

The Onyx Family

The Pentek Onyx® family includes radar, and software radio boards based on the Xilinx Virtex-7 FPGA. This comprehensive product line offers products that satisfy a wide range of applications.

Form Factors

All products in the Onyx family are available in the following form factors:

- XMC
- x8 PCI Express
- AMC
- 3U OpenVPX
- 6U OpenVPX
- 3U CompactPCI
- 6U CompactPCI

The Onyx Architecture

All of the board's data and control paths are accessible by the FPGA, enabling factory-installed functions including data multiplexing, channel selection, data packing, gating, triggering and memory control. The Onyx architecture organizes the FPGA as a container for data processing applications where each function exists as an (IP) module.

All members of the Onyx family are delivered with factory-installed applications ideally matched to the board's analog interfaces. In addition, IP modules for on-board memories, a controller for all data clocking and synchronization functions, a test signal generator, and a Gen. 3 PCIe interface complete the factory-installed functions and enable the board to operate as a complete turnkey solution without the need to develop any FPGA IP.

GateFlow

For applications that require specialized functions, users can install their own custom IP for data processing. Pentek GateFlow® FPGA Design Kits include all of the installed modules as documented source code. Developers can integrate their own IP with the installed functions or use the GateFlow kit to replace the Pentek IP with their own.

GateXpress

The Onyx architecture includes GateXpress®, a sophisticated FPGA-PCIe configuration manager for loading and reloading the FPGA. At power up, GateXpress immediately presents a PCIe target for the host computer to discover, effectively giving the FPGA time to load from FLASH. This is especially important for larger FPGAs where the loading times can exceed the PCIe discovery window, typically 100 msec on most PCs.

GateXpress handles the hardware negotiation simplifying and streamlining the loading task. In addition, GateXpress preserves the PCIe configuration space allowing dynamic FPGA reconfiguration without needing to reset the host computer.

Synchronization

An internal timing bus provides board timing and synchronization. The bus includes a clock, sync and gate or trigger signals. A Clock/Sync connector allows multiple boards to be synchronized. Multiple boards can be driven from the bus master, thereby supporting synchronous sampling and sync functions across all connected boards.

Ruggedization

Except for the PCIe form factor, all other boards are available in various ruggedized formats up to and including conduction cooling.

SPARK Development Systems

The Pentek SPARK® systems are fully-integrated development systems for Pentek Cobalt® Onyx® and Flexor® software radio, data acquisition and I/O boards. They save engineers and system integrators the time and expense of designing and building systems that ensure optimum performance of Pentek boards.



XMC Module



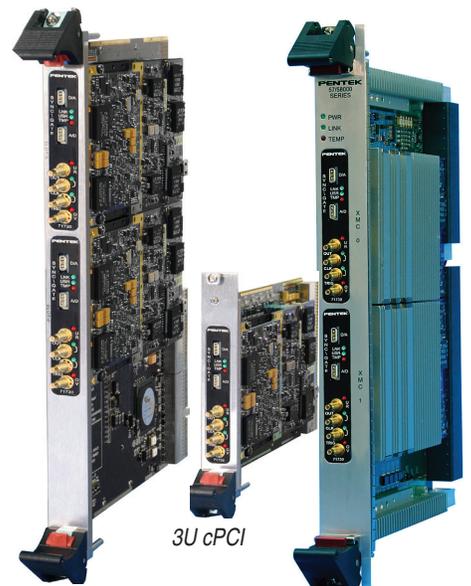
x8 PCIe



AMC



3U VPX
Commercial (left) and
Rugged



6U cPCI
Double Density

6U VPX
Double Density