

Re: Digital O'scopes: Sampling Rate vs. Sample Storage Space

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- *From:* JosephKK <quiettechblue@xxxxxxxx>
 - *Date:* Wed, 20 Aug 2008 22:15:06 -0700
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On Mon, 18 Aug 2008 19:27:59 -0700 (PDT), "David L. Jones" <altzone@xxxxxxxx> wrote:

On Aug 16, 8:31 am, Joerg <notthisjoerg...@xxxxxxxxxxxxxxxxxxxxxxxxxxxx> wrote:

Rich Webb wrote:

On Fri, 15 Aug 2008 14:28:23 -0700 (PDT), soda...@xxxxxxxx wrote:

What is the relative importance of sampling rate versus sample memory in a digital oscilloscope?

I'm looking at two candidates: one has a sampling rate of 2GS/sec, but only 2.5K of sample memory, while the other samples at only 400MS/sec, but has 1M of sample memory.

For debugging microcontroller systems with typical peripherals (I2C, SPI, ADC, LCD), which is more important, sampling rate or sample memory size?

For your stated purpose, I'd say that a better candidate would be a

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logic analyzer. Whereas PC-based, USB-interfaced o'scopes tend to be a bit underpowered, similar logic analyzers are often cost effective and a good fit for a home/hobby lab. Hit Google for "usb logic analyzer" for a long list of candidates. My personal favorite (which gets a lot of use developing professional products as well) is the Intronix logic analyzer from <http://www.pctestinstruments.com/>. This one includes "interpreters" for RS-232, I2C, SPI, and CAN protocols; very handy.

A logic analyzer cannot easily detect marginal line conditions such as overshoots, reflections, marginal levels, bus contentions. I'd go with a scope.

I'd second that.

Logic analysers are handy tools, but NOT as good a scope. You can't beat seeing the true probed digital signal instead of a 0/1 that the logic analyser thinks it sees.

Dave.

It is not that simple. Capturing 32, 64 or more channels simultaneously at speed with decent record lengths can tell you things about software – hardware interaction that a scope never will. Protocol analyzers and bus analyzers also have their place.