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Find the *Kontron / Thales / Cetia VMPC4a* at our website: ***Click HERE***

PowerEngine 4th Generation
CETIA VMPC4a

Faster

Using the fastest PowerPC available, advanced high performance memory and superior I/O capabilities, the PowerEngine 4th generation is the right product for higher speed applications.

Stronger

With built-in capability for enhanced ruggedization, the VMPC4a range is based on a rugged design adapted to severe environments.

Further

Advanced modular design with built-in growth capability takes the PowerEngine 4th generation into the 21st century.

General Overview

CETIA PowerEngine 4 is a highly integrated range of VME Single Board Computers, designed to bring all the power of the PowerPC microprocessors to the VME world.

Using several leading edge ASICs designed to take advantage of the PowerPC architecture and to optimize the I/O capabilities, PowerEngine 4 provides the customer with a cost effective solution perfectly suited to the most demanding application requirements.

Moreover, the compact design of the PowerEngine 4 as well as its thermal and mechanical characteristics make it a product of choice to use in severe environments, if necessary with "the Ruggedizer", a CETIA innovative thermal drain that naturally extends the operating range of its COTS products.

CETIA PowerEngine 4 first product of this new family, the VMPC4a, illustrates all these characteristics, with a first version at 8 SPECint 95, due to the PowerPC 604e at 200 MHz.

Moreover, the PowerEngine VMPC4a offers a wide range of operating systems and development solutions to the VME developpers. Defined for the PowerPC, the CHRP standard (Common Hardware Reference Platform) ensures a compatibility between servers, workstations and VME target systems, and therefore lowers the cost and maximizes the perennity of your software development.

VMPC4 Technical Data

- PowerPC Processor family
- ROM memory
- NVRAM/RTC
- PCI interface
- Software
- PowerEngine VMPC4a - Technical

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- Ethernet interface
- SCSI-2 Interface
- Serial lines
- VME interface
- DRAM memory
- Cache memory
- PMC carrier card
- CETIA dedicated I/O controller : COBRA
- VMPC4a Picture
- Features
- VMPC4a Order Codes
- VMPC4a Connector Table
- Miscellaneous
- VMPC4a Architecture

PowerPC Processor family

- Superscalar PowerPC 604e processor operating from 200 MHz upwards.
- SPECint95 (200 MHz) : 8,02.
- SPECfp95 (200 MHz) : 6,72.
- 32-KB instruction cache and 32-KB data cache.
- Four instructions per clock cycle.
- Dynamic branch prediction.
- Multiple integer units.
- Memory Management Unit(MMU).
- 64-bit data bus.
- Fully JTAG compliant.
- Low Power implementation.



Ethernet Interface

- On-board PCnet-PCI Ethernet controller (10Base-T on front panel or Thick on P2).
- ANSI 802.3 compliant.
- Handled by the AM79C970 chip

SCSI-2 Interface

- This interface enables easy connection of industry-standard mass storage devices (hard disk, CD-ROM, streamer,..).
- Handled by the SYM53C825A PCI-SCSI I/O processor (SIOP).
- Fast/Wide SCSI bus transfers in single-ended mode.



Serial Lines

- Two available RS232C channels containing FIFOs.
- Handled by TL16C550C component.
- INS8250N-B, PC16550A, PC16450 software compatible.



VME Interface

- Handled by the IBM PCI to VME bridge component, an highly integrated low power single chip solution.
- IEEE-STD-1014-1987 fully compliant (32-bit) with VME64 capability.
- VMEbus system controller.
- VMEbus Requestor (Level 1-4).
- VMEbus Interruptor and Interrupt handler (IRQ1-7).
- VME transfer rate up to 60 MB/sec.
- VMEbus master/slave A32, A24, A16 : D32, D16, D8, UAT.
- VMEbus master/slave A32, A24 : D32BLT, D64MBLT.
- Programmable VME slave image base address and size (8 VME slave channels) and VME to PCI access conversion through 8 MB granularity.
- Transmit/Receive FIFOs
- Programmable Posted Write, Prefetch Read, coupled mode.
- Programmable BB2BLT mode: mapping of multiple single PCI accesses to a VMEbus BLT/MBLT cycle.
- Semaphore registers.



DRAM Memory

- 16 or 32 MB of on-board DRAM with optional ECC.
- DRAM extensions are provided by 1 or 2 daughter boards (IPMD modules), each one offering 16, 32, 64 or 128 MB with optional ECC.

Cache Memory

- Users who require extra performance can exploit a secondary cache option. The 256 or 512 KB L2 Look-aside cache is directly connected to the processor bus (IPML2 module)



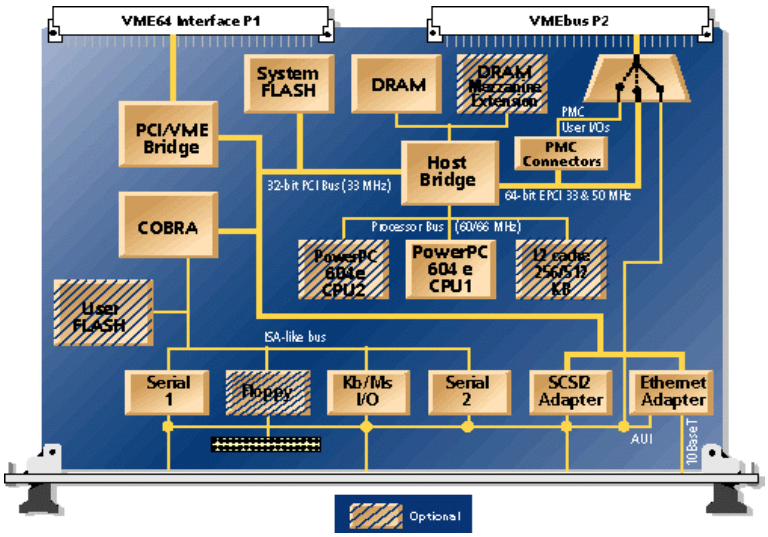
ROM Memory

- 512 KB or 1 MB of Flash EPROM memory are available for initialization and operating system boot routines.
- In addition, 4 to 32 MB of user Flash EPROM are devoted to embedded user programs (IPMF module).

NVRAM/RTC

- Using the MT48T18 chip, on board (8-KB) NVRAM provides a convenient removable battery-backed storage area.
- Time of day clock available with M48T18.





Menu

Click Here to See VMPC4a Picture (121 Ko)

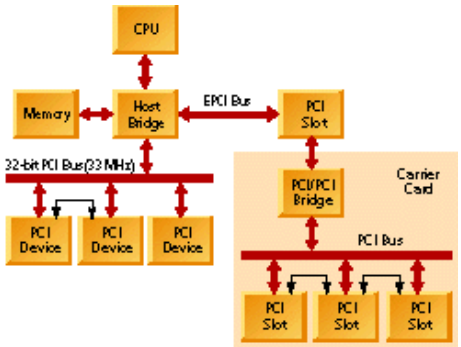
PCI Interface

Two PCI interfaces (master/slave with burst capability) are implemented on the PowerEngine VMPC4a:

- The first one internal to provide a high-speed backbone for local interconnect of on-board devices (Host Bridge, Ethernet, SCSI-2,...). This interface is fully compliant to PCI Specs- Rev.2.0 (33 MHz, 32-bit).
- The second one called Enhanced PCI (EPCI) is a user PCI interface designed for connecting PMC mezzanine modules (SCSI2, Graphics, Ethernet, FDDI, ATM..), providing a Rev. 2.0 standard PCI interface (33 MHz, 32/64-bit) that can operate at up to 50 MHz.

The PowerEngine VMPC4a can maintain concurrent bus operations on the two PCI buses using a uniquely optimized host bridge (UNION). This allows applications using PCIs to operate efficiently in parallel doubling available throughput.

Menu



Menu

PMC Carrier Card

For configurations requiring additional PCI connectivity, CETIA offers a PMC carrier card (ICPMC) that provides an extra three PMC slot module.

This PMC carrier is fitted in an adjacent VMEbus slot. Applications requiring up to three PCI slots (such as redundant configurations) are easily therefore implemented.

The following table summerizes the number of PMC slots available with/without the carrier board (ICPMC).

CONFIGURATION	*Available PMC Slots*	VME Slots
VMPC4a without ICPMC Carrier card	1	1
VMPC4a with ICPMC Carrier card	3	2



CETIA dedicated I/O Controller : COBRA

The COBRA chip brings a highly integrated single chip solution to control interrupts.

Furthermore, this product optimized for real-time applications offers:

- Connection to PCI bus Rev. 2.1 (slave mode).
- ISA-like interface for serial ports, keyboard/mouse, optional floppy disk, RTC...
- Large non-volatile memory interface (NVRAM, Flash, ...).
- Optimized message passing with four high density FIFOs.
- General purpose I/Os (L2 cache control, dead lock control, ...).
- Two highly programmable 16-bit counter/timers.



Miscellaneous

- Board size: VME double Eurocard (6 U - 233,3 mm x 160 mm).
- Single or dual slot (depending on options).
- VMPC4a supports a broad spectrum of environmental conditions to withstand shock and vibration levels found in most light-to medium industrial or military applications.



VMPC4a Order Codes

Product Description	Order Code
6U VME Card	
604e 200 Mhz, 16 MB, No L2 cache	
604e 200 Mhz, 32 MB, No L2 cache	

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Options	
256/512 KB L2 cache	IPML2
Additionnal 604e processor	IPM 604
DRAM extension daughter board	IPMD
(16,32,64,128MB) with optional ECC	
P2 Transition module	CP2-CVME
PCI Carrier (2 additionnal PMC slots)	CP2SI-CVME
4/32 MB User Flash EPROM	IPMF
No VME interface	Contact CETIA



Software

CETIA provides a wide range of Operating Systems on the PowerEngine 4 CPU.

- AIX: the popular UNIX of IBM is certified on CETIA platforms and branded according to the IBM Multi Vendor Platform (MVP) program. This certification guarantees the compatibility at ABI and API levels with the IBM RS/6000 servers and workstations, giving access to all the commercial software available on these platforms.
- LynxOS from LynxRTS: Real-time environment jointly supported by CETIA and its developers, in order to ensure customers the best possible service.
- VxWorks from Wind River Systems: the CETIA PowerEngine 4 is core BSP product of the WRS standard distribution. Support is provided by WRS as CETIA world wide.

Furthermore, CETIA provides optimized functionalities and support; customized services as requested by system integrators are offered by CETIA.

CETIA's cluster architecture allows configurations from one SBC board of up to 19 CPUs executing different OS (AIX, LynxOS). The communications between these boards on the VMEbus are optimized at several levels (TCP/IP, raw Ethernet, message passing) to take full advantage of these powerful clusters.

CETIA also provides a wide range of enhancements to LynxOS standard offering: multiprocessing mechanisms, X25 and ATM communication features, extended X11 and Motif graphics, kernel debugging tools, optimized context switch, ... as well as optimized cross compilers (C, C++, Fortran).

Due to its source code license of LynxOS and AIX, CETIA can provide an extended support of its real-time solutions and offers system integrators long term support options especially attractive for programs requesting extended deployment phases.



VMPC4a Connector Table

Reference/Interface	Front Panel	P2	P2	Header

		CP2-CVME	CP2SI-CVME	(on Mother board)
Serial Line 1	9-pin micro SUBD	15-pin IDC	NA	NA
Serial Line 2	No	15-pin IDC	NA	NA
SCSI Wide	68-pin Socket Connector	8/16 bit SCSI HE10	8/16 bit SCSI HE10	NA
Ethernet	8-pin RJ45 (10 Base-T)	15-pin DType Socket	NA	NA
Keyboard/Mouse	15-pin micro SUBD	26-pin IDC	NA	NA
Floppy (Option)	NA	NA	NA	Yes (P7 connector)



PowerEngine VMPC4 - Technical Features

CPU	
Processor	PowerPC 604e
Clock Frequency	200 MHz
SPECint 95	8,02
SPECfp 95	6,72
MEMORY	
Global Memory	16, 32 MB on board
	Up to 256 MB with IPMD
	mezzanine memory modules.
ECC	Yes (manufacturing option)
Cache Memory	256/512 KB (IPML2 mezzanine module)
ROM Flash Memory	512 KB / 1 MB System Flash Memory
	4 to 32 MB User Flash Memory
	(IPMF mezzanine module)
VME INTERFACE	
	- 32-bit with VME64 capability
	- A32/A24/A16 master / slave
	- D64 (MBLT) / D32 (BLT) / D16 / D8 master / slave
	- 3/5 rows connector
USER PCI INTERFACE (EPCI)	
	- PCI fully compliant (33 MHz, 32/64-bit)
	- 50 MHz optional interface
	- P2 connectivity (manufacturing option):

	32-bit interface: 3 rows
	64-bit interface: 5 rows
INTERNAL PCI INTERFACE	
On board I/O devices	- 33 MHz / 32-bit
	- PCI Rev. 2 fully compliant
ETHERNET Interface	
	10 Base T (front panel)
	AUI Thick (P2)
SCSI INTERFACE	
	8/16-bit fast SCSI2
MISCELLANEOUS	
	2 PC compatible serial I/Os
	Keyboard / Mouse
	Optional floppy disk interface
	1 PMC slot (up to 3 with ICPMC carrier card)
POWER REQUIREMENTS	
	Maximum
	+5V, ,+ 5, - 2,5 TBD
	+12V, +5, -2,5TBD
	-12V, ,+5, -2,5TBD
ENVIRONMENTAL SPECIFICATIONS	
	Operating: Storage:
Temperature range	0 to 55° C Ambient -40° TO 85° C
Recommended Cooling	A linear airflow of not less than 1.2 m/s across the board
Relative Humidity	Up to 95Up to 95
	without condensation
Thermal Shock	±5° C per minute ± 10°C per minute
Altitude	15000 ft
Vibration	4 to 2000 Hz at 2g acceleration
Shock	20g for 6ms (half sine)





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