New!

Models 72800 73800 and 74800

Kintex UltraScale FPGA Coprocessor - cPCI

Model 74800 *Model 73800*

JADE NAVIGATOR Design Suite

General Information

Models 72800, 73800 and 74800 are members of the Jade™ family of high-performance CompactPCI boards. 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 new Navigator™ Design Suite of tools, the combination of Jade and Navigator offers users an efficient path to developing and deploying FPGA-based data acquisition and processing.

These models consist of one or two Model 71800 XMC modules mounted on a cPCI carrier board. Model 72800 is a 6U cPCI board while the Model 73800 is a 3U cPCI board; both are equipped with one Model 71800 XMC. Model 74800 is a 6U cPCI board with two XMC modules rather than one.

In addition to supporting PCI-X as a native interface, these models include optional high-bandwidth connections to the Kintex UltraScale FPGA for custom digital I/O.

The Jade Architecture

Evolved from the proven designs of the Pentek Cobalt and Onyx families, Jade raises the processing performance with the new flagship family of Kintex UltraScale FPGAs from Xilinx. As the central feature of the board architecture, the FPGA has access to all data and control paths. The Jade architecture organizes the FPGA as a container for data-processing applications where each function exists as an intellectual property (IP) module.

Each member of the Jade family is delivered with factory-installed applications ideally matched to the board's interfaces. The factory-installed functions in these models include one or two test signal generators, one or two metadata generators, one or two DDR4 SDRAM controllers, and DMA engines for moving data on and off the board.

Extendable IP Design

For applications that require specialized functions, users can install their own custom IP for data processing. The Pentek Navigator FPGA Design Kits include the board's entire FPGA design as a block diagram that can be edited in Xilinx's Vivado tool suite.

In addition to the block diagrams, all source code and complete IP core documentation is included. Developers can integrate their own IP along with the wide range of IP functions contained in the Navigator IP library, or use the Navigator kit to completely replace the Pentek IP with their own.

Xilinx Kintex UltraScale FPGA

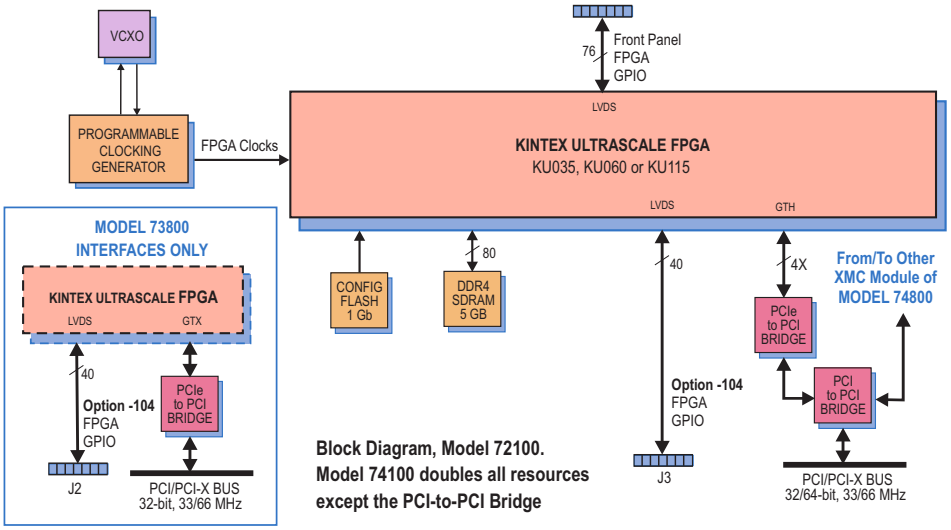
The Kintex UltraScale FPGA site can be populated with a range of FPGAs to match the specific requirements of the processing task, spanning the KU035 through KU115.

The KU115 features 5520 DSP48E2 slices and is ideal for modulation/demodulation, encoding/decoding, encryption/decryption, and channelization of the signals between transmission and reception. For applications not requiring large DSP resources or logic, a lower-cost FPGA can be installed.

Option -104 provides 20 LVDS pairs between the FPGA and the J2 connector, Model 73800; J3 connector, Model 72800; J3 and J5 connectors, Model 74800.➤

Features

- High-performance coprocessor platform
- Supports Xilinx Kintex UltraScale FPGAs
- Front panel digital I/O can be used as a status and control or data interface
- 5 or 10 GB of DDR4 SDRAM
- Optional LVDS connections to the FPGA for custom I/O
- Ruggedized and conduction-cooled version available



Block Diagram, Model 72100. Model 74100 doubles all resources except the PCI-to-PCI Bridge

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Pentek, Inc. One Park Way ◆ Upper Saddle River ◆ New Jersey 07458
Tel: 201·818·5900 ◆ Fax: 201·818·5904 ◆ Email: info@pentek.com
www.pentek.com

Models 72800 73800 and 74800

Kintex UltraScale FPGA Coprocessor - cPCI

PCI-X Interface

These models include an industry-standard interface fully compliant with PCI-X bus specifications. The interface includes multiple DMA controllers for efficient transfers to and from the board. Data widths of 32 or 64 bits and data rates of 33 and 66 MHz are supported. Model 73800: 32 bits only.

Front-Panel Digital I/O Interface

These models include one or two 80-pin front panel connectors that provide 38 or 76 LVDS pairs connected to one or both of the FPGAs. With user IP, these can be utilized for a control and status interface to other components of the system or as a data path.

Memory Resources (1 or 2)

The architecture of these models supports 5 or 10 GB of DDR4 SDRAM memory. User-installed IP along with the Pentek-supplied DDR4 controller cores within the FPGA can take advantage of the memory for custom applications.

Specifications

Front Panel Digital I/O (1 or 2)
- **Connector Type:** 80-pin connector, mates to a ribbon cable connector
- **Signal Quantity:** 38 or 76 pairs
- **Signal Type:** LVDS

Field Programmable Gate Array (1 or 2)
- **Standard:** Xilinx Kintex UltraScale XCKU035-2
- **Option -084:** Xilinx Kintex UltraScale XCKU060-2
- **Option -087:** Xilinx Kintex UltraScale XCKU115-2

Custom I/O (1 or 2)
- **Option -104:** Provides 20 LVDS pairs between the FPGA and the J2 connector, Model 73800; J3 connector, Model 72800; J3 and J5 connectors, Model 74800

Memory (1 or 2)
- **Type:** DDR4 SDRAM
- **Size:** 5 GB
- **Speed:** 1200 MHz (2400 MHz DDR)

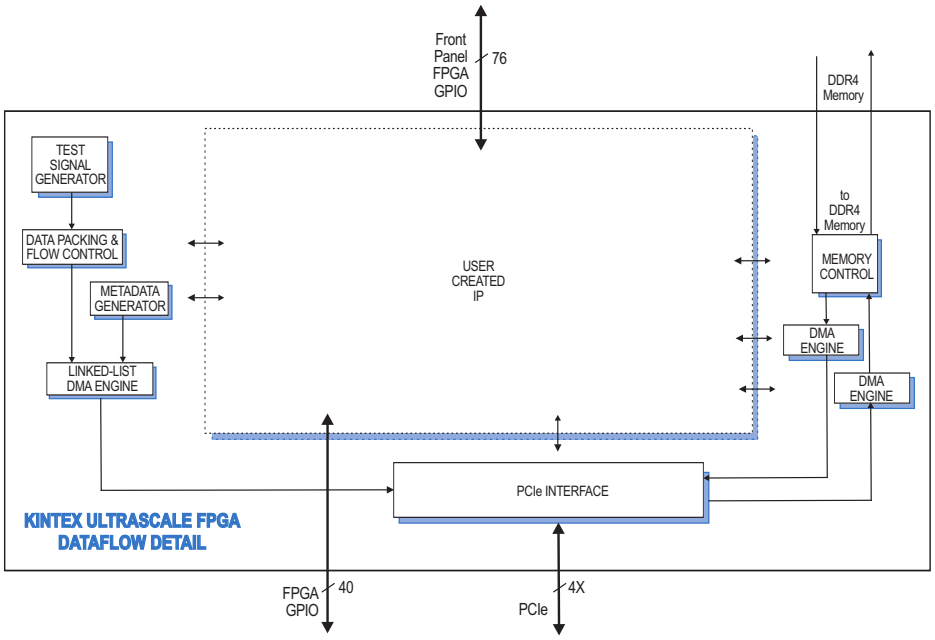
PCI-X Interface
- **PCI-X Bus:** 32 or 64 bits at 33 or 66 MHz Model 73800: 32 bits only

Environmental
- **Standard: L0 (air cooled)**
  - **Operating Temp:** 0° to 50° C
  - **Storage Temp:** –20° to 90° C
  - **Relative Humidity:** 0 to 95%, non-condensing
- **Option -702: L2 (air cooled)**
  - **Operating Temp:** –20° to 65° C
  - **Storage Temp:** –40° to 100° C
  - **Relative Humidity:** 0 to 95%, non-condensing

Size: **6U Board** 9.187 in x 6.717 in (233.35 mm x 170.61 mm)
3U Board 3.937 in. x 6.717 in. (100.00 mm x 170.61 mm)

Kintex UltraScale FPGA Resources

	XCKU035	XCKU060	XCKU115
System Logic Cells	444,000	726,000	1,451,000
DSP Slices	1,700	2,760	5,520
Block RAM (Mb)	19.0	38.0	75.9



Ordering Information

Model	Description
72800	Kintex UltraScale FPGA Coprocessor - 6U cPCI
73800	Kintex UltraScale FPGA Coprocessor - 3U cPCI
74800	Kintex UltraScale FPGA Coprocessor - 6U cPCI

Options:

-084	XCKU060-2 FPGA
-087	XCKU115-2 FPGA
-104	LVDS FPGA I/O
-702	Air cooled, Level L2

Contact Pentek for complete specifications of rugged version

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www.pentek.com