Digital Measurements in WaveSurfer 3000 Oscilloscopes

TECHNICAL BRIEF

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Summary

The WaveSurfer 3000 oscilloscopes offer a full complement of timing parameters for measurement and analysis of digital busses.

Introduction

With the 16 digital channels available on Teledyne LeCroy's WaveSurfer 3000 oscilloscopes, users can gain deep insight into the behavior of digital busses by measuring and analyzing the circuit's timing parameters. Let's take a look at how easy it is to get started with digital measurements.

Procedure

For purposes of this demonstration, digital lines D0-D4 of the 16-channel digital lead set were connected to clock pins of varying speeds. Next, press the Dig (for Digital) button in the Vertical section of the front panel. This will activate the digital channels.

The measurement menu is accessible through the touch screen's Measure pull-down menu. Select Measure Setup (Figure 1).

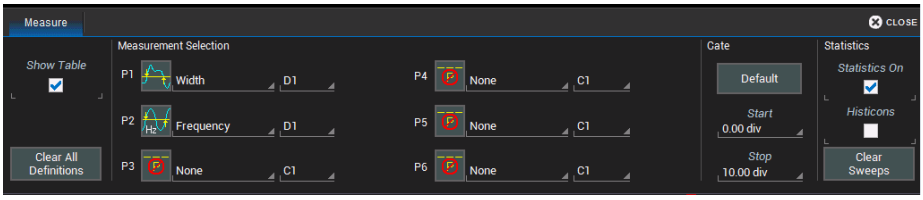

Figure 1: The Measure Setup showing P1 set for measurement of width and P2 set for measurement of frequency.

Next, specify the measurement parameter(s) and source(s) for the measurements. For this example, we'll measure the pulse width and frequency. Other supported parameters include duty cycle, delay, and period.

Under Measurement Selection in the Measure Setup dialog, touch P1. In the Select Measurement dialog, scroll down and touch Width. Next, touch the Source button for P1 in the Measure Setup dialog. Under category, select Digital Lines and touch the line of interest.

Repeat the above steps for P2, selecting Frequency in the Select Measurement dialog. Select the same digital line as for the width measurement.

Next, look to the far right in the Measure Setup dialog and turn on Statistics and Histicons by checking the boxes. Statistics and Histicons will provide insight into how the width and frequency values change over time (Figure 2). Figure 3 is a full-screen capture of the WaveSurfer 3000 with digital lines in use.

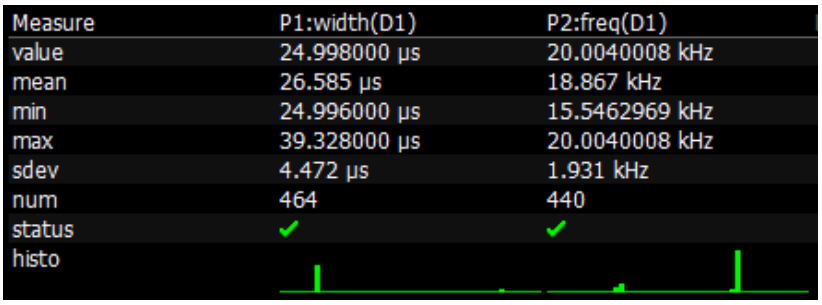

Figure 2: Turning on Statistics and Histograms for measurements shows how those measurements change over time.

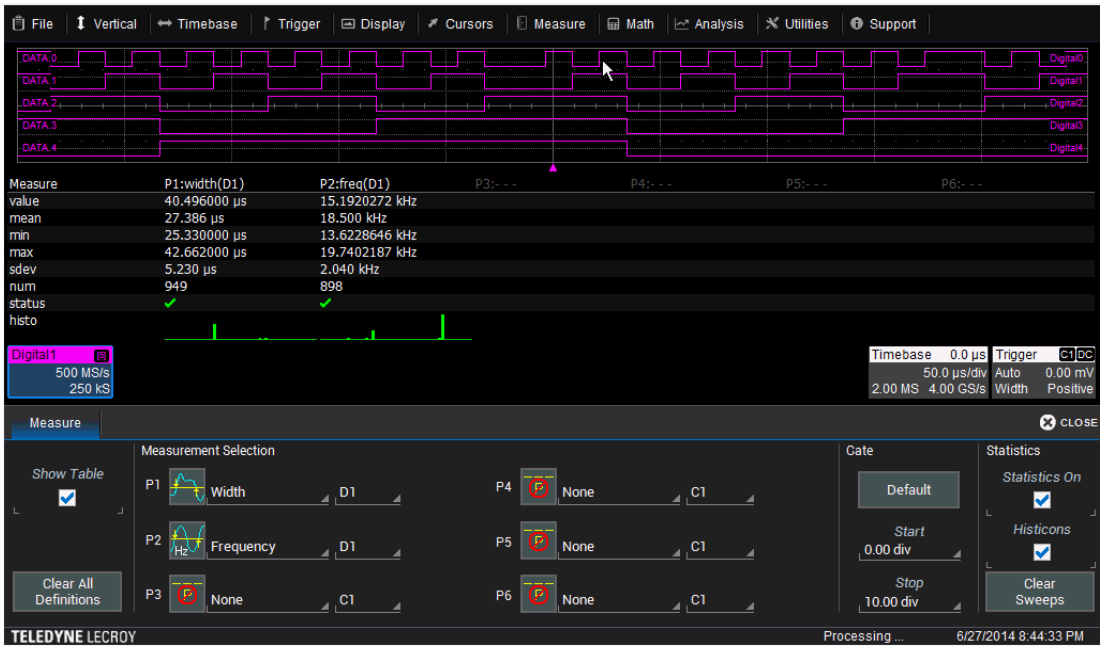

Figure 3: Shown is the WaveSurfer 3000 display with measurement setup dialog open.

Conclusion

Teledyne LeCroy's WaveSurfer 3000 oscilloscopes provide powerful tools for measurement and analysis of digital signals. All of these powerful tools make debugging of digital designs quick and painless.