Lab 2 – **View** – (30 Minute)

*Note:(*Screenshots below show a white background configuration of your WaveAce to save black ink in printing, this configuration can be learnt in this Lab – VIEW)

Overview

The **View Lab** is designed to address the different trace & grid display modes found in modern digital oscilloscopes like the WaveAce.

A test at the end of the Lab allows you to check your knowledge.

It is recommended to start with the WaveAce Capture Lab first.

Goal

Learn how to configure and use:

- Grid Styles and points
- Persistence setup, saturation control & time constant
- Drag & drop, adjustment of delay, offset and zooms

In this Lab you will learn the various ways to view your data in the most easily understood format for each type of application.

Required Equipment

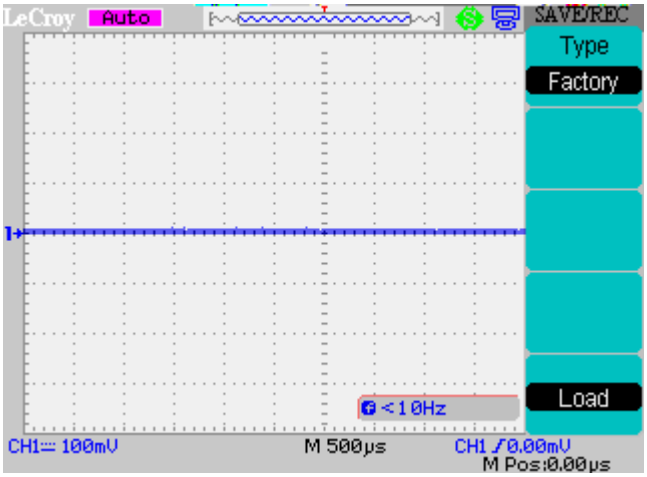
- 2 x WaveAce passive probe.

Setup

Connect the probe to Channel 2 and the probe top to the calibrator (CAL) output loop on the front panel. Use the sprung hook accessory of the probe to clip to the CAL output loop. For the later steps connect the second probe to the CAL signal and the CH1 BNC.

Step 1

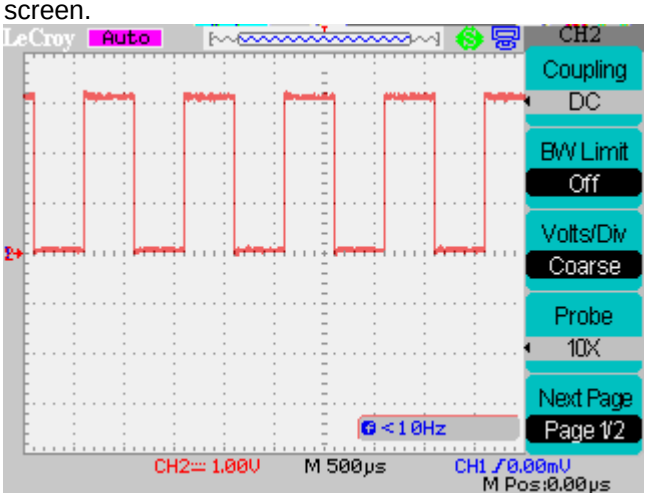
Reset the scope configuration to the default factory settings using the front panel DEFAULT SETUP button. An alternative method is to use the front panel SAVE/RECALL button, then press the Type button until Factory is displayed and finally press the Load button.



At any time the menu on the right-hand side of the screen can be removed/restored by pressing the front panel MENU ON/OFF button.

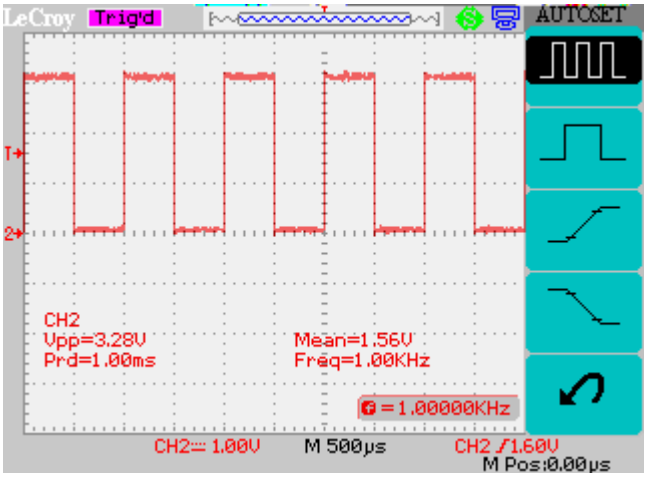
Step 2

Turn CH1 off and CH2 on by pressing the front panel CH1 and CH2 buttons. Pressing a channel button also displays the corresponding vertical settings. DC coupling on CH2 is selected by default. Check the slider switch on the probe is set to X10 and using the Probe button set 10X on the screen.



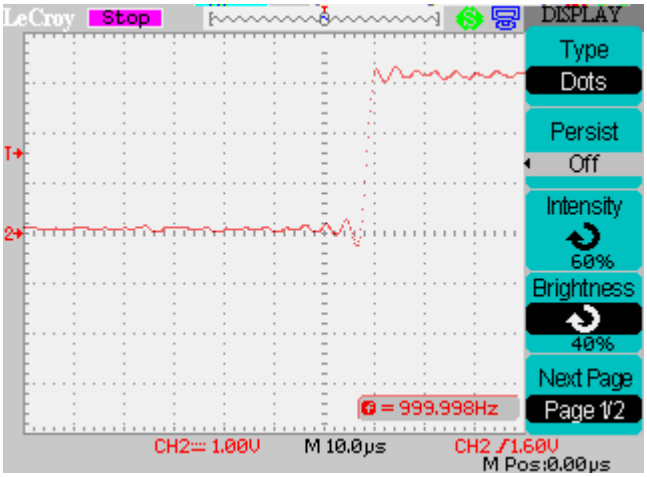
Step 3

Press the [blue] AUTO button on the front panel. Wait for a few seconds and you should have a triggered signal with a number of signal periods shown on the screen.

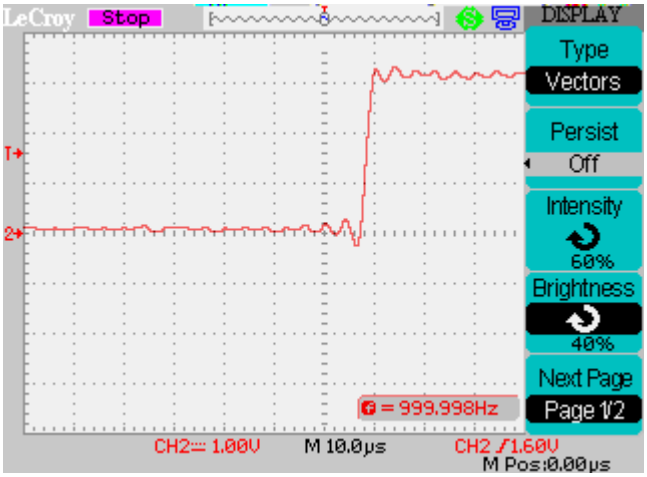


Step 4

Press the front panel RUN/STOP button (LED goes red) to capture the data on the display. Turn the timebase knob to the right until the scope beeps and the trace is expanded. Press the front panel Display button and change the Type to Dots. Now we can see the individual sample points on the screen.



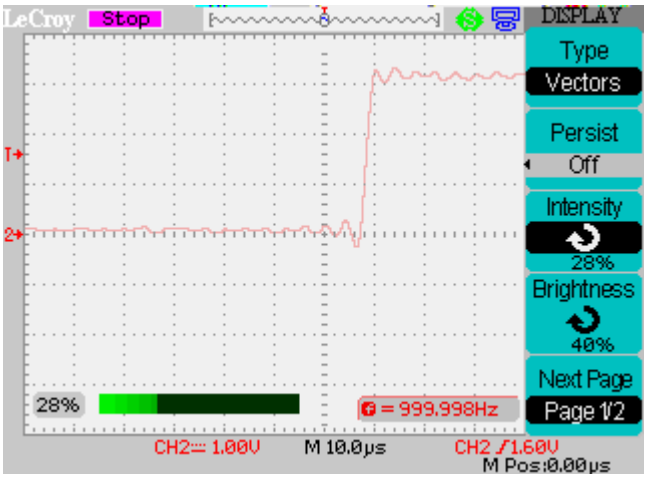
Change back to Vectors and observe that the sample points are joined by lines. In most cases this is the best configuration.



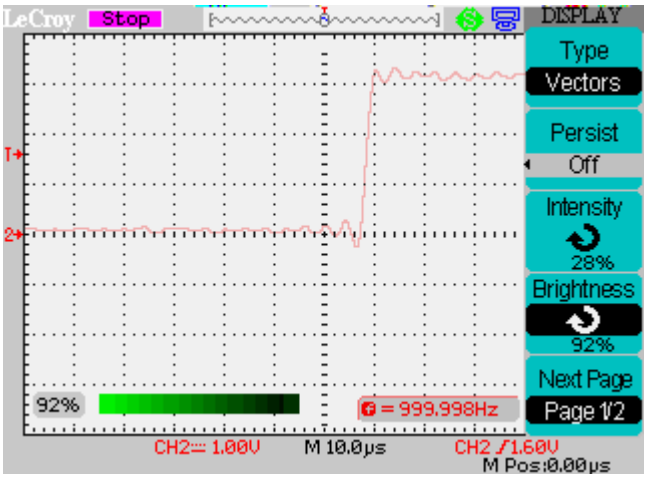
It is very important to understand that a digital oscilloscope, samples the data into discrete data points.

Step 5

Select Intensity and now the front panel Intensity/Adjust knob controls the trace intensity. An on-screen bar is momentarily displayed when adjusting.

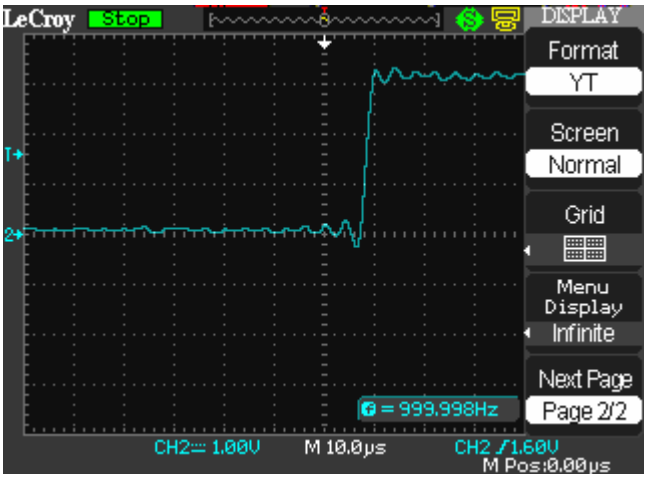


Select Brightness and now the front panel Intensity/Adjust knob controls the grid intensity. An on-screen bar is momentarily displayed when adjusting.



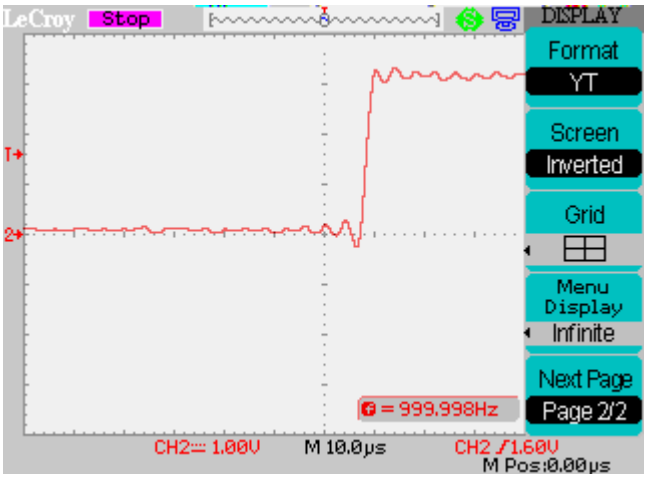
Step 6

Reset the Intensity and Brightness to their original values (60% and 40%). Select the Next Page on the Display menu. Press the Screen button to change the background color.



The choice of screen color is a largely a question of personal preference. Inverted mode is used in this document to save ink.

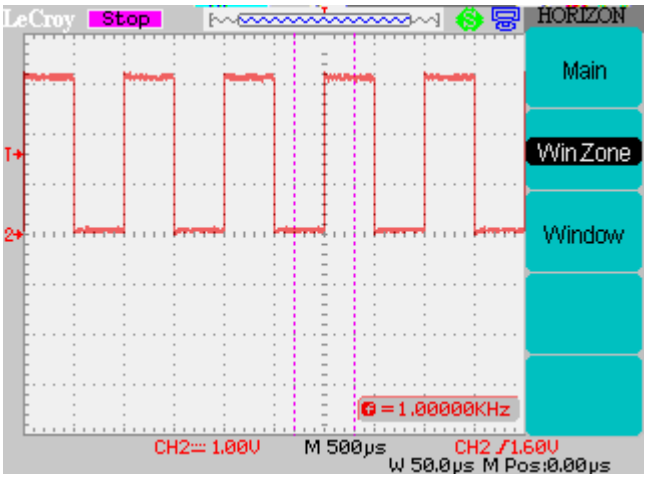
Press the Grid button to select the format of the background grid. Here only the central grid lines are displayed. After this test press the Grid button to reselect normal grid mode.



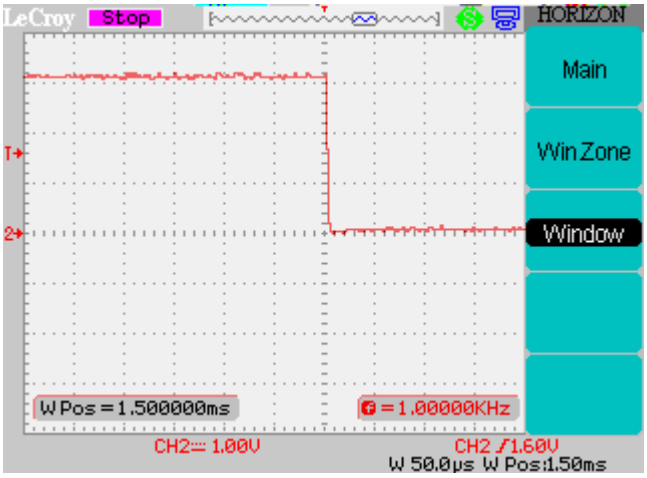
Press the Menu display to control menu operation. Selecting a value other than Infinite will result in the menu automatically disappearing after the specified time.

Step 7

Set the timebase to 500us/div and press RUN/STOP to show several cycles of the waveform. Now press the HORI MENU button and select WinZone in the menu. Notice that 2 vertical lines are displayed on the screen. Press the front panel RUN/STOP button again to capture the trace.



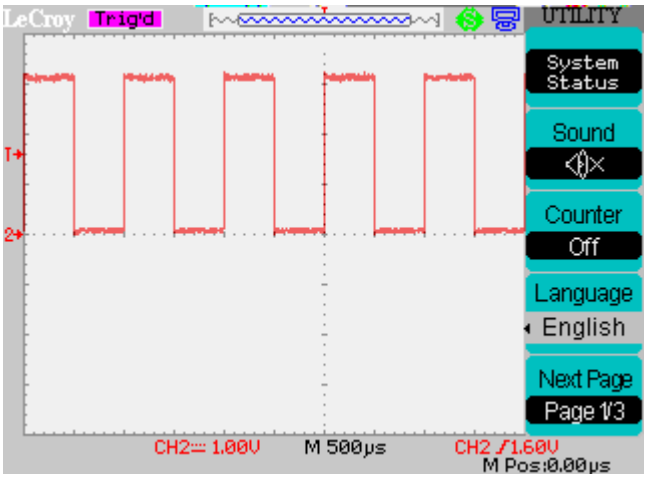
Select Window in the menu and notice that the region between the 2 vertical lines has been expanded to fill the whole screen. The front panel Horizontal timebase and Position knobs can be used to control the region of the original waveform which is displayed. Move to the second falling edge after the trigger and the position is momentarily displayed on the screen. The central indicator on the top line of the screen shows the position and size of the zoomed waveform with respect to the original in pictorial format. The bottom line of the screen shows details of the region in numerical format.



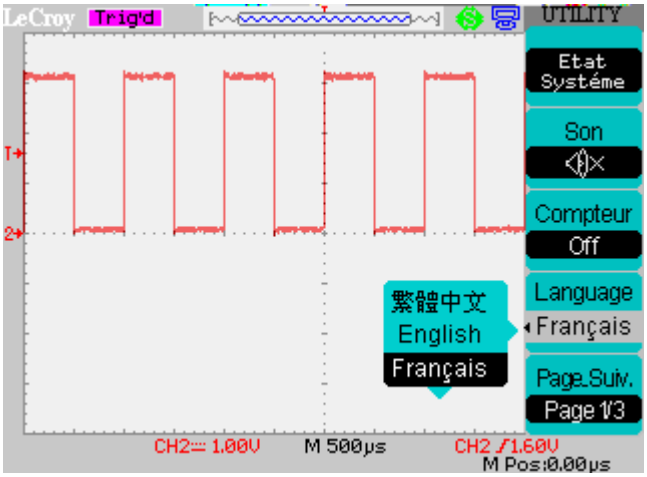
Select Main in the menu to display the original waveform and in the TRIG MENU set the mode to Auto.

Step 8

Press the UTILITY button and use the Counter button to turn off the frequency counter display. This menu also contains the Sound button which can be used to turn off the beep that normally occurs when any button is pressed.



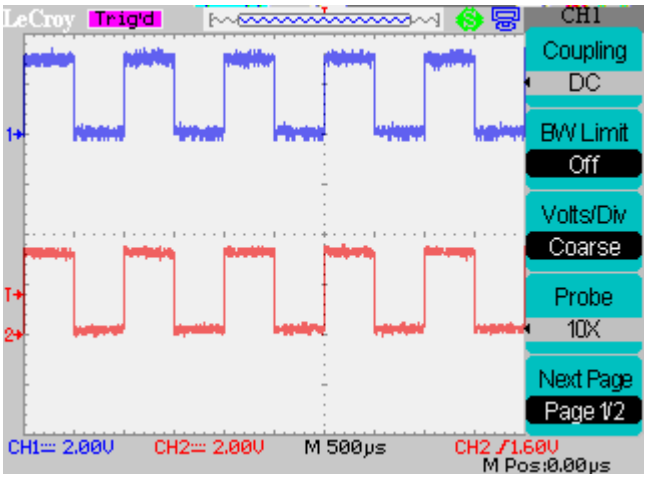
Press the Language function to change to a different language. When a button with multiple selections is pressed a small pop-up box appears alongside the button. While this pop-up is displayed the green LED above the front panel Intensity/Adjust knob is also illuminated. This knob functions as an Adjust knob and can be used to scroll through the available selections. When the LED goes out the knob reverts to its normal function.



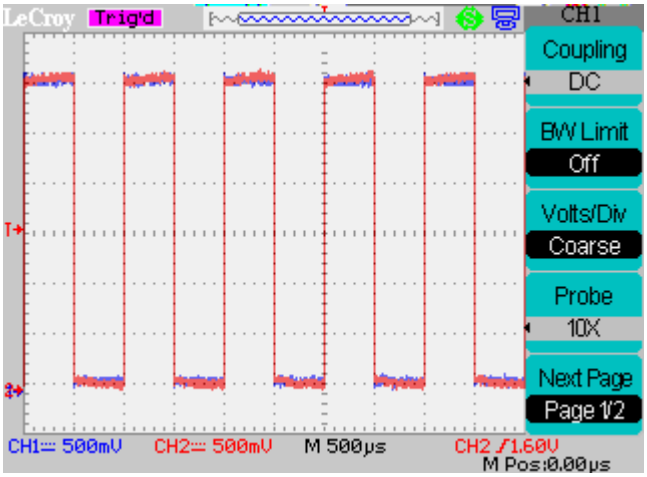
For this document English is selected as the menu language.

Step 9

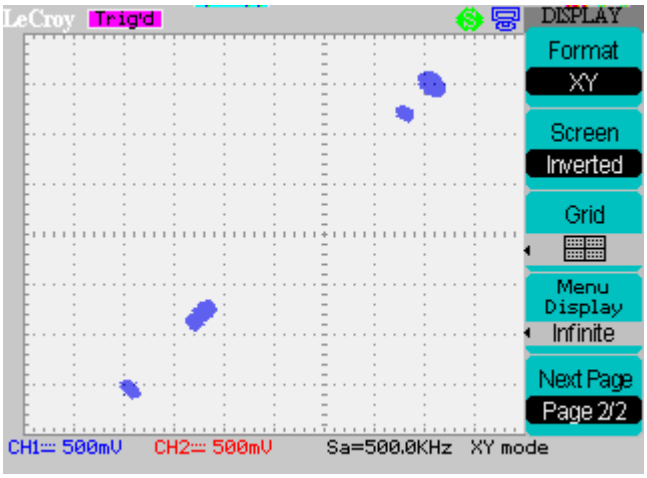
Connect the second probe to CH1 and the CAL loop. The front panel AUTO button can be used to find a suitable initial setting for the two signals. Remember on the CH1 menu to set the probe attenuation to 10X and the slider switch on the probe to X10.



Expand the traces to full the screen by adjusting each channel's voltage and position knobs.



Press DISPLAY and select page 2. Press Format to select XY. CH1 is now plotted against CH2 instead of both waveforms being plotted against time. Both waveforms are the same here so the resulting XY plot is not very interesting. In a real situation XY plots can provide significant additional information. Dot mode is always used for XY plots so turning on Persistence (DISPLAY menu page 1) is often beneficial.


LeCroy
Trig'd
DISPLAY
Format
XY
Screen
Inverted
Grid
Menu
Display
Infinite
Next Page
Page 2/2
CH1 500mV
CH2 500mV
Sa=500.0KHz
XY mode

Test

Question 1

Name the 2 display formats used in the WaveAce digital storage oscilloscope?

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How would you modify the display to view the actual sampled data points?

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Question 2

What does it mean when the green LED above the Intensity/Adjust knob is illuminated?

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Question 3

How can you enable display of the frequency counter?

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Summary

In this lab you learned how to configure the WaveAce to view waveforms in different formats. You now know the options for the screen background and the different grid modes.