

**Intel® Core™ i7
Processor Dual PMC/XMC
Embedded Controller
Rugged Conduction-Cooled**



APPLICATIONS

The VP 717/08x-RC is a PC-compatible high performance, high functionality VME64x, ruggedized conduction-cooled processor board supporting the Intel® Core™ i7 processor up to 2.0 GHz (32nm process technology), the Mobile Intel® QM57 Express chipset, with up to 8 Gbytes of DDR3-1066 ECC SDRAM. This single slot board features 2 PMC/XMC sites and a variety of interfaces including an option for an on-board Solid

State Flash Disk or CompactFlash™. The VP 717/08x-RC is suitable for a range of demanding applications within the defense, industrial control, telecomms, telemetry, scientific and aerospace markets. The board is also plug compatible with the popular VP 417/03x-RC and VP 31x/02x-RC families. To simplify the board's integration many popular industry standard operating systems are supported.

HIGHLIGHTS

- Ruggedized 6U single board computer:
 - conduction-cooled to IEEE 1101.2
 - removable front and center ribs
 - supports 2 conduction-cooled PMC or XMC modules conforming to ANSI/VITA 20
 - -40°C to +85°C operating temperature (at card edge)
 - conformally coated
- 2.0 GHz or 1.33 GHz Intel® Core™ i7 processor:
 - dual-core processor
 - 1066 MHz DRAM Bus (800 MHz for 1.33 GHz processor)
 - 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 DDR3-1066 ECC SDRAM
- High performance SATA and EIDE disk interfaces with support for optional on-board Solid State Flash Disk
- On-board CompactFlash™ site
- 2 x PMC/XMC module interfaces with rear I/O:
 - 32/64-bit, 33/66/100 MHz PCI/PCI-X™
 - 2 x XMC module interfaces (x8 PCI Express®)
- 2 x serial channels and 2 x USB 2.0 interfaces
- Up to 2 x 10/100/1000 Mbps Ethernet interfaces:
 - Gigabit Ethernet for VME64x backplane (VITA 31.1)
- Analog graphics, keyboard and mouse interfaces
- VME-64 Interface supporting A32/A24/A16/D64/D32/D16/D8(E0), MBLT64 and with support for fast hardware byte-swapping
- 8 Mbytes of BIOS Flash EPROM
- 64 Mbytes of Application Flash EPROM
- Watchdog timer; Long Duration Timer
- Single slot
- Optional Built-In Test (BIT) support:
 - Power-on BIT, Initiated BIT, Continuous BIT
- air-cooled versions (N, E, K-Series and RA-Series):
 - N: 0°C to +55°C, commercial, non-ruggedized
 - E: -25°C to +75°C, extended, non-ruggedized
 - K: -40°C to +85°C, humidity-sealed, non-ruggedized
 - RA: -40°C to +75°C, conformally coated, ruggedized
- Support for Linux®, Windows® 7, Windows® Embedded Standard 7, Windows® XP, Windows® XP Embedded, Windows® Server 2003, Windows® Server 2008, VxWorks®, QNX®, Solaris™ and LynxOS®

Ruggedized dual PMC/XMC controller

- conduction-cooled to IEEE 1101.2
- supports 2 x conduction-cooled PMC or XMC modules conforming to ANSI/VITA 20
- conformally coated
- air-cooled versions available

Central Processor

- 2.0 GHz Intel® Core™ i7-620LE processor or 1.33 GHz Intel® Core™ i7-660UE processor
- common processor features are:-
 - dual-core processor
 - 4 Mbytes shared last level cache
 - Intel® Hyper-Threading Technology
 - Intel® 64 Technology (64-bit computing)
 - Intel® Turbo Boost technology
- processor to DRAM memory, bus speed:-
 - 620LE - 1066MHz; 660UE - 800MHz
- 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

DRAM

- up to 8 Gbytes DDR3-1066 ECC SDRAM:-
 - up to 8 Gbytes soldered on-board
 - single bit error correction
 - dual channel architecture
 - accessible from processor or VME bus

Mass Storage Interfaces

- 2 x external drive interfaces supporting:-
 - single EIDE drive via P2 connector
 - single SATA300 drive via P0 (see Note 1)
- optional on-board 2.5 inch SATA300 solid-state Flash drive
- 1 x EIDE interface supports on-board CompactFlash™ site

Ethernet Interfaces

- up to two Ethernet interfaces supporting:-
 - 10 Base-T, 100 Base-TX, 1000 Base-T
 - implemented by Intel® 82576EB LAN Controller via x4 PCI Express® link
 - both interfaces accessed via optional P0 (see Note 1)
- support for VITA 31.1:-
 - Gigabit Ethernet for VME64x backplanes

Graphics Interface

- implemented by the integrated chipset graphics controller
- resolutions up to 1920 x 1200 @ 16M colors
- analog graphics accessed via optional P0

PMC/XMC Interfaces

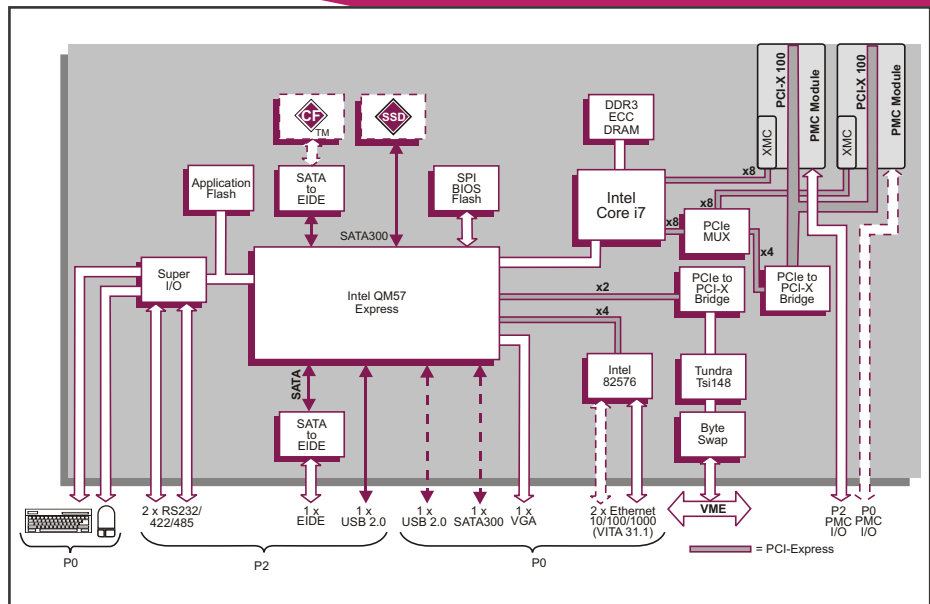
- 2 x PMC/XMC shared sites, with rear I/O:-
 - PMC sites support 32/64-bit, 33/66/100MHz PCI-X operation
 - PCI 3.3V or 5V signaling
 - XMC sites support x8 PCI Express® links
 - XMC sites powered from 5V supply
- PMC Site 1 I/O via P2
- PMC Site 2 I/O via P0 (see Note 1)

Serial Interfaces

- 2 x serial channel interfaces:-
 - 2 x RS232/422/485 accessed via P2
- 16550 compatible UARTs

Flash EPROM

- 8 Mbytes of BIOS Flash EPROM
- 64 Mbytes of Application Flash EPROM



Other Peripheral Interfaces

- PC-compatible Real Time Clock
- 2 x USB 2.0 interfaces:-
 - 1 via P2 connector
 - 1 via optional P0 connector (see Note 1)
- keyboard and mouse interfaces accessed via optional P0 connector
- watchdog timer
- 1 x 32-bit Long Duration Timer with processor interrupt capability

Software Support

- support for Linux®, Windows® 7, Windows® Embedded Standard 7, Windows® XP, Windows® XP Embedded, Windows® Server 2003, Windows® Server 2008, VxWorks®, QNX®, Solaris™ and LynxOS®

Built-In Test (BIT) Support (optional)

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

Firmware Support

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

VME Interface

- P1 and P2 connectors compatible with VME64x
- implemented using IDT®/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
- bus error interrupt supported

Safety

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

Electrical Specification

- +5V @ 8.4A (typical with 2.0 GHz processor and 4 Gbytes SDRAM)
- +12V @ 0.0A; -12V @ 0.0A; 3.3V not required
- +12V and -12V routed to both PMC/XMC sites

Environmental Specification

- operating temperature (at card edge):-
 - VITA 47 Class CC4, -40°C to +85°C
 - conduction-cooled
- storage temperature:-
 - VITA 47 Class C4, -55°C to +105°C
- operating altitude:-
 - -1,000 to 50,000 feet (-305 to 15,240 meters)
- 5% to 95% Relative Humidity, non condensing (operating/storage)
- ruggedized and commercial air-cooled versions - see separate datasheets:-
 - rear plug compatible
 - rugged air-cooled: VP 717/08x-RA
 - commercial air-cooled: VP 717/08x

Mechanical Specification

- 6U form-factor
- single slot, width 0.8 inch (20.3mm)
- utilizes 160-way connectors for P1 and P2
- optional P0
- removable front and center ribs (VITA20)
- operating mechanical:-
 - shock - VITA 47 Class OS2, 40g
 - random vibration - VITA 47 Class V3, 0.1g²/Hz

Note 1: The optional P0 connector supports either PMC Site 2 I/O x64 and 1 x Ethernet or PMC Site 2 I/O x32, SATA, USB and 2 x Ethernet

ORDERING INFORMATION

Order Number Product Description (Hardware)

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

VP 717/080-xyRC 1.33 GHz Intel® Core™ i7-660UE processor
VP 717/082-xyRC 2.0 GHz Intel® Core™ i7-620LE processor

x - P2 and P0 I/O configurations

y - up to 8 Gbytes SDRAM

For commercial or ruggedized air-cooled boards, please contact your local sales office.