

3rd Generation Intel® Core™ Processor Dual PMC/XMC VITA 41.4 Controller (Bridgeless VME)



APPLICATIONS

VX 913/11x is a VME/VXS processor board based on a 3rd generation Intel® Core™ processor with up to 16 Gbytes of ECC DRAM. This single slot board features a variety of PC-compatible interfaces including Ethernet, SATA, USB and digital graphics. Expansion options include two PMC/XMC sites and a CompactFlash socket for removable solid state storage. The board supports both PCI Express and Gigabit Ethernet backplane fabric interfaces for

control and data connection with other boards within the same rack. VX 913/11x is suitable for a range of applications within the defense, industrial control, telecomms, telemetry, scientific and aerospace markets. For harsher environments, extended temperature and ruggedized conduction-cooled versions are supported. To simplify integration, board support packages for many embedded operating systems are supported.

HIGHLIGHTS

- 3rd generation Intel® Core™ processor:
 - 2-core 2.5 GHz Intel® Core™ i7-3555LE processor
- Up to 16 Gbytes DDR3-1600 DRAM with ECC
- 2 x SATA interfaces via VXS P0 I/O and 2 x SATA interfaces via P2 I/O, plus optional on-board drive
- CompactFlash® site on-board
- 2 x PMC/XMC module interfaces:
 - 32/64-bit, 33/66/100 MHz PCI/PCI-X™
 - 2 x XMC module interfaces (x8 PCI Express®)
 - one site supporting Pn4 rear I/O (VITA 35)
- Dual independent displays via front panel and P2 I/O
- 2 x serial channels and 6 x USB 2.0 interfaces
- 2 x 10/100/1000Mbps Ethernet channels
- Optional VXS P0 connector supporting fabric interfaces:
 - dual x4 PCI Express ports (data plane, VITA 41.4) or option for x8 fabric port from Pn6 switched via P0
 - dual 1000Base-BX ports, control plane (VITA 41.6)
- 8 Mbyte BIOS SPI Flash EPROM
- VMEbus Bridgeless Interface supports:
 - SYSRESET, SYSFAIL, ACFAIL, GAX
 - VMEbus daisy chain
- Optional Built-In Test (BIT) support:
 - Power-on BIT, Initiated BIT, Continuous BIT
- Air-cooled versions (N, E, K-Series):
 - N: 0°C to 55°C,
 - E: -25°C to +75°C
 - K: -40°C to +70°C (includes humidity sealant)
- Ruggedized conduction-cooled versions (RC-Series):
 - RC: -40°C to +85°C (at card edge), conformally coated
 - conduction-cooled to ANSI/VITA 30.1-2002
- Support for Linux®, Windows®, VxWorks®, Solaris™ and LynxOS®
- Optional Rear Transition Module available
- Front and rear I/O compatible with the popular VX 81x/19x family



VME/VXS Single Board Computer

- VME/VXS SBC utilizing the 3rd generation Intel® Core™ processor:
 - air-cooled
 - optional rear transition module available
- supports VITA 41.4 and VITA 41.6 fabric interfaces via optional VXS P0 I/O connector
- for ruggedized versions, see separate datasheet:
 - rear plug compatible
 - conduction-cooled: VX 913/11x-RC

Central Processor

- 3rd generation Intel® Core™ processors:
 - 2-core 2.5 GHz Intel® Core™ i7-3555LE processor
 - 4 Mbytes of shared Last-Level on-die cache
- utilizes 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

Fabric Interfaces

- 2 x4 PCI Express® VXS data plane (VITA 41.4), including DMA and transparent/non-transparent modes:
 - implemented by PCI Express® switch via dual x4 PCI Express ports (Gen 1 or Gen 2)
- build option to support XMC site 1 Pn6 interface to VXS data plane via an active multiplexer:
 - 1 x4, 2 x4 or 1 x8 fabric ports
 - up to 6.25 Gbits/s
- 2 x 1000 Base-BX control plane (VITA 41.6)
- implemented by Intel® 82580EB Ethernet Controller via x2 PCI Express port (Gen 2)
- fabric interfaces via VXS P0

Ethernet Interfaces

- 2 x 10/100/1000 Mbps Ethernet channels:
 - access via front panel RJ45 and via VXS P0 I/O
- implemented by Intel® 82580EB Ethernet Controller via x2 PCI Express port (Gen 2)

Mass Storage Interfaces

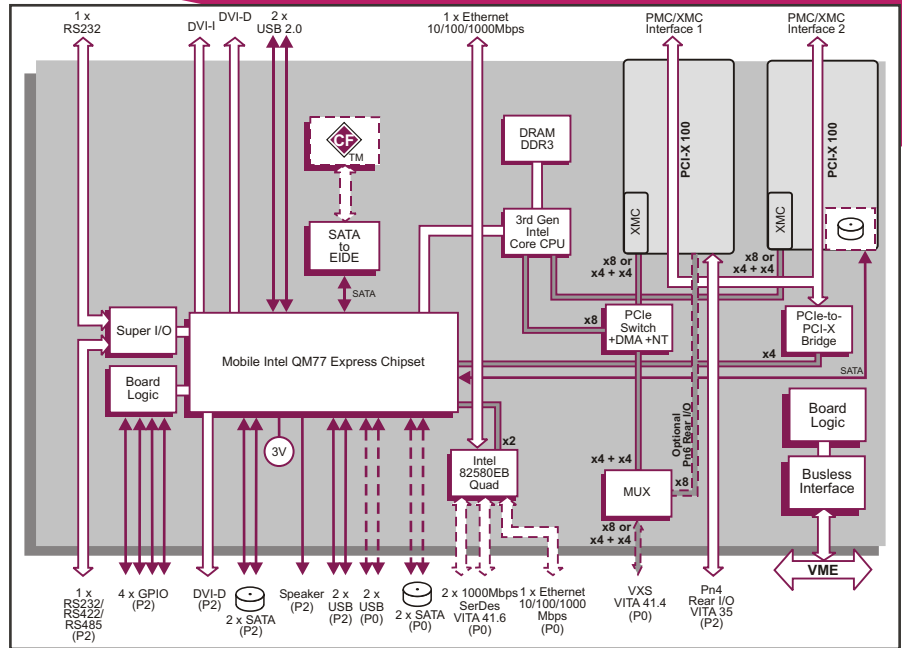
- 2 x SATA600 channels via VXS P0 I/O
- 2 x SATA300 channels via P2 I/O*
- optional 2.5-inch drive, occupies PMC site 2
- SATA to EIDE interface supports on-board CompactFlash™ site

PMC/XMC Interfaces

- 2 x PMC/XMC sites:
 - PMC sites support 32/64-bit, 33/66/100MHz PCI-X operation and PCI 3.3V or 5V signaling
 - XMC sites support x8 PCI Express port (Gen 1 or Gen 2)
 - XMC sites powered from 5V supply
- PMC/XMC site 1 I/O via front panel and utilizes Pn4 via P2 I/O (VITA 35)
- PMC/XMC site 2 I/O via front panel

Dual Display Graphics Interfaces

- implemented by Intel chipset
- independent dual display channels:
 - DVI-I and DVI-D interfaces, via 60-way high-density connector on front panel
 - DVI-D interface, via P2 I/O*
- digital, up to 1600 x 1200 or 1920 x 1080
- analog, up to 1920 x 1200
- up to 32-bits color depth
- support for Microsoft® DirectX 10
- support for OpenGL 2.0, Windows and Linux



Serial Interfaces

- 2 x serial channel interfaces:
 - 1 x RS232 accessed via a 60-way high-density connector on front panel
 - 1 x RS232/RS422/RS485 via P2 I/O*
- 16550 compatible UARTs

Other Peripheral Interfaces

- PC-compatible Real Time Clock
- 6 x USB 2.0 interfaces:
 - 2 accessed via a 60-way high-density connector on front panel
 - 2 via P2 I/O*
 - 2 via VXS P0 I/O
- 4 x GPIO via P2 I/O* with processor interrupt capability
- watchdog timer
- legacy speaker interface
- 1 x 32-bit Long Duration Timer with processor interrupt capability

Software Support

- support for Linux®, Windows®, VxWorks®, QNX®, Solaris™ and LynxOS®

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

BIOS EPROM

- 8 Mbyte of BIOS SPI Flash EPROM

Optional Built-In Test (BIT) Support

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

Safety

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

VMEbus Bridgeless Interface

- P1 and P2 connectors compatible with VME64x
- busless VME interface supports:
 - SYSRESET, SYSFAIL, ACFAIL, GAX
 - VMEbus daisy chain

Electrical Specification

- requires 5V supply only, +5/-3%
- +5V @ 7.5A (typical current figure with 2.5 GHz Intel Core i7-3555LE processor, 8 Gbytes DRAM)
- 3.3V, +12V and -12V supplies not utilized

Environmental Specification

- operating temperatures:
 - 0°C to +55°C (N-Series)
 - -25°C to +70°C (E-Series)
 - -40°C to +70°C (K-Series: 2-core 2.5 GHz)
- non-operating temperature: -40°C to +85°C
- 5% to 95% Relative Humidity, non condensing:
 - 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 VXS P0 connector
- IEEE 1101.10 handles
- shock: 20g, 11ms, 1/2 sine
- vibration: 5Hz-2000Hz at 2g, 0.38mm peak displacement

I/O Compatible with the VX 81x/19x

- front and rear I/O compatible with the popular VX 81x/19x

*P2 I/O : A P2 connector build option is supported to isolate the signals on P2 rows Z and D, this allows the board to be installed in special backplanes, e.g. Race++®

ORDERING INFORMATION

Order Number	Product Description (Hardware)
VX 913/11x-yz	2-core Intel® Core™ i7 processor

For the order number suffix (yz) options please contact your local sales office:
 Where y = P0/Pn6 configurations
 y - VXS P0 and Pn6 configurations
 Where z = DRAM size
 z - up to 16 Gbytes