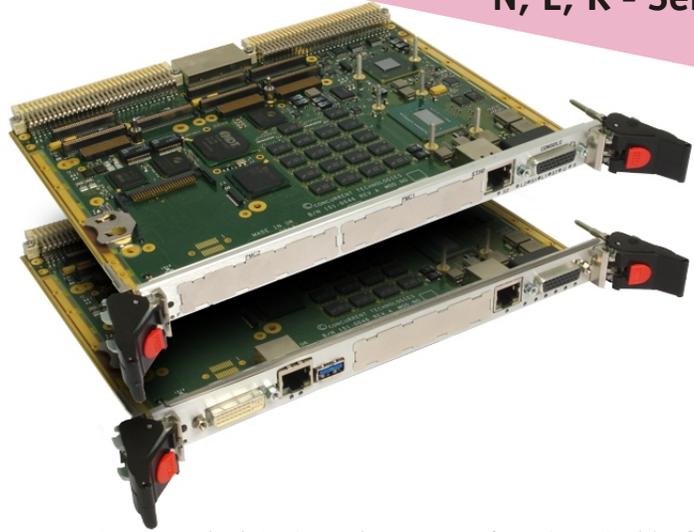


## 3rd Generation Intel® Core™ Processor Embedded Controller (Dual or Single PMC/XMC)



### APPLICATIONS

The VP 92x/x1x is a PC-compatible high performance, high functionality VME processor board supporting the 3rd generation Intel® Core™ processors and the Mobile Intel® QM77 Express Chipset with up to 16 Gbytes of DDR3-1600 ECC DRAM. This single slot board features 1 or 2 PMC/XMC sites and a variety of interfaces including an option for an on-board mass storage drive and a

CompactFlash® site. The VP 92x/x1x is suitable for a range of demanding applications within the defense, industrial control, telecomms, telemetry, scientific and aerospace markets. To simplify the board's integration many popular industry standard operating systems are supported. For harsher environments, extended temperature variants are available.

### HIGHLIGHTS

- 3rd generation Intel® Core™ processor:
  - 4-core 2.3 GHz Intel Core i7-3615QE processor
  - 4-core 2.1 GHz Intel Core i7-3612QE processor
  - 2-core 2.5 GHz Intel Core i7-3555LE processor
  - 2-core 1.7 GHz Intel Core i7-3517UE processor
- Up to 16 Gbytes of DDR3-1600 DRAM with ECC
- Up to 4 x external SATA interfaces plus optional on-board 2.5-inch SATA600 mass storage drive or front panel eSATA option
- Onboard CompactFlash® site
- Dual or single PMC/XMC module sites:
  - 32/64-bit, 33/66/100 MHz PCI/PCI-X™
  - XMC module interface, x8 PCI Express®
- up to 4 x 10/100/1000 Mbps Ethernet interfaces, with Gigabit Ethernet for VME64x backplane (VITA 31.1)
- 3 x serial channels, and up to 6 x USB interfaces
- VGA and up to 2 x DVI-D graphics interfaces
- Keyboard and mouse interfaces
- 8 x GPIO signals
- VME-64 Interface:
  - A32/A24/A16/D64/D32/D16/D8(E0), MBLT64 modes
  - support for 2eVME, 2eSST protocols
- 8 Mbytes of BIOS Flash EPROM, dual devices
- Watchdog timer; Long Duration Timer
- High Definition stereo audio
- Extended temperature versions:
  - -25°C to +70°C (E-Series)
  - -40°C to +85°C (K-Series, includes humidity sealant)
- Optional security packages
- Optional Built-In Test (BIT) support:
  - Power-on BIT, Initiated BIT, Continuous BIT
- Support for Linux®, Windows® 7, Windows® Embedded Standard 7, Windows® 8, Windows® Embedded Standard 8, Windows® XP, Windows® XP Embedded, Windows® Server 2003, Windows® Server 2008, Windows® Server 2012, VxWorks® and QNX®

## Central Processor

- 3<sup>rd</sup> generation Intel® Core™ processors:
  - 4-core 2.3 GHz Intel Core i7-3615QE processor
  - 4-core 2.1 GHz Intel Core i7-3612QE processor
  - 2-core 2.5 GHz Intel Core i7-3555LE processor
  - 2-core 1.7 GHz Intel Core i7-3517UE processor
  - up to 6 Mbytes of shared Last-Level cache
- utilizes the Mobile Intel® QM77 Express Chipset

## DRAM

- up to 16 Gbytes soldered DDR3-1600 ECC DRAM:
  - single bit error correction
  - peak bandwidth of 25 Gbytes/s
  - dual channel architecture
- accessible from processor or VME bus

## Mass Storage Interfaces

- up to 4 x external SATA interfaces:
  - 2 x SATA via P2
  - 2 x SATA optionally via P0
- 1 x EIDE interface supports on-board CompactFlash® socket via SATA converter
- optional on-board 2.5-inch SATA600 storage or optional eSATA connector on front-panel

## Ethernet Interfaces

- 4 x Gigabit Ethernet interfaces implemented by an Intel® 82580EB LAN controller via a x4 PCI Express® Gen2 link
- up to 2 x Gigabit Ethernet interfaces via front panel:
  - accessed via RJ45 connectors
  - one optional (uses PMC/XMC site 2)
- 2 x Gigabit Ethernet interfaces via rear panel:
  - accessed via optional P0
- support for VITA 31.1:
  - Gigabit Ethernet for VME64x backplanes

## PMC/XMC Interfaces

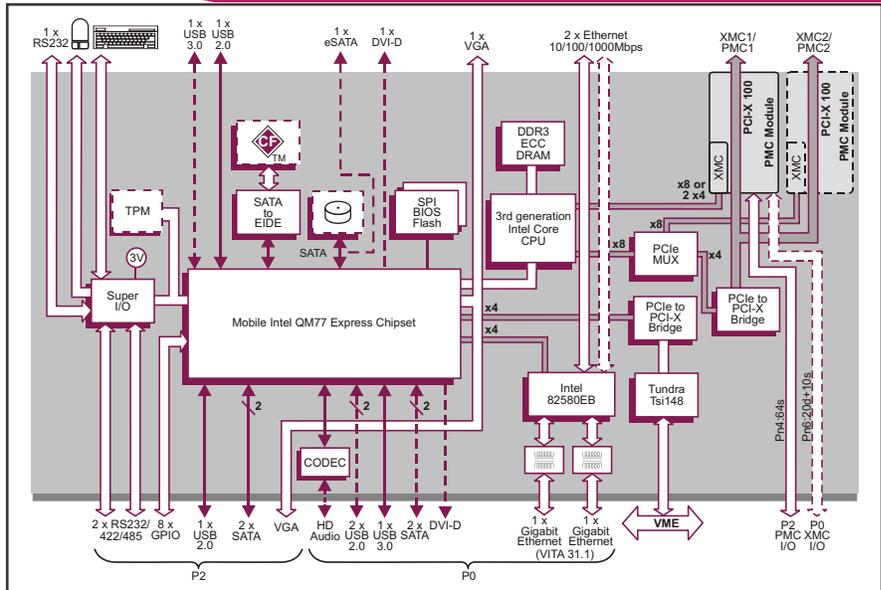
- PMC/XMC site 1:
  - front panel I/O
  - PMC Pn4 rear I/O via P2
  - XMC Pn6 rear I/O via optional P0
- PMC/XMC site 2 (build option):
  - front panel I/O: option for PMC/XMC module or extra front panel I/O connectors (USB3.0, DVI-D and Gigabit Ethernet interfaces)
  - rear I/O: none
- PMC interface(s) support:
  - 32/64-bit, 33/66MHz PCI bus
  - 64-bit PCI-X bus up to 100MHz
  - 5V and 3.3V signaling
- XMC (Switched Mezzanine Card) site(s):
  - both support x8 PCI Express® (Gen 1, Gen 2)
  - XMC site 1 can also support 2 x4 PCI Express
  - are powered from 5V supply

## Serial Interfaces

- 3 x serial channel interfaces:
  - 1 x RS232 accessed via 26-way high density connector on front panel
  - 2 x RS232/422/485 accessed via P2
- 16550 compatible UARTs

## Graphics Interfaces

- implemented by the integrated chipset graphics controller
- analog VGA interface via front or rear panel:
  - analog, up to 1920 x 1200
  - accessed via front panel 26-way high-density connector or P2
- 2 x DVI-D interfaces:
  - one optionally accessed via front panel (uses PMC/XMC site 2)
  - one optionally accessed via P0
  - up to 1920 x 1200
- all interfaces support 32-bit color depth
- support for Microsoft® DirectX 10, OpenGL 2.0, Windows® and Linux®



## Stereo Audio

- Intel® High Definition Audio interface via optional P0 at line level:
  - stereo input
  - stereo output
  - microphone input
  - headphone output

## Other Peripheral Interfaces

- PC-compatible Real Time Clock
- up to 6 x USB interfaces:
  - 1 x USB2.0 via 26-way front panel connector
  - 1 x USB3.0 optionally via front panel (uses PMC/XMC site 2)
  - 1 x USB2.0 via P2
  - 1 x USB3.0 via P0
  - 2 x USB2.0 optionally via P0
- keyboard and mouse interfaces accessed via a 26-way high-density connector on front panel
- 8 x GPIO signals via P2
- watchdog timer
- 1 x 32-bit Long Duration Timer with processor interrupt capability

## Flash EPROM

- 8 Mbytes of BIOS Flash EPROM, dual devices:
  - main/backup device enabled via switch

## Software Support

- support for Linux®, Windows® 7, Windows® Embedded Standard 7, Windows® 8, Windows® Embedded Standard 8, Windows® XP, Windows® XP Embedded, Windows® Server 2003, Windows® Server 2008, Windows® Server 2012, VxWorks® and QNX®

## Security Packages (optional)

- Trusted Platform Module (TPM)
- proprietary security features:
  - contact sales for further information

## Built-In Test (BIT) Support (optional)

- Power-on BIT (PBIT)
- Initiated BIT (IBIT)
- Continuous BIT (CBIT)

## Firmware Support

- Insyde® Software InsydeH20™ BIOS:
  - includes Compatibility Support Module
- based upon Intel® Platform Innovation Framework for EFI
- comprehensive Power-On Self-Test (POST)
- LAN boot firmware included

## Safety

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

## VME Interface

- P1 and P2 connectors compatible with VME64x
- implemented using IDT® Tsi148™ device
- VME Master/Slave
- A32/A24/A16/D64/D32/D16/D8(E0)/MBLT64
- support for 2eVME, 2eSST protocols
- auto system controller detect
- full interrupter / interrupt handler support
- bus error interrupt support

## Electrical Specification

- +5V @ 6.2A (typical with 2.5 GHz Intel Core i7-3555LE processor and 8 Gbytes DRAM)
- +12V @ 0.0A; -12V @ 0.0A; 3.3V not required
- +12V and -12V routed to both PMC/XMC sites

## Environmental Specification

- operating temperatures:
  - 0°C to +55°C (N-Series)
  - -25°C to +70°C (E-Series: 1.7, 2.5 or 2.1 GHz)
  - -40°C to +70°C (K-Series: 2.5, 2.1 GHz)
  - -40°C to +85°C (K-Series: 1.7 GHz)
- storage temperature: -40°C to +85°C
- 5% to 95% Relative Humidity, non condensing (operating or storage):
  - K-Series includes humidity sealant

## 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, ½ sine
- vibration: 5Hz-2000Hz at 2g, 0.38mm peak displacement

## ORDERING INFORMATION

Order Number      Product Description (Hardware)

VP 92x/x1x-yz      3rd generation Intel Core i7 SBC

For the order number suffix (yz) options please contact your local sales office:  
Where y = P2 and P0 I/O configurations      Where z = DRAM size

y - P2 and P0 I/O configurations

z - up to 16 Gbytes DRAM

For accessories or extended temperature E and K-Series, please contact your local sales office.

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Specification subject to change; E and OE. RoHS 2002/95/EC compliant.

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