute	
Percent	

**ClockPhase***Enum***Values**

Negative	
Positive	

**ColumnState***String***Range** Any number of characters



**Conversion***Enum***Values**

Binary	
Binary2Cpl	

**CSLevelPercent***Double***Range** From 0 to 100 step 0.1**CSLevelType***Enum***Values**

Absolute	
Percent	

**CSLockMode***Enum***Values**

Falling	
Rising	

**CSOffset***Integer***Range** From 0 to 31 step 1**CSPolarity***Enum***Values**

ActiveHigh	
ActiveLow	

**DataLevelPercent***Double***Range** From 0 to 100 step 0.1**DataLevelType***Enum***Values**

Absolute	
Percent	

**IgnoreCS***Bool***MinSamplesPerBit***Integer***Range** From 4 to 100 step 1

**ViewingMode***Enum***Values**

Binary	
dB	
Dec	
Hex	

**AUDIOTDM***app.SerialDecode.Decode[n].Protocol (Protocol = "AudioTDM")*

Annotate	Enum
BitOrder	Enum
BitsInChannel	Integer
BitsPerByte	Integer
ByteSlicer	Enum
ClockLevelPercent	Double
ClockLevelType	Enum
ClockPhase	Enum
ColumnState	String
Conversion	Enum
CSLevelPercent	Double
CSLevelType	Enum
CSLockMode	Enum
Csoffset	Integer
CSPolarity	Enum
DataLevelPercent	Double
DataLevelType	Enum
IgnoreCS	Bool
MinSamplesPerBit	Integer
ViewingMode	Enum

**Annotate***Enum***Values**

All	
Audio1	
Audio2	
Audio3	
Audio4	
Audio5	
Audio6	
Audio7	
Audio8	

**BitOrder***Enum***Values**

LSB	
MSB	

**BitsInChannel***Integer***Range** From 1 to 32 step 1**BitsPerByte***Integer***Range** From 2 to 32 step 1**ByteSlicer***Enum***Values**

CSbased	
CSbasedMulti	
HolebasedMulti	
NoHole	
Std	
UserCol	

**ClockLevelPercent***Double***Range** From 0 to 100 step 0.1**ClockLevelType***Enum***Values**

Absolute	
Percent	

**ClockPhase***Enum***Values**

Negative	
Positive	

**ColumnState***String***Range** Any number of characters**Conversion***Enum***Values**

Binary	
Binary2Cpl	

**CSLevelPercent** *Double*

**Range** From 0 to 100 step 0.1

**CSLevelType** *Enum*

**Values**

Absolute	
Percent	

**CSLockMode** *Enum*

**Values**

Falling	
Rising	

**CSOffset** *Integer*

**Range** From 0 to 31 step 1

**CSPolarity** *Enum*

**Values**

ActiveHigh	
ActiveLow	

**DataLevelPercent** *Double*

**Range** From 0 to 100 step 0.1

**DataLevelType** *Enum*

**Values**

Absolute	
Percent	

**IgnoreCS** *Bool*

**MinSamplesPerBit** *Integer*

**Range** From 4 to 100 step 1

**ViewingMode** *Enum*

**Values**

Binary	
dB	
Dec	
Hex	

**CAN**

*app.SerialDecode.Decode[n].Protocol (Protocol = "CAN")*

## Automation Command and Query Reference Manual - Control Reference

BitRate	Double
ColumnState	String
dbLibFile	FileName
GMLAN	Bool
LevelPercent	Double
LevelType	Enum
ShowStuffBits	Bool
Tolerance	Double
ViewingMode	Enum

**BitRate** *Double*

**Range** From 10 to 2e+007 step 1

**ColumnState** *String*

**Range** Any number of characters

**dbLibFile** *FileName*

**Range** Any number of characters

**GMLAN** *Bool*

**LevelPercent** *Double*

**Range** From 0 to 100 step 0.1

**LevelType** *Enum*

**Values**

Absolute	
Percent	

**ShowStuffBits** *Bool*

**Tolerance** *Double*

**Range** From 0.01 to 10 step 0.01

**ViewingMode** *Enum*

**Values**

Hexadecimal	
Symbolic	

**CANHL** *app.SerialDecode.Decode[n].Protocol (Protocol = "CANHL")*

BitRate	Double
---------	--------

## Automation Command and Query Reference Manual - Control Reference

ColumnState	String
dbLibFile	FileName
GMLAN	Bool
LevelPercent	Double
LevelType	Enum
ShowStuffBits	Bool
Tolerance	Double
ViewingMode	Enum

### BitRate

*Double*

**Range** From 10 to 2e+007 step 1

### ColumnState

*String*

**Range** Any number of characters

### dbLibFile

*FileName*

**Range** Any number of characters

### GMLAN

*Bool*

### LevelPercent

*Double*

**Range** From 0 to 100 step 0.1

### LevelType

*Enum*

#### Values

Absolute	
Percent	

### ShowStuffBits

*Bool*

### Tolerance

*Double*

**Range** From 0.01 to 10 step 0.01

### ViewingMode

*Enum*

#### Values

Hexadecimal	
Symbolic	

## FLX

*app.SerialDecode.Decode[n].Protocol (Protocol = "FLX")*

BitRate	Double
Channel	Enum
ColumnState	String

## Automation Command and Query Reference Manual - Control Reference

LevelHighPercent	Double
LevelHighType	Enum
LevelLowPercent	Double
LevelLowType	Enum
Tolerance	Double
ViewingMode	Enum

### BitRate

*Double*

**Range** From 1e+006 to 2e+007 step 1000

### Channel

*Enum*

#### Values

A	
B	

### ColumnState

*String*

**Range** Any number of characters

### LevelHighPercent

*Double*

**Range** From 0 to 100 step 0.1

### LevelHighType

*Enum*

#### Values

Absolute	
Percent	

### LevelLowPercent

*Double*

**Range** From 0 to 100 step 0.1

### LevelLowType

*Enum*

#### Values

Absolute	
Percent	

### Tolerance

*Double*

**Range** From 0.01 to 10 step 0.01

### ViewingMode

*Enum*

#### Values

Hex	
Symbolic	

**GMCANHL***app.SerialDecode.Decode[n].Protocol (Protocol = "GMCANHL")*

BitRate	Double
ColumnState	String
dbLibFile	FileName
GMLAN	Bool
LevelPercent	Double
LevelType	Enum
ShowStuffBits	Bool
Tolerance	Double
ViewingMode	Enum

**BitRate** *Double***Range** From 10 to 2e+007 step 1**ColumnState** *String***Range** Any number of characters**dbLibFile** *FileName***Range** Any number of characters**GMLAN** *Bool***LevelPercent** *Double***Range** From 0 to 100 step 0.1**LevelType** *Enum***Values**

Absolute	
Percent	

**ShowStuffBits** *Bool***Tolerance** *Double***Range** From 0.01 to 10 step 0.01**ViewingMode** *Enum***Values**

Hexadecimal	
Symbolic	

**GMCANLAN***app.SerialDecode.Decode[n].Protocol (Protocol = "GMCANLAN")*



## Automation Command and Query Reference Manual - Control Reference

BitRate	Double
ColumnState	String
dbLibFile	FileName
GMLAN	Bool
LevelPercent	Double
LevelType	Enum
ShowStuffBits	Bool
Tolerance	Double
ViewingMode	Enum

**BitRate** *Double*

**Range** From 10 to 2e+007 step 1

**ColumnState** *String*

**Range** Any number of characters

**dbLibFile** *FileName*

**Range** Any number of characters

**GMLAN** *Bool*

**LevelPercent** *Double*

**Range** From 0 to 100 step 0.1

**LevelType** *Enum*

**Values**

Absolute	
Percent	

**ShowStuffBits** *Bool*

**Tolerance** *Double*

**Range** From 0.01 to 10 step 0.01

**ViewingMode** *Enum*

**Values**

Hexadecimal	
Symbolic	

**I2C** *app.SerialDecode.Decode[n].Protocol (Protocol = "I2C")*

AddressWithRW

Bool

## Automation Command and Query Reference Manual - Control Reference

BitRate	Double
ClockLevelPercent	Double
ClockLevelType	Enum
ColumnState	String
DataLevelPercent	Double
DataLevelType	Enum
Tolerance	Double
ViewingMode	Enum

**AddressWithRW** *Bool*

**BitRate** *Double*

**Range** From 10 to 2e+006 step 1

**ClockLevelPercent** *Double*

**Range** From 0 to 100 step 0.1

**ClockLevelType** *Enum*

**Values**

Absolute	
Percent	

**ColumnState** *String*

**Range** Any number of characters

**DataLevelPercent** *Double*

**Range** From 0 to 100 step 0.1

**DataLevelType** *Enum*

**Values**

Absolute	
Percent	

**Tolerance** *Double*

**Range** From 0.01 to 10 step 0.01

**ViewingMode***Enum***Values**

ASCII	
Binary	
Dec	
Hex	

**LIN***app.SerialDecode.Decode[n].Protocol (Protocol = "LIN")*

BitRate	Double
ColumnState	String
LevelPercent	Double
LevelType	Enum
LINVersion	Enum
Tolerance	Double

**BitRate***Double***Range** From 1000 to 20000 step 1**ColumnState***String***Range** Any number of characters**LevelPercent***Double***Range** From 0 to 100 step 0.1**LevelType***Enum***Values**

Absolute	
Percent	

**LINVersion***Enum***Values**

ALL	
J2602	
Rev1.3	
Rev2.x	

**Tolerance***Double***Range** From 0.01 to 10 step 0.01**MIL1553***app.SerialDecode.Decode[n].Protocol (Protocol = "MIL1553")*

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BitRate	Double
ColumnState	String
FBO	Double
HalfSyncWidth	Double
LevelHAbsolute	Double
LevelHType	Enum
LevelLAbsolute	Double
LevelLType	Enum
MinSamplesPerBit	Integer
NPproximity	Double
TableMode	Enum
ViewingMode	Enum

**BitRate** *Double*

**Range** From 1000 to 2e+007 step 50

**ColumnState** *String*

**Range** Any number of characters

**FBO** *Double*

**Range** From 0 to 50 step 0.1

**HalfSyncWidth** *Double*

**Range** From 4e-008 to 0.025 step 1e-008

**LevelHAbsolute** *Double*

**Range** From -10 to 10 step 0.05

**LevelHType** *Enum*

**Values**

Absolute	
Percent	

**LevelLAbsolute** *Double*

**Range** From -10 to 10 step 0.05

**LevelLType** *Enum*

**Values**

Absolute	
Percent	

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### MinSamplesPerBit

*Integer*

**Range** From 4 to 100 step 1

### NPproximity

*Double*

**Range** From 1e-009 to 0.005 step 1e-009

### TableMode

*Enum*

#### Values

Transfer	
Word	

### ViewingMode

*Enum*

#### Values

Binary	
Hex	

## PCIE1X1

*app.SerialDecode.Decode[n].Protocol (Protocol = "PCIE1X1")*

BitRate	Double
CurrentBitRate	Double
InputIsDescrambled	Bool
Lane	Integer
LevelPercent	Double
LevelType	Enum
LinkToProtoColAnalyzer	Bool
ScramblingOn	Bool
SpeedChangeAt	Double
ViewMode	Enum

### BitRate

*Double*

**Range** From 1e+008 to 2e+010 step 1000

### CurrentBitRate

*Double*

**Range** From 1e+008 to 2e+010 step 1000

### InputIsDescrambled

*Bool*

### Lane

*Integer*

**Range** From 0 to 15 step 1

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**LevelPercent** *Double*

**Range** From 0 to 100 step 0.1

**LevelType** *Enum*

**Values**

Absolute	
Percent	

**LinkToProtoColAnalyzer** *Bool*

**ScramblingOn** *Bool*

**SpeedChangeAt** *Double*

**Range** From -100 to 100 step 1e-009

**ViewMode** *Enum*

**Values**

**PCIE1X2** *app.SerialDecode.Decode[n].Protocol (Protocol = "PCIE1X2")*

BitRate	Double
CurrentBitRate	Double
InputIsDescrambled	Bool
Lane	Integer
LevelPercent	Double
LevelType	Enum
LinkToProtoColAnalyzer	Bool
ScramblingOn	Bool
SpeedChangeAt	Double
ViewMode	Enum

**BitRate** *Double*

**Range** From 1e+008 to 2e+010 step 1000

**CurrentBitRate** *Double*

**Range** From 1e+008 to 2e+010 step 1000

**InputIsDescrambled** *Bool*

**Lane** *Integer*

**Range** From 0 to 15 step 1

**LevelPercent***Double***Range** From 0 to 100 step 0.1**LevelType***Enum***Values**

Absolute	
Percent	

**LinkToProtoColAnalyzer***Bool***ScramblingOn***Bool***SpeedChangeAt***Double***Range** From -100 to 100 step 1e-009**ViewMode***Enum***Values****PCIE4X1***app.SerialDecode.Decode[n].Protocol (Protocol = "PCIE4X1")*

BitRate	Double
CurrentBitRate	Double
InputIsDescrambled	Bool
LevelPercent	Double
LevelType	Enum
LinkToProtoColAnalyzer	Bool
ScramblingOn	Bool
SpeedChangeAt	Double
ViewMode	Enum

**BitRate***Double***Range** From 1e+008 to 2e+010 step 1000**CurrentBitRate***Double***Range** From 1e+008 to 2e+010 step 1000**InputIsDescrambled***Bool***LevelPercent***Double***Range** From 0 to 100 step 0.1

**LevelType***Enum*

Values

Absolute	
Percent	

**LinkToProtoColAnalyzer***Bool***ScramblingOn***Bool***SpeedChangeAt***Double***Range** From -100 to 100 step 1e-009**ViewMode***Enum*

Values

**RS232***app.SerialDecode.Decode[n].Protocol (Protocol = "RS232")*

BitRate	Double
ByteOrderUI	Enum
ColumnState	String
DataBitsUI	Integer
LevelPercent	Double
LevelType	Enum
Parity	Enum
ParityUI	Enum
PolarityUI	Enum
StopBitsUI	Enum
Tolerance	Double
ViewingMode	Enum

**BitRate***Double***Range** From 30 to 5e+008 step 1**ByteOrderUI***Enum*

Values

LSB	
MSB	

**ColumnState***String***Range** Any number of characters



**DataBitsUI***Integer***Range** From 5 to 16 step 1**LevelPercent***Double***Range** From 0 to 100 step 0.1**LevelType***Enum***Values**

Absolute	
Percent	

**Parity***Enum***Values**

Even	
Mark	
None	
Odd	
Space	

**ParityUI***Enum***Values**

Even	
None	
Odd	

**PolarityUI***Enum***Values**

IdleHigh	
IdleLow	

**StopBitsUI***Enum***Values**

1	
2	

**Tolerance***Double***Range** From 0.01 to 10 step 0.01

**ViewingMode***Enum***Values**

ASCII	
Binary	
Hex	

**SIOP***app.SerialDecode.Decode[n].Protocol (Protocol = "SIOP")*

BitOrder	Enum
BitsPerByte	Integer
ByteSlicer	Enum
ClockLevelPercent	Double
ClockLevelType	Enum
ClockPhase	Enum
ClockPolarity	Enum
ColumnState	String
Conversion	Enum
CSLevelPercent	Double
CSLevelType	Enum
CSLockMode	Enum
CSPolarity	Enum
DataLevelPercent	Double
DataLevelType	Enum
DDR	Bool
IgnoreCS	Bool
InterFrameSetup	Enum
InterFrameTime	Double
MinSamplesPerBit	Integer
TDMChannel	Integer
ViewingMode	Enum

**BitOrder***Enum***Values**

LSB	
MSB	

**BitsPerByte***Integer***Range** From 2 to 32 step 1

**ByteSlicer***Enum***Values**

CSbased	
CSbasedMulti	
HolebasedMulti	
NoHole	
Std	
UserCol	

**ClockLevelPercent***Double***Range** From 0 to 100 step 0.1**ClockLevelType***Enum***Values**

Absolute	
Percent	

**ClockPhase***Enum***Values**

0	
1	

**ClockPolarity***Enum***Values**

0	
1	

**ColumnState***String***Range** Any number of characters**Conversion***Enum***Values**

Binary	
Binary2Cpl	

**CSLevelPercent***Double***Range** From 0 to 100 step 0.1

**CSLevelType***Enum***Values**

Absolute	
Percent	

**CSLockMode***Enum***Values**

Both	
Falling	
Rising	

**CSPolarity***Enum***Values**

ActiveHigh	
ActiveLow	

**DataLevelPercent***Double***Range** From 0 to 100 step 0.1**DataLevelType***Enum***Values**

Absolute	
Percent	

**DDR***Bool***IgnoreCS***Bool***InterFrameSetup***Enum***Values**

Auto	
Manual	

**InterFrameTime***Double***Range** From 1e-009 to 10 step 1e-009**MinSamplesPerBit***Integer***Range** From 4 to 100 step 1**TDMChannel***Integer***Range** From 1 to 8 step 1

**ViewingMode***Enum***Values**

ASCII	
Binary	
Dec	
Hex	

**SPI***app.SerialDecode.Decode[n].Protocol (Protocol = "SPI")*

BitOrder	Enum
BitsPerByte	Integer
ByteSlicer	Enum
ClockLevelPercent	Double
ClockLevelType	Enum
ClockPhase	Enum
ClockPolarity	Enum
ColumnState	String
Conversion	Enum
CSLevelPercent	Double
CSLevelType	Enum
CSLockMode	Enum
CSPolarity	Enum
DataLevelPercent	Double
DataLevelType	Enum
DDR	Bool
IgnoreCS	Bool
InterFrameSetup	Enum
InterFrameTime	Double
MinSamplesPerBit	Integer
TDMChannel	Integer
ViewingMode	Enum

**BitOrder***Enum***Values**

LSB	
MSB	

**BitsPerByte***Integer***Range** From 2 to 32 step 1

**ByteSlicer***Enum***Values**

CSbased	
CSbasedMulti	
HolebasedMulti	
NoHole	
Std	
UserCol	

**ClockLevelPercent***Double***Range** From 0 to 100 step 0.1**ClockLevelType***Enum***Values**

Absolute	
Percent	

**ClockPhase***Enum***Values**

0	
1	

**ClockPolarity***Enum***Values**

0	
1	

**ColumnState***String***Range** Any number of characters**Conversion***Enum***Values**

Binary	
Binary2Cpl	

**CSLevelPercent***Double***Range** From 0 to 100 step 0.1

**CSLevelType***Enum***Values**

Absolute	
Percent	

**CSLockMode***Enum***Values**

Both	
Falling	
Rising	

**CSPolarity***Enum***Values**

ActiveHigh	
ActiveLow	

**DataLevelPercent***Double***Range** From 0 to 100 step 0.1**DataLevelType***Enum***Values**

Absolute	
Percent	

**DDR***Bool***IgnoreCS***Bool***InterFrameSetup***Enum***Values**

Auto	
Manual	

**InterFrameTime***Double***Range** From 1e-009 to 10 step 1e-009**MinSamplesPerBit***Integer***Range** From 4 to 100 step 1**TDMChannel***Integer***Range** From 1 to 8 step 1

**ViewingMode***Enum***Values**

ASCII	
Binary	
Dec	
Hex	

**SPICUSTOM***app.SerialDecode.Decode[n].Protocol (Protocol = "SPICustom")*

BitOrder	Enum
BitsPerByte	Integer
ByteSlicer	Enum
ClockLevelPercent	Double
ClockLevelType	Enum
ClockPhase	Enum
ClockPolarity	Enum
ColumnState	String
Conversion	Enum
CSLevelPercent	Double
CSLevelType	Enum
CSLockMode	Enum
CSPolarity	Enum
DataLevelPercent	Double
DataLevelType	Enum
DDR	Bool
IgnoreCS	Bool
InterFrameSetup	Enum
InterFrameTime	Double
MinSamplesPerBit	Integer
TDMChannel	Integer
ViewingMode	Enum

**BitOrder***Enum***Values**

LSB	
MSB	

**BitsPerByte***Integer***Range** From 2 to 32 step 1



**ByteSlicer***Enum***Values**

CSbased	
CSbasedMulti	
HolebasedMulti	
NoHole	
Std	
UserCol	

**ClockLevelPercent***Double***Range** From 0 to 100 step 0.1**ClockLevelType***Enum***Values**

Absolute	
Percent	

**ClockPhase***Enum***Values**

0	
1	

**ClockPolarity***Enum***Values**

0	
1	

**ColumnState***String***Range** Any number of characters**Conversion***Enum***Values**

Binary	
Binary2Cpl	

**CSLevelPercent***Double***Range** From 0 to 100 step 0.1

**CSLevelType***Enum***Values**

Absolute	
Percent	

**CSLockMode***Enum***Values**

Both	
Falling	
Rising	

**CSPolarity***Enum***Values**

ActiveHigh	
ActiveLow	

**DataLevelPercent***Double***Range** From 0 to 100 step 0.1**DataLevelType***Enum***Values**

Absolute	
Percent	

**DDR***Bool***IgnoreCS***Bool***InterFrameSetup***Enum***Values**

Auto	
Manual	

**InterFrameTime***Double***Range** From 1e-009 to 10 step 1e-009**MinSamplesPerBit***Integer***Range** From 4 to 100 step 1**TDMChannel***Integer***Range** From 1 to 8 step 1

**ViewingMode***Enum***Values**

ASCII	
Binary	
Dec	
Hex	

**SPIDDR***app.SerialDecode.Decode[n].Protocol (Protocol = "SPIDDR")*

BitOrder	Enum
BitsPerByte	Integer
ByteSlicer	Enum
ClockLevelPercent	Double
ClockLevelType	Enum
ClockPhase	Enum
ClockPolarity	Enum
ColumnState	String
Conversion	Enum
CSLevelPercent	Double
CSLevelType	Enum
CSLockMode	Enum
CSPolarity	Enum
DataLevelPercent	Double
DataLevelType	Enum
DDR	Bool
IgnoreCS	Bool
InterFrameSetup	Enum
InterFrameTime	Double
MinSamplesPerBit	Integer
TDMChannel	Integer
ViewingMode	Enum

**BitOrder***Enum***Values**

LSB	
MSB	

**BitsPerByte***Integer***Range** From 2 to 32 step 1

**ByteSlicer***Enum***Values**

CSbased	
CSbasedMulti	
HolebasedMulti	
NoHole	
Std	
UserCol	

**ClockLevelPercent***Double***Range** From 0 to 100 step 0.1**ClockLevelType***Enum***Values**

Absolute	
Percent	

**ClockPhase***Enum***Values**

0	
1	

**ClockPolarity***Enum***Values**

0	
1	

**ColumnState***String***Range** Any number of characters**Conversion***Enum***Values**

Binary	
Binary2Cpl	

**CSLevelPercent***Double***Range** From 0 to 100 step 0.1

**CSLevelType***Enum***Values**

Absolute	
Percent	

**CSLockMode***Enum***Values**

Both	
Falling	
Rising	

**CSPolarity***Enum***Values**

ActiveHigh	
ActiveLow	

**DataLevelPercent***Double***Range** From 0 to 100 step 0.1**DataLevelType***Enum***Values**

Absolute	
Percent	

**DDR***Bool***IgnoreCS***Bool***InterFrameSetup***Enum***Values**

Auto	
Manual	

**InterFrameTime***Double***Range** From 1e-009 to 10 step 1e-009**MinSamplesPerBit***Integer***Range** From 4 to 100 step 1**TDMChannel***Integer***Range** From 1 to 8 step 1

**ViewingMode***Enum***Values**

ASCII	
Binary	
Dec	
Hex	

**SSPI***app.SerialDecode.Decode[n].Protocol (Protocol = "SSPI")*

BitOrder	Enum
BitsPerByte	Integer
ByteSlicer	Enum
ClockLevelPercent	Double
ClockLevelType	Enum
ClockPhase	Enum
ClockPolarity	Enum
ColumnState	String
Conversion	Enum
CSLevelPercent	Double
CSLevelType	Enum
CSLockMode	Enum
CSPolarity	Enum
DataLevelPercent	Double
DataLevelType	Enum
DDR	Bool
IgnoreCS	Bool
InterFrameSetup	Enum
InterFrameTime	Double
MinSamplesPerBit	Integer
TDMChannel	Integer
ViewingMode	Enum

**BitOrder***Enum***Values**

LSB	
MSB	

**BitsPerByte***Integer***Range** From 2 to 32 step 1

**ByteSlicer***Enum***Values**

CSbased	
CSbasedMulti	
HolebasedMulti	
NoHole	
Std	
UserCol	

**ClockLevelPercent***Double***Range** From 0 to 100 step 0.1**ClockLevelType***Enum***Values**

Absolute	
Percent	

**ClockPhase***Enum***Values**

0	
1	

**ClockPolarity***Enum***Values**

0	
1	

**ColumnState***String***Range** Any number of characters**Conversion***Enum***Values**

Binary	
Binary2Cpl	

**CSLevelPercent***Double***Range** From 0 to 100 step 0.1

**CSLevelType***Enum***Values**

Absolute	
Percent	

**CSLockMode***Enum***Values**

Both	
Falling	
Rising	

**CSPolarity***Enum***Values**

ActiveHigh	
ActiveLow	

**DataLevelPercent***Double***Range** From 0 to 100 step 0.1**DataLevelType***Enum***Values**

Absolute	
Percent	

**DDR***Bool***IgnoreCS***Bool***InterFrameSetup***Enum***Values**

Auto	
Manual	

**InterFrameTime***Double***Range** From 1e-009 to 10 step 1e-009**MinSamplesPerBit***Integer***Range** From 4 to 100 step 1**TDMChannel***Integer***Range** From 1 to 8 step 1



**ViewingMode***Enum***Values**

ASCII	
Binary	
Dec	
Hex	

**UART***app.SerialDecode.Decode[n].Protocol (Protocol = "UART")*

BitRate	Double
ByteOrderUI	Enum
ColumnState	String
DataBitsUI	Integer
LevelPercent	Double
LevelType	Enum
Parity	Enum
ParityUI	Enum
PolarityUI	Enum
StopBitsUI	Enum
Tolerance	Double
ViewingMode	Enum

**BitRate***Double***Range** From 30 to 5e+008 step 1**ByteOrderUI***Enum***Values**

LSB	
MSB	

**ColumnState***String***Range** Any number of characters**DataBitsUI***Integer***Range** From 5 to 16 step 1**LevelPercent***Double***Range** From 0 to 100 step 0.1

**LevelType***Enum***Values**

Absolute	
Percent	

**Parity***Enum***Values**

Even	
Mark	
None	
Odd	
Space	

**ParityUI***Enum***Values**

Even	
None	
Odd	

**PolarityUI***Enum***Values**

IdleHigh	
IdleLow	

**StopBitsUI***Enum***Values**

1	
2	

**Tolerance***Double***Range** From 0.01 to 10 step 0.01**ViewingMode***Enum***Values**

ASCII	
Binary	
Hex	

**USART***app.SerialDecode.Decode[n].Protocol (Protocol = "USART")*

BitOrder

Enum

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BitsPerByte	Integer
ByteSlicer	Enum
ClockLevelPercent	Double
ClockLevelType	Enum
ClockPhase	Enum
ClockPolarity	Enum
ColumnState	String
Conversion	Enum
CSLevelPercent	Double
CSLevelType	Enum
CSLockMode	Enum
CSPolarity	Enum
DataLevelPercent	Double
DataLevelType	Enum
DDR	Bool
IgnoreCS	Bool
InterFrameSetup	Enum
InterFrameTime	Double
MinSamplesPerBit	Integer
TDMChannel	Integer
ViewingMode	Enum

### BitOrder

*Enum*

#### Values

LSB	
MSB	

### BitsPerByte

*Integer*

**Range** From 2 to 32 step 1

### ByteSlicer

*Enum*

#### Values

CSbased	
CSbasedMulti	
HolebasedMulti	
NoHole	
Std	
UserCol	

### ClockLevelPercent

*Double*

**Range** From 0 to 100 step 0.1

**ClockLevelType***Enum***Values**

Absolute	
Percent	

**ClockPhase***Enum***Values**

0	
1	

**ClockPolarity***Enum***Values**

0	
1	

**ColumnState***String***Range** Any number of characters**Conversion***Enum***Values**

Binary	
Binary2Cpl	

**CSLevelPercent***Double***Range** From 0 to 100 step 0.1**CSLevelType***Enum***Values**

Absolute	
Percent	

**CSLockMode***Enum***Values**

Both	
Falling	
Rising	

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### CSPolarity

*Enum*

#### Values

ActiveHigh	
ActiveLow	

### DataLevelPercent

*Double*

**Range** From 0 to 100 step 0.1

### DataLevelType

*Enum*

#### Values

Absolute	
Percent	

### DDR

*Bool*

### IgnoreCS

*Bool*

### InterFrameSetup

*Enum*

#### Values

Auto	
Manual	

### InterFrameTime

*Double*

**Range** From 1e-009 to 10 step 1e-009

### MinSamplesPerBit

*Integer*

**Range** From 4 to 100 step 1

### TDMChannel

*Integer*

**Range** From 1 to 8 step 1

### ViewingMode

*Enum*

#### Values

ASCII	
Binary	
Dec	
Hex	

## DECODEX

*app.SerialDecode.DecodeX*

AnnotationPosition	Enum
DataSource	Enum

OutputFile	FileName
Protocol	Enum
View	Bool
ViewDecode	Bool

AnnotationPosition Enum

Values

Bottom	
Centered	
OnNoisyTrace	
OnTrace	
Top	

**DataSource***Enum***Description**

The Data Source has to be entered here. The source can be any channel, function or memory. The Data Source is required for every protocol supported whereas Clock and Chip Select might not be

**Values**

BadBits	
BadBits2	
Bits	
Bits2	
C1	
C2	
C3	
C4	
D0	
D1	
D10	
D11	
D12	
D13	
D14	
D15	
D16	
D17	
D18	
D19	
D2	
D20	
D21	
D22	
D23	
D24	
D25	
D26	
D27	
D28	
D29	
D3	
D30	
D31	
D32	
D33	
D34	
D35	
D4	
D5	

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D6	
D7	
D8	
D9	
dvdt	
E100Dta	
E10Dta	
EnetDta	
ET	
Eye	
Eye2	
F1	
F2	
F3	
F4	
FiltData	
FiltJit	
FiltSlv	
FLXEye	
FLXEye	
Harm	
I	
M1	
M2	
M3	
M4	
Mod	
PointA	
PointB	
PointC	
PointD	
PointF	
PointH	
PRBS	
Pwr	
R	
ScanHisto	
ScanOverlay	
SigQual	
SineRemovedData	
SlvDtaJit	
SpecAn	
V	
Z2	
Z3	
Z4	



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Z5	
Z6	
Z7	
Z8	

### OutputFile

*FileName*

**Range** Any number of characters

#### Description

The name and path of the File used to export the Decoded Table

### Protocol

*Enum*

#### Description

The protocol currently decoded by this Decoder. At the time of this writing (July of 2007) we support 7 protocols: 8b10, CAN, FlexRay, I2C, LIN, UART, SPI. The options purchased govern the list of visible protocol in this field.

#### Values

8B10B	
AudioI2S	
AudioLJ	
AudioRJ	
AudioTDM	
CAN	
CANHL	
FLX	
GMCANHL	
GMCANLAN	
I2C	
LIN	
MIL1553	
PCIE1X1	
PCIE1X2	
PCIE4X1	
RS232	
SIOP	
SPI	
SPICustom	
SPIDDR	
SSPI	
UART	
USART	

### View

*Bool*

#### Description

Turns the Table View on and off.

**ViewDecode*****Bool*****Description**

Turns the Annotation View on and off.

**DECODE***app.SerialDecode.Decodex.Decode*

BitRate	Double
ColumnState	String
FilteredSymbolList	String
LevelPercent	Double
LevelType	Enum
PrimitiveFile	FileName
PrimitiveSource	Enum
ViewingMode	Enum

**BitRate*****Double***

**Range** From 1000 to 1e+010 step 0.0001

**Description**

The Bitrate of the data stream to be decoded

**ColumnState*****String***

**Range** Any number of characters

**Description**

This variable lists the visibility state of the columns in the decoded table  
Each column is named, followed by an equal sign and the state on or off.  
On turns on the column, off turns it off.

**Example**

The following command would show 3 columns  
Time=on|Data=on|DataLength=on  
whereas this comand would only show Time and DataLength  
Time=on|Data=on|DataLength=off

**FilteredSymbolList*****String***

**Range** Any number of characters

**LevelPercent*****Double***

**Range** From 0 to 100 step 0.1

**Description**

The threshold between zeros and ones expressed in Percent of the distance between top and base.

**LevelType***Enum***Description**

The selection between absolute and relative threshold mode

**Values**

Absolute	
Percent	

**PrimitiveFile***FileName*

**Range** Any number of characters

**PrimitiveSource***Enum***Values**

8b10b	
Others	
PCIE	
PCIE20	
SAS	
SATA	
USB3	
XAUI	

**ViewingMode***Enum***Description**

Selects viewing mode, usually between Binary,Hexadecimal, ASCII

**Values**

Hexadecimal	
Symbolic	

**RESULT***app.SerialDecode.Decodex.Out.Result***FLEXRAYMEASURE***app.SerialDecode.FlexRayMeasure*

AsymmetricDelay	Bool
Bitrate	Double
Channel	Enum
FrameTSSLengthChange	Bool
Jitter	Bool
NodeM	Enum
NodeN	Enum
ProbeOn	Enum

PropagationDelay	Bool
SIVoting	Bool

**AsymmetricDelay** *Bool*

**Bitrate** *Double*

Range From 1000 to 1e+012 step 1000

**Channel** *Enum*

Values

A	
B	

**FrameTSSLengthChange** *Bool*

**Jitter** *Bool*

**NodeM** *Enum*

Values

C1	
C2	
C3	
C4	
F1	
F2	
F3	
F4	
M1	
M2	
M3	
M4	
Z1	
Z2	
Z3	
Z4	
Z5	
Z6	
Z7	
Z8	

**NodeN***Enum***Values**

C1	
C2	
C3	
C4	
F1	
F2	
F3	
F4	
M1	
M2	
M3	
M4	
Z1	
Z2	
Z3	
Z4	
Z5	
Z6	
Z7	
Z8	

**ProbeOn***Enum***Values**

BPBM	
RXDTXD	

**PropagationDelay***Bool***SIVoting***Bool***FLXEYE***app.SerialDecode.FLXEye*

AxisXRotation	Integer
AxisYRotation	Integer
Bitrate	Double
Channel	Enum
ClearSweeps	Action
LabelsPosition	String
LabelsText	String
MaskTestOn	Bool
MaskType	Enum
Persist3DQuality	Enum

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Persisted	Bool
Persistence3d	Bool
PersistenceMonoChrome	Bool
PersistenceSaturation	Integer
PersistenceTime	Enum
ShowLastTrace	Bool
Source	Enum
StopOnViolation	Bool
UseGrid	String
View	Bool
ViewLabels	Bool

### AxisXRotation

*Integer*

**Range** From -90 to 90 step 1

### AxisYRotation

*Integer*

**Range** From -90 to 90 step 1

#### Description

This control is used only when Persisted is true and Persistence3d is true. It controls rotation about the Y axis of the view being persisted.

### Bitrate

*Double*

**Range** From 1000 to 1e+012 step 1000

### Channel

*Enum*

#### Values

A	
B	

### ClearSweeps

*Action*

#### Description

Clear any accumulated result data. Useful for example to restart an average, or parameter statistics.

### LabelsPosition

*String*

**Range** Any number of characters

#### Description

Sets / Queries the horizontal position of the label attached to the acquisition trace Cx. The unit of measurement is the unit of the horizontal scale. The measurement is made from the trigger point. Note that this control is a string, not a numeric value. This allows multiple labels to be positioned, as shown in the example below.

### LabelsText

*String*

**Range** Any number of characters

**MaskTestOn****Bool****MaskType****Enum****Values**

bitrate10Mbps	
bitrate2p5Mbps	
bitrate5Mbps	

**Persist3DQuality****Enum****Description**

This control only has an effect when Persisted is true and Persistence3D is true. It controls whether the 3D view is shown as a wire frame (which can be monochrome or color graded), a solid (also can be monochrome or color graded), or a shaded solid (always monochrome). For WireFrame or Solid, if monochrome the brightness increases with height; if color graded the color changes from purple to red with height. "Shaded" present the solid as if it were lit from the upper left.

**Values**

Shaded	
Solid	
WireFrame	

**Persisted****Bool****Description**

Sets/Queries the persisted state of the waveform. If the Display.LockPersistence control is set to 'AllLocked' then the persisted state of all displayed waveforms will be the same. If the Display.LockPersistence control is set to 'PerTrace' then the persisted state of each waveform may be independently controlled.

**Persistence3d****Bool****Description**

Changes the persistence map from a two-dimensional surface with brightness or color indicating the third dimension, to a perspective rendering of a three dimensional object, where the third dimension is shown as height above the surface formed by points which are not lit. In 3d, that surface is same color or brightness as points with one or very few hits so that the surface is visible; but that means points with one or very few hits cannot be distinguished from the background. See also Persist3DQuality, which controls the appearance of the 3D object.

**PersistenceMonoChrome****Bool****Description**

When this control is false (the default state), persistence is color graded. When this control is set to true, persistence is monochrome, in the color of the trace, and increasing number of hits is shown as increasing brightness. This control only has an effect when Persisted is true.

**PersistenceSaturation***Integer***Range** From 0 to 100 step 1**Description**

Sets/Queries the saturation threshold for persisted waveforms.

All information at this level or above will be recorded with the same color or intensity.

See the general description above for a discussion of the locked and unlocked persistence modes.

**PersistenceTime***Enum***Description**

Sets/Queries the state of the Persistence Time control. Controls the persistence decay time for this trace. See the general description above for a discussion of the locked and unlocked persistence modes.

**Values**

0.5s	
10s	
1s	
20s	
2s	
5s	
Infinite	

**ShowLastTrace***Bool***Description**

Sets/Queries the state of the Show Last Trace control. If True then when this trace is displayed in persistence mode the last acquired waveform will be superimposed on the accumulating persistence map.

See the general description above for a discussion of the locked and unlocked persistence modes.



**Source*****Enum*****Values**

C1	
C2	
C3	
C4	
F1	
F2	
F3	
F4	
M1	
M2	
M3	
M4	
Z1	
Z2	
Z3	
Z4	
Z5	
Z6	
Z7	
Z8	

**StopOnViolation*****Bool*****UseGrid*****String*****Range** Any number of characters**View*****Bool*****Description**

Sets/Queries the trace's 'Viewed' state. When true, the trace is displayed on one of the display graticules. Note that even when a trace is not visible, it may be used as a source for Math, Measure, etc.

**ViewLabels*****Bool*****Description**

Sets/Queries whether the user-defined labels for the trace are visible.  
See Also: LabelsPosition and LabelsText controls.

**RESULT***app.SerialDecode.FLXEye.Out.Result***MEASURE***app.SerialDecode.Measure*

## Automation Command and Query Reference Manual - Control Reference

P1	Enum
P2	Enum
P3	Enum
P4	Enum
P5	Enum
P6	Enum
ViewCANParam	Bool

**P1**

**Enum**

### Values

Amplitude	
CANLoad	
CANMsgBR	
CANMsgNum	
CANtoAnalog	
CANtoCAN	
CANtoValue	
Fall	
Fall8020	
FallAtLevel	
FullWidthAtHalfMaximum	
FullWidthAtXX	
HistogramBase	
HistogramMaximum	
HistogramMean	
HistogramMedian	
HistogramMid	
HistogramMinimum	
HistogramRms	
HistogramSdev	
HistogramTop	
MaximumPopulation	
Mode	
Null	
OvershootNegative	
OvershootPositive	
Peaks	
Percentile	
PopulationAtX	
Range	
Rise	
Rise2080	
RiseAtLevel	
TimeAtCAN	

## Automation Command and Query Reference Manual - Control Reference

TotalPopulation	
XAtPeak	

P2

*Enum*

### Values

Amplitude	
CANLoad	
CANMsgBR	
CANMsgNum	
CANtoAnalog	
CANtoCAN	
CANtoValue	
Fall	
Fall8020	
FallAtLevel	
FullWidthAtHalfMaximum	
FullWidthAtXX	
HistogramBase	
HistogramMaximum	
HistogramMean	
HistogramMedian	
HistogramMid	
HistogramMinimum	
HistogramRms	
HistogramSdev	
HistogramTop	
MaximumPopulation	
Mode	
Null	
OvershootNegative	
OvershootPositive	
Peaks	
Percentile	
PopulationAtX	
Range	
Rise	
Rise2080	
RiseAtLevel	
TimeAtCAN	
TotalPopulation	
XAtPeak	

## Values

Amplitude	
CANLoad	
CANMsgBR	
CANMsgNum	
CANtoAnalog	
CANtoCAN	
CANtoValue	
Fall	
Fall8020	
FallAtLevel	
FullWidthAtHalfMaximum	
FullWidthAtXX	
HistogramBase	
HistogramMaximum	
HistogramMean	
HistogramMedian	
HistogramMid	
HistogramMinimum	
HistogramRms	
HistogramSdev	
HistogramTop	
MaximumPopulation	
Mode	
Null	
OvershootNegative	
OvershootPositive	
Peaks	
Percentile	
PopulationAtX	
Range	
Rise	
Rise2080	
RiseAtLevel	
TimeAtCAN	
TotalPopulation	
XAtPeak	

## Values

Amplitude	
CANLoad	
CANMsgBR	
CANMsgNum	
CANtoAnalog	
CANtoCAN	
CANtoValue	
Fall	
Fall8020	
FallAtLevel	
FullWidthAtHalfMaximum	
FullWidthAtXX	
HistogramBase	
HistogramMaximum	
HistogramMean	
HistogramMedian	
HistogramMid	
HistogramMinimum	
HistogramRms	
HistogramSdev	
HistogramTop	
MaximumPopulation	
Mode	
Null	
OvershootNegative	
OvershootPositive	
Peaks	
Percentile	
PopulationAtX	
Range	
Rise	
Rise2080	
RiseAtLevel	
TimeAtCAN	
TotalPopulation	
XAtPeak	

## Values

Amplitude	
CANLoad	
CANMsgBR	
CANMsgNum	
CANtoAnalog	
CANtoCAN	
CANtoValue	
Fall	
Fall8020	
FallAtLevel	
FullWidthAtHalfMaximum	
FullWidthAtXX	
HistogramBase	
HistogramMaximum	
HistogramMean	
HistogramMedian	
HistogramMid	
HistogramMinimum	
HistogramRms	
HistogramSdev	
HistogramTop	
MaximumPopulation	
Mode	
Null	
OvershootNegative	
OvershootPositive	
Peaks	
Percentile	
PopulationAtX	
Range	
Rise	
Rise2080	
RiseAtLevel	
TimeAtCAN	
TotalPopulation	
XAtPeak	

## Values

Amplitude	
CANLoad	
CANMsgBR	
CANMsgNum	
CANtoAnalog	
CANtoCAN	
CANtoValue	
Fall	
Fall8020	
FallAtLevel	
FullWidthAtHalfMaximum	
FullWidthAtXX	
HistogramBase	
HistogramMaximum	
HistogramMean	
HistogramMedian	
HistogramMid	
HistogramMinimum	
HistogramRms	
HistogramSdev	
HistogramTop	
MaximumPopulation	
Mode	
Null	
OvershootNegative	
OvershootPositive	
Peaks	
Percentile	
PopulationAtX	
Range	
Rise	
Rise2080	
RiseAtLevel	
TimeAtCAN	
TotalPopulation	
XAtPeak	

## ViewCANParam

Bool

## SPECANALYZER

app.SpecAnalyzer

ActualResolutionBandwidth	Double
AutoResolutionBandwidth	Bool

## Automation Command and Query Reference Manual - Control Reference

CenterFreq	Double
Enable	Bool
ENBW	Double
MarkerToCenterFreq	Action
MaxFrequency	Double
MaxPeaks	Integer
Mode	Enum
ReferenceFreq	Double
ReferenceLevel	Double
ResolutionBandwidth	DoubleLockstep
ShowPeakTable	Bool
Source	Enum
SpanFreq	Double
SpanMode	Enum
VerticalScale	DoubleLockstep
Window	Enum

---

### ActualResolutionBandwidth

*Double*

**Range** From 0.1 to 1e+011 step 0.1

#### Description

Read-only control which reflects the current resolution bandwidth.

Note that this may differ from the ResolutionBandwidth control in cases where the user-requested resolution bandwidth cannot be achieved.

---

### AutoResolutionBandwidth

*Bool*

#### Description

If set to TRUE, the resolution bandwidth will be automatically determined, based on 1/1000th of the frequency span requested.

---

### CenterFreq

*Double*

**Range** From 100 to 1e+010 step 100

#### Description

Spectrum center frequency.

---

### Enable

*Bool*

#### Description

Enable/Disable Spectrum Analyzer mode.

---

### ENBW

*Double*

**Range** From 0.1 to 10 step 0.001

#### Description

Readout of the current Equivalent Noise Bandwidth (ENBW).



**MarkerToCenterFreq****Action****Description**

Center the spectrum on the current market frequency.

**MaxFrequency****Double**

**Range** From 100000 to 1e+011 step 1

**Description**

Read-only control, reflects the maximum frequency of the spectrum. Calculated as 1/2 the scope sample rate.

**MaxPeaks****Integer**

**Range** From 1 to 100 step 1

**Description**

Define the maximum number of peaks which will be measured, and presented in the table.

**Mode****Enum****Description**

Define the spectrum analyzer mode.

**Values**

Average	Average a number of traces, specified in the NumAverages control.
MaxHold	Record the maximum value in each frequency bin.
Normal	Normal Mode.

**ReferenceFreq****Double**

**Range** From 0 to 1e+010 step 1

**Description**

Defines the reference frequency, at which point a vertical marker (cursor) will be displayed.

**ReferenceLevel****Double**

**Range** From -200 to 200 step 0.0001

**Description**

Define the vertical reference level, that is the level in dBm, that is shown at the top of the graticule.

**ResolutionBandwidth****DoubleLockstep**

**Range** From 0.1 to 1e+009 step 1000, locked to 1 3 5, fine grain allowed=false, on=false

**Description**

When not in Auto Resolution Bandwidth mode, this control is used to request a specific resolution bandwidth.

Note that the requested resolution bandwidth is not always achievable, so a second control, ActualResolutionBandwidth is available to verify that the actual resolution bandwidth is acceptable.

**ShowPeakTable***Bool***Description**

If TRUE, the table of detected peaks, and their respective amplitudes, is shown beside the spectral plot.

**Source***Enum***Description**

Define the Source trace. Note that only acquisition channels may be used as sources to the spectrum analyzer.

**Values**

C1	
C2	
C3	
C4	

**SpanFreq***Double*

**Range** From 100 to 1e+010 step 100

**Description**

Define the Span Frequency, valid when the SpanMode control is in CenterSpan mode.

**SpanMode***Enum***Description**

Define the way in which the span of the spectrum is controlled, either as a Center and Span frequency, or as a Start and Stop frequency.

**Values**

CenterAndSpan	
StartAndStop	

**VerticalScale***DoubleLockstep*

**Range** From 0.1 to 100 step 0.2, locked to 1 2 5, fine grain allowed=false, on=false

**Description**

Define the vertical scale of the spectrum, in units of dB.

**Window***Enum***Description**

Define the window function used to compute the FFT of the input signal.

**Values**

BlackmanHarris	
FlatTop	
Hamming	
VonHann	

AxisXRotation	Integer
AxisYRotation	Integer
ClearSweeps	Action
LabelsPosition	String
LabelsText	String
Persist3DQuality	Enum
Persisted	Bool
Persistence3d	Bool
PersistenceMonoChrome	Bool
PersistenceSaturation	Integer
PersistenceTime	Enum
ShowLastTrace	Bool
UseGrid	String
View	Bool
ViewLabels	Bool

### AxisXRotation

*Integer*

**Range** From -90 to 90 step 1

### AxisYRotation

*Integer*

**Range** From -90 to 90 step 1

#### Description

This control is used only when Persisted is true and Persistence3d is true. It controls rotation about the Y axis of the view being persisted.

### ClearSweeps

*Action*

#### Description

Clear any accumulated result data. Useful for example to restart an average, or parameter statistics.

### LabelsPosition

*String*

**Range** Any number of characters

#### Description

Sets / Queries the horizontal position of the label attached to the acquisition trace Cx. The unit of measurement is the unit of the horizontal scale. The measurement is made from the trigger point. Note that this control is a string, not a numeric value. This allows multiple labels to be positioned, as shown in the example below.

### LabelsText

*String*

**Range** Any number of characters

**Persist3DQuality****Enum****Description**

This control only has an effect when Persisted is true and Persistence3D is true. It controls whether the 3D view is shown as a wire frame (which can be monochrome or color graded), a solid (also can be monochrome or color graded), or a shaded solid (always monochrome). For WireFrame or Solid, if monochrome the brightness increases with height; if color graded the color changes from purple to red with height. "Shaded" present the solid as if it were lit from the upper left.

**Values**

Shaded	
Solid	
WireFrame	

**Persisted****Bool****Description**

Sets/Queries the persisted state of the waveform. If the Display.LockPersistence control is set to 'AllLocked' then the persisted state of all displayed waveforms will be the same. If the Display.LockPersistence control is set to 'PerTrace' then the persisted state of each waveform may be independently controlled.

**Persistence3d****Bool****Description**

Changes the persistence map from a two-dimensional surface with brightness or color indicating the third dimension, to a perspective rendering of a three dimensional object, where the third dimension is shown as height above the surface formed by points which are not lit. In 3d, that surface is same color or brightness as points with one or very few hits so that the surface is visible; but that means points with one or very few hits cannot be distinguished from the background. See also Persist3DQuality, which controls the appearance of the 3D object.

**PersistenceMonoChrome****Bool****Description**

When this control is false (the default state), persistence is color graded. When this control is set to true, persistence is monochrome, in the color of the trace, and increasing number of hits is shown as increasing brightness. This control only has an effect when Persisted is true.

**PersistenceSaturation****Integer**

**Range** From 0 to 100 step 1

**Description**

Sets/Queries the saturation threshold for persisted waveforms.  
All information at this level or above will be recorded with the same color or intensity.  
See the general description above for a discussion of the locked and unlocked persistence modes.

**PersistenceTime****Enum****Description**

Sets/Queries the state of the Persistence Time control. Controls the persistence decay time for this trace. See the general description above for a discussion of the locked and unlocked persistence modes.

**Values**

0.5s	
10s	
1s	
20s	
2s	
5s	
Infinite	

**ShowLastTrace****Bool****Description**

Sets/Queries the state of the Show Last Trace control. If True then when this trace is displayed in persistence mode the last acquired waveform will be superimposed on the accumulating persistence map.

See the general description above for a discussion of the locked and unlocked persistence modes.

**UseGrid****String**

**Range** Any number of characters

**View****Bool****Description**

Sets/Queries the trace's 'Viewed' state. When true, the trace is displayed on one of the display graticules. Note that even when a trace is not visible, it may be used as a source for Math, Measure, etc.

**ViewLabels****Bool****Description**

Sets/Queries whether the user-defined labels for the trace are visible.  
See Also: LabelsPosition and LabelsText controls.

**RESULT***app.SpecAnalyzer.SpecAn.Out.Result***SPECANTABLE***app.SpecAnalyzer.SpecAnTable*

ClearSweeps	Action
TableLocation	String
View	Bool

**ClearSweeps***Action***Description**

Clear any accumulated result data. Useful for example to restart an average, or parameter statistics.

**TableLocation***String*

**Range** Any number of characters

**View***Bool***Description**

Sets/Queries the trace's 'Viewed' state. When true, the trace is displayed on one of the display graticules. Note that even when a trace is not visible, it may be used as a source for Math, Measure, etc.

**RESULT***app.SpecAnalyzer.SpecAnTable.Out.Result***SYSTEMCONTROL***app.SystemControl*

FrontPanelEventTimestamp	String
ModalDialogTimeout	Integer
PersistentMessage	String

**FrontPanelEventTimestamp***String*

**Range** Any number of characters

**ModalDialogTimeout***Integer*

**Range** From 0 to 120 step 1

**Description**

Set a timeout, in units of seconds, used to auto-dismiss modal dialogs, with their default responses.

**PersistentMessage***String*

**Range** Any number of characters

**DATETIMESETUP***app.Utility.DateTimeSetup*

This set of variables controls user the date and time setup. In addition to manual controls for hh/mm/ss, dd/mm/yy, there is the ability to set the time and date from an Internet clock using the SNTP protocol.

CurrentDateAndTime	String
Day	Integer
Hour	Integer
Minute	Integer

## Automation Command and Query Reference Manual - Control Reference

Month	Integer
Second	Integer
SetFromSNTP	Action
Validate	Action
Year	Integer

### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set time/date from the NIST Internet clock
app.Utility.DateTimeSetup.SetFromSNTP
```

### CurrentDateAndTime

*String*

**Range** Any number of characters

#### Description

Reads the current date and time from the real-time calendar and clock.

#### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Read the current date and time from the real-time calendar and clock.
app.Utility.DateTimeSetup.CurrentDateAndTime
```

### Day

*Integer*

**Range** From 1 to 31 step 1

#### Description

Sets/Queries the day of the month setting of the real-time clock as a number.  
The value will not be accepted by the clock until app.Utility.DateTimeSetup.Validate is sent. All time/date controls are validated at the same time.

#### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the day of the month as 21.
app.Utility.DateTimeSetup.Day = 21
app.Utility.DateTimeSetup.Validate
```

### Hour

*Integer*

**Range** From 0 to 23 step 1

#### Description

Sets/Queries the hours setting of the real-time clock as a number.  
The value will not be accepted by the clock until app.Utility.DateTimeSetup.Validate is sent. All time/date controls are validated at the same time.

#### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the hour as 13.
app.Utility.DateTimeSetup.Hour = 13
app.Utility.DateTimeSetup.Validate
```

### Minute

*Integer*

**Range** From 0 to 59 step 1

#### Description

Sets/Queries the minutes setting of the real-time clock as a number.  
The value will not be accepted by the clock until app.Utility.DateTimeSetup.Validate is sent. All time/date controls are validated at the same time.

#### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the minute as 34.
app.Utility.DateTimeSetup.Minute = 34
app.Utility.DateTimeSetup.Validate
```

### Month

*Integer*

**Range** From 1 to 12 step 1

#### Description

Sets/Queries the month setting of the real-time clock as a number.  
The value will not be accepted by the clock until app.Utility.DateTimeSetup.Validate is sent. All time/date controls are validated at the same time.

#### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the month as August.
app.Utility.DateTimeSetup.Month = 8
app.Utility.DateTimeSetup.Validate
```



### Second

*Integer*

**Range** From 0 to 59 step 1

#### Description

Sets/Queries the seconds setting of the real-time clock as a number.  
The value will not be accepted by the clock until app.Utility.DateTimeSetup.Validate is sent. All time/date controls are validated at the same time.

#### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")
```

```
' Set the seconds as 55.
app.Utility.DateTimeSetup.Second = 55
app.Utility.DateTimeSetup.Validate
```

### SetFromSNTP

*Action*

#### Description

Sets the real time clock from the simple network time protocol.

#### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")
```

```
' Set the real time clock from the simple network time protocol.
app.Utility.DateTimeSetup.SetFromSNTP
```

### Validate

*Action*

#### Description

Validates any new settings. This action is equivalent to clicking 'Validate Changes' on the Date/Time page.

#### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the day, hour, and minute, and validate.
app.Utility.DateTimeSetup.Day = 3
app.Utility.DateTimeSetup.Hour = 5
app.Utility.DateTimeSetup.Minute = 8

app.Utility.DateTimeSetup.Validate
```

**Year***Integer***Range** From 2000 to 2037 step 1**Description**

Sets/Queries the year setting of the real-time clock as a number.  
 The value will not be accepted by the clock until app.Utility.DateTimeSetup.Validate is sent. All time/date controls are validated at the same time.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")
```

```
' Set the year as 2003.
app.Utility.DateTimeSetup.Year = 2003
app.Utility.DateTimeSetup.Validate
```

**OPTIONS***app.Utility.Options*

Options subsystem, contains controls to query the list of installed software and hardware options.

InstalledHWOPTIONS	String
InstalledSWOptions	String
ScopeID	String

**InstalledHWOPTIONS***String***Range** Any number of characters**Description**

Shows a list of the installed hardware options.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Read the list of installed hardware options and present
' in a popup dialog
MsgBox app.Utility.Options.InstalledHWOPTIONS
```

**InstalledSWOptions***String***Range** Any number of characters**Description**

Shows list of installed software options.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Read the list of installed software options and display
' in a popup dialog
MsgBox app.Utility.Options.InstalledSWOptions
```

**ScopeID***String***Range** Any number of characters**Description**

Queries the ID of the instrument. This ID should be specified when purchasing software options for your instrument.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Read the ID of the instrument.
MsgBox app.Utility.Options.ScopeID
```

**REMOTE***app.Utility.Remote*

Controls related to the remote control section of the instrument. Note that in this context Automation is not considered part of 'Remote'. Remote control currently includes control using ASCII remote commands from GPIB or TCP/IP.

Assistant	Enum
Interface	Enum
RestrictControl	Enum
SetToErrorsOnlyAndClearAtStartup	Bool

**Assistant***Enum***Description**

Sets/Queries the setting of the remote assistant.

**Values**

EO	Log errors only
FD	Log all remote commands/queries
OFF	Turn the assistant off

**Interface***Enum***Description**

Sets/Queries the currently selected type of currently selected remote control interface.

**Values**

LXI	
Off	
TCPIP	

**RestrictControl***Enum***Description**

Sets/Queries whether remote control is restricted to certain hosts, where the host name is defined either by IP address, or dns name.

**Values**

No	
Yes	

**SetToErrorsOnlyAndClearAtStartup***Bool***Description**

Enable the resetting of the remote assistant to 'Errors Only' mode when the instrument is reset. Also ensure s that the remote assistant log is cleared upon startup.

This control is set by default to lower the risk that the remote assistant will be set to 'Full Dialog' mode and be forgotten, causing a decrease in remote control performance.

**CIOPORTU3GPIB***app.Utility.Remote.IOManager.CIOPortU3GPIB*

GpibAddress	Integer
-------------	---------

**GpibAddress***Integer*

**Range** From 1 to 30 step 1

**CLSIBPORT***app.Utility.Remote.IOManager.CLSIBPort***WAVESCAN***app.WaveScan*

This is the root of the WaveScan automation hierarchy.

WaveScan enables you to search for unusual events in a single capture, or to scan for an event in many acquisitions over a long period of time.

It may be considered a kind of software trigger.

Enable	Bool
FindRare1Sigma	Action
FindRare3Sigma	Action
FindRare5Sigma	Action
FindUseMean	Action
ShowTimes	Bool

**Enable***Bool*

## Automation Command and Query Reference Manual - Control Reference

### Description

Sets/Queries the WaveScan enabled state.

### FindRare1Sigma

**Action**

### Description

Preset the filter limit and delta to find rare events. Uses the history of measurements since the last Clear Sweeps, or control change, to set the limit and delta to capture +/- 1 sigma events.

### FindRare3Sigma

**Action**

### Description

Preset the filter limit and delta to find rare events. Uses the history of measurements since the last Clear Sweeps, or control change, to set the limit and delta to capture +/- 3 sigma events.

### FindRare5Sigma

**Action**

### Description

Preset the filter limit and delta to find rare events. Uses the history of measurements since the last Clear Sweeps, or control change, to set the limit and delta to capture +/- 5 sigma events.

### FindUseMean

**Action**

### Description

Setup the filter to find measurements with values > the current statistical mean.

### ShowTimes

**Bool**

## SCANDECODE

*app.WaveScan.ScanDecode*

ClearSweeps	Action
TableLocation	String
View	Bool

### ClearSweeps

**Action**

### Description

Clear any accumulated result data. Useful for example to restart an average, or parameter statistics.

### TableLocation

**String**

**Range** Any number of characters

### View

**Bool**

### Description

Sets/Queries the trace's 'Viewed' state. When true, the trace is displayed on one of the display graticules. Note that even when a trace is not visible, it may be used as a source for Math, Measure, etc.

## RESULT

*app.WaveScan.ScanDecode.Out.Result*

**SCANHISTO***app.WaveScan.ScanHisto*

AxisXRotation	Integer
AxisYRotation	Integer
ClearSweeps	Action
LabelsPosition	String
LabelsText	String
Persist3DQuality	Enum
Persisted	Bool
Persistence3d	Bool
PersistenceMonoChrome	Bool
PersistenceSaturation	Integer
PersistenceTime	Enum
ShowLastTrace	Bool
View	Bool
ViewLabels	Bool

**AxisXRotation***Integer***Range** From -90 to 90 step 1**AxisYRotation***Integer***Range** From -90 to 90 step 1**Description**

This control is used only when Persisted is true and Persistence3d is true. It controls rotation about the Y axis of the view being persisted.

**ClearSweeps***Action***Description**

Clear any accumulated result data. Useful for example to restart an average, or parameter statistics.

**LabelsPosition***String***Range** Any number of characters**Description**

Sets / Queries the horizontal position of the label attached to the acquisition trace Cx. The unit of measurement is the unit of the horizontal scale. The measurement is made from the trigger point. Note that this control is a string, not a numeric value. This allows multiple labels to be positioned, as shown in the example below.

**LabelsText***String***Range** Any number of characters

**Persist3DQuality****Enum****Description**

This control only has an effect when Persisted is true and Persistence3D is true. It controls whether the 3D view is shown as a wire frame (which can be monochrome or color graded), a solid (also can be monochrome or color graded), or a shaded solid (always monochrome). For WireFrame or Solid, if monochrome the brightness increases with height; if color graded the color changes from purple to red with height. "Shaded" present the solid as if it were lit from the upper left.

**Values**

Shaded	
Solid	
WireFrame	

**Persisted****Bool****Description**

Sets/Queries the persisted state of the waveform. If the Display.LockPersistence control is set to 'AllLocked' then the persisted state of all displayed waveforms will be the same. If the Display.LockPersistence control is set to 'PerTrace' then the persisted state of each waveform may be independently controlled.

**Persistence3d****Bool****Description**

Changes the persistence map from a two-dimensional surface with brightness or color indicating the third dimension, to a perspective rendering of a three dimensional object, where the third dimension is shown as height above the surface formed by points which are not lit. In 3d, that surface is same color or brightness as points with one or very few hits so that the surface is visible; but that means points with one or very few hits cannot be distinguished from the background. See also Persist3DQuality, which controls the appearance of the 3D object.

**PersistenceMonoChrome****Bool****Description**

When this control is false (the default state), persistence is color graded. When this control is set to true, persistence is monochrome, in the color of the trace, and increasing number of hits is shown as increasing brightness. This control only has an effect when Persisted is true.

**PersistenceSaturation****Integer**

**Range** From 0 to 100 step 1

**Description**

Sets/Queries the saturation threshold for persisted waveforms.  
All information at this level or above will be recorded with the same color or intensity.  
See the general description above for a discussion of the locked and unlocked persistence modes.

**PersistenceTime****Enum****Description**

Sets/Queries the state of the Persistence Time control. Controls the persistence decay time for this trace. See the general description above for a discussion of the locked and unlocked persistence modes.

**Values**

0.5s	
10s	
1s	
20s	
2s	
5s	
Infinite	

**ShowLastTrace****Bool****Description**

Sets/Queries the state of the Show Last Trace control. If True then when this trace is displayed in persistence mode the last acquired waveform will be superimposed on the accumulating persistence map.

See the general description above for a discussion of the locked and unlocked persistence modes.

**View****Bool****Description**

Sets/Queries the trace's 'Viewed' state. When true, the trace is displayed on one of the display graticules. Note that even when a trace is not visible, it may be used as a source for Math, Measure, etc.

**ViewLabels****Bool****Description**

Sets/Queries whether the user-defined labels for the trace are visible.

See Also: LabelsPosition and LabelsText controls.

**HISTOGRAM***app.WaveScan.ScanHisto.Histogram*

AutoFindScale	Bool
Bins	DoubleLockstep
BufferSize	Integer
Center	Double
ClearSweeps	Action
FindScale	Action
HorScale	DoubleLockstep
Values	Integer
VerScaleType	Enum

**AutoFindScale****Bool**



## Automation Command and Query Reference Manual - Control Reference

---

### Description

Defines whether the histogram horizontal axis is automatically scaled when sufficient data has been accumulated.

The FindScale control may be used to manually find the scale, if this control is set to False.

### Bins

*DoubleLockstep*

**Range** From 20 to 2000 step 1, locked to 1 2 5, fine grain allowed=false, on=false

### Description

Number of bins in the histogram.

### BufferSize

*Integer*

**Range** From 200 to 5000 step 1

### Description

Size of the buffer which stores incoming parameter values, ready to be histogrammed.

Not to be confused with the 'Values' control, which defines the number of values from the buffer which are currently rendered in the histogram.

### Center

*Double*

**Range** From -1e+010 to 1e+010 step 1e-012

### Description

Defines the value of the bin which is centered horizontally within the graticule.

### ClearSweeps

*Action*

### Description

Clear any accumulated result data. Useful for example to restart an average, or parameter statistics.

### FindScale

*Action*

### Description

Automatically determine an appropriate horizontal scale for the histogram, using the values currently in the histogram buffer.

### HorScale

*DoubleLockstep*

**Range** From 1e-012 to 1e+012 step 0.01, locked to 1 2 5, fine grain allowed=false, on=false

### Description

Horizontal scale of the histogram, per division of the graticule.

### Values

*Integer*

**Range** From 20 to 2000000000 step 1

### Description

Size of the buffer in which all values currently histogrammed are queued.

**VerScaleType***Enum***Description**

Vertical Scale mode of the histogram, Linear, or 'Linear with Constant Maximum'.

**Values**

LinConstMax	
Linear	

**RESULT***app.WaveScan.ScanHisto.Out.Result***ZOOM***app.WaveScan.ScanHisto.Zoom*

HorPos	Double
HorZoom	Double
ResetZoom	Action
VariableHorZoom	Bool
VariableVerZoom	Bool
VerPos	Double
VerZoom	Double

**HorPos***Double*

**Range** From -0.5 to 0.5 step (8 digits)

**Description**

Horizontal Position of the trace, normalized to a value between -0.5 and 0.5. A value of zero is the default, and indicates no position change relative to the source trace.

**HorZoom***Double*

**Range** From 0.1 to 1e+006 step (8 digits)

**Description**

Horizontal Zoom setting. Locked to a 1, 2, 5 sequence unless VariableHorZoom is set to True .

**ResetZoom***Action***Description**

Resets the zoom settings to their default values.

**VariableHorZoom***Bool***Description**

Enable/Disable the variable Horizontal Zoom control. If enabled, the HorZoom control may be set to a value other than the standard 1, 2, 5 sequence.

**VariableVerZoom*****Bool*****Description**

Enable/Disable the variable Vertical Zoom control. If enabled, the VerZoom control may be set to a value other than the standard 1, 2, 5 sequence.

**VerPos*****Double***

**Range** From -1.5 to 1.5 step (8 digits)

**Description**

Vertical Position of the trace, normalized to a value between -1.5 and 1.5. A value of zero is the default, and indicates no position change relative to the source trace.

**VerZoom*****Double***

**Range** From 0.1 to 100 step (8 digits)

**Description**

Vertical Zoom setting. Locked to a 1, 2, 5 sequence unless VariableVerZoom is set to True .

**SCANOVERLAY***app.WaveScan.ScanOverlay*

AxisXRotation	Integer
AxisYRotation	Integer
ClearSweeps	Action
EnablePersistence	Bool
Persist3DQuality	Enum
Persisted	Bool
Persistence3d	Bool
PersistenceMonoChrome	Bool
PersistenceSaturation	Integer
PersistenceTime	Enum
ShowLastTrace	Bool
View	Bool

**AxisXRotation*****Integer***

**Range** From -90 to 90 step 1

**AxisYRotation*****Integer***

**Range** From -90 to 90 step 1

**Description**

This control is used only when Persisted is true and Persistence3d is true. It controls rotation about the Y axis of the view being persisted.

**ClearSweeps*****Action*****Description**

Clear any accumulated result data. Useful for example to restart an average, or parameter statistics.

**EnablePersistence****Bool****Description**

Set to place the WaveScan 'ScanOverlay' in persistence mode, as opposed to 'overlay' mode (where all contributing sub-waveforms are overlaid)

**Persist3DQuality****Enum****Description**

This control only has an effect when Persisted is true and Persistence3D is true. It controls whether the 3D view is shown as a wire frame (which can be monochrome or color graded), a solid (also can be monochrome or color graded), or a shaded solid (always monochrome). For WireFrame or Solid, if monochrome the brightness increases with height; if color graded the color changes from purple to red with height. "Shaded" present the solid as if it were lit from the upper left.

**Values**

Shaded	
Solid	
WireFrame	

**Persisted****Bool****Description**

Sets/Queries the persisted state of the waveform. If the Display.LockPersistence control is set to 'AllLocked' then the persisted state of all displayed waveforms will be the same. If the Display.LockPersistence control is set to 'PerTrace' then the persisted state of each waveform may be independently controlled.

**Persistence3d****Bool****Description**

Changes the persistence map from a two-dimensional surface with brightness or color indicating the third dimension, to a perspective rendering of a three dimensional object, where the third dimension is shown as height above the surface formed by points which are not lit. In 3d, that surface is same color or brightness as points with one or very few hits so that the surface is visible; but that means points with one or very few hits cannot be distinguished from the background. See also Persist3DQuality, which controls the appearance of the 3D object.

**PersistenceMonoChrome****Bool****Description**

When this control is false (the default state), persistence is color graded. When this control is set to true, persistence is monochrome, in the color of the trace, and increasing number of hits is shown as increasing brightness. This control only has an effect when Persisted is true.

**PersistenceSaturation****Integer**

**Range** From 0 to 100 step 1

**Description**

Sets/Queries the saturation threshold for persisted waveforms.  
All information at this level or above will be recorded with the same color or intensity.  
See the general description above for a discussion of the locked and unlocked persistence modes.

**PersistenceTime***Enum***Description**

Sets/Queries the state of the Persistence Time control. Controls the persistence decay time for this trace. See the general description above for a discussion of the locked and unlocked persistence modes.

**Values**

0.5s	
10s	
1s	
20s	
2s	
5s	
Infinite	

**ShowLastTrace***Bool***Description**

Sets/Queries the state of the Show Last Trace control. If True then when this trace is displayed in persistence mode the last acquired waveform will be superimposed on the accumulating persistence map.

See the general description above for a discussion of the locked and unlocked persistence modes.

**View***Bool***Description**

Sets/Queries the trace's 'Viewed' state. When true, the trace is displayed on one of the display graticules. Note that even when a trace is not visible, it may be used as a source for Math, Measure, etc.

**RESULT***app.WaveScan.ScanOverlay.Out.Result***WEBEDITOR***app.WebEditor*

This set of variables controls the web-editor which show the paths for data flow in the instrument.

This feature is not supported on all instruments. Currently it is supported on DDA and SDA models, and models with XMAP and/or XMATH software options.

AddConnection([in] VARIANT destProcessor, [in] VARIANT destInputPin, [in] VA	Method
AddPreview([in] VARIANT sourceProcessor, [in] VARIANT sourcePin, [in] BSTR	Method
AddProcessor([in] VARIANT processorOrClassId, [in] BSTR requestedName, [in]	Method
ClearSweeps	Action
GetProcessor([in] VARIANT processor)	Method
RemoveAll()	Method
RemoveConnection([in] VARIANT destProcessor, [in] VARIANT destInputPin)	Method
RemovePreview([in] VARIANT processor)	Method
RemoveProcessor([in] VARIANT processor)	Method

### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Enter auto-trigger mode
app.Acquisition.TriggerMode = "Auto"

' Show the web editor and remove all processors from it
app.ActiveView = "WebEdit"
app.WebEditor.RemoveAll

' Crea
```

---

<b>AddConnection([in] VARIANT destProcessor, [in] VARIANT destInputPin, [in] VARIANT sourceProcessor, [in] VARIANT sourceOutputPin)</b>	<b>Method</b>
---	---------------

#### Description

Add a connection between two 'pins' of nodes placed within the Web Editor. Pins are described by the name of the node, and the zero-based index of the pin on that node.

---

<b>AddPreview([in] VARIANT sourceProcessor, [in] VARIANT sourcePin, [in] BSTR previewName, [in] double xPositon, [in] double yPositon, [in] BSTR associatedExecName)</b>	<b>Method</b>
--	---------------

#### Description

Add a Preview to the specified pin of the specified node. The coordinates specify where the preview will appear on the Web, with 0,0 being the top left-hand corner.

---

<b>AddProcessor([in] VARIANT processorOrClassId, [in] BSTR requestedName, [in] double xPositon, [in] double yPositon)</b>	<b>Method</b>
---	---------------

#### Description

Add a named 'processor' to the web. To determine the name of a processor just place it on the web using the GUI and hover the mouse over the node. The 'ProgID' of the node, in the format 'LeCroy.<procName>' will appear. Note that when adding processors from automation there is no distinction between Measure, Math, and Pass/Fail processors.

---

<b>ClearSweeps</b>	<b>Action</b>
--------------------	---------------

#### Description

Clear any accumulated data for nodes such as Average, Persistence, etc. that reside in the processing web.

**GetProcessor([in] VARIANT processor)***Method***Description**

Retrieve a reference to a processor that has been added to the Web. This reference may then be used to access the processor's controls. See the Math/Measure control reference section of this manual for a list of the available controls for each processor.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Show the web editor and remove all processors from it
app.ActiveView = "WebEdit"
app.WebEditor.RemoveAll

' Create a Waveform Averager, name it "MyAvg", and place it at x=200, y=30
app.WebEditor.AddProcessor "LeCroy.Average", "MyAvg", 200, 30

' Retrieve a pointer to the averager and set it's number of sweeps
' to the value 1234
set myAverager = app.WebEditor.GetProcessor("MyAvg")
myAverager.Sweeps = 1234
```

**RemoveAll()***Method***Description**

Remove all processors from the web.

**RemoveConnection([in] VARIANT destProcessor, [in] VARIANT destInputPin)***Method***Description**

Remove a connection between two pins on the web.

**RemovePreview([in] VARIANT processor)***Method***Description**

Remove the named preview display.

**RemoveProcessor([in] VARIANT processor)***Method***Description**

Remove the named processor from the Web.

**XPORT***app.XPort***ZOOM***app.Zoom*

ConnectedToSuperKnob	Bool
GoToEnd	Action
GoToStart	Action
HorZoomIn	Action
HorZoomOut	Action

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MultiZoomOn	Bool
QuickZoom	Action
ResetAll	Action
ResetZoom	Action
VariableHorZoom	Bool

**ConnectedToSuperKnob** *Bool*

**GoToEnd** *Action*

**Description**

When in multi-zoom mode, scroll to the end of the source waveform, who's last point will be centered on the graticule.

**GoToStart** *Action*

**Description**

When in multi-zoom mode, scroll to the start of the source waveform, who's first point will be centered on the graticule.

**HorZoomIn** *Action*

**Description**

Horizontally zoom in all the traces included in MultiZoom.

**HorZoomOut** *Action*

**Description**

Horizontally zoom out all the traces included in MultiZoom.

**MultiZoomOn** *Bool*

**Description**

Turn MultiZoom On and includes all the Zx automatically if any viewed.

**QuickZoom** *Action*

**Description**

Zoom all Cx that are on at an horizontal factor of 10.

**ResetAll** *Action*

**Description**

Reset all Zx to their default settings.

**ResetZoom** *Action*

**Description**

Resets the zoom settings to their default values.

**VariableHorZoom** *Bool*

**Description**

Enable/Disable the variable Horizontal Zoom control. If enabled, the HorZoom control may be set to a value other than the standard 1, 2, 5 sequence.



AxisXRotation	Integer
AxisYRotation	Integer
ClearSweeps	Action
DoStoreToMemoryTrace	Action
Equation	String
LabelsPosition	String
LabelsText	String
Persist3DQuality	Enum
Persisted	Bool
Persistence3d	Bool
PersistenceMonoChrome	Bool
PersistenceSaturation	Integer
PersistenceTime	Enum
ShowLastTrace	Bool
Source	Enum
UseGrid	String
View	Bool
ViewLabels	Bool

**AxisXRotation***Integer***Range** From -90 to 90 step 1**AxisYRotation***Integer***Range** From -90 to 90 step 1**Description**

This control is used only when Persisted is true and Persistence3d is true. It controls rotation about the Y axis of the view being persisted.

**ClearSweeps***Action***Description**

Clear any accumulated result data. Useful for example to restart an average, or parameter statistics.

**DoStoreToMemoryTrace***Action***Description**

Store the content of Zx into the corresponding Memory Slot (Mx).

**Equation***String***Range** Any number of characters**Description**

Same as app.Math.Fx.Equation.

**LabelsPosition****String****Range** Any number of characters**Description**

Sets / Queries the horizontal position of the label attached to the acquisition trace Cx. The unit of measurement is the unit of the horizontal scale. The measurement is made from the trigger point. Note that this control is a string, not a numeric value. This allows multiple labels to be positioned, as shown in the example below.

**LabelsText****String****Range** Any number of characters**Persist3DQuality****Enum****Description**

This control only has an effect when Persisted is true and Persistence3D is true. It controls whether the 3D view is shown as a wire frame (which can be monochrome or color graded), a solid (also can be monochrome or color graded), or a shaded solid (always monochrome). For WireFrame or Solid, if monochrome the brightness increases with height; if color graded the color changes from purple to red with height. "Shaded" present the solid as if it were lit from the upper left.

**Values**

Shaded	
Solid	
WireFrame	

**Persisted****Bool****Description**

Sets/Queries the persisted state of the waveform. If the Display.LockPersistence control is set to 'AllLocked' then the persisted state of all displayed waveforms will be the same. If the Display.LockPersistence control is set to 'PerTrace' then the persisted state of each waveform may be independently controlled.

**Persistence3d****Bool****Description**

Changes the persistence map from a two-dimensional surface with brightness or color indicating the third dimension, to a perspective rendering of a three dimensional object, where the third dimension is shown as height above the surface formed by points which are not lit. In 3d, that surface is same color or brightness as points with one or very few hits so that the surface is visible; but that means points with one or very few hits cannot be distinguished from the background. See also Persist3DQuality, which controls the appearance of the 3D object.

**PersistenceMonoChrome****Bool****Description**

When this control is false (the default state), persistence is color graded. When this control is set to true, persistence is monochrome, in the color of the trace, and increasing number of hits is shown as increasing brightness. This control only has an effect when Persisted is true.

**PersistenceSaturation***Integer***Range** From 0 to 100 step 1**Description**

Sets/Queries the saturation threshold for persisted waveforms.

All information at this level or above will be recorded with the same color or intensity.

See the general description above for a discussion of the locked and unlocked persistence modes.

**PersistenceTime***Enum***Description**

Sets/Queries the state of the Persistence Time control. Controls the persistence decay time for this trace. See the general description above for a discussion of the locked and unlocked persistence modes.

**Values**

0.5s	
10s	
1s	
20s	
2s	
5s	
Infinite	

**ShowLastTrace***Bool***Description**

Sets/Queries the state of the Show Last Trace control. If True then when this trace is displayed in persistence mode the last acquired waveform will be superimposed on the accumulating persistence map.

See the general description above for a discussion of the locked and unlocked persistence modes.

**Source***Enum***Description**

Zoom source trace.

**Values**

BadBits	
BadBits2	
Bits	
Bits2	
C1	
C2	
C3	
C4	
Digital1	
Digital2	
Digital3	
Digital4	
dvdT	
E100Dta	
E10Dta	
EnetDta	
ET	
Eye	
Eye2	
F1	
F2	
F3	
F4	
FiltData	
FiltJit	
FiltSiv	
FLXEye	
Harm	
I	
M1	
M2	
M3	
M4	
Mod	
PointA	
PointB	
PointC	
PointD	
PointF	
PointH	
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SineRemovedData	
SlvDtaJit	
SpecAn	
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Z3	
Z4	
Z5	
Z6	
Z7	
Z8	

### UseGrid

*String*

**Range** Any number of characters

#### Description

Sets/Queries the grid in use for the zoom trace Zx.  
See also app.Acquisition.Cx.UseGrid.

### View

*Bool*

#### Description

Sets/Queries the trace's 'Viewed' state. When true, the trace is displayed on one of the display graticules. Note that even when a trace is not visible, it may be used as a source for Math, Measure, etc.

### ViewLabels

*Bool*

#### Description

Sets/Queries whether the user-defined labels for the trace are visible.  
See Also: LabelsPosition and LabelsText controls.

## RESULT

*app.Zoom.Zx.Out.Result*

## ZOOM

*app.Zoom.Zx.Zoom*

CenterSelectedSegment	Integer
HorPos	Double
HorZoom	Double
NumSelectedSegments	DoubleLockstep
VariableHorZoom	Bool

## Automation Command and Query Reference Manual - Control Reference

VariableVerZoom	Bool
VerPos	Double
VerZoom	Double

---

### CenterSelectedSegment

*Integer*

**Range** From 1 to 1 step 1

---

### HorPos

*Double*

**Range** From -0.5 to 0.5 step (8 digits)

#### Description

Horizontal Position of the trace, normalized to a value between -0.5 and 0.5. A value of zero is the default, and indicates no position change relative to the source trace.

---

### HorZoom

*Double*

**Range** From 0.1 to 1e+006 step (8 digits)

#### Description

Horizontal Zoom setting. Locked to a 1, 2, 5 sequence unless VariableHorZoom is set to True .

---

### NumSelectedSegments

*DoubleLockstep*

**Range** From 1 to 1 step 1, locked to 1 2 5, fine grain allowed=true, on=false

---

### VariableHorZoom

*Bool*

#### Description

Enable/Disable the variable Horizontal Zoom control. If enabled, the HorZoom control may be set to a value other than the standard 1, 2, 5 sequence.

---

### VariableVerZoom

*Bool*

#### Description

Enable/Disable the variable Vertical Zoom control. If enabled, the VerZoom control may be set to a value other than the standard 1, 2, 5 sequence.

---

### VerPos

*Double*

**Range** From -1.5 to 1.5 step (8 digits)

#### Description

Vertical Position of the trace, normalized to a value between -1.5 and 1.5. A value of zero is the default, and indicates no position change relative to the source trace.

---

### VerZoom

*Double*

**Range** From 0.1 to 100 step (8 digits)

#### Description

Vertical Zoom setting. Locked to a 1, 2, 5 sequence unless VariableVerZoom is set to True .

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**AVERAGE***app.Math.Fx.OperatorYSetup (Operator = "Average")*

Waveform Averaging.

AverageType	Enum
ClearSweeps	Action
InvalidInputPolicy	Bool
Sweeps	Integer

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Turn trace F1 on and setup to average the data from C1
' Average mode is set to Continuous
app.Math.F1.View = True
app.Math.F1.Operator1 = "Average"
app.Math.F1.MathMode = "OneOpe
```

**AverageType***Enum***Description**

Sets / Queries the averaging mode. Continuous and Summation modes are supported.

**Values**

Continuous	
Summed	

**ClearSweeps***Action***Description**

Clears all averaged sweeps.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Clear sweeps for average in trace F1.
app.Math.F1.Operator1Setup.ClearSweeps
```

**InvalidInputPolicy***Bool*

**Sweeps***Integer***Range** From 1 to 1000000 step 1**Description**

Sets / Queries the number of sweeps to be averaged when trace Fx is set to averaging - continuous or summed.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set number of sweeps to be averaged in trace F1 as 20.
app.Math.F1.Operator1Setup.Sweeps = 20
```

**BOXCAR***app.Math.Fx.OperatorYSetup (Operator = "Boxcar")*

Rectangular BoxCar filter (local running average) of specified length.

Length	Integer
--------	---------

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the filter length for the boxcar function in trace F1
app.Math.F1.View = True
app.Math.F1.MathMode = "OneOperator"
app.Math.F1.Operator1 = "Boxcar"
app.Math.F1.Operator1Setup.
```

**Length***Integer***Range** From 2 to 5000 step 1**Description**

Sets / Queries the length, in samples, of the boxcar FIR filter (i.e. the running average of a local set of "length" points)

**COPY***app.Math.Fx.OperatorYSetup (Operator = "Copy")*

BatchSize	Integer
ResetCount	Action
WfCount	Double
WfCountText	String

**BatchSize***Integer***Range** From 128 to 10000000 step 128

**ResetCount***Action***WfCount***Double***Range** From 0 to 1e+009 step 1**WfCountText***String***Range** Any number of characters**CORRELATION***app.Math.Fx.OperatorYSetup (Operator = "Correlation")*

Correlate a portion of one waveform with another.

CorrLength	Double
CorrStart	Double

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Configure correlation in F3 using a length of 3.5 divisions,
' starting at the first division.
app.Math.F3.View = True
app.Math.F3.Operator1 = "Correlation"
app.Math.F3.Operator1S
```

**CorrLength***Double***Range** From 0.001 to 10 step 0.001**Description**

Sets / Queries the length in graticule divisions of the section of the first input trace that is used in the calculation of correlation.

**CorrStart***Double***Range** From 0 to 9.999 step 0.001**Description**

Sets/Queries the position in graticule divisions of the start of the section of trace 1 that is used in the correlation function in trace Fx.

**DEMODULATE***app.Math.Fx.OperatorYSetup (Operator = "Demodulate")*

Bandwidth	Double
CarrierFrequency	Double
DecimateBy	Integer
MaxCoefficients	Integer
SummaryText	String
Type	Enum

**Bandwidth** *Double*

**Range** From 100000 to 1e+011 step 1000

**CarrierFrequency** *Double*

**Range** From 1e+006 to 1e+011 step 1

**DecimateBy** *Integer*

**Range** From 1 to 1000 step 1

**MaxCoefficients** *Integer*

**Range** From 9 to 8193 step 1

**SummaryText** *String*

**Range** Any number of characters

**Type** *Enum*

## Values

Amplitude	
Frequency	
Imaginary	
Phase	
Real	
Time	
WideBandAM	

## DERIVATIVE

*app.Math.Fx.OperatorYSetup (Operator = "Derivative")*

Computes the derivative of the waveform (next\_sample\_value - this\_sample\_value) / horizontal\_sample\_interval.

EnableAutoScale	Bool
FindScale	Action
VerOffset	Double
VerScale	DoubleLockstep

## Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Start a find scale operation for derivative function trace F1
app.Math.F1.View = True
app.Math.F1.MathMode = "OneOperator"
app.Math.F1.Operator1 = "Derivative"
app.Math.F1.Operato
```

**EnableAutoScale** *Bool*

**Description**

Sets/Queries whether the autoscale function is enabled for the derivative function trace Fx. If enabled, an auto-scale operation is performed whenever the setup changes.

**FindScale***Action***Description**

Initiates a Find Scale action, to set a suitable vertical scale for the derivative function trace Fx.

**VerOffset***Double*

**Range** From -1e+006 to 1e+006 step 1e-009

**Description**

Sets/Queries the vertical offset of the derivative function trace Fx.

**VerScale***DoubleLockstep*

**Range** From 1e-012 to 1e+013 step 10000, locked to 1 2 5, fine grain allowed=false, on=false

**Description**

Sets/Queries the vertical scale of the derivative function Fx.

**DESKEW***app.Math.Fx.OperatorYSetup (Operator = "Deskew")*

Deskew waveform by shifting it in time.

WaveDeskew	Double
------------	--------

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set the displacement of the trace F3 to 3.7e-9
app.Math.F3.View = True
app.Math.F3.MathMode = "OneOperator"
app.Math.F3.Operator1 = "Deskew"
app.Math.F3.Operator1Setup.WaveDeskew
```

**WaveDeskew***Double*

**Range** From -2.5e-008 to 2.5e-008 step 1e-012

**Description**

Sets/Queries the displacement in time of the trace Fx. A positive value delays the signal: a negative one makes it appear earlier.

**ENHANCEDRESOLUTION***app.Math.Fx.OperatorYSetup (Operator = "EnhancedResolution")*

Bits	Enum
------	------



**Description**

Number of bits of enhanced resolution. ERES is a FIR filter with a gaussian frequency response.

**Values**

0.5	Enhance by 0.5 bits
1	Enhance by 1 bits
1.5	Enhance by 1.5 bits
2	Enhance by 2 bits
2.5	Enhance by 2.5 bits
3	Enhance by 3 bits

**ENVELOPE**

*app.Math.Fx.OperatorYSetup (Operator = "Envelope")*

Envelope of minimum and maximum values for an ensemble of sweeps, or 'Extrema'

ClearSweeps	Action
LimitNumSweeps	Bool
Sweeps	Integer

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Configure F3 to be an envelope of C1
app.Math.F3.View = True
app.Math.F3.Source1 = "C1"
app.Math.F3.MathMode = "OneOperator"
app.Math.F3.Operator1 = "Envelope"
app.Math.F3.Operat
```

**ClearSweeps****Action****Description**

Initiates a Clear Sweeps operation for envelope function trace Fx.

**LimitNumSweeps****Bool****Sweeps****Integer**

**Range** From 1 to 1000000 step 1

**Description**

Sets/Queries the maximum number of sweeps to be used by the envelope function trace Fx.

**EXCELMATH**

*app.Math.Fx.OperatorYSetup (Operator = "ExcelMath")*

Perform Math in Excel. Transfers 1 or 2 waveforms into Excel and reads the resulting waveform.

AddChart	Action
----------	--------

AddLabels	Action
Advanced	Bool
ClearSheet	Action
CreateDemoSheet	Action
FindScale	Action
NewSheet	Bool
OutputCell	String
OutputEnable	Bool
OutputHeaderCell	String
Scaling	Enum
Source1Cell	String
Source1Enable	Bool
Source1HeaderCell	String
Source2Cell	String
Source2Enable	Bool
Source2HeaderCell	String
SpreadsheetFilename	FileName
Status	String
WithHeader	Bool

### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Configure F3 to process C1 in Excel using a demo-sheet
app.Math.F3.View = True
app.Math.F3.Source1 = "C1"
app.Math.F3.MathMode = "OneOperator"
app.Math.F3.Operator1 = "ExcelMath"□
```

---

### AddChart

*Action*

#### Description

Adds a chart to the current Excel spreadsheet.

---

### AddLabels

*Action*

#### Description

Adds labels to the cells of the array headers in the Excel spreadsheet.

### Advanced

*Bool*

#### Description

Enables/Disables/Queries the advanced Excel settings. By default, the cell ranges used to store the input waveform, and to retrieve the calculated waveform, are preset. Advanced mode allows these to be changed.

#### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set function trace F3 to be an Excel function.
app.Math.F3.Operator1 = "ExcelMath"

' Enable the use of the advanced settings.
app.Math.F3.Operator1Setup.Advanced = True
```

---

### ClearSheet

*Action*

#### Description

Clears the contents of the current Excel spreadsheet.

---

### CreateDemoSheet

*Action*

#### Description

Creates a 'demo sheet', an excel spreadsheet pre-labelled, and with the output column equation preset to invert the input data.

---

### FindScale

*Action*

#### Description

Set a suitable scale for the output data from Excel on the instrument graticule when scaling has been set to manual.

#### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set function trace F3 to be an Excel function.
app.Math.F3.Operator1 = "ExcelMath"

' Set the scaling from the Excel spreadsheet to automatic.
app.Math.F3.Operator1Setup.Scaling = "Manual"

' Find a suitable scale for the output data
' on the instrument graticule.
app.Math.F3.Operator1Setup.FindScale
```

## NewSheet

**Bool**

### Description

Enables/Disables/Queries the creation of a new Excel spreadsheet. If a new sheet is not to be created, an existing file name must be specified in the SpreadsheetFilename control.

### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set function trace F3 to be an Excel function.
app.Math.F3.Operator1 = "ExcelMath"

' Enable the creation of a new Excel spreadsheet.
app.Math.F3.Operator1Setup.NewSheet = True
```

## OutputCell

**String**

**Range** Any number of characters

### Description

Sets/Queries the cell label for output in the Excel function Fx. This cell marks the start (top) of the array of data to be taken from Excel into the instrument.

## OutputEnable

**Bool**

### Description

Enables/Disables/Queries the transfer of output data from Excel to the instrument. If a one-way computation is required, where results of the Excel processing are not required, this should be set to False to increase performance.

## OutputHeaderCell

**String**

**Range** Any number of characters

### Description

Sets/Queries the header cell label for output in the Excel function Fx. This is the starting cell for the header which carries setup information about the output waveform, from Excel to the instrument. Only used if the WithHeader control is set to True.

## Scaling

**Enum**

### Description

Sets/Queries the method of scaling the output trace from the Excel spreadsheet.

### Values

Automatic	Automatically scale the output waveform to full-scale
FromSheet	Retrieve scaling information from the output header in the spreadsheet
Manual	Manually auto-scale when FindScale is pressed

## Source1Cell

**String**

**Range** Any number of characters

### Description

Sets/Queries the cell label for source 1 in the Excel function Fx. This cell marks the start (top) of the array into which data from the first source waveform is transferred.

**Source1Enable*****Bool*****Description**

Enables/Disables/Queries the transfer of source 1 data from the instrument to Excel.

**Source1HeaderCell*****String***

**Range** Any number of characters

**Description**

Sets/Queries the header cell label for source 1 in the Excel function Fx. This is the starting cell for the header which carries setup information about waveform 1, from the instrument to Excel. This information includes waveform length, vertical and horizontal units, vertical and horizontal framing information, and horizontal scaling and offset information. Only used when the WithHeader control is set to True.

**Source2Cell*****String***

**Range** Any number of characters

**Description**

Sets/Queries the cell label for source 2 in the Excel function Fx. This cell marks the start (top) of the array into which data from the second source waveform is transferred.

**Source2Enable*****Bool*****Description**

Enables/Disables/Queries the transfer of source 2 data from the instrument to Excel.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set function trace F1 to be an Excel function.
app.Math.F1.Operator1 = "ExcelMath"
' Enable the transfer of source 2 data from the instrument to Excel.
app.Math.F1.Operator1Setup.Source2Enable = True
```

**Source2HeaderCell*****String***

**Range** Any number of characters

**Description**

Sets/Queries the header cell label for source 2 in the Excel function Fx. This is the starting cell for the header which carries setup information about waveform 2, from the instrument to Excel. This information includes waveform length, vertical and horizontal units, vertical and horizontal framing information, and horizontal scaling and offset information. Only used when the WithHeader control is set to True.

**SpreadsheetFilename***FileName***Range** Any number of characters**Description**

Sets/Queries the file name of the current Excel spreadsheet.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set function trace F3 to be an Excel function.
app.Math.F3.Operator1 = "ExcelMath"

' Disable the creation of a new Excel spreadsheet.
app.Math.F3.Operator1Setup.NewSheet = False

' Select the filename of the existing Excel spreadsheet to be used.
app.Math.F3.Operator1Setup.SpreadsheetFilename = "C:\Sheet17.xls"
```

**Status***String***Range** Any number of characters**Description**

Inspects the status of the Excel and instrument combination. Examples are "OK", or "Excel not installed".

**WithHeader***Bool***Description**

Enables/Disables/Queries the presence of headers with the waveform data.

**FASTWAVEPORT***app.Math.Fx.OperatorYSetup (Operator = "FastWavePort")*

MaxSize	Integer
PortName	String
Timeout	Double

**MaxSize***Integer***Range** From 0 to 100000000 step 1**PortName***String***Range** Any number of characters**Timeout***Double***Range** From 0 to 100 step 1**FFT**

Fast Fourier Transform of waveform data.

Algorithm	Enum
FillType	Enum
SuppressDC	Bool
Type	Enum
Window	Enum

### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Configure F3 to perform an FFT of C1
app.Math.F3.View = True
app.Math.F3.Source1 = "C1"
app.Math.F3.MathMode = "OneOperator"
app.Math.F3.Operator1 = "FFT"
app.Math.F3.Operator1Se
```

### Algorithm

*Enum*

#### Description

Sets/Queries the algorithm for the FFT in function trace Fx.

#### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set function trace F4 to FFT.
app.Math.F4.Operator1 = "FFT"
' Set the FFT algorithm to power of two.
app.Math.F4.Operator1Setup.Algorithm = "Power2"
```

#### Values

LeastPrime	
Power2	

### FillType

*Enum*

#### Description

Sets/Queries the type of trace fill to use in the FFT function trace Fx.

#### Values

Truncate	
ZeroFill	

### SuppressDC

*Bool*

#### Description

Enables/Disables suppression of the value at zero frequency in the FFT spectrum.

**Type****Enum****Description**

Sets/Queries the type of FFT spectrum for function trace Fx.

**Values**

Imaginary	Imaginary part of the complex spectrum
Magnitude	Magnitude with linear vertical scale
MagSquared	
Phase	Phase
PowerDensity	Power Density
PowerSpectrum	Power Spectrum
Real	Real part of the complex spectrum

**Window****Enum****Description**

Sets/Queries the type of window for the FFT function trace Fx.

**Values**

BlackmanHarris	
FlatTop	
Hamming	
Rectangular	
VonHann	

**FILTER**

*app.Math.Fx.OperatorYSetup (Operator = "Filter")*

Processes waveform using specified digital filter.

AutoLength	Bool
FilterKind	Enum
FIRMissingPointsLocation	Enum
FirOrlir	Enum
FitAlways	Bool
LowFreqPass	Double
NumberOfTaps	Integer
PassBandRipple	Double
ReframeOutput	Bool
SampleRateText	String
StopBandAttenuation	Double
TransitionWidth	Double

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Configure F1 to filter C1
app.Math.F1.View = True
```



```
app.Math.F1.Source1 = "C1"
app.Math.F1.MathMode = "OneOperator"
app.Math.F1.Operator1 = "Filter"
app.Math.F1.Operator1Setup.FirO
```

### AutoLength

*Bool*

#### Description

Enables/Disables/Queries status of the auto-length feature for the filter Fx.

### FilterKind

*Enum*

#### Description

Sets/Queries kind of filter to use in function Fx.

#### Values

BandPass	
BandStop	
Custom	
Gaussian	
HighPass	
LowPass	
RaisedCosine	
RaisedRootCosine	

### FIRMissingPointsLocation

*Enum*

#### Values

Left	
LeftRight	
Right	

### FirOrlir

*Enum*

#### Description

Sets/Queries whether the filter Fx is an FIR filter or an IIR filter.

#### Values

FIR	Finite Impulse Response Filter
IIR	Infinite Impulse Response Filter

### FitAlways

*Bool*

### LowFreqPass

*Double*

**Range** From 1000 to 1e+011 step 1

#### Description

Sets/Queries the lower cut-off frequency for the band-pass filter Fx.

## NumberOfTaps

*Integer*

**Range** From 3 to 2001 step 1

### Description

Sets/Queries the number of taps in the filter Fx. Valid only when the AutoLength control is set to False.

## PassBandRipple

*Double*

**Range** From 0.5 to 20 step 0.1

### Description

Sets/Queries the pass-band ripple.

## ReframeOutput

*Bool*

## SampleRateText

*String*

**Range** Any number of characters

## StopBandAttenuation

*Double*

**Range** From 10 to 100 step 0.001

### Description

Sets/Queries the stop-band attenuation of the filter Fx.

## TransitionWidth

*Double*

**Range** From 0 to 1e+011 step 1

### Description

Sets/Queries the width of the transition in the frequency spectrum of filter Fx.

## FLOOR

*app.Math.Fx.OperatorYSetup (Operator = "Floor")*

Most negative or minimum values for an ensemble of sweeps, or "Floor"

ClearSweeps	Action
LimitNumSweeps	Bool
Sweeps	Integer

### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Configure F1 to measure the Floor of the first 1000
' sweeps of C1
app.Math.F1.View = True
app.Math.F1.Source1 = "C1"
app.Math.F1.MathMode = "OneOperator"
app.Math.F1.Operator1
```

## ClearSweeps

*Action*

## Description

Initiates a clear sweeps action for the Floor function trace Fx.

## LimitNumSweeps

**Bool**

## Sweeps

**Integer**

**Range** From 1 to 1000000 step 1

## Description

Sets/Queries the maximum number of sweeps for the Floor function trace Fx.

## HISTOGRAM

*app.Math.Fx.OperatorYSetup (Operator = "Histogram")*

Histogram of the values of a parameter, or if a waveform is used as the input, histogram the waveform sample amplitudes.

AutoFindScale	Bool
Bins	DoubleLockstep
Center	Double
ClearSweeps	Action
FindScale	Action
HorScale	DoubleLockstep
Values	Integer
VerScaleType	Enum

## Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Configure F1 to histogram the first 200000 sample
' values from source waveform C1 into 50 bins.
' Auto find-scale is enabled.
app.Math.F1.View = True
app.Math.F1.Source1 = "C1"
```

## AutoFindScale

**Bool**

## Description

Enables/Disables automatic scale setting for the histogram function Fx.

## Bins

**DoubleLockstep**

**Range** From 20 to 2000 step 1, locked to 1 2 5, fine grain allowed=false, on=false

## Description

Sets/Queries the number of bins in the histogram function Fx.

## Center

**Double**

**Range** From -1e+010 to 1e+010 step 1e-012

## Description

Sets/Queries the horizontal value at the center of the graticule of the histogram function Fx.

**ClearSweeps***Action***Description**

Clears the contents of all the bins of the histogram function Fx.

**FindScale***Action***Description**

Creates a suitable horizontal position and scale to include all the non-empty bins of the histogram Fx.

**HorScale***DoubleLockstep*

**Range** From 1e-012 to 1e+012 step 0.01, locked to 1 2 5, fine grain allowed=false, on=false

**Description**

Sets/Queries the horizontal scale in units per division for the histogram function Fx. Use the FindScale control to automatically determine the scale by looking at the non-zero populated bins.

**Values***Integer*

**Range** From 20 to 2000000000 step 1

**Description**

Sets/Queries the maximum number of values from the source result to include in the histogram function Fx.

**VerScaleType***Enum***Description**

Sets/Queries the way that the vertical scale is calculated as the histogram Fx grows.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set function F1 as histogram.
app.Math.F1.Operator1 = "Histogram"
' Set the vertical scale type to linear with constant maximum.
app.Math.F1.Operator1Setup.VerScaleType = "LinConstMax"
```

**Values**

LinConstMax	Linear scale with constant maximum value
Linear	Linear scale

**HTIE2BER**

*app.Math.Fx.OperatorYSetup (Operator = "Htie2BER")*

Format	Enum
Frequency	Double
MaxPopInFit	DoubleLockstep
PercentileUsed	DoubleLockstep
TransitionDensity	Double
UseValInput	Bool
UseWeights	Bool

## Format

*Enum*

### Values

Bathtub	
EstTIE	
LogEstTIE	
LogTIE	
TjGaussian	
TotalJitter	

## Frequency

*Double*

**Range** From 100000 to 1e+011 step 1

## MaxPoplnFit

*DoubleLockstep*

**Range** From 10 to 1e+009 step 20, locked to 1 2 5, fine grain allowed=false, on=false

## PercentileUsed

*DoubleLockstep*

**Range** From 0.001 to 20 step 0.001, locked to 1 2 5, fine grain allowed=false, on=false

## TransitionDensity

*Double*

**Range** From 0.1 to 1 step 0.01

## UseVallInput

*Bool*

## UseWeights

*Bool*

## INTEGRAL

*app.Math.Fx.OperatorYSetup (Operator = "Integral")*

Integral of the linearly rescaled (multiplier and adder) input.

Adder	Double
AutoFindScale	Bool
FindScale	Action
Multiplier	Double
VerOffset	Double
VerScale	DoubleLockstep

## Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Configure F1 to integrate C1
app.Math.F1.View = True
app.Math.F1.Source1 = "C1"
app.Math.F1.MathMode = "OneOperator"
```

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```
app.Math.F1.Operator1 = "Integral"  
app.Math.F1.Operator1Setup
```

### Adder

*Double*

**Range** From -1e-009 to 1e-009 step 1e-012

#### Description

Sets/Queries the additive A for the integral function Fx, where  $Fx = M \cdot \text{Input} + A$ .

### AutoFindScale

*Bool*

#### Description

Set/Query the state of the 'AutoFindScale' cvar, which enables the automatic scaling of the Integral when the acquisition setup changes.

### FindScale

*Action*

#### Description

Initiates an action to find suitable vertical offset and scale for the integral function trace Fx.

### Multiplier

*Double*

**Range** From -1e+006 to 1e+006 step 1e-006

#### Description

Sets/Queries the multiplying constant M for the integral function Fx, where  $Fx = M \cdot \text{Input} + A$

### VerOffset

*Double*

**Range** From -1e+006 to 1e+006 step 1e-015

#### Description

Sets/Queries the vertical offset for the integral function trace Fx.

### VerScale

*DoubleLockstep*

**Range** From 1e-012 to 1e+007 step 0.01, locked to 1 2 5, fine grain allowed=false, on=false

#### Description

Sets/Queries the vertical scale for the integral function trace Fx.

## INTERPOLATE

*app.Math.Fx.OperatorYSetup (Operator = "Interpolate")*

Interpolate, producing more points in the resulting waveform using linear, cubic, or weighted  $\sin(x)/x$  algorithms.

DownFactor	Action
Expand	DoubleLockstep
HalfWidth	Integer
InterpolateType	Enum
KaiserBeta	Double
NoiseGain	Double
UpFactor	Action
USE_1_2_5	Bool

WindowType
------------

Enum
------

## Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Configure F1 to interpolate C1
app.Math.F1.View = True
app.Math.F1.Source1 = "C1"
app.Math.F1.MathMode = "OneOperator"
app.Math.F1.Operator1 = "Interpolate"
app.Math.F1.Operator1
```

## DownFactor

*Action*

## Expand

*DoubleLockstep*

**Range** From 2 to 50 step 0.1, locked to 1 2 5, fine grain allowed=false, on=false

### Description

Sets/Queries the sampling expansion ratio for the interpolation function Fx.

## HalfWidth

*Integer*

**Range** From 4 to 128 step 1

## InterpolateType

*Enum*

### Description

Sets/Queries the type of interpolation for the function trace Fx.

### Values

Cubic	
Linear	
SinXX	

## KaiserBeta

*Double*

**Range** From 2 to 11 step 0.1

## NoiseGain

*Double*

**Range** From 0.01 to 4 step 0.01

## UpFactor

*Action*

## USE\_1\_2\_5

*Bool*

**WindowType***Enum***Values**

Blackman	
BlackmanHarris	
Hamming	
Kaiser	
Rectangular	
VonHann	

**ISIPATT***app.Math.Fx.OperatorYSetup (Operator = "ISIPatt")*

AutoClearSweeps	Bool
BitRate	Double
ClearSweeps	Action
DelayPct	Double
NumberOfBits	Integer
Resample	Bool
UpdateVoltageTrack	Bool
UseBitRate	Bool
Width	Double

**AutoClearSweeps***Bool***BitRate***Double***Range** From 99000 to 2e+010 step 1000**ClearSweeps***Action***Description**

Clear any accumulated result data. Useful for example to restart an average, or parameter statistics.

**DelayPct***Double***Range** From 0 to 100 step 0.01**NumberOfBits***Integer***Range** From 3 to 12 step 1**Resample***Bool***UpdateVoltageTrack***Bool***UseBitRate***Bool*



**Width****Double****Range** From 1e-011 to 0.1 step 1e-012**LOWPASSIIR***app.Math.Fx.OperatorYSetup (Operator = "LowPassIIR")*

Cutoff	Double
FilterType	Enum
Log2BuffSize	Integer
Order	Integer
Ripple	Double
Warning	String

**Cutoff****Double****Range** From 10000 to 5e+011 step 1000**FilterType****Enum****Values**

Butterworth	
Chebyshev1	

**Log2BuffSize****Integer****Range** From 10 to 17 step 1**Order****Integer****Range** From 1 to 12 step 1**Ripple****Double****Range** From 0.01 to 4 step 0.01**Warning****String****Range** Any number of characters**MATHCADMATH***app.Math.Fx.OperatorYSetup (Operator = "MathcadMath")*

Produces a waveform using a user specified Mathcad function.

Advanced	Bool
FindScale	Action
NewSheet	Bool
OutputEnable	Bool

OutputHeaderVar	String
OutputVar	String
Reload	Action
Scaling	Enum
Source1Enable	Bool
Source1HeaderVar	String
Source1Var	String
Source2Enable	Bool
Source2HeaderVar	String
Source2Var	String
Status	String
WithHeader	Bool
WorksheetFilename	FileName

### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Configure F1 to process C1 using Mathcad
app.Math.F1.View = True
app.Math.F1.Source1 = "C1"
app.Math.F1.MathMode = "OneOperator"
app.Math.F1.Operator1 = "MathcadMath"
```

### Advanced

**Bool**

#### Description

Enables/Disables/Queries the use of the advanced features. When in advanced mode the names used for source and output vectors, in addition to names used for source and output headers, may be modified from their default values.

### FindScale

**Action**

#### Description

Set a suitable vertical scale of the Mathcad output trace on the instrument graticule. Valid only when Manual scaling is specified.

### NewSheet

**Bool**

#### Description

Enables/Disables/Queries the creation of a new Mathcad worksheet.

#### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set function F1 as Mathcad calculation.
app.Math.F1.Operator1 = "MathcadMath"
' Enable creation of a new Mathcad worksheet.
app.Math.F1.Operator1Setup.NewSheet = True
```

**OutputEnable*****Bool*****Description**

Enables/Disables/Queries the transmission of output data from Mathcad to the instrument.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set function F1 as Mathcad calculation.
app.Math.F1.Operator1 = "MathcadMath"
' Enable transmission of output data.
app.Math.F1.Operator1Setup.OutputEnable = True
```

**OutputHeaderVar*****String***

**Range** Any number of characters

**Description**

Sets/Queries the name in Mathcad of the output header variable.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set function F1 as Mathcad calculation.
app.Math.F1.Operator1 = "MathcadMath"
' Enables use of headers.
app.Math.F1.Operator1Setup.WithHeader = True
' Sets the name of the output header variable
app.Math.F1.Operator1Setup.OutputHeaderVar = "header1"
```

**OutputVar*****String***

**Range** Any number of characters

**Description**

Sets/Queries the name in Mathcad of the output variable.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set function F1 as Mathcad calculation.
app.Math.F1.Operator1 = "MathcadMath"
' Sets the name of the output variable in Mathcad.
app.Math.F1.Operator1Setup.OutputVar = "output3"
```

**Reload***Action***Description**

Reloads a specified Mathcad worksheet. If the worksheet does exist, the system creates an empty one with a name of the form "UntitledN", where N is an integer.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set function F1 as Mathcad calculation.
app.Math.F1.Operator1 = "MathcadMath"
' Specifies a Mathcad worksheet name.
app.Math.F1.Operator1Setup.WorksheetFilename = "XStream34.mcd"
' Reload a Mathcad worksheet.
app.Math.F1.Operator1Setup.Reload
```

**Scaling***Enum***Description**

Sets/Queries the method of vertical scaling of the Mathcad output trace on the instrument graticule.

**Values**

Automatic	
Manual	

**Source1Enable***Bool***Description**

Enables/Disables/Queries the transmission of source 1 data from the instrument to Mathcad.

**Source1HeaderVar***String*

**Range** Any number of characters

**Description**

Sets/Queries the name in Mathcad of input 1 header variable.

**Source1Var***String*

**Range** Any number of characters

**Description**

Sets/Queries the name in Mathcad of input variable 1.

**Source2Enable***Bool***Description**

Enables/Disables/Queries the transmission of source 2 data from the instrument to Mathcad.

**Source2HeaderVar***String*

**Range** Any number of characters

**Description**

Sets/Queries the name in Mathcad of input 2 header variable.

## Source2Var

*String*

**Range** Any number of characters

### Description

Sets/Queries the name in Mathcad of input variable 2.

## Status

*String*

**Range** Any number of characters

### Description

Inspects the status of the Mathcad calculation.

## WithHeader

*Bool*

### Description

Enables/Disables/Queries inclusion of headers in the Mathcad calculation.

## WorksheetFilename

*FileName*

**Range** Any number of characters

### Description

Sets/Queries a Mathcad worksheet file name.

## MATLABWAVEFORM

*app.Math.Fx.OperatorYSetup (Operator = "MATLABWaveform")*

Process a waveform using an external MATLAB application.

MATLABCode	String
MATLABPlot	Bool
MATLABScalePerDiv	Double
MATLABZeroOffset	Double

## MATLABCode

*String*

**Range** Any number of characters

### Description

String containing the MATLAB code to execute when new data is presented.

## MATLABPlot

*Bool*

### Description

If true, the result of the MATLAB processing operation is plotted by MATLAB, in a floating window.

## MATLABScalePerDiv

*Double*

**Range** From 1e-009 to 1e+009 step 1e-009

### Description

Vertical Scaling, used to scale the waveform returned from MATLAB to the DSO's graticule.

**MATLABZeroOffset****Double****Range** From -1e+009 to 1e+009 step 1e-009**Description**

Zero Offset (vertically), used to scale the waveform returned from MATLAB to the DSO's graticule.

**PERSISTENCEHISTOGRAM***app.Math.Fx.OperatorYSetup (Operator = "PersistenceHistogram")*

CenterCursor	Action
ClearSweeps	Action
CutDirection	Enum
VerCutCenter	Double
VerCutWidth	Double

**CenterCursor****Action****Description**

Center the slice about the center of the axis, Vertical or Horizontal, depending upon the CutDirection Setting.

**ClearSweeps****Action****Description**

Clear any accumulated result data. Useful for example to restart an average, or parameter statistics.

**CutDirection****Enum****Description**

Specifies either a "vertical" cut direction or "horizontal" cut direction producing a histogram with the same horizontal coordinates as the chosen direction.

**Values**

Horizontal	
Vertical	

**VerCutCenter****Double****Range** From -1.79769e+308 to 1.79769e+308 step 0**Description**

Horizontal coordinate of center of cut or slice from the persistence map (in horizontal units)

**VerCutWidth****Double****Range** From -1.79769e+308 to 1.79769e+308 step 0**Description**

Horizontal coordinate of center of cut or slice from the persistence map (in horizontal units)

**PERSISTENCETRACEMEAN***app.Math.Fx.OperatorYSetup (Operator = "PersistenceTraceMean")*

ClearSweeps	Action
NumPoints	Integer

**ClearSweeps***Action***Description**

Clear any accumulated result data. Useful for example to restart an average, or parameter statistics.

**NumPoints***Integer***Range** From 100 to 100000 step 1**PERSISTENCETRACERANGE***app.Math.Fx.OperatorYSetup (Operator = "PersistenceTraceRange")*

ClearSweeps	Action
NumPoints	Integer
PctPopulation	Double

**ClearSweeps***Action***Description**

Clear any accumulated result data. Useful for example to restart an average, or parameter statistics.

**NumPoints***Integer***Range** From 100 to 100000 step 1**PctPopulation***Double***Range** From 0.5 to 100 step 0.5**PERSISTENCETRACESIGMA***app.Math.Fx.OperatorYSetup (Operator = "PersistenceTraceSigma")*

ClearSweeps	Action
NumPoints	Integer
Sigma	Double

**ClearSweeps***Action*

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### Description

Clear any accumulated result data. Useful for example to restart an average, or parameter statistics.

### NumPoints

*Integer*

**Range** From 100 to 100000 step 1

### Sigma

*Double*

**Range** From 0.5 to 10 step 0.1

## REFRAME

*app.Math.Fx.OperatorYSetup (Operator = "Reframe")*

FitAlways	Bool
FitOnInpDefChanged	Bool
OneClickLarger	Bool
UseRegion	Enum
VerFrameStart	Double
VerFrameStop	Double

### FitAlways

*Bool*

### FitOnInpDefChanged

*Bool*

### OneClickLarger

*Bool*

### UseRegion

*Enum*

#### Values

All	
Lower	
Upper	

### VerFrameStart

*Double*

**Range** From -1e+012 to 1e+012 step 1e-015

### VerFrameStop

*Double*

**Range** From -1e+012 to 1e+012 step 1e-015

## RESCALE

*app.Math.Fx.OperatorYSetup (Operator = "Rescale")*

Linearly transform the vertical values of a waveform.

Adder	Double
-------	--------



CustomUnit	Bool
Multiplier	Double

## Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Configure F1
app.Math.F1.View = True
app.Math.F1.Source1 = "C1"
app.Math.F1.MathMode = "OneOperator"
app.Math.F1.Operator1 = "Rescale"
app.Math.F1.Operator1Setup.Adder = 2.0
app
```

## Adder

*Double*

**Range** From -1e+018 to 1e+018 step (9 digits)

### Description

Sets/Queries the additive constant A in the rescale function  $Fx = M.Input + A$

## CustomUnit

*Bool*

### Description

Enables/Disables the application of a custom unit of measurement to the rescale function trace Fx.

## Multiplier

*Double*

**Range** From -1e+018 to 1e+018 step (9 digits)

### Description

Sets/Queries the multiplicative constant M in the rescale function  $Fx = M.Input + A$

## ROOF

*app.Math.Fx.OperatorYSetup (Operator = "Roof")*

Most positive or maximum values for an ensemble of sweeps, or "Roof"

ClearSweeps	Action
LimitNumSweeps	Bool
Sweeps	Integer

## Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Configure F1 to measure the Roof of the first 1000
' sweeps of C1
app.Math.F1.View = True
app.Math.F1.Source1 = "C1"
app.Math.F1.MathMode = "OneOperator"
app.Math.F1.Operator1 =
```

## ClearSweeps

*Action*

## Description

Initiates a clear sweeps action for the roof function trace Fx.

## LimitNumSweeps

*Bool*

## Sweeps

*Integer*

**Range** From 1 to 1000000 step 1

## Description

Sets/Queries the maximum number of sweeps for the Roof function trace Fx.

## Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set function trace F2 to roof.
app.Math.F2.Operator1 = "Roof"
' Set the maximum number of sweeps to 150.
app.Math.F2.Operator1Setup.Sweeps = 150
```

## SEGMENTSELECT

*app.Math.Fx.OperatorYSetup (Operator = "SegmentSelect")*

NumSelectedSegments	Integer
SelectedSegment	Integer

## NumSelectedSegments

*Integer*

**Range** From 1 to 1 step 1

## SelectedSegment

*Integer*

**Range** From 1 to 1 step 1

## SEQBUILDER

*app.Math.Fx.OperatorYSetup (Operator = "SeqBuilder")*

ClearSweeps	Action
FifoMode	Bool
MaxWaveforms	Integer
StatusText	String
Sweeps	Integer

## ClearSweeps

*Action*

## Description

Clear any accumulated result data. Useful for example to restart an average, or parameter statistics.

---

**FifoMode** *Bool*

---

**MaxWaveforms** *Integer*

**Range** From 1 to 5000 step 1

---

**StatusText** *String*

**Range** Any number of characters

---

**Sweeps** *Integer*

**Range** From 1 to 5000 step 1

## SEQUENCEAVERAGE

*app.Math.Fx.OperatorYSetup (Operator = "SequenceAverage")*

---

AverageType	Enum
ClearSweeps	Action
ConfirmFull	Action
Sweeps	Integer

---

**AverageType** *Enum*

### Values

Continuous	
Summed	

---

**ClearSweeps** *Action*

### Description

Clear any accumulated result data. Useful for example to restart an average, or parameter statistics.

---

**ConfirmFull** *Action*

---

**Sweeps** *Integer*

**Range** From 1 to 1000000 step 1

## SINXOVERX

*app.Math.Fx.OperatorYSetup (Operator = "SinXOverX")*

---

## SPARSE

*app.Math.Fx.OperatorYSetup (Operator = "Sparse")*

---

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Waveform sparser, will reduce the number of points in the output waveform by skipping points in the input, and starting at a given offset.

SparsingFactor	Integer
SparsingPhase	Integer

### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Configure F1 to sparse C1 by a factor of 100
app.Math.F1.View = True
app.Math.F1.Source1 = "C1"
app.Math.F1.MathMode = "OneOperator"
app.Math.F1.Operator1 = "Sparse"
app.Math.F1.
```

### SparsingFactor

*Integer*

**Range** From 1 to 1000000 step 1

#### Description

Sets/Queries the factor by which the number of samples is reduced in the sparsing function Fx.

### SparsingPhase

*Integer*

**Range** From 0 to 0 step 1

#### Description

Sets/Queries the number of the first sample that will be accepted by the sparsing function Fx.

## TREND

*app.Math.Fx.OperatorYSetup (Operator = "Trend")*

Trend of the values of a parameter, if connected to a parameter result source, or a trend of the sample values of a waveform, if connected to a waveform result source.

AutoFindScale	Bool
Center	Double
ClearSweeps	Action
FindScale	Action
Mode	Enum
Values	Integer
VerScale	DoubleLockstep

### AutoFindScale

*Bool*

#### Description

Enables/Disables the automatic setting of the vertical scale and vertical offset for the trend trace Fx.

## Center

*Double*

**Range** From -1.79769e+308 to 1.79769e+308 step 0

### Description

Sets/Queries the vertical position of the centre of the trend trace Fx.

## ClearSweeps

*Action*

### Description

Clears the contents of the trend trace Fx.

## FindScale

*Action*

### Description

Sets the vertical scale and offset to optimum values to display the trend trace Fx.

## Mode

*Enum*

### Description

Trend mode, defines which parameter measurements are used to build the trend.

### Values

All	Trend all values
AllperTrace	Trend an average of all values per acquisition
Average	Trend all values per trace, clear before new acquisition.

## Values

*Integer*

**Range** From 2 to 1000000 step 1

### Description

Sets/Queries the number of visible values in the trend trace Fx.

## VerScale

*DoubleLockstep*

**Range** From 1e-015 to 1e+012 step 0.01, locked to 1 2 5, fine grain allowed=false, on=false

### Description

Sets/Queries the vertical scale of the trend trace Fx.

## WAVESCRIPT

*app.Math.Fx.OperatorYSetup (Operator = "WaveScript")*

Code	String
Language	Enum
Status	String
Timeout	Double

## Code

*String*

**Range** Any number of characters

**Language****Enum****Values**

JScript	
VBScript	

**Status****String****Range** Any number of characters**Timeout****Double****Range** From 1 to 1200 step 0.001**MATHCADPARAMARITH***app.Measure.Px.Operator (ArithEngine = "MathcadParamArith")*

Advanced	Bool
NewSheet	Bool
OutputEnable	Bool
OutputHeaderVar	String
OutputVar	String
Reload	Action
Source1Enable	Bool
Source1HeaderVar	String
Source1Var	String
Source2Enable	Bool
Source2HeaderVar	String
Source2Var	String
Status	String
WithHeader	Bool
WorksheetFilename	FileName

**Advanced****Bool****Description**

Enables/Disables/Queries use of advanced features fro Mathcad parameter Px.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set parameter P3 as Mathcad calculation.
app.Measure.P3.ParamEngine = "MathcadParam"
' Enables use of advanced features.
app.Measure.P3.Operator.Advanced = True
```

**NewSheet*****Bool*****Description**

Enables/Disables/Queries use of new Mathcad worksheet for parameter Px.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set parameter P3 as Mathcad calculation.
app.Measure.P3.ParamEngine = "MathcadParam"
' Enable new Mathcad worksheet.
app.Measure.P3.Operator.NewSheet = True
```

**OutputEnable*****Bool*****Description**

Enables/Disables/Queries transmission of output data from Mathcad to instrument.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set parameter P3 as Mathcad calculation.
app.Measure.P3.ParamEngine = "MathcadParam"
' Enables transmission of Mathcad output to the instrument.
app.Measure.P3.Operator.OutputEnable = True
```

**OutputHeaderVar*****String***

**Range** Any number of characters

**Description**

Sets/Queries the name of the output variable header in Mathcad parameter Px.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set parameter P3 as Mathcad calculation.
app.Measure.P3.ParamEngine = "MathcadParam"
' Sets the name of the Mathcad output header variable
app.Measure.P3.Operator.OutputHeaderVar = "outputheader"
```

**OutputVar*****String***

**Range** Any number of characters

**Description**

Sets/Queries the name of the output variable in Mathcad parameter Px.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set parameter P3 as Mathcad calculation.
app.Measure.P3.ParamEngine = "MathcadParam"
' Sets the name of the Mathcad output variable
app.Measure.P3.Operator.OutputVar = "output7"
```

**Reload****Action****Description**

Reloads the specified Mathcad file.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set parameter P3 as Mathcad calculation.
app.Measure.P3.ParamEngine = "MathcadParam"
' Specify a Mathcad worksheet filename.
app.Measure.P3.Operator.WorksheetFilename =
"C:\XStreamMathcad\Param233.mcd"
' Reload the specified Mathcad file.
app.Measure.P3.Operator.Reload
```

---

**Source1Enable****Bool****Description**

Enables/Disables/Queries transmission of source data 1 from instrument to Mathcad.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set parameter P3 as Mathcad calculation.
app.Measure.P3.ParamEngine = "MathcadParam"
' Enables transmission of source 1 data to instrument.
app.Measure.P3.Operator.Source1Enable = True
```

---

**Source1HeaderVar****String**

**Range** Any number of characters

**Description**

Sets/Queries the name of the input variable 1 header in Mathcad parameter Px.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set parameter P3 as Mathcad calculation.
app.Measure.P3.ParamEngine = "MathcadParam"
' Sets the name of the Mathcad source 1 header variable
app.Measure.P3.Operator.Source1HeaderVar = "input1header"
```



### Source1Var

*String*

**Range** Any number of characters

#### Description

Sets/Queries the name of the input variable 1 in Mathcad parameter Px.

#### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set parameter P3 as Mathcad calculation.
app.Measure.P3.ParamEngine = "MathcadParam"
' Sets the name of the source 1 variable
app.Measure.P3.Operator.Source1Var = "input1"
```

### Source2Enable

*Bool*

#### Description

Enables/Disables/Queries transmission of source data 2 from instrument to Mathcad.

#### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set parameter P3 as Mathcad calculation.
app.Measure.P3.ParamEngine = "MathcadParam"
' Enables transmission of source 2 data to instrument.
app.Measure.P3.Operator.Source2Enable = True
```

### Source2HeaderVar

*String*

**Range** Any number of characters

#### Description

Sets/Queries the name of the input variable 2 header in Mathcad parameter Px.

#### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set parameter P3 as Mathcad calculation.
app.Measure.P3.ParamEngine = "MathcadParam"
' Sets the name of the Mathcad source 2 header variable
app.Measure.P3.Operator.Source2HeaderVar = "input2header"
```

**Source2Var*****String*****Range** Any number of characters**Description**

Sets/Queries the name of the input variable 2 in Mathcad parameter Px.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set parameter P3 as Mathcad calculation.
app.Measure.P3.ParamEngine = "MathcadParam"
' Sets the name of the source 2 variable
app.Measure.P3.Operator.Source2Var = "input2"
```

**Status*****String*****Range** Any number of characters**Description**

Inspects the status of the Mathcad parameter calculation Px.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set parameter P3 as Mathcad calculation.
app.Measure.P3.ParamEngine = "MathcadParam"
' Inspect status of Mathcad parameter calculation.
MathcadStatus = app.Measure.P3.Operator.Status
```

**WithHeader*****Bool*****Description**

Enables/Disables/Queries presence of headers with variables with Mathcad parameter Px.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set parameter P3 as Mathcad calculation.
app.Measure.P3.ParamEngine = "MathcadParam"
' Enables inclusion of headers with data.
app.Measure.P3.Operator.WithHeader = True
```

**WorksheetFilename***FileName***Range** Any number of characters**Description**

Sets/Queries the name of the current Mathcad file for parameter Px.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set parameter P3 as Mathcad calculation.
app.Measure.P3.ParamEngine = "MathcadParam"
' Specify a Mathcad worksheet filename.
app.Measure.P3.Operator.WorksheetFilename =
"C:\XStreamMathcad\Param233.mcd"
```

**PARAMCONST***app.Measure.Px.Operator (ArithEngine = "ParamConst")*

HorRes	Double
HorStartValue	Double
HorStopValue	Double
HorUnits	String
StatusValue	Integer
Value	Double
VerRes	DoubleLockstep
VerUnits	String

**HorRes***Double***Range** From 1e-020 to 0.001 step 1e-020**HorStartValue***Double***Range** From -1e+012 to 1e+012 step 1e-015**HorStopValue***Double***Range** From -1e+012 to 1e+012 step 1e-015**HorUnits***String***Range** Any number of characters**StatusValue***Integer***Range** From 0 to 2147483647 step 1

**Value** *Double*

**Range** From -1e+012 to 1e+012 step 1e-015

**VerRes** *DoubleLockstep*

**Range** From 1e-015 to 1 step 1e-008, locked to 1 2 5, fine grain allowed=false, on=false

**VerUnits** *String*

**Range** Any number of characters

**PARAMINVERT**

*app.Measure.Px.Operator (ArithEngine = "ParamInvert")*

CycleForTimeUnits	Bool
-------------------	------

**CycleForTimeUnits** *Bool*

**PARAMMINMAX**

*app.Measure.Px.Operator (ArithEngine = "ParamMinMax")*

MinMax	Enum
--------	------

**MinMax** *Enum*

**Values**

Max	
Min	

**PARAMPASSTHRU**

*app.Measure.Px.Operator (ArithEngine = "ParamPassThru")*

ShowButton	Bool
------------	------

**ShowButton** *Bool*

**PARAMRESCALE**

*app.Measure.Px.Operator (ArithEngine = "ParamRescale")*

Adder	Double
-------	--------

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CustomUnit	Bool
Multiplier	Double

### Adder

*Double*

**Range** From -1.79769e+308 to 1.79769e+308 step 0

### CustomUnit

*Bool*

### Multiplier

*Double*

**Range** From -1.79769e+308 to 1.79769e+308 step 0

## PARAMSCRIPT

*app.Measure.Px.Operator (ArithEngine = "ParamScript")*

Code	String
Language	Enum
Status	String
Timeout	Double

### Code

*String*

**Range** Any number of characters

### Language

*Enum*

#### Values

JScript	
VBScript	

### Status

*String*

**Range** Any number of characters

### Timeout

*Double*

**Range** From 1 to 12000 step 0.001

## PLIMITER

*app.Measure.Px.Operator (ArithEngine = "Plimiter")*

MaxNbParam	Integer
StartParamIdx	Integer

~~MaxNbParam~~

~~Integer~~

**Range** From 1 to 1000000000 step 1

---

**StartParamIdx**

*Integer*

**Range** From 0 to 1000000000 step 1

### 100BT FALL

*app.Measure.Px.Operator (ParamEngine = "100BTfall")*

---

SelectedLevels	Enum
----------------	------

---

**SelectedLevels**

*Enum*

**Values**

Lower	
Upper	

### 100BTRISE

*app.Measure.Px.Operator (ParamEngine = "100BTrise")*

---

SelectedLevels	Enum
----------------	------

---

**SelectedLevels**

*Enum*

**Values**

Lower	
Upper	

### 100BTTIE

*app.Measure.Px.Operator (ParamEngine = "100BTTIE")*

---

BaseFrequency	Double
FindBaseFrequency	Action
SelectedLevels	Enum

---

**BaseFrequency**

*Double*

**Range** From 1 to 2e+012 step 10

---

**FindBaseFrequency**

*Action*

**SelectedLevels***Enum***Values**

Lower	
Upper	

**100BTTJ***app.Measure.Px.Operator (ParamEngine = "100BTTj")*

BaseFrequency	Double
FindBaseFrequency	Action
SelectedLevels	Enum

**BaseFrequency***Double***Range** From 1 to 2e+012 step 10**FindBaseFrequency***Action***SelectedLevels***Enum***Values**

Lower	
Upper	

**10BTJ***app.Measure.Px.Operator (ParamEngine = "10BTJ")*

ClearSweeps	Action
-------------	--------

**ClearSweeps***Action***Description**

Clear any accumulated result data. Useful for example to restart an average, or parameter statistics.

**AMPLITUDE***app.Measure.Px.Operator (ParamEngine = "Amplitude")***AMPLITUDEASYMMETRY***app.Measure.Px.Operator (ParamEngine = "AmplitudeAsymmetry")*

Hysteresis	Double
------------	--------

## Hysteresis

*Double*

**Range** From 0 to 10 step 0.1

## ANALOG2PROTOCOL

*app.Measure.Px.Operator (ParamEngine = "Analog2Protocol")*

AddressOperator	Enum
AddressValue	BitPattern
AddressValue2	BitPattern
FilterType	Enum
FindLevel	Action
Hysteresis	Double
LevelType	Enum
PatternBitLength	Integer
PatternBitPos	Integer
PatternOperator	Enum
PatternValue	BitPattern
PatternValue2	BitPattern
PercentLevel	Double
Slope	Enum
ViewingMode	Enum

## AddressOperator

*Enum*

### Values

Equal	
Greater	
GreaterOrEqual	
InRange	
NotEqual	
OutRange	
Smaller	
SmallerOrEqual	

## AddressValue

*BitPattern*

**Range** MaxBits=32 NumBits=8 NumBytes=1 AllowedBitValues=01X PaddingChar=X  
PadAlign=Left SizeAlign=BitFix Format=Ehex



**AddressValue2***BitPattern*

**Range** MaxBits=32 NumBits=8 NumBytes=1 AllowedBitValues=01 PaddingChar=1  
PadAlign=Left SizeAlign=BitFix Format=Ehex

**FilterType***Enum***Values**

Any	
ID	
IDData	

**FindLevel***Action***Hysteresis***Double*

**Range** From 0 to 10 step 0.1

**LevelType***Enum***Values**

Absolute	
Percent	
PercentGNDMax	
PercentGNDDMin	
PercentPkPk	

**PatternBitLength***Integer*

**Range** From 1 to 128 step 1

**PatternBitPos***Integer*

**Range** From 0 to 127 step 1

**PatternOperator***Enum***Values**

Equal	
Greater	
GreaterOrEqual	
InRange	
NotEqual	
OutOfRange	
Smaller	
SmallerOrEqual	

**PatternValue***BitPattern*

**Range** MaxBits=128 NumBits=8 NumBytes=1 AllowedBitValues=01X PaddingChar=X  
PadAlign=Left SizeAlign=BitVar Format=Ehex

**PatternValue2****BitPattern**

**Range** MaxBits=128 NumBits=8 NumBytes=1 AllowedBitValues=01 PaddingChar=1  
PadAlign=Left SizeAlign=BitVar Format=Ehex

**PercentLevel****Double**

**Range** From 0 to 100 step 1

**Slope****Enum****Values**

Both	
Bothneg	
Bothpos	
Neg	
Pos	

**ViewingMode****Enum****Values**

Binary	
Hex	

**AREA***app.Measure.Px.Operator (ParamEngine = "Area")*

Calculates the area of the input waveform relative to zero.

Cyclic	Bool
--------	------

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set parameter P1 to area.
app.Measure.P1.View = True
app.Measure.P1.MeasurementType = "measure"
app.Measure.P1.ParamEngine = "Area"
app.Measure.P1.Source1 = "C1"

' Enable cycli
```

**Cyclic****Bool****Description**

Enables/Disables cyclic calculation of area parameter Px, that is calculated using a whole number of cycles of the signal.

Note: the HelpMarkers aid in observing over which region of the waveform the measurement is made.

**AUTOCORRELATION SIGNAL TO NOISE***app.Measure.Px.Operator (ParamEngine = "AutoCorrelationSignalToNoise")*

PatternLength	Double
---------------	--------

### PatternLength

*Double*

**Range** From 1e-009 to 0.001 step 1e-010

### BASE

*app.Measure.Px.Operator (ParamEngine = "Base")*

### BURSTWIDTH

*app.Measure.Px.Operator (ParamEngine = "BurstWidth")*

AbsLevel1	Double
AbsLevel2	Double
BitRate	Double
LevelType	Enum
MaxRunLength	Integer

### AbsLevel1

*Double*

**Range** From -100 to 100 step 0.0001

### AbsLevel2

*Double*

**Range** From -100 to 100 step 0.0001

### BitRate

*Double*

**Range** From 0 to 1e+011 step 1000

### LevelType

*Enum*

#### Values

Absolute	
Percent	

### MaxRunLength

*Integer*

**Range** From 2 to 20 step 1

### CANLOAD

*app.Measure.Px.Operator (ParamEngine = "CANLoad")*

FrameType	Enum
FromID	String
IDBits	Enum
IDCondition	Enum
MessageCount	Bool
ToID	String

### FrameType

*Enum*

#### Values

ALL	
Data	
Error	
Remote	

### FromID

*String*

**Range** Any number of characters

### IDBits

*Enum*

#### Values

ALL	
EXT29bit	
STD11bit	

### IDCondition

*Enum*

#### Values

DontCare	
EQ	
GE	
GT	
INRANGE	
LE	
LT	

### MessageCount

*Bool*

### ToID

*String*

**Range** Any number of characters

**CANMSGBR**

*app.Measure.Px.Operator (ParamEngine = "CANMsgBR")*

## Automation Command and Query Reference Manual - Processor Reference

FrameType	Enum
FromID	String
IDBits	Enum
IDCondition	Enum
ToID	String

### FrameType

*Enum*

#### Values

ALL	
Data	
Error	
Remote	

### FromID

*String*

**Range** Any number of characters

### IDBits

*Enum*

#### Values

ALL	
EXT29bit	
STD11bit	

### IDCondition

*Enum*

#### Values

DontCare	
EQ	
GE	
GT	
INRANGE	
LE	
LT	

### ToID

*String*

**Range** Any number of characters

## CANMSGNUM

*app.Measure.Px.Operator (ParamEngine = "CANMsgNum")*

FrameType	Enum
FromID	String
IDBits	Enum

## Automation Command and Query Reference Manual - Processor Reference

IDCondition	Enum
ToID	String

### FrameType

*Enum*

#### Values

ALL	
Data	
Error	
Remote	

### FromID

*String*

**Range** Any number of characters

### IDBits

*Enum*

#### Values

ALL	
EXT29bit	
STD11bit	

### IDCondition

*Enum*

#### Values

DontCare	
EQ	
GE	
GT	
INRANGE	
LE	
LT	

### ToID

*String*

**Range** Any number of characters

## CANTOANALOG

*app.Measure.Px.Operator (ParamEngine = "CANtoAnalog")*

DataCondition	Enum
DataValue0	String
DataValue1	String
DataValue2	String
DataValue3	String
DataValue4	String

DataValue5	String
DataValue6	String
DataValue7	String
DLC	Integer
FindLevel	Action
FrameType	Enum
Hysteresis	Double
ID	String
IDCondition	Enum
LevelType	Enum
PercentLevel	Double
Slope	Enum

### DataCondition

*Enum*

#### Values

EQ	
X	

### DataValue0

*String*

**Range** Any number of characters

### DataValue1

*String*

**Range** Any number of characters

### DataValue2

*String*

**Range** Any number of characters

### DataValue3

*String*

**Range** Any number of characters

### DataValue4

*String*

**Range** Any number of characters

### DataValue5

*String*

**Range** Any number of characters

### DataValue6

*String*

**Range** Any number of characters

### DataValue7

*String*

**Range** Any number of characters

---

**DLC** *Integer***Range** From 0 to 8 step 1

---

**FindLevel** *Action*

---

**FrameType** *Enum***Values**

Data	
Error	
Remote	

---

**Hysteresis** *Double***Range** From 0 to 10 step 0.1

---

**ID** *String***Range** Any number of characters

---

**IDCondition** *Enum***Values**

DontCare	
EQ	
GE	
GT	
INRANGE	
LE	
LT	

---

**LevelType** *Enum***Values**

Absolute	
Percent	
PercentGNDMax	
PercentGNDMin	
PercentPkPk	

---

**PercentLevel** *Double***Range** From 0 to 100 step 1



**Slope***Enum***Values**

Both	
Neg	
Pos	

**CANTOCAN***app.Measure.Px.Operator (ParamEngine = "CANtoCAN")*

DataCondition1	Enum
DataCondition2	Enum
DataValue01	String
DataValue02	String
DataValue11	String
DataValue12	String
DataValue21	String
DataValue22	String
DataValue31	String
DataValue32	String
DataValue41	String
DataValue42	String
DataValue51	String
DataValue52	String
DataValue61	String
DataValue62	String
DataValue71	String
DataValue72	String
DLC1	Integer
DLC2	Integer
FrameType1	Enum
FrameType2	Enum
ID1	String
ID2	String
IDCondition1	Enum
IDCondition2	Enum

**DataCondition1***Enum***Values**

EQ	
X	

**DataCondition2***Enum***Values**

EQ	
X	

**DataValue01***String***Range** Any number of characters**DataValue02***String***Range** Any number of characters**DataValue11***String***Range** Any number of characters**DataValue12***String***Range** Any number of characters**DataValue21***String***Range** Any number of characters**DataValue22***String***Range** Any number of characters**DataValue31***String***Range** Any number of characters**DataValue32***String***Range** Any number of characters**DataValue41***String***Range** Any number of characters**DataValue42***String***Range** Any number of characters**DataValue51***String***Range** Any number of characters**DataValue52***String***Range** Any number of characters

**DataValue61** *String*

**Range** Any number of characters

**DataValue62** *String*

**Range** Any number of characters

**DataValue71** *String*

**Range** Any number of characters

**DataValue72** *String*

**Range** Any number of characters

**DLC1** *Integer*

**Range** From 0 to 8 step 1

**DLC2** *Integer*

**Range** From 0 to 8 step 1

**FrameType1** *Enum*

**Values**

Data	
Error	
Remote	

**FrameType2** *Enum*

**Values**

Data	
Error	
Remote	

**ID1** *String*

**Range** Any number of characters

**ID2** *String*

**Range** Any number of characters

**IDCondition1***Enum***Values**

DontCare	
EQ	
GE	
GT	
INRANGE	
LE	
LT	

**IDCondition2***Enum***Values**

DontCare	
EQ	
GE	
GT	
INRANGE	
LE	
LT	

**CANTOVALUE***app.Measure.Px.Operator (ParamEngine = "CANtoValue")*

Algorithm	Enum
BitWidth	Integer
Coeff	Double
Format	Enum
ID	BitPattern
StartBit	Integer
Term	Double
Type	Enum
Units	String

**Algorithm***Enum***Values**

ByOption	
ForceLecroy	
ForceVector	

## Automation Command and Query Reference Manual - Processor Reference

**BitWidth** *Integer*

**Range** From 1 to 32 step 1

**Coeff** *Double*

**Range** From -1000 to 1000 step 1e-005

**Format** *Enum*

**Values**

Intel	
Motorola	

**ID** *BitPattern*

**Range** MaxBits=29 NumBits=29 NumBytes=4 AllowedBitValues=01 PaddingChar=0  
PadAlign=Left SizeAlign=BitFix Format=Ehex

**StartBit** *Integer*

**Range** From 0 to 63 step 1

**Term** *Double*

**Range** From -10000 to 10000 step 1e-005

**Type** *Enum*

**Values**

SignedInt	
UnsignedInt	

**Units** *String*

**Range** Any number of characters

## DELTAMESSAGES

*app.Measure.Px.Operator (ParamEngine = "DeltaMessages")*

AddressOperator	Enum
AddressValue	BitPattern
AddressValue2	BitPattern
FilterType	Enum
PatternBitLength	Integer
PatternBitPos	Integer
PatternOperator	Enum
PatternValue	BitPattern
PatternValue2	BitPattern
ViewingMode	Enum

**AddressOperator***Enum***Values**

Equal	
Greater	
GreaterOrEqual	
InRange	
NotEqual	
OutOfRange	
Smaller	
SmallerOrEqual	

**AddressValue***BitPattern*

**Range** MaxBits=32 NumBits=8 NumBytes=1 AllowedBitValues=01X PaddingChar=X  
PadAlign=Left SizeAlign=BitFix Format=Ehex

**AddressValue2***BitPattern*

**Range** MaxBits=32 NumBits=8 NumBytes=1 AllowedBitValues=01 PaddingChar=1  
PadAlign=Left SizeAlign=BitFix Format=Ehex

**FilterType***Enum***Values**

Any	
ID	
IDData	

**PatternBitLength***Integer*

**Range** From 1 to 128 step 1

**PatternBitPos***Integer*

**Range** From 0 to 127 step 1

**PatternOperator***Enum***Values**

Equal	
Greater	
GreaterOrEqual	
InRange	
NotEqual	
OutOfRange	
Smaller	
SmallerOrEqual	

## PatternValue

*BitPattern*

**Range** MaxBits=128 NumBits=8 NumBytes=1 AllowedBitValues=01X PaddingChar=X  
PadAlign=Left SizeAlign=BitVar Format=Ehex

## PatternValue2

*BitPattern*

**Range** MaxBits=128 NumBits=8 NumBytes=1 AllowedBitValues=01 PaddingChar=1  
PadAlign=Left SizeAlign=BitVar Format=Ehex

## ViewingMode

*Enum*

### Values

Binary	
Hex	

## DELTAPERIODATLEVEL

*app.Measure.Px.Operator (ParamEngine = "DeltaPeriodAtLevel")*

FindLevel	Action
GroupSize	Integer
Hysteresis	Double
LevelType	Enum
PercentLevel	Double
SignalType	Enum
Slope	Enum
StartCycle	Integer
Summary	String

## FindLevel

*Action*

## GroupSize

*Integer*

**Range** From 1 to 1024 step 1

## Hysteresis

*Double*

**Range** From 0 to 10 step 0.1

## LevelType

*Enum*

### Values

Absolute	
Percent	
PercentGNDMax	
PercentGNDMin	
PercentPkPk	

**PercentLevel***Double***Range** From 0 to 100 step 1**SignalType***Enum***Values**

Clock	
Data	

**Slope***Enum***Values**

Both	
Neg	
Pos	

**StartCycle***Integer***Range** From 0 to 0 step 1**Summary***String***Range** Any number of characters**DELTATIMEATLEVEL***app.Measure.Px.Operator (ParamEngine = "DeltaTimeAtLevel")*

FindLevel1	Action
FindLevel2	Action
Hysteresis1	Double
Hysteresis2	Double
LevelType1	Enum
LevelType2	Enum
PercentLevel1	Double
PercentLevel2	Double
Slope1	Enum
Slope2	Enum

**FindLevel1***Action***Description**

When in absolute level mode, finds the absolute level at 50% on the first trace

**FindLevel2***Action***Description**

When in absolute level mode, finds the absolute level at 50% on the second trace



**Hysteresis1***Double***Range** From 0 to 10 step 0.1**Description**

Hysteresis in divisions around the level on first trace. The signal must enter the hysteresis zone (shown as a cursor) on one side and exit from the other side to qualify a transition.

**Hysteresis2***Double***Range** From 0 to 10 step 0.1**Description**

Hysteresis in divisions around the level on second trace. The signal must enter the hysteresis zone (shown as a cursor) on one side and exit from the other side to qualify a transition.

**LevelType1***Enum***Description**

Type of level on first trace: absolute/percent and %Pkpk, %0-Min, %0-Max with EMC option

**Values**

Absolute	
Percent	
PercentGNDMax	
PercentGNDDMin	
PercentPkPk	

**LevelType2***Enum***Description**

Type of level on second trace: absolute/percent and %Pkpk, %0-Min, %0-Max with EMC option.

**Values**

Absolute	
Percent	
PercentGNDMax	
PercentGNDDMin	
PercentPkPk	

**PercentLevel1***Double***Range** From 0 to 100 step 1**Description**

Level on first trace in percent.

**PercentLevel2***Double***Range** From 0 to 100 step 1**Description**

Level on second trace in percent.

**Slope1***Enum***Description**

Sign of detected transition on first trace: positive, negative, both.

**Values**

Both	
Neg	
Pos	

**Slope2***Enum***Description**

Sign of detected transition on second trace: positive, negative, both

**Values**

Both	
Neg	
Pos	

**DELTAWIDTHATLEVEL**

*app.Measure.Px.Operator (ParamEngine = "DeltaWidthAtLevel")*

FindLevel	Action
Hysteresis	Double
LevelType	Enum
PercentLevel	Double
Slope	Enum
Summary	String

**FindLevel***Action***Hysteresis***Double*

**Range** From 0 to 10 step 0.1

**LevelType***Enum***Values**

Absolute	
Percent	
PercentGNDMax	
PercentGNDMin	
PercentPkPk	

**PercentLevel***Double***Range** From 0 to 100 step 1**Slope***Enum***Values**

Both	
Neg	
Pos	

**Summary***String***Range** Any number of characters**DOV***app.Measure.Px.Operator (ParamEngine = "DOV")*

SelectedLevels

Enum

**SelectedLevels***Enum***Values**

Lower	
Upper	

**DUTYATLEVEL***app.Measure.Px.Operator (ParamEngine = "DutyAtLevel")*

FindLevel	Action
Hysteresis	Double
LevelType	Enum
PercentLevel	Double
Slope	Enum
Summary	String

**FindLevel***Action***Hysteresis***Double***Range** From 0 to 10 step 0.1

**LevelType***Enum***Values**

Absolute	
Percent	
PercentGNDMax	
PercentGNDDMin	
PercentPkPk	

**PercentLevel***Double***Range** From 0 to 100 step 1**Slope***Enum***Values**

Neg	
Pos	

**Summary***String***Range** Any number of characters**DUTYCYCLEDISTORTION***app.Measure.Px.Operator (ParamEngine = "DutyCycleDistortion")*

FindLevel	Action
Hysteresis	Double
LevelType	Enum
PercentLevel	Double
Slope	Enum

**FindLevel***Action***Hysteresis***Double***Range** From 0 to 10 step 0.1**LevelType***Enum***Values**

Absolute	
Percent	
PercentGNDMax	
PercentGNDDMin	
PercentPkPk	

**PercentLevel***Double***Range** From 0 to 100 step 1**Slope***Enum***Values**

Neg	
Pos	

**EDGEATLEVEL***app.Measure.Px.Operator (ParamEngine = "EdgeAtLevel")*

FindLevel	Action
Hysteresis	Double
LevelType	Enum
PercentLevel	Double
Slope	Enum
Summary	String

**FindLevel***Action***Hysteresis***Double***Range** From 0 to 10 step 0.1**LevelType***Enum***Values**

Absolute	
Percent	
PercentGNDMax	
PercentGNDMin	
PercentPkPk	

**PercentLevel***Double***Range** From 0 to 100 step 1**Slope***Enum***Values**

Both	
Neg	
Pos	

## Summary

*String***Range** Any number of characters**EMCLVLPULSE***app.Measure.Px.Operator (ParamEngine = "EMClvIPulse")*

Delay	Double
Hysteresis	Double
LevelType	Enum
PercentLevel	Double
Slope	Enum

**Delay***Double***Range** From 0 to 1 step 1e-012**Hysteresis***Double***Range** From 0 to 10 step 0.1**LevelType***Enum***Values**

Absolute	
Percent	
PercentGNDMax	
PercentGNDDMin	
PercentPkPk	

**PercentLevel***Double***Range** From 0 to 100 step 1**Slope***Enum***Values**

Neg	
Pos	

**EMCT2VAL***app.Measure.Px.Operator (ParamEngine = "EMCt2Val")*

LevelType	Enum
PercentHighLevel	Double
PercentLowLevel	Double

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PercentMidLevel	Double
PulsePolarity	Enum

### LevelType

*Enum*

#### Values

Percent	
PercentGNDMax	
PercentGNDMin	
PercentPkPk	

### PercentHighLevel

*Double*

**Range** From 5 to 95 step 1

### PercentLowLevel

*Double*

**Range** From 5 to 95 step 1

### PercentMidLevel

*Double*

**Range** From 5 to 95 step 1

### PulsePolarity

*Enum*

#### Values

Neg	
Pos	

## EXCELPARAM

*app.Measure.Px.Operator (ParamEngine = "ExcelParam")*

AddChart	Action
AddLabels	Action
Advanced	Bool
ClearSheet	Action
CreateDemoSheet	Action
NewSheet	Bool
OutputCell	String
OutputEnable	Bool
OutputHeaderCell	String
Source1Cell	String
Source1Enable	Bool
Source1HeaderCell	String
Source2Cell	String
Source2Enable	Bool
Source2HeaderCell	String

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SpreadsheetFilename	FileName
Status	String
WithHeader	Bool

---

### AddChart

*Action*

#### Description

Adds a chart to the output worksheet

---

### AddLabels

*Action*

#### Description

Using ParamEngine = "ExcelParam", Please refer to the corresponding variable for the ExcelMath function.

---

### Advanced

*Bool*

#### Description

Sets/Queries whether advanced features of this component are accessible

---

### ClearSheet

*Action*

#### Description

Using ParamEngine = "ExcelParam", Please refer to the corresponding variable for the ExcelMath function.

---

### CreateDemoSheet

*Action*

#### Description

Using ParamEngine = "ExcelParam", Please refer to the corresponding variable for the ExcelMath function.

---

### NewSheet

*Bool*

#### Description

Using ParamEngine = "ExcelParam", Please refer to the corresponding variable for the ExcelMath function.

---

### OutputCell

*String*

**Range** Any number of characters

#### Description

Using ParamEngine = "ExcelParam", Please refer to the corresponding variable for the ExcelMath function.

---

### OutputEnable

*Bool*

#### Description

Using ParamEngine = "ExcelParam", Please refer to the corresponding variable for the ExcelMath function.



### OutputHeaderCell

*String*

**Range** Any number of characters

**Description**

Using ParamEngine = "ExcelParam", Please refer to the corresponding variable for the ExcelMath function.

### Source1Cell

*String*

**Range** Any number of characters

**Description**

Using ParamEngine = "ExcelParam", Please refer to the corresponding variable for the ExcelMath function.

### Source1Enable

*Bool*

**Description**

Using ParamEngine = "ExcelParam", Please refer to the corresponding variable for the ExcelMath function.

### Source1HeaderCell

*String*

**Range** Any number of characters

**Description**

Using ParamEngine = "ExcelParam", Please refer to the corresponding variable for the ExcelMath function.

### Source2Cell

*String*

**Range** Any number of characters

**Description**

Using ParamEngine = "ExcelParam", Please refer to the corresponding variable for the ExcelMath function.

### Source2Enable

*Bool*

**Description**

Using ParamEngine = "ExcelParam", Please refer to the corresponding variable for the ExcelMath function.

### Source2HeaderCell

*String*

**Range** Any number of characters

**Description**

Using ParamEngine = "ExcelParam", Please refer to the corresponding variable for the ExcelMath function.

### SpreadsheetFilename

*FileName*

**Range** Any number of characters

#### Description

Using ParamEngine = "ExcelParam", Please refer to the corresponding variable for the ExcelMath function.

### Status

*String*

**Range** Any number of characters

#### Description

Using ParamEngine = "ExcelParam", Please refer to the corresponding variable for the ExcelMath function.

### WithHeader

*Bool*

#### Description

Using ParamEngine = "ExcelParam", Please refer to the corresponding variable for the ExcelMath function.

## EXTINCTIONRATIO

*app.Measure.Px.Operator (ParamEngine = "ExtinctionRatio")*

Aperture	Double
CalcType	Enum
CursorDisplay	Enum

### Aperture

*Double*

**Range** From 0 to 100 step 0.1

#### Description

For eye-diagram parameters which have an "aperture" setting, this defines the region over which the eye digrams vertical information is analyzed.

It specifies the percentage of the central region of the eye (relative to 1 Unit Interval) which is used in the analysis.

### CalcType

*Enum*

#### Description

Extinction ratio units.

#### Values

db	
linear	
pct	

**CursorDisplay***Enum***Description**

Set/Query the CursorDisplay cvar. This defines whether the source trace is annotated with 'Help Markers' generated by the measurement.

**Values**

Detailed	
Off	
Simple	

**EYEAMPLITUDE***app.Measure.Px.Operator (ParamEngine = "EyeAmplitude")*

Aperture	Double
CursorDisplay	Enum

**Aperture***Double*

**Range** From 0 to 100 step 0.1

**Description**

For eye-diagram parameters which have an "aperture" setting, this defines the region over which the eye diagrams vertical information is analyzed.

It specifies the percentage of the central region of the eye (relative to 1 Unit Interval) which is used in the analysis.

**CursorDisplay***Enum***Description**

Set/Query the CursorDisplay cvar. This defines whether the source trace is annotated with 'Help Markers' generated by the measurement.

**Values**

Detailed	
Off	
Simple	

**EYEAVGPOWER***app.Measure.Px.Operator (ParamEngine = "EyeAvgPower")*

Aperture	Double
----------	--------

**Aperture***Double*

**Range** From 0 to 100 step 0.1

### Description

For eye-diagram parameters which have an "aperture" setting, this defines the region over which the eye diagrams vertical information is analyzed.

It specifies the percentage of the central region of the eye (relative to 1 Unit Interval) which is used in the analysis.

## EYEBER

*app.Measure.Px.Operator (ParamEngine = "EyeBER")*

---

Aperture	Double
CursorDisplay	Enum

### Aperture

*Double*

**Range** From 0 to 100 step 0.1

### Description

For eye-diagram parameters which have an "aperture" setting, this defines the region over which the eye diagrams vertical information is analyzed.

It specifies the percentage of the central region of the eye (relative to 1 Unit Interval) which is used in the analysis.

### CursorDisplay

*Enum*

### Description

Set/Query the CursorDisplay cvar. This defines whether the source trace is annotated with 'Help Markers' generated by the measurement.

### Values

Detailed	
Off	
Simple	

## EYECROSSING

*app.Measure.Px.Operator (ParamEngine = "EyeCrossing")*

---

Output	Enum
--------	------

### Output

*Enum*

### Description

Type of output returned, percentage of eye height, or absolute voltage.

### Values

Absolute	
Percent	

**EYEHEIGHT***app.Measure.Px.Operator (ParamEngine = "EyeHeight")*

Aperture	Double
CalcUnits	Enum
CursorDisplay	Enum

**Aperture****Double****Range** From 0 to 100 step 0.1**Description**

For eye-diagram parameters which have an "aperture" setting, this defines the region over which the eye digrams vertical information is analyzed.

It specifies the percentage of the central region of the eye (relative to 1 Unit Interval) which is used in the analysis.

**CalcUnits****Enum****Description**

Specifies the units of the parameter readout, linear (volts), or decibels.

**Values**

dB	
linear	

**CursorDisplay****Enum****Description**

Set/Query the CursorDisplay cvar. This defines whether the source trace is annotated with 'Help Markers' generated by the measurement.

**Values**

Detailed	
Off	
Simple	

**EYEONELEVEL***app.Measure.Px.Operator (ParamEngine = "EyeOneLevel")*

Aperture	Double
----------	--------

**Aperture****Double****Range** From 0 to 100 step 0.1**Description**

For eye-diagram parameters which have an "aperture" setting, this defines the region over which the

## Automation Command and Query Reference Manual - Processor Reference

eye digrams vertical information is analyzed.

It specifies the percentage of the central region of the eye (relative to 1 Unit Interval) which is used in the analysis.

### EYEQFACTOR

*app.Measure.Px.Operator (ParamEngine = "EyeQFactor")*

Aperture	Double
CursorDisplay	Enum

#### Aperture

*Double*

**Range** From 0 to 100 step 0.1

#### Description

For eye-diagram parameters which have an "aperture" setting, this defines the region over which the eye digrams vertical information is analyzed.

It specifies the percentage of the central region of the eye (relative to 1 Unit Interval) which is used in the analysis.

#### CursorDisplay

*Enum*

#### Description

Set/Query the CursorDisplay cvar. This defines whether the source trace is annotated with 'Help Markers' generated by the measurement.

#### Values

Detailed	
Off	
Simple	

### EYEZEROLEVEL

*app.Measure.Px.Operator (ParamEngine = "EyeZeroLevel")*

Aperture	Double
----------	--------

#### Aperture

*Double*

**Range** From 0 to 100 step 0.1

#### Description

For eye-diagram parameters which have an "aperture" setting, this defines the region over which the eye digrams vertical information is analyzed.

It specifies the percentage of the central region of the eye (relative to 1 Unit Interval) which is used in the analysis.

### FALLATLEVEL

HighPct	Double
LevelsAre	Enum
LowPct	Double
SetLevel1090	Action
SetLevel2080	Action

**HighPct****Double****Range** From 10 to 95 step 1**Description**

High level in percent.

**LevelsAre****Enum****Description**

Type of level: absolute, percent, %PkPk or %0-Min with EMC option.

**Values**

Absolute	
Percent	
PercentGNDDMin	
PercentPkPk	

**LowPct****Double****Range** From 5 to 90 step 1**Description**

High level in percent.

**SetLevel1090****Action****Description**

Set the levels to 10% and 90% of full amplitude.

**SetLevel2080****Action****Description**

Set the levels to 20% and 80% of full amplitude.

**FASTMULTIWPORT**

AdjustFrame	Bool
ClearCumulative	Bool
ClearSweeps	Action
ForceUpdate	Action

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PortName	String
Timeout	Double

**AdjustFrame** *Bool*

**ClearCumulative** *Bool*

**ClearSweeps** *Action*

**Description**

Clear any accumulated result data. Useful for example to restart an average, or parameter statistics.

**ForceUpdate** *Action*

**PortName** *String*

**Range** Any number of characters

**Timeout** *Double*

**Range** From 0 to 100 step 1

## FREQUENCYATLEVEL

*app.Measure.Px.Operator (ParamEngine = "FrequencyAtLevel")*

FindLevel	Action
Hysteresis	Double
LevelType	Enum
PercentLevel	Double
SignalType	Enum
Slope	Enum
Summary	String

**FindLevel** *Action*

**Hysteresis** *Double*

**Range** From 0 to 10 step 0.1

**LevelType** *Enum*

**Values**

Absolute	
Percent	
PercentGNDDMax	
PercentGNDDMin	
PercentPkPk	



**PercentLevel****Double****Range** From 0 to 100 step 1**SignalType****Enum****Values**

Clock	
Data	

**Slope****Enum****Values**

Neg	
Pos	

**Summary****String****Range** Any number of characters**GAPWIDTH***app.Measure.Px.Operator (ParamEngine = "GapWidth")*

AbsLevel1	Double
AbsLevel2	Double
BitRate	Double
LevelType	Enum
MaxRunLength	Integer

**AbsLevel1****Double****Range** From -100 to 100 step 0.0001**AbsLevel2****Double****Range** From -100 to 100 step 0.0001**BitRate****Double****Range** From 0 to 1e+011 step 1000**LevelType****Enum****Values**

Absolute	
Percent	

**MaxRunLength***Integer***Range** From 2 to 20 step 1**HALFPERIOD***app.Measure.Px.Operator (ParamEngine = "HalfPeriod")*

AbsLevel	Double
FindLevel	Action
Hysteresis	Double
LevelType	Enum
Slope	Enum
Summary	String

**AbsLevel***Double***Range** From -100 to 100 step 1e-007**Description**

If absolute level type is used, then this is the threshold used for transition time detection. Note: the range of this variable setting adapts to the scale of the input signal.

**FindLevel***Action***Hysteresis***Double***Range** From 0 to 10 step 0.1**LevelType***Enum***Values**

Absolute	
Percent	
PercentGNDMax	
PercentGNDDMin	
PercentPkPk	

**Slope***Enum***Values**

Both	
Neg	
Pos	

**Summary***String***Range** Any number of characters

**HOLDTIME***app.Measure.Px.Operator (ParamEngine = "HoldTime")*

ClockFindLevel	Action
ClockHysteresis	Double
ClockLevellis	Enum
ClockPctLevel	Double
ClockSlope	Enum
DataFindLevel	Action
DataHysteresis	Double
DataLevellis	Enum
DataPctLevel	Double
DataSlope	Enum
Summary	String

**ClockFindLevel****Action****ClockHysteresis****Double****Range** From 0 to 10 step 0.1**ClockLevellis****Enum****Values**

Absolute	
Percent	
PercentGNDMax	
PercentGNDMin	
PercentPkPk	

**ClockPctLevel****Double****Range** From 0 to 100 step 1**ClockSlope****Enum****Values**

Both	
Neg	
Pos	

**DataFindLevel****Action****DataHysteresis****Double****Range** From 0 to 10 step 0.1

**DataLevellis***Enum***Values**

Absolute	
Percent	
PercentGNDDMax	
PercentGNDDMin	
PercentPkPk	

**DataPctLevel***Double***Range** From 0 to 100 step 1**DataSlope***Enum***Values**

Both	
Neg	
Pos	

**Summary***String***Range** Any number of characters**HPARAMSCRIPT***app.Measure.Px.Operator (ParamEngine = "HParamScript")*

Code	String
Language	Enum
Status	String
Timeout	Double

**Code***String***Range** Any number of characters**Language***Enum***Values**

JScript	
VBScript	

**Status***String***Range** Any number of characters

**Timeout****Double****Range** From 1 to 12000 step 0.001**LEVELATX***app.Measure.Px.Operator (ParamEngine = "LevelAtX")*

HorValue	Double
PinToData	Bool
TimeFromCvar	Bool

**HorValue****Double****Range** From -1.79769e+308 to 1.79769e+308 step 0**Description**

if the "TimeFromCvar" is set to true, this specifies the horizontal (x) coordinate at which the waveform data "level" or value is to be evaluated

**PinToData****Bool****Description**

If set to true, the vertical values are restricted to actual data points, else if false the values can be interpolated (linearly) between points.

**TimeFromCvar****Bool****Description**

If true, the horizontal coordinate (typically time) is specified by the "HorValue" cvar, otherwise the time is specified by the input pin.

**LOCALBASE***app.Measure.Px.Operator (ParamEngine = "LocalBase")*

Hysteresis	Double
------------	--------

**Hysteresis****Double****Range** From 0 to 10 step 0.1**LOCALBASELINESEPARATION***app.Measure.Px.Operator (ParamEngine = "LocalBaselineSeparation")*

Hysteresis	Double
------------	--------

**Hysteresis****Double**

**Range** From 0 to 10 step 0.1

**LOCALMAXIMUM**

*app.Measure.Px.Operator (ParamEngine = "LocalMaximum")*

Hysteresis	Double
------------	--------

**Hysteresis**

*Double*

**Range** From 0 to 10 step 0.1

**LOCALMINIMUM**

*app.Measure.Px.Operator (ParamEngine = "LocalMinimum")*

Hysteresis	Double
------------	--------

**Hysteresis**

*Double*

**Range** From 0 to 10 step 0.1

**LOCALNUMBER**

*app.Measure.Px.Operator (ParamEngine = "LocalNumber")*

Hysteresis	Double
------------	--------

**Hysteresis**

*Double*

**Range** From 0 to 10 step 0.1

**LOCALPEAKTOPEAK**

*app.Measure.Px.Operator (ParamEngine = "LocalPeakToPeak")*

Hysteresis	Double
------------	--------

**Hysteresis**

*Double*

**Range** From 0 to 10 step 0.1

**LOCALTIMEATMAXIMUM**

*app.Measure.Px.Operator (ParamEngine = "LocalTimeAtMaximum")*

Hysteresis	Double
------------	--------

**Hysteresis** *Double*  
**Range**    From 0 to 10 step 0.1

**LOCALTIMEATMINIMUM**

*app.Measure.Px.Operator (ParamEngine = "LocalTimeAtMinimum")*

Hysteresis	Double
------------	--------

**Hysteresis** *Double*  
**Range**    From 0 to 10 step 0.1

**LOCALTIMEBETWEENEVENTS**

*app.Measure.Px.Operator (ParamEngine = "LocalTimeBetweenEvents")*

Hysteresis	Double
------------	--------

**Hysteresis** *Double*  
**Range**    From 0 to 10 step 0.1

**LOCALTIMEBETWEENPEAKS**

*app.Measure.Px.Operator (ParamEngine = "LocalTimeBetweenPeaks")*

Hysteresis	Double
------------	--------

**Hysteresis** *Double*  
**Range**    From 0 to 10 step 0.1

**LOCALTIMEBETWEENTROUGHS**

*app.Measure.Px.Operator (ParamEngine = "LocalTimeBetweenTroughs")*

Hysteresis	Double
------------	--------

### Hysteresis

*Double*

**Range** From 0 to 10 step 0.1

## LOCALTIMEOVERTHRESHOLD

*app.Measure.Px.Operator (ParamEngine = "LocalTimeOverThreshold")*

Hysteresis	Double
Level	Double

### Hysteresis

*Double*

**Range** From 0 to 10 step 0.1

### Level

*Double*

**Range** From 0.1 to 100 step 0.01

## LOCALTIMEPEAKTOTROUGH

*app.Measure.Px.Operator (ParamEngine = "LocalTimePeakToTrough")*

Hysteresis	Double
------------	--------

### Hysteresis

*Double*

**Range** From 0 to 10 step 0.1

## LOCALTIMETROUGHTOPEAK

*app.Measure.Px.Operator (ParamEngine = "LocalTimeTroughToPeak")*

Hysteresis	Double
------------	--------

### Hysteresis

*Double*

**Range** From 0 to 10 step 0.1

## LOCALTIMEUNDERTHRESHOLD

*app.Measure.Px.Operator (ParamEngine = "LocalTimeUnderThreshold")*

Hysteresis	Double
Level	Double



## Hysteresis

*Double*

**Range** From 0 to 10 step 0.1

## Level

*Double*

**Range** From 0.1 to 100 step 0.01

## MATHCADPARAM

*app.Measure.Px.Operator (ParamEngine = "MathcadParam")*

Advanced	Bool
NewSheet	Bool
OutputEnable	Bool
OutputHeaderVar	String
OutputVar	String
Reload	Action
Source1Enable	Bool
Source1HeaderVar	String
Source1Var	String
Source2Enable	Bool
Source2HeaderVar	String
Source2Var	String
Status	String
WithHeader	Bool
WorksheetFilename	FileName

## Advanced

*Bool*

### Description

Using ParamEngine = "MathcadParam", please refer to the corresponding variable for the MathcadMath function.

## NewSheet

*Bool*

### Description

Using ParamEngine = "MathcadParam", please refer to the corresponding variable for the MathcadMath function.

## OutputEnable

*Bool*

### Description

Using ParamEngine = "MathcadParam", please refer to the corresponding variable for the MathcadMath function.

### OutputHeaderVar

*String*

**Range** Any number of characters

#### Description

Using ParamEngine = "MathcadParam", please refer to the corresponding variable for the MathcadMath function.

### OutputVar

*String*

**Range** Any number of characters

#### Description

Using ParamEngine = "MathcadParam", please refer to the corresponding variable for the MathcadMath function.

### Reload

*Action*

#### Description

Using ParamEngine = "MathcadParam", please refer to the corresponding variable for the MathcadMath function.

### Source1Enable

*Bool*

#### Description

Using ParamEngine = "MathcadParam", please refer to the corresponding variable for the MathcadMath function.

### Source1HeaderVar

*String*

**Range** Any number of characters

#### Description

Using ParamEngine = "MathcadParam", please refer to the corresponding variable for the MathcadMath function.

### Source1Var

*String*

**Range** Any number of characters

#### Description

Using ParamEngine = "MathcadParam", please refer to the corresponding variable for the MathcadMath function.

### Source2Enable

*Bool*

#### Description

Using ParamEngine = "MathcadParam", please refer to the corresponding variable for the MathcadMath function.

### Source2HeaderVar

*String*

**Range** Any number of characters

#### Description

Using ParamEngine = "MathcadParam", please refer to the corresponding variable for the MathcadMath function.

**Source2Var***String***Range** Any number of characters**Description**

Using ParamEngine = "MathcadParam", please refer to the corresponding variable for the MathcadMath function.

**Status***String***Range** Any number of characters**Description**

Using ParamEngine = "MathcadParam", please refer to the corresponding variable for the MathcadMath function.

**WithHeader***Bool***Description**

Using ParamEngine = "MathcadParam", please refer to the corresponding variable for the MathcadMath function.

**WorksheetFilename***FileName***Range** Any number of characters**Description**

Using ParamEngine = "MathcadParam", please refer to the corresponding variable for the MathcadMath function.

**MATLABPARAMETER***app.Measure.Px.Operator (ParamEngine = "MATLABParameter")*

MATLABCode	String
MATLABPlot	Bool

**MATLABCode***String***Range** Any number of characters**Description**

String containing the MATLAB code to execute when new data is presented.

**MATLABPlot***Bool***Description**

If true, the result of the MATLAB processing operation is plotted by MATLAB, in a floating window.

**MAXIMUM***app.Measure.Px.Operator (ParamEngine = "Maximum")*

Calculates the maximum vertical value of the waveform

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")
app.Measure.P1.ParamEngine = "Maximum"
```

**MEAN**

*app.Measure.Px.Operator (ParamEngine = "Mean")*

Calculates the mean value of the input waveform's vertical values. When Cyclic = true, the range of values used is limited to a whole number of cycles.

Cyclic	Bool
--------	------

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set parameter P1 to mean.
app.Measure.P1.ParamEngine = "Mean"
' Set the mean parameter for cyclic measurements.
app.Measure.P1.Operator.Cyclic = true
```

**Cyclic****Bool****Description**

Sets/Queries whether the mean parameter Px is to be measured over a number of complete cycles.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set parameter P2 to mean.
app.Measure.P2.ParamEngine = "Mean"
' Set the mean parameter for cyclic measurements.
app.Measure.P2.ParamEngine.Cyclic = True
```

**MEDIAN**

*app.Measure.Px.Operator (ParamEngine = "Median")*

Calculates the median (division between two halves) of the probability distribution of an input waveform. For periodic signals it is advisable to use Cyclic = true.

Cyclic	Bool
--------	------

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")
app.Measure.P1.ParamEngine = "Median"
' Set the measurement for a periodic signal
app.Measure.P1.Operator.Cyclic = true
```

**Cyclic****Bool****Description**

Sets/Queries whether the median parameter Px is to be measured over a number of complete cycles.

### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set parameter P2 to median.
app.Measure.P2.ParamEngine = "Median"
' Set the median parameter for cyclic measurements.
app.Measure.P2.Operator.Cyclic = True
```

## MINIMUM

*app.Measure.Px.Operator (ParamEngine = "Minimum")*

Calculates the minimum value of a waveform

### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

app.Measure.P1.ParamEngine = "Minimum"
```

## NARROWBANDPHASE

*app.Measure.Px.Operator (ParamEngine = "NarrowBandPhase")*

Frequency	Double
-----------	--------

### Frequency

*Double*

**Range** From 10 to 4e+010 step 1

## NCYCLEJITTER

*app.Measure.Px.Operator (ParamEngine = "NCycleJitter")*

FindUITime	Bool
N	Integer
UITime	Double
Units	Enum

### FindUITime

*Bool*

### N

*Integer*

**Range** From 1 to 100000 step 1

### UITime

*Double*

**Range** From 0 to 1000 step 1e-012

## Units

Enum

## Values

S	
UI	

**NONLINEARTRANSITIONSHIFT***app.Measure.Px.Operator (ParamEngine = "NonLinearTransitionShift")*

PatternDelay	Double
PatternLength	Double

**PatternDelay**

Double

**Range** From -100 to 100 step 0.01**PatternLength**

Double

**Range** From 1e-009 to 0.001 step 1e-010**NPOINTS***app.Measure.Px.Operator (ParamEngine = "npoints")*

UsePointsInFrame	Bool
------------------	------

**UsePointsInFrame**

Bool

**Description**

Choose if the returned value is only points inside the displayed frame, or if all points in the result are reported.

**OVERSHOOTNEGATIVE***app.Measure.Px.Operator (ParamEngine = "OvershootNegative")***OVERSHOOTPOSITIVE***app.Measure.Px.Operator (ParamEngine = "OvershootPositive")*

**OVERWRITE***app.Measure.Px.Operator (ParamEngine = "Overwrite")*

Frequency	Double
-----------	--------

**Frequency***Double***Range** From 10 to 4e+010 step 1**PARAMSCRIPT***app.Measure.Px.Operator (ParamEngine = "ParamScript")*

Code	String
Language	Enum
Status	String
Timeout	Double

**Code***String***Range** Any number of characters**Language***Enum***Values**

JScript	
VBScript	

**Status***String***Range** Any number of characters**Timeout***Double***Range** From 1 to 12000 step 0.001**PEAKMAG***app.Measure.Px.Operator (ParamEngine = "PEAKMAG")*

FindBaseline	Bool
--------------	------

**FindBaseline***Bool***PEAKTOPEAK**

*app.Measure.Px.Operator (ParamEngine = "PeakToPeak")***PERCENTILE***app.Measure.Px.Operator (ParamEngine = "Percentile")*

HPctPop	Double
PctRes	DoubleLockstep

**HPctPop***Double***Range** From 0 to 100 step 1**Description**

Sets/Queries the percentage of the population which falls to the left (or below) the desired percentile. For example, the median is the 50th percentile, or the horizontal coordinate of the histogram at which 50% of the population falls to the left.

**PctRes***DoubleLockstep***Range** From 1e-006 to 1 step 0.01, locked to 1 2 5, fine grain allowed=false, on=false**Description**

This control allows you to control the precision or resolution in the percentage. The default is 1%. But you can set the resolution to as low as 1e-6 % (one part in 1e8). This is useful for finding approximate confidence limits.

**PERIODATLEVEL***app.Measure.Px.Operator (ParamEngine = "PeriodAtLevel")*

FindLevel	Action
Hysteresis	Double
LevelType	Enum
PercentLevel	Double
PFDUpdated	Action
SignalType	Enum
Slope	Enum
Summary	String

**FindLevel***Action***Hysteresis***Double***Range** From 0 to 10 step 0.1



**LevelType***Enum***Values**

Absolute	
Percent	
PercentGNDDMax	
PercentGNDDMin	
PercentPkPk	

**PercentLevel***Double***Range** From 0 to 100 step 1**PFDUpdated***Action***SignalType***Enum***Values**

Clock	
Data	

**Slope***Enum***Values**

Neg	
Pos	

**Summary***String***Range** Any number of characters**PHASE***app.Measure.Px.Operator (ParamEngine = "Phase")*

OutputType	Enum
RefFindLevel	Action
RefHysteresis	Double
RefLevelType	Enum
RefPercentLevel	Double
RefSlope	Enum
SigFindLevel	Action
SigHysteresis	Double
SigLevelType	Enum
SigPercentLevel	Double
SigSlope	Enum

**OutputType***Enum*

### Description

Sets/Queries the output type for Phase Px.

### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set parameter P1 to phase difference.
app.Measure.P1.ParamEngine = "Phase"
' Set the output unit as radians.
app.Measure.P1.Operator.OutputType = "Radians"
```

### Values

Degrees	
DEGREES360	
Percent	
Radians	
RADIANSTWOPI	

## RefFindLevel

*Action*

### Description

Find the test level for the reference trace.

### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set parameter P3 to phase difference.
app.Measure.P3.ParamEngine = "Phase"
' Find the test level for the reference trace.
app.Measure.P3.Operator.RefFindLevel
```

## RefHysteresis

*Double*

**Range** From 0 to 10 step 0.1

### Description

Sets/Queries the hysteresis range for the reference trace.

### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set parameter P1 to phase difference.
app.Measure.P1.ParamEngine = "Phase"
' Set the reference hysteresis in graticule divisions.
app.Measure.P1.Operator.RefHysteresis = 0.7
```

**RefLevelType***Enum***Description**

Sets/Queries the unit of measurement for the test level of the reference trace.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set parameter P1 to phase difference.
app.Measure.P1.ParamEngine = "Phase"
' Set the reference level to be measured in absolute units.
app.Measure.P1.Operator.RefLevelType = "Absolute"
```

**Values**

Absolute	
Percent	
PercentGNDMax	
PercentGNDMin	
PercentPkPk	

**RefPercentLevel***Double*

**Range** From 0 to 100 step 1

**Description**

Sets/Queries the test level for the reference trace in percent.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set parameter P3 to phase difference.
app.Measure.P3.ParamEngine = "Phase"
' Set the reference test level in percent.
app.Measure.P3.Operator.RefPercentLevel = 55
```

**RefSlope***Enum***Description**

Sets/Queries the polarity of the measured reference transitions.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set parameter P1 to phase difference.
app.Measure.P1.ParamEngine = "Phase"
' Set the reference slope to negative.
app.Measure.P1.Operator.RefSlope = "Neg"
```

**Values**

Both	
Neg	
Pos	

**SigFindLevel***Action***Description**

Causes the engine to find a suitable level for either SigLevelType ("Absolute" or "Percent")

**SigHysteresis***Double*

**Range** From 0 to 10 step 0.1

**Description**

Sets/Queries the hysteresis range for the signal.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Set parameter P3 to phase difference.
app.Measure.P3.ParamEngine = "Phase"
' Set the signal hysteresis in graticule divisions.
app.Measure.P3.Operator.SigHysteresis = 0.7
```

**SigLevelType***Enum***Description**

Sets/Queries which level to use "Percent" or "Absolute" for transitions on the signal

**Values**

Absolute	
Percent	
PercentGNDDMax	
PercentGNDDMin	
PercentPkPk	

**SigPercentLevel***Double*

**Range** From 0 to 100 step 1

**Description**

Sets/Queries the test level for the signal in percent.

**SigSlope***Enum***Description**

Sets/Queries the polarity of the measured signal transitions.

**Values**

Both	
Neg	
Pos	

**PROTOCOL2ANALOG**

*app.Measure.Px.Operator (ParamEngine = "Protocol2Analog")*

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AddressOperator	Enum
AddressValue	BitPattern
AddressValue2	BitPattern
FilterType	Enum
FindLevel	Action
Hysteresis	Double
LevelType	Enum
PatternBitLength	Integer
PatternBitPos	Integer
PatternOperator	Enum
PatternValue	BitPattern
PatternValue2	BitPattern
PercentLevel	Double
Slope	Enum
ViewingMode	Enum

### AddressOperator

*Enum*

#### Values

Equal	
Greater	
GreaterOrEqual	
InRange	
NotEqual	
OutOfRange	
Smaller	
SmallerOrEqual	

### AddressValue

*BitPattern*

**Range** MaxBits=32 NumBits=8 NumBytes=1 AllowedBitValues=01X PaddingChar=X  
PadAlign=Left SizeAlign=BitFix Format=Ehex

### AddressValue2

*BitPattern*

**Range** MaxBits=32 NumBits=8 NumBytes=1 AllowedBitValues=01 PaddingChar=1  
PadAlign=Left SizeAlign=BitFix Format=Ehex

### FilterType

*Enum*

#### Values

Any	
ID	
IDData	

### FindLevel

*Action*

**Hysteresis***Double***Range** From 0 to 10 step 0.1**LevelType***Enum***Values**

Absolute	
Percent	
PercentGNDMax	
PercentGNDMin	
PercentPkPk	

**PatternBitLength***Integer***Range** From 1 to 128 step 1**PatternBitPos***Integer***Range** From 0 to 127 step 1**PatternOperator***Enum***Values**

Equal	
Greater	
GreaterOrEqual	
InRange	
NotEqual	
OutOfRange	
Smaller	
SmallerOrEqual	

**PatternValue***BitPattern***Range** MaxBits=128 NumBits=8 NumBytes=1 AllowedBitValues=01X PaddingChar=X  
PadAlign=Left SizeAlign=BitVar Format=Ehex**PatternValue2***BitPattern***Range** MaxBits=128 NumBits=8 NumBytes=1 AllowedBitValues=01 PaddingChar=1  
PadAlign=Left SizeAlign=BitVar Format=Ehex**PercentLevel***Double***Range** From 0 to 100 step 1

**Slope***Enum***Values**

Both	
Bothneg	
Bothpos	
Neg	
Pos	

**ViewingMode***Enum***Values**

Binary	
Hex	

**PROTOCOL2PROTOCOL***app.Measure.Px.Operator (ParamEngine = "Protocol2Protocol")*

Protocol1AddressOperator	Enum
Protocol1AddressValue	BitPattern
Protocol1AddressValue2	BitPattern
Protocol1FilterType	Enum
Protocol1PatternBitLength	Integer
Protocol1PatternBitPos	Integer
Protocol1PatternOperator	Enum
Protocol1PatternValue	BitPattern
Protocol1PatternValue2	BitPattern
Protocol2AddressOperator	Enum
Protocol2AddressValue	BitPattern
Protocol2AddressValue2	BitPattern
Protocol2FilterType	Enum
Protocol2PatternBitLength	Integer
Protocol2PatternBitPos	Integer
Protocol2PatternOperator	Enum
Protocol2PatternValue	BitPattern
Protocol2PatternValue2	BitPattern
ViewingMode	Enum

**Protocol1AddressOperator***Enum***Values**

Equal	
Greater	
GreaterOrEqual	

InRange	
NotEqual	
OutOfRange	
Smaller	
SmallerOrEqual	

## Protocol1AddressValue

*BitPattern*

**Range** MaxBits=32 NumBits=8 NumBytes=1 AllowedBitValues=01X PaddingChar=X  
PadAlign=Left SizeAlign=BitFix Format=Ehex

## Protocol1AddressValue2

*BitPattern*

**Range** MaxBits=32 NumBits=8 NumBytes=1 AllowedBitValues=01 PaddingChar=1  
PadAlign=Left SizeAlign=BitFix Format=Ehex

## Protocol1FilterType

*Enum*

### Values

Any	
ID	
IDData	

## Protocol1PatternBitLength

*Integer*

**Range** From 1 to 128 step 1

## Protocol1PatternBitPos

*Integer*

**Range** From 0 to 127 step 1

## Protocol1PatternOperator

*Enum*

### Values

Equal	
Greater	
GreaterOrEqual	
InRange	
NotEqual	
OutOfRange	
Smaller	
SmallerOrEqual	

## Protocol1PatternValue

*BitPattern*

**Range** MaxBits=128 NumBits=8 NumBytes=1 AllowedBitValues=01X PaddingChar=X  
PadAlign=Left SizeAlign=BitVar Format=Ehex

## Protocol1PatternValue2

*BitPattern*

**Range** MaxBits=128 NumBits=8 NumBytes=1 AllowedBitValues=01 PaddingChar=1  
PadAlign=Left SizeAlign=BitVar Format=Ehex



**Protocol2AddressOperator***Enum***Values**

Equal	
Greater	
GreaterOrEqual	
InRange	
NotEqual	
OutOfRange	
Smaller	
SmallerOrEqual	

**Protocol2AddressValue***BitPattern*

**Range** MaxBits=32 NumBits=8 NumBytes=1 AllowedBitValues=01X PaddingChar=X  
PadAlign=Left SizeAlign=BitFix Format=Ehex

**Protocol2AddressValue2***BitPattern*

**Range** MaxBits=32 NumBits=8 NumBytes=1 AllowedBitValues=01 PaddingChar=1  
PadAlign=Left SizeAlign=BitFix Format=Ehex

**Protocol2FilterType***Enum***Values**

Any	
ID	
IDData	

**Protocol2PatternBitLength***Integer*

**Range** From 1 to 128 step 1

**Protocol2PatternBitPos***Integer*

**Range** From 0 to 127 step 1

**Protocol2PatternOperator***Enum***Values**

Equal	
Greater	
GreaterOrEqual	
InRange	
NotEqual	
OutOfRange	
Smaller	
SmallerOrEqual	

**Protocol2PatternValue*****BitPattern***

**Range** MaxBits=128 NumBits=8 NumBytes=1 AllowedBitValues=01X PaddingChar=X  
PadAlign=Left SizeAlign=BitVar Format=Ehex

**Protocol2PatternValue2*****BitPattern***

**Range** MaxBits=128 NumBits=8 NumBytes=1 AllowedBitValues=01 PaddingChar=1  
PadAlign=Left SizeAlign=BitVar Format=Ehex

**ViewingMode*****Enum*****Values**

Binary	
Hex	

**PROTOCOL2VALUE***app.Measure.Px.Operator (ParamEngine = "Protocol2Value")*

AddressValue	BitPattern
DefinitionFile	FileName
FilterType	Enum
PatternBitLength	Integer
PatternBitPos	Integer
ValueCoefficient	Double
ValueTerm	Double
ValueType	Enum
ValueUnit	String
ViewingMode	Enum

**AddressValue*****BitPattern***

**Range** MaxBits=32 NumBits=8 NumBytes=1 AllowedBitValues=01X PaddingChar=X  
PadAlign=Left SizeAlign=BitFix Format=Ehex

**DefinitionFile*****FileName***

**Range** Any number of characters

**FilterType*****Enum*****Values**

Any	
ID	

**PatternBitLength*****Integer***

**Range** From 1 to 128 step 1

**PatternBitPos***Integer***Range** From 0 to 127 step 1**ValueCoefficient***Double***Range** From -1e+050 to 1e+050 step 1e-010**ValueTerm***Double***Range** From -1e+050 to 1e+050 step 1e-010**ValueType***Enum***Values**

Signed	
Unsigned	

**ValueUnit***String***Range** Any number of characters**ViewingMode***Enum***Values**

Binary	
Hex	

**PROTOCOLBITRATE***app.Measure.Px.Operator (ParamEngine = "ProtocolBitrate")*

AddressOperator	Enum
AddressValue	BitPattern
AddressValue2	BitPattern
FilterType	Enum
PatternBitLength	Integer
PatternBitPos	Integer
PatternOperator	Enum
PatternValue	BitPattern
PatternValue2	BitPattern
ViewingMode	Enum

**AddressOperator***Enum***Values**

Equal	
Greater	

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GreaterOrEqual	
InRange	
NotEqual	
OutOfRange	
Smaller	
SmallerOrEqual	

### AddressValue

*BitPattern*

**Range** MaxBits=32 NumBits=8 NumBytes=1 AllowedBitValues=01X PaddingChar=X  
PadAlign=Left SizeAlign=BitFix Format=Ehex

### AddressValue2

*BitPattern*

**Range** MaxBits=32 NumBits=8 NumBytes=1 AllowedBitValues=01 PaddingChar=1  
PadAlign=Left SizeAlign=BitFix Format=Ehex

### FilterType

*Enum*

#### Values

Any	
ID	
IDData	

### PatternBitLength

*Integer*

**Range** From 1 to 128 step 1

### PatternBitPos

*Integer*

**Range** From 0 to 127 step 1

### PatternOperator

*Enum*

#### Values

Equal	
Greater	
GreaterOrEqual	
InRange	
NotEqual	
OutOfRange	
Smaller	
SmallerOrEqual	

### PatternValue

*BitPattern*

**Range** MaxBits=128 NumBits=8 NumBytes=1 AllowedBitValues=01X PaddingChar=X  
PadAlign=Left SizeAlign=BitVar Format=Ehex

**PatternValue2*****BitPattern***

**Range** MaxBits=128 NumBits=8 NumBytes=1 AllowedBitValues=01 PaddingChar=1  
PadAlign=Left SizeAlign=BitVar Format=Ehex

**ViewingMode*****Enum*****Values**

Binary	
Hex	

**PROTOCOLLOAD**

*app.Measure.Px.Operator (ParamEngine = "ProtocolLoad")*

AddressOperator	Enum
AddressValue	BitPattern
AddressValue2	BitPattern
FilterType	Enum
PatternBitLength	Integer
PatternBitPos	Integer
PatternOperator	Enum
PatternValue	BitPattern
PatternValue2	BitPattern
ViewingMode	Enum

**AddressOperator*****Enum*****Values**

Equal	
Greater	
GreaterOrEqual	
InRange	
NotEqual	
OutOfRange	
Smaller	
SmallerOrEqual	

**AddressValue*****BitPattern***

**Range** MaxBits=32 NumBits=8 NumBytes=1 AllowedBitValues=01X PaddingChar=X  
PadAlign=Left SizeAlign=BitFix Format=Ehex

**AddressValue2*****BitPattern***

**Range** MaxBits=32 NumBits=8 NumBytes=1 AllowedBitValues=01 PaddingChar=1  
PadAlign=Left SizeAlign=BitFix Format=Ehex

**FilterType***Enum***Values**

Any	
ID	
IDData	

**PatternBitLength***Integer***Range** From 1 to 128 step 1**PatternBitPos***Integer***Range** From 0 to 127 step 1**PatternOperator***Enum***Values**

Equal	
Greater	
GreaterOrEqual	
InRange	
NotEqual	
OutOfRange	
Smaller	
SmallerOrEqual	

**PatternValue***BitPattern***Range** MaxBits=128 NumBits=8 NumBytes=1 AllowedBitValues=01X PaddingChar=X  
PadAlign=Left SizeAlign=BitVar Format=Ehex**PatternValue2***BitPattern***Range** MaxBits=128 NumBits=8 NumBytes=1 AllowedBitValues=01 PaddingChar=1  
PadAlign=Left SizeAlign=BitVar Format=Ehex**ViewingMode***Enum***Values**

Binary	
Hex	

**PROTOCOLNUMMESSAGES***app.Measure.Px.Operator (ParamEngine = "ProtocolNumMessages")*

AddressOperator	Enum
AddressValue	BitPattern
AddressValue2	BitPattern

FilterType	Enum
PatternBitLength	Integer
PatternBitPos	Integer
PatternOperator	Enum
PatternValue	BitPattern
PatternValue2	BitPattern
ViewingMode	Enum

### AddressOperator

*Enum*

#### Values

Equal	
Greater	
GreaterOrEqual	
InRange	
NotEqual	
OutOfRange	
Smaller	
SmallerOrEqual	

### AddressValue

*BitPattern*

**Range** MaxBits=32 NumBits=8 NumBytes=1 AllowedBitValues=01X PaddingChar=X  
PadAlign=Left SizeAlign=BitFix Format=Ehex

### AddressValue2

*BitPattern*

**Range** MaxBits=32 NumBits=8 NumBytes=1 AllowedBitValues=01 PaddingChar=1  
PadAlign=Left SizeAlign=BitFix Format=Ehex

### FilterType

*Enum*

#### Values

Any	
ID	
IDData	

### PatternBitLength

*Integer*

**Range** From 1 to 128 step 1

### PatternBitPos

*Integer*

**Range** From 0 to 127 step 1

**PatternOperator***Enum***Values**

Equal	
Greater	
GreaterOrEqual	
InRange	
NotEqual	
OutOfRange	
Smaller	
SmallerOrEqual	

**PatternValue***BitPattern*

**Range** MaxBits=128 NumBits=8 NumBytes=1 AllowedBitValues=01X PaddingChar=X  
PadAlign=Left SizeAlign=BitVar Format=Ehex

**PatternValue2***BitPattern*

**Range** MaxBits=128 NumBits=8 NumBytes=1 AllowedBitValues=01 PaddingChar=1  
PadAlign=Left SizeAlign=BitVar Format=Ehex

**ViewingMode***Enum***Values**

Binary	
Hex	

**PW50***app.Measure.Px.Operator (ParamEngine = "PW50")*

Hysteresis	Double
------------	--------

**Hysteresis***Double*

**Range** From 0 to 10 step 0.1

**PW50NEGATIVE***app.Measure.Px.Operator (ParamEngine = "PW50Negative")*

Hysteresis	Double
------------	--------

**Hysteresis***Double*

**Range** From 0 to 10 step 0.1



**PW50POSITIVE***app.Measure.Px.Operator (ParamEngine = "PW50Positive")*

Hysteresis

Double

**Hysteresis***Double***Range** From 0 to 10 step 0.1**RESOLUTION***app.Measure.Px.Operator (ParamEngine = "Resolution")*

Hysteresis

Double

**Hysteresis***Double***Range** From 0 to 10 step 0.1**RISEATLEVEL***app.Measure.Px.Operator (ParamEngine = "RiseAtLevel")*

HighPct

Double

LevelsAre

Enum

LowPct

Double

SetLevel1090

Action

SetLevel2080

Action

**HighPct***Double***Range** From 10 to 95 step 1**Description**

High level in percent.

**LevelsAre***Enum***Description**

Type of level: absolute, percent, %PkPk or %0-Min with EMC option.

**Values**

Absolute	
Percent	
PercentGNDMax	
PercentPkPk	

**LowPct***Double*

**Range** From 5 to 90 step 1

**Description**

High level in percent.

**SetLevel1090***Action***Description**

Set the levels to 10% and 90% of full amplitude.

**SetLevel2080***Action***Description**

Set the levels to 20% and 80% of full amplitude.

**ROOTMEANSQUARE**

*app.Measure.Px.Operator (ParamEngine = "RootMeanSquare")*

Cyclic	Bool
--------	------

**Cyclic***Bool***Description**

If true, the calculation is limited to a whole number of cycles detected in the input.

**SETUP**

*app.Measure.Px.Operator (ParamEngine = "Setup")*

Calculates the Setup time associated with a pair of input waveforms for Clock and Data.

ClockFindLevel	Action
ClockHysteresis	Double
ClockLevellS	Enum
ClockPctLevel	Double
ClockSlope	Enum
DataFindLevel	Action

DataHysteresis	Double
DataLevellls	Enum
DataPctLevel	Double
DataSlope	Enum
Summary	String

### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")
app.Measure.MeasureMode = "MyMeasure"
app.Measure.Pl.ParamEngine = "Setup"
```

### ClockFindLevel

*Action*

#### Description

Causes the engine to find a suitable level for either ClockLevellls ("Absolute"or "Percent")

### ClockHysteresis

*Double*

**Range** From 0 to 10 step 0.1

#### Description

Using ParamEngine = "Setup", please refer to the corresponding variable for the Hold Time parameter.

### ClockLevellls

*Enum*

#### Description

Sets/Queries whether the Clock signal levels are specified in "Percent" or "Absolute"

#### Values

Absolute	
Percent	
PercentGNDMax	
PercentGNDDMin	
PercentPkPk	

### ClockPctLevel

*Double*

**Range** From 0 to 100 step 1

#### Description

Using ParamEngine = "Setup", please refer to the corresponding variable for the Hold Time parameter.

### ClockSlope

*Enum*

#### Description

Sets/Queries the polarity of transitions of the Clock signal are used

#### Values

Both	
Neg	
Pos	

**DataFindLevel***Action***Description**

Causes the engine to find a suitable level for either DataLevels ("Absolute" or "Percent")

**DataHysteresis***Double*

**Range** From 0 to 10 step 0.1

**Description**

Using ParamEngine = "Setup", please refer to the corresponding variable for the Hold Time parameter.

**DataLevels***Enum***Description**

Sets/Queries whether the Data signal level is DataAbsLevel or DataPctLevel

**Values**

Absolute	
Percent	
PercentGNDMax	
PercentGNDDMin	
PercentPkPk	

**DataPctLevel***Double*

**Range** From 0 to 100 step 1

**Description**

Using ParamEngine = "Setup", please refer to the corresponding variable for the Hold Time parameter.

**DataSlope***Enum***Description**

Sets/Queries the polarity of transitions to be used for the Data signal

**Values**

Both	
Neg	
Pos	

**Summary***String*

**Range** Any number of characters

**Description**

Using ParamEngine = "Setup", please refer to the corresponding variable for the Hold Time parameter.

**SKEW**

*app.Measure.Px.Operator (ParamEngine = "Skew")*

Calculates the skew between two clock signal waveforms

Clock1FindLevel

Action

Clock1Hysteresis	Double
Clock1Levellls	Enum
Clock1PctLevel	Double
Clock1Slope	Enum
Clock2FindLevel	Action
Clock2Hysteresis	Double
Clock2Levellls	Enum
Clock2PctLevel	Double
Clock2Slope	Enum
Deskew	Double
UpSamplingFactor	Integer

### Example

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")
app.Measure.MeasureMode = "MyMeasure"
app.Measure.Pl.ParamEngine = "Skew"
```

---

### Clock1FindLevel

**Action**

#### Description

Automatically find a suitable level for Clock1, for either "Percent" or "Absolute" levels

---

### Clock1Hysteresis

**Double**

**Range** From 0 to 10 step 0.1

#### Description

Sets/Queries hysteresis for transition detection used for Clock1

---

### Clock1Levellls

**Enum**

#### Description

Sets/Queries whether to use Percent or Absolute levels for Clock1

#### Values

Absolute	
Percent	
PercentGNDMax	
PercentGNDMin	
PercentPkPk	

---

### Clock1PctLevel

**Double**

**Range** From 0 to 100 step 1

#### Description

Sets/Queries the "Percent" of the amplitude of Clock1 to use for a transition level, if Clock1Levellls = "Percent"

**Clock1Slope***Enum***Description**

Sets/Queries the polarity of transitions detected on Clock1

**Values**

Both	
Neg	
Pos	

**Clock2FindLevel***Action***Description**

Using ParamEngine = "Skew", please refer to the corresponding variable for the Hold Time parameter.

**Clock2Hysteresis***Double*

**Range** From 0 to 10 step 0.1

**Description**

Sets/Queries hysteresis for transition detection used for Clock1

**Clock2LevellS***Enum***Description**

Sets/Queries whether to use Percent or Absolute levels for Clock2

**Values**

Absolute	
Percent	
PercentGNDMax	
PercentGNDMin	
PercentPkPk	

**Clock2PctLevel***Double*

**Range** From 0 to 100 step 1

**Description**

Sets/Queries the "Percent" of the amplitude of Clock2 to use for a transition level, if Clock2LevellS = "Percent"

**Clock2Slope***Enum***Description**

Sets/Queries the polarity of transitions detected on Clock2

**Values**

Both	
Neg	
Pos	

**Deskew***Double***Range** From -1e-008 to 1e-008 step 1e-012**UpSamplingFactor***Integer***Range** From 1 to 20 step 1**SLEW***app.Measure.Px.Operator (ParamEngine = "Slew")*

HighPct	Double
LevelsAre	Enum
LowPct	Double
PercentImage	Image
SetLevel1090	Action
SetLevel2080	Action
Slope	Enum

**HighPct***Double***Range** From 40 to 95 step 1**Description**

High level in percent.

**LevelsAre***Enum***Description**

Type of level: absolute, percent, %PkPk or %0-Min with EMC option.

**Values**

Absolute	
Percent	
PercentGNDMax	
PercentPkPk	

**LowPct***Double***Range** From 5 to 60 step 1**Description**

High level in percent.

**PercentImage***Image***SetLevel1090***Action***Description**

Set the levels to 10% and 90% of full amplitude.

**SetLevel2080***Action***Description**

Set the levels to 20% and 80% of full amplitude.

**Slope***Enum***Values**

Neg	
Pos	

**STANDARDDEVIATION***app.Measure.Px.Operator (ParamEngine = "StandardDeviation")*

Cyclic	Bool
--------	------

**Cyclic***Bool***Description**

If true, the calculation is limited to a whole number of cycles detected in the input.

**TAA***app.Measure.Px.Operator (ParamEngine = "TAA")*

Hysteresis	Double
------------	--------

**Hysteresis***Double***Range** From 0 to 10 step 0.1**TAANEGATIVE***app.Measure.Px.Operator (ParamEngine = "TAANegative")*

Hysteresis	Double
------------	--------

**Hysteresis***Double***Range** From 0 to 10 step 0.1**TAAPOSITIVE***app.Measure.Px.Operator (ParamEngine = "TAAPositive")*

Hysteresis	Double
------------	--------



Hysteresis	Double
------------	--------

## Hysteresis

*Double*

**Range** From 0 to 10 step 0.1

## TIE

*app.Measure.Px.Operator (ParamEngine = "TIE")*

TIE is "Time Interval Error", or the error in expected arrival time of trnasotions in either a data stream or a clock signal. It is the heart of most jitter measurments (where only one signal is under analysis). The Skew processor is closely related to this function in cases where measurements are using a separate reference clock.

**WARNING:** The TIE processor is appropriate for analysis of "real-time" acquired waveforms for jitter and timing variations. It will give incorrect results for equivalent-time type waveforms.

Annotate	Integer
BaseFrequency	Double
DatalsNRZ	Bool
FindBaseFrequency	Action
FindLevel	Action
FrequencyMultiplier	Double
Hysteresis	Double
IncludeVirtualEdges	Bool
IntervalsEdgeEdge	Integer
IntervalType	Enum
LevelType	Enum
MaxComboIntervals	Integer
PercentLevel	Double
PermitGTHalfUI	Bool
PLL1TransportDelay	Double
PLLCompensateForMissingEdges	Bool
PLLFrequency	Double
PLLType	Enum
SignalType	Enum
Slope	Enum
Summary	String
UseAllEdges	Bool
UseBaseFrequency	Enum
UseMultiEdgeCombos	Bool
UsePLL	Bool
VirtEdgeType	Enum

## Annotate

*Integer*

**Range** From 1 to 10 step 1

**BaseFrequency***Double***Range** From 1 to 2e+012 step 10**Description**

This is the frequency of used to provide expected times for TIE. If a PLL is being used, this frequency must be within the capture range for the PLL (usually quite close) or you will encounter unexpected results. Typically the find frequency operation is quite good for setting this value, unless the input source is "data" and the signal is very stressed (closed eye or nearly closed eye).

**DatalsNRZ***Bool***Description**

This should be set to "true" for TIE analysis of an NRZ data stream. It should be set to false for TIE analysis of a clock signal

**FindBaseFrequency***Action***Description**

When activated starts an automatic process to attempt to learn the base frequency of the clock or data signal (see DatalsNRZ) and set the BaseFrequency control to the found value. Warning: be sure to provide as many clock or data cycles as is reasonably possible for maximum precision in the result.

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Automatically find the frequency for clock or data signal at the input
of the TIE processor.
app.Measure.P3.Operator.FindBaseFrequency
```

**FindLevel***Action***Description**

Activate this control to find the vertical level for 50% for the waveform presented at the input to this processor. (Only for LevelType = "Absolute")

**Example**

```
' Visual Basic Script
Set app = CreateObject("LeCroy.XStreamDSO")

' Automatically find the level for 50% crossing as an absolute (vertical
units) value
app.Measure.P3.Operator.FindLevel
```

**FrequencyMultiplier***Double***Range** From 0.001 to 1000 step 0.001**Hysteresis***Double***Range** From 0 to 10 step 0.1**Description**

This setting establishes the zone around the level (or threshold for level crossings) which must be traversed by the signal in order for the transition to be "qualified".

**IncludeVirtualEdges***Bool***Description**

When this control is set to true (default is false), the TIE values the result at the output have "virtual edges" included in the output (i.e. values which are linearly interpolated) corresponding to edges which did NOT transit. This allows a relatively uniform in time strm of values. This feature is mostly obviated by the processor "ParamUpSample"

**IntervalsEdgeEdge***Integer*

**Range** From 1 to 100000 step 1

**Description**

For edge-edge methodology, this control sets the number of UI ( unit intervals) between edges to be analyzed.

**IntervalType***Enum***Description**

Timing Analysis can either performed using the edge-edge timing methodology (as was developed for Time-Interval-Analyzers", or edge-ref, as is common for real-time oscilloscopes. Edge-Ref is highly recommended.

**Values**

EDGEEDGE	
EDGEREF	

**LevelType***Enum***Values**

Absolute	
Percent	
PercentGNDMax	
PercentGNDMin	
PercentPkPk	

**MaxComboIntervals***Integer*

**Range** From 1 to 20000 step 1

**PercentLevel***Double*

**Range** From 0 to 100 step 1

**PermitGTHalfUI***Bool***PLL1TransportDelay***Double*

**Range** From 0 to 1 step 1e-015

**PLLCompensateForMissingEdges***Bool*

**PLLFrequency***Double***Range** From 1 to 1e+011 step 100**PLLType***Enum***Description**

Permits selection of a PLL type (depending on installed software options)

**Values**

Custom	
DVI	
FBDIMM	
GOLDEN	
PCIEXPRESS	

**SignalType***Enum***Values**

Clock	
Data	

**Slope***Enum***Values**

Both	
Neg	
Pos	

**Summary***String***Range** Any number of characters**UseAllEdges***Bool***UseBaseFrequency***Enum***Values**

Custom	
Standard	

**UseMultiEdgeCombos***Bool***UsePLL***Bool***VirtEdgeType***Enum***Values**

Expected	
Observed	

**TIMEATCAN***app.Measure.Px.Operator (ParamEngine = "TimeAtCAN")*

DataCondition	Enum
DataValue0	String
DataValue1	String
DataValue2	String
DataValue3	String
DataValue4	String
DataValue5	String
DataValue6	String
DataValue7	String
DLC	Integer
FrameType	Enum
HorValue	Double
ID	String
IDCondition	Enum
ShowBrowseDb	Bool

**DataCondition***Enum***Values**

EQ	
X	

**DataValue0***String***Range** Any number of characters**DataValue1***String***Range** Any number of characters**DataValue2***String***Range** Any number of characters**DataValue3***String***Range** Any number of characters**DataValue4***String***Range** Any number of characters**DataValue5***String***Range** Any number of characters

**DataValue6***String***Range** Any number of characters**DataValue7***String***Range** Any number of characters**DLC***Integer***Range** From 0 to 8 step 1**FrameType***Enum***Values**

Data	
Error	
Remote	

**HorValue***Double***Range** From -1.79769e+308 to 1.79769e+308 step 0**ID***String***Range** Any number of characters**IDCondition***Enum***Values**

DontCare	
EQ	
GE	
GT	
INRANGE	
LE	
LT	

**ShowBrowseDb***Bool***TIMEATLEVEL***app.Measure.Px.Operator (ParamEngine = "TimeAtLevel")*

FindLevel	Action
Hysteresis	Double
LevelType	Enum
PercentLevel	Double
Slope	Enum
Summary	String

**FindLevel***Action***Description**

When in absolute level, finds the level at 50%.

**Hysteresis***Double*

**Range** From 0 to 10 step 0.1

**Description**

Hysteresis around level in units of divisions.

**LevelType***Enum***Description**

Level type in absolute, percent and %Pkpk, %0-min, %0-max with EMC option.

**Values**

Absolute	
Percent	
PercentGNDDMax	
PercentGNDDMin	
PercentPkPk	

**PercentLevel***Double*

**Range** From 0 to 100 step 1

**Description**

Level in percent.

**Slope***Enum***Description**

Slope of the detected transitions.

**Values**

Both	
Neg	
Pos	

**Summary***String*

**Range** Any number of characters

**Description**

Summary of functionality and settings of processor.

**TIMEATPROTOCOL**

*app.Measure.Px.Operator (ParamEngine = "TimeAtProtocol")*

AddressOperator

Enum

AddressValue	BitPattern
AddressValue2	BitPattern
FilterType	Enum
PatternBitLength	Integer
PatternBitPos	Integer
PatternOperator	Enum
PatternValue	BitPattern
PatternValue2	BitPattern
ViewingMode	Enum

## AddressOperator

*Enum*

### Values

Equal	
Greater	
GreaterOrEqual	
InRange	
NotEqual	
OutRange	
Smaller	
SmallerOrEqual	

## AddressValue

*BitPattern*

**Range** MaxBits=32 NumBits=8 NumBytes=1 AllowedBitValues=01X PaddingChar=X  
PadAlign=Left SizeAlign=BitFix Format=Ehex

## AddressValue2

*BitPattern*

**Range** MaxBits=32 NumBits=8 NumBytes=1 AllowedBitValues=01 PaddingChar=1  
PadAlign=Left SizeAlign=BitFix Format=Ehex

## FilterType

*Enum*

### Values

Any	
ID	
IDData	

## PatternBitLength

*Integer*

**Range** From 1 to 128 step 1

## PatternBitPos

*Integer*

**Range** From 0 to 127 step 1



**PatternOperator***Enum***Values**

Equal	
Greater	
GreaterOrEqual	
InRange	
NotEqual	
OutOfRange	
Smaller	
SmallerOrEqual	

**PatternValue***BitPattern*

**Range** MaxBits=128 NumBits=8 NumBytes=1 AllowedBitValues=01X PaddingChar=X  
PadAlign=Left SizeAlign=BitVar Format=Ehex

**PatternValue2***BitPattern*

**Range** MaxBits=128 NumBits=8 NumBytes=1 AllowedBitValues=01 PaddingChar=1  
PadAlign=Left SizeAlign=BitVar Format=Ehex

**ViewingMode***Enum***Values**

Binary	
Hex	

**TOP***app.Measure.Px.Operator (ParamEngine = "Top")***WIDTHATLEVEL***app.Measure.Px.Operator (ParamEngine = "WidthAtLevel")*

FindLevel	Action
Hysteresis	Double
LevelType	Enum
PercentLevel	Double
Slope	Enum
Summary	String

**FindLevel***Action*

**Hysteresis***Double***Range** From 0 to 10 step 0.1**LevelType***Enum***Values**

Absolute	
Percent	
PercentGNDMax	
PercentGNDMin	
PercentPkPk	

**PercentLevel***Double***Range** From 0 to 100 step 1**Slope***Enum***Values**

Both	
Neg	
Pos	

**Summary***String***Range** Any number of characters**XATMAXIMUM***app.Measure.Px.Operator (ParamEngine = "XAtMaximum")*

HystDiv	Double
Method	Enum

**HystDiv***Double***Range** From 0.1 to 5 step 0.05**Method***Enum***Values**

LeftmostMax	
LocalMaxima	
RightmostMax	

**XATMINIMUM***app.Measure.Px.Operator (ParamEngine = "XAtMinimum")*

HystDiv	Double
Method	Enum

---

### HystDiv

*Double*

**Range** From 0.1 to 5 step 0.05

---

### Method

*Enum*

#### Description

Method to use for finding Minima.

#### Values

LeftmostMin	
LocalMinima	
RightmostMin	

## XATPEAK

*app.Measure.Px.Operator (ParamEngine = "XAtPeak")*

---

PeakNumber	Integer
------------	---------

---

### PeakNumber

*Integer*

**Range** From 1 to 10000 step 1

#### Description

Peak number for which the X value is returned.

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