

BAB 760

PowerPC 750-based VMEbus Board

- PowerPC on VMEbus
- PowerPC 750 FX, 800MHz
- PowerPC 750 GX, 933MHz

III Main Features

- PowerPC-based VMEbus CPU board
- PowerPC 750 FX (800 MHz, 750 GX with 933 MHz)
- 512 kB on-chip second level cache, 1 MB with 750 GX
- 128 MB to 1 GB SDRAM
- Serial ATA hard disk interface on transition board, on-board parallel IDE interface
- Dual 10 / 100 Mb Ethernet interface (10BaseT/100BaseTX)
- 32-bit VMEbus interface
- Four serial and one bi-directional parallel channels
- Double Eurocard (6U), single-slot format
- Single-slot PMC module with 64-bit/66 MHz bus mountable on-board
- Transition board for I/O connectivity via VMEbus back plane
- Linux, OS-9, VxWorks BSP support

III Technical Details

The BAB 760 is a PowerPC-based single board computer with a VMEbus interface. The standardised Eurocard format permits setting up multiprocessor systems in proven 19" racks.

The board is based on the Marvell Discovery 1 chip set, providing internal 64-bit/ 66 MHz PCI resources. Also, long-term availability, compared to the PC market, makes the board an ideal platform for industrial applications.

CPU

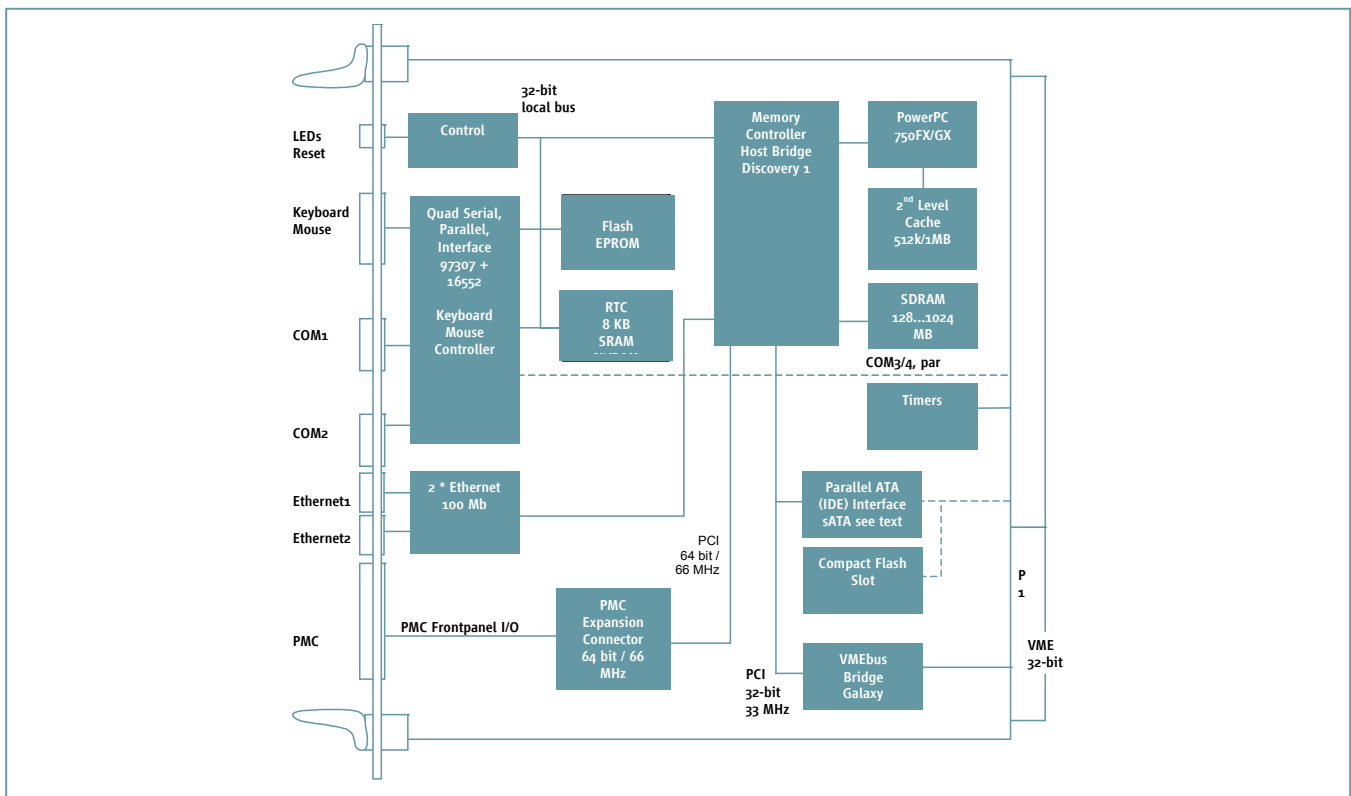
The latest PowerPC CPUs are supported: IBM's PowerPC 750 FX, compatible to the PowerPC 750 (G3 kernel) at 600 MHz to 800 MHz. The CPU has FPU, MMU, first level cache and a L2 cache. The next-generation PowerPC 750 GX also fits on the BAB 760.

CPU	PowerPC 750 FX	PowerPC 750 GX
L1 cache	32 kB data/32 kB instr.	32 kB data/32 kB instr.
L2 cache	512 kB on-chip	1 MB on-chip
Processing units	2 * integer, 1 * float	2 * integer, 1 * float
Bus size	64 data, 32 addr.	64 data, 32 addr.
Bus speed	133 / 133 MHz	133 / 133 MHz
Power cons.	4 W @ 700 MHz	6.5 W @ 1 GHz
CPU speed	800 MHz	933 MHz
Altivec	-	-

Memory Configuration

The 64-bit wide memory allows configurations of 128 MBytes, 256 Mbytes, or 512 MBytes with on-board 133 MHz SDRAMs in a single SO-DIMM module; 1GB modules are supported when available. The second-level cache, located on the CPU chip, runs with the full CPU clock rate.

A CompactFlash socket, mounted on the board, offers file storage with robust, non-rotating media.



Boot PROM

Boot code is stored in a Flash EPROM which enables easy code updates. Boot from IDE or Ethernet is supported, depending on the operating system used. A second Flash device with 8 MB is available for user-supplied code. Current boot Proms contain self test code as well as OS boot code for Linux, OS-9, and VxWorks.

Hard Disks

Hard Disks are supported with the parallel ATA controller of the BAB 760. Data is transferred with up to 100 MB/s. There are two ATA channels, one of which is used for attaching the Compact Flash socket. The second IDE channel is routed to the transition board on the back plane, where data is converted to serial ATA format.

Ethernet Interface

The two network interfaces use the chipset-internal network controllers for 10/100 Mbps transfers with 10BaseT (twisted pair) or 100BaseTX connectivity. Both Ethernet ports are routed to the front panel.

I/O Features

Four asynchronous 16550-compatible serial channels with up to 115 kbaud transfer rate and 16-byte FIFO with RS232 levels are available. PS/2-compatible keyboard and mouse interfaces are provided with a single mini-DIN connector (for use with Y cable). A printer port is routed to the back plane transition board (optional).

Feature	Option 1 PMC	Option 2 PMC
Keybd./Mouse	Mini DIN front	-
Ethernet ports	2 * RJ45 front	1* RJ45 front
COM ports	2 * DB-9 front	1 * DB-9 front, 1 * 10-pin header on trans. board
PMC	1	2
Timer I/O	On trans. board	On trans. board
LPT port	On trans. board	On trans. board

VMEbus Interface

The VMEbus interface is implemented with a 32-bit PCI-to-VME interface chip, delivering system slot capabilities for 32-bit VME systems. It features four programmable address windows, programmable VME interrupt handling, and interrupt generation. Software drivers for all operating systems supported on the BAB 760 are supplied.

Watchdog / Timers

The BAB 760 has three on-board 32-bit counters with programmable time-out periods, each with gating input and timer output; they can be used as a watchdogs, process timers, etc. Special-function counters, such as angular encoders, can be implemented in an on-board programmable circuit on request.

Operating Systems

The software support for the BAB 760 includes the board support package for the ELinOS Embedded Linux and for OS-9. Support for WindRiver's VxWorks (rev 5.4) with Tornado (rev 2.0) is in preparation.

PMC Expansion

A PMC single-slot module board can be installed in the on-board PMC connector. Additionally, a PMC module carrier board can be installed to provide two additional PMC module slots. PMC I/O of the carrier is routed to the back plane P2 connectors.

Dual PMC Option

As an option, the BAB 760 can be equipped with two PMC slots instead of one, while still fitting into a single VME slot. Due to limited front panel space, with this option the following changes apply: Keyboard/Mouse / CompactFlash connectors are not supplied. In addition, only one serial RS-232 D connector is at the front panel and the PMC expansion carrier cannot be used.

Front Panel I/O

There are two options for the front panel, depending on the selection of one or two PMC modules: The single-PMC version has two serial-interface Sub D connectors, two Ethernet RJ-45 connectors and one keyboard-mouse mini-DIN connector and PMC mounting slot.. The dual-PMC option has one 9-pin serial D connector and one Ethernet RJ45 connector.

Transition Board

The transition board is used to route I/O from the backside of the back plane to the enclosure back panel. It contains standard connectors for COM3/4, and header connectors for serial ATA as well as for parallel ATA. Conversion from parallel to serial ATA is also done on the transition board. Parallel port and timer I/Os are available only alternatively.

Miscellaneous

USB is not implemented on the BAB 760 board. However, a PMC module with USB 2.0 support and connectors is available.

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III Specifications

VMEbus

- 32-bit system controller interface
- Single-slot, 6U
- Passive cooling of CPU

Environmental Conditions

- Storage Temperature: -40 °C – 70 °C, at 10% - 100% non-condensing
- Operating Temperature: 0 °C – 50 °C (1 m/s forced air cooling)
- Maximum Operating Humidity: 85 % relative

Power Requirements (CPU board only, 600 MHz)

- 4.2A max. 2.8A typ. at +5 VDC ± 5 % (800 MHz; 750 FX)
- 5.3A max. 4.3A typ. at +5 VDC ± 5 % (933 MHz; 750 GX)
- 100mA max. 30mA typ. at +12 VDC ± 10 %
- 100mA max. 10mA typ. at -12 VDC ± 10 %

MTBF Values

- 34938 hrs (computed after MIL-HDBK-217E)

Connectors

Front panel

- Keyboard / Mouse: Mini-DIN
- COM1/2: 9-pin Sub-D
- Net1/2: 6-pin RJ-45
- PMC I/O

Transition board

- Serial ATA: 7-pin signal connector
- Parallel port: 25-pin Sub-D
- COM3: 9-pin Sub-D
- COM4: 9-pin Sub-D

Regulatory

- CE: EN50082-2, EN50081-1, EN55011

Documentation

- Free Internet

Please contact your local sales office for detailed information.

