PENTEK

COMPANY PROFILE & PRODUCT OVERVIEW

DIGITAL SIGNAL PROCESSING BOARDS •

DATA ACQUISITION BOARDS •

SOFTWARE RADIO BOARDS •

RECORDING SYSTEMS •

XMC • FMC • AMC • VPX • cPCI • PCIe

COMMERCIAL • RUGGED • PORTABLE • RACKMOUNT • SFF

About Pentek, Inc.

Pentek designs embedded computer boards and recording systems for DSP, software radio and data acquisition as an ISO 9001:2015 certified company. Products feature high-speed digital and analog interfaces and FPGAs in AMC, XMC, FMC, PMC, cPCI, PCIe, and VPX suitable for both COTS commercial and rugged environments.

Pentek's 88,000 sq. ft. facility in Upper Saddle River, NJ

"Pentek takes pride in listening to its customers and creating new products to meet their needs. We promise an atmosphere of freedom and creativity among our engineers, so they can design industry-leading products to satisfy the most demanding applications. This has been the key to our success through the years."

- Rodger Hosking
Vice President & Co-Founder, Pentek

Company Brief

- Designs and builds boards and recording systems for 30 years satisfying customer demands in many military programs and commercial markets.
- Provides high-performance COTS and rugged board & recording system solutions for the lab and deployment.
- Pentek engineers maintain a thorough understanding of advanced signal theory and real-world system considerations.
- Small business, privately held, manufactures in the USA.
- Serves high-end radar, communications, SIGINT, beamforming, software radio & SATCOM markets.
- Optimizes design for maximum performance and to satisfy critical requirements.
- Pentek is a technology partner with deep knowledge of customer applications.
- Offers complete technical documentation that saves development time.
- Committed to customer satisfaction with free, lifetime customer support.
- Provides long term product availability and life-cycle support with automated life cycle management notification system.
- Bonded Inventory Program extends product longevity.
- Bundle discount programs and volume discounts available.

Product Overview

You can select from a variety of recording systems and processor boards with the industry's most extensive line of advanced analog and digital I/O products, along with exclusive development tools that help you get up and running quickly.

High-Speed Real-Time Recording Systems
- Economical alternatives to in-house development
- Fully tested and ready to run right out-of-the-box
- Full-featured SystemFlow® recording software
- Sentinel® Intelligent Signal Scanning Software
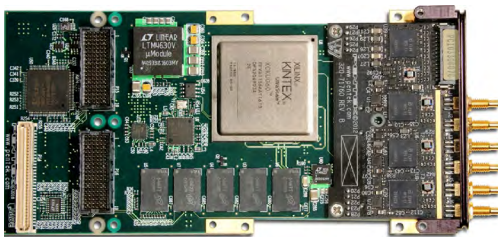- ArchiTek™ FPGA Development Suite

Processor Engines
- FPGA processors and IP
- Navigator™ Design Suite

Data Acquisition
- Single or multichannel A/Ds and D/As
- Sampling rates to 6.4 GHz
- Resolution to 16 bits
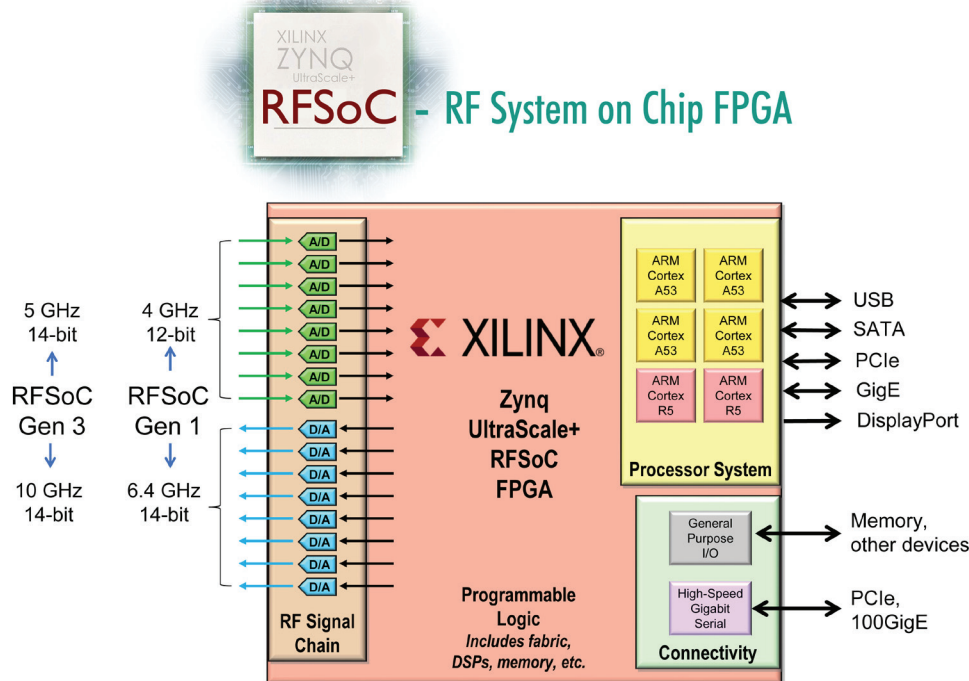- Optical, sFPDP and Gbit Ethernet interfaces

Software Radio
- Up to 2200 channels per slot
- Narrow-, wide- & multi-band products
- Downconverters and upconverters

TALON
Recording Systems

JADE
Kintex UltraScale

Onyx
Virtex-7

Cobalt
Virtex-6

QUARTZ
UltraScale+ RFSoC

Flexor
FMC

PENTEK

QUARTZ

The Quartz Family: Xilinx Zynq UltraScale+ RFSoC

The Pentek Quartz® family is based on the Xilinx Zynq® UltraScale+™ RFSoC FPGA. Quartz brings the performance and high density integration of the RFSoC to a wide range of different application spaces with a uniquely flexible design path.

Quartz products are available in standard form factors including 3U VPX, SOSA aligned 3U VPX, PCIe, as well as a SFF rugged enclosure and SFF subsystem. In addition, QuartzXM modules can be deployed on an application-specific custom carrier using the QuartzXM Carrier Design Package. Designed to work with Pentek's **Navigator**® Design Suite tools, the combination of Quartz and Navigator offers users a streamlined path to IP development and deployment.

Model 6003
8-Channel A/D & D/A
Zynq UltraScale+ RFSoC Gen 3 Processor -
QuartzXM eXpress Module

RFSoC – RF System on Chip FPGA

Model 5953
8-Channel
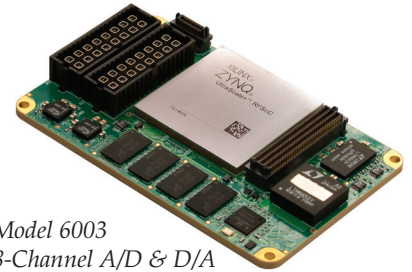*A/D & D/A Zynq UltraScale+*
RFSoC Gen 3 Processor -
3U VPX

RFSoC Advantages

The Xilinx Zynq UltraScale+ RFSoC Gen 3 integrates eight RF-class A/Ds and D/As into the Zynq FPGA fabric along with quad ARM Cortex-A53 and dual ARM Cortex-R5 processors, creating a multichannel data conversion and processing solution on a single chip.
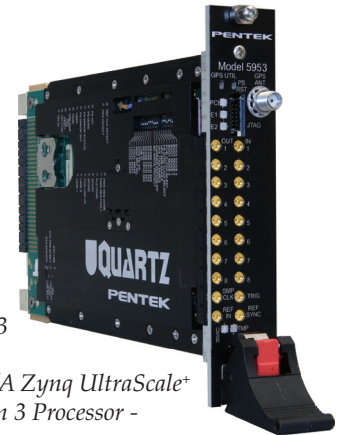
Quartz RFSoC Board Architecture

Complementing the RFSoC's on-chip resources, the Quartz products add:

- Dual 100 GigE optical interfaces for high-bandwidth data streaming
- On-board GPS receiver
- 16 GB of DDR4 SDRAM
- LVDS connections to the FPGA for custom I/O
- Sophisticated clocking for multi-channel and multi-board synchronization
- x8 PCIe Gen 3 system interface
- QuartzXM eXpress Module design for flexible development and deployment
- Factory-installed IP for waveform generation, real-time data acquisition, and more
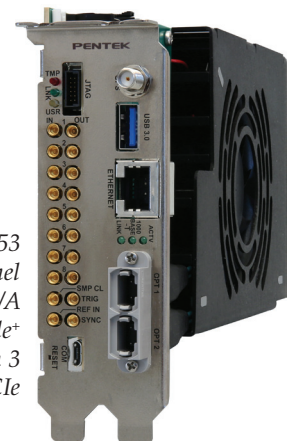- Air-cooled and conduction-cooled versions

Model 8256
SOSA Aligned Development Platform
featuring the Model 5553 SOSA Aligned
3U VPX board.

Model 7053
8-Channel
A/D & D/A
Zynq UltraScale+
RFSoC Gen 3
Processor - PCIe

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Quartz Product Solutions:

QuartzXM eXpress Module: the Cornerstone of Quartz Product Family

The Model 6003 QuartzXM eXpress Module speeds custom deployment of the Gen 3 RFSoC in SWaP-critical environments. Measuring only 2.5 by 4 inches, the eight-channel 5 GHz 14-bit A/Ds & 10 GHz 14-bit D/As QuartzXM module includes all of the circuitry needed to maximize the performance of the RFSoC. As the central core of the Quartz RFSoC products, the Model 6003 module migrates easily to other carriers with standard or custom form factors.

QuartzXM Carrier Design Package

The Model 4801 QuartzXM Design Package supports customers interested in building their own carrier for the QuartzXM modules by sharing Pentek's RFSoC design expertise. QuartzXM module documentation includes thermal profiles, 3D mechanical models, pin definitions, and electrical specifications of all signals. Model 595x 3U VPX carrier documentation includes reference design schematics, PCB design guidelines, routing rules, and much more. A design review by Pentek engineers is included to help speed successful development.

Ready-to-Use Quartz Development Platforms

The Model 8257 is a low-cost 3U VPX chassis ideal for developing applications on Pentek's Model 5950 and Model 5953 (Gen 3) Quartz RFSoC boards. The 8257 can be configured with optional rear-panel dual MPO optical connectors to support dual 100 GigE interfaces and VITA 66.4.

The Model 8256 3U VPX chassis is an ideal development platform for Pentek's SOSA aligned Models 5550 and 5553 (Gen 3) eight-channel A/D & D/A Zynq UltraScale+ RFSoC 3U VPX processors.

5903 High-Speed Synchronizer and Distribution Board

The Model 5903 High-Speed Synchronizer and Distribution Board synchronizes multiple Pentek Quartz family boards within a system. It enables synchronous sampling and timing for a wide range of multichannel high-speed data acquisition, DSP, radar, EW and software radio applications.

An on-board programmable clock generator creates the sample clock along with the required complimentary clocks. Up to eight Quartz boards can be synchronized using the 5903, with each receiving a common clock along with timing signals that can be used for synchronizing, triggering and gating functions.

Navigator Design Suite for Streamlined IP Development

Pentek's Navigator Design Suite includes: Navigator FDK (FPGA Design Kit) for custom IP and Navigator BSP (Board Support Package) for creating host software applications.

The Navigator FDK includes the board's entire FPGA design as a block diagram that can be graphically edited in Xilinx's Vivado tool suite, with full source code and documentation.

Developers can integrate their IP along with the factory-installed functions or use the Navigator kit to replace the IP with their own. The Navigator FDK Library is fully AXI-4 compliant, providing a well-defined interface for developing custom IP or integrating IP from other sources.

The Navigator BSP supports Xilinx's PetaLinux on the ARM processors. Users can work efficiently using high-level API functions, or gain full access to the underlying libraries including source code. Pentek provides numerous examples to assist in the development of new applications.

Whether the QuartzXM is deployed on a Pentek carrier or a custom carrier, developers will find the included IP cores and examples an ideal foundation for building custom applications.

Model 6353
8 Channel A/D & D/A Zynq UltraScale+
RFSoC Gen 3 Processor - SFF Enclosure
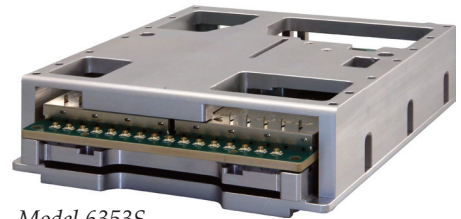
Model 6353S
8 Channel A/D & D/A Zynq UltraScale+
RFSoC Gen 3 Processor - SFF Subsystem

*Model 8257*
1-Slot 3U Quartz Development Chassis

Model 5903
High-Speed System
Synchronization
and Distribution Amplifier
- 3U VPX

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Example Application 1 - High Bandwidth Data Streaming

The RFSoC's eight 5 GSPS A/Ds are capable of producing an aggregate data rate of 80 GBytes/sec when all channels are enabled. While capturing this much raw data is not feasible, the A/Ds' built-in digital downconverters can reduce this data throughput in many applications to a rate reasonable for the data-streaming and storage components downstream in the system.

In some applications, capturing the raw, full-bandwidth data is crucial. The 6353's dual 100 GigE UDP engine provides a high-bandwidth path for moving data off of the board (shown with blue arrows). Along with the built-in data acquisition IP with the A/Ds running at 4 GSPS, the 6353 can stream two full bandwidth A/D data streams over optical cable to a downstream storage or processing subsystem. Other converter speeds and bandwidths are possible with user installed IP.

The 6353's built-in IP functions also provide paths for capturing data in the DDR4 SDRAM memory for retrieval by the ARM processing system or the FPGA programmable logic (shown with red arrows) and for sending data over the ARM's 1 GigE interface (shown in yellow arrows).
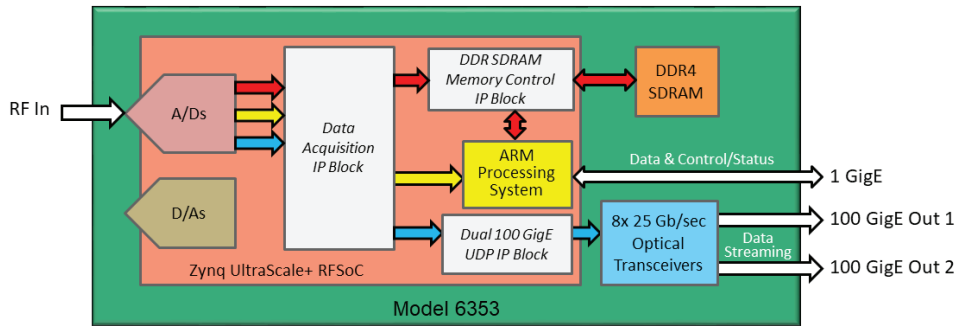

Example Application 2 - Waveform Generator

The 5950's IP supports multiple D/A signal source options. A simple loopback path allows samples received by the A/Ds to be output through the D/As. A CW signal generator produces a sine output with programmable frequency. A chirp generator, ideal for radar applications, outputs sweep signals with programmable frequency, ramp, phase offset, and length. The generators also include flexible trigger options with both internal and external triggering.
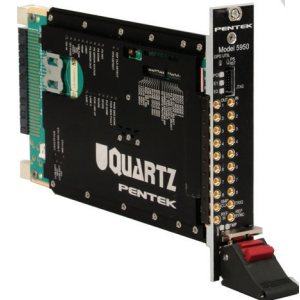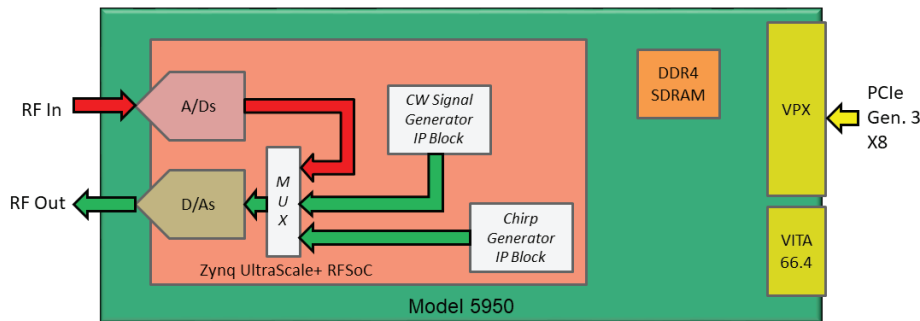
Example Application 3 - Multimode Data Acquisition System

In some applications, multiple data acquisition modes may need to be operated at the same time. A required dataflow could be full-bandwidth streaming of a single A/D channel over 100 GigE to a data recorder while another channel of A/D data is stored as snapshots in the board's DDR4 SDRAM and read by the ARM processor while yet other A/D channels are down converted using the A/D's built-in DDCs and streamed over PCIe. The 5953 provides these modes with built-in IP supporting complex data-streaming scenarios without the need for creating custom IP.
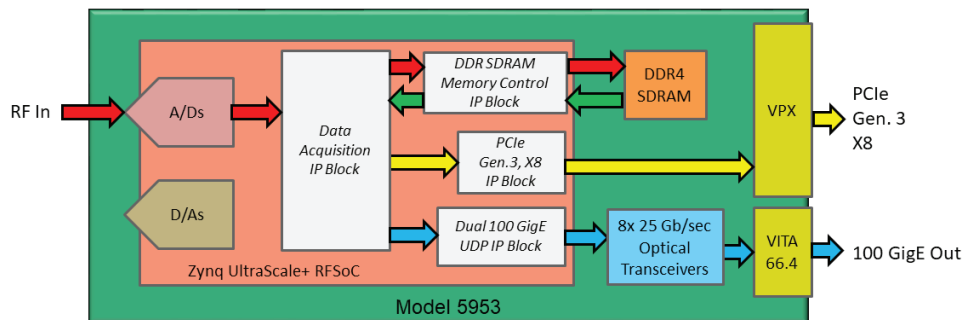
The Jade Family

The Jade® family of board-level products is based on the Xilinx Kintex UltraScale FPGAs. Jade includes products for radar, software radio, and communications based on these FPGAs.

Form Factors

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

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

XMC Module

The Jade Architecture

The Jade architecture embodies a new streamlined approach to FPGA-based boards, simplifying the design to reduce power and cost, while still providing some of the highest-performance FPGA resources available today. Designed to work with Pentek's Navigator® Design Suite, the combination of Jade and Navigator offers users an efficient path to developing and deploying FPGA-based data acquisition and processing.

As the central feature of the board architecture, the FPGA has access to all data and control paths, enabling factory-installed functions including data multiplexing, channel selection, data packing, gating, triggering and memory control. The Jade architecture organizes the FPGA as a container for data-processing applications where each function exists as an intellectual property (IP) module.

x8 PCIe

AMC

Each member of the Jade family is delivered with factory-installed applications ideally matched to the board's analog interfaces. Typical factory-installed functions may include A/D acquisition IP modules for simplifying data capture and transfer.

Each of the acquisition IP modules contains a powerful, programmable DDC IP core; an IP module for DDR4 SDRAM memory; a controller for all data clocking and synchronization functions; a test signal generator; and a PCIe interface. These complete the factory-installed functions and enable the board to operate as a complete turnkey solution for many applications, thereby saving the cost and time of custom IP development.

3U VPX COTS (left) and Rugged

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.
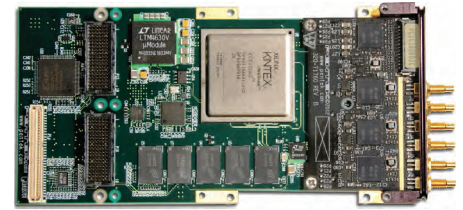
Ruggedization

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

The Pentek SPARK® systems are fully-integrated development systems for Pentek Cobalt, Onyx, Flexor, and Jade 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.

Each SPARK system is delivered with the Pentek board(s) and required software installed and is equipped with sufficient cooling and power to ensure optimum performance.

3U cPCI

6U cPCI Double Density

6U VPX Double Density

PENTEK

Pentek's Navigator® Design Suite includes the Navigator FDK (FPGA Design Kit) for integrating custom IP into the Pentek factory-shipped design and the Navigator BSP (Board Support Package) for creating host applications. Most modern FPGA-processing applications require development of specialized FPGA IP to run on the hardware, *and* software to control the FPGA hardware from a host computer.

The Navigator Design Suite was designed from the ground up to work with Pentek's Jade and Quartz architectures and provides a better solution to the complex task of IP and software creation.

Navigator FDK (FPGA Design Kit)

As FPGAs become larger and IP more complex, the need for IP design tools to manage this growing complexity has never been greater.

The Xilinx Vivado Design Suite includes IP Integrator, the industry's first plug-and-play IP integration design environment. Built around a graphical block diagram interface, IP Integrator allows IP developers to leverage existing IP by importing it into their block diagram design. Pentek's Navigator FPGA Design Kit (FDK), was designed with this exact purpose.

Each Navigator FDK provides the complete IP for a specific Jade or Quartz data acquisition and processing board. When the design is opened in Vivado's IP Integrator, the developer can access every component of the Pentek design, replacing or modifying blocks as needed for the application.

Navigator BSP (Board Support Package)

The companion product to the Navigator FDK is the Pentek Navigator Board Support Package (BSP). While Navigator FDK provides a streamlined path for creating or modifying new IP for the Pentek hardware, the Navigator BSP enables complete operational control of the hardware and all IP functions in the FPGA.

Similar to the FDK, the BSP allows software developers to work at a higher level, abstracting many of the details of the hardware through an intuitive API. The API allows developers to focus on the task of creating the application by letting the API, the hardware and IP-control libraries below it to handle many of the board-specific functions. Developers who want full access to the entire BSP library, enjoy complete C-language source code as well as full documentation.

New applications can be developed on their own or by building on one of the included example programs. All Jade and Quartz boards are shipped with a full suite of build-in functions allowing operation without the need for any custom IP development.
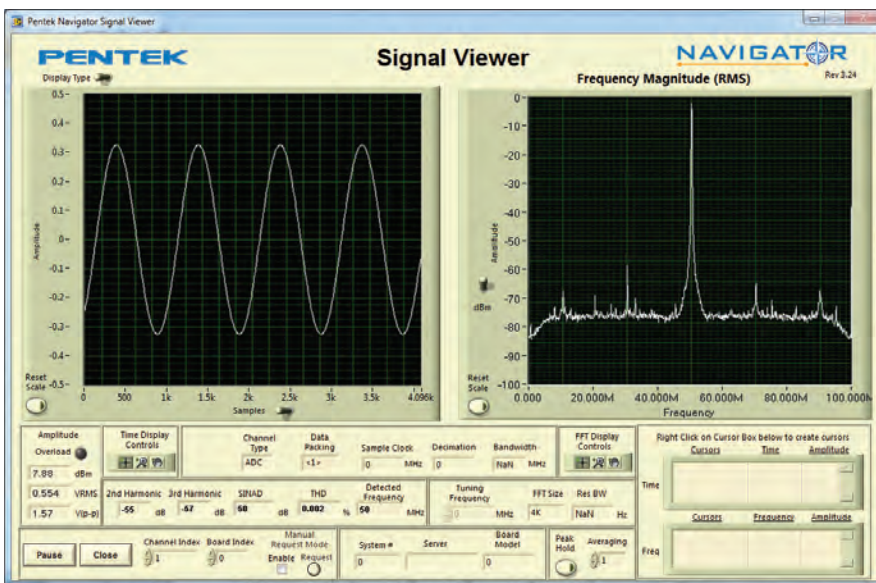
The Navigator BSP includes the Signal Analyzer, a full-featured analysis tool, that displays data in time and frequency domains. Built-in measurement functions display 2nd and 3rd harmonics, THD (total harmonic distortion), and SINAD (signal to noise and distortion). Interactive cursors allow users to mark data points and instantly calculate amplitude and frequency of displayed signals. With the Signal Analyzer, users can install the Pentek hardware and Navigator BSP and start viewing analog signals immediately.

PENTEK

XMC Module

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

x8 PCIe

AMC

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.

*3U VPX
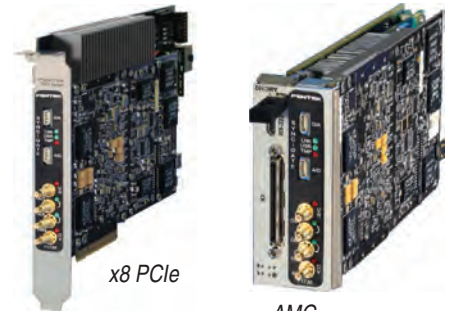Commecial (left) and
Rugged*

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.

3U cPCI

*6U cPCI
Double Density*

*6U VPX
Double Density*

The Cobalt Family

The Pentek Cobalt® family includes radar, software radio and digital I/O boards based on the Xilinx Virtex-6 FPGA. This comprehensive product line offers products that satisfy a very wide range of applications.

Form Factors

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

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

The Cobalt Architecture

The Pentek Cobalt architecture features a Virtex-6 FPGA. 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 Cobalt architecture organizes the FPGA as a container for data-processing applications where each function exists as an intellectual property (IP) module.

Most members of the Cobalt 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. 2 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.

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 factory-installed modules as documented source code. Developers can integrate their own IP with the Pentek factory-installed functions or use the GateFlow kit to completely replace the Pentek IP with their own.

Many of the Cobalt models come with off-the-self installed IP that addresses specific applications. This IP provides additional dedicated functions that range from three broadband DDCs (digital downconverters) to 1100 narrowband DDCs.

Synchronization

An internal timing bus provides board timing and synchronization. The bus includes a clock, sync and gate or trigger signals. An on-board clock generator receives an external sample clock. This clock can be used directly or divided by a built-in clock synthesizer.

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 platform, all other boards are available in various ruggedized formats up to and including conduction cooling.

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.

A fully-integrated system-level solution, each SPARK development system provides the user with a streamlined, out-of-the-box experience.
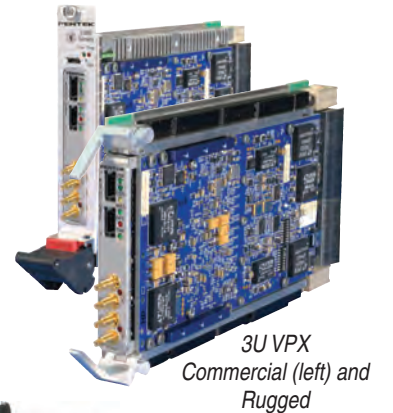
XMC Module
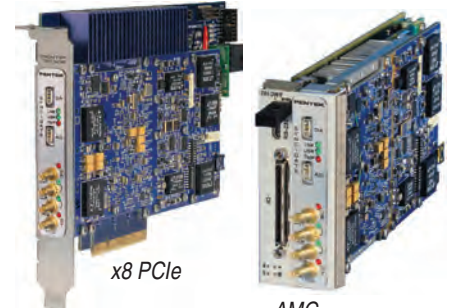
x8 PCIe

AMC

3U VPX Commercial (left) and Rugged

3U cPCI

6U cPCI Double Density

6U VPX Double Density

PENTEK

High-Speed Recording Systems

Talon® High-Speed Recording Systems eliminate the time and risk associated with new technology system development. With increasing pressure in both the defense and commercial arenas to get to the market first, today's system engineers are looking for more complete off-the-shelf system offerings. Out of the box, these systems arrive complete with a full-featured virtual operator control panel ready for immediate data recording and/or playback operation.

RTR Rugged Portable System

Ready-to-Run Recording Systems

The Pentek offerings are fully integrated systems featuring a range of A/D and D/A resources or digital I/O with high-speed disk arrays. These systems are built on a Windows workstation. Users can easily install post-processing and analysis tools to operate on the recorded data. The recorded files are stored in the native Windows NTFS format, allowing them to be immediately used without the need for post-recording file conversion.

RTR Rugged Rackmount System

Systems For All Your Recording Needs

RTS Lab Systems are housed in a 19-in. rack-mountable chassis in a PC server configuration. They are designed for commercial applications in a lab or office environment

RTV Lab Systems are also designed for commercial applications in a lab or office environment. They provide outstanding performance for under $20,000 US.

RTR Rugged Portable Systems are available in small briefcase-sized enclosures with integral LCD display and keyboard and weigh less than 30 lbs. They are designed for harsh environment field applications where size and weight is of paramount importance.

RTR Rugged Rackmount Systems are built to survive shock and vibration and they target operation in harsh environments and remote locations that may be unsuitable for humans.

RTX Extreme Systems are available in a 1/2 ATR chassis and are designed to operate to military specifications and under extreme environmental conditions.


RTX Extreme 1/2 ATR Portable System

SENTINEL

Sentinel™ Recorders add intelligent signal scanning with signal monitoring and detection for Talon real-time recording systems. Users can scan the entire available spectrum or select a region of interest. Selectable-resolution bandwidth allows for the trading of sweep rate for a finer resolution and better dynamic range. RF energy in each band of the scan is detected and presented in a waterfall display. Any RF band can be selected for real-time monitoring or recording. The Sentinel hardware resources are controlled through enhancements to Talon's SystemFlow® software package.

QuickPac Compatible
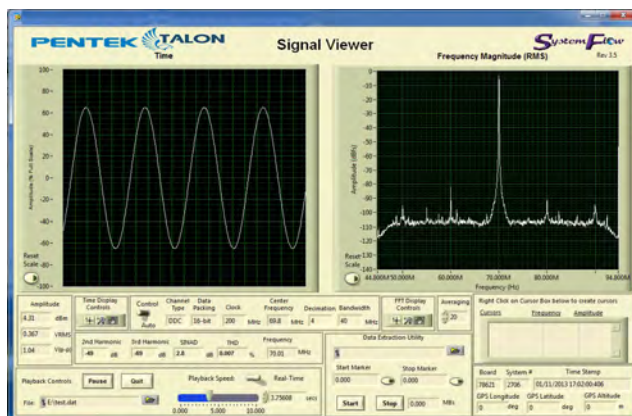
SystemFlow Signal Viewer

The SystemFlow Signal Viewer includes a virtual oscilloscope and a virtual spectrum analyzer for signal monitoring in both the time and frequency domains. You can download and install the free SystemFlow Simulator to your desktop or laptop PC.

FREE Talon SystemFlow Simulator Download Now!

https://www.pentek.com/systemflow/systemflow.cfm#SystemFlowSimulator

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PENTEK

ARCHITEK

The Architek™ FPGA Development Suite allows FPGA design engineers to add custom IP to a number of Pentek's Talon recording systems. FPGA IP can be added to the recorder to provide real-time, on-the-fly digital signal processing during the data acquisition process, greatly reducing the time associated with post-processing recorded data. Architek provides a simple development environment that allows engineers to add FPGA IP such as threshold detection, spectral filtering, digital downconversion, demodulation or any other digital signal processing technique required.

PRODUCT FOCUS:

Model 2654 - 26.5 GHz Sentinel Intelligent Signal Scanner

- Search and capture system using Pentek's Sentinel™ Intelligent Signal Scanner
- Captures RF signals from 800 MHz to 26.5 GHz
- Capture and scan bandwidths up to 500 MHz
- Selectable threshold triggered or manual record modes
- 12 bit A/Ds with 57.5 dB SNR & 72 dB SFDR
- Built-in DDC with selectable decimations of 4, 8, and 16
- 4U chassis with front panel removable SSDs
- Storage capacities to 245 TB
- RAID levels 0, 5, and 6
- Windows® workstation with Intel Core™ i7 processor
- SystemFlow® GUI with virtual oscilloscope, spectrum analyzer and spectrogram displays

Model 2684 - 26 GHz Sentinel Intelligent Signal Scanner

- Search and capture system using Pentek's Sentinel™ Intelligent Signal Scanner
- Captures RF signals from 1 GHz to 26 GHz
- Capture and scan bandwidths up to 500 MHz
- Selectable threshold triggered or manual record modes
- 12 bit A/Ds with 57.5 dB SNR & 72 dB SFDR
- Built-in DDC with selectable decimations of 4, 8, and 16
- Rugged 1/2 ATR MIL-spec chassis for harsh mechanical and thermal environments
- Environmentally sealed
- Internally conduction-cooled
- Fully sealed for RF emissions with EMI power line filter
- MIL-STD circular connectors
- Compact and lightweight: about 23 lb (10.4 kg)
- QuickPac® drive packs allow quick removal of all data storage via the front panel
- Ideal for UAVs, military vehicles, aircraft pods and outdoor environments
- Sustained real-time record rates up to 4 GB/s
- 12 to 28 VDC power supply
- Optional GPS receiver for precise time and position stamping
- SystemFlow GUI, SystemFlow API, and Signal Viewer analysis tools
- Optional telnet remote connection to recorder

PENTEK

SPARK Development Systems

SPARK Development Systems

The Pentek SPARK® systems are fully-integrated development systems for Pentek Cobalt®, Onyx®, Flexor®, Jade®, and Quartz™ software radio, data acquisition, and I/O boards. They were created to save engineers and system integrators the time and expense associated with building and testing development systems that ensure optimum performance of Pentek boards.

A fully-integrated system-level solution, each SPARK development system provides the user with a streamlined, out-of-the-box experience. Each comes preconfigured with Pentek hardware, drivers and software examples installed and tested to allow development engineers to run example applications out of the box.

Ready-to-Run Development Systems

● The Model 8266 PCIe development system is equipped with the latest Intel processor, DDR SDRAM and a high-performance motherboard. These features accelerate application code development and provide unhindered access to the high-bandwidth data available with Pentek analog and digital interfaces.

This development system uses a 19" 4U rackmount chassis that is 21" deep. It can be configured with Windows® or Linux® operating systems.

● The Model 8267 3U OpenVPX development system is equipped with the latest Intel i7 processor, DDR SDRAM and a high-performance single-board computer. These features accelerate application code development and provide unhindered access to the high-bandwidth data available with Pentek analog and digital interfaces. The development system can be configured with Windows or Linux operating systems.

This development system uses a 19" 4U rackmount chassis that is 12" deep. Nine VPX slots provide ample space for an SBC, a switch card and multiple Pentek boards.

● The Model 8264 6U OpenVPX development system is equipped with the latest Intel i7 processor, DDR SDRAM and a high-performance single-board computer. These features accelerate application code development and provide unhindered access to the high-bandwidth data available with Pentek analog and digital interfaces. The system can be configured with Windows or Linux operating systems.

This development system uses a 19" 6U rackmount chassis that is 12" deep. Nine VPX slots provide ample space for an SBC, a switch card and multiple Pentek boards.
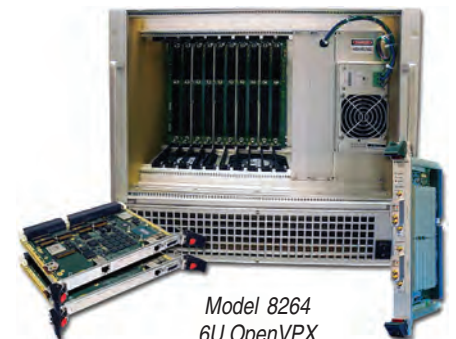
Ventilation and Power

In all development systems, enhanced forced-air ventilation assures adequate cooling for all boards and power supplies guarantee more than adequate power for all installed boards.
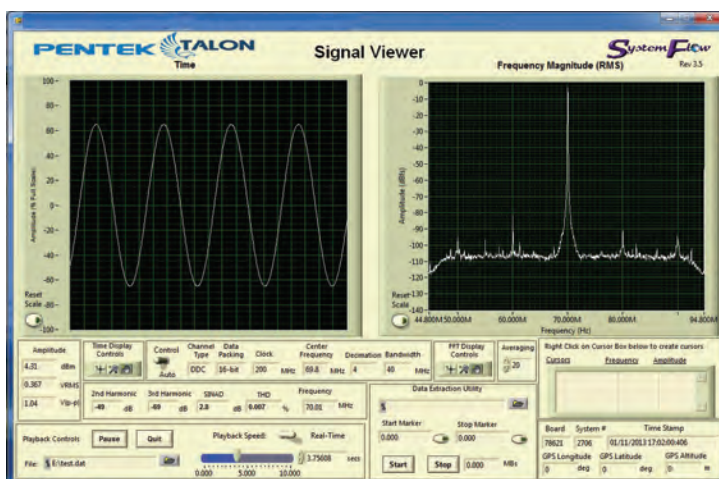

Model 8266
PCIe Development
System

Model 8267
3U OpenVPX
Development System

Model 8264
6U OpenVPX
Development System

ReadyFlow® & Navigator®
Board Support Packages (BSPs)

Pentek's BSPs contain C-language examples that can be used to demonstrate the capabilities of the Pentek products. The BSP compiled executable examples operate the hardware right out of the box, without the need to write any code. The BSPs also include a Signal Viewer, a full-featured analysis tool, built-in measurement functions, interactive cursors to mark data points and instantly calculate amplitude and frequency of the displayed signals.

- **Pentek has been designing and building boards for 25+ years:** We understand how these boards are going to be used and have designed them for maximum performance, signal quality, thermal characteristics, cooling, FPGA loading, I/O to and through the boards and for channel synchronization where low phase noise is critical.

- **Digital Signal Processing & Data Acquisition and I/O Experts:** By thoroughly understanding advanced signal theory and real-world system considerations, our experts have spread this knowledge to the embedded computing community through thousands of tutorials, industry articles, techcasts, webcast seminars and technical handbooks targeting the most demanding applications. These same Pentek experts help customers choose the best system architectures for a successful design that is delivered on time.

- **Pentek targets the high-end of the market:** Building a board is one thing, getting it to perform correctly and at peak performance is another, especially if the FPGA is an integral part of the application. Pentek thereby offers highly optimized products with superior technical support for maximum performance.

- **Systems Hardware Prequalification:** Pentek characterizes and tests a variety of motherboards, processor boards, RAID controllers, SSDs, etc. so the right components can be used in your systems eliminating system and processing bottlenecks and development time.

- **FPGAs are fully characterized:** Pentek provides detailed information on FPGA utilization and can recommend exactly which FPGA to use on each board based on how much user generated IP will be installed.

- **Navigator Design Suite:** The Navigator Design Suite, consisting of the BSP and FPGA Design Kit, provides an unparalleled plug-and-play solution to the complex task of IP and control software creation and compatibility.

- **FPGA IP development support:** All of Pentek's boards use the FPGA as an integral part of the board for moving data and for signal processing functions. As a result, Pentek is expert at developing IP and using vendor's development and debugging software tool sets. This helps new customers through the process, saving time and money.

- **Technical Support:** Pentek offers free, unlimited, lifetime technical support from seasoned DSP engineers. Pentek's superior support means customers get their application implemented significantly faster. Pentek excels at supporting you until you get your issues resolved.

- **Documentation:** Pentek's documentation is the best in the industry. This level of quality documentation saves an enormous amount of development time.

- **Startup Time:** You can install and use the board immediately by using the ReadyFlow Command Line Interface and Signal Analyzer to display the data without having to do any programming. This saves development time and shortens project start up time.

- **Quality:** Pentek implements the highest quality practices in all operational phases, and is committed to customer satisfaction and on-going improvement. Pentek proudly maintains its ISO 9001:2015 certification.

Associations

Pentek is an active member in many industry associations that drive new technologies including the following: