

Intel® Core™ i7 Processor XMC Module



APPLICATIONS

The XP 732/x8x is a PC-compatible high performance, high functionality, Processor XMC module supporting the Intel® Core™ i7 processor, the Mobile Intel® QM57 Express chipset and up to 8 Gbytes of DDR3 ECC SDRAM. This board features a variety of interfaces including dual Gigabit Ethernet/SerDes, dual SATA, RS232/422/485, graphics and USB interfaces. The XP-732/x8x 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, with ruggedized conduction-cooled and ruggedized air-cooled versions for harsh environments. To simplify the board's integration many industry standard operating systems are supported.

HIGHLIGHTS

- 1.33 GHz Intel® Core™ i7 processor:
 - dual-core processor
 - 800MHz DRAM Bus
 - 4 Mbytes shared last level cache
 - Intel® Hyper-Threading Technology
 - Intel® Turbo Boost technology
 - Intel® 64 Technology (64-bit computing support)
- Up to 8 Gbytes of dual channel DDR3 ECC SDRAM
- XMC interface supports x8 or dual x4 PCI Express®:
 - supports DMA via XMC host interface
 - supports Root Complex and Endpoint operation
- I/O via XMC Pn6 or via PMC Pn4 connector
- Up to 2 x SATA disk interfaces
- On-board EIDE NAND Flash drive
- Options for Gigabit Ethernet and 1000Base-BX interfaces
- Up to 3 x USB 2.0 interfaces
- 2 x serial ports
- Digital graphics interface
- Up to 4 x GPIO interfaces
- Watchdog timer; Long Duration Timer
- Optional Built-In Test (BIT) support:
 - Power-on BIT, Initiated BIT, Continuous BIT
- Extended temperature version (E-Series):
 - E: -25°C to +70°C, air-cooled
- Ruggedized versions (RA-Series, RC-Series):
 - RA: -40°C to +75°C, conformally coated, air-cooled
 - RC: -40°C to +85°C, conformally coated, conduction-cooled (at card edge) to ANSI/VITA 20-2001
- Single-width XMC form factor
- For use with VPX, VME, VXS, CompactPCI® and other XMC Host Boards
- Linux®, Windows® 7, Windows® Embedded Standard 7, Windows® XP, Windows® XP Embedded, QNX® and VxWorks®
- Linux PCI Express device driver available

Processor XMC Module

- utilizes Intel® Core™ i7 processor
- configurable PCI Express® fabric interface
- variety of I/O interfaces via XMC Pn6 I/O connector or via PMC Pn4 I/O connector
- for ruggedized versions, see separate datasheets:
 - rear plug compatible
 - air-cooled: XP 732/x8x-RA
 - conduction-cooled: XP 732/x8x-RC

Central Processor

- 1.33 GHz Intel® Core™ i7-660UE processor:
 - dual-core processor
 - 4 Mbytes shared last level cache
 - Intel® Hyper-Threading Technology
 - Intel® 64 Technology (64-bit computing)
 - Intel® Turbo Boost technology
- Intel Turbo Boost technology allows faster graphics engine speed depending on the CPU loading
- utilizes Intel® Platform Controller Hub (PCH):
 - Mobile Intel® QM57 Express chipset

SDRAM

- up to 8 Gbytes soldered DDR3 ECC SDRAM:
 - single bit error correction
 - dual channel architecture
 - bus speed 800MHz
- accessible from processor and base board

XMC Interface

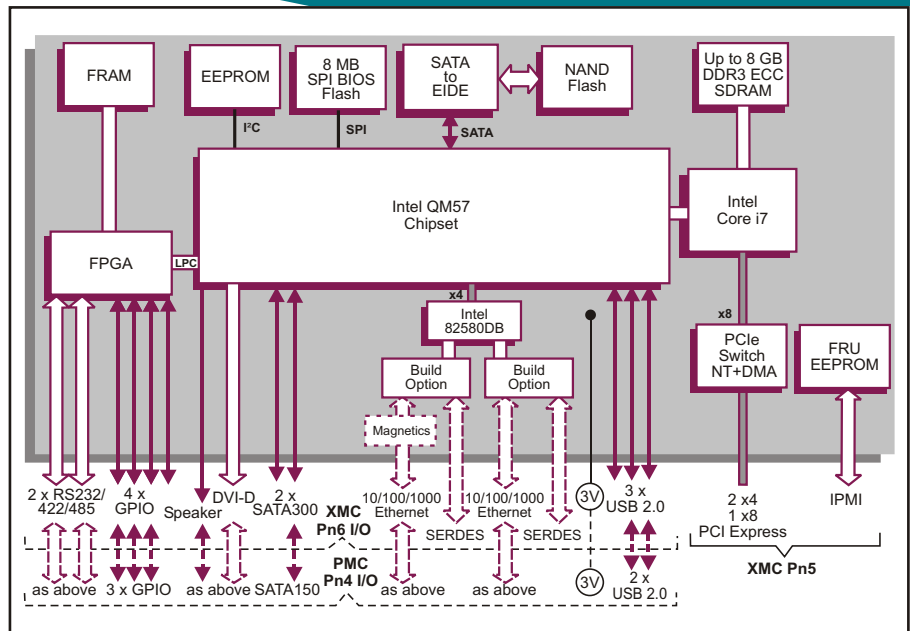
- configurable PCI Express® (PCIe) fabric interface via Pn5 connector supports:
 - 1 x8 or 2 x4 PCIe ports
 - PCI Express Gen 1 and Gen 2
 - Transparent/Non-Transparent Hub modes
 - supports DMA via host interface
- supports Root Complex and Endpoint operation
- factory build options for rear I/O via either:
 - optional XMC Pn6 connector or via
 - optional PMC Pn4 connector

Dual Ethernet/SerDes Interfaces

- build options for two Ethernet/SerDes interfaces implemented by an Intel® 82580DB dual Ethernet controller via x4 PCI Express link
- up to 2 x Gigabit Ethernet interfaces:
 - 1 with optional on-board magnetics
 - 1 without magnetics
 - via XMC Pn6 or PMC Pn4 I/O connector
- up to 2 x SerDes 1000Base-BX interfaces:
 - via XMC Pn6 I/O connector
- support for Wake-On-Lan

Mass Storage Interfaces

- 2 x SATA300 interfaces:
 - accessible via XMC Pn6 I/O connector
- 1 x SATA150 interface:
 - accessible via PMC Pn4 I/O connector
- 8 Kbytes non-volatile Ferroelectric RAM (FRAM):
 - supports hardware write-protection
- 4 Gbytes EIDE soldered NAND Flash Drive:
 - supports hardware write-protection



Serial Interfaces

- 2 x RS232/RS422/RS485 serial ports, via Pn6 or via Pn4 I/O connector, plus modem control:
 - port 1 supports RTS, CTS, DSR, DCD, DTR, RI
 - port 2 supports RTS, CTS
- 16550 compatible UARTS

Graphics Interface

- implemented by the integrated chipset graphics controller
- DVI-D interface via Pn6 or Pn4 I/O connector:
 - up to 1600 x 1200 @ 16M colors
- support for Microsoft® DirectX
- support for OpenGL 2.0 on Microsoft® Windows® and Linux®

Other Peripheral Interfaces

- PC Real-Time Clock (no on-board battery):
 - VBAT available via I/O connector
- up to 3 x USB 2.0 ports:
 - 3 USB ports via XMC Pn6 I/O connector
 - 2 USB ports via PMC Pn4 I/O connector
- watchdog timer
- 1 x 32-bit Long Duration Timer
- legacy speaker output via Pn6 or Pn4 I/O connector
- up to 4 x GPIO signals:
 - processor interrupt capability
 - 4 x GPIO signal via XMC Pn6 I/O connector
 - 3 x GPIO signal PMC Pn4 I/O connector

Flash EPROM

- 8 Mbytes of BIOS Flash EPROM

Firmware Support

- UEFI-compliant BIOS with legacy mode support
- comprehensive Power-On Self-Test (POST)
- LAN boot firmware included

Software Support

- support for Linux®, Windows® 7, Windows® Embedded Standard 7, Windows® XP, Windows® XP Embedded, QNX® and VxWorks®
- Linux PCI Express device driver available

Built-In Test (BIT) Support (optional)

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

Electrical Specification

- typical current figure (4 Gbytes SDRAM):
 - +5V @ 4.6A
 - +12V supply cannot be used
- +5V voltage +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)
- 5% to 95% Relative Humidity, non condensing (operating)
- 40°C to +85°C (storage)
- 5% to 95% Relative Humidity, non condensing (storage)

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)

XP 732/p80-xy 1.33 GHz Intel® Core™ i7-660UE processor

For the order number suffix (xy) options please contact your local sales office:
 Where x = I/O configurations Where y = SDRAM size
 x - I/O configurations y - up to 8 Gbytes SDRAM

where p = select option for I/O via either a Pn6 XMC (p=1) or Pn4 PMC (p=2) connector

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.