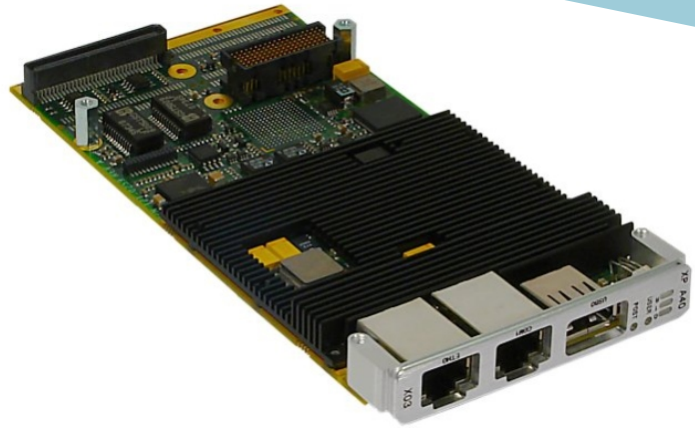


## Intel® Atom™ Processor XMC/PMC Module



### APPLICATIONS

The XP A40/x03 is a PC-compatible ultra-low power, high functionality, Processor XMC/PMC module supporting the 1.6 GHz Intel® Atom™ processor Z530. It utilizes the Intel® System Controller Hub US15W to support up to 2 Gbytes of DDR2 SDRAM. This board features a variety of interfaces including dual Gigabit Ethernet, graphics, RS232/422/485, USB and CANbus. The XP A40/x03 is a commercial air-cooled board,

suitable for a range of environments within industrial control, transportation, security, telemetry, scientific and medical applications. An option is available to operate in temperatures ranging from -25°C to +70°C. The board is rear I/O plug compatible with the ruggedized air-cooled and conduction-cooled versions. To simplify the board's integration many industry standard operating systems are supported.

### HIGHLIGHTS

- 1.6 GHz Intel® Atom™ processor:
  - 45nm process technology
  - 512 Kbytes L2 cache
  - Intel® Hyper-Threading technology supports 2 execution threads
  - Intel® Virtualization Technology
- Up to 2 Gbytes DDR2-533 SDRAM
- XMC or PMC interface options:
  - XMC supports x1 PCI Express®
  - PMC supports 33/66 MHz PCI and 100/133 MHz PCI-X
- Rear I/O via PMC Pn4 connector
- Supports monarch and non-monarch operation on the PMC version
- Supports Root Complex and Endpoint operation on the XMC version
- Supports DMA via XMC/PMC host interface
- On-board EIDE NAND Flash disk
- 2 x 10/100/1000 Mbps Ethernet interfaces
- 4 x USB 2.0 interfaces
- 2 x serial ports:
  - 1 x RS232 via front panel or 1 x RS232/RS422/RS485 via Pn4
  - 1 x RS232/RS422/RS485 via Pn4
- High Speed CANbus controller
- Extended temperature version:
  - -25°C to +70°C (E-Series)
- Ruggedized air-cooled version (RA-Series):
  - -40°C to +75°C, conformally coated
- Ruggedized conduction-cooled version (RC-Series):
  - conduction-cooled
  - -40°C to +85°C, conformally coated
- Single-width XMC/PMC form factor
- For use with VME, VXS, VPX, CompactPCI® and other XMC Host Boards
- Support for Linux®, Windows® 7, Windows® Embedded Standard 7, Windows® XP Embedded, Windows® XP, QNX® and VxWorks®

## Central Processor

- 1.6 GHz Intel® Atom™ processor Z530:-
  - 45nm process technology
  - soldered to board
  - 512 Kbytes of secondary (L2) on-die cache
  - Intel® Hyper-Threading technology supporting 2 execution threads
  - Intel® Virtualization Technology
  - no CPU fan
- micro Flip-Chip Ball Grid Array package
- utilizes Intel® System Controller Hub US15W (SCH)
- ultra-low power chipset and I/O

## SDRAM

- up to 2 Gbytes soldered DDR2-533 SDRAM
- accessible from processor and base board

## XMC or PMC Interface

- option for XMC interface:-
  - via PCI Express switch from SCH
  - automatic selection of Transparent/Non-Transparent mode
- option for PMC interface:-
  - supports 32/64-bit, 33/66MHz PCI bus
  - supports 64-bit PCI-X bus up to 133MHz
  - 3.3V signaling; 5V tolerant
- supports monarch and non-monarch operation on the PMC version
- supports Root Complex and Endpoint operation on XMC version
- supports DMA via XMC/PMC host interface
- rear I/O via PMC Pn4 rear I/O connector for all options (no XMC Pn6 rear connector)

## Mass Storage Interface

- EIDE (ATA-100) interface for on-board 4 Gbytes bootable NAND Flash

## Ethernet Interfaces

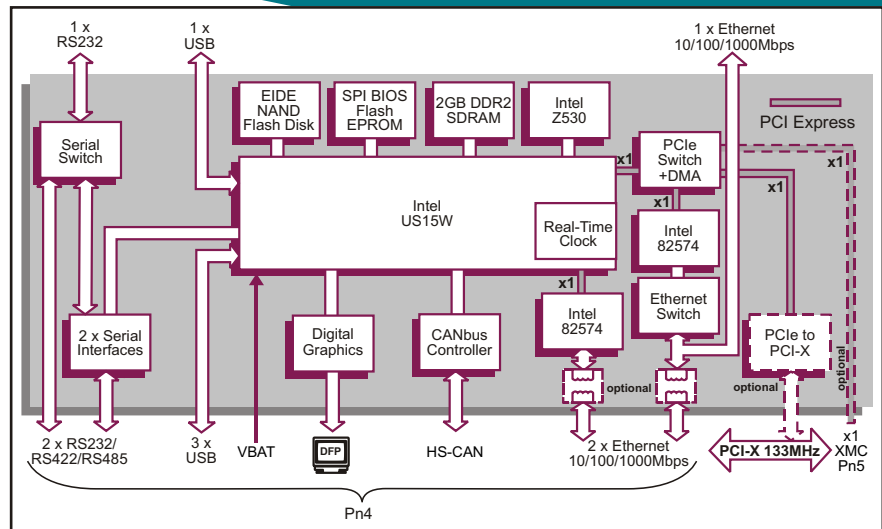
- 2 x channels:-
  - supporting 10 Base-T, 100 Base-TX, 1000 Base-T
  - implemented by 2 x Intel® 82574L
  - optional on-board magnetics via Pn4 rear connector
- 1 x channel via Pn4 rear I/O connector
- 1 x channel switched between front panel and Pn4 rear I/O connector

## Flash EPROM

- 4 Mbytes SPI Flash EPROM for BIOS and self-test firmware

## Graphics Interface

- implemented by the Intel® US15W SCH
- video RAM shared with main memory
- DVI-D output via Pn4 rear I/O connector:-
  - resolutions up to 1600x1200 @ 16M colors
- support for Microsoft® DirectX
- support for OpenGL 2.0 on Microsoft® Windows® and Linux®



## Serial Interfaces

- 2 x serial ports:-
  - 1 x switched between front panel (RS232 mode) and Pn4 rear I/O connector (RS232/RS422/RS485 mode)
  - 1 x fixed via Pn4 rear I/O connector (RS232/RS422/RS485 mode)
- 16550 compatible UARTS

## Other Peripheral Interfaces

- PC Real-Time Clock (no on-board battery):-
  - VBAT available via Pn4 rear I/O connector
- 4 x USB 2.0 interfaces:-
  - 1 via front panel
  - 3 via Pn4 rear I/O connector
- high speed CANbus controller:-
  - up to 1 Mbps
- 3 x GPIO pins via Pn4 rear I/O connector:-
  - processor interrupt capability

## Firmware Support

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

## Software Support

- support for Linux®, Windows® 7, Windows® Embedded Standard 7, Windows® XP Embedded, Windows® XP, QNX® and VxWorks®

## Electrical Specification

- PMC option power supply requirements:-
  - +5V@ 2.0A (typical with 1 Gbyte SDRAM)
- XMC option power supply requirements:-
  - +5V@ 1.8A or +12V@ 0.8A (typical with 1 Gbyte SDRAM)
- all voltages +5% / -5%
- board power management capability under software control

## Safety

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

## 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
- 5% to 95% Relative Humidity, non condensing (operating or storage)
- ruggedized versions, see separate datasheets:-
  - rear plug compatible
  - conduction-cooled: XP A40/x03-RC
  - air-cooled: XP A40/x03-RA

## Mechanical Specification

- single-width CMC (Common Mezzanine Card) IEEE 1386 form factor: (74mm x 149mm)
- 10mm height stack module

## ORDERING INFORMATION

Order Number Product Description (Hardware)

For the order number suffix (xy) options please contact your local sales office:  
Where x = Ethernet magnetics configurations Where y = SDRAM size

XP A40/103-xy  
XP A40/203-xy

PMC Processor Module, 1.6 GHz Atom processor Z530  
XMC Processor Module, 1.6 GHz Atom processor Z530

x - Ethernet magnetics configurations

y - up to 2 Gbytes SDRAM

For accessories please contact your local sales office.

For extended temperature E-Series or Ruggedized RA and RC-Series please contact your local sales office