# VPX boards Offer Xilinx Virtex®-6 FPGAs for Demanding Military and Avionics Applications

Pentek, Inc. today unveiled the first in a family of ruggedized boards for high-performance military and avionics applications utilizing the industry's most advanced FPGA technology. Pentek's 53xxx Cobalt™ board family incorporates Xilinx's Virtex-6 FPGAs for on-board signal processing, delivering digital sampling rates to 1 GHz in a compact 3U VPX form factor.

By combining processing, data conversion, and preconfigured functions, the 53xxx family is suitable for such applications as UAV, CommINT (Communications Intelligence) transceivers, airborne communications recorders, airborne radar countermeasures, shipboard diversity transceivers and armored vehicle anti-IED systems.

VPX is a new, widely-adopted COTS standard that merges the latest connector and packaging offerings with the most advanced gigabit serial fabric technology to provide military systems with a solid migration path for existing VMEbus solutions. Pentek's 53xxx VPX modules support VPX REDI (VITA 48) and feature the ruggedized construction and extended temperature options essential for military installations. The products are available in both air-cooled and conduction-cooled formats.

Pentek's 53xxx Cobalt family is the first to bring Virtex-6 FPGA technology to the VPX format. With more than twice the resources of previous Virtex generations, including new enhancements in digital signal processing, logic and clocking, the Virtex-6 family provides developers with a previously unavailable level of customizable processing power.

Pentek gives the FPGA full access to all data and control paths and then harnesses its raw processing power by pre-configuring boards with key functions. This strategy provides a wealth of useful turn-key operations, while leaving enough unused FPGA capacity for adding customer-developed IP.

All Cobalt VPX products are available with a choice of Xilinx Virtex-6 LXT or SXT FPGA devices to match the application. Other common features of Cobalt boards include PCI Express (Gen 2) interfaces up to 8 lanes wide, synchronous clocking locked to an external system reference, and an LVPECL synch bus for synchronizing multiple modules to increase channel count.

The initial release of boards in the 3U VPX series includes:

* 53660, with four 16-bit, 200 MHz A/Ds

* 53661 with four 16-bit, 200 MHz A/Ds and four multiband DDCs

* 53620 with three 16-bit, 200 MHz A/Ds and two16-bit, 800 MHz D/As with DUC

* 53621 with three 16-bit, 200 MHz A/Ds, three multiband DDCs, and two 16-bit 800 MHz D/As with DUC and interpolator

* 53650 with two 12-bit, 500 MHz A/Ds and two 16-bit, 800 MHz D/As with DUC

* 53630 with one 12-bit, 1 GHz A/D and one 16-bit, 1 GHz D/A

Users can readily integrate custom processing algorithms with the factory-installed IP in Cobalt devices using Pentek's GateFlow FPGA design kits. The kits facilitate implementation of DSP functions such as FFTs, FIR filters and software-radio blocks. GateFlow kits include VHDL source files for all standard board features and work in conjunction with the Xilinx IDS Foundation design tools.

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