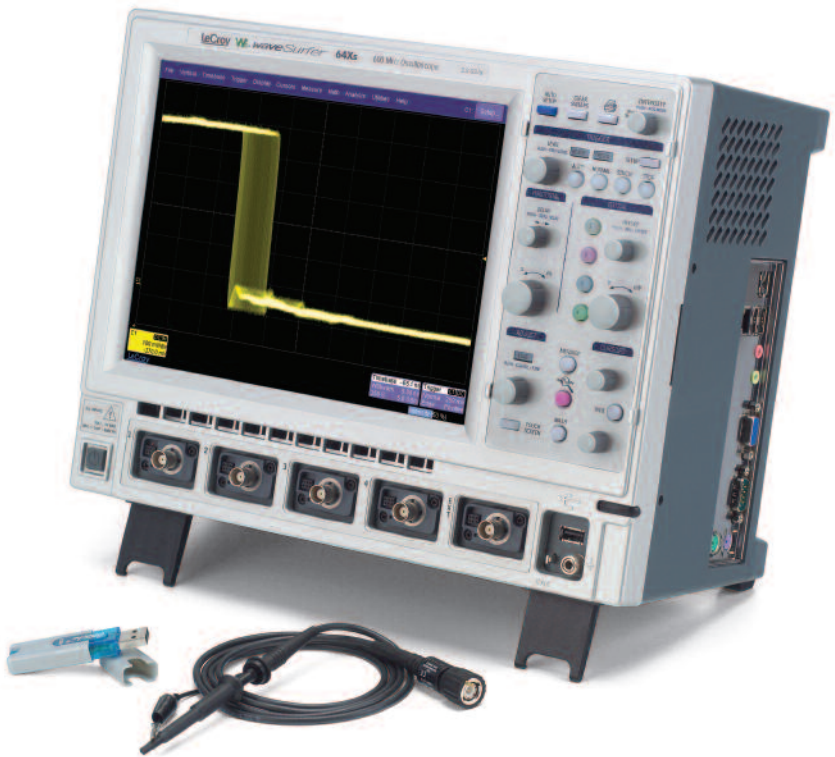


# Quick Reference Guide



## **WaveSurfer® Xs Series**

To get started quickly, take a few moments to read through this guide. Additional information can be found in the Getting Started Manual.

On-line help also contains more information on using the instrument.

# User Interface

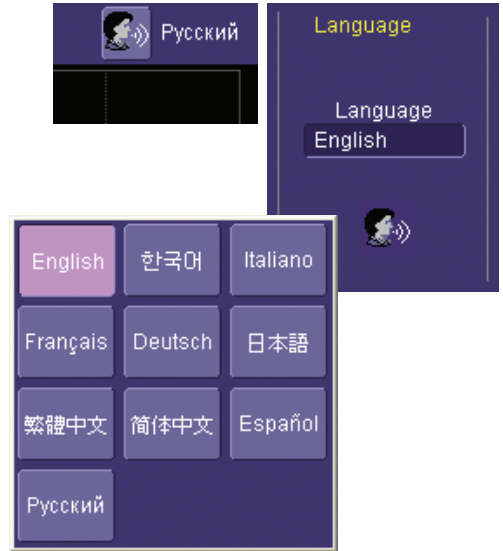
## Local Language

### Local Language User Interface

WaveSurfer Xs can be set to display software menus in many different languages. You can select your language preference at startup by touching the icon in the upper right corner of the screen. This will take you to the language preferences selection.

### Language Preference

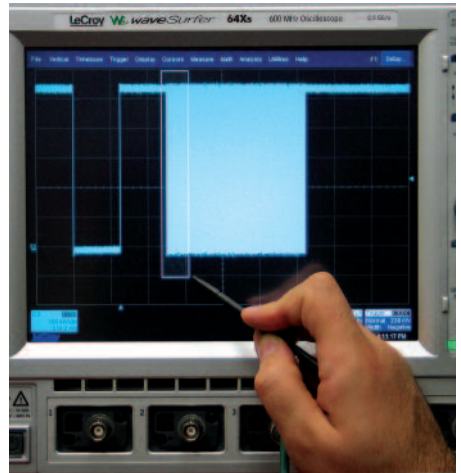
Select a language from the pop-up menu. Once selected, you do not need to reboot your oscilloscope, but you may have to wait a short time for all translated items to load from the database.



## Touch Screen with Stylus

### Touch Screen with Built-in Stylus Holder

Just pull the stylus out of the built-in holder and use it with the touch screen graphical user interface.



# Understanding Display Information



## Top Menu Bar

One way of accessing the setup menus.

## Grid Area

Similar to many other oscilloscopes.

## Trigger Level Indicator

Color coded to the triggered signal.

## Descriptor Labels

Touch sensitive. One is provided for each channel, zoom, math, or memory that is on. Touch for quick access to the setup menu.

## Trigger Position Indicator

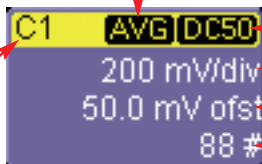
Color coded to the triggered signal. Zero is center of display.

## Timebase and Trigger Descriptor Labels

Touch sensitive. These are always displayed, and provide information on status. Touch for quick access to the setup menu.

## Pre-Processing Summary Listing

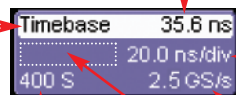
(summarizes changes from default states)



## Channel Abbreviation

## Trigger Delay (Position)

## Horizontal Descriptor Label



## # Samples

## Sample Rate

## Sampling Mode

(blank when in real-time mode)

# Shortcuts

## Shortcuts to Channel, Math, and Memory Menus

are provided to make it easy to access common functions. Touch the descriptor box to display the menu.



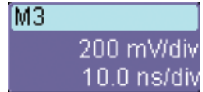
Channel  
Descriptor Box



Zoom  
Descriptor Box



Math  
Descriptor Box



Memory  
Descriptor Box

## Toolbar Shortcuts to Channel, Math, and Memory Menus

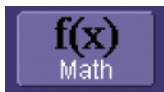
These shortcuts are available from the channel, zoom, math, and memory menus. They can save you valuable setup time by predefining sources; and they provide additional features (such as labeling of traces).



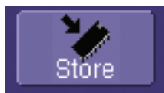
Opens a Measurement selection pop-up menu. You can then select up to 6 parameters (measurements) for the active channel from this menu without leaving the Channel Setup menu.



Creates a zoom trace of the channel signal. The zoom trace becomes active, and you can use the Math and Zoom controls to modify its scale and position.



Opens a Math selection pop-up menu. You can then select a math function for the active channel from this menu without leaving the Channel Setup menu.



Copies the channel trace into its corresponding Memory (Reference Waveform) location. For instance, C1 is loaded into M1, C2 is loaded into M2, etc.



Automatically performs a vertical scaling that fits the waveform into the grid.



Opens a Labeling pop-up menu that allows user-defined labels tied to the waveform.

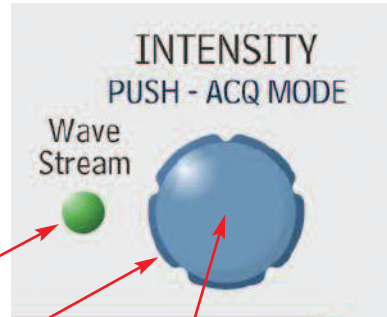
# WaveStream™ Fast Viewing Mode

## Overview

WaveSurfer Xs contains WaveStream technology that closely simulates the look and feel of a lively, analog display by providing a fast display update rate. You may adjust the intensity of the trace(s), and sample at the full scope sampling rate while in WaveStream mode, which significantly enhances glitch finding capability.

**WaveStream Indicator Light** is lighted when WaveStream fast viewing mode is ON.

**Turn Knob** to adjust intensity in either WaveStream fast viewing mode or real-time sampling mode.



**Press Knob** to toggle at any time between real-time sampling and WaveStream fast viewing mode.

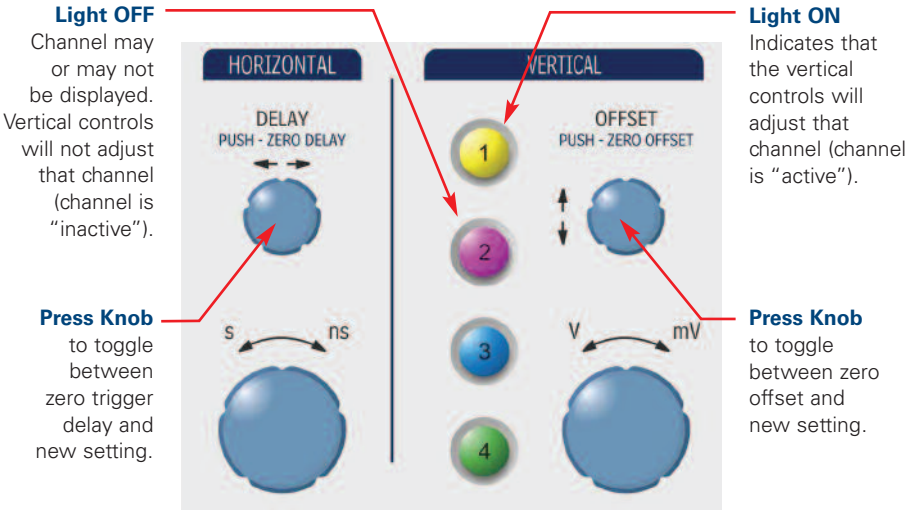
## Math and Measure in WaveStream Mode

WaveStream traces comprise many overlaid traces. While in WaveStream mode, math and measurements are applied only to the last trace in the WaveStream acquisition. A math trace will not have the same appearance as a channel does in WaveStream mode, and measurements will accumulate more slowly compared to real-time sampling mode.

## Zooming in WaveStream Mode

WaveStream data is pixelated data with 256 different intensity levels. If you zoom a WaveStream trace, you will zoom pixelated data. Therefore, it is recommended that you toggle to real-time sampling mode for most zooming.

# Horizontal and Vertical Controls



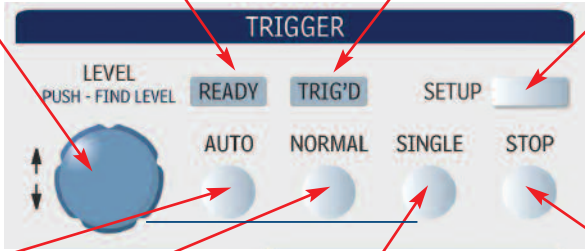
## If all Channel Lights are Off

Then the Horizontal and Vertical Controls are "Active" for either a Math, Zoom, or Memory trace, and function as a scale control for the active trace. The solid coloring on the descriptor labels indicates "Active." Note that only one trace can be "Active" at a time.

|   |  |   |   |
|---|--|---|---|
| <b>Inactive</b><br>Vertical controls will not work for this trace | <b>C1</b> DC1M<br>200 mV/div<br>-500.0 mV          | <b>C1</b> DC1M<br>200 mV/div<br>-500.0 mV         | <b>Active</b><br>Vertical controls will work for this trace |
|   | <b>Math</b> FFT(C1)<br>20.0 dB/div<br>50.0 MHz/div | <b>Math</b> FFT(C3)<br>20.0 dB/div<br>250 MHz/div |   |
|   | <b>Z1</b> zoom(C1)<br>200 mV/div<br>1.00 ns/div    | <b>Z1</b> zoom(C1)<br>200 mV/div<br>1.00 ns/div   |   |
|   | <b>M3</b><br>200 mV/div<br>10.0 ns/div             | <b>M3</b><br>200 mV/div<br>10.0 ns/div            |   |

# Trigger Control

Sets the trigger level — push to set to 50%. Is lighted when the trigger is armed. Is lighted and stays lit after a trigger. Press to open the trigger setup menu.

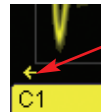
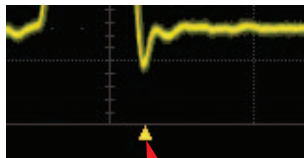
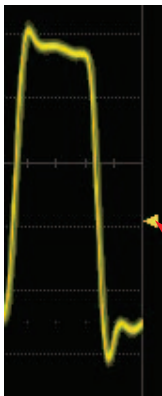


Triggers even if the trigger conditions are not met.

Triggers whenever the trigger conditions are met.

Triggers once (single-shot acquisition) when the trigger conditions are met.

Cancels the acquisition in Auto, Normal, or Single trigger mode.

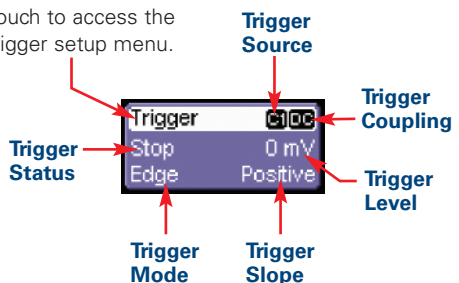


Post Trigger Indicator

Trigger Position Indicator

Trigger Level Indicator

Touch to access the trigger setup menu.



Trigger Status

Trigger Source

Trigger Coupling

Trigger Level

Trigger Mode

Trigger Slope

# Using Cursors

Dedicated cursor knobs on WaveSurfer make using cursors easy. All common cursor features can be accessed from the front panel controls. There is no need to open menus to use cursors on WaveSurfer.

## Cursor Type Button

Press to turn cursors ON, toggle through types, and then turn cursors OFF



## Cursor Knobs

Rate sensitive knobs combine fine and coarse adjustment. One knob is provided for each cursor. Push to set cursor to default position.



## Cursor Readout

Vertical (Y) information is located in the descriptor labels.

|            |               |
|------------|---------------|
| C1         | ACIM          |
|            | 100 mV/div    |
|            | 0.0 mV offset |
| ↓          | -23 mV        |
| ↑          | -147 mV       |
| $\Delta y$ | -124 mV       |

|          |                  |                 |               |
|----------|------------------|-----------------|---------------|
| Timebase | -5.10 $\mu$ s    | Trigger         | C100          |
|          | 1.00 $\mu$ s/div | Auto            | 0 mV          |
| 10.0 kS  | 1.0 GS/s         | Dropout         | Negative      |
| X1 =     | 4.509 $\mu$ s    | $\Delta X =$    | 1.074 $\mu$ s |
| X2 =     | 5.583 $\mu$ s    | 1/ $\Delta X =$ | 931.1 kHz     |

Horizontal (X) information is located underneath the Timebase and Trigger Descriptor Labels



# Setting Up Measurements

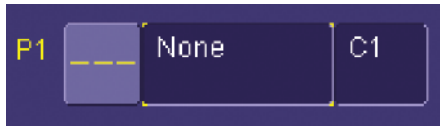
## Measure Button

Press the front panel Measure button to access the Measure setup menu.



## Choose your Measurement and Source

in the measure setup menu—touch on the icon or Source name to choose.



## Measurement Display

### Value

Last value measured in the acquisition.

### Status Indicator

✔ Good measurement. (Refer to the manual for a complete listing of indicator icons).



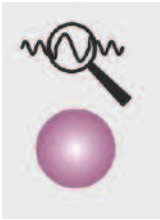
**Measurement (Parameter) Number**      **Measurement Name**



| Measure | P1:ovsh+(C1) |
|---------|--------------|
| value   | 4.7 %        |
| mean    | 4.758 %      |
| min     | 2.7 %        |
| max     | 6.8 %        |
| sdev    | 713 m%       |
| num     | 800          |

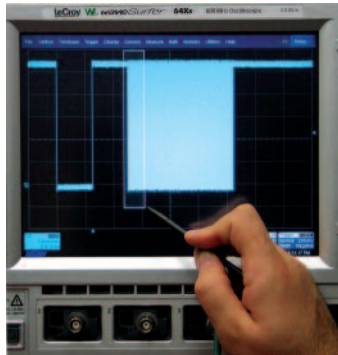
# Zoom your Signals

There are three ways to zoom with the WaveSurfer Xs. Use whichever method feels best.



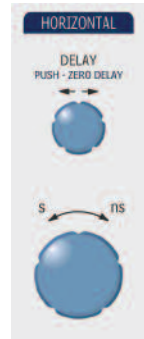
## 1 QuickZoom Button

Press the button and all channels displayed will be zoomed in separate grids. Will also UNDO any zooms.



## 2 Draw a Zoom Box

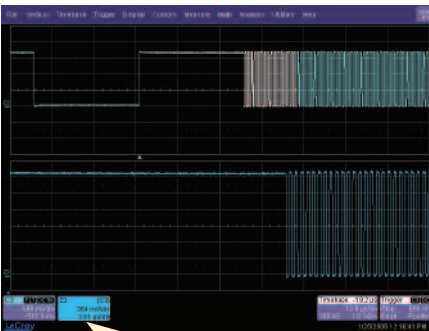
Using the stylus, outline the area you wish to zoom.



## 3 Horizontal Adjust

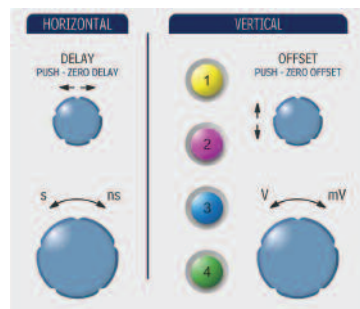
Stop your acquisition, and use the delay and horizontal adjust knobs to position a subset of your acquisition.

### Zoomed Area is shown



**Zoom Descriptor Label** shows zoom scaling.

Z3 zoom(C3)  
264 mV/div  
3.61  $\mu$ s/div

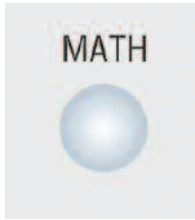


**Use Horizontal and Vertical controls** to adjust memory scale and position (if desired).

# Setting Up Math

## Math Button

Press the front panel Math button to turn on the Math trace and access the Math setup menu



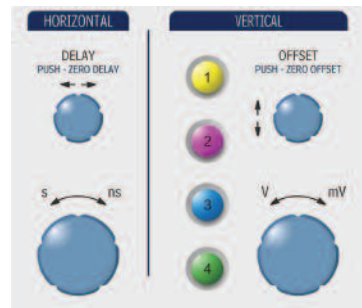
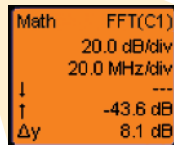
Choose your Math Operator and Source(s) in the Math setup menu—touch on the Operator name or Source name to choose



## Math trace appears on a separate grid

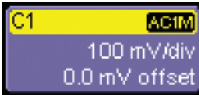


Math Descriptor Label shows math scaling.



Use Horizontal and Vertical controls to adjust math scale and position (if desired).

# Setting Up Memories (Reference Waveforms)

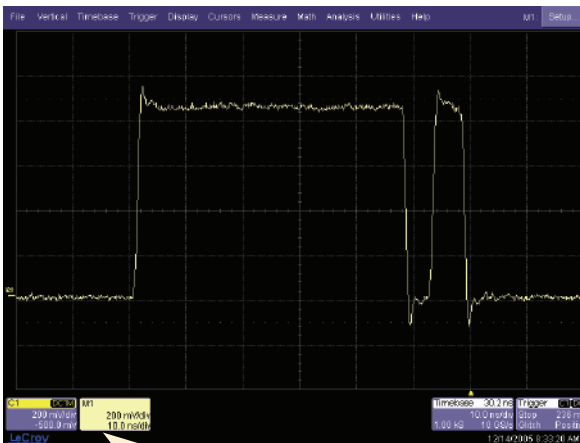


- 1 **Touch the descriptor label** of the trace that you want to create a memory of (if it's not active, you'll have to touch it twice).



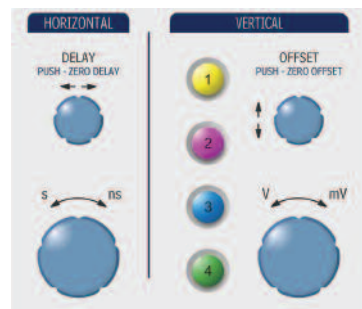
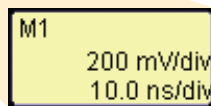
- 2 **Touch the Store Button** in the toolbar area of the channel setup menu.

Memory trace automatically appears on the grid.



## Memory Descriptor Label

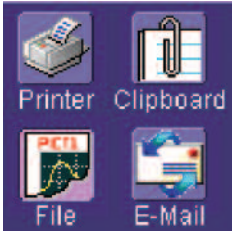
shows memory scaling.



**Use Horizontal and Vertical controls** to adjust memory scale and position (if desired).

# Communicate and Document

WaveSurfer makes it easy to store, transfer and print your files and images. Refer to the Getting Started Manual for complete details.



## Saving Screen Images

You can save a screen image as a file, send it as an email, print it, or store it on the clipboard. Define in Utilities, Utilities Setup, Hardcopy Menu.

## Print Button

Can be defined to perform with one button push any of the functions at left.



## Front Mounted USB Port

makes it easy to transfer files quickly to your PC. Or, store files to your hard drive.



## Connect Your WaveSurfer to the Network

and easily email files to people anywhere, or let others view your oscilloscope display from their PC. Plug in printers to USB ports.

# Notes

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# Thank You for Purchasing a WaveSurfer Xs Oscilloscope

To offer comments or suggestions about the product, please feel free to email the Product Manager at [WaveSurferXs@lecroy.com](mailto:WaveSurferXs@lecroy.com)

## **Corporate Headquarters**

700 Chestnut Ridge Road  
Chestnut Ridge, NY 10977  
USA  
[www.lecroy.com](http://www.lecroy.com)

For more detailed information and a listing of LeCroy offices and distributors, visit [www.lecroy.com/goto/wsxs](http://www.lecroy.com/goto/wsxs)

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