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CPCI-7070

CompactPCI Host Slot Processor Board

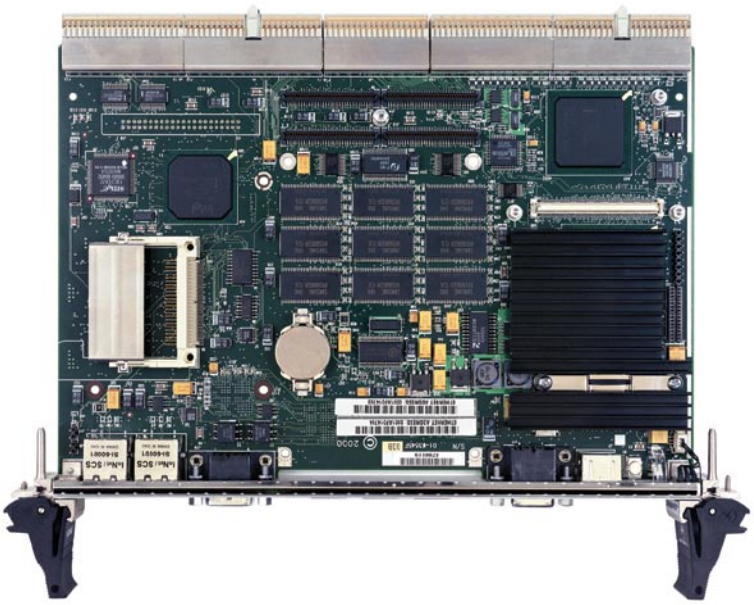
Embedded Computing for Business-Critical Continuity™

The CPCI-7070 is specifically designed to add performance, memory and bandwidth to Emerson's high availability platforms.

- CompactPCI® host slot processor board
- Intel® Pentium® III BGA2 processor
- Intel® 440GX chipset
- 100 MHz frontside bus frequency
- Up to 1.5GB PC100 SDRAM
- Accelerated 2D graphics with 4MB video memory
- Dual 10/100BaseT Ethernet
- Two universal serial bus (USB) channels
- Two asynchronous serial ports
- One bi-directional IEEE-1284 compliant parallel port
- One 32/64-bit PMC expansion slot
- Optional CompactFlash
- Watchdog timer
- Supported by industry-standard operating systems such as Linux

The Emerson Network Power CPCI-7070 is a powerful and flexible CompactPCI host slot processor board based on the Intel Pentium III processor. It's ideal for uses in embedded board-level applications where performance and a rich feature set are required. The CPCI-7070 is is designed for telecommunications and other applications where high reliability is mandatory.

The board has a demonstrated high MTBF in addition to a unique feature that allows the board to be booted from an on-board flash device rather than a lower-reliability device such as a hard disk or floppy drive. Coupled with software support for operating systems such as Linux, the CPCI-7070 provides an ideal time-to-market solution for applications requiring a CompactPCI host slot controller based on the Intel Pentium processor.



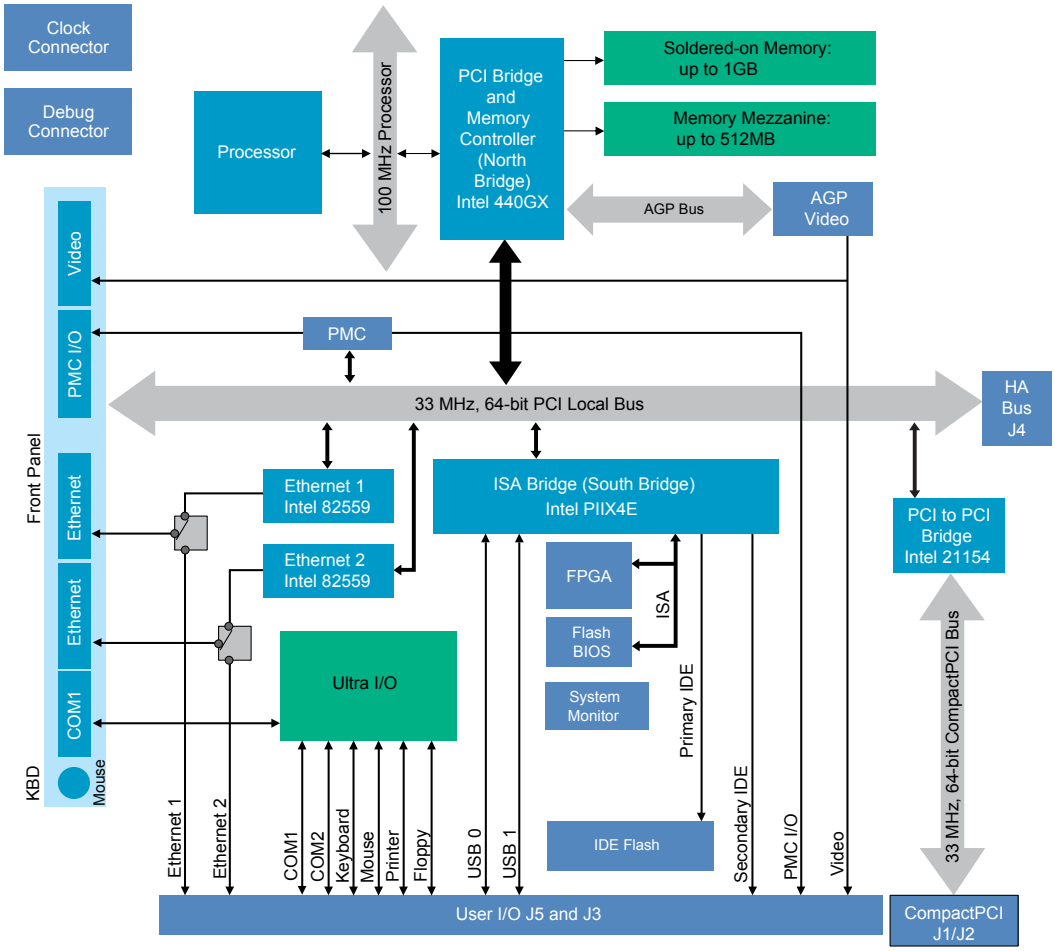
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CPCI-7070 Block Diagram



Hardware Overview

INTEL PENTIUM III PROCESSOR

For high-end embedded applications, the CPCI-7070 fully supports the Intel Pentium III BGA2 processor. The processor is combined with the Intel 440GX PCI chipset resulting in exceptional processing capability. The processor contains 32KB of internal Level 1 cache memory as well as 256KB of Level 2 cache, delivering rapid data access to complex applications. Dynamic execution and dual independent buses are additional performance advantages.

MEMORY

The CPCI-7070 is configured with up to 1.5GB of on-board PC100 compliant synchronous DRAM. Memory size is detected by the system BIOS. The board can support up to 1.5GB of SDRAM by installing two CPCI-7070-MEZZ-256 memory expansion modules.

DUAL ETHERNET

Two Intel® 82559 Ethernet controllers provide redundant Ethernet ports for monitoring and telecom applications. One or both of these controllers can be used as a diagnostic interface, allowing remote monitoring of system status (for example, voltage and temperature). Both Ethernet RJ-45 ports are located on the front panel. Both Ethernet ports are also routed to the rear I/O and available via the CPCI-7070-CPTM-04 transition module.

HOT SWAP COMPATIBLE

The CPCI-7070 can be inserted or removed in a powered system. ENUM# services are in compliance with the PICMG 2.1 Hot Swap Specification.

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ON-BOARD PERIPHERALS

The CPCI-7070 has an extensive array of on-board I/O available from both the front and/or rear panel via the CPCI-7070-CPTM-04 transition module. Front panel I/O includes a knockout for the PMC site, PS/2 mouse and keyboard connector, two RJ-45 ports for Ethernet, one high-density 15-pin D-sub SVGA connector, and one 9-pin D-sub connector for COM1. User I/O available at the rear of the board includes the Ethernet 1 & 2 ports, secondary IDE, PMC I/O, video, parallel, floppy, mouse/keyboard, COM1 and COM2, and USB0 and USB1.

COMPACTPCI BUS

Designed to the CompactPCI interface standard, the CPCI-7070 supports a 64-bit PCI interface on the J1 and J2 physical CompactPCI connectors. On-board devices connect directly to the local bus. Off-board CompactPCI bus accesses are supported through the Intel® 21154 PCI-to-PCI transparent bridge.

2D ACCELERATED GRAPHICS

A CHIPS 69030 HiQVideo accelerator with 4MB integrated memory provides eye-opening 2D accelerated graphics performance for human-machine interfaces and imaging applications. Resolutions up to 1600 x 1200 are supported.

Specifications

PROCESSOR

- 1.0 GHz and 700 MHz Intel Pentium III BGA2 processor

CACHE

- Level 1: 16/16KB instruction/data
- Level 2: 256KB

MEMORY

- Capacity: Up to 1.5GB
- DRAM: PC100 compliant synchronous, 60 ns, parity or ECC mode
- Addressing: Real and protected (32-bit) addressing supported
- Data Path: 32-bit CPU/PCI bus

COMPACTPCI INTERFACE

- Compliance: PCI Specification Rev. 2.1
- Connectors: J1/J2
- Address/Data Lines: 64
- PCI Bus Clock: 33 MHz
- Controller: Intel 21154 PCI-to-PCI interface bridge chip
- Signaling: 5V compliant

IEEE 1386.1 PCI MEZZANINE INTERFACE

- Address/Data Lines: 64
- PCI Bus Clock: 33 MHz
- Signaling: 5V
- Power: +3.3V, +5V, ±12V; 7.5 watts maximum per PMC slot
- Module Types: One single-wide front-panel I/O or J3 and J5 I/O

Note: Due to high component density, uninsulated traces and vias are located in the CPCI-7070 I/O keepout area. If installed, PMC modules having conductive I/O connectors could contact these traces and vias. If full IEEE 1386-2001 compliance is required, an insulating shield (e.g., Kapton tape) should be installed.

CLOCK/CALENDAR

- Real-time clock with replaceable battery backup

INTERRUPTS

- Four CompactPCI level-sensitive interrupts, configurable to any interrupt vector for plug-and-play compatibility.
- Note: All ISA on-board interrupts are plug-and-play compliant.

ETHERNET

- Controllers: Two Intel 82559
- PCI Local Bus DMA: Yes, with PCI burst

GRAPHICS

- Controller: CHIPS 69030 2D accelerated video
- Video Memory: 4MB on-chip SDRAM
- Resolution: 1600 x 1200 max.; Quarter VGA 320 x 240, 320 x 200

IDE COMPACTFLASH DISK

- Type: Surface-mounted CompactFlash connector
- Capacity: 8MB – 2GB
- Mode: True IDE, configured as primary master if installed

FRONT PANEL I/O INTERFACES

- PMC: One opening to accommodate PMC I/O
- Serial Port: 9-pin D-sub
- Ethernet: Two RJ-45
- Video: One 15-pin D-sub
- Keyboard/mouse: One mini Din

Note: Additional devices may be attached via transition module.

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BIOS FEATURES

- BIOS in flash EPROM
- Auto-configuration or extended setup with serial/parallel ports remappable
- Diskless, keyboardless and videoless operation extensions
- BIOS POST and Setup
- System and video BIOS shadowing
- Network boot using PXE (Preboot eXecution Environment)
- CMOS backup to flash (allows operation without battery)

SUPERVISORY

- Watchdog Timer: Two-level, software programmable (0.46 sec. to 477 sec.); drives interrupt, NMI/system reset, or soft reset
- Alarm Microcontroller (NS LM81): CPU and board temperature (user definable threshold alarm on selectable IRQ: 5, 7, 9, 11, NMI, SCI. or Alarm), and backplane and CPU voltages, with status interrogated via NMI, SCI, selectable IRQ, or Alarm
- Reset Switch: Guarded, on front panel
- Front Panel LEDs: Power OK (green), Alarm (red), Primary IDE Channel (green)
- On-board Headers: CompactFlash and single PMC site
- Rear Panel: Ethernet one and two ports, secondary IDE, PMC I/O, video, printer, floppy, mouse/keyboard, COM1 and COM2, and USB0 and USB1

MECHANICAL

- 6U, 4HP wide (233 mm x 160 mm x 20 mm)
- Conforms to PICMG 2.0 CompactPCI (rev. 2.1) and PCI SIG 2.1 specifications

CPCI-7070-CPTM-04 TRANSITION MODULE I/O

- Transition module provides backplane I/O from J3, J4, and J5 on the CPCI-7070
- Connectors on the panel include: Keyboard/mouse, dual
  Ethernet, video, COM2, and optional PIM* module knockout
- On-board Headers: COM1, USB0, USB1, IDE, floppy, parallel, and CompactFlash

*The PMC interface module (PIM) simplifies PMC rear I/O. PMC vendors create PMC-PIM pairs while CPU or I/O controller vendors create CPU or I/O transition module pairs. PMCs can then be easily mixed on carrier cards.

POWER REQUIREMENTS

(includes transition module)

Operating	Storage/Transit
+5V @ 2.9 A	700 MHz with 256MB, 512MB, or 1GB SDRAM
+5V @ 4.15 A	1 GHz with 1GB or 1.5GB SDRAM
+3.3V @ 2.0 A	700 MHz with 256MB, 512MB, or 1GB SDRAM
+3.3V @ 2.3 A	1 GHz with 1GB or 1.5GB SDRAM
+12V @ <25 mA typ., <25 mA max	700 MHz or 1 GHz
-12V @ 0.5 A typ., 0.05 A max	700 MHz or 1 GHz

DEMONSTRATED MTBF

(based on a sample of eight boards in accelerated stress environment)

- Mean: 190,509 hours
- 95% Confidence: 107,681 hours

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ENVIRONMENTAL

	Operating	Non-operating
Temperature:	700 MHz: 0° C to +55° C 1 GHz: 0° C to +50° C	–40° C to +70° C
Humidity:	5% to 90% @ 40° C non-condensing	5% to 95% @ 40° C non-condensing
Vibration:	1.0 G RMS, 5 – 200 Hz random	0.5 Gs sine sweep, 5 – 50 Hz random 0.1 octaves/min; 3.0 G sine sweep, 50 – 500 Hz, 0.25 octaves/min, all 3 axes

ELECTROMAGNETIC COMPATIBILITY (EMC)

- Intended for use in systems meeting the following regulations:
  - U.S.: FCC Part 15, Subpart B, Class A (non-residential)
  - Canada: ICES-003, Class A (non-residential)
- Emerson board products are tested in a representative system to the following standards:
  - CE Mark per European EMC Directive 89/336/EEC with Amendments; Emissions: EN55022 Class B; Immunity: EN55024

PMC MODULE SUPPORT

Emerson also offers PMC modules that complement and enhance the functionality of the CPCI-7070. Additional information is available at www.EmersonNetworkPower.com/EmbeddedComputing or by contacting a Emerson sales representative or authorized distributor.

USER NOTE: SPECIFICATIONS FOR 2.5" DISK DRIVES

Your attention is directed to the fact that the MTBF of any drives mounted on these blades must be considered independently of the MTBF of the blades themselves. Also, the supported operating parameters of the drives may differ substantially from those of the blades.

It is the User's responsibility to ensure that the operating parameters of these drive offerings are well understood and taken into consideration when designing operating use.

The operating parameters of our current drive offerings can be found in the Resource Center section of our web site at www.EmersonNetworkPower.com/EmbeddedComputing

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