

PXIe Modules allow Precision Signal Generation

Combined speed and flexibility means continuously replayed signals at a high output rate

Grosshansdorf, Germany, October 2016, 2016 – Spectrum's M4x series of PXIe Arbitrary Waveform Generators (AWGs) offer a cost effective solution for automated testing applications that require fast and accurate electronic signal generation. Based on the modular PXIe instrumentation standard, the M4x series includes five new modules that provide one, two or four channels.

Each channel is equipped with the latest 16 bit digital-to-analog converter (DAC) technology and the various models (see table 1) have maximum clocking rates of 625 MS/s or 1.25 GS/s. The combination of high resolution and fast clocking rates makes them ideal for generating precise and flexible wave shapes with frequency content from DC to 400 MHz.



PXIe speed and performance

The dual width 3U AWGs feature a PXIe x4 Gen 2 interface that allows waveform data to be transferred to the module's impressive 4 GB of on-board memory, at speeds up to 1.4 GB/s. Fully PXIe compliant, the modules can be used in any PXIe or PXI hybrid chassis. Support is also provided for chassis distribution features such as the PXIe/PXI reference clock, star-trigger and trigger bus.

Advanced waveform replay modes

To allow the generation of long and complex waveforms, the AWGs include a number of operating modes such as Single-Shot, Loop, FIFO, Gating and Sequence Replay. In FIFO mode, the instruments can stream data continuously from PC memory to the AWG memory over the PXIe interface. The AWGs can even output signals while new waveform data is being sent to the on-board memory. The operating modes, together with the fast data transfer and the large on-board memories, make the M4x series AWGs among the most flexible on the market.

For further versatility, each channel of the AWG is clocked using a precision phase locked loop (PLL) control system that can be generated internally or from an external clock or reference. Three front-panel, multipurpose I/O connectors allow access to synchronous marker outputs, asynchronous digital I/O lines, the trigger output, the run and arm status and the PLL reference clock.

Ideal for automated test

The AWGs are designed to output signals that emulate those found in the real world, delivering programmable output levels from ± 200 mV to ± 4 V (± 5 V for 625 MS/s models) into high-impedance and ± 100 mV up to ± 2 V (± 2.5 V for 625 MS/s models) for 50 Ω termination. Using 16 bit digital to analog conversion, the AWGs also allow fine signal details to be generated. They deliver outstanding dynamic performance with signal-to-noise (SNR) up to 72 dB, spurious free dynamic range (SFDR) up to 98 dB and noise spectral density (NSD) at an impressive -150 dBm/Hz.

To allow easy integration into any test system, the units are shipped with a host of software tools so users can create their own control programs with almost any popular programming language. This includes C++, Visual Basic, VB.NET, C#, VisualJ#, Delphi, Java and Python code. Third party software support is also provided for LabVIEW, LabWindows and MATLAB for users not wanting to write software.

Spectrum also offers its SBench6-Pro software that lets users control all of the AWG's operating modes and hardware settings from a simple, easy-to-use, graphical user interface. The software has a host of built-in features for waveform creation, data analysis and documentation. These include the EasyGenerator function

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for producing standard wave shapes such as sine, rectangular, triangle, saw-tooth, SINC and DC. Waveforms can also be created from equations, imported from other devices (such as digitizers and oscilloscopes) or other software programs. SBench6 allows data import and export in the most popular formats such as ASCII, binary and WAV.

The M4x series products are available with immediate delivery. All units are shipped factory tested and include a base version of Spectrum's SBench 6 software, support drivers for most popular programming languages and a two-year manufacturer's warranty. Technical support, including software and firmware updates, is available free of charge.

For more information, please visit <http://spectrum-instrumentation.com/de/m4x66xx-x4-pxi-express-pxie-x4>

Model	Channels	Sampling Speed	Resolution	Bandwidth	On-board Memory
M4x.6630-x4	1	1.25 GS/s	16 Bit	400 MHz	4 GByte
M4x.6631-x4	2	1.25 GS/s	16 Bit	400 MHz	4 GByte
M4x.6620-x4	1	625 MS/s	16 Bit	200 MHz	4 GByte
M4x.6621-x4	2	625 MS/s	16 Bit	200 MHz	4 GByte
M4x.6622-x4	4	625 MS/s	16 Bit	200 MHz	4 GByte

Table 1. M4x AWG series selection table

About Spectrum Instrumentation

Founded in 1989 Spectrum is a pioneer in the design and manufacture of PC based test and measurement instrumentation used for electronic signal capture, generation and analysis. The company specializes in high-speed digitizer and generator technology and has available over 450 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.

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