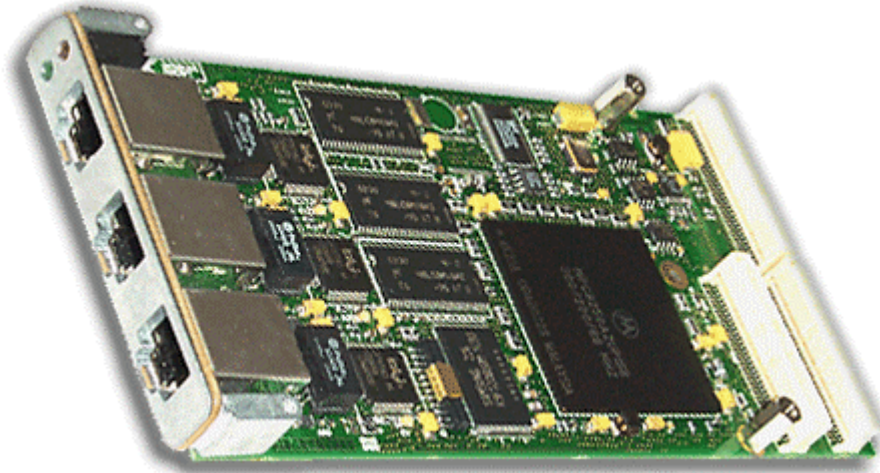


Model 8750

Embedded Processor Module with 3 Fast Ethernet Controllers



The Model 8750 Embedded Processor PMC Module is designed in accordance with IEEE1386 standard. It features a high performance 32-bit PowerPC processor with three Fast Ethernet controllers and can be used in conjunction with CompactPCI, VME carriers or proprietary design. The versatile Model 8750 has the capability to serve many needs:

- Rugged versions available
- Processing requirements with a high level of integration and low power consumption
- Low cost embedded applications
- Communication controller with Multi-Ethernet Links
- Time stamping on data flow, traffic shaping and so on.
- Ethernet channels with redundancy

A local co-processor handles all communication functions decreasing the load on the PowerPC processor.

Description

The 8750 is powered by an MPC8250/70, part of the PowerQUICCII processor family. This embedded processor couples a 603e core with a RISC communication processor and three Fast Ethernet controllers. The low 4W power design simplifies system integration.

The board implements a 64 bit PowerPC local bus. This local bus is usable by the host via the 32 bit-PCI bus through a PowerPC-to- PCI bridge.

The 8750 can be used in three different modes: Monarch, Non-Monarch or stand-alone and may be used as the host or node. Three full-duplex 802.3 and Fast Ethernet controllers are provided in conjunction with three PHY 10/100TX interfaces. Each controller implements a local FIFO and DMA channel and supports the promiscuous mode.

Thermal management is supplied by temperature sensors. Surge protection implemented on each Ethernet lines make this board particularly suited to harsh, industrial environments. Consult ACT regarding conformal coating.

Four multi-purpose serial controllers are provided (each with a data rate up to 10Mbits) on the Pn4 rear I/O or the reverse optional Pn3 connector. SPI and I²C bus are also available on these connectors. In addition Pn3 provides several GPIO.

An engineering kit is available to enable easy utilization of debug tools: JTAG/COP/Async RS232 port and external reset.

IC-PQ2-PMCa Features

Processor Core

- PPC603e with FPU 32 bit RISC architecture with :
- 266 or 400/450 MHz
- 16KB Instruction Cache and 16KB Data Cache
- 24KB on-board fast dual-port SRAM
- MMU and FPU capabilities
- DMA-channel controllers
- 64 or 128MB of shared SDRAM
- 128KB SRAM
- 8 or 32 MB of Nor Flash EPROM
- 32KB SPI EEPROM
- Real Time clock and four 32 bit-timers
- PCI interface Initiator, Target & Host:
- 32 bits @ 33/66 MHz
- 3.3V only PCI signaling Rev 2.2

I/O subsystem

Up to three Ethernet 10/100TX auto-sensing ports are routed to the front panel RJ45 or Pn4 connector:

- On the rear I/O Pn4 and reverse Pn3 connectors
- 4*Multi-purpose serial controller SCC[1..4]
- 4 TDM with 128 HDLC channels
- I²C bus (400Kbs), SPI and one RS232 serial port
- On the reverse Pn3, several general logical I/O
- On the debug connector : JTAG/COP and SMC1

Options

- 128 or 256MB soldered Flash Disk
- SDRAM with ECC extension
- Time of day Calendar clock
- Supercap for Cal. Clock and backup SRAM
- Reverse Pn3 to mezzanine board connection

On-board Firmware

A comprehensive set of firmware is provided and stored in flash memory including:

Boot

This module is called by the reset vector when the board is powered up. It initializes the PowerQUICCII, the memory controller, the Bios module, and performs the Power on self tests before initializing the PCI bridge and executing applications stored in memory.

Bios

This module allows the user to access the specific IC-PQ2-PMCa hardware resources via an easy-to-use API. A set of about 60 library functions are provided.

Tools

A firmware monitor allowing loading files from Ethernet via Bootp, running files in RAM or flash. The firmware monitor also permits display or modification of RAM data and allows for the performance of maintenance tests.

BSP basic

BSP products are based on the standard distribution of the OS editor. They manage hardware initialization, interrupt handling and generation, hardware clock and timer services, memory management, PCI management, mapping of memory spaces, basic serial for SMC/SCC (pseudo-driver for VxWorks®) and MAC driver for Fast Ethernet ports. The advanced CPM functionalities require specific protocol drivers.

Protocol Modules

Optimized drivers provided with new functions for serial controllers: asynchronous with frame, HDLC/SDLC, Bisync, Transparent mode, Ethernet, PPP, etc. Communication drivers are designed to minimize the buffer's copy.

BSP provided for VxWorks® and Linux® operating systems. Other RTOS (LynxOS,...) can be ported on request. Powerful software debugging tools for application development are available for OS supported in-house. Hosts supported by the 8750 are Linux® OS and VxWorks.

Board Specifications

Environmental

MPC8250A version : standard and extended grade

MPC8270 version : standard and rugged grade

Contact ACT Technico regarding conduction-cooled application

Physical dimensions

PMC Module single width, IEEE P1386 compliant (150 mm * 75 mm)

Power requirements

3.3VDC only with less than 4 W for maximum configuration

EM compatibility

EMC/EMI : 89/336/ECC, EN55022 CIE, EN50082-2

Highlights

PowerPC embedded core

- 372 MIPS and 6,6SPEC95 @ 266MHZ (MPC8250)
- 630 MIPS and 11.5SPEC95 @ 450MHz (MPC8270)
- FPU, MMU, 16KB IC & 16KB ID
- 24 KB SRAM attached to core (MPC8250)
- 64 KB internal SRAM (MPC8270)

SDRAM

- 64 or 128 MB 64-bits wide
- Power management with self-refresh
- Fast access 10ns (6.1.1.1)

Flash or EEprom

- 8 MB or 32MB Mirror-NOR Flash
- 32KB of EEPROM on the SPI bus

SRAM

- 128 KB

DMA controller

- 4 virtual independent channels
- 8, 16, 32 bits peripheral support
- Scatter/gather with command/data chaining
- Transfers supported include: PCI, memory, internal I/O

PCI interface

- 32-bit, 33/66MHz PCI version 2.2 compatible
- Signalization 3.3VDC only
- A poll of read and write buffers
- PCI host bridge and peripheral capabilities
- Monarch, Non-Monarch or stand-alone mode
- 4 independent DMA channels
- I²O standard

Ethernet Ports

- Compliant with IEEE802.3, 802.3u, 802.3x
- 10/100Base TX auto-sensing
- Surge protection

Other on-board functions

FOR MPC8250/70

- Temperature sensor usable via the SPI bus
- I²C bus, SCC signals and multipurpose I/O on PMC I/O
- On-board DC/DC generation
- Optional calendar clock and supercap for backedup SRAM
- 4 multi-purposes serial controllers SCC configurable as:
 - asynchronous or synchronous ports
 - 10Mbs Ethernet channels
 - TDM link at 2Mbs with 128 HDLC channels with TSA capability
- These functionalities are provided without phy interface

ONLY FOR MPC8270

- USB on SCC4

Debug Ports via Engineering kit

- RS232 serial link based on SMC UART
- JTAG - COP

Order Information

All Extended Grade, Rugged Grade and Conduction Cooled boards below are conformal coated

S= standard grade (0-+55C), X= ext grade (-20-+65C), R = rugged grade (-40 - +75C), cc = cond cooled

	(FP) = Front Panel - (R) = Rear I/O	
8750-1-S	PowerQUICC II @ 266MHz - 64MB SDRAM - 8MB Flash - 128KB SRAM, 32KB EEPROM T° monitoring - 3*Ethernet 10/100TX (FP), PPMC (monarch-non monarch) PCI 32bits 33/66MHz	0 to +55°C
8750-1-X	PowerQUICC II @ 266MHz - 64MB SDRAM - 8MB Flash - 128KB SRAM, 32KB EEPROM T° monitoring - 3*Ethernet 10/100TX (FP), PPMC (monarch-non monarch) PCI 32bits 33/66MHz	-20 to +65°C
8750-2-S	PowerQUICC II @ 266MHz - 64MB SDRAM - 32MB Flash -128KB SRAM, 32KB EEPROM T° monitoring - 3*Ethernet 10/100TX (FP), PPMC (monarch-non monarch) PCI 32bits 33/66MHz	0 to +55°C
8750-3-X	PowerQUICC II @ 266MHz - 64MB SDRAM - 8MB Flash - 128KB SRAM - 32KB EEPROM T° monitoring - 3*Ethernet 10/100TX (FP) + Real Time Clock (RTC) PPMC (monarch-non monarch) PCI 32bits 33/66MHz	-20 to +65°C
8750-4-S	PowerQUICC II @ 266MHz - 128MB SDRAM - 8MB Flash -128KB SRAM, 32KB EEPROM T° monitoring - 3*Ethernet 10/100TX (FP) PPMC (monarch-non monarch) PCI 32bits 33/66MHz	0 to +55°C
8750-4-X	PowerQUICC II @ 266MHz - 128MB SDRAM - 8MB Flash -128KB SRAM, 32KB EEPROM T° monitoring - 3*Ethernet 10/100TX (FP) PPMC (monarch-non monarch) PCI 32bits 33/66MHz	20 to +65°C
8750-5-X	PowerQUICC II @ 333MHz - 128MB ECC - 32MB Flash - 128KB SRAM - 32KB EEPROM T° monitoring - 3*Ethernet 10/100TX (FP), PPMC (monarch-non monarch) PCI 32bits 33/66MHz	-20 to +65°C
8750-6-S	PowerQUICC II @ 400MHz - 128MB ECC - 32MB Flash - 128KB SRAM - 32KB EEPROM T° monitoring - 3*Ethernet 10/100TX (FP), Real Time Clock (RTC), Back up RAM SRAM (Super Cap) PPMC (monarch-non monarch) PCI 32bits 33/66MHz	0 to + 55°C
8750-6-R	PowerQUICC II @ 400MHz - 128MB ECC - 32MB Flash - 128KB SRAM - 32KB EEPROM T° monitoring - 3*Ethernet 10/100TX (FP), Real Time Clock (RTC), Back up RAM SRAM (Super Cap) PPMC (monarch-non monarch) PCI 32bits 33/66MHz	-40 to +75°C
8750 – Eng Kit	Engineering kit + User's Manual (Hw & Sw) + Console cable	

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