



- **VME 6U Dual Slot (8HP) SBC**
- **Compliant to IEEE STD 1101.2-1992 & ANSI/VITA 20-2001, VITA 30.1 VME64x Architecture**
- **Two Dual redundant 1553B channels programmable as BC/RT/MT**
- **8Tx and 8Rx ARINC429 Channels**
- **Single PMC/XMC mezzanine site**
- **Three Digital Display Interfaces (DDI) for Display Port /HDMI/DVI/SDVO**
- **Dual channel 18/24-bit LVDS**
- **Linux, VxWorks OS are available**
- **For other RTOS support contact sales**
- **On Card COMExpress Computer On Module specification:**
 - > **Processor – Intel Core i7 Processor up to 2 Ghz**
 - > **4 GB of DDR3 SDRAM with ECC**
 - > **NOR Flash Memory – Up to 32 MB**
 - > **NAND Flash Memory –Up to 16 GB**
 - > **32 kB instruction and 32 kB data L1 cache per core**
 - > **4MB L2 cache per core**
 - > **Up to 4 MB L3 cache, shared**
 - > **Two 10/100/1000 Gigabit Ethernet ports**
 - > **One High Definition Audio port**
 - > **Four USB 2.0 ports**
 - > **Four SATA ports**
 - > **Watch Dog Timer**
 - > **Real Time clock**

OVERVIEW

The AT-VME-SBC-Corei7 board has a Computer On Module COMExpress plugged in to it. COMExpress is based on one of the ultra high performance, high-integration Intel Corei7 processor, and gives designers the choice of a complete, ruggedized systems requiring high bandwidth processing, based on the COMExpress form factor. Core i7 offers integrated graphics and memory controller and dual core processing up to 2 GHz. The module plugs into the card, which has connectors and additional circuitry to meet your application requirements.

The Computer On Module incorporates a 4 GB of SDRAM with ECC Protection, 32 MB NOR Flash memory, 16 GB of NAND Flash, Two Gigabit Ethernet ports, four USB ports, four SATA ports and One High Definition Audio port.

The AT-VME-SBC-Corei7 is equipped with On-board mezzanine expansion sites-one optional PCI 32-bit/66MHz PMC site or PCIe x4 XMC site, Three digital display interfaces, a number of user defined GPIO's, two dual redundant 1553B channels and eight transmit and eight receive ARINC429 Channels. The AT-VME-SBC-Corei7 has implemented all its Discrete IO logic in the FPGA. All discrete inputs and outputs are accessed through registers implemented inside FPGA.

The card is particularly well suited to embedded applications and meets all the requirements such as power consumption, temperature range, quality, and reliability demands of embedded system applications. The card uses +5V, +3.3V and +12V from the Back Plane as primary supply voltages. All the internal Voltages required by FPGAs and various other peripherals are derived using on board regulators and DC-DC Converters.

The board is available in either Air-cooled or Conduction-cooled versions. Operating system support for VxWorks, Linux are available.

Memory

SDRAM

The board comes with up to 4 GB of DDR3 SDRAM. It is equipped with an Error Checking and Correction (ECC) mechanism providing a high degree of protection against errors. It is capable of detecting and correcting single errors while alerting when multiple errors arise. The ECC mechanism enhances the system reliability to a great extent.

PCI Local Bus

The SBC comes with separate PCI bus and is fully compliant to PCI Specs-Rev 2.2. PCI bus operates at 32-bit/33MHz bus providing a high-speed backbone for the local interconnects of on-board devices. PCI bus operates at 64-bit/66 MHz and is routed to one IEEE standard PCI Mezzanine Card (PMC) site.

VME Interface

The SBC includes the Tundra chip (Tsi148) PCI-VME bridge controller allowing the interface between the local PCI bus and the VME backplane. It provides a high performance VME64x bus interface. The VME interface provides full master and slave capabilities.

PMC Interface

Mounting a PCI Mezzanine Card (PMC) further enhances the capabilities of the SBC. The PMC expansion slot is compliant to IEEE 1386/1386.1-2001. The PCI bus running at 64-bit/66 MHz is connected to the PMC slot.

XMC Interface

X4 lane PCI express interface at 2.5 Gbps data rate. Single XMC site.

AT-VME-SBC-Corei7

Core i7 Processor based VME Single Board Computer

I/O Interfaces

Ethernet Interface

The AT-VME-SBC provides two 10/100/1000 Gigabit Ethernet ports.

USB

The SBC includes four USB Rev 2.0 ports providing high-speed, full-speed and low-speed signaling.

Video

Integrated in Processor: Intel® HD Graphics 4000 at 650-1300 Mhz Integrated Video: DirectX 11.0, OpenGL 3.1, and OCL 1.1 Media Processing:

- Decode (HW JPEG & MJPEG decode), encode (full HW MPEG2 encode), transcode
- Intel® Clear Video HD Technology + enhanced media processing VGA Interface:
- Analog VGA support with 300 MHz DAC
- Analog monitor support up to QXGA (2048 x 1536) and VGA hot plug

LVDS Interface: Dual channel 18/24-bit LVDS

Digital Display Interface: Three DDI ports supporting HDMI / DVI / Display Port or SDVO

Test and Diagnostic Software

The SBC comes with a complete bundle of firmware containing the following modules:

- Boot software for initialization
- Monitor/Debugger tool
- BIT/POST software

MIL-STD-1553B

- 2 Dual Redundant MIL-STD-1553B Channels
- Supports MIL-STD-1553 A/B
- Each channel is independently programmable as either Bus Controller, Remote Terminal or Bus Monitor
- Complete message programmability
- 48-bit/100ns Time tagging
- Direct or Transformer Coupled Bus Interface

ARINC429

- 8 Transmit and 8 Receive Channels
- Configurable for High Speed (100 Kbps) or Low Speed (12.5Kbps/50Kbps)
- Up to 256 Label memory for each Receive channel
- 128 Word for Tx and Rx FIFOs for each Transmit and Receive channel
- Asynchronous and Synchronous messaging
- Programmable Interrupts
- Programmable Refresh rates of 20ms to 200ms
- Label selective trigger for Capture/Filtering and SDI filtering

PRODUCT SPECIFICATIONS

CPU

- Processor: Intel Core i7
- Clock Frequency: 2 Ghz
- Intel QM57 chipset
- Dual-core with hyper-threading technology
- Integrated two channel memory controller
- L2 Cache: 4MB
- L1 Cache: 32 kB instruction and 32 Kb data cache

Memory

- Global Memory: Up to 4 GB of DDR3 SDRAM
- ECC: Standard
- Nand Flash: Up to 16GB

VME Interface

- VME64x backplane interface
- A64/A32/A24/A16 master/slave
- 5 row connectors

XMC Interface

- XMC – x4 lane PCIe, 2.5Gbps (PCIe basespecification1.0a)

AT-VME-SBC-Corei7

Core i7 Processor based VME Single Board Computer

PCI Interface

- PCI 32/64 bit
- 33 or 66 MHz selectable PCI frequency
- Fully compliant to PCI Specs- Rev 2.2
- One PMC slot

I/O Interfaces

- Four USB ports
- One PMC/XMC mezzanine site
- Two 10/100/1000 Gigabit Ethernet ports

Environmental

Temperature Range:

	Air-Cooled	Conduction-Cooled
Operating	0°C to + 60°C	-40°C to + 85°C

- The temperature range for conduction-cooled boards are the operating card edge temperatures
- Meets MIL-STD-810F standards for temperature, shock, vibration etc
- Meets MIL-STD-461C Part-II standards for EMI/EMC

Warranty

- 1 year limited warranty

JTAG

- On-board JTAG interface to the processor for debugging and development purposes

Mechanical

- 6U VME 64x dual slot (8HP) interface
- Dimensions- 233.35mm x 160mm
- As per IEEE 1101.10 – For Air-Cooled version
- As per IEEE 1101.2 For conduction cooled version

Operating Systems

- Linux, Vx-Works drivers support is available
- Other BSP can be made available up on request

ORDERING INFORMATION

Hardware Selection

AT - VME - 2 - SBC - Corei7 - A - B - Ruggedization



A = Air-Cooled Version
R = Conduction-Cooled Version

- 0 = Without A429
- 1 = 1 Tx and 1 Rx channel
- 2 = 2 Tx and 2 Rx channels
- 3 = 3 Tx and 3 Rx channels
- 4 = 4 Tx and 4 Rx channels
- 5 = 5 Tx and 5 Rx channels
- 6 = 6 Tx and 6 Rx channels
- 7 = 7 Tx and 7 Rx channels
- 8 = 8 Tx and 8 Rx channels

- 0 = Without 1553
- 1 = With Single Node 1553 channel
- 2 = With Two Node 1553 channels

2 = 6U

- Contact sales for support for other Operating Systems
- Contact sales for configuration of front and rear I/O configuration
- Contact sales for environmental options



Distributor/Reseller

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