

2nd Generation Intel® Core™ Processor Dual PMC/XMC VITA 41.4 Controller (Bridgeless VMEbus)



APPLICATIONS

VX 81x/19x is a VME/VXS processor board based on a 2nd 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 81x/19x 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 air-cooled versions are supported. To simplify integration, board support packages for many embedded operating systems are supported.

HIGHLIGHTS

- 2nd generation Intel® Core™ processor:
 - 4-core 2.1 GHz Intel Core i7-2715QE processor
 - 2-core 1.5 GHz Intel Core i7-2610UE processor
 - 2-core 2.2 GHz Intel Core i7-2655LE processor
- Up to 16 Gbytes DDR3-1333 DRAM with ECC
- 2 x SATA interfaces via P0 rear I/O and 2 x SATA interfaces via P2 rear 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 rear I/O
- 2 x serial channels and 6 x USB 2.0 interfaces
- 2 x 10/100/1000Mbps Ethernet channels
- 8 Mbyte BIOS SPI Flash EPROM
- VMEbus Bridgeless Interface supports:
 - SYSRESET, SYSFAIL, ACFAIL, GAx
 - VMEbus daisy chain
- Optional VXS P0 connector supporting fabric interfaces:
 - dual x4 PCI Express links (data plane, VITA 41.4) or option for x8 fabric lanes from Pn6 switched via P0
 - dual 1000 Base-BX ports, control plane (VITA 41.6)
- Optional Built-In Test (BIT) support:
 - Power-on BIT, Initiated BIT, Continuous BIT
- Extended temperature versions (E-Series, K-Series):
 - E: -25°C to +70°C, air-cooled
 - K: -40°C to +85°C, humidity sealant, air-cooled
- Ruggedized versions (RA-Series):
 - RA: -40°C to +75°C, conformally coated, air-cooled
- Single slot
- Support for Linux®, Windows® 7, Windows® Embedded Standard 7, Windows® XP, Windows® XP Embedded, Windows® Server 2008 , QNX® , VxWorks® , Solaris™ and LynxOS®
- Optional Rear Transition Module available

VME/VXS Single Board Computer

- VME/VXS SBC utilizing the 2nd generation Intel® Core™ processor:
 - air-cooled
 - optional rear transition module available
- supports VITA 41.4 and VITA 41.6 fabric interfaces
- see separate datasheet for ruggedized version:
 - rear plug compatible
 - air-cooled: VX 81x/19x-RA

Central Processor

- 4-core 2.1 GHz Intel® Core™ i7-2715QE processor, 2-core 1.5 GHz Intel® Core™ i7-2610UE processor or 2-core 2.2 GHz Intel® Core™ i7-2655LE processor
- common processor features are:
 - 32nm process technology
 - 1333 MHz Front Side Bus
 - Intel 64 technology (64-bit computing)
- shared Last-Level on-die cache:
 - 2.1 GHz Intel Core i7-2715QE - 6 Mbytes
 - 1.5 GHz Intel Core i7-2610UE - 4 Mbytes
 - 2.2 GHz Intel Core i7-2655LE - 4 Mbytes
- utilizes Intel® Series 6 mobile class chipset with Intel® QM67 Platform Controller Hub (PCH)

DRAM

- supports up to 16 Gbytes DDR3-1333 ECC DRAM:
 - up to 16 Gbytes soldered
 - peak bandwidth of 20 Gbytes/s
 - dual channel architecture
- accessible from processor or VME/VXS interfaces

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 links (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 links
 - 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 link (Gen 2)
- fabric interfaces via optional P0 rear I/O

Ethernet Interfaces

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

Mass Storage Interfaces

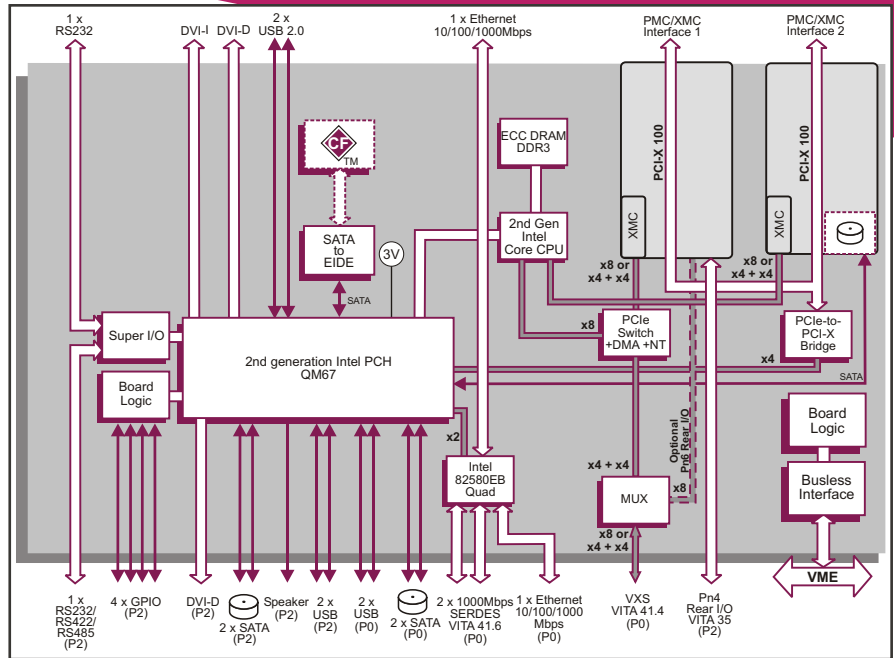
- 2 x SATA600 channels via P0 rear I/O
- 2 x SATA300 channels via P2 rear I/O*
- optional 2.5-inch drive, occupies PMC site 2
- SATA to EIDE interface supports on-board CompactFlash™ site

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 link (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 rear I/O (VITA 35)
- PMC/XMC site 2 I/O via front panel

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 rear I/O*
- 16550 compatible UARTs



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 rear I/O*
- digital, up to 1600 x 1200
- 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

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 rear I/O*
 - 2 via P0 rear I/O
- 4 x GPIO via P2 rear 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® 7, Windows® Embedded Standard 7, Windows® XP, Windows® XP Embedded, Windows® Server 2008, 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 @ 9.4A (typical current figure with 2.2 GHz Intel Core i7-2655LE 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: 2.2 GHz or 1.5 GHz)
 - -40°C to +70°C (K-Series: 2.2 GHz)
 - -40°C to +85°C (K-Series: 1.5 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 VXS P0 connector
- IEEE 1101.10 handles
- shock: 20g, 11ms, ½ sine
- vibration: 5Hz-2000Hz at 2g, 0.38mm peak displacement

*P2 rear 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 815/19x-yz 4-core Core i7 processor
 VX 813/19x-yz 2-core Core i7 processor

All companies and product names are trademarks of their respective organizations. Specification subject to change; E and OE. RoHS 2002/95/EC compliant.

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