

Intel® Atom™ Processor Dual PMC Controller



APPLICATIONS

The VP A45/01x is a PC-compatible low power, high functionality, 6U VME board supporting the 1.6 GHz Intel® Atom™ processor N270. It utilizes the Mobile Intel® 945GSE Express chipset to support 2 Gbytes of DDR2-533 SDRAM. This single slot board features 1 PMC/XMC site and 1 PMC site, an on-board CompactFlash™ site and a range of I/O including four Ethernet interfaces. The VP A45/01x is a commercial

air-cooled board, suitable for a range of environments within industrial control, transportation, security, telemetry, scientific and medical applications. Options to operate in temperatures ranging from -40°C to +85°C are available. Ruggedized conduction-cooled and ruggedized air-cooled versions are planned. To simplify the board's integration many industry standard operating systems are supported.

HIGHLIGHTS

- 1.6 GHz Intel® Atom™ processor N270:
 - 512 Kbytes L2 cache
 - Intel® Hyper-Threading Technology supports 2 execution threads
- The estimated power consumption for this board is under 20 watts
- 2 Gbytes of DDR2-533 SDRAM
- Dual SATA150 drive interfaces
- Option for an on-board SATA 2.5" mass storage device
- EIDE interface for an on-board CompactFlash® socket and option for a Flash Drive module
- 1 x PMC/XMC and 1 x PMC module interfaces:
 - 1 x 32-bit, 33MHz PCI PMC site
 - 1 x 32/64-bit, 33/66/100MHz PCI/PCI-X™ PMC site
 - 1 x XMC module interface (x1 PCI Express™)
 - Expansion carrier for 2 more PMC/XMC sites
- Keyboard, mouse and DVI-D graphics interfaces via P2
- 2 x serial channels and 3 x USB 2.0 interfaces
- 4 x Ethernet interfaces:
 - 1 x 10/100Mbps and 1 x 10/100/1000Mbps Ethernet channels via front panel RJ45 connectors
 - 2 x 10/100/1000Mbps Ethernet channels via P0
- 64Kbytes of battery backed SRAM
- Watchdog and long duration timer
- 4 Mbytes of BIOS Flash EPROM
- VME64 interface supporting A32/A24/A16/D64/D32/D16/D8(E0), MBLT64
- Extended temperature versions planned:
 - -25°C to +70°C (E-Series)
 - -40°C to +85°C (K-Series, includes humidity sealant)
- Ruggedized versions planned:
 - conduction cooled and air cooled
- Support for Linux®, Windows® XP, Windows® XP Embedded, QNX® and VxWorks®

Central Processor

- 1.6 GHz Intel® Atom™ processor N270:-
 - 512 Kbytes of secondary (L2) on-die cache
 - 533 MHz Front Side Bus
 - Intel Hyper-Threading Technology supporting 2 execution threads
- uses 437 pin FC-BGA (Flip-Chip Ball Grid Array) package
- utilizes Mobile Intel® 945GSE Express chipset:-
 - uses Intel® ICH7M I/O Hub

SDRAM

- 2 Gbytes soldered DDR2-533 SDRAM
- accessible from processor or VME bus

Mass Storage Interfaces

- 1 x EIDE interface supports:-
 - option for Flash drive module
 - on-board CompactFlash™ socket
- 2 x Serial ATA150 interfaces:-
 - transfer rate up to 150 Mbytes/s
 - accessed via P2 connector
 - one channel switchable to on-board SATA 2.5" mass storage device
- option for USB Flash disk on Transition Module

Ethernet Interfaces

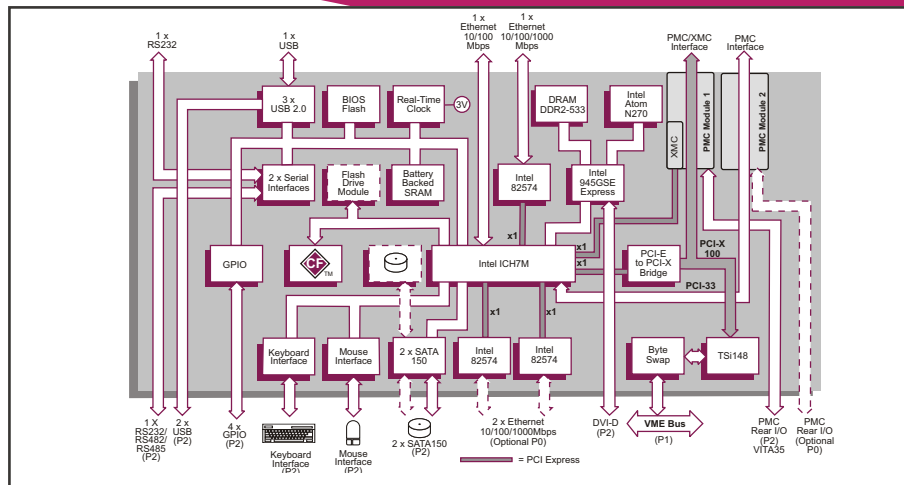
- 1 x 10/100Mbps interface via front panel:-
 - provided by Intel ICH7M
- 1 x 10/100/1000Mbps interface via front panel:-
 - implemented by Intel® 82574 LAN Controller via x1 PCI Express® link
- 2 x 10/100/1000 Mbps interfaces via P0:-
 - implemented by 2 x Intel® 82574 LAN Controllers via x1 PCI Express® links

PMC/XMC Interfaces

- 1 x PMC/XMC site and 1 x PMC site
- PMC site 1 supports:-
 - 32/64-bit, 33/66/100 MHz PCI/PCI-X
 - 3.3V or 5V signaling
 - XMC interface via x1 PCI Express port
 - I/O via front panel and via P2 (VITA 35 P4V2-64ac pinout)
- PMC site 2 supports:-
 - 32-bit, 33MHz PCI only
 - 3.3V or 5V signaling
 - I/O via front panel and via optional P0
- expansion to optional dual PMC/XMC carrier board:-
 - via x1 PCI Express XMC site

Serial Interfaces

- 1 x RS232 serial channel accessed via RJ45 connector on front panel:-
 - supporting CTS, RTS, DSR, DTR and DCD
- 1 x RS232/422/485 serial channel accessed via P2:-
 - supporting RI, CTS, RTS, DSR, DTR, DCD and RI
 - 16550 compatible UART



Graphics Interface

- implemented by Intel 945GSE:-
 - resolutions up to 2048 x 1536 @ 16M colors
- DVI-D graphics accessed via P2 connector

Battery Backed SRAM

- 64 Kbytes battery backed SRAM

Flash EPROM

- 4 Mbytes of BIOS Flash EPROM

Software Support

- supports Linux®, Windows® XP, Windows® XP Embedded, QNX®, and VxWorks®

Firmware Support

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

Other Peripheral Interfaces

- PC-compatible Real Time Clock (Year 2000 compliant)
- 3 x USB 2.0 interfaces:-
 - 1 via a USB connector on front panel
 - 2 via P2 connector
- keyboard and mouse interfaces accessed via P2 connector
- watchdog timer
- 1 x 32-bit Long Duration Timer with processor interrupt capability
- 4 x GPIO signals via P2

VME Interface

- P1 and P2 connectors compatible with VME64x
- implemented using Tundra® Tsi148 device
- VME Master/Slave
- A32/A24/A16/D64/D32/D16/D8(E0)/MBLT64
- fast hardware byte swapping
- auto system controller detect
- full interrupter/interrupt handler support

Safety

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

Electrical Specification

- the estimated power consumption for this board is under 20 watts
- +5V@TBD A
- +12V@0.0A; -12V@0.0A; 3.3V not required
- +12V and -12V routed to both PMC sites

Environmental Specification

- operating temperatures:-
 - 0°C to +55°C (N-Series)
 - -25°C to +70°C (E-Series)
 - -40°C to +85°C (K-Series)
- storage temperature: -40°C to +85°C
- 5% to 95% Relative Humidity, non condensing (operating or storage):-
 - K-Series includes humidity sealant
- ruggedized versions planned, see separate datasheets:-
 - conduction-cooled: VP A45/01x-RC
 - air-cooled: VP A45/01x-RA

Mechanical Specification

- 6U form-factor
- single slot, front panel width 0.8 inch (20.3mm)
- utilizes 160-way connectors for P1 and P2
- optional P0
- IEEE 1101.10 handles
- shock: 20g, 11ms, 1/2 sine (operating); 30g, 11ms, 1/2 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 A45/013-x2	1.6 GHz Atom processor N270
AD 110/001-zz	SATA 2.5" Mass Storage Drive kit
AD 230/001-04	4 Gbytes EIDE Flash Drive Module
AD CR3/PMC-zz	PMC Carrier board for 2 PMC modules

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

Where x = P2/P0 Breakout combinations
 5 - P2 peripheral I/O and PMC (VITA35 P4V2-64ac), No P0
 6 - P2 peripheral I/O and PMC (VITA35 P4V2-64ac), P0 fitted

Where y = memory size
 1 - reserved
 2 - 2 Gbytes

AD VP2/020-10	Rear Transition Module with I/O peripheral connectors, no P0: use when x = 5, i.e. VP A45/013-5y
AD VP2/020-30	Rear Transition Module with I/O peripheral connectors, P0 fitted: use when x = 6, i.e. VP A45/013-6y
AD 235/001-0z	USB Flash Drive Module (optional, fits onto AD VP2/020 Rear Transition Module)

For z options please contact your local sales office
 For ruggedized versions, see separate datasheets: VP A45/01x-RC (conduction-cooled) or VP A45/01x-RA (air-cooled))

For extended temperature, 1.6 GHz E and K-Series, please contact your local sales office