CPCI-6065

CompactPCI Peripheral Slot Processor Board
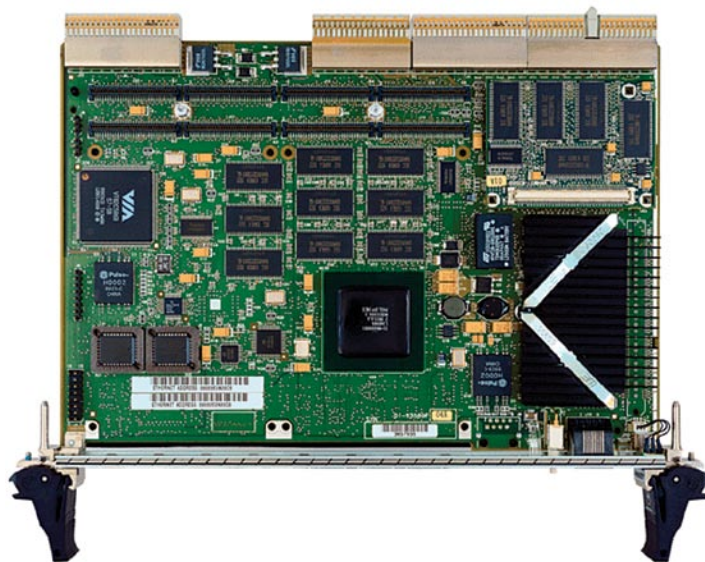
The Emerson CPCI-6065 offers maximum performance and flexibility.

- MPC7410 or MPC750 class processor
- 1MB or 2MB of L2 cache
- Up to 1.5GB ECC SDRAM, with optional RAM500 memory expansion modules
- Dual 10/100BaseTX Ethernet interface
- Two 32/64-bit PMC expansion slots with front-panel or backplane I/O
- 16MB on-board flash memory for user-specified requirements
- Two 32-pin PLCC/CLCC sockets for flash memory, up to 1MB capacity for on-board firmware or user specified requirements
- Optional CompactFlash memory card socket on accompanying transition module
- On-board debug monitor with self-test diagnostics
- Two USB ports, four async serial ports
- 32KB NVRAM and time-of-day clock with replaceable battery backup
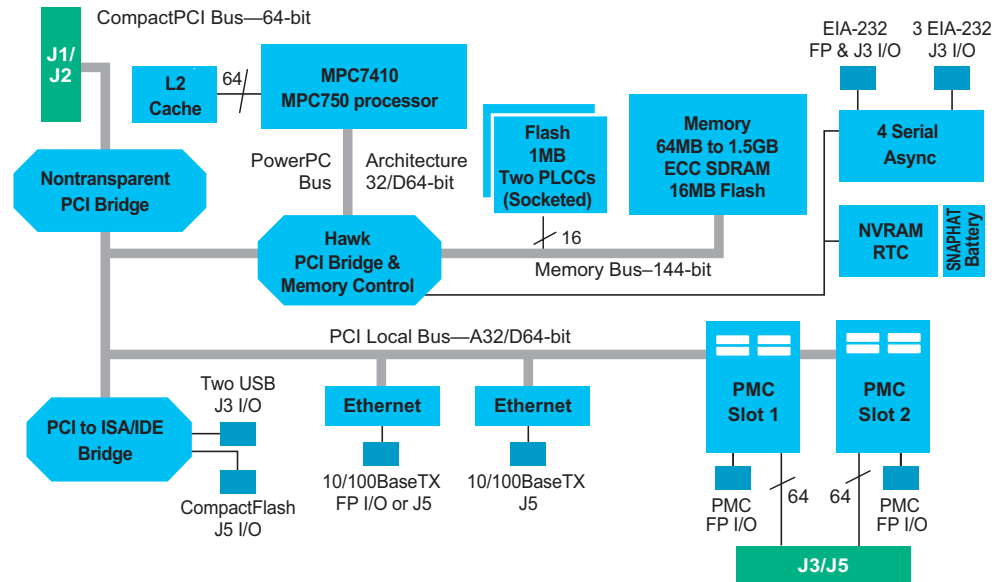- Four 32-bit timers, one watchdog timer

The Emerson CPCI-6065 series of CompactPCI® boards provides competitive processors, Emerson's PowerPlus II Architecture, dual 10/100BaseTX Ethernet, two PCI mezzanine card (PMC) slots, and up to 1.5GB of ECC SDRAM. All this is available in a single CompactPCI slot.

Using the low-power, high-performance MPC7410 or MPC750 class processors, 64-bit local peripheral component interconnect (PCI) bus for the on-board peripherals and processor/memory bus to PCI bus bridge, the CPCI-6065 offers maximum performance and flexibility. It is also fully compliant to the PICMG® 2.1 Hot Swap Specification, making it the ideal choice for high availability applications.

RoHS
5/6
Pb SOLDER EXEMPT

EMERSON™
Network Power

CPCI6065 Block Diagram

CompactPCI Bus—64-bit

EIA-232 FP & J3 I/O   3 EIA-232 J3 I/O

J1/J2

L2 Cache   64   **MPC7410 MPC750 processor**

Flash 1MB Two PLCCs (Socketed)   **Memory 64MB to 1.5GB ECC SDRAM 16MB Flash**   **4 Serial Async**

Nontransparent PCI Bridge   PowerPC Bus   Architecture 32/D64-bit

Hawk PCI Bridge & Memory Control   16   **NVRAM RTC**   **SNAPHAT Battery**

Memory Bus–144-bit

PCI Local Bus—A32/D64-bit

Two USB J3 I/O

PMC Slot 1   **PMC Slot 2**

PCI to ISA/IDE Bridge   **Ethernet**   **Ethernet**

CompactFlash J5 I/O   10/100BaseTX FP I/O or J5   10/100BaseTX J5   PMC FP I/O   64   64   PMC FP I/O

J3/J5

Hardware Overview

IEEE P1386.1 COMPLIANT PMC SLOTS

The CPCI-6065 features dual PMC ports with support for both front-panel and backplane I/O. In addition to providing high-performance expansion I/O, the IEEE P1386.1 compliant PMC ports form a common architecture for future generations of products. Changing I/O requirements can be satisfied by simply replacing PMCs while reusing the same base platform and software, reducing the long-term cost of ownership.

POWERPLUS II ARCHITECTURE

A second-generation architecture, PowerPlus II Architecture, is a processor and bus architecture fully optimized to get the maximum performance from the PowerPC® architecture-compatible microprocessor family, the PCI bus and the CompactPCI bus. Features added to the original PowerPlus Architecture include support for 100 MHz local bus operation and utilization of synchronous DRAM (SDRAM) technology. The outstanding performance of the PowerPlus II Architecture is not due to a single factor. A number of elements in the design of the PowerPlus II Architecture contribute to its outstanding performance including the processor/ memory subsystem, high-speed local bus, optimally decoupled architecture, decoupling the processor from PCI and the advanced CompactPCI interface that reduces PCI delays.

TRANSITION MODULE

The CPCI-6065-TM-PIMC101 transition module provides industry-standard connector access to two RJ-45 Ethernet connectors, two RJ-45 async serial port connectors (configured as EIA DTE), two headers for async serial ports and two PIM slots for PMC interface modules. One socket for optional CompactFlash memory is also provided.

FIRMWARE MONITOR

Firmware must fulfill the traditional functions of test and initialization, in addition to operating system boot support. The CPCI-6065 firmware monitor exceeds these requirements plus expands features like power- up tests with extensive diagnostics, as well as a powerful evaluation and debug tool for simple checkout or when high-level development debuggers require additional support. All this is included with the CPCI-6065 firmware, plus it supports booting both operating systems and kernels.

OPERATING SYSTEMS AND KERNELS

CPCI-6065 supports booting VxWorks real-time operating system and kernels, which may be purchased from Wind River Systems, Inc.

Specifications

PROCESSOR

- Microprocessor: 450 or 500 MHz MPC750 class or 500 MHz MPC7410
- On-chip Cache (I/D): 32K/32K

MEMORY

- ECC Protected Main Memory: PC100 SDRAM with 100 MHz bus
- Capacity: 64MB to 1.5GB
- Single Cycle Accesses: 10 read/5 write
- Read Burst Mode: 7-1-1-1 idle; 2-1-1-1 aligned page hit
- Write Burst Mode: 4-1-1-1 idle; 2-1-1-1 aligned page hit
- L2 Cache: 1MB (750) or 2MB (7410)
- EEPROM/Flash: On-board programmable
- Capacity: 1MB via two 32-pin PLCC/CLCC sockets; 16MB surface mount
- Read Access (8MB port): 70 clocks (32-byte burst)
- Read Access (1MB port): 262 clocks (32-byte burst)
- NVRAM: 32KB; 24KB available for users
- Cell Capacity Life: 5 years at 100% duty cycle, 25° C
- Removable Battery: Yes

COMPACTPCI INTERFACE

- Controller: Intel® 2155x
- Address/Data: A32/D32/D64
- PCI Bus Clock: 33 MHz
- Signaling: 3.3V output; input defined by VIO

DUAL ETHERNET INTERFACE

- Controller: Two Intel® 21143
- Interface Speed: 10/100Mbps
- PCI Local bus DMA: Yes, with PCI burst
- Connector: One RJ-45 on front panel or J5/TM, one additional J5/TM only

ASYNCHRONOUS SERIAL PORTS

- Controller: 16C550C UART
- Number of Ports: Four
- Async Baud Rate, bps max.: 38.4K EIA-232
- Connector (COM1): Front panel; also RJ-45 on CPCI-6065-TM-PIMC101
- Connector (COM2/3/4): Routed to J3; one RJ-45, two headers on CPCI-6065-TM-PIMC101

COUNTERS/TIMERS

- TOD Clock Device: M48T37V; 32KB NVRAM
- Real-Time Timers/Counters: Four 32-bit programmable
- Watchdog Timer: Time-out generates reset

USB

- Controller: 82C586 or 82C686
- Connectors: Routed to J3 for use of two Series A receptacles on optional host interface module

IEEE P1386.1 PCI MEZZANINE CARD SLOTS

- Address/Data: A32/D32/D64, PMC JN1, JN2, JN3, JN4 connectors
- PCI Bus Clock: 33 MHz
- Signaling: 5V
- Power: +3.3V, +5V, ±12V, 7.5 watts maximum per PMC slot
- Module Types: Two single-wide or one double-wide, front panel I/O or J3 and J5 I/O; supports PrPMC module type PMCs (maximum, not including PMC modules)

Note: Due to high component density, uninsulated traces and vias are located in the CPCI-6065 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.

HOT SWAP

Compliant with PICMG Hot Swap Specification, Revision 1.0

POWER REQUIREMENTS
(maximum, not including PMC modules)

	+3.3V ±5%	+5V ±5%	+12V ±5%	−12V ±5%
CPCI-6065-3371	2.97 A .	2.65 A	20 mA	<10 mA
CPCI-6065-8371	2.97 A	3.65 A .	20 mA	<10 mA

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 (0.58 in.)

MISCELLANEOUS

- Reset/Abort switch (recessed on the MPC7410) on front panel
- Three LEDs for FAIL, CPU activity and hot swap

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

- Mean: 214,322 hours
- 95% Confidence: 121,141 hours

CPCI-6065-TM-PIMC101 Transition Module

I/O CONNECTORS

- Asynchronous Serial Ports: Two RJ-45 connectors labeled as COM1 and COM2; two 10-pin headers labeled as COM3 and COM4
- Ethernet: Two RJ-45

PIM CARD SLOT

- Power: +3.3V, +5V, +12V, −12V
- Module Types: Two single-wide or one double-wide

Note: Jn0 PIM connectors incorporate other CPCI-6065 I/O for future host interface modules.

COMPACTFLASH MEMORY CARD INTERFACE

- Controller: 82C586
- Interface: ATA, true IDE mode
- CompactFlash Cards (optional): Emerson CFLASH5E-xxx series
- Connector: One standard 50-pin socket

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	−40° C to +85° C
Humidity (NC):	0% to 80%	10% to 90%
Vibration:	0.5 G RMS, 20–2000 Hz random	6.0 Gs RMS, 20–2000 Hz random

SAFETY

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

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)

This product was 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

Ordering Information

Part Number	Description
CPCI-6065-3371	500 MHZ MPC750 processor, 512MB SDRAM, 5E
CPCI-6065-3361	500 MHZ MPC750 processor, 256MB SDRAM, 5E
CPCI-6065-8371	500 MHZ MPC7410 processor, 512MB SDRAM, 5E
Transition Module	
CPCI-6065-TM-PIMC101	Dual Ethernet transition module for the CPCI-6065
Documentation	
6806800A67A	CPCI-6065 CompactPCI Nonsystem Slot Processor Module Installation and Use
MCPN765A/PG	MCPN765 CompactPCI Nonsystem Slot Processor Module Programmer's Reference Guide
6806800A84A	CPCI-6065-TM-PIMC-0101 Transition Module 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. Plus solution extras include enhanced warranty and repairs.

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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