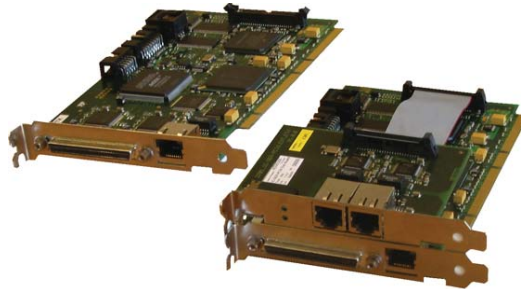


IC-SER-PCId

Programmable Serial Communication Controller



IC-SER-PCId is a versatile asynchronous/synchronous PCI platform specifically designed for high performance, Datacomms applications.

IC-SER-PCId is an intelligent sub-system well-suited to implement :

- HDLC, SDLC, Transparent, ... protocols
- X.25, OSI or Frame Relay
- Multipurpose communication controller
- TCP (TOE) Offloading with IP V4 or V6

The IC-SER-PCId complies with the PC PICMG standard and provides four fast full-duplex serial ports and Fast Ethernet ports. It is an enhanced version of the IC-SER-PCIdb.

This controller provides the main functionalities of our Lines products.

Description

IC-SER-PCId is powered by a MPC8270, being part of the PowerQUICCII processor family. This embedded processor couples a 603e core with a RISC communication processor and three Fast Ethernet controllers.

The board is equipped with three full-duplex 802.3 Ethernet controllers. One of these channels provides an on-board 10/100TX interface, the physical interface of the two other ports requires an optional mezzanine board. Each controller implements local FIFO and DMA.

This multi-purpose communication board provides 4 versatile serial communication channels. These 4 high speed synchronous or asynchronous controllers are processed by the communication processor implemented in the PowerQuiccll.

IC-SER-PCId is also an open platform with a FPGA available for specific or customer functions.

IC-SER-PCId provides an initiator & target PCI universal interface compliant with PCI standard Rev 2.2. It can run at 33 or 66MHz with 32-bit wide.

Main features

- ▶ PowerQUICCII® MPC8270
- ▶ Up to 3 Fast Ethernet Controllers.
- ▶ 4 * asynch./synch. serial multimode and three-state software programmable ports up to 4Mbps.
- ▶ RS232/422, V11, EIA530A, etc modes.
- ▶ DMA capability on each channel.
- ▶ 1 * asynch. serial port to debug.
- ▶ Expansion board providing 2 additional 10/100TX Ethernet ports (2nd slot), (optional).
- ▶ PCI 32 bits Rev 2.2--short card.

Processor core

- ▶ PPC603e (e300) with FPU 32 bits RISC :
 - 266MHz (500 MIPS)
 - 16KB Instruction & 16KB Data L1 Cache
 - MMU and FPU capabilities
 - DMA-channel controllers
- ▶ 16MB of FlashEprom memory
- ▶ 128MB SDRAM
- ▶ Four 32 bit-timers
- ▶ A watchdog

I/O subsystem

- ▶ PCI interface :
 - 32-bit @33/66MHz (64-bit on the host bus).
 - PCI signaling 3.3v and 5v tolerant, allowing universal PCI integration.
 - Mail Box, FIFO, etc.
- ▶ Three Ethernet controllers with :
 - One front 10/100TX auto-sensing port.
 - Two Ethernet MII channels routed to an extension connector.
- ▶ Four high performance serial controllers :
 - Asynchronous with high speed capability
 - Synchronous : HDLC, BSC, transparent
 - Software configurable mode for each serial ports: V10/11, EIA530A, RS232/422/485, High impedance.
- ▶ Console and JTAG/COP ports.

IC-SER-PCId

Programmable Serial Communication Controller

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 built-in tests, before jumping in different applications according to the configuration stored in memory.

IC_Bios

This module allows the user to access the specific 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. It can also be used to load a program from the server into memory via BOOTP.

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 management, memory management, mapping of memory spaces, basic serial and Ethernet communications.

Examples of data exchange between the host processor and the IC-SER-PCId are available. These applications use the standard PCI driver of the host.

Enhanced Serial Protocols

These Enhanced functions provide facilities for system integration and optimized drivers with new functions for serial communications (asynchronous with header or asynchronous HDLC, HDLC/SDLC, BSC, Transparent mode, ...), for instance these communication drivers operate without buffer recopy.

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

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

Board specifications

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

Extended grade available.

Physical features

- PCI short format, single slot
- ▶ Height: 106,68 mm (4.2 in.)
- ▶ Depth :174.63 mm (6.875 in.)

Termination front panel wiring

The serial links are routed to the DB-68 (SCSI III) female pin connector equipped with 2-56 UNC screw lock terminal blocks and the Ethernet one is routed to the RJ45 connector.

Regarding the version with no Ethernet, instead of the latter, an asynchronous Console port (SMC) is routed to the RJ45 connector.

Connection to the mezzanine board

Mezzanine boards are connected through high density 68 pins connectors

Power requirements

When all RS422 lines are running the board requires about 5W supply :

- ▶ +5v (±5%): 600mA
- ▶ +3.3V (±5%): 600mA

Interface features

Interface Concept support a set of protocols according to the OS used: IP, PPP, BOOTP, TELNET, TFTP, HTTP server, asynchronous and HDLC synchronous drivers, ...

Third party protocols

Other protocols such as Frame Relay, X25, ... are available from third party. For more details please contact us.

Hosts supported by Interface Concept are Linux® OS. Call us for Windows or Vxworks support.

Engineering kit

The engineering kit includes :

- ▶ User's guide.
- ▶ Four loop back connectors.
- ▶ 1 * octopus cable with the following features :
 - 1 * male DB-68 (SCSI III) connector on the IC-SER-PCId front panel side.
 - 4 * DTE female SubD 25pins connectors on the networks side.
 - 0,9 meter long.

Environnement Specifications:

Please consult the IC-SER-PCId page at www.interfaceconcept.com.

Ordering Information:

Please contact our sales department : tel. +33 (0)2 98 573 030 - email : info@interfaceconcept.com

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.

