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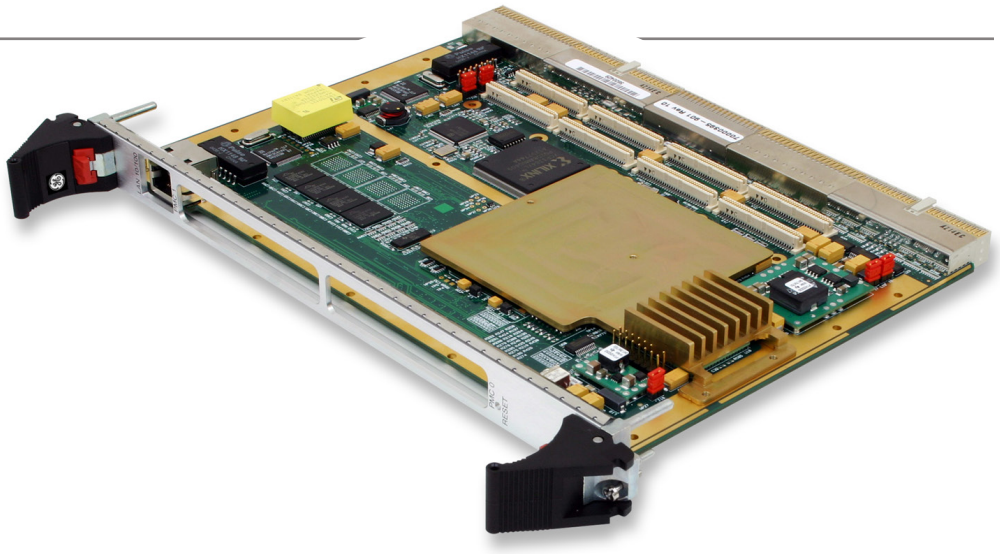
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CK5

High Performance Rugged 6U CompactPCI® Embedded Computer

The CK5 is a rugged 6U CompactPCI® single board computer (SBC) with increased processor speeds, system and memory bus speeds, and system memory capacities offered as an upgrade for the CK3 rugged cPCI SBC.

The CK5 hosts the PPC G4 MPC7447A processor from Freescale™ Semiconductor, with core processor speeds up to 1 GHz, and 512 KB of on-board L2 cache. The MPC7447A processor is supported with a 167 MHz MPX system bus.

The CK5 integrates the Marvell® MV64460 (Discovery® III) system controller bridge chip, which includes a high speed DDR SDRAM controller with 167 MHz interface that services the 512 MB of DDR SDRAM with build options for 256 MB or 1 GB. The MV64460 also features 10/100 BaseTX Ethernet MACs that provides one Ethernet port to the backplane (convection and conduction-cooled versions) and one port to a front-panel RJ-45 connector (convection-cooled version only). The MV64460 includes two MPSC ports that provide two RS-232 ports to the backplane.

The CK5 includes eight programmable GPIO ports with independent interrupts. Each port can be programmed for direction, input polarity, output type, and interrupt mask.

The CK5 hosts two IEEE1386.1 PMC sites for expanding I/O capability with WAN or LAN I/O. The CK5 retains the same backplane PMC interfaces as the CK3 to support existing applications.

In addition to the two RS-232 port provided by the MV64460, the CK5 includes four RS-422 ports through an independent Quad UART. The CK5 also includes two USB ports.

The CK5 implements the PCI 6254 PCI/cPCI Bridge that allows the CK5 to operate as a system con-troller or peripheral processor card.

The CK5 is offered as a ruggedized conduction-cooled processor card and also in a convection-cooled configuration.

FEATURES:

- MPC7447A G4 host processor with 512 KB on-chip L2 cache
- MV64460 PowerPC® System Controller (Discovery® III) bridge chip
- DDR333 SDRAM 512 MB standard, (256 MB or 1 GB options) with ECC
- Soldered boot flash 128 MB with multi-level write-protection
- 32 KB NVRAM with battery backup
- Real-time clock with battery backup
- Watchdog from RTC or MV64460, software selectable
- 10/100 Ethernet port to backplane (convection and conduction-cooled versions)
- 10/100 Ethernet port to front-panel RJ-45 connector (convection-cooled version only)
- Two IEEE 1386.1 PMC extension slots
- Two RS-232 serial I/O ports (COM1 and COM2)
- Four RS-422 serial I/O ports (COM3 – COM6)
- Two USB 2.0 ports
- Eight programmable GPIO ports with independent interrupts
- Dual temperature sensor
- System and non-system (peripheral) mode
- Conduction or convection cooled
- Extended temperature range (-40° C to 85° C)

abaco SYSTEMS

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CK5 *High Performance Rugged 6U CompactPCI® Embedded Computer*

Specifications

Processor
- Motorola PowerPC MPC7447A G4 processor
- Core processor speeds: up to 1 GHz
- High performance, low power, 32-bit PowerPC RISC architecture
- Superscaler processor
- 32 KB L1 instruction and data caches
- 512 KB L2 on-chip cache
- 64-bit 167 MPX system bus interface to MV64460 system controller

DDR SDRAM
- Soldered DDR333 SDRAM
- SDRAM controller from MV64460 system controller
- 64-bit (72-bit with ECC) 167 MHz memory bus
- Capacities: 512 MB standard (256 MB and 1 GB offered as build options)

Flash ROM
- 128 MB flash memory
- Multi-level write-protection

PCI Interfaces
- Two PCI bus interfaces from MV64460 system controller
- PCI bus 0: 32/64-bit 33/66 MHz (dedicated to PMC0 site)
- PCI bus 1: 32/64-bit 33/66 MHz, VIO selectable (+5V/+3.3V) through header/jumper site (shares PMC1 site, USB controller through PCI2050B PCI bridge, and PCI 6254 PCI bridge)

cPCI Backplane Interface
- PCI 6254 PCI/PCI bridge
- PICMG 2.0 R3.0 compliant
- 32 or 64-bit CompactPCI data transfers at 33 or 66 MHz
- 33 or 66 MHz PCI bus interface
- Supports system controller or peripheral mode

PCI/PCI Bridge
- PCI2050B PCI/PCI bridge
- Provides 32-bit 33 MHz PCI bus for USB controller
- Provides isolation for 66 MHz PCI bus 1 from 33 MHz USB controller

NVRAM/Real-time clock
- ST M48T37V device
- 32 KB non-volatile RAM
- RTC 146818 compatible, on-board Li-battery

10/100 Ethernet
- One 10/100 BaseTX Ethernet port to rear I/O (convection- and conduction-cooled)
- One 10/100 BaseTX Ethernet port to front-panel RJ-45 including Activity and Link LEDs (convection-cooled only)
- MACs and MII interfaces from MV64460 system controller

USB Ports
- Two USB 2.0 ports to cPCI_J4
- Three speeds supported: USB 1.0 (1.5 MHz), USB 1.1 (12 MHz), and USB 2.0 (480 MHz)

Serial I/O – RS-232
- Two RS-232 serial ports: COM1, COM2 on cPCI_J5
- Two Multi-Protocol Serial Controllers (MPSC) from the MV64460 system controller
- Independent RS-232 differential receiver and line drivers

Serial I/O – RS-422
- Four RS-422 serial ports: COM3–COM6 on cPCI_J4
- ST16C654 Quad UART on 32-bit Device bus
- Independent Quad RS-422 receiver and line driver

General-Purpose I/O
- Eight programmable GPIO ports
- Programmable for line direction (input, output), input polarity (inverted, non-inverted), output type (TTL, open-drain), and interrupt masking
- Independent interrupt for each port

PMC Extension Slots - IEEE P1386/1386.1
- Compliant to VITA 30.1-2001 and ANSI/VITA 20-2001
- PMC0 site on dedicated PCI bus 0 (supports standard PCI configurations)
- PMC1 site on shared PCI bus 1 (supports standard PCI configurations)
- Both PMC sites support rear I/O

Watchdog Timers
- ST M48T37V NVRAM/RTC
- MV64460 system controller
- Software selectable

Temperature Sensor
- CPU die and ambient temperature
- Software readable from –55° C to +125° C

Power Requirements
- +5 V, +3.3V required
- ±12V only if required by mounted PMC module

Power Allowances - PMC slot
- +5 V, +3.3 V, ±12 V
- Total power max. 7.5 W

Mechanical
- PICMG 2.0 R3.0 and VITA 30.1 compliant
- 6U, 1 slot wide
- 233 x 160 x 20 mm

Temperature
- Highest reachable operating temperature depends on processor speed and ambient conditions (airflow)
- All values under typical conditions w/o PMC module

Range	Operating	Storage
Standard	0° C to +70° C	–40° C to +85° C
Extended	–40° C to +85° C	–55° C to +85° C

Humidity
- Operating: 5 - 95% @ 40° C
- Storage: 5 - 95% @ 40° C

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- Storage: 5 - 95% @ 40° C

Altitude
- Operating: 15,000 ft. (4.5 km)
- Storage: 40,000 ft. (12 km)

Shock (half-sine)
- C-Style: 12 g/6 ms, 3 axis (up and down, 5 hits/direction)
- N-Style: 40g /11 ms, 3 axis (up and down, 5 hits/direction)

Vibration
- C-Style: 2 g rms @ 5 to 100 Hz (30 minutes each axis)
- N-Style: 14 g rms @ 5 to 2000 Hz (30 minutes each axis)

MTBF
- Calculations are available in accordance with MIL-HDBK-217. Please contact Abaco Intelligent Platforms for latest values.

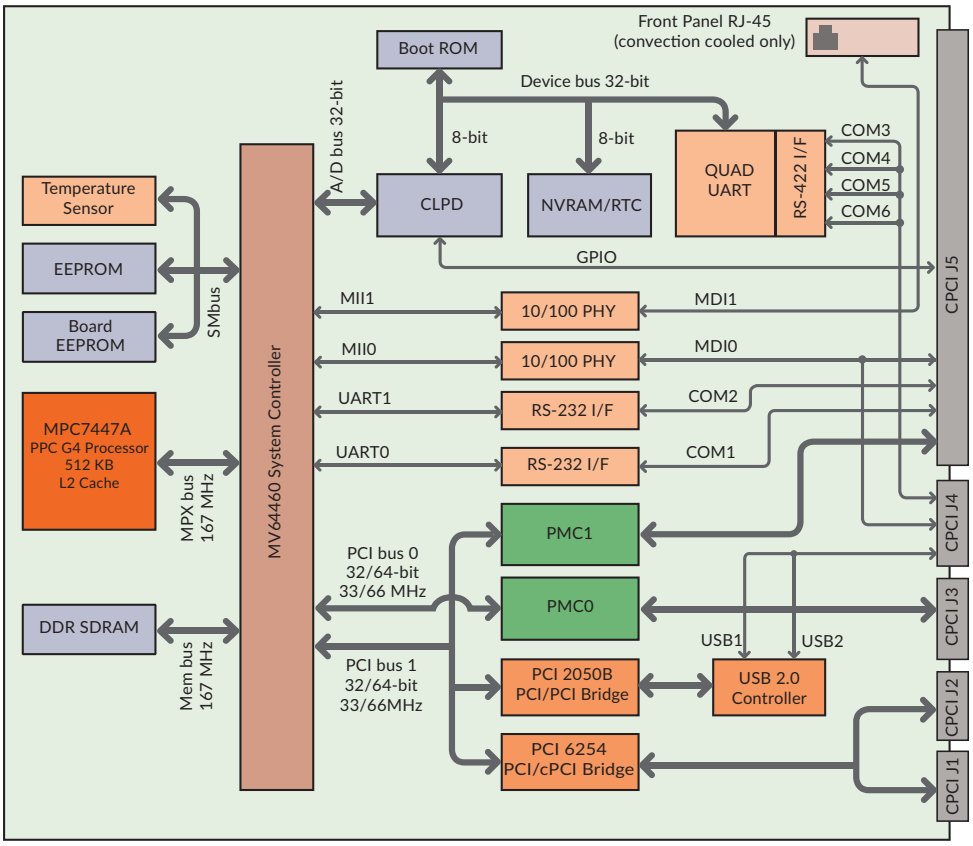
Safety
- Designed to meet standard UL1950/60950

Emissions
- Designed to meet FCC Part 15, SubPart A

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CK5 *High Performance Rugged 6U CompactPCI® Embedded Computer*

Block diagram



Ordering information

CK532200C:	MPC7447A 1GHz processor, 512 MB SDRAM, convection-cooled
CK532210C:	Same as above with VxWorks® Bootrom

Hardware Accessories

CK5-TM:	I/O transition module for 6U backplane (IEEE 1101.11-1998 compliant)

Operating Systems

Abaco Systems supports various operating systems. Please contact us for current offerings. For detailed information and further options, contact Abaco Systems.

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