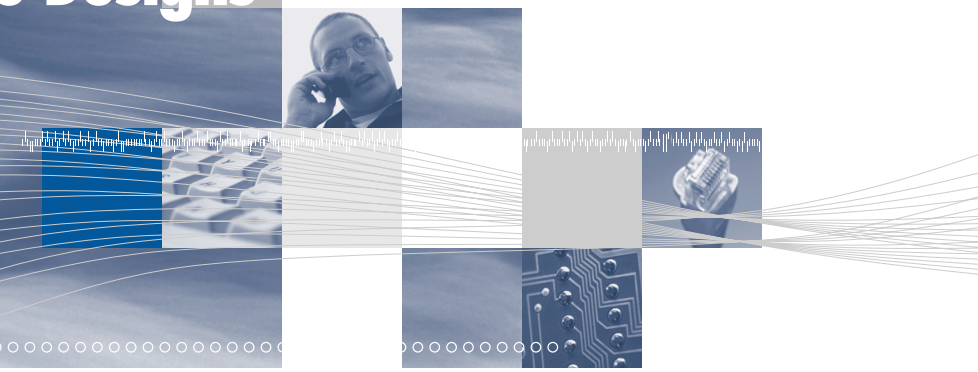
Hardware Reference Designs

for Motorola's Scout



Wind River | *Reference designs*

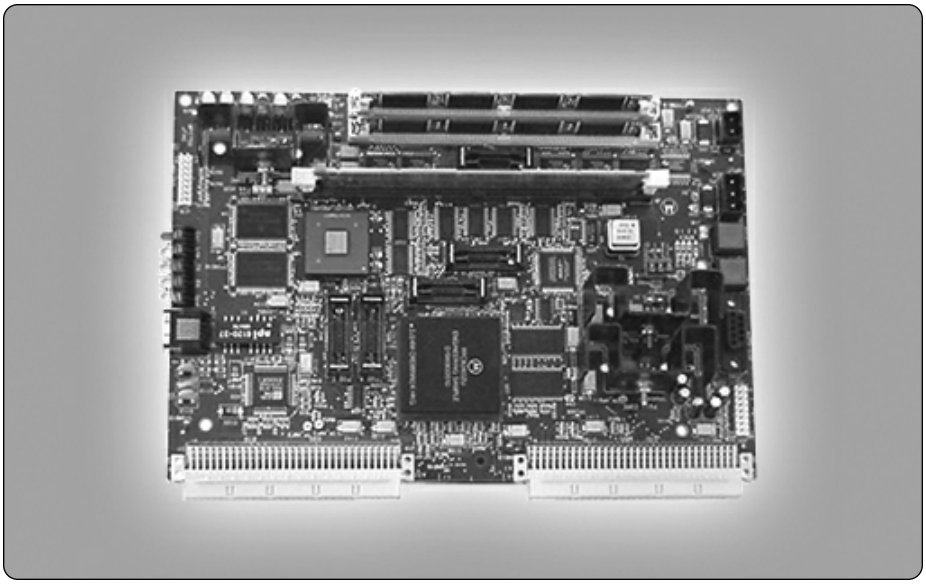
Reference platform for preproduction design, prototyping, and evaluation

Wind River's Scout reference design is a single board computer (SBC) that enables development to begin before the hardware is available. This board offers a solid platform for bothhardware and software engineers to use in evaluating and prototyping designs that closely parallel their final applications. The Scout also gives software engineers a live target on which to begin developing and testing application code.

Like all Wind River reference designs, the Scout comes complete with detailed schematics, board support package (BSP), visionBOOT boot loader, user documentation, and power supply.

The Scout reference design combines Motorola's high performance MPC750 RISC and MPC8260 microprocessors for multi-processor master/slave functionality.

The major focus of the Scout design is to evaluate systems that use the high performance MPC750 with a backside L2 cache as the system processor, and use the integrated communication and memory controller features of the MPC8260. In this companion mode, the PowerPC processor inside the MPC8260 device is disabled. A configuration option will allow the user to

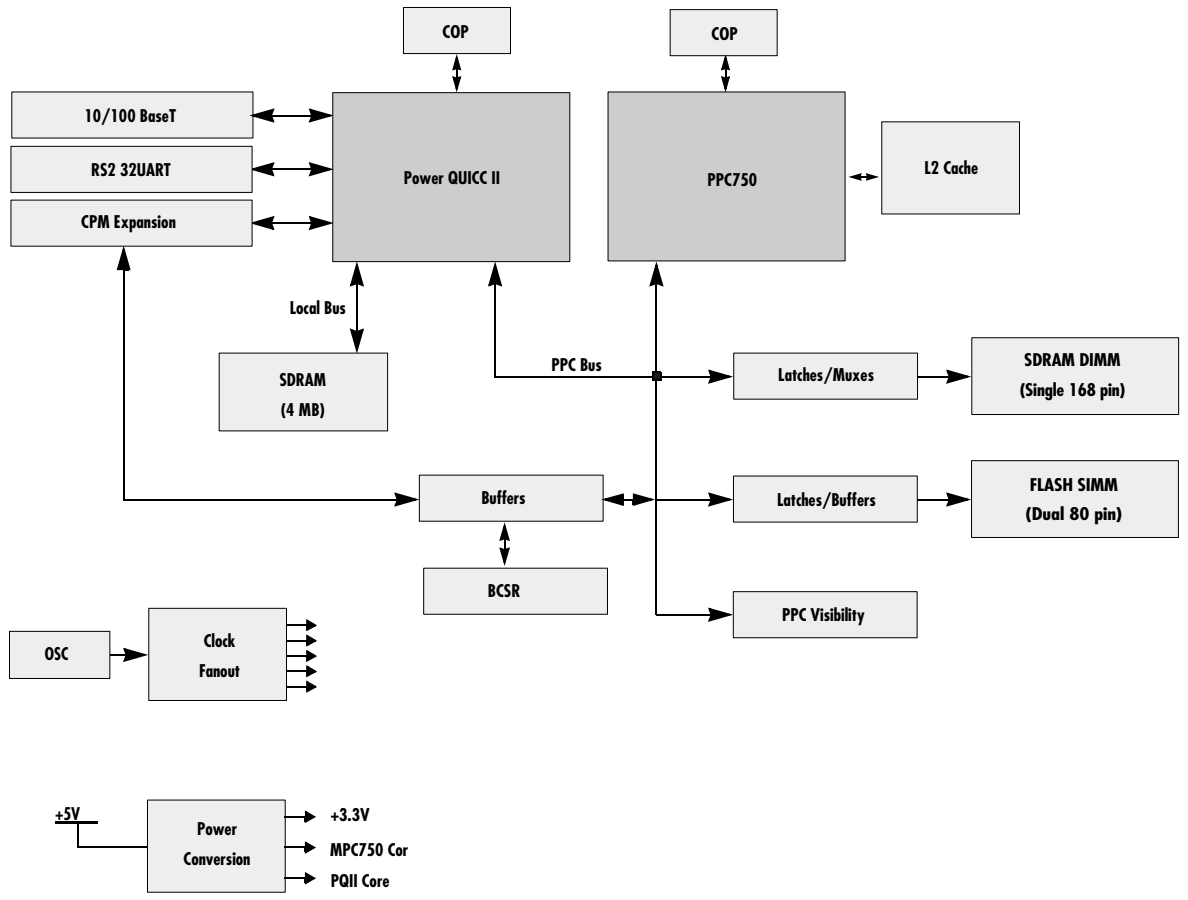


Features

- 200MHz MPC 750 or MPC 755 (266MHz with 66MHz oscilator)
- 1MB L2 Cache
- MPC 8260 in companion mode. CPM runs up to 166MHz
- 50MHz external bus (66MHz with 66MHz oscilator) (60X bus mode)
- 32MB 64-bit SDRAM controlled by SDRAM Machine 1
- 4MB 32-bit SDRAM on local bus
- 16MB 64-bit flash (expandable to 32MB)
- Board control & status register-BCSR, controlling board operation
- Mictor logic analyzer connectors for high speed trace
- 10/100BaseT Ethernet (8CCZ)
- Serial port (SCII)
- Expansion connectors to allow connection to communications ports off board (BCSG disables on board transceivers)
- visionBOOT boot loader
- VxWorks board support package

WindRiver®
HOW SMART THINGS THINK™

SCOUT BLOCK DIAGRAM



enable the MPC8260 processor, thus enabling a multi-processor system. This option is not recommended due to limitations in the power on reset sequencing.

Benefits

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.

Tools integration

Wind River reference designs and hardware-assisted debugging tools are pre-integrated. Every board has its own register files, so developers can immediately begin using all of Wind River tools.

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.

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® 5.4 and VxWorks AE. Developers can fully utilize and modify the source code for current and future projects.

Accelerated early development

Firmware, hardware, and production test engineers can all 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

visionICE II and visionPROBE II JTAG emulators are designed to handle the full lifecycle of an embedded project. These tools offer JTAG-preconfigured hardware diagnostic tests, which are crucial for hardware bring-up phases. The features and fast download speed of visionICE II and visionPROBE II help shorten software engineers' projects.

visionBOOT

visionBOOT provides boot loading that can use TFTP downloading of an image from a flash file system, an HTTP server, or a disk. The flash file image includes a VxWorks image and a diagnostic script that can be used to test the board hardware. visionBOOT is built with the visionWARE software development suite, which can be purchased separately.

visionWARE automatically generates visionBOOT and diagnostics and can program flash and field programmable gate arrays (FPGAs).

EMBEDDED DEVELOPMENT SOLUTIONS

Fully integrated solutions

Wind River offers fully integrated hardware and software solutions designed for all phases of embedded development, from early board bring-up to debug and production/test. This tool suite includes reference designs with schematics and BSPs, software debuggers, hardware-assisted on-chip debuggers, compilers, and other software tools.

Hardware-assisted tools

Wind River's JTAG emulator tools include a high-performance debugging parallel cable for PCs (visionPROBE II) as well as a networked emulator complete with 10/100BaseT capabilities (visionICE II) for both PC and UNIX.

Hardware tools benefits

- Real-time target control via on-chip debugging
- High-speed binary downloads to target
- Built-in hardware diagnostics
- Flash memory programming
- Source-level debugging
- Statistical performance analysis
- Internal register configuration

Tornado integration

visionICE II and visionPROBE II are tightly integrated with the Tornado® development environment and enable core and optional Tornado tools to communicate with the target through JTAG. This provides board bring-up and debug support, crash diagnosis, as well as a fast download and debug channel, if Ethernet or serial channels are used.

RTOS independent

Wind River provides an extensive line of embedded development tools for all embedded real-time operating systems (RTOSs) including in-house RTOSs, Wind River RTOSs, and other commercial embedded operating systems. Published applications program interfaces (APIs) support easy integration of Wind River tools with other embedded operating systems.

Source-level debuggers

Fully integrated with Wind River's hardware-assisted tools are source-level debuggers including visionCLICK, visionXD, and SingleStep™ with vision running on Windows and UNIX development hosts. In addition to point-and-click capability for major functions, these debuggers offer support for hardware, software, and complex breakpoints, a register configuration utility, built-in diagnostics, and complete run control.

Software tools benefits

- Intuitive graphical user interface
- Easy project configuration that reduces project start-up time
- RTOS API kit allows choice of third-party tools
- Tight integration with Wind River's full suite of embedded development tools
- Powerful register configuration utility to reduce register programming time
- Sophisticated compiler optimization technology with finegrained compiler control
- Kernel awareness for task-aware debugging of VxWorks, proprietary operating systems, and many third-party operating systems

The visionWARE developers kit

Wind River's visionWARE developers kit is designed for engineers developing software that interacts with and controls hardware. visionWARE extends JTAG emulator features with an application development framework that automatically generates a boot loader and a flash file system for custom boards that store and launch customer applications. It also generates a ready-to-run diagnostics program and target resident code to program advanced programmable devices, such as flash and FPGA, using a target Ethernet port.

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