Virtex-6 FPGA Modules Target Radar and Communication Applications

Pentek, Inc., today announced a major expansion of its popular Cobalt family of data acquisition modules for high-performance applications. With the release of four new XMC and four new PCI Express (PCIe) modules, the company has tripled the number of Cobalt boards while extending the sampling frequency range to 1 GHz and adding key software radio functions. All Cobalt modules utilize the industry's most advanced FPGA technology ? Xilinx's Virtex-6 FPGA family ? for on-board signal processing.

"It's been less than a year since the first member of the Cobalt family set the standard for high-performance data conversion modules," noted Rodger Hosking, vice president of Pentek. "With these new additions, we now offer a full range of choices for data conversion frequencies and channel counts in both turnkey and customizable versions," he concluded.

All Cobalt family members are available in both XMC and PCIe formats to satisfy a range of system needs. The 71xxx series includes ruggedized XMC-format modules with extended temperature range options for deployed applications such as an unmanned aerial vehicle (UAV) collecting radar and signal intelligence data. The 78xxx series uses the commercial PCIe format for use in desktop PCs and blade servers for R&D and laboratory environments.

"The Virtex-6 FPGA family offers previously unattainable DSP performance levels to handle the toughest real-time signal processing tasks due to its advanced DSP48E1 slices," said Xilinx senior manager, Platform Solutions, Raj Seelam. "Pentek's Cobalt family delivers a large variety of Virtex-6 FPGA-based products, allowing customers

to optimize their FPGA-based applications with the performance and I/O choices they need."

Four New Module Types
Today's release includes four module types in each format:
• 71621/78621 – Three 16-bit, 200 MHz A/Ds, three multiband DDCs (digital downconverters), two 16-bit 800 MHz D/As with DUC (digital upconverter) and interpolator
• 71630/78630 – One 12-bit, 1 GHz A/D and one 16-bit 1 GHz D/A
• 71650/78650 – Two 12-bit, 500 MHz A/Ds and two 16-bit, 800 MHz D/As with DUC
• 71661/78661 – Four 16-bit, 200 MHz A/Ds and four multiband DDCs

Each module features a Xilinx Virtex-6 LXT or SXT FPGA fully connected to all data and control paths. The FPGAs contain factory-installed functions including data multiplexing, channel selection, data packing, gating, triggering, time stamping, and memory control with additional capacity for user-defined functions. The modules support a range of Virtex-6 devices, allowing customers to choose the device density that best fits their requirements.

Other key features common to all Cobalt modules include:

•Extends A/D and D/A sampling rates to 1 GHz
•Embedded IP delivers turnkey software radio solutions
•GateFlow Design Kit speeds integration of custom IP
•FPGA device options offer scalable performance
• Synch bus for synchronizing multiple modules to increase channel count
• VCO sample clock synthesizers locked to an external system reference
• PCIe (Gen 2) interfaces for x4 and x8
• Secondary gigabit serial interface
• Modular memory options for QDRII+ SRAM and DDR3 SDRAM
• Intelligent, chaining DMA engines

Development Support
Users can readily integrate custom FPGA code with standard factory-installed IP using Pentek's GateFlow FPGA design kits. GateFlow kits include VHDL source files, test benches and complete documentation, and are fully compatible with the Xilinx IDS Foundation design tools.

The ReadyFlow board support packages for C-language programming include drivers, project files and example code demonstrating all features. ReadyFlow supports Windows, Linux and VxWorks operating systems.

Price and Delivery
All Cobalt modules are available immediately starting at $10,995 USD; delivery is stock to 10 weeks ARO.

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