VMP2

3U VME Processor Module

Compact

Powerful

Unprecedented

VME

- Optimized design achieving a maximum of computer performance versus power dissipation.
- Build around the enhanced PowerPC MPC8245, the rugged 3U design is an ideal computing core even for harsh environments.
- Highly integrated, the VMP2 is a straigt forward number cruncher.

kontron

Tough requirements ?
The VMP2 does not mind ...

Kontron's VME PowerPC Processor board with Floating point unit based on the MPC8245 is a straight forward computing design.

CPU, Memory and DMA
The VMP2 strictly continues the VME number cruncher line started by the VMP1. It is a lean CPU design with only those functions required for basic industrial calculation tasks. It addresses the need for increasing computing capacity while reducing the number of system components and taking up less space. The board is based on the MPC8245, a highly integrated microprocessor containing a PowerPC MPC603e core with FPU. With the VMP2 design the best possible MPC8245 performance is achieved with a clock frequency of 330 MHz and using synchronous DRAM at 133 MHz.
Anticipating the VMP2's use in data critical applications, the memory data path contains a selectable in-line ECC controller which can provide SDRAM single bit error correct or double bit error detect.

PCI bus and PCI Expansion capability
PCI is used as the local bus to connect the MPC8245 with the Fast Ethernet controller and the PCI/VME bridge. Moreover, it is routed to a 100 pin PCI expansion connector that can be used to add further functionality to the VMP2. One or two VMP1-IO modules can be plugged together with the VMP2 (e.g. two PMC slots can be added) resulting in a total package of either 8HP or 12HP.

VME interface
The VMEbus interface (Universe 2 bridge) delivers all functionality that is needed by a VME CPU:
- automatic First-Slot-Detection
- integral FIFO buffers for multiple transactions in both directions
- programmable DMA controller with linked list support
- Mailbox

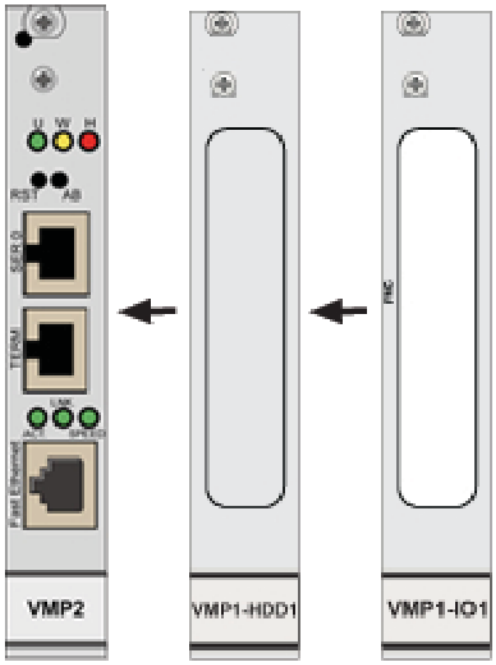
LAN
The i8255x 10/100 Mbps Fast Ethernet controller with auto negotiation is the foremost solution for PCI board LAN designs. It combines low power consumption with a small package design which is ideal for power and space constrained environments.

Serial ports
Two high speed serial ports are realized with a 16C2550 UART and supports baud rates up to 1.5Mbps. One is a RS232 full modem interface, the other one is configurable (RS232/485) with optional opto isolation.

Debug support
The MPC8245 supports processor control and visibility through the JTAG/COP (common on-chip processor) interface that is accessible as a pin row connector on the VMP2. Utilizing third party tools, the developer can access and control the microprocessor. It also has standard IEEE 1149.1a-1993 compliant boundary scan capability. The ECC data path has a mechanism to manually inject errors into memory for use with maintenance and diagnostic utilities. Furthermore a watch point and capture register on the internal bus as well as a set of address attributes on the external memory and PCI buses aid in debugging analysis.

Universal Netboot Loader
The VMP2 employs an operating system independent boot loader that enables loading of OS and application software via Ethernet/Internet or serial line. The boot loader is used to update Flash contents and accomplishes an automatic download from Flash to DRAM before booting the OS.

Front-Panel



Specifications

... even in harsh environments

Processor

Integrated PowerPC microprocessor Motorola MPC8245 (330MHz) with 603e core
L1 cache 2 x 16 kB data/instruction cache;
7.8 SPECint95,
6.6 SPECfp95,
465 Dhrystone (2.1) MIPS

PCI arbiter
Two channel controller DMA with chaining
Programmable IRQ controller
Multiple timers and counters

Memory

Up to 256MB direct soldered SDRAM /64bit /133MHz with ECC protection (8 bit parity)

Up to 8MB direct soldered Flash (Boot Device and Program Storage)

DIL Socket for:

NV-SRAM (up to 512kB) / Cell Storage Life 10 years

Flash DiskOnChip (up to 144MB)

Front Panel Functions

Fast Ethernet Channel 10Base-T/100Base-TX; RJ-45; LAN Status LED´s (Activity, Link, Speed)
integrated IEEE 802.3 10BASE-T and 100BASE-TX compatible PHY
integrated power management functions
dynamic transmit chaining with multiple priorities transmit queues
full duplex support at both 10 and 100 Mbps operation
IEEE 802.3u Auto-Negotiation support
3 Kbyte Transmit FIFO and 3 Kbyte Receive FIFO
back-to-back transmission support with minimum inter frame spacing
IEEE 802.3x 100BASE-TX Flow Control support
TCP/UDP checksum off-load capabilities

One full modem RS232 port, one configurable RS232/485 port, opto isolation optional, 16550 compatible Dual UART; RJ-45
Two push buttons RESET, ABORT (NMI) Board Status LED´s (watchdog active, general purpose)

VME Interface

ANSI/VITA 1-1994 VME64 interface on P1 (IEEE STD 1014); Universe 2
DTB Master/Slave A16-A24; D08-D16
9 user programmable slave images on VME and PCI bus
4 mailboxes and location monitors for message oriented systems
7 IRQ lines with flexible mapping

Miscellaneous Functions

Timers: Four 32-bit timers, one 16-bit timer, one watchdog timer
RTC: backup via GoldCap (5days) or optional via replaceable battery (10years)
Debug Port: JTAG/BDM; 16Pin row connector

Software Support

The VMP2 employs an operating system independent boot loader that enables loading of OS and application software via Ethernet/Internet or serial line. The boot loader is used to update Flash contents and accomplishes an automatic download from Flash to DRAM before booting the OS.
Board Support Packages:
VxWorks 5.4/5.5
OS-9
Linux (SUSE PowerPC)

Reliability

MTBF according to MIL-HDBK 217F

VMP2:	164,300h
VMP1-IO1:	251,000h

General

Dimensions:	100mm x 160mm (3U card size)
Front Panel Height:	128.5mm ;
Width:	20mm (0.8inch) / 4HP
Weight::	180 g

Power Consumption

Power Consumption:

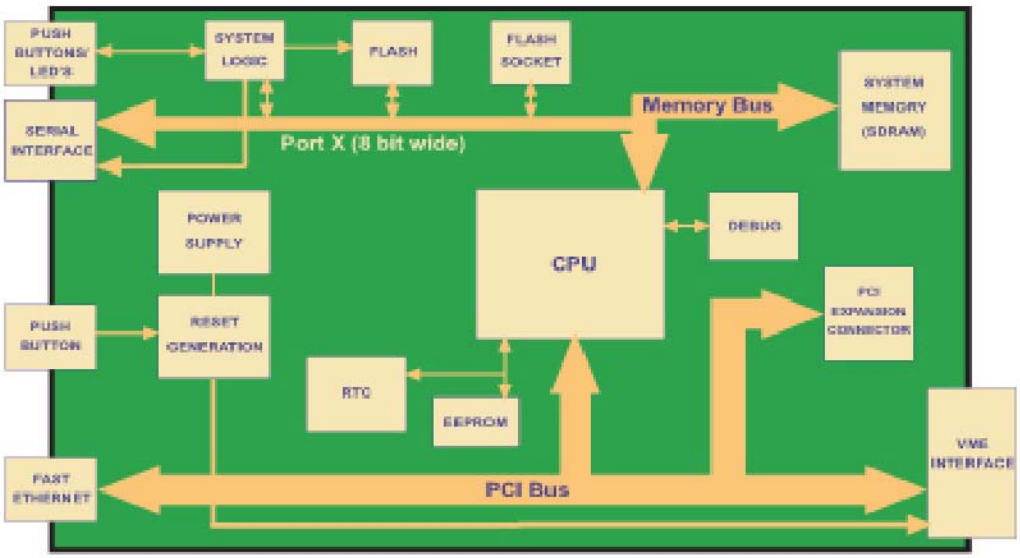
+5V	5,8* /typ.
+12V	0W*
-12V	0W*

*Without PCI Expansion Module and at 330MHz, 64MB SDRAM, 8MB Flash

Environmental

Temperature Ranges:	0°C to + 55°C (standard)
	-40°C to + 85°C extended)
	-55°C to + 125°C (storage)
Operating humidity:	0% to 90% non-condensing
Altitude:	50,000 ft. (15,240 m)

Functional Block Diagram



Ordering Information

Product	Description	Order No.
VMP2	330MHz MPC8245, 64MB SDRAM with ECC, 8MB Flash	23856
VMP2-E2	330MHz MPC8245, 64MB SDRAM with ECC, 8MB Flash, Extended temperature range -40°C to +85°C	24124
VMP2	330MHz MPC8245, 256 MB SDRAM with ECC, 8MB Flash	26164
VMP1-001	PCI expansion I/O; one PMC slot	20523
VMP1-HD01	Hard disk extension module, 2,5" HDD, current size (>10GByte)	26445
FLD-16	16 MByte FLASH-Disk	19643
FLD-32	32 MByte FLASH-Disk	19644
FLD-96	96 MByte FLASH-Disk	22146
NVSRAM-512	512kByte non volatile SRAM; 32pin DIP	20656
CABLE-SM-RS232-9	3 meter RS232 Serial Interface cable with RJ45 to 9Pin D-Sub (female) for connection to PC	10890
VxW-BSP-VMP1	VxWorks Board Support Package for VMP1/VMP2 for use with Tornado	20857
OS9OPKW-VMP1	OS-9 Board Support Package for VMP1/VMP2 for use with Hawk	21225
LIN-BSP-VMP1	Linux BSP for VMP1/VMP2 for use with a SUSE PowerPC distribution	24854
KIT-VMP2	User´s manual documentation in PDF format on CD-ROM	24027

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