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VME
Ruggedized

VP A45/01x-RA

R - Series

Intel® Atom™ Processor Dual PMC Controller



RoHS 2002/95/EC

APPLICATIONS

The VP A45/01x-RA is a PC-compatible low power, high functionality, ruggedized air-cooled board, 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-RA operates in temperatures ranging from -40°C to +75°C, making it suitable for a range of applications within the industrial control, transport, security, aerospace and defense industries. The board is rear I/O plug compatible with the commercial air-cooled version. A ruggedized conduction-cooled version is planned. To simplify the board's integration many industry standard operating systems are supported.

HIGHLIGHTS

- Ruggedized PMC/XMC board for VME systems:
  - air cooled
  - conformally coated
- 1.6 GHz Intel® Atom™ processor N270:
  - 512 Kbytes L2 cache
  - Intel® Hyper-Threading Technology supports 2 execution threads
- 2 Gbytes of DDR2-533 SDRAM
- Dual SATA150 drive interfaces
- Option for an on-board SATA 2.5-inch solid state drive
- EIDE interface for an on-board CompactFlash® socket
- 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 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
- Watchdog and long duration timer
- 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
- Built-In Test (BIT) support planned:
  - Power-on BIT, Initiated BIT, Continuous BIT
- 4 Mbytes of BIOS Flash EPROM
- VME64 interface supporting A32/A24/A16/D64/D32/D16/D8(E0), MBLT64
- Ruggedized conduction-cooled version planned:
  - conduction-cooled to ANSI/VITA 30.1-2002
  - -40°C to +85°C, conformally coated
  - see separate VP A45/01x-RC datasheet
- Non-ruggedized air-cooled version available:
  - rear plug compatible with the ruggedized version
  - useful for bench development
  - use in commercial (non-rugged) applications
  - see separate VP A45/01x datasheet
- Support for Linux®, Windows® XP, Windows® XP Embedded, QNX® and VxWorks®

CONCURRENT TECHNOLOGIES

Concurrent Technologies Plc 4 Gilberd Court, Colchester, Essex, CO4 9WN, UK
Tel: +44 (0)1206 752626 Fax: +44 (0)1206 751116

Concurrent Technologies Inc 6 Tower Office Park, Woburn, MA 01801, USA
Tel: (781) 933 5900 Fax: (781) 933 5911

email: info@gocct.com **http://www.gocct.com**

Specification

Ruggedized PMC/XMC Controller
- ruggedized air-cooled
- conformally coated
- ruggedized conduction-cooled version planned:-
  - → see VP A45/01x-RC datasheet
- non-ruggedized commercial version available:-
  - → see VP A45/01x datasheet

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
- utilizes Mobile Intel® 945GSE Express chipset:-
  - → uses Intel® ICH7M I/O Hub

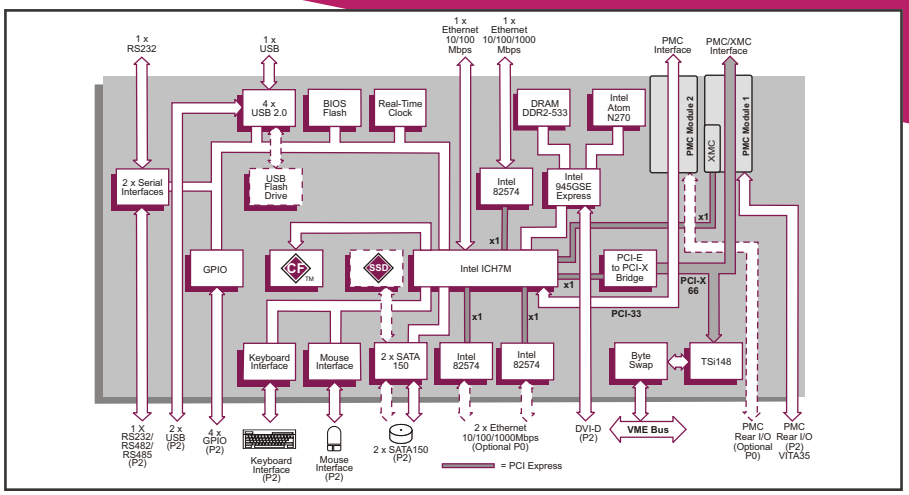
SDRAM
- 2 Gbytes soldered DDR2-533 SDRAM
- accessible from processor or VME bus

Mass Storage Interfaces
- 1 x EIDE interface supports on-board CompactFlash™ socket
- 2 x Serial ATA150 interfaces:-
  - → transfer rate up to 150 Mbytes/s
  - → accessed via P2 connector
  - → one channel switchable to optional on-board SATA 2.5" solid state drive
- option for USB Flash drive 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 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

Graphics Interface
- implemented by Intel 945GSE:-
  - → resolutions up to 1600 x 1200 @ 16M colors
- DVI-D graphics accessed via P2 connector



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

Flash EPROM
- 4 Mbytes of BIOS Flash EPROM

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

Built-In Test (BIT) Support
- Power-on BIT (PBIT)
- Initiated BIT (IBIT)
- Continuous BIT (CBIT)

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(EO)/MBLT64
- fast hardware byte swapping
- auto system controller detect
- full interrupter/interrupt handler support

Electrical Specification
- +5V @ 4.4 A; voltage +5% / -3%
- +12V @ 0.0A; -12V @ 0.0A; 3.3V not required
- +12V and -12V routed to both PMC sites

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

Environmental Specification
- operating temperature:-
  - → -40°C to +75°C
- storage temperature VITA 47 Class C3
- operating altitude -1,000 to 50,000 feet (-305 to 15,240 meters)
- 5% to 95% Relative Humidity, non condensing (operating/storage)
- for ruggedized and commercial versions, see separate datasheets:-
  - → conduction-cooled: VP A45/01x-RC (planned)
  - → air-cooled: VP A45/01x (available)

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
- operating shock - VITA 47 Class OS1
- operating vibration - VITA 47 Class V2

ORDERING INFORMATION

Order Number	Product Description (Hardware)	Replace the order number suffix (-xy) with selections from the following: Where x = P2/P0 Breakout combinations	Where y = SDRAM size
VP A45/013-x2RA	1.6 GHz Atom processor N270	5 - No P0, 3.3V PMC, PMC (VITA35 P4V2-64ac) 6 - P0 fitted, 3.3V PMC, PMC (VITA35 P4V2-64ac) 7 - No P0, 5V PMC, PMC (VITA35 P4V2-64ac) 8 - P0 fitted, 5V PMC, PMC (VITA35 P4V2-64ac)	1 - reserved 2 - 2 Gbytes

AD 110/001-z2RA SATA 2.5-inch Solid State Drive kit

AD VP2/020-10RA Rear Transition Module with I/O peripheral connectors, no P0: use when x = 5 or 7, e.g. VP A45/013-5yRA
AD VP2/020-30RA Rear Transition Module with I/O peripheral connectors, P0 fitted: use when x = 6 or 8, e.g. VP A45/013-6yRA

AD 235/001-0zRA USB Flash Drive Module (optional, fits on VP A45/01x-RA baseboard)

For z options please contact your local sales office

For commercial or ruggedized air-cooled versions please contact your local sales office

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