

Digitizer Cards Get FPGA-Based Signal Averaging Capabilities

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Using the latest in FPGA technology Spectrum has created new firmware packages that allow its high-speed M4i series digitizer cards to perform on-board signal averaging. The M4i.44xx series cards offer real-time sampling rates of up to 500 MS/s with 14 bit resolution and 250 MS/s with 16 bit resolution. The new averaging package features ultrafast performance being able to acquire and average signals at rates of over 5,000,000 events per second. The M4i series cards are available with two or four channels and, thanks to the cards fast PCIe bus, acquired and averaged data can be transferred directly to a host PC at speeds of up to 3.4 GB/s.

“The new averaging package, together with the M4i.44xx cards exceptional digitizer performance and fast PCIe bus, makes this development one of the most powerful averaging systems available today,” said Spectrums Director of Technology, Oliver Rovini. “With these new FPGA based processing functions we are extending the capabilities of our digitizer products by improving measurement sensitivity and throughput. Engineers and scientists who are looking for faster, more accurate measurements for repetitive signals should find this development of interest.”

About Signal Averaging

Signal averaging is a common time domain based processing technique that is used to reduce the random noise component of a signal, improving its signal-to-noise ratio (SNR), while at the same time increasing a digitizer's measurement resolution and dynamic range. Ideally, if the signal and noise are uncorrelated, the noise being random while the signal is repetitive, then the averaging function can improve the SNR in proportion to the square root of the number of measurements (or averages). For example, averaging a signal 256 times may improve the SNR by as much as 24 dB or increase measurement resolution by about 4 bits. Signal averaging is a vital tool in improving measurement sensitivity in applications such as mass spectroscopy, radar, ultrasonic testing, laser ranging, medical imaging, component testing and nanotechnology.

The averaging option (-spavg) is available now on the M4i.44xx series of PCIe high-speed digitizers as well as on the Ethernet/LXI digitizer product of the digitizerNETBOX DN2.44x. Please contact info@spec.com for more information or visit our web site at www.spectrum-instrumentation.com.

About Spectrum Systementwicklung Microelectronic GmbH

Spectrum is a pioneer in the design and manufacture of PC based test and measurement instrumentation that is used for electronic signal capture, generation and analysis. The company specializes in high-speed digitizer and generator technology and has available over 400 modular products in the most popular industry standards; PCIe, LXI and PXI. The company is headquartered in Grosshansdorf, Germany and sells its products worldwide via an extensive sales network offering outstanding support directly from the design engineers. More information about Spectrum can be found at www.spectrum-instrumentation.com.