



CT9

High Performance – PICMG 2.16 6U CompactPCI® Server Blade

SINGLE BOARD
COMPUTERS

Features

- Intel® Pentium® M CPU, 600 MHz to 1.6 GHz
- Optimized for telecom applications
- Ultra compact, 1 slot
- Hot Swap (Full) PICMG 2.1 compliant
- System & Non-system (peripheral) mode
- Extensive Software Support
- Up to 2 GB DDR SDRAM (200) with ECC
- Flash Drive up to 1 GB or local 2.5" hard disk
- VGA/LCD up to 2048x1536, 16/32MB DDR SDRAM
- Two Gigabit Ethernet ports 10/100/1000 BaseT front or rear optional
- PICMG 2.16 compliant
- Two PMC extension slots, one 64-bit/66 MHz and one 32-bit/33 MHz
- IPMI PICMG 2.9
- Ultra ATA/100 onboard, second channel rear I/O
- 2x serial I/O with FIFOs RS-232/422/485 interface
- USB 2.0 ports, one front, 4 rear
- Watchdog, temperature sensor
- Optional -40°/+55°C
- Customer specific, low cost assembly versions



CT9 is a 6U CompactPCI all-in-one CPU board with integrated low power Intel® Pentium® M processor and dual Gigabit Ethernet channels. The CT9 supports full hot swap and is capable of being used in a system or non-system (peripheral) slot. Adhering to the PICMG 2.16 dual Ethernet specification, the CT9 supports the 64-bit/66 MHz CompactPCI bus and is designed for use in a broad range of applications such as wireless base stations, voice over packet, enterprise devices, test and measurement systems, and server blade applications.

The CT9 platform is designed to support processors starting with 600MHz up to 1.6 GHz. It offers low power consumption and eliminates the need for on-board fans. The design is ready to accept future higher performance Intel Pentium M processor versions.

The CT9 provides a unique feature set, including up to 2 GB of 200 MHz DDR SDRAM with ECC, three independent on-board PCI buses, high speed support for the CPCI backplane, two PMC interfaces (64-bit/66MHz and 32-bit/33 MHz). A high level of functional integration (VGA/TFT, USB, serial interfaces, etc.) within a single slot gives users the freedom to use the PMC interfaces as extension for their applications. This combined with a custom specific assembly service provides optimized price/performance for all kinds of OEM applications. The board is also available in extended temperature version ranging from -40° to +55° C.

The CT9 also includes a Baseboard Management Controller (BMC) supporting the Intelligent Platform Management Interface (IPMI) architecture. It allows independent platform management between IPMI enabled boards, power supplies, fans and other accessories in a system. This feature can be used for autonomous monitoring, logging and recovery control functions.

Supported operating systems are Windows® 2000, Windows® XP, QNX, VxWorks®, Linux® and LynxOS® (on request).

Specifications

CompactPCI - Hint HB6 PCI-to-PCI Bridge

- PICMG 2.0 R3.0 compliant CPCI local bus standard
- 64-bit PCI-to-PCI bridge for up to 8 slots (33 MHz) or 5 slots (66 MHz)
- Supports System and Peripheral Mode
- J1+2, 2 mm pin and socket connectors (IEC-1076-4-101)

Processor - μ FCBGA, Low Power Design

- Scalable processing power with flexible processor design
- Intel Pentium M processor: 600 MHz to 1.6 GHz
- High efficiency on-board switching regulator (DC/DC)
- Fanless cooling with heatsink
- See price list for latest CPU versions

Chipset – Intel E7501/P64H2

- 400 MHz system bus to processor
- PCI burst mode transfers up to 512 MB/s (64-bit/66 MHz)
- Two 64-bit wide PCIbusses with 66 MHz
- One 32-bit wide PCIbus with 33 MHz

Cache	level 1	level 2
Pentium M	32 KB	1024 KB, full speed

Memory – DDR 200

- High-speed registered DDR SDRAM
- 72-bit wide with error correction (ECC)
- 128 Mbytes to 2 Gbyte with soldered chips
- Note: Memory speed depends on selected processor type

Dual Gigabit Ethernet – Intel 82546GB

- Highly integrated Dual Channel Ethernet Controller with 64-bit/66 MHz PCI local bus DMA
- 64 Kbyte Transmit and Receive FIFO
- 10/100/1000BaseT auto-negotiation
- Versions with front I/O available
- Compliant to PICMG 2.16

Hard Disk or Flash Drive

- Internal 2.5" IDE hard disk or 2.5" flash drive (for extended temperature range and higher shock/vibration immunity)

PMC Extension Slots - IEEE P1386/1386.1

- Compliant to VITA 30.1-2001 and ANSI/VITA 20-2001
- One high bandwidth 64-bit/66 MHz PMC interface
- 32-bit/33 MHz PMC slot supports front panel I/O and rear I/O
- 32-bit/33 MHz PMC slot not available with front I/O, hard disk or flash drive mounted

IPMI 1.5

- Baseboard Management Controller supporting the Intelligent Platform Management Interface (IPMI) architecture in compliance with PICMG 2.9
- Peripheral mode and BMC mode are supported

VGA and LCD – NVIDIA® GeForce™4 410/420 Go

- 256-bit 3D and 2D graphics accelerator
- On-chip 16/32 Mbytes frame buffer (66-190 MHz)
- 32-bit/33 MHz PCI interface
- NVIDIA Digital Vibrance Control™ technology
- Dual CRT/Simultaneous Dual Display (same or different surfaces)
- Integrated 350MHz Palette-DAC for analog VGA monitors up to 2048x1536
- DVI-I interface PanelLink® single channel for TFT displays up to 1280x1024 true color (EDID displays PnP supported)
- Fully compliant support for OpenGL 1.2 for all Windows operating systems and Linux
- Versions with front or rear-I/O available
- Note: No video output is available if connector J4 is not populated and if a PMC module is attached on PMC2

EIDE- ICH4

- Ultra ATA/100 sync. DMA mode up to 100 Mbytes/sec
- PIO mode 4 and bus master IDE up to 16 Mbytes/sec
- Two devices supported via local EIDE connector and two devices alternative with PMC32/33 rear I/O

Serial I/O - RS232/422/485

- Two async. 16550 compatible full duplex serial channels at rear I/O
- High-speed transfer up to 115.2 kbaud with 16 byte FIFOs
- User selectable RS232/422/485 interface
- COM1 optional available at front

Parallel Port

- Bi-directional, IEEE 1284 compatible enhanced parallel port (including EPP and ECP) for printer

USB 2.0 – ICH4

- One USB 2.0 connector at front
- 4 universal serial bus channels at rear

Keyboard

- PS/2 compatible

Mouse

- PS/2 compatible

Real-time clock

- RTC 146818 compatible, on-board Li-battery

CMOS RAM

- 114 bytes non-volatile CMOS RAM

EEPROM

- 512 kbit serial EEPROMs for non-volatile user data

Floppy

- One channel 3.5" floppy drive controller
- 720 KB and 1.44 MB

Watchdog

- Integrated in E7501/ICH4 chipset

Timer

- IRQ and integrated in E7501/ICH4 chipset

Temp. Sensor

- CPU die and heatsink temperature software readable from -65°C to +127°C

LED

- front panel LED System control (read)

Hot-Swap - compliant to PICMG 2.1

- Peripheral mode: Board can be inserted or removed in a powered system
- System controller mode: Other, non system (peripheral) boards can be removed or added with power on

H.110 Friendly

- Versions with non populated J4 (see Front and Rear I/O table) do not interfere with H.110 bus on P4

BIOS Features

- New AMI BIOS Core 8, in-system programmable Flash ROM
- CPU, memory and IDE auto-detection/selection
- Integrated VGA, and Ethernet BIOS ROM
- USB Mass Storage support
- Password protection, BIOS post, system and video BIOS shadowing
- Extensive setup with remappable serial/parallel ports
- Diskless, keyboardless and videoless operation
- Remote BIOS through serial port

Software

- The following software is supported to the extent listed below.

OS	On Request	Planned
WIN 2000	-	✓
WIN XP	-	✓
QNX 4 + 6	-	✓
VxWorks	-	✓
Lynx OS	✓	-
Linux	-	✓

Front and Rear I/O (with transition module CTM12)

- The pinouts of the transition module connectors (rear I/O) corresponds to standard PC connectors (press-fit cables).

Function	Front	Rear J3/J4/J5
DVID	-	✓ ^{*1*}
VGA	✓ ^{*3}	✓ ^{*1*}
Eth 1	✓ ^{*2*}	✓ ^{*2}
Eth 2	✓ ^{*2*}	✓ ^{*2}
Keyb+Mouse	✓	✓
Reset	✓	✓
LEDs	✓	✓
USB 1-5	1	2-5 ^{*5}
IDE primary	onboard	-
IDE secondary	-	✓
Floppy	-	✓ ^{*5}
COM 1-2	1	1,2
LPT	-	✓ ^{*5}
PMC 1	✓	✓
PMC 2	✓ ^{*4}	✓

^{*1} rear DVI-I connector for DVI and VGA

^{*2} either front or rear as an order option

^{*3} 32-bit/33 MHz PMC slot not available with this front I/O option

^{*4} not with front VGA and/or Ethernet

^{*5} not without J4

Power Requirements

- +5 V, +3.3V, +12V Required
- -12V Only if required by mounted PMC module

Power Consumption - typical operating current (* = estimated)

- w/o keyboard, hard disk, modules, measured at DOS prompt, no power savings.

Pentium M	5 V	3.3 V	total Power
600 MHz, 256MB	0.7A	5.1A	20.3W
1.1 GHz, 512MB	1.5A	5.9A*	27.0W*
1.6 GHz, 2GB	3.4A	7.5A*	41.8W*

- w/o keyboard, hard disk, modules, Windows XP, 3D graphics active. Both Gigabit Ethernet channels linked, CPU running at instruction mix for maximum power consumption.

Pentium M	5 V	3.3 V	total Power
600 MHz, 256MB	0.9A	6.9A	27.3W
1.1 GHz, 512MB	2.3A	7.7A*	36.9W*
1.6 GHz, 2GB	5.4A	9.3A*	57.7W*

Power Allowances - PMC slot

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

Mechanical – PICMG 2.0

- 6U, 1 slot wide
- 233 x 160 x 20 mm (including flash drive) or hard disk

Temperature

- Highest reachable operating temperature depends on processor type, speed and ambient conditions (airflow)
- TMDS option may reduce temperature range
- All values under typical conditions w/o PMC module, HDD or flash drive

	Operating	Storage
Standard	0°C to +55°C	-40°C to +85°C
Extended	-40°C to +55°C	-40°C to +85°C

Humidity

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

Altitude

- Operating: 15.000 ft. (4.5 km)
- Storage: 40.000 ft. (12 km)

Shock

- C-, I-Style 12g / 6 ms, 3 axis, up & down, 5 hits / direction

Vibration

- C-, I-Style 2g rms @ 5 to 100 Hz, 30 minutes each axis

MTBF

- Calculations are available in accordance with MIL-HDBK-217. Please contact factory.

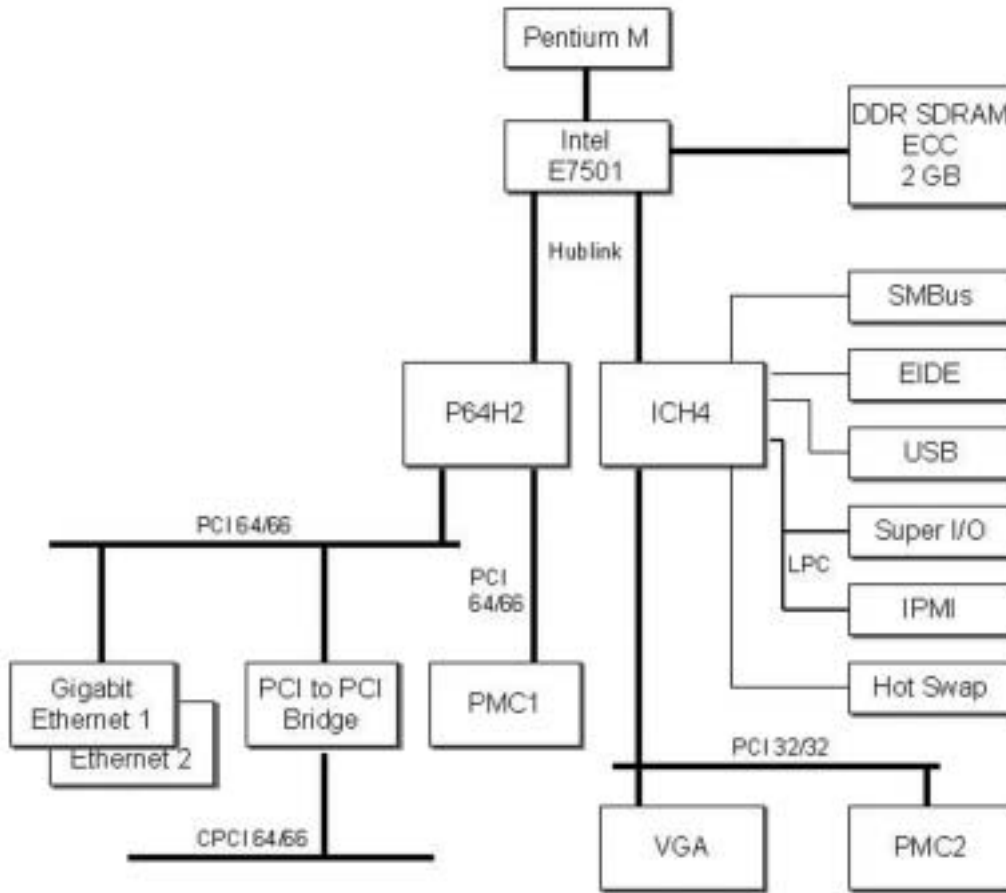
Safety

- Designed to meet standard UL1950, CE class A, FCC-A



CT9

Block Diagram



Ordering Information

Hardware Accessories

CTM12	I/O transition module for 6U backplane (IEEE 1101.11-1998 compliant)
SC304F	Floppy disk 3.5 inch, 19" box: 3U/4HP, cable
SC306H110G0	IDE hard disk 3.5", 10 GB, 19" box: 3U/6HP, cable
ZKAAPS2SPLIT	Cable for keyboard and mouse on front panel

Operating Systems

Extensive operating systems support are available, see page 3 of this document.
 Chassis with power supplies, backplanes and drives on request.
 For detailed information and further options, contact SBS.

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