VMP60
3U VME PowerPC CPU



Versatile

Communicative

Powerful

VME Communication Engine

- Based on the Motorola PowerQUICC 2, the VMP60 provides an excellent combination of computing and communication performance.
- The rugged 3U design is an ideal computing core even for harsh environments.
- With a multitude of interfaces, the VMP60 is a perfect base for communication intensive applications.

Computing and Communication Performance ?
The VMP60 is the answer

The VMP60 combines computing performance and low power dissipation with excellent communication qualities by using the Motorola "PowerQUICC" MPC860T.

The VMP60 is a state-of-the-art design addressing the increased need for enhanced computing performance and versatile communication capabilities in compact 3U VME systems.

The board is based on the Motorola "PowerQUICC " MPC860T featuring a Fast Ethernet interface. The CPU delivers a performance of 106 MIPS at a clock speed of just 80 MHz which has a very positive impact on power consumption, endurance, and operational temperature. For this reason the extended temperature range E2 (-40 C to +85 C) can be accomplished with passive cooling.

The integrated RISC communication processor provides a Fast Ethernet interface and 5 serial ports with multiprotocol support.

The 10/100BaseT Fast Ethernet interface supports Auto Sensing and automatically adapts default data transfer rates of Ethernet fabrics.

Two of the five available serial interfaces are directly accessible at the front panel. One of them supports the hardware handshake signals DTR, CTS, RTS and CD and is suitable for connecting to a modem. That makes the VMP60 an ideal basis for telemaintenance and remote control systems.

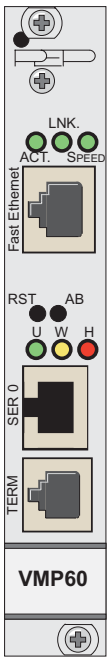
Three of the serial ports are routed to the CXC connector for use with an appropriate add-on module like the CXM-SIO3. Depending on the system interface requirements the serial ports can be configured as RS232, RS485, RS422, or Current Loop. A sixth serial line is available for further extension. In order to enable configuration of the memory, flexible to the highest extent possible, the field proven DM60x memory modules are used which provide 4 to 64 MByte of DRAM and 4 MByte of Flash memory. The CPU board can be booted either from this Flash or from an optional EPROM/Flash device in a BootRom socket.

Software updates or the porting of an operating system like Wind Rivers' VxWorks® or Microwares' OS-9® are made easy with the bootloader on which the complete software architecture is based upon. The bootloader performs the major task of initializing the hardware and provides functions like storing software modules directly into Flash which were transferred via Ethernet or serial line to the board.

There are two means for non-volatile storage of data: a 1MByte SRAM with battery backup for up to 48 hours and a 2 kBit serial EEPROM with unlimited time capacity.

The feature set is completed by a real time clock (RTC), a software controlled watchdog, and a BDM interface which eases background debugging.

Front-Panel



Specifications

Processor

Motorola MPC860T PowerPC @ 80MHz with integrated RISC communication processor module

106 Dhrystone (2.1) MIPS

Memory

Up to 64 MByte DRAM, 4 MByte Flash via DM60x
1 MByte SRAM with data retention via goldcap capacitors (typ. 48 hours)
2 kBit serial EEPROM for storage of application and configuration data
Boot from DM60x Flash or optional 512 kByte Flash/1MB EPROM on boot socket

Front Panel Functions

Fast Ethernet 10baseT/100BaseT, RJ45
Full duplex support at both 10 and 100 Mbps operation
IEEE 802.3u auto-negotiation support
LAN status LED's (Activity, Link, Speed)
Full modem RS232 interface, RJ45
RS232 interface, Rx/Tx only, RJ11
Two push buttons, RESET, ABORT
Board status LEDs (watchdog active, general purpose)

VME Interface

ANSI/VITA 1-1994 VME interface on P1
DTB Master/Slave A16-A24; D08-D16
7 IRQ levels

Onboard Functions

(E)CXC interface, 96 pin IEC 603-2 connector, VITA 19 BootROM socket for 512 kByte Flash/1MB EPROM devices

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

Additional Functions

Real time clock V3021, time and date
Software controlled 512 ms watchdog, triggers system reset
4x16 bit or 2x32 bit timers built in MPC860T
BDM debug interface, 10 pin connector (pin row)

Software Support

The VMP60 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
Linux (SUSE/Redhat PowerPC)
OS-9

Reliability

MTBF according to MIL-HDBK 217F
VMP60: 230,600 hours

General

Dimensions:	100mm x 160mm (3U card size)
Front Panel Height:	128.5mm ;
Width:	20mm (0.8inch) / 4HP
Weight::	149 g (without memory module)

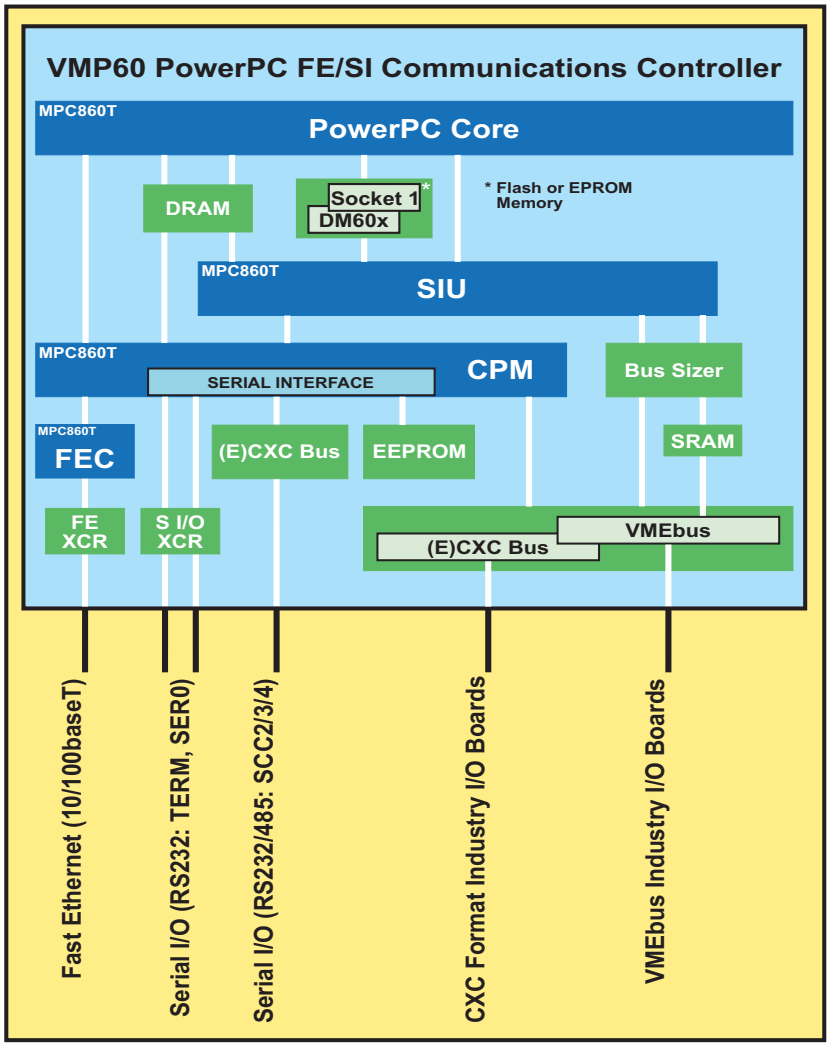
Power Consumption

typ. 6.2 W at 5V

Environmental

Temperature Ranges:	0 C to + 55 C (standard)
	-40 C to + 85 C (optional)
	-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.
VMP60-BASE	80MHz MPC860T, Fast Ethernet, 1MB SRAM, RTC, 5 serial interfaces	22856
KIT-VMP60 *)	User's manual documentation in PDF format on CD-ROM	22858
Cable-VM42-232	3 meter RS232 Serial Interface cable with RJ11-6 to 9 pin D-SUB (female) for terminal connection	12383
VXW-BSP-VMP60	VxWorks BSP for VMP60, for development with Tornado	17626
LIN-BSP-VMP60	Linux BSP for VMP60, for development with SUSE/Redhat PowerPC distribution	27106
OS9DPXW-VMP60	OS-9 BSP for VMP60, for development with Hawk	24026
DM600	Memory piggyback, 4MB DRAM, 4MB Flash	11853
DM601	Memory piggyback, 16MB DRAM, 4MB Flash	11855
DM603-860	Memory piggyback, 32MB DRAM, 4MB Flash	17100
DM604	Memory piggyback, 8MB DRAM, 4MB Flash	15912
DM605	Memory piggyback, 64MB DRAM, 4MB Flash	16368

*) Note: Hardware documentation can be downloaded free of charge from the Internet (www.kontron.com)

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