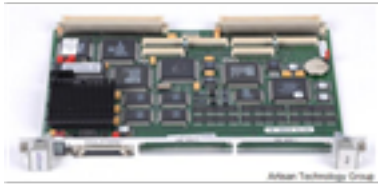
Heurikon Baja4700

Single Board Computer



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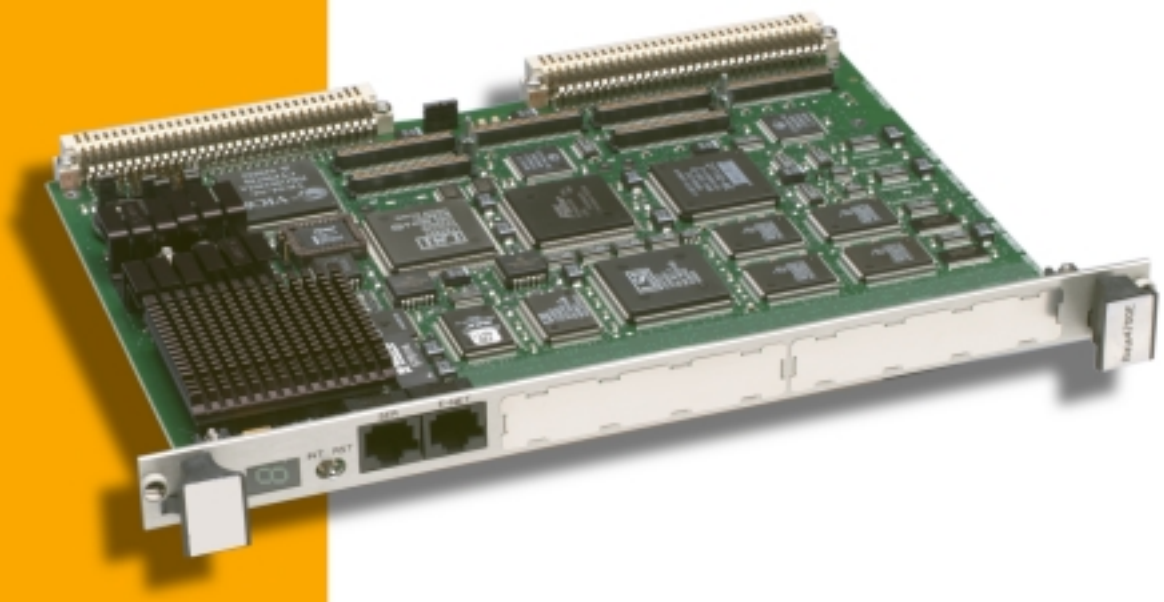
Baja4700E

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



- IDT ORION 64-bit R4700 MIPS processor in 166, 175, and 200 MHz versions
- Optimized VME64 interface for high performance multi-processing applications
- Two 32-bit PMC expansion interfaces, accepts two single-width PMC modules or one double-width PMC module with P2 I/O
- Up to 256 MB DRAM for efficient program execution
- On-board 10BaseT/100BaseTx Ethernet interface for high-performance DMA supported I/O
- Support for VxWorks real-time operating system
- Quality assured by more than 25 years of experience, ISO-9001 certification and exclusive Gauntlet testing

The Baja4700E targets compute- and I/O-intensive applications such as communications system control, switch control and network bridge applications. Since many communications system developers must balance the need for high-performance computing for protocol processing with system requirements for high-throughput communications, the Baja4700E offers a choice of MIPS processor speeds - 166, 175, or 200 MHz.

The Baja4700E accommodates the varying I/O needs of communications applications by including two IEEE standard PMC (PCI Mezzanine Card) expansion slots. Artesyn offers a variery of compatible PMC modules which add further T1, E1, high throughput serial (V.35, EIA530), SCSI/Ethernet and VSB functionality. A wide range of additional third-party PMC modules offer ATM, FDDI, WAN interfaces, and Fiber Channel.

Most communications applications demand that all I/O come off the back of the board for easier maintenance. The Baja4700E uses the the new standard 5-row VME connector which both provides a back panel I/O solution and still provides a high density of I/O on the board.

Driven as they are by time-to-market pressures, many system developers are also looking for off-the-shelf operating system solutions rather than developing a proprietary real-time kernel. To address this operating system need, we offer complete support for Wind River's VxWorks.

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

ARTESYN TECHNOLOGIES

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8310 Excelsior Drive, Madison, WI 53717-1935
voice: 608-831-5500 or 800-356-9602 fax: 608-831-4249
email: info@artesyncp.com web: www.artesyncp.com

Baja4700E technical specifications

bus interface

VMEBUS

- VME64 architecture: D64A32(7)
- Master or Slave Mode
- 64-bit and 32-bit block transfers using local DMA capability
- System level controller functions including 4 level arbitration
- Uses VIC64 VME interface chip optimized via custom ASIC
- 2K D64 block transfers:
  166, 200 MHz boards (33 MHz I/O bus): 64.46 MBytes/sec reads, 62.95 MBytes/sec writes.
  175 MHz board (29 MHz I/O bus): 60.39 MBytes/sec reads, 61.82 MBytes/sec writes

VME64 EXTENSIONS

- 5-row P1 & P2 backplane connectors (100% compatible with 3-row DIN backplanes)
- Provides 46 additional I/O lines on J24 routed to P2 connector rows Z & D for PMC slot 2 I/O
- 35 more signal ground lines
- Slot Geographical addressing
- 3.3V power for PMC slots
- Optional 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

- PCI Mezzanine Card interface
- Two 32-bit PMC expansion interfaces
- Uses PLX PCI9060 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
  PMC slot 1 to rows A & C
  PMC slot 2 to rows Z & D

processor options

MIPS R4700 ORION

- IDT R4700 implementation of MIPS R4000 architecture
- 166, 175, or 200 MHz available
- True 64-bit RISC processor
- 5-stage instruction pipeline
- 16 Kbyte instruction cache
- 16 Kbyte 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
- Instruction set 100% compatible with MIPS R4000 family

RANDOM ACCESS MEMORY

- 64/128/256 Mbytes DRAM
- 64-bit data bus
- 2 bank interleaved architecture with write posting buffer
- Transparent discrete hardware refresh

READ ONLY MEMORY

- Up to 512 Kbytes ROM (flash chip)
- 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
- User definable parameters such as default baud rates, software and hardware revision levels and configuration information
- Provides field upgradeable non-volatile program storage

peripheral I/O

CONSOLE SERIAL I/O

- One front panel serial I/O port
- One P2 serial I/0 port
- EIA-232 standard

FAST ETHERNET INTERFACE

- Digital 21140A Fast Ethernet LAN Controller
- Operates at either 10 Mbit/sec or 100 Mbit/sec
- Autonegotiated Ethernet rate
- Programmable PCI bus burst size to optimize system data transfer efficiency
- On-chip Tx and Rx FIFOs
- Highly efficient linked-list, Bus Master DMA engine
- Flexible address filtering modes
- External and internal loopback capability
- Complies with Fast Ethernet Standards: IEEE P802.3u/D3 and ANSI TP-PMD v2.0 UTP CAT 5

FRONT PANEL

- I/O for 2 PMC modules
- 7 segment LED display
- Fast Ethernet port connector (RJ45)
- Serial port connector (RJ45)
- Reset/Interrupt switch

TIMERS/COUNTERS

- Four 31-bit general purpose counter/timers
- Interrupt capability

MAILBOX INTERRUPTS

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

board support

SOFTWARE SUPPORT

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

PHYSICAL CHARACTERISTICS

- Multilayer with ground and power planes
- Board size: 233.5 mm x 160 mm (9.19 in. x 6.3 in.)
- Power requirements*:
  +5VDC @ 5.8 A
  +12VDC @ 50 mA
  -12VDC @ 30 mA
- Storage temperature:
  -40°C to 85°C
- Operating range:
  0° to 55° C, 95% relative humidity (non-condensing)

target applications

- Communications system control
- Switch control
- Network bridge
- Video-on-demand server

* Power measured on 16MB board with no PMC modules and no Ethernet transceiver

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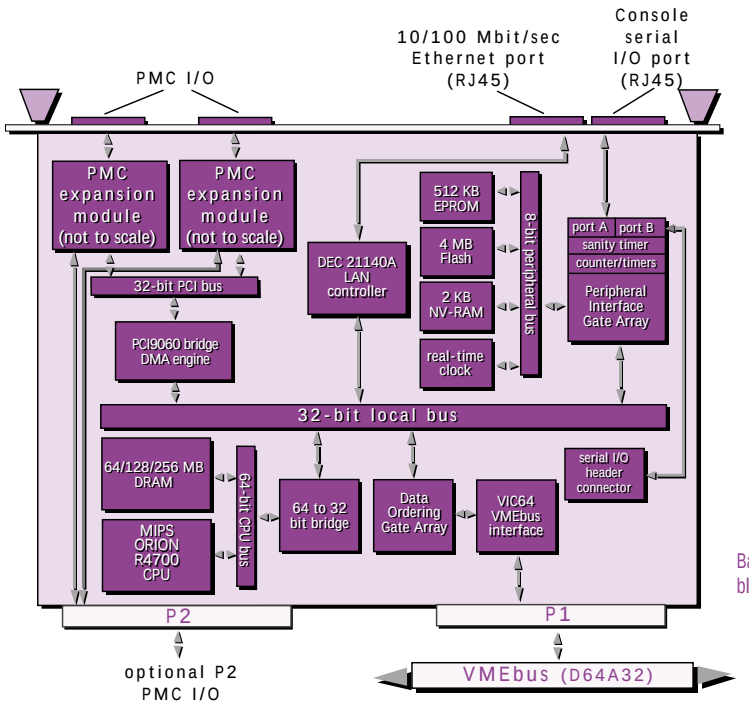

Baja4700E block diagram

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