IC-CPU-PCI 811

Intelligent MPC860P processor board for PCI bus

Description

The IC-CPU-PCI/811 is a high performance MPC860P based CPU, designed for OEM applications. Its embedded PowerQUICC® (Quad-channel Integrated Communication Controller) and RISC processor, provide the CPU board with real-time performance that today's high performance communication systems applications demand.
With an output connector providing MPC860P I/O to a mezzanine board, it's easy to add the right hardware interface on it for the job required in only one PC slot. Moreover with support of real-time development tools, it's easy than ever to get applications up and to run them.

Features

The MPC860P PowerQUICC® is compliant with the 32 bits PowerPC core. It's a fully-static design that include integrated MMU/Caches and integer units.
It combines PowerPC core with a RISC communication controller. The memory consists of a 2/4 MB Flash bank and a 16 MB SDRAM bank memories.

I/O Processor

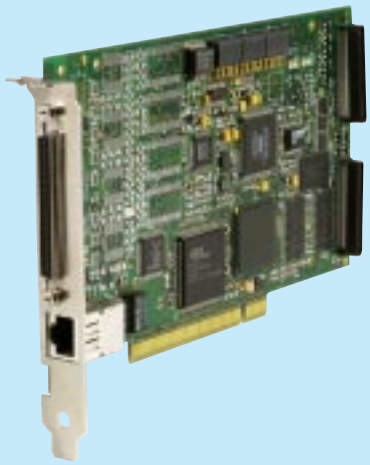
The MPC860P QUICC® communication controller provides the following main functions :

- 4—Serial Communication Controllers (SCC) offering 4 high-speed serial channels up to 10Mbs for Ethernet or asynch/synchronous ports
- 2—Serial Management Channels (SMC) which one of them, is dedicated to the RS232 on-board console debug port

All the previous TTL signals are available through a high density connector. Our range of IC-BD-MUL transition modules supports a variety of interface modes such as: 10 BT/AUI Ethernet, E1/T1, RS-232, RS-422, RS-485, RS- 449, EIA-530, V35.

- 1—Fast Ethernet Controller (FEC) offering one 10/100 Mbs MII port

The MPC860 bus processor is also available through a second high density connector.



- **MPC860P@50MHz processor**
- **2/4 MB of Flash EPROM memory**
- **16 MB of SDRAM memory**
- **PCI rev 2.2 short card single slot**
- **32bits @ 33MHz PCI interface, Initiator & Target**
- **Two expansion connectors for mezzanine boards providing:**
- **MPC860P I/O communication ports**
- **MPC860P bus signals**
- **BDM & RS232 ports to debug**
- **On-board real-time OS & development tools for Linux, pSOS+, VxWorks**
- **Linux & W98/NT4™ software driver on host system**

PCI Interface

Based on a PLX9054 bridge, PCI interface features:

- Initiator & Target PCI interface
- 32 bits@33 MHz
- PCI 32 bits access to/from local data transfers up to 80Mbytes/s effective rate
- compliant with all PCI rev.2.2 and I2O messaging specifications aspects
- 2 independent programmable DMAs with programmable FIFOs
- direct bus master and direct slave access
- 8—32 bits mailbox and 2—32 bits doorbell capabilities
- Big and Little Endian conversion
- PCI signaling 3.3v and 5v tolerant, allowing universal PCI design

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Board specifications

Processor

Microprocessor:	MPC860P—32 bits
Clock Frequency:	50 MHz
Performance:	65 MIPS

Memory

Instruction cache:	16 KB
Data cache:	8 KB
SDRAM:	16 MB
Flash EPROM:	2/4 MB

Data Path

CPU bus:	32 bits @ 50MHz
PCI bus:	32 bits @ 33MHz
Expansion bus:	16 bits @ 50MHz through 68 pins high density connector
Debug bus:	JTAG and BDM connectors

MPC860P I/O port

The MPC860P SMC1 is RS232 configured.

The MPC860P FEC together with a physical transceiver provide a 10/100TX Ethernet port.

All others MPC860P SCC & SMC are routed to a 68 pins high density connector. A mezzanine transition board can be plugged on it. On this board SMC & SCC can be set in any electrical mode on demand (10 BT/AUI Ethernet, E1/T1, …).

Environmental features

Operating temperature:	0 - 55°C (32 to 131°F)
Storage temperature:	-25 to 85°C (-13 to 185°F)
Humidity:	5 to 95% non-condensing
Altitude:	TBD
Vibration:	TBD
MTBF:	TBD

Physical features

Length:	174,6 mm (6.88 in.)
Width:	106,7 mm (4.20 in.)
Thickness:	1,60 mm (0.062 in.)
Weight:	TBD
Max. component height:	6 mm (0.23 in)

Once interconnected, both IC-CPU-PCI 811 & IC-BD-MUL transition board, only use one PCI slot.

Power requirements

The board requires 3W supply (3.3v plus 5v or only 5v)

+5v (±5%):	600mA / 200mA
+3.3V (±5%):	0mA / 650mA

Ordering information

IC-CPU-PCI 811 : 811/100/710

IC-SER-PCIb on-board firmware

IC's on-board firmware is a comprehensive set of softwares stored in flash memory including:

IC_Boot

This module is called by the reset vector when the board is powered up. It initializes the MPC860P, the memory controller, performs the RAM self tests, the module IC_Bios, before using the PLX chip and jumping in different applications according to the values stored in memory.

IC_Bios

This module allows the user to access to the specific IC-SER-PCIb hardware resources via an easy-to-use API.

IC_Tools

It is a firmware monitor which allows either to load or execute files in RAM or to flash them. In addition it permits to display or modify the RAM data. To end with, it enables the user to perform maintenance tests.

IC-BSP

Interface Concept provides BSP for pSOS+®, VxWorks® and Linux® operating systems. Other RTOS can be implemented on request.

BSPs provide facilities for hardware initialization, interrupts handling and generation, hardware clock and timer management, memory management, mapping of memory spaces, serial and network communications …

Powerful software debugging tools for application development on IC-SER-PCIb board are available for OS supported in-house.

IC-SER-PCIb host firmware

IC's host firmware is a comprehensive set of softwares including:

Access device driver

Powerful API host library for PCI bus :

- I/O and memory read/write with DMA
- mailbox and doorbell functions
- ISR service,...

Monitor :

- downloader to IC-SER-PCIb SDRAM (S-Record, COFF and binary image files)
- flash EPROM front end programmer
- PCI device configuration
- displaying and writing memory, reset function,...

Hosts supported by Interface Concept are W98/NT® and Linux® OS.

INTERFACE CONCEPT

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