VPX
(OpenVPX)

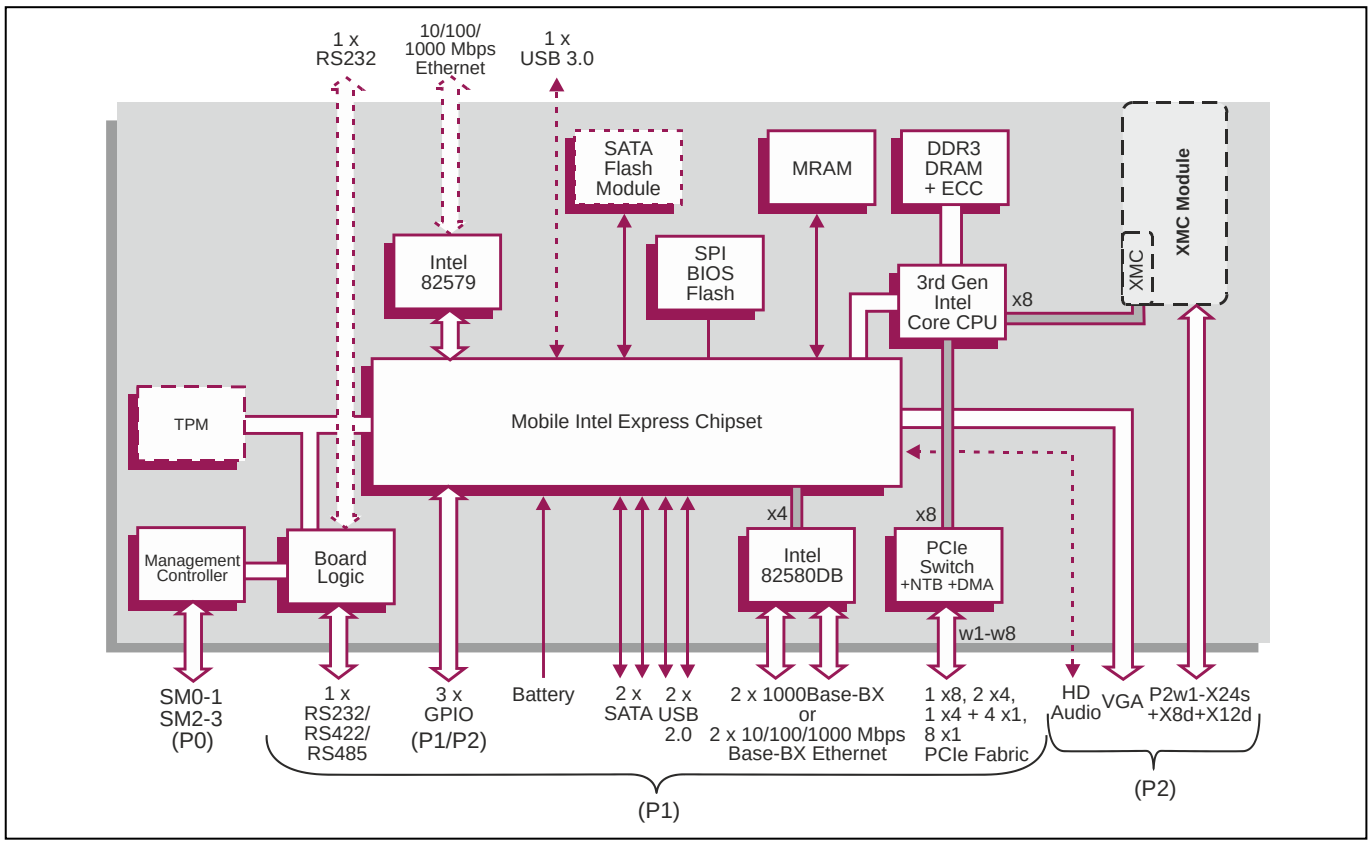
TR 90x/x1x
N - Series

3U VPX board based on 3rd Generation Intel® Core™ Processor

Key Features

The TR 90x/x1x is a high performance 3U VPX processor board supporting 2-core or 4-core, 3rd Generation Intel® Core™ processors.

- Flexible, high bandwidth PCI Express® data plane fabric
- Module features Built-In-Test which supports Power-on BIT, Initiated BIT and Continuous BIT:
  - ➔ this ensures the module is equipped to perform in a wide variety of critical applications such as industrial control, transport, aerospace, security and defense applications
- Support for Linux®, Windows®, QNX® and VxWorks®



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Specification

VPX Processor Board

- 3U VPX (N-Series) utilizing the 3rd Generation Intel® Core™ processor:
  - → air-cooled
  - → optional rear transition module (RTM)
- compatible with several OpenVPX™ module profiles
- rugged conduction-cooled (VITA 48.2) VPX-REDI (RCx-Series) versions:
  - → see TR 90x/31x-RCx datasheet

Central Processor

- 3rd Generation Intel® Core™ processors:
  - → 4-core 2.1 GHz Intel Core i7-3612QE processor
  - → 2-core 2.5 GHz Intel Core i7-3555LE processor
  - → up to 6 Mbytes Last-Level Cache
- utilizes Mobile Intel® QM77 Express Chipset

DRAM

- up to 16 Gbytes DDR3-1600 ECC DRAM:
  - → single bit error correction
  - → peak bandwidth of 25 Gbytes/s
  - → dual channel architecture
- accessible from processor or VPX fabric

XMC Interface (build option)

- 1 x XMC site, in a single VPX slot (VITA 42.0):
  - → XMC (Switched Mezzanine Card) interface supported by x8 PCI Express® Gen 2 (VITA 42.3)
  - → +5V or +12V powered (build option)
- front panel XMC I/O is supported (see TIN 13050)
- rear XMC I/O configuration is changed by including the HD audio factory build option:
  - → without the HD audio the XMC rear I/O is P2w1-X24s+X8d+X12d (VITA 46.9)
  - → with the HD audio the XMC rear I/O is P2w1-X18s+X8d+X12d (VITA 46.9)
- the XMC site is not supported with the Front Panel Interface build option

Front Panel Interface (build option)

- the optional front panel interface supports:
  - → 10/100/1000 Mbps Ethernet port via RJ45
  - → 1 x RS232 channel accessed via RJ45, full modem support (16550 compatible)
  - → 1 x USB 3.0 interface
- only available with the air-cooled boards (N-Series)

Ethernet Interfaces

- factory build option for 2 x 1000 Mbps IEEE802.3z SerDes (1000BASE-BX) ports via P1:
  - → with software switchable option for 1 x 10/100/1000 Mbps Ethernet port (with magnetics) plus 1 x SerDes port
- alternative factory build options for 2 x 10/100/1000 Mbps Ethernet ports:
  - → one port with and one port without magnetics or
  - → both ports with magnetics
  - → both ports without magnetics
- implemented by Intel® 82580DB Ethernet controller

Mass Storage Interfaces

- 2 x SATA600 interfaces via P1 connector
- optional SATA Flash Drive Module

Graphics Interface

- analog VGA accessed via P2 rear I/O:
  - → resolutions up to 2048 x 1536 @ 75 Hz
- support for Microsoft® DirectX 11
- support for OpenGL 2.0 under Windows® and Linux®

Serial Interfaces

- 1 x RS232/422/485 channel accessed via P1:
  - → supporting Tx/Rx CTS/RTS in RS-232 only
  - → supporting Transmit Control in RS-485 mode
- 16550 compatible UARTs

Stereo Audio

- optional Intel® High Definition Audio build option:
  - → requires CoDec fitted to the RTM

VPX Backplane Interface

- P0, P1 and P2 support OpenVPX configuration
- configurable PCI Express (PCIe®) fabric interface supports:
  - → 8 x1 PCIe ports, 2 x4 PCIe ports, 1 x4 + 4 x1 PCIe ports, or a 1 x8 PCIe port
  - → support for Gen 1 and Gen 2
  - → compatible with OpenVPX module profiles
- supports 1 or 2 Non-Transparent Bridge (NTB) ports for multi-processing configurations
- 4 channel DMA engine for fast data block moves
- supported by VPX switch configuration tool
- supported by Fabric Interconnect Networking Software (FIN-S)

Other Peripheral Interfaces

- PC Real Time Clock
- long duration timer; watchdog timer
- CPU temperature monitor; voltages monitor; accessed via System Management interface
- 2 x USB 2.0 interfaces accessed via P1
- 3 x GPIO signals via P1 and P2

Software Support

- support for Linux®, Windows®, QNX® and VxWorks®

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

Optional Security Packages

- Trusted Platform Module (TPM)
- proprietary board-level security features

Optional Built-In Test (BIT) Support

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

System Management

- IPMI Version 1.5 via SM0-1 and SM2-3
- on-board BMC (Baseboard Management Controller)

Non-Volatile Memory

- 8 Mbytes of BIOS SPI Flash EPROM
- 128Kbytes MagnetoResistive RAM (MRAM)

Electrical Specification

- typical current consumption (2.1 GHz Intel Core i7-3612QE with 8 Gbytes DRAM):
  - → +5V @ 4.3A, voltage +5% / -2.5%
  - → +3.3V @ 5.0A, voltage +5% / -2%
  - → +3.3V AUX @ 0.2A, voltage +5% / -2%
- +12V AUX and -12V AUX routed to XMC site

Safety

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

Environmental Specification

- operating temperature (air-cooled):
  - → VITA 47 Class AC1, 0°C to +55°C
- non-operating temperature:
  - → VITA 47 Class C1, -40°C to +85°C
- operating altitude:
  - → 0 to 15,000 feet (0 to 4,572 meters)
- relative humidity:
  - → 5% to 95%, non condensing

Mechanical Specification

- 3U VPX form-factor (VITA 46.0, VITA 48.0)
- 3.9 inches x 6.3 inches (100mm x 160mm)
- optional slot widths:
  - → 0.8-inch (VITA 46.0)
  - → 1.0-inch (IEEE 1101.10 as per VITA 46.0)
  - → 1.0-inch (VITA 48.0 as per VITA 65)
- connectors to VITA 46.0 for P0, P1 and P2
- operating mechanical:
  - → shock - VITA 47 Class OS1, 20g
  - → random vibration - 0.002g²/Hz

Optional VPX Switch

- compatible with FR 331/x06 VPX switch

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

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