VP F1x/msd

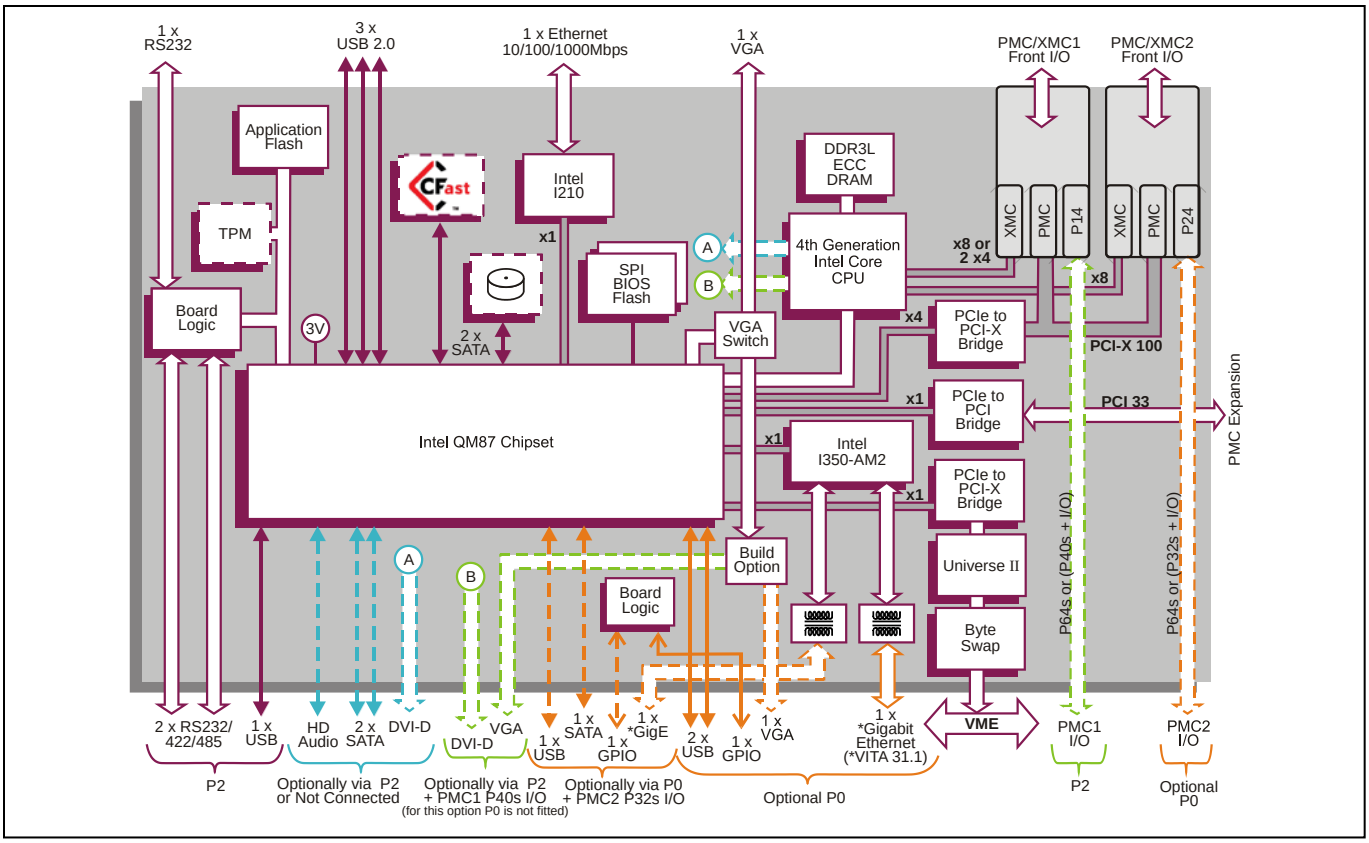
N, E, K - Series

VME board based on 4th Generation Intel® Core™ i7/i5 processor

Key Features

A 6U processor board extending the choice of long-life VMEbus products designed to be available beyond 2020.

- Based on 4th generation Intel® Core™ processor
- Supports two PMC/XMC sites for on-board expansion
- Supports two extra PMC or XMC modules connected via optional expansion carriers
- On-board Application Flash for VxWorks support
- Option for CFast™ and 2.5-inch storage drives
- Air and conduction-cooled variants available
- Support for Linux®, Windows® and VxWorks®; for other Operating Systems contact your local Concurrent Technologies Sales Office.



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Specification

Central Processor

- 4th generation Intel® Core™ CPU:
  - → 4-core Intel® Core™ i7-4700EQ CPU up to 3.4 GHz, 6M Last Level cache
  - → 2-core Intel® Core™ i5-4422E CPU up to 2.9 GHz, 3M Last Level cache
  - → Intel® Advanced Vector Extensions 2 (AVX2)
  - → Intel® AES New Instructions (AES-NI)
- utilizes the Intel® QM87 Chipset

DRAM

- up to 32 Gbytes soldered DDR3L-1600 ECC DRAM (16 Gbytes maximum, 2-core CPU):
  - → single bit error correction
  - → peak bandwidth of 25.6 Gbytes/s
  - → dual channel architecture
- accessible from processor or VME bus

Mass Storage Interfaces

- options for up to 3 x external SATA interfaces:
  - → 2 x SATA300 via P2
  - → 1 x SATA300 via P0
- 2 x SATA interfaces for optional on-board:
  - → CFast™ module, SATA300 interface
  - → 2.5-inch SATA600 drive (fills PMC/XMC Site 2)

Ethernet Interfaces

- 2 x Gigabit Ethernet interfaces via rear panel:
  - → accessed via optional P0
  - → onboard magnetics
  - → implemented by Intel® Ethernet Controller I350-AM2 via x1 PCI Express® (PCIe®) Gen 2 port
- support for VITA 31.1:
  - → Gigabit Ethernet for VME64x backplanes
- 1 x Gigabit Ethernet interface via front panel:
  - → accessed via RJ45 connector
  - → implemented by Intel® Ethernet Controller I210

PMC/XMC Interfaces

- 2 x PMC shared sites supporting:
  - → 32/64-bit, 33/66 MHz PCI bus
  - → 64-bit PCI-X bus up to 100 MHz
  - → 3.3V or 5V PCI signaling
- 2 x XMC (Switched Mezzanine Card) sites:
  - → support x8 PCI Express (Gen 1, Gen 2)
  - → XMC Site 1 can also support 2 x4 PCI Express
  - → both sites provide 5V VPWR
- PMC/XMC Site 1 I/O via front panel and via P2:
  - → P64s via P2 or factory build option to provide P40s plus VGA and DVI-D via P2
- PMC/XMC Site 2 I/O via front panel and via optional P0:
  - → P64s via P0 or factory build option to provide P32s plus other I/O (see Note 1.1 & Note 1.2)
- optional carrier board with dual PMC/XMC sites:
  - → x8 PCIe interface (using XMC Site 2) supporting up to two modules, 66MHz PCI-X or x8 PCIe
- alternative optional carrier board with dual PMC sites:
  - → PCI-33 board expansion connector supporting up to two 32-bit/33 MHz modules
  - → PMC/XMC Site 1 and Site 2 remain available

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

- up to 2 x DVI-D interfaces (build options) via P2:
  - → up to 1920 x 1200
  - → 1 x interface uses I/O pins for PMC/XMC Site 1
- VGA interface user switchable via front panel or via rear using either P2 or P0:
  - → analog, up to 1920 x 1200
  - → front panel access via 26-way high-density connector
- VGA interface via rear, P2 or P0, is defined by a factory build option:
  - → when P0 connector fitted then VGA signals default via P0 and are not available via P2
  - → VGA via P2 uses I/O pins for PMC/XMC Site 1
- all interfaces support 32-bit color depth
- support for Microsoft® DirectX 11, OpenGL 2.0, Windows® and Linux®

Stereo Audio

- option for Intel® High Definition stereo audio interface via P2

Other Peripheral Interfaces

- PC-compatible Real Time Clock
- up to 7 x USB 2.0 interfaces:
  - → 3 x USB via 26-way front panel connector
  - → 1 x USB via P2
  - → 2 x USB via P0
  - → option for an additional USB via P0 (see Note 1.2)
- 1 or 2 x GPIO signals via P0 (see Note 1.2)
- 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
- 64 Mbytes of Application Flash memory for VxWorks applications

Software Support

- support for Linux®, Windows® and VxWorks®

Optional Built-In Test (BIT) Support

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

Optional Board Security Packages

- Trusted Platform Module (TPM):
  - → compliant to TCG v1.2
- proprietary board-level security features

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

VME Interface

- P1 and P2 connectors compatible with VME64x
- implemented using IDT® Universe II™ device
- VME Master/Slave
- A32/A24/A16/D64/D32/D16/D8(EO)/MBLT
- fast hardware byte swapping
- auto system controller detect
- full interrupter / interrupt handler support
- bus error interrupt hardware

Electrical Specification

- +5V @ 8.8A (typical with Intel Core i7-4700EQ processor and 16 Gbytes DRAM)
- +12V, -12V and +3.3V not required
- +12V and -12V routed to both PMC/XMC sites and PMC expansion connector

Safety

- PCB (PWB) manufactured with flammability rating of UL94V-0

Environmental Specification

- operating temperatures:
  - → 0°C to +55°C (N-Series)
  - → -25°C to +70°C (E-Series: selected CPU)
  - → -40°C to +70°C (K-Series: selected CPU)
- non-operating temperature: -40°C to +85°C
- 5% to 95% Relative Humidity, non condensing:
  - → K-Series includes humidity sealant
- rugged versions, see separate datasheet:
  - → conduction-cooled: VP F1x/msd-RC

Mechanical Specification

- 6U form-factor
- single slot, 0.8-inch (20.3mm)
- utilizes 160-way connectors for P1 and P2
- optional P0 connector
- IEEE 1101.10 VME64x handles, alternatively with option for VME32 handles
- shock: 20g, 11ms, ½ sine
- vibration: 0.38mm pk at 5Hz-36Hz; 36Hz-2000Hz at 2g, 0.38mm peak displacement
- front and rear plug compatibility with the popular VP 91x/x1x and VP 717/x8x families

Note 1:
The optional P0 connector supports factory build options for either:

1.1) PMC/XMC Site 2 P64s I/O, 1 x VGA,
1 x GPIO, 2 x USB 2.0 and
1 x Ethernet (VITA 31.1) interfaces
or
1.2) PMC/XMC Site 2 P32s I/O, 1 x VGA,
1 x SATA, 2 x GPIO, 3 x USB 2.0 and
2 x Ethernet (VITA 31.1) interfaces

Please contact your local Concurrent Technologies sales office for further details on board build options and accessories.

Datasheet Code 1771/0117