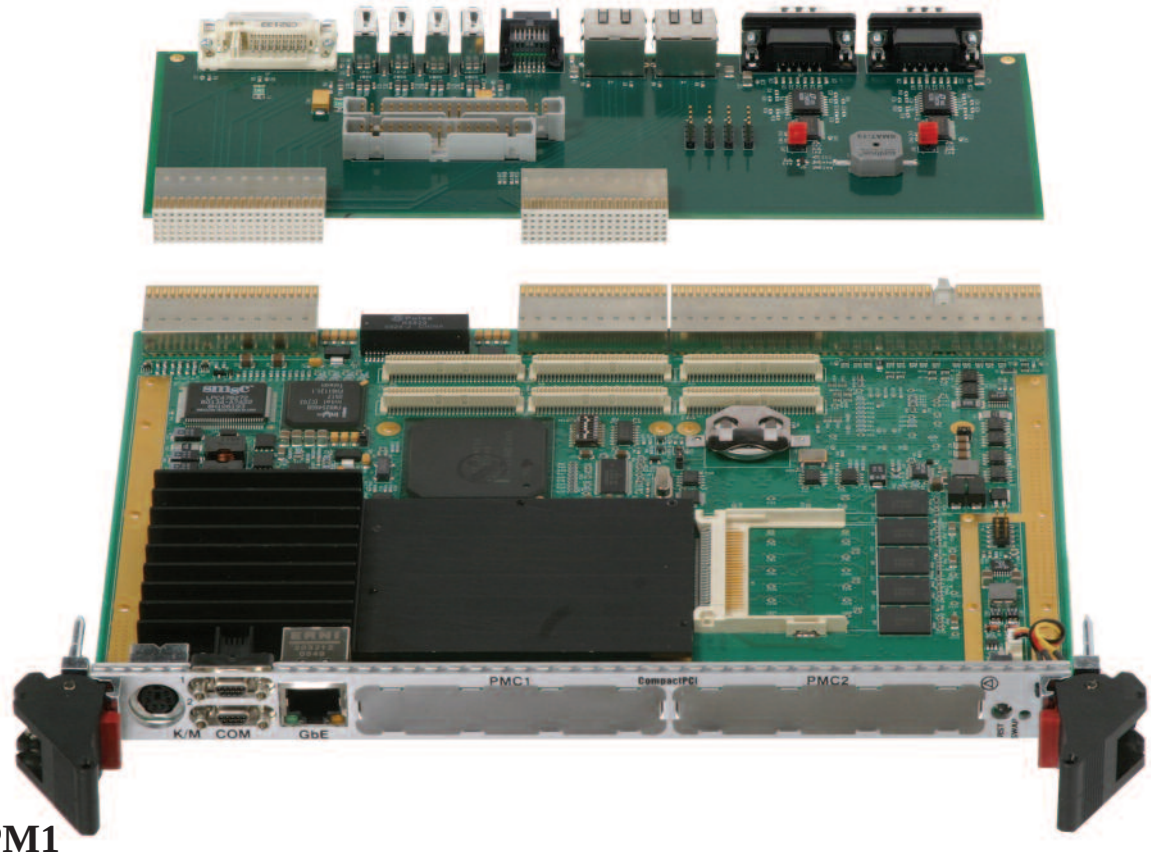
DYNATEM

Pentium M CompactPCI/PICMG 2.16 Single Board



CPM1

The CPM1 is a 6U CompactPCI compatible platform based on the Intel® low power Pentium® M processor. The Pentium M's low power consumption ideally equips the CPM1 for rugged applications. The CPM1 is built with no socketed components and an optional full-board heat sink, wedgelocks, and a stiffener bar for operation in high shock/vibration conditions and extreme temperatures.

The 855GME and 6300ESB chipset supports PCI-X expansion, integrated VGA/DVO (routed to the cPCI backplane), four USB 2.0 ports, ATA/100, and Serial ATA. A 1000BaseTX port, two configurable RS232/422 COM ports, and a PS/2 connector that shares mouse and keyboard interfaces are all accessible from the front panel. On-board CompactFlash permits single-slot booting. Two 1000BaseTX ports are routed to the backplane in compliance with PICMG's 2.16 Specification. Conventional PC I/O is accessible with industry standard connectors on an optional rear I/O module. Two PMCX sites are provided for additional I/O expansion.

Processor

Intel® Pentium® M Processor:
- 2 MB of L2 Advanced Transfer Cache

Available in either the Ultra Low Voltage 1.0 GHz
- Celeron-M 370 version @ 5.5 W, the Low Voltage 1.4 GHz Pentium-M 733 @10 W version, or the 1.8 GHz Pentium-M 745 @ 21 W

Single-slot Operation

Single-slot CompactPCI operation with an on-board
- CompactFlash disk for bootable mass storage

855GME and 6300ESB Chipset

400 MHz System Bus

Ultra ATA 100/66/33 IDE protocol

PCI-X expansion offers 64 bits @ 66 MHz data transfer
- capability

Integrated Graphics

Chipset includes DRAM controller, four USB 2.0 ports,
- two Serial ATA/150 ports, RTC, NV-RAM, standard PC timers, Ultra DMA, and interrupt logic

DRAM

DDR-266 support with a memory bandwidth of 2.1 GB/s

Stuffing options for 256MByte, 512MByte or 1GByte

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CompactPCI
PICMG 2.0 R3.0 Compliant
PLX non-transparent PCI-PCI bridge provides 64-bit CompactPCI transfer rates at 66 MHz
Universal bridge lets the CPM1 operate as a system controller or a peripheral slot module
Supports Hot Swapping according to PICMG 2.1 R2.0
Connectors J3 and J5 are used for I/O expansion - J4 is not populated

PMC Expansion
Two PMCX sites are available on-board: one with a 32-bit @ 33 MHz and a second with 64-bit @ 66 MHz bandwidth
I/O from the 64-bit PMC site is routed from JN4 to the J3 connector
Front panel I/O access is available for both sites

Ethernet/PICMG 2.16
An Intel 82546 Ethernet controller supports two 10/100/1000BaseTX Ethernet ports routed to the J3 connector in compliance with PICMG 2.16 for back plane fabric switching or for alternate routing to an optional rear I/O card
An 82541 provides one 10/100/1000BaseTX port that is accessible from the front panel

Graphics
855GME provides an integrated 32-bit 3D core at 133 MHz
SVGA and 12-bit DVI interfaces are routed through J5

IDE
Primary ATA/100 DMA IDE interface is accessible from the CompactPCI P2 connector.
PIO and bus master support
Secondary IDE port is routed to a Type II compatible CompactFlash connector for on-board booting and a retention clip for high shock/vibe applications

BIOS
General Software's flash-based system BIOS with a variety of boot options including CD-ROM, USB, and PXE over Ethernet
Customized versions can be provided

Watchdog
Programmable watchdog timer for system recovery

IPMI
Pigeon Point's IPM Sentry offers IPMI system management in compliance with PICMG 2.9
Platform management subsystem monitors, controls and assures proper operation of active components in the chassis

I/O interfaces accessible from the front panel
PS/2 Mouse/Keyboard, 10/100/1000BaseTX port, and COM1/2

I/O interfaces routed to optional rear plug-in board
IDE, COM3/4, Floppy Drive Interface, Dual Serial ATA, and Four USB 2.0 ports (routed through J5)
DVO and VGA ports are routed out through J5
PMC I/O and two Gb Ethernet ports in compliance with PICMG 2.16 (routed through J3)

XPM1RIO
Optional rear I/O interface board with:
- Small speaker
- DVI-I connector for digital and analog graphics
- Four stacked USB connectors
- 40-pin IDE connector
- Two RJ-45 connectors for Gb Ethernet (as an alternative to PICMG 2.16)
- Two SATA connectors
- One floppy drive connector
- COM 3 and 4 connectors, individually selectable for RS-232/RS-422
- Fan connectors

Operating temperature
The CPM1 has an operating temperature range of -0°/+70° C
-40°/+85°C versions are available for the CPM1 with 1.0 GHz Celeron M or 1.4 GHz Pentium M

Rugged/Conduction-cooled Versions
CRM1 is a conduction-cooled version of the CPM1
Stiffener bar enables high shock/vibration immunity per MIL-STD-810F
Convection-cooled and conduction-cooled versions have conformal coating as an option

Power Consumption
5 VDC @ 2 Amps typical
3.3 VDC @ 2 Amps typical

Net Weight
15.1 oz with no CompactFlash installed, 1 GB DDR267, with heatsink and front panel

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Pentium M
The Intel® Pentium® M processor was designed from the ground up with a new microarchitecture that delivers high performance with low power consumption. With its 90 nm processing technology and 2 MB of L2 advanced transfer cache, the Pentium M offers more performance per Watt. Second-generation Streaming SIMD Extensions (Streaming SIMD Extensions 2) capability adds 144 new instructions, including 128-bit SIMD integer arithmetic and 128-bit SIMD double-precision floating-point operation. The Pentium. The Pentium M also offers a dedicated hardware stack manager that employs sophisticated hardware control for improved stack management, advanced branch prediction capability, and a 400 MHz front side bus to the memory controller hub.

Chipset and 6300ESB ICH
The Intel® 855GME Graphics Memory Controller Hub (GMCH) and Intel® 6300ESB I/O Controller Hub (ICH) chipset create an optimized integrated graphics solution with a 400 MHz system bus and integrated 32-bit 3D core at 133 MHz.

855GME

DRAM Controller
The 855GME (GMCH) provides a 266 MHz interface to DDR RAM (72 bits wide with ECC). The CPM1 can be populated with one or two banks of DRAM for 512 MB or 1 GB of total memory respectively. The GMCH system memory architecture is optimized to maintain open pages (up to 16-kB page size) across multiple rows. As a result, up to 16 pages across four rows is supported. To complement this, the GMCH will tend to keep pages open within rows, or will only close a single bank on a page miss.

Graphics Processor
The 855GME also has an advanced integrated graphical display controller. The CPM1 a DVO port (driven via a PanelLink device) and a VGA port out through the J5 connector to the system backplane. The DVO ports:
- Provide high-speed, 12-bit interfaces with 165 MHz dot clocks
- Supports DVO devices (TV-Out Encoders, TMDS & LVDS transmitters, etc.) with pixel resolutions up to 1600 x 1200 @ 85 Hz and up to 1048 x 1536 @ 72 Hz
- Compliant with DVI Specification 1.0

6300ESB
The 6300ESB I/O Controller Hub (ICH) provides most of the CPM1's on-board I/O and it's the CPM1's PCI-X expansion bridge. The ICH is designed as a low-power, high-performance I/O hub that features:
- 64-bit @ 66 MHz PCI-X expansion that is used on the CPM1 for the on-board PMC-X slot, the three Ethernet ports available on the CPM1, and for the Universe IID PCI/CompactPCI bridge
- Four USB 2.0 compliant ports that are routed to the J5 connector to the backplane
- Integrated IDE controller supports Ultra 100 DMA Mode Transfers up to 100 MB/sec read cycles and 88.88 MB/sec write cycles for a CompactFlash drive on-board and a primary IDE port that is routed through J5 to the backplane
- Two Serial ATA ports providing 150 MB/sec data rates are also routed through J5
- Standard PC functionality like a battery-backed RTC and 256-bytes of CMOS RAM, Power Management Logic, Interrupt Controller, Watchdog Timer, AC'97 CODEC, Integrated 16550 compatible UART's, and multimedia timers based on the 82C54

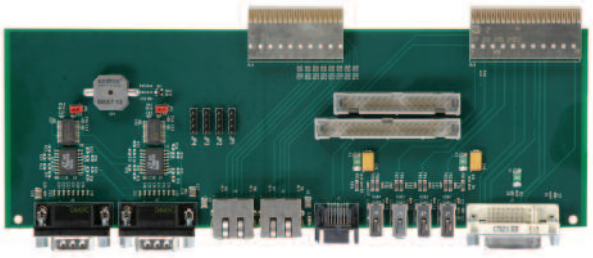
Intel 82546EB Dual Gigabit Ethernet Controller
The CPM1 supports two 10/100/1000BaseTX channels that are routed to the J3 connector in compliance with the PICMG 2.16 Specification for backplane fabric switching. The Intel 82546EB Dual Port Gigabit Ethernet Controller incorporates two full Gigabit Ethernet MAC and PHY layer functions on a single, compact component. Routed from the ICH, the front side data path to the dual Ethernet port controller is a 64-bit PCI-X interface at 66 MHz. The Intel 82546EB offers the following features: 10, 100, and 1000BaseTX support with auto-negotiation; Dual 64KB configurable RX and TX packet FIFOs; 128-bit internal data path architecture for low latency data handling and superior DMA transfer rate performance; Built-in Phyceiver

Intel 82541 Gigabit Ethernet Controller
The Intel 82541 offers the following features: 10/100/1000BaseTX support with auto-negotiation; Independent 3 KB receive and transmit FIFOs; Powerful on-chip DMA minimizes CPU overhead with zero wait-state burst transfers to system memory; Built-in Phyceiver.

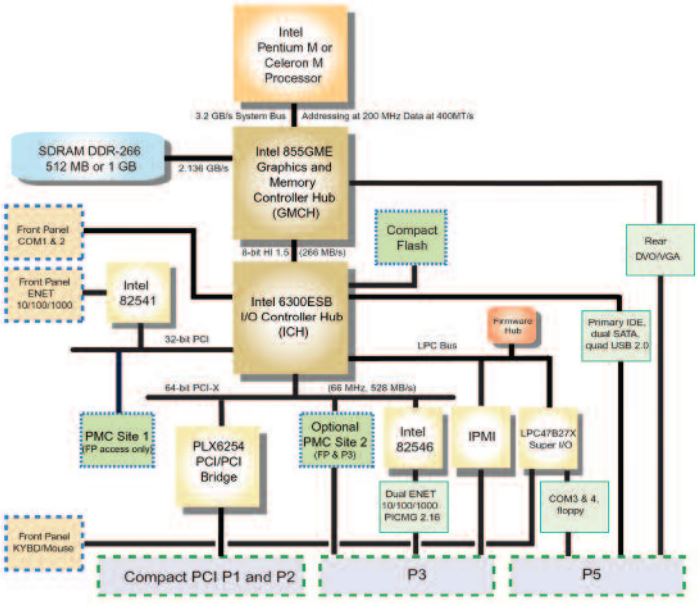
CPM1 I/O Routing

I/O	Front Panel	Through J3	Through J5
PS/2 Mouse/Kybd	2 in 1		
1 Gb LAN (3 total)	1	2 (PICMG 2.16)	
RS232/422 Ports	2		
DVI-I Graphics			1
USB 2.0			4
Serial ATA			2
Un-driven COM3/4			2
Floppy Disk I/F			1
IDE Interface			1
PMC I/O		PICMG 2.3 R1.0 Slot B	

XPMRIO rear connectors



XPMRIO from above



CPM1 Block Diagram

Ordering Information:

Part#	**Description**
CPM1xQP	**Pentium M single-slot processor with 1.4 GHz Pentium M, 1 GB DDR-266. With CompactPCI, PICMG 2.16, IPMI. With no CompactFlash installed**
xxxxQxx	**256 MB Flash for CPM1**
xxxxRxx	**512 MB Flash for CPM1**
xxxxSxx	**1 GB Flash for CPM1**
xxxxTxx	**2 GB Flash for CPM1**
xxxxUxx	**4 GB Flash for CPM1**
xxxxVxx	**8 GB Flash for CPM1**
xxxxWxx	**16 GB Flash for CPM1**
xxxxxx8	**1.0 GHz ultra-low-power Celeron M**
xxxxxxQ	**Upgrade to 1.8 GHz Pentium M**
xxxxxxx-ER	**Extended -40°/+85°C operating temperature (1.0 GHz or 1.8 GHz processors only)**
XPM1RIO	**Optional rear I/O interface board with: small speaker, DVI-I graphics interface, 4 USB connectors, 2 RJ-45 Ethernet connectors, 2 SATA connectors, 1 floppy connector, COM3 &4 (individually selectable for RS-232/422)**

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