Dual-Core Intel® Xeon® Dual Processor Single Board Computer

RoHS
2002/95/EC

APPLICATIONS

The VP 426/23x is a PC-compatible high performance, high functionality VME64x processor board supporting two Dual-Core Intel® Xeon® processors. Featuring a selection of memory options, an optional on-board hard disk drive, CompactFlash™ and a variety of I/O interfaces. For embedded systems an optional fixed USB Flash drive is available on the rear transition module. High- performance networking is provided by four Gigabit Ethernet links and the board is fully compliant with the VITA 31.1 specification (Gigabit Ethernet for VME64x backplanes). Its functionality can be further increased through the use of PMC or XMC modules. To simplify the board's integration many popular industry standard operating systems are supported. The board is suitable for a range of high-performance applications within the defense, industrial control, telecomms, telemetry, scientific and aerospace markets.

HIGHLIGHTS

- Dual-processor configuration:
    - using 1.66 GHz Dual-Core Intel® Xeon® processor ULV
    - 667 MHz Front Side Bus
    - on-die L1 cache
    - 2 Mbytes on-die shared L2 cache for each processor
    - no CPU fan required
- Up to 8 Gbytes DDR2-400 SDRAM (with ECC)
- All features available in a single 4HP slot
- 1 x PMC/XMC module site:
    - 32/64-bit; 33/66MHz PCI and 66MHz PCI-X™
    - 1 x XMC module interface (x8 PCI Express®)
    - front and rear user I/O interfaces
- Dual CompactFlash™/Microdrive™ option
- USB Flash drive option
- Two high performance Serial ATA150 (SATA) channels:
- Optional on-board SATA or EIDE disk drive (in a single slot)
- 4 x 10/100/1000Mbps Ethernet interfaces:
    - supports Gigabit Ethernet for VME64x backplanes (VITA 31.1)

- 1 Mbyte of BIOS Flash EPROM
- Graphics interface:
    - VGA via front panel or via P2 connector
    - digital flat panel via P2 connector
- Keyboard and mouse interfaces
- 4 x USB 2.0 ports
- 2 x asynchronous RS232 serial channels
- 2 x asynchronous RS232/RS422 serial channel
- Watchdog timer
- Long duration timer
- VME-64 Interface supporting A32/A24/A16/D64/D32/D16/D8(EO), MBLT64, 2eSST
- Extended temperature version available:
    - -25°C to +70°C (E-Series)
- Optional Rear Transition Modules for rear panel I/O:
    - option for fixed USB Flash drive
- Supports Linux®, Windows® Server 2003, Windows® XP, Windows® 2000, QNX®, Solaris™ and LynxOS®

CONCURRENT TECHNOLOGIES

Concurrent Technologies Plc

Concurrent Technologies Inc

Dual Processors

- dual processors; for each processor:-
  - → 1.66 GHz Dual-Core Intel® Xeon® processor ULV
  - → uses μFC-PGA 478 (micro Flip-Chip Pin Grid Array) package
  - → internal primary (L1) on-die cache
  - → 2 Mbytes secondary (L2) shared on-die cache
- no CPU fan required
- utilizes 64-bit Intel® E7520 chipset:-
  - → uses Intel® 6300ESB I/O Controller Hub

DRAM

- supports up to 8 Gbytes DDR2-400 ECC SDRAM:-
  - → up to 4 Gbytes soldered to board
  - → up to 4 Gbytes provided via two 200-pin SODIMM sockets
  - → dual channel configuration
  - → peak bandwidth of 6.4 Gbytes/s
  - → error correction up to 4-bits
- accessible from processors and VME bus

Hard Disk Interfaces

- EIDE interface:-
  - → can be used for an ATA-100 EIDE disk drive or up to 2 CompactFlash™ or Microdrive™ Type II drives in a single slot
- 2 x Serial ATA150 interfaces:-
  - → both channels accessible via P2 to a Rear Transition Module (RTM)
  - → one channel switchable to on-board SATA disk drive
  - → transfer rate up to 150 Mbytes/s
- on-board options occupy the PMC site

Ethernet Interfaces

- 4 x channels supporting 10Base-T, 100Base-TX, 1000Base-T
- 2 x front panel interfaces:-
  - → implemented by an Intel® 82571EB LAN controller via a x4 PCI Express® link
  - → accessed via front panel RJ45 connectors
- 2 x rear interfaces via P0:-
  - → implemented by an Intel® 82571EB LAN controller via a x4 PCI Express link
  - → support for VITA 31.1 - Gigabit Ethernet for VME64x backplane or support for rear panel RJ45's to a Rear Transition Module (RTM)

Graphics Interface

- implemented by a Silicon Motion SM722:-
  - → 8 Mbytes video memory
  - → resolution up to 1280 x 1024 @ 16M colors
- analog interface via front panel connector
- DVI-I interface supported via P2 to an RTM

PMC/XMC Interface

- PMC/XMC shared site:-
  - → PMC site supports 32/64-bit, 33/66 MHz PCI and 66 MHz PCI-X™ operation (PCI 3.3V signaling)
  - → XMC (PCI Express Mezzanine Card) interface supported via x8 or dual x4 PCI Express Link
- I/O via front panel and via optional P0:-
  - → Rear Transition Module supports rear I/O
- expansion to optional dual PMC carrier board (64-bit/66 MHz) via baseboard PMC or XMC site
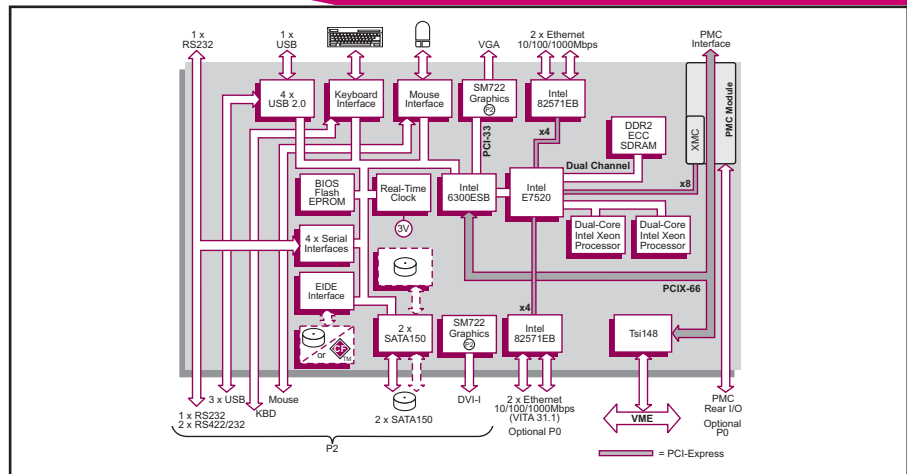
Serial Interfaces

- 4 x RS232/RS422 asynchronous serial channels:-
  - → one RS232 channel accessed via front panel
  - → two RS232/422 channels accessed via P2
  - → one RS232 channel accessed via P2
- 16550 compatible UART

Other Peripheral Interfaces

- keyboard and mouse interfaces, sharing a single PS/2™ type connector on front panel, also accessible via P2 to an RTM
- PC-compatible Real Time Clock (Year-2000 compliant)
- 4 x USB 2.0 interfaces:-
  - → one accessed via front panel
  - → three accessed via P2 to an RTM
  - → option for fixed USB Flash drive on RTM
- watchdog timer
- 1 x 32-bit Long Duration Timer with processor interrupt capability
- two CPU temperature monitors; voltages monitor; board temperature monitor
- legacy speaker interface

Flash EPROM

- 1 Mbyte of BIOS Flash EPROM - 8-bits wide

Firmware Support

- Phoenix® TrustedCore™ BIOS
- comprehensive Power-On Self-Test (POST)
- LAN boot firmware included

VME64x Interface

- P1 and P2 connectors compatible with VME64x systems; backplane must be 5-row
- implemented using Tundra® Tsi148 PCI-X VME bridge
- VME Master/Slave
- A32/A24/A16/D64/D32/D16/D8(EO), MBLT64, 2eSST
- auto system controller detect
- full interrupter / interrupt handler support
- bus error interrupt hardware

Software Support

- support for Linux®, Windows® Server 2003, Windows® XP, Windows® 2000, QNX®, Solaris™ and LynxOS®

Electrical Specification

- +5V@10.0 A (typical with 4 Gbytes DRAM); +5% / -3%
- +3.3V@0.0 A; +5% / -3%
- +12V@0.0 A; -12V@0.0 A
- +12V and -12V routed to PMC expansion slot
- requires VME64x backplane to provide power

Environmental Specification

- operating temperatures:-
  - → 0°C to +55°C (N-Series)
  - → -25°C to +70°C (E-Series)
- storage temperature: -40°C to +85°C
- 10% to 90% Relative Humidity, non condensing (operating or storage)

Safety

- PCB (PWB) manufactured with flammability rating of 94V-0

Mechanical Specification

- 6U form-factor
- single VME64x slot - front panel width 0.8inch (20.3mm)
- utilizes 160-way connectors for P1 and P2
- optional P0
- IEEE 1101.10 handles
- shock:
  20g, 11ms, ½ sine (operating);
  30g, 11ms, ½ sine (non-operating)
- vibration:
  5Hz-2000Hz at 2g, 0.38mm peak displacement (operating);
  5Hz-2000Hz at 5g, 0.76mm peak displacement (non-operating)

ORDERING INFORMATION

Order Number	Product Description (Hardware)
VP 426/231-xy	1.66 GHz Dual-Core Xeon, dual processors
AD 110/002-z1	2.5 inch SATA Hard Disk Drive assembly
AD CP1/DR1-z2	2.5 inch EIDE Hard Disk Drive assembly
AD 200/001-01	Dual CompactFlash/MicroDrive Carrier
AD CR3/PMC-zz	Dual PMC Carrier board for 64-bit/66 MHz PMC modules
AD VP2/016-zz	P2 & P0 I/O RTM (see Note 2), optional USB flash
AD VP2/017-zz	P2 I/O RTM (see Note 1), optional USB flash

Replace the order number suffix (-xy) with selections from the following:

Where x = P2/P0 I/O Breakout combinations
1 - 5-row only, P2 I/O = KDB/MSE, DVI-I, 3xUSB, 1xRS232, 2xRS232/RS422, 2xSATA150. (See Note 1)
6 - 5-row only, P2 I/O as x=1; plus P0 I/O = PMC x64, 2xGigE or VITA 31.1. (See Note 2)

Where y = memory size
1 - 2 Gbytes
2 - reserved
3 - 4 Gbytes
4 - 6 Gbytes
5 - 8 Gbytes

Note 1: For I/O option x = 1, if an RTM is required then please order AD VP2/017-zz
Note 2: For I/O option x = 6, if an RTM is required then please order AD VP2/016-zz

For z or zz options please contact your local sales office

For extended temperature, E-Series, please contact your local sales office