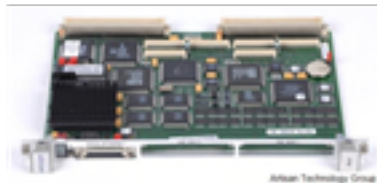


Heurikon Baja4700
Single Board Computer



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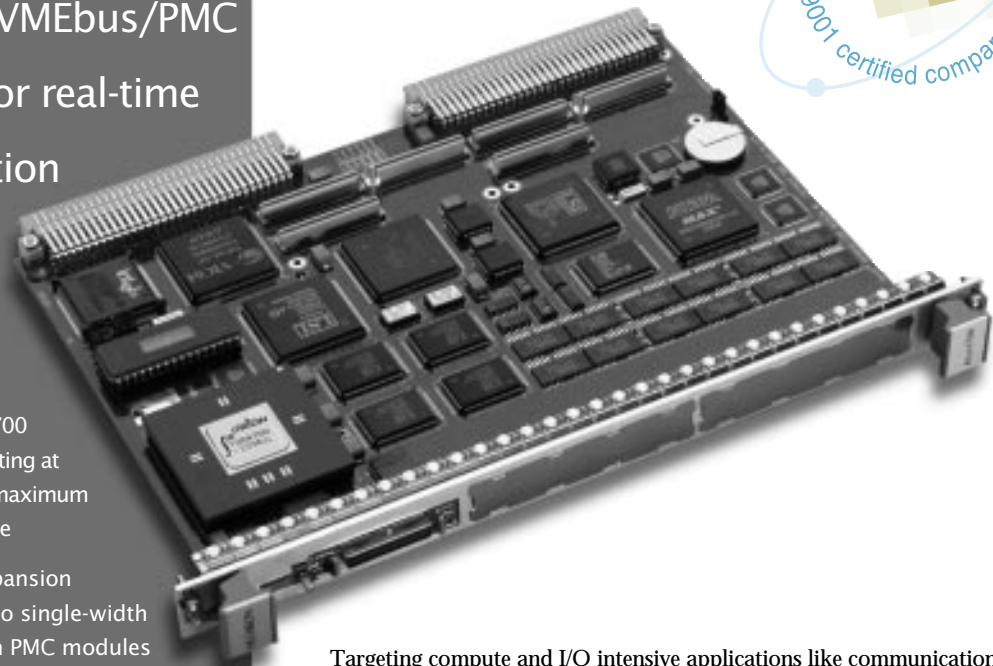
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R I S C | s i n g l e | b o a r d | c o m p u t e r

MIPS-based VMEbus/PMC CPU Board for real-time communication applications

- IDT ORION 64-bit R4700 MIPS processor operating at 166 or 175 MHz for maximum real-time performance
- Two 32-bit PMC expansion interfaces accept two single-width or one double-width PMC modules with front panel or P2 I/O
- Optimized VME64 interface features sustained board-to-board data rates in excess of 60 MBytes/Sec
- Implementation of VME64 Extensions subset for flexibility and reliability
- Up to 64 Mbytes of 2-way interleaved DRAM for efficient program execution
- Up to 4 Mbytes user-accessible Flash Memory for large applications
- Two RS-232 interface ports for flexible serial I/O
- On-card Ethernet for high performance DMA-supported Local Area Networking
- In-house support for VxWorks real-time operating system and development environment
- Quality assured by more than 20 years of experience, ISO 9001 certification and exclusive Gauntlet testing



Targeting compute and I/O intensive applications like communications, imaging, embedded control, and video-on-demand, the Baja4700 features a 64-bit VME64 interface, on-card Ethernet, two serial ports and up to 64 Mbytes of DRAM. It also features a pair of 32-bit PMC expansion interfaces, which make it easy for designers to add custom and off-the-shelf third-party PMC cards.

The Baja's compute engine is IDT's R4700, available in both 166 and 175 MHz versions. The 166 MHz board is optimized for high-performance I/O, and is best suited for I/O intensive applications. The 175 MHz board is best suited for CPU intensive applications such as those requiring extensive floating point calculations or critical program loops.

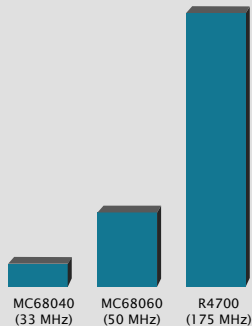
The Baja's PMC (PCI Mezzanine Card) interface features two 32-bit expansion connectors. The two interfaces can accept either two single-wide or one double-wide module. I/O can be routed either to the front panel or out the P2 connector. Because it supports two PMC modules, the Baja is ideally suited to communications applications requiring support for multiple protocols. By mixing PMC modules the Baja can serve as a high-performance bridge between networks. The excellent data moving capabilities of the R4700 processor make the board ideal as a communication switch controller, and the 2 PMC slots ensure compatibility with most standard or custom switch interfaces.

For quality in real-time, choose the performance, reliability and responsiveness of Heurikon. Our engineers and support group are available to answer your inquiries. Please call 1-800-356-9602 for more details.

baja4700

technical specifications

relative processor performance floating point divide



bus interface

VMEbus

- VME64 architecture: D64A32(7)
- Operates in Master or Slave Mode
- 64-bit and 32-bit wide block transfers using local DMA capability
- System level controller functions including 4 level arbitration
- Uses VIC64 VMEbus interface chip optimized via custom ASIC
- 2K D64 block transfers:
 - 166 MHz version:
 - Read - 64.46 MBytes/sec
 - Write - 62.95 MBytes/sec
 - 175 MHz version:
 - Read - 60.39 MBytes/sec
 - Write - 61.82 MBytes/sec

VME64 EXTENSIONS SUPPORT

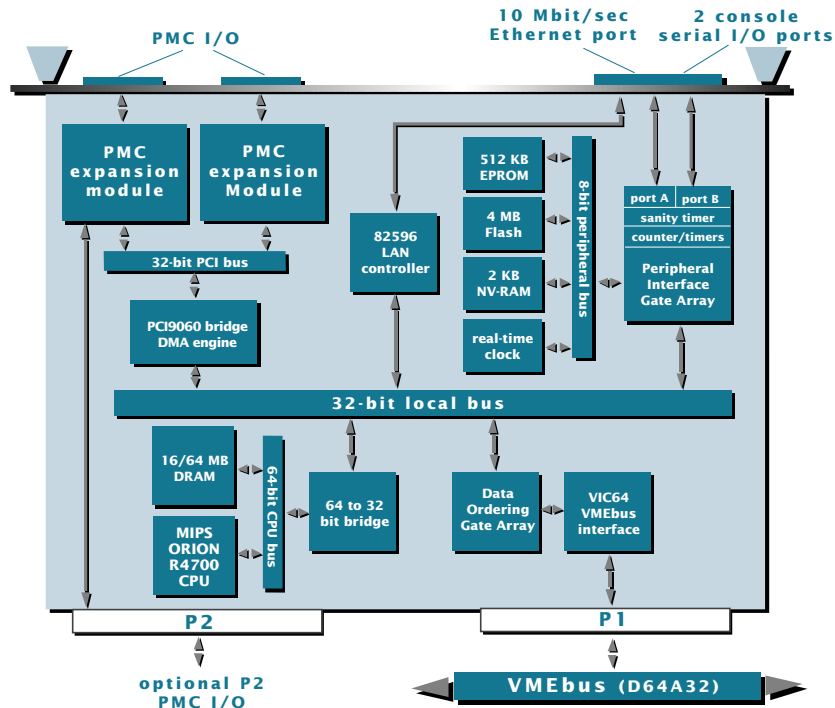
- 5-row P1 & P2 backplane connectors (100% compatible with 3-row DIN backplanes)
- Provides 46 additional user-definable lines on P2 connector rows Z&D
- 35 additional signal ground lines
- Slot geographical addressing
- 3.3 Volt power
- EMC front panel reduces EMI & RFI radiation

MAILBOX INTERRUPTS

- Allows remote control of board via specified VMEbus addresses
- CPU interrupt and VMEbus lock functions supported

PMC INTERFACE

- PCI Mezzanine Card interface
- Two 32-bit PMC expansion slots
- Uses PLX PMC9060 controller with 2 DMA channels
- Accepts 2 single-wide or 1 double-wide PMC module
- 69.9 MBytes/sec sustained transfer rate, 132 MBytes/sec peak
- I/O can be routed to front panel or out P2 connector



baja4700 block diagram

processor

IDT ORION R4700

- IDT R4700 implementation of MIPS R4000 architecture
- Available at 166 or 175 MHz
- True 64-bit RISC processor
- 5-stage instruction pipeline
- 16 KB two-way set associative instruction cache
- 16 KB data cache
- 4-deep write buffer
- MMU and translation lookaside buffer (TLB)
- On-chip system control coprocessor manages exception handler, virtual memory system and transitions between processor operating modes
- 64-bit floating point unit on-chip
- Instruction set fully compatible with R4000 processor family

RANDOM ACCESS MEMORY

- 16 or 64 Mbytes DRAM with parity
- 64-bit data bus
- 2-way bank interleaved architecture
- One parity bit per byte
- Transparent discrete hardware refresh

READ ONLY MEMORY

- Up to 512 Kbytes capacity
- Supports 64K, 128K and 512K

FLASH MEMORY

- 1 or 4 Mbytes flash memory
- 512 Kbytes used for monitor & power-on diagnostics
- Provides field upgradeable non-volatile program storage

EEPROM

- 2 Kbytes Non-Volatile RAM
- Storage for user definable parameters such as baud rates, software and hardware revision levels and configuration information
- Provides field upgradeable non-volatile program storage

peripheral I/O

CONSOLE SERIAL PORTS

- Two front panel serial I/O ports provided via ASIC
- Intel 8251A UART emulation
- RS-232 standard
- Transfer rates up to 1Mbit/sec (cable length dependent)

ETHERNET INTERFACE

- Intel 82596CA 32-bit LAN coprocessor
- On-chip DMA, FIFO's, and memory management
- Conforms to IEEE 802.3
- AUI interface connector via cable off front panel
- 800 Kbytes/sec throughput obtained using TCP/IP protocol

FRONT PANEL

- Reset / Interrupt switch
- LED display
- Ethernet port connector
- Serial port connector

TIMERS/COUNTERS

- Real-time clock with 10 msec resolution
- Three 32-bit timer/counters with 62.5 nsec resolution
- Interrupt capability

board support

SOFTWARE SUPPORT

- Wind River Systems' VxWorks™ real-time operating system and development environment
- ISI's pSOS™ real-time operating system and development environment
- On-board monitor and power-on diagnostics

PHYSICAL CHARACTERISTICS

- Multilayer with ground and VCC planes
- Board size: 233.5 mm x 160 mm (9.19 in. x 6.3 in.)
- Power requirements*:
 - +5VDC @ 5.8 A, +12VDC @ 50mA, -12VDC@30mA
- Storage Temperature: -40°C to 85°C
- Operating range: 0° - 55°C, 85% relative humidity (non-condensing)

target applications

- Communications system control
- Network bridge
- Switch control
- Video on demand server
- Data acquisition
- Imaging

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