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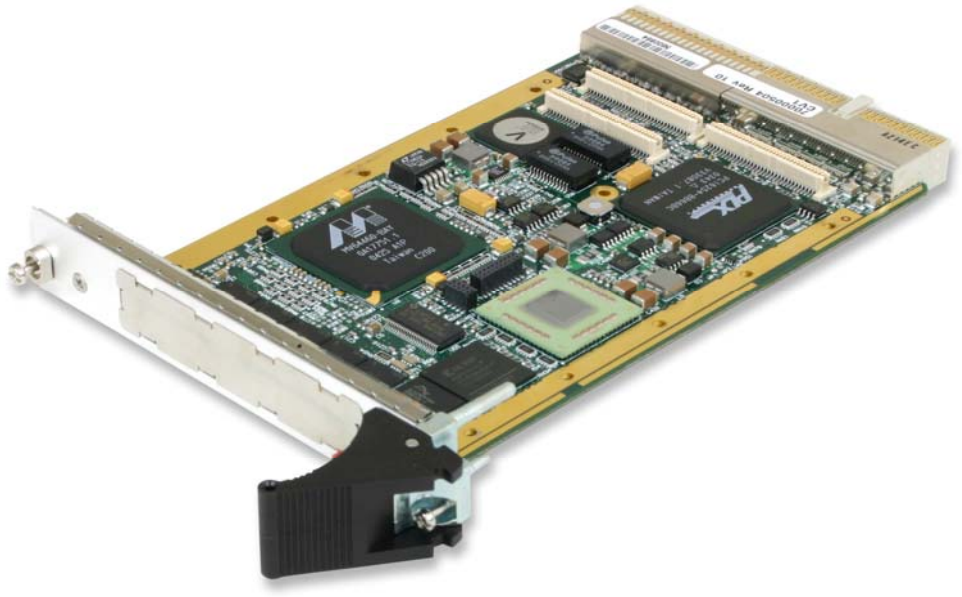
CV1

High Performance Rugged 3U CompactPCI® Embedded Computer

Single Board Computers

Features

- MPC7447A G4 host processor with 512 kB on-chip L2 cache
- MV64460 PowerPC System Controller (Discovery III) bridge chip
- System controller or peripheral mode operation
- DDR SDRAM: 256 MB with ECC
- Soldered boot flash: 128 MB with multiple levels of write-protection
- 32 kB NVRAM
- Real-Time Clock with backup power from system
- Watchdog timer
- Temperature sensor
- Two 10/100/1000 Base-TX ports to backplane
- RS-232 (COM1) serial port
- RS-422/485 (COM2) serial port
- PMC extension slot, 32-bit 33/66 MHz with rear I/O
- 10 GPIO ports (eight dedicated, two shared)
- Single slot
- Conduction or convection cooled
- Extended temperature range (-40° C to 85° C)



Convection-cooled version (shown without heatsink)

CV1 is a rugged 3U CompactPCI PowerPC Single Board Computer featuring Freescale Semiconductor's MPC7447A G4 processor supporting a core processor speed of 1 GHz and a system bus clock rate of 167 MHz.

The CV1 includes the Marvell® MV64460 (Discovery III) System Controller with integrated 167 MHz SDRAM controller, two Gigabit Ethernet ports, two 32-bit 33/66 MHz PCI bus interfaces, and two serial I/O ports.

The CV1 hosts one single-wide IEEE1386.1 PMC site for expanding I/O capability. The PMC site resides on a dedicated 32-bit 33/66 MHz PCI bus.

For status and control capability, the CV1 provides ten general-purpose I/O lines to the backplane with separate interrupts and interrupt masking capability.

The CV1 employs the PLX PCI 6254 Dual Mode cPCI Bridge that handles 32-bit data transfers to and from the cPCI backplane. Through its dual mode functionality the PCI 6254 allows the CV1 to operate as a system controller or peripheral processor card.

The CV1 is available in ruggedized conduction-cooled or convection-cooled configurations.

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Specifications

Processor
- MPC7447A PowerPC G4 processor
- Core processor speed: 1 GHz
- High performance, 32-bit PowerPC RISC architecture
- Superscalar processor
- 32 kB L1 instruction and data caches
- 512 kB L2 on-chip cache
- 64-bit 167 MHz System Bus from MV64460 System Controller

DDR SDRAM
- 256 MB of soldered DDR333 SDRAM (PC2700)
- Memory Controller from MV64460 System Controller
- 64-bit 167 MHz Memory Bus (72-bit with ECC)

Flash ROM
- 128 MB flash memory
- Multiple levels of write-protection

PCI Interface
- Two PCI Bus interfaces from MV64460 System Controller
- PCI Bus 0: 32-bit 33/66 MHz, +3.3 VIO, dedicated to PMC site
- PCI Bus 1: 32-bit 33/66 MHz, dedicated to cPCI bridge

cPCI Backplane Bridge
- PCI 6254 cPCI Bridge
- PICMG 2.0 R3.0-compliant
- 32-bit cPCI data transfers at 33 or 66 MHz
- Auto-detect system controller slot for controller or peripheral mode

NOTE: The CV1 is **not** compatible with a 64-bit backplane.

PMC Extension Slot
- Single IEEE P1386/1386.1-2001-compatible PMC site on dedicated PCI bus
- Rear I/O support (+3.3V VIO)

NVRAM/Real-time clock
- 32 kB non-volatile RAM
- STK17T88 NVRAM device
- Real-Time Clock feature
- Backup power (+3.3V supplied from the system)

Gigabit Ethernet
- Two 10/100/1000 Base-TX Ethernet ports to backplane
- Two on-board Gigabit Ethernet PHYs
- MAC/RGMII interface from MV64460 System Controller

Serial Ports
- Two Multi-Protocol Serial Controller (MPSC) ports from MV64460 System Controller
- COM1: RS-232 (asynchronous)
- COM2: RS-422/485 (synchronous and asynchronous**)**

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

Watchdog Timer
- MV64460 System Controller

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 installed PMC module
- +3.3V—required for RTC battery backup

Power Allowances - PMC slot

- PMC power max.: 7.5 W
- +5V, +3.3V, ±12V

Power Consumption

- Total (processor at 1 GHz, 256 MB SDRAM): 40 W *
- Inrush: TBD
- BATT+ for RTC battery backup: 10µA

* This value is a calculated maximum.

Mechanical

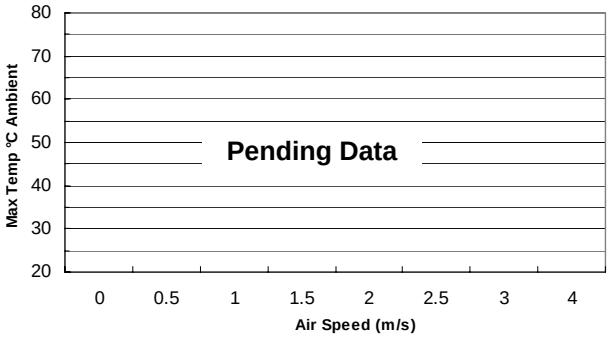
- PICMG 2.0 and VITA 30.1 compliant
- 3U, 1 slot wide
- 100 mm x 160 mm
- Weight: C-Style: 15.2 oz.
  N-Style: 9.6 oz.

Temperature

- Tests performed with 7.5W PMC load

Range	Operating	Storage
Standard	0° C to +70° C	–40° C to +85° C
Extended	–40° C to +85° C	–55° C to +105° C

Processor Temperature



Humidity

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

Altitude

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

Shock

- C-Style 12g / 6 ms, 3-axes, up & down, 5 hits / direction
- N-Style 40g / 11 ms, 3-axes, up & down, 5 hits / direction
  100g / 6 ms, 3-axes, up & down, 5 hits / direction

Vibration

- C-Style 2 g rms @ 5–100 Hz, 60 minutes each axis
- N-Style 12 g rms @ 5–2000 Hz, 60 minutes each axis

MTBF

- Calculations are available in accordance with MIL-HDBK-217. Please contact SBS for latest values.

Safety

- Designed to meet standard UL1950/60950

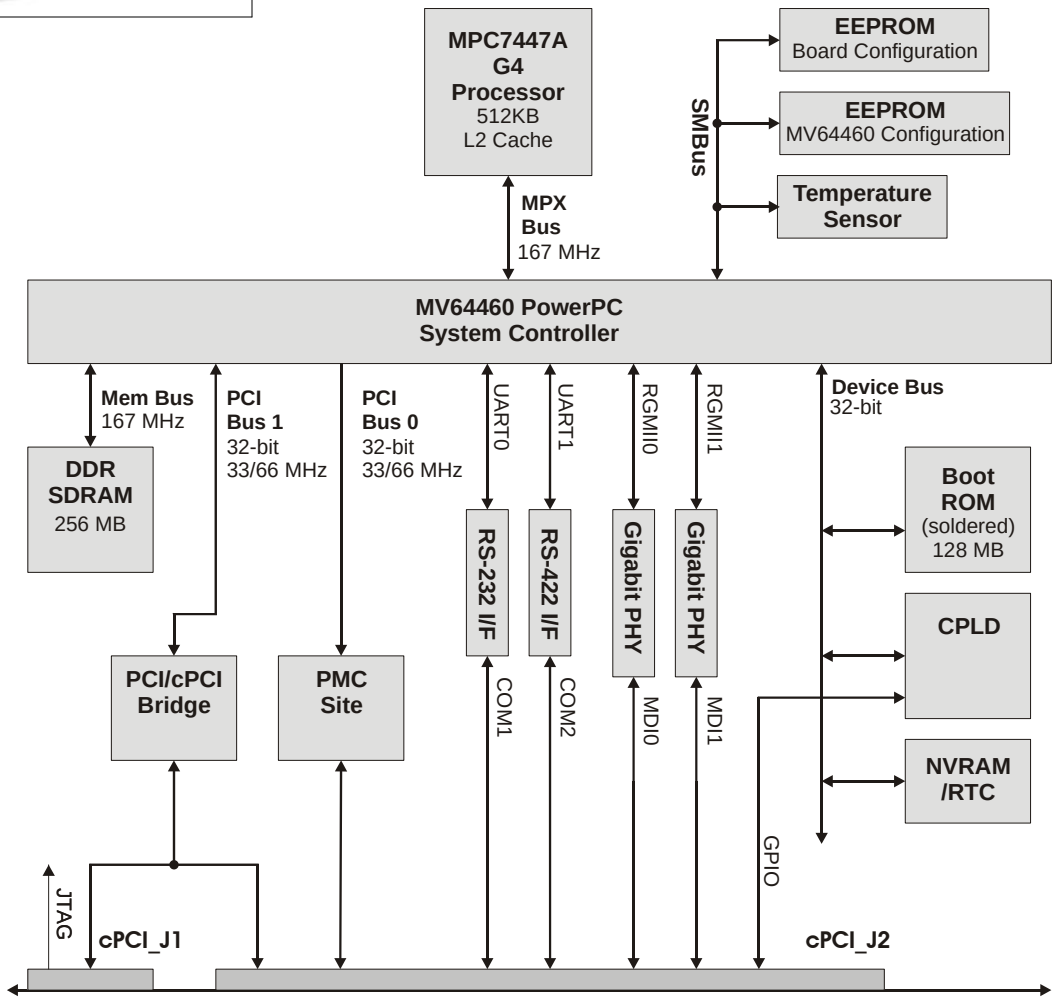
Emissions

- Designed to meet FCC Part 15, Subpart A



CV1

Block Diagram



Ordering Information

CV123000C
256 MB SDRAM, MPC7447A 1GHz processor, convection-cooled version
256 MB SDRAM, MCP7447A 1GHz processor, conduction-cooled version

Hardware Accessories
CV1-TM I/O transition module for 3U cPCI backplane (IEEE 1101.11-1998 compliant)

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

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