XXL Memory - 100 MSamples

Scope Option Offers Longest Acquisition Memory Yet

LeCroy, who pioneered long acquisition memories in digital oscilloscopes, has again set the record for the longest commercially available acquisition memory with the -XXL memory option for the SDA, DDA, and WaveMaster series oscilloscopes. The new memory option increases the acquisition memory to 100 MegaSamples (MS) on each of two channels or 50 MS on each of four channels.

In addition to increasing the length of the acquisition memory the maximum number of segments available in sequence mode has been increased to 25,000.

Figure 1 shows how the -XXL option allows the user to capture 5 ms worth of data at the maximum sample rate of 20 GS/s. The 5 ms capture window is over three time longer than the nearest competitive offering.

The great advantage of this long acquisition is felt in applications such a serial data communications where an entire 2^{23} pseudo random binary sequence (PRBS) pattern can be acquired in a single acquisition. This means that pattern dependencies, such as inter-symbol interference (ISI) can be observed for the entire sequence. Likewise, jitter studies can assess timing uncertainties down to 200 Hz at the highest resolution of 50 ps/point.

The WaveMaster series scopes

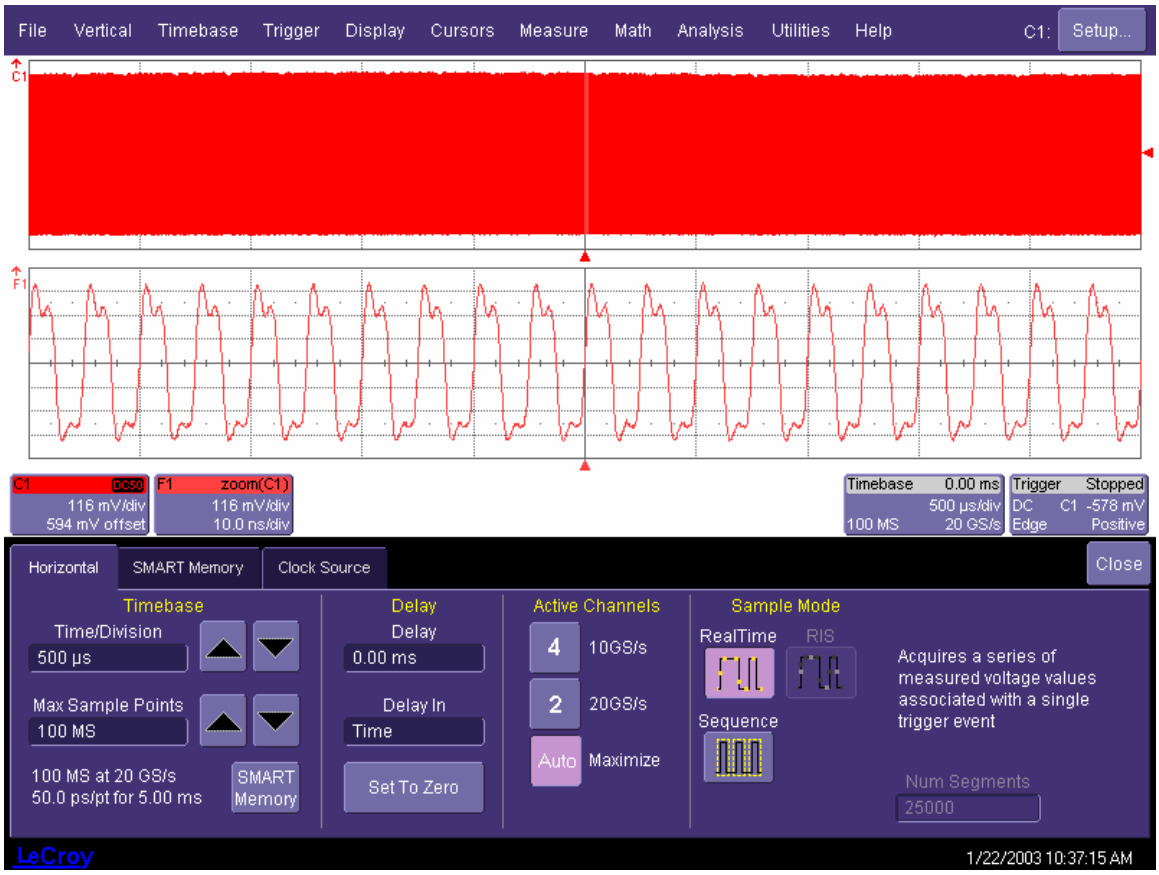

Figure 1 Timebase setup for a WaveMaster Series scope with option XXL showing the full 100 MS memory being used to acquire 5 ms of data at the maximum sampling rate of 20 GS/s

utilize fast CMOS memories which update at 3.3 GS/s. In a standard scope three memories are coupled to each digitizer realizing a 10 GS/s sample rate per channel. When the -XXL memory option is installed the memory is doubled and six memories are coupled to each ADC. This allows the scope to utilize 100 MS of memory. The table to the right summarizes the sample rate and memory available for each horizontal (time/division) scale. Note that the maximum memories are available at 500 µs/division. Below that range the maximum sampling rate is used and memory is apportioned as needed. For sweep speeds longer than 500 µs/division the sampling rate is decimated and memory is again apportioned as needed. In order to be able to write to each of the six multiplexed memories within the channel the decimation ratio must be a prime number that is not a factor of six. Since two and three are both factors of six the decimation jumps in steps of five. So the next sampling rate below 10 GS/s is 2 GS/s and the sampling rate below 20GS/s is 4 GS/s. In order to include more sweep rates which utilize all the available memory some ranges have there display width truncated.

If your application calls for measuring low frequency phenomena with the highest available time resolution then the 100 MS -XXL memory option is for you.

	50 M (4 Channel)			100M (2 Ch Combine)		
T/Div	S/R (MS/s)	Memory Length (S)	Display Length (%)	S/R (MS/s)	Memory Length (S)	Display Length (%)
20 ps	10,000.00	2	100	20,000.00	4	100
50 ps	10,000.00	5	100	20,000.00	10	100
100 ps	10,000.00	10	100	20,000.00	20	100
200 ps	10,000.00	20	100	20,000.00	40	100
500 ps	10,000.00	50	100	20,000.00	100	100
1 ns	10,000.00	100	100	20,000.00	200	100
2 ns	10,000.00	200	100	20,000.00	400	100
5 ns	10,000.00	500	100	20,000.00	1,000	100
10 ns	10,000.00	1,000	100	20,000.00	2,000	100
20 ns	10,000.00	2,000	100	20,000.00	4,000	100
50 ns	10,000.00	5,000	100	20,000.00	10,000	100
100 ns	10,000.00	10,000	100	20,000.00	20,000	100
200 ns	10,000.00	20,000	100	20,000.00	40,000	100
500 ns	10,000.00	50,000	100	20,000.00	100,000	100
1 us	10,000.00	100,000	100	20,000.00	200,000	100
2 us	10,000.00	200,000	100	20,000.00	400,000	100
5 us	10,000.00	500,000	100	20,000.00	1,000,000	100
10 us	10,000.00	1,000,000	100	20,000.00	2,000,000	100
20 us	10,000.00	2,000,000	100	20,000.00	4,000,000	100
50 us	10,000.00	5,000,000	100	20,000.00	10,000,000	100
100 us	10,000.00	10,000,000	100	20,000.00	20,000,000	100
200 us	10,000.00	20,000,000	100	20,000.00	40,000,000	100
500 us	10,000.00	50,000,000	100	20,000.00	100,000,000	100
1 ms	2,000.00	20,000,000	100	4,000.00	40,000,000	100
2 ms	2,000.00	40,000,000	100	4,000.00	80,000,000	100
5 ms	400.00	20,000,000	100	800.00	40,000,000	100
10 ms	400.00	40,000,000	100	800.00	80,000,000	100
20 ms	80.00	16,000,000	100	160.00	32,000,000	100
50 ms	80.00	40,000,000	100	160.00	80,000,000	100
100 ms	16.00	16,000,000	100	32.00	32,000,000	100
200 ms	16.00	32,000,000	100	32.00	64,000,000	100
500 ms	3.20	16,000,000	100	6.40	32,000,000	100
1 s	3.20	32,000,000	100	6.40	64,000,000	100
2 s	3.20	50,000,000	78	6.40	100,000,000	78
5 s	0.64	32,000,000	100	1.28	64,000,000	100
10 s	0.64	50,000,000	78	1.28	100,000,000	78

Figure 2 Table of available sampling rates and memory lengths for the -XXL memory option