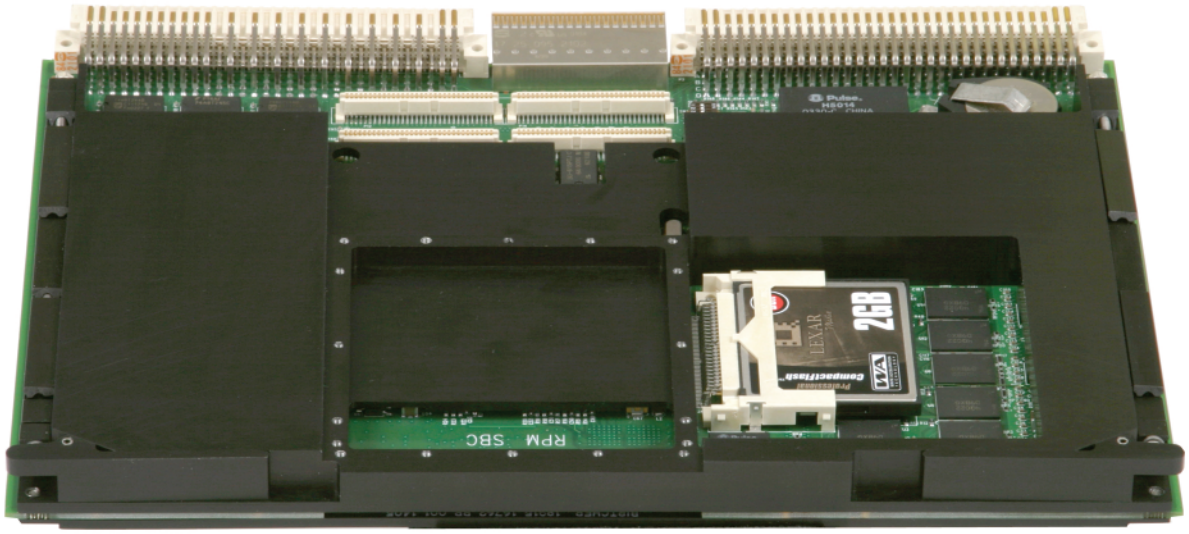
DYNATEM

VMEbus Rugged Pentium M Single Board Computer



RPM shown with conduction-cooled heat sink

RPM

The RPM is a VMEbus (and VME64) compatible platform based on the Intel® low-power Pentium® M (Dothan) processor. The RPM takes advantage of the Pentium M's low-power consumption as a rugged Single Board Computer (SBC) and it is optionally available as an IEEE 1101.2-compliant, conduction-cooled VMEbus module with wedge locks and a full-board heat sink for high shock/vibration environments and temperature extremes.
The RPM is a rugged conduction-cooled VMEbus (and VME64) compatible platform based on the Intel® low-power Pentium® M (Dothan) processor. The RPM takes advantage of the Pentium M's low-power consumption as a rugged Single Board Computer (SBC) and it is an IEEE 1101.2-compliant, conduction-cooled VMEbus module with wedge locks and a full-board heat sink for high shock/vibration environments and temperature extremes.

The RPM is the same board design as the convection-cooled DPM . The DPM typically uses front panel I/O routing but can be provided with identical I/O routing as the RPM for application development in a standard VMEbus chassis.

The 855GME Graphics Memory Controller Hub (GMCH) and 6300ESB I/O Controller Hub (ICH) chipset supports PCI-X expansion, integrated VGA/DVO interface, USB 2.0, ATA/100, and Serial ATA (SATA). Two USB 2.0 ports, a COM port and IDE are all accessible from the rear P2 connector. SVGA and Digital Vido Output (DVO), dual 10/100/1000BaseT (VITA 31.1 compatible), dual SATA, and LPC bus are routed to the optional P0 connector. On-board CompactFlash permits single-slot booting. One PMC-X site is provided for additional I/O expansion.

The RPM meets an operating temperature range of -40°/85° C with it's standard 1.4 GHz Pentium M processor.

The RPM was design for compliance with MIL-Std-810F. Options include conformal coating.

The 855GME Graphics Memory Controller Hub (GMCH) and 6300ESB I/O Controller Hub (ICH) chipset supports PCI-X expansion, integrated VGA/DVO interface, USB 2.0, ATA/100, and Serial ATA (SATA). A DVI-I connector, two USB 2.0 ports, a 10/100BaseTX interface, and a COM port are all accessible from the front panel. On-board CompactFlash permits single-slot booting. Two VITA 31.1-compliant, 10/100/1000BaseTX ports are routed to the backplane. Conventional PC I/O is accessible with industry-standard connectors on optional rear I/O modules, as well as, SATA, VGA/DVO video, Gb Ethernet, and two more USB 2.0 ports. One PMC-X site is provided for additional I/O expansion.

Processor
2 MB of L2 Advanced Transfer Cache
Available in either the Ultra Low Voltage 1.0 GHz @ 5 W version or the Low Voltage at 1.4 GHz @ 10 W
Optional versions available with UltraLowVoltage 1.0 GHz Celeron M

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

855GME and 6300ESB Chipset
400 MT/sec 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, USB 2.0 interface, 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
Support ECC

VMEbus
Tundra Universe IID PCI-VMEbus interface provides 64-bit VMEbus transfer rates over 30 MB/sec
Full range of software drivers is available for different operating systems
Full Slot 1 (system controller) functions provided
Lower cost versions available without VMEbus

BIOS
General Software's flash-based system BIOS with a variety of boot options, including CD-ROM and PXE over Ethernet
Customized versions available upon request

PMC Expansion
One conduction-cooled PMC-X site with 64 bit @ 66 MHz bandwidth is available on-board
PMC-P4 is routed in accordance with VITA-35 P4V2-46dz (PMC-P4 to VME64x-P2-Rows-D,Z)

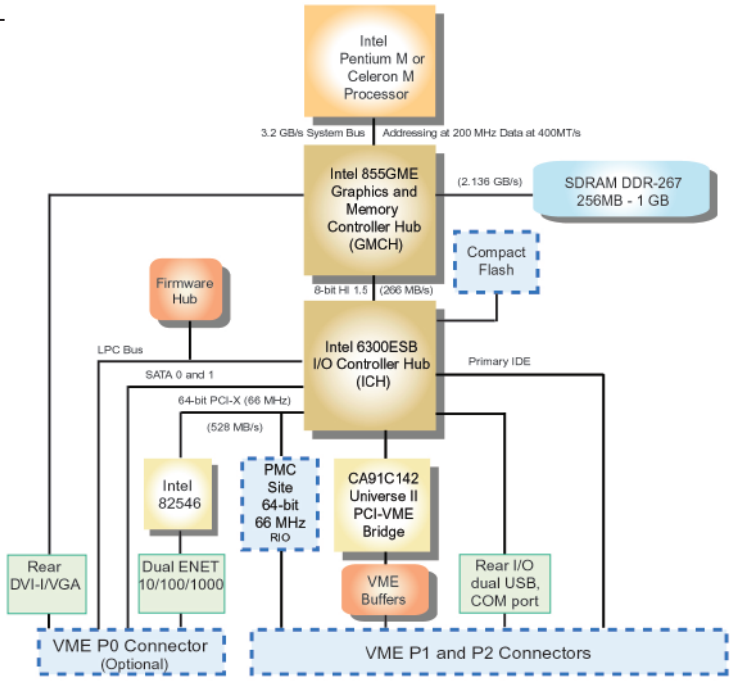
Ethernet
An Intel 82546 Ethernet controller supports two 10/100/1000BaseTX Ethernet ports routed to the P0 connector in compliance with Vita 31.1 for backplane fabric switching or for alternate routing to an optional rear I/O card

Graphics
The 855GME offers integrated, high-performance graphics that can support resolutions up to 1600 x 1200 at 85 MHz
DVI-I graphics interface to the P0 backplane connector
PaneLink digital graphic interface combined with a conventional SVGA analog interfac
Supports a 5 meter cable

IDE
Primary ATA/100 DMA IDE interface is accessible from the VMEbus P2 connector
PIO and bus master support
Secondary IDE port is routed to a Type II-compatible CompactFlash connector for on-board booting

Watchdog
Programmable watchdog timer for system recovery

Conduction-cooling
Compliant with IEEE 1101.2
Top and bottom cooling plates that are bonded to the major components through thermal conduction
Wedgelocks secure the RPM in the chassis and bring the module's heat from the cooling plates and the PCB



RPM Block Diagram

Dynatem Inc., (800)543-3830, (949)855-3235, Fax: (949)770-3481, Email:*sales@dynatem.com*, Web:*www.dynatem.com*

Convection-cooled Versions
For versions compatible with standard VME chassis for application development, see DPM

I/O interfaces
IDE and PMC I/O (routed through P2)
LPC interface runs through P0
COM2 and two distinct USB 2.0 ports are through P2
Two Serial ATA ports, two 10/100/1000BaseTX ports, are routed through P0
DVO/VGA routed to P0

Power Consumption
5 VDC only required
3.5 A @ 5 VDC typical for 1.4 GHz Pentium M
2.5 A @ 5 VDC typical for 1.0 GHz Celeron M

Operating Temperature Range
-40°/+85° C for 1.4 GHz Pentium M

Net Weight
28.2 oz with 1 GB DDR267, no CompactFlash, no conformal coating, with heatsink/stiffener, with P0

RPM Environmental Specs

Temperature			
	Operating	-40°C to 85°C	1.0 GHz and 1.4 GHz processors can meet -40°C to 85°C with or without speed-step enabled
	Storage	-55°C to 125°C	
Humidity			
	Operating	0 to 95% non-condensing	± 4% relative humidity, per MIL-STD-810F
	Storage	0 to 100% non-condensing	
Altitude			
		Unlimited	Air cooled cards must have adequate cooling
Vibration			
	Sine	10 g peak 15-2 kHz	All levels based on a sweep duration of ten minutes per axis, each of three mutually perpendicular axes. Qualification testing is displacement limited below 44 Hz.
	Random	0.1 g2/Hz 15-2 kHz (14.1 grms)	60 minutes per axis each of three mutually perpendicular axes.
	Shock	40 g peak	Three hits per direction per axis, ½ sine + terminal peak sawtooth, 11 ms (total 36 hits).

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RPM I/O Routing

I/O	Through P0	Through P2
DVI-I Graphics	1	
Serial ATA	2	
AC'97 CODEC	1	
10/100BaseT		
Gb Ethernet	2 (VITA 31.1)	
RS-232 COM 1 Port		
RS-232 COM 2 Port		1
RS-232/422/485 COM 3/4 Port		
USB 2.0		2
IDE Interface		1

Ordering Information:

Part#	Description
RPMxPPGx	Conduction-cooled VME64 Single-slot CPU board with 1.4 GHz Pentium-M. 512 MB DDR-267 DRAM. COM2, 2x USB 2.0 and IDE routed to P2. PCI-X compatible PMC site with front and rear access. Support for up to 4 GB bootable CompactFlash. Dual 10/100/1000BaseT, dual SATA, and DVI-I/VGA routed to P0. VITA 31.1 compliant. LPC routed to P0 . -40°/+85°C operation.

XPMQxxxx	256 MB Flash for RPM
XPMRxxxx	512 MB Flash for RPM
XPMSxxxx	1 GB Flash for RPM
XPMTxxxx	2 GB Flash for RPM
XPMUxxxx	4 GB Flash for RPM
XPMVxxxx	8 GB Flash for RPM
XPMxQxxx	Upgrade to 1 GB DDR-267 memory
XPMxxx8x	Ultra low power 1.0 GHz Celeron M
XPMxxxxx-ER	Testing for extended temperature operation
CONCOAT-XPM	CONCOAT-XPM

Special configurations can be quoted with no P0 and/or no VMEbus interface and USB routed to P2. Ultra low power processors can also be quoted separately. See DPM for convection-cooled versions

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