

IC-SER-PMCd Communication Processor PMC

IC-SER-PMCd PMC module is designed in accordance with IEEE1386 standard. It features a high performance 32-bits PowerQuicc II processor with Fast Ethernet and multi-standard serial controllers. A local co-processor takes in charge all communication functionalities unloading the PowerPC processor.

IC-SER-PMCd can be used in conjunction with Compact-PCI, VME carriers or proprietary design. Many network protocol or communication stacks can run on-board :

- Low cost embedded application
- Communication controller with Multi-serial Links
- Time stamping on the data flow, Traffic shaping...
- Custom router



Description

IC-SER-PMCd is powered by a MPC8270, being part of the PowerQUICCII processor family. The low power design, less than 4W makes integration easier.

IC-SER-PMCd board implements a 64bits PowerPC bus and a PCI Rev 2.2 bus interface. It can be used in Monarch, Non-Monarch or in stand-alone mode. According to the application, this PMC module can act as a host or a peripheral.

IC-SER-PMCd provides three Fast Ethernet controllers. One is associated to an on-board 10/100TX interface, the two others are available on a transition card. Each controller implements a local FIFO and DMA channel and supports the promiscuous mode.

The communication controller also provides 4 Serial Communication Controllers (SCC) offering 4 high-speed asynchronous or synchronous channels.

Owing to multi-mode transceivers chips, each serial channel is independently software programmable in different asynch./synch. electrical modes.

The four channels provide modem line interface functions (TXD, RXD, RTS, CTS, DSR, DCD, DTR, TXCK, RXCK, TXCKO) mainly in DTE configuration.

An open FPGA enhances the versatile characteristics of the board. The customer or our technical team can implement specific communication functions.

IC-SER-PMCd is specially designed for industrial environment. It is available in standard or rugged grade version with coating. A temperature sensor monitors the operational constraints. Surge protections lines make this board particularly fitted to harsh conditions.

IC-SER-PMCd is compatible with several "LINES" range products such as : pLines-VMEb, IC-SER-PCId.

Main features

Processor core

- ▶ PPC603e with FPU 32 bits RISC architecture with :
 - 266MHz e300 core (about 500MIPS)
 - 16KB Instruction Cache and 16KB Data Cache
 - 24KB on-board fast dual-port SRAM
 - MMU and FPU capabilities
 - DMA-channel controllers
- ▶ 128MB of shared SDRAM
- ▶ 32 MB of Nor Flash EPROM
- ▶ 128MB of Nand Flash
- ▶ Real Time clock, watchdog 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

- ▶ One Ethernet 10/100TX auto-sensing port routed to the front panel RJ45.
- ▶ Two MII fast Ethernet ports routed on Pn IO.
- ▶ Four high performance serial ports :
 - Asynchronous with high speed capability.
 - Synchronous : HDLC, BSC, transparent modes.
 - Software configurable mode for the four serial ports: V10, V11, EIA530A, RS232/422, HIZ.
 - Routed on a front HD68 connector.
- ▶ I²C bus, SPI and one RS232 serial port.
- ▶ Temperature monitoring

Accessories

- ▶ Engineering kit for debug tools : JTAG/COP/Async RS232 port and external reset.
- ▶ Reverse PnIO to mezzanine board connection for two additional fast Ethernet channels.
- ▶ Carriers : IC-PMC-VME, IC-PMC-cPCI.

IC-SER-PMCd

Communication processor PMC

On-board firmware

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

IC_Boot

This module is called by the reset vector when the board is powered up. It initializes the PowerQUICCII, the memory controller, performs the Power on self tests (PBIT), the module IC_Bios, before using the PCI bridge and jumping in different applications according to the values stored in memory.

IC_Bios

This module allows the user to access the specific hardware resources via an easy-to-use API. A comprehensive set of libraries functions are provided.

IC_Tools

It is a firmware monitor which allows loading files from Ethernet via Bootp, running files in RAM or flashing 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 basic

These BSPs products are based on the standard distribution of the OS editor. They take in charge hardware initialization, interrupt handling and generation, hardware clock and timer services, memory management, PCI management, mapping of memory spaces, basic serial for SMC/SCC and MAC driver for Fast Ethernet ports. The advanced CPM functionalities require specific protocol drivers.

IC-Protocol Modules

These software provide optimized drivers with new functions for serial controllers : asynchronous with frame, HDLC/SDLC, Bisync, Transparent mode, Ethernet, PPP, etc. These communication drivers are designed to minimize the buffer's copy.

Interface Concept provides BSP for VxWorks® (5.5 & 6.x) and Linux® (2.4 & 2.6) operating systems. Other RTOS (LynxOS,...) can be ported on request.

Hosts supported by Interface Concept are Linux® OS and VxWorks.

Board specifications

Environmental

Standard or rugged grade

Physical dimensions

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

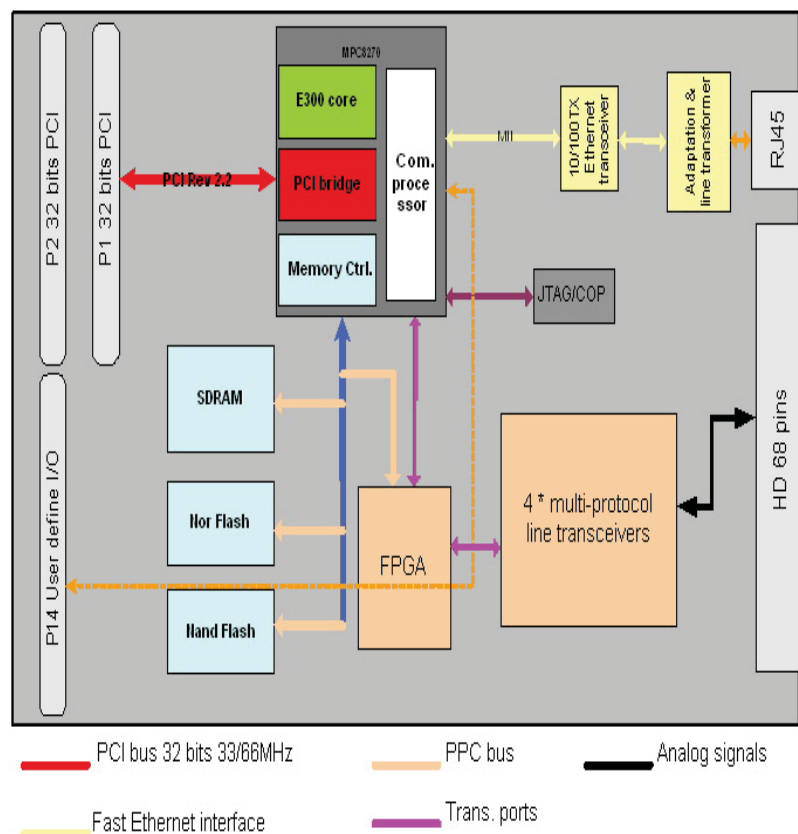
Power requirements

3.3VDC only with less than 4 W for maximum configuration.

EM compatibility

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

Block Diagram



Environnement Specifications:

Please refer to information below.

Ordering Information:

Please consult the **IC-SER-PMCd datasheet** at www.interfaceconcept.com (listing all products reference and environment grades availability).

This document supersedes any earlier documentation relating to the products referred to herein. The information contained in this document is current at the date of publication. It may subsequently be updated or withdrawn without notice.

