

# CPCI-6020

## CompactPCI Host Slot Processor Board

■ Embedded Computing for Business-Critical Continuity™

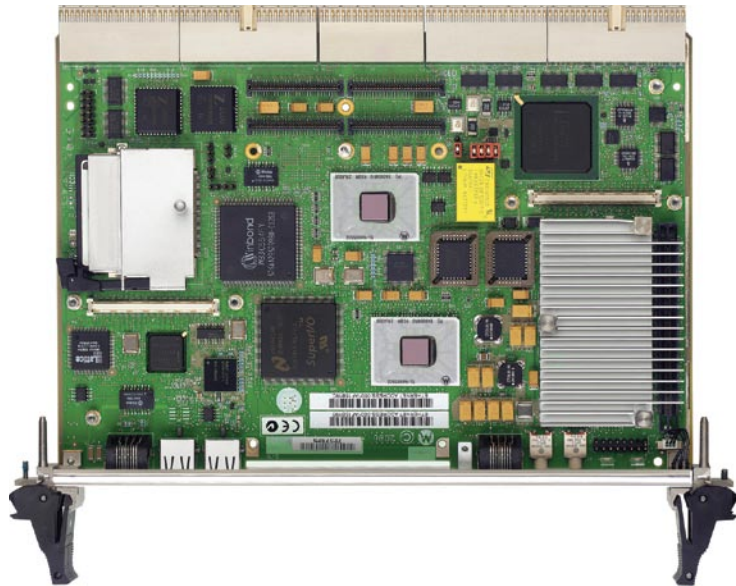
### The CPCI-6020 series pushes performance and functionality of the PowerPlus Architecture to unprecedented levels

- MPC7410 processor
- High-performance L2 cache
- High-performance, low-latency SDRAM subsystem
- Up to 2GB of ECC protected capacity
- New DMA capability
- Variety of persistent memory types and capacities
- Dual 10/100BaseT Ethernet
- Four optional USB ports (two in the front)
- Two async serial ports, two async/sync serial ports, keyboard and mouse
- Single PMC slot
- PCI Enhanced IDE (EIDE) controller and floppy disk controller
- On-board debug monitor with self-test diagnostics
- Four 32-bit timers, three watchdog timers

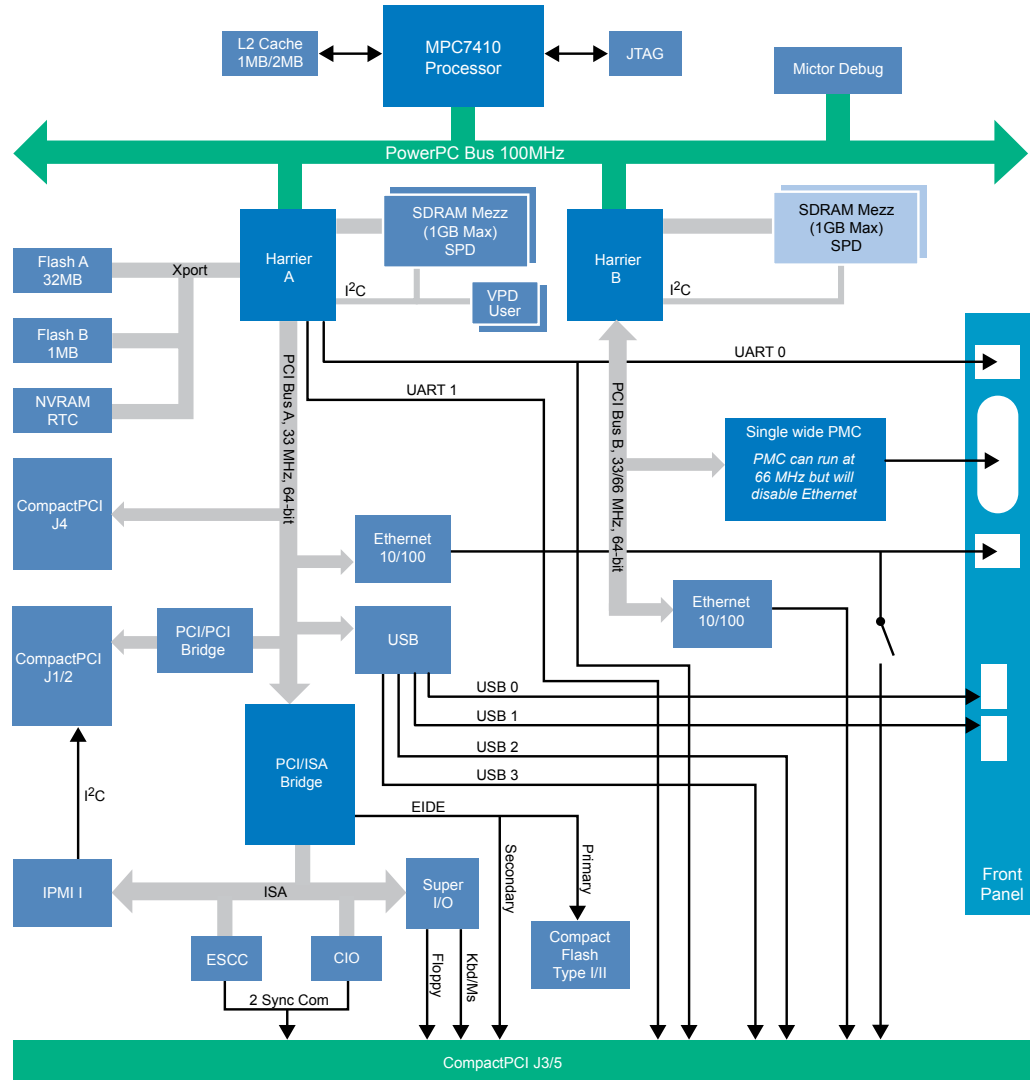
The Emerson Network Power CPCI-6020 series is a family of CompactPCI host-slot processor modules and the first host-slot modules to benefit from Emerson's PowerPlus III Architecture. The CPCI-6020 provides substantial investment protection to deployed infrastructure by providing an easy upgrade and migration to state-of-the-art features and performance. Utilizing low-power, high-performance MPC7410 processors with 2MB of secondary cache, dual peripheral component interconnect (PCI) buses for the on-board peripherals and a 64-bit bridge to the CompactPCI® interface, the CPCI-6020 series packs optimum performance and functionality in a single CompactPCI slot.

The CPCI-6020-MCPTM-01 transition module provides industry standard connector access to a single mouse/keyboard connector, EIDE and floppy connectors (internal), one RJ-45 connector and one 10-pin header providing access to the asynchronous serial ports, one PIM, two RJ-45 connectors for rear Ethernet and two additional sync/async serial ports via a single connector.

Designed with relevant standards, compatibility and interoperability in mind, the CPCI-6020 is compliant with PICMG® 2.1 (Hot Swap), VITA 36 (PIM), IEEE 1386.1 (PMC) and Emerson's high availability system architecture specifications. The CPCI-6020 supports booting a complete range of real-time operating systems and kernels which may be purchased from companies such as Wind River Systems, Inc. and other leading providers.



## CPCI-6020 Block Diagram



## Specifications

### PROCESSING SUBSYSTEM

- Processor: 500 MHz MPC7410 processor
- On-chip L1 Cache (I/D): 32K/32K
- High-Performance L2 Cache: 200 MHz parity protected, 2MB
- Frontside Bus: 100 MHz

### CONTROLLER AND MEMORY SUBSYSTEM

- Dynamic Memory: ECC protected synchronous dynamic RAM
- Capacity: Up to four RAM500 mezzanines yielding 2GB maximum capacity

- Additional Functions: Dual DMA engine—See the Harrier ASIC Programmer's Reference Guide for details; dual multi-processor interrupt controller (MPIC). One DMA engine per Harrier controller.
- Single Cycle Accesses: 10 read/5 write
- Read Burst Mode: 8-1-1-1 idle; 3-1-1-1 aligned page hit (CL3)
- Write Burst Mode: 4-1-1-1 idle; 3-1-1-1 aligned page hit

### COMPACTPCI INTERFACE

- Controller: Intel® 21154
- Address/Data: A32/D32/D64 with parity
- PCI Bus Clock: 33/66 MHz, PCI 2.1 compliant
- Signaling: 3.3V output, input defined by VIO

#### ETHERNET INTERFACE

- Controller: Dual Intel® 82551IT
- Interface Speed: 10/100Mbps
- PCI Local bus DMA: Yes, with PCI burst
- Connector: One RJ-45 on front panel, one TM port RJ-45 via Jx

#### PERSISTENT MEMORY

- Flash Capacity (bootable): 1MB via two 32-pin PLCC sockets; additional 32MB surface mount; selectable via reset vector
- CompactFlash: Single Type I/II memory card socket for large capacity needs (50-pin socket)
- Controller: W83C554
- Interface: ATA, true IDE mode
- NVRAM: 32KB total capacity, 4KB available for user data
- Cell Storage Life: 50 years at 55° C
- Cell Capacity Life: 10 years at 100% duty cycle
- Removable Battery: Yes
- SRAM/Serial EEPROM: AT93C46 SRAMs for Ethernet configuration; two 8KB dual-address I2C devices for vital product data (VPD) and user configuration data; separate 256 byte standard I2C serial EEPROMs (on mezzanines) for memory VPD

#### ASYNCHRONOUS SERIAL PORTS

- Controller: PC97317
- Number of Ports: Two, 16550-compatible
- Configuration: EIA-574-DTE
- Async Baud Rate, bps max.: 38.4KEIA-232, 115Kb/s raw
- Connector (COM1): Front panel RJ-45, also RJ-45 on CPCI-6020-MCPTM-01
- Connector (COM2): Routed to J3, 10-pin header on CPCI-6020-MCPTM-01

#### SYNCHRONOUS SERIAL PORTS

- Controller: Z85230/Z8536
- Number of Ports: Two
- Configuration: TTL to P2 (both ports), SIM on MCPTM-01
- Baud Rate, bps max.: 2.5MB sync, 38.4KB async
- Oscillator Clock Rate (PCLK): 10 MHz/5 MHz
- Connector: Routed to J3, HD-50 on CPCI-6020-MCPTM-01

#### EIDE INTERFACE

- Controller: W83C554F
- Connector: Routed to J5, one 40-pin header on CPCI-6020-MCPTM-01; plus on-board CompactFlash

#### USB

- Controller:  $\mu$ PD720101
- Connectors: Two Series A receptacles on front panel, two separate ports routed to J5

#### FLOPPY

- Controller: PC97317
- Compatible Controllers: DP8473, 765A, N82077
- Configuration: 3.5" 2.88MB and 1.44MB; 5.25" 1.2MB
- Connector: Routed to J3, 34-pin header on CPCI-6020-MCPTM-01

#### MOUSE/KEYBOARD INTERFACE

- Controller: PC97317
- Connector: Routed to J3, 6-pin mini DIN on CPCI-6020-MCPTM-01

#### IEEE P1386.1 PCI MEZZANINE CARD SLOT

- Address/Data: A32/D32/D64, PMC PN1, PN2, PN3, PN4 connectors
- PCI Bus Clock: 33 MHz or 66 MHz
- Signaling: 3.3V
- Power: +3.3V, +5V, 12V, 7.5 watts maximum per PMC slot
- Module Types: Basic, single-wide, front panel I/O or J3 I/O

#### COUNTERS/TIMERS

- TOD Clock Device: MT48T37, 32KB NVRAM
- Real-Time Timers/Counters: Four 32-bit programmable
- Watchdog Timers: Three, time-out generates reset

#### POWER REQUIREMENTS

(not including power required by PMC, PIM or SIMs)

	+3.3V $\pm$ 5%	+5V $\pm$ 5%	12V $\pm$ 5%
CPCI-6020:	2.6 A typ.	2.8 A typ.	15 mA typ.
	3.5 A max.	3.75 A max.	20 mA max.

#### BOARD SIZE

- Height: 233.4 mm (9.2 in.)
- Depth: 160.0 mm (6.3 in.)
- Front Panel Height: 261.8 mm (10.3 in.)
- Width: 19.8 mm (0.8 in.)
- Max. Component Height: 14.8 mm (0.6 in.)

#### FRONT PANEL DETAIL AND CONTENT

- LED Indicators: Board FAIL and CPU Activity status
- Recessed Switches: Reset and Abort

## Transition Modules

### TRANSITION MODULE I/O CONNECTORS

- Asynchronous Serial Ports: RJ-45 labeled as COM1. Two 10/100 Mbps Ethernet ports ENET1 & ENET2. ENET1 shares with Ethernet port of CPCI-6020 on the front panel and requires custom-built option to activate it.
- Synchronous Serial Ports: Two (Serial 3 and Serial 4). User configurable via the installation of SIMs. Two 60-pin connectors on planar for installation of two serial interface modules. Single 50-pin external connector with Y-cable adapter.
- Mouse/Keyboard: 6-pin circular female mini DIN
- Floppy: 34-pin header
- EIDE: One 40-pin header

### BOARD SIZE

- Height: 233.4 mm (9.2 in.)
- Depth: 80.0 mm (3.1 in.)
- Front Panel Height: 261.8 mm (10.3 in.)
- Width: 19.8 mm (0.8 in.)

## All Modules

### ENVIRONMENTAL

	Operating	Non-operating
Temperature:	0° C to +55° C, forced air cooling exit air	-40° C to +85° C
Humidity (NC):	10% to 80%	10% to 90%
Vibration:	0.5 G RMS, 20–2000 Hz random	6.0 Gs RMS, 20–2000 Hz random

### 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, results pending:
  - ▲ CE Mark per European EMC Directive 89/336/EEC with Amendments; Emissions: EN55022 Class B; Immunity: EN55024

### SAFETY

All printed wiring boards (PWBs) are manufactured with a flammability rating of 94V-0 by UL recognized manufacturers.

## Ordering Information

Part Number	Description (revised)
CPCI-60206E-500	500 MHz, 7410 processor, USB, 6E
CPCI-60206E-505	500 MHz, 7410 processor, 6E
<b>Transition Module</b>	
CPCI-60206E-MCPTM-01	CPCI-6020 transition module, 6E
<b>Mezzanine Card</b>	
RAM5006E-005	128MB ECC DRAM (top), 6E
RAM5006E-015	128MB ECC DRAM (bottom), 6E
RAM5006E-006	256MB ECC DRAM (top), 6E
RAM5006E-016	256MB ECC DRAM (bottom), 6E
RAM5006E-010	512MB ECC DRAM (top), 6E
RAM5006E-020	512MB ECC DRAM (bottom), 6E
<b>Memory Modules</b>	
CFLASH6E-256	256MB CompactFlash memory card, 6E
CFLASH6E-512	512MB CompactFlash memory card, 6E
<b>Documentation</b>	
6806800A51A	CPCI-6020 Installation and Use

## SOLUTION SERVICES

Emerson Network Power provides a portfolio of solution services optimized to meet your needs throughout the product lifecycle. Design services help speed time-to-market. Deployment services include global 24x7 technical support. Renewal services enable product longevity and technology refresh.

PICMG and CompactPCI are registered trademarks of the PCI Industrial Computer Manufacturers Group. PowerPC is a trademark of IBM Corp. and used under license. Intel is a registered trademark of Intel Corporation or its subsidiaries in the U.S. and other countries. All other product or service names are the property of their respective owners.

This document identifies products, their specifications, and their characteristics, which may be suitable for certain applications. It does not constitute an offer to sell or a commitment of present or future availability, and should not be relied upon to state the terms and conditions, including warranties and disclaimers thereof, on which Emerson Network Power may sell products. A prospective buyer should exercise its own independent judgment to confirm the suitability of the products for particular applications. Emerson Network Power reserves the right to make changes, without notice, to any products or information herein which will, in its sole discretion, improve reliability, function, or design. Emerson Network Power does not assume any liability arising out of the application or use of any product or circuit described herein; neither does it convey any license under its patent or other intellectual property rights or under others. This disclaimer extends to any prospective buyer, and it includes Emerson Network Power's licensee, licensee's transferees, and licensee's customers and users. Availability of some of the products and services described herein may be restricted in some locations.

**Emerson Network Power.**  
The global leader in enabling  
Business-Critical Continuity™.

■ AC Power Systems  
■ Connectivity  
■ DC Power Systems  
■ **Embedded Computing**

■ Embedded Power  
■ Integrated Cabinet Solutions  
■ Outside Plant  
■ Power Switching & Control

■ Precision Cooling  
■ Services  
■ Site Monitoring  
■ Surge & Signal Protection

### Emerson Network Power

**Offices:** Tempe, AZ U.S.A. 1 800 759 1107 or +1 602 438 5720 • Madison, WI U.S.A. 1 800 356 9602 or +1 608 831 5500  
Shanghai, China +86 10 85631 122 • Paris, France +33 1 60 92 31 20 • Tokyo, Japan +81 3 5403 2730  
Munich, Germany +49 89 9608 2333 • Hong Kong, China +852 2176 3540 • Tel Aviv, Israel +972 3 568 4387

[www.EmersonNetworkPower.com/EmbeddedComputing](http://www.EmersonNetworkPower.com/EmbeddedComputing)

Emerson, Business-Critical Continuity, Emerson Network Power and the Emerson Network Power logo are trademarks and service marks of Emerson Electric Co.  
©2008 Emerson Electric Co.

CPCI6020-D3 06/08