Hardware Reference Designs

For IBM PowerPC 440GP

WIND RIVER

Reference Designs

Reference platform for pre-production design, prototyping and evaluation

Wind River's PPMC440GP reference design is a Processor PCI Mezzanine Card (PPMC) that allows you to begin development before your own custom design is available. This board offers a solid platform for both hardware and software engineers to use in evaluating and prototyping designs that closely parallel their final applications. The PPMC440GP also gives software engineers a live target on which to begin developing and testing application code.

The PPMC440GP reference design comes complete with detailed schematics, a **VxWORKS**® 5.5 board support package, user documentation, and power supply.

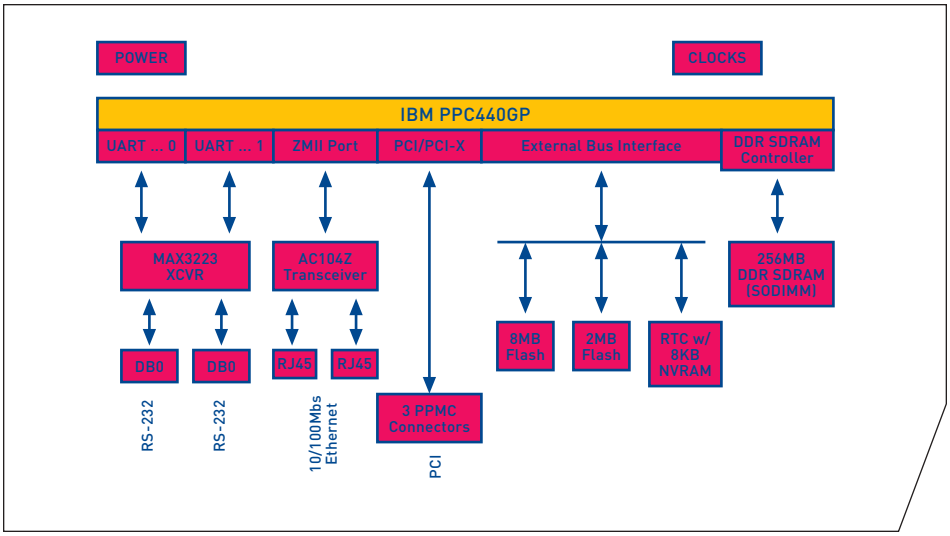
The PPMC440GP can either be operated as a standalone board or mounted on a PPMC carrier board and connected to other boards or peripherals through a PCI interface.

Wind River's PPMC440GP comes standard with 256Mb of DDR SDRAM implemented through an unbuffered, 64-bit wide memory interface using a standard 200-pin DDR SDRAM SODIMM, 8MB of Primary FLASH, and 2MB of Backup FLASH. The PPMC440GP supports a PCI Rev 2.0 compliant interface when plugged into a PCI carrier board. Also standard are (2) 10/100Base-T RMII/SMII Ethernet Ports using the Ethernet MACs on the IBM440GP, an AC014Z SMII/RMII

PPMC440GP reference design.

Features

- IBM PowerPC 440GP at:
  - 400MHz to 500MHz CPU/133MHz CPU Bus/266MHz Memory Bus
- PPMC Single Slot form factor
- 256MB DDR SDRAM
- 8MB Primary FLASH
- 2MB Back up FLASH
- Real-time clock using the DS1743
- 8KB NvRAM
- The following IBM PPC440GP peripherals:
  - PCI/PCI-X controller – 3.3v 32/64-bit PCI bus up to 66MHz
  - Memory controller – up to 266MHz memory bus
  - Interrupt controller and timers
  - (2) 10/100BaseT internal Ethernet MAC interfaces using RJ45 connectors
  - (2) RS-232 interfaces using Mini-DB9 connectors
- Hard reset via a momentary switch
- Memory-mapped user LEDs displayed on the front panel
- JTAG debug connection
- High Density (MICTOR) for on- chip trace
- 8-bit mailbox connector



PPMC440 block diagram.

Transceiver and RJ45 connetors, a 16-pin JTAG interface connection, (2) 3-wire RS-232 Ports using the IBM 440GP's on-chip IARTs, a real-time clock connected to the peripheral bus of the IBM440GP, 8KB of NvRAM, reset configuration of the IBM 440GP via jumpers, and two serial I2C EPROMs.

Benefits

Experienced support

As a supplier of reference designs and hardware-assisted debugging tools for an array of microprocessors, Wind River has the experience to provide knowledgeable, responsive, application and technical support for development projects.

Free detailed schematics

All Wind River reference designs come with free schematics in electronic format. Schematics give hardware engineers a solid design for use in building their own boards.

Accelerated early development

Firmware, hardware, and production test engineers alike can take advantage of Wind River's reference designs. Firmware and hardware engineers can adapt Wind River's reference designs to their own, enabling them to reduce development time. Production test engineers can use the board and **visionICE II**/ **visionPROBE II** debugging tools to design and prototype complex and efficient production algorithms before the custom hardware is prototyped.

Emulators for turnkey development

Wind River provides several JTAG emulators to meet the full life cycle demands of your project:

- **WIND POWER** *ICE* uses Wind River's **JTAGServer**™ technology to provide a networked multi-core/ JTAG device/ CPU JTAG emulator solution for complex board designs that serially link (daisy-chain) onboard components' JTAG interface
- **visionICE II** provides a networked, mono-core JTAG emulator solution
- **visionPROBE II** provides a cost-effective, PC-based, mono-core JTAG emulator solution

These tools offer JTAG-pre-configured hardware diagnostic tests and CPU run control that are crucial for hardware bring-up phases. The features and fast download speed of **WIND POWER** *ICE*, **visionICE II** and **visionPROBE II** help shorten software engineer's projects.

Tools integration

Wind River reference designs and hardware-assisted debugging tools are pre-integrated. Every reference board is supplied with its own CPU register initialization files to allow developers to immediately begin using all of Wind River's tools.

Board support packages

Because even the best hardware design is useless without software support, Wind River provides the source code for board support packages available with **VxWORKS**® 5.5. Developers can fully utilize and modify the source code for current and future projects.

For more information on how the PPMC440GP can help you on your next development project, please contact your Wind River representative at 781-828-5588 or 1-800-957-5588.

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