



TSBCi7-300X

Mission and Payload Systems 3U-VPX

3U VPX Single Board Computer Utilizing the Intel® Arrandale Core™ i7 CPU

Feature Set

General

- 3U VPX per VITA 46
- VITA 48 VPX-REDI
- VITA 65 OpenVPX
- 0.8" air cooled, 0.85" and 1" conduction cooled Pitch available
- Intel Core i7 Series Processor
- Intel IBEX Peak QM57 PCH Chipset
- 16x PCI Express Lanes
- 2x IEEE-1588 GigE Ports
- 2x RS-232/422/485
- 1x RS-232/422/485 with Handshake
- 4x USB 2.0
- 1x SATA
- 1x Hi Resolution VGA, HDMI, DVI
- 2x Audio In/Out
- GPIO wit Interrupts
- I²C Bus
- MIL-STD-1553 RT/BC/BM

Processor Options

- Corei7-610E
- Corei7-620LE
- Corei7-620UE

Power

- 50 Watts (Typical)

Environmental

- Conduction Cooled
- Operating Temperature: -40° to +85°C
- Storage Temperature: -55° to +105°C
- Humidity: 0 to 95% RH Non-Condensing
- Conformal Coat: Yes
- Shock: 40g Peak Sawtooth @ 11 mSec
- Vibration (Random): 1g2/Hz, 15Hz to 2KHz
- Vibration (Sine): 10g Peak, 15Hz to 2KHz



Themis' **TSBCi7-300X** Single Board Computer is designed for high performance rugged applications, thanks its use of the Intel® Core™ i7 Arrandale series Dual Core processors, as well as the highly integrated IBEX Peak QM57 Platform Controller Hub (PCH) Chipset. The superior performance of the TSBCi7-300X is due in large part to the CPU's use of Intel® Turbo Boost technology² and Intel Hyper-Threading technology, which maximizes performance to match processor workload, as well as the efficient use and high speeds of Mass Storage and buffering, due to the advanced design of the QM57 PCH Chipset

The TSBCi7-300X has a full compliment of PCIe buses, configurable as X1, X2, X4, X8 and X16 interfaces. All common serial interfaces are supported, including USB, RS-232, RS-422 and RS-485. For Military applications, there is an optional on-board MIL-STD-1553 interface available. A high resolution video graphics interface is standard, allowing use of VGA, HDMI and DVI displays.

The TSBCi7-300X is an ideal upgrade processor for Mission Computers, Display Processors, Payload Controllers, Sensor Management, EW and SIGINT applications, and high speed Data Storage Units.

Drivers and Board Support Packages are available for Linux® and Windows®, with other operating systems supplied upon request. Please contact Themis for information on using other Real Time Operating Systems such as VxWorks®, Integrity® and LynxOS®.

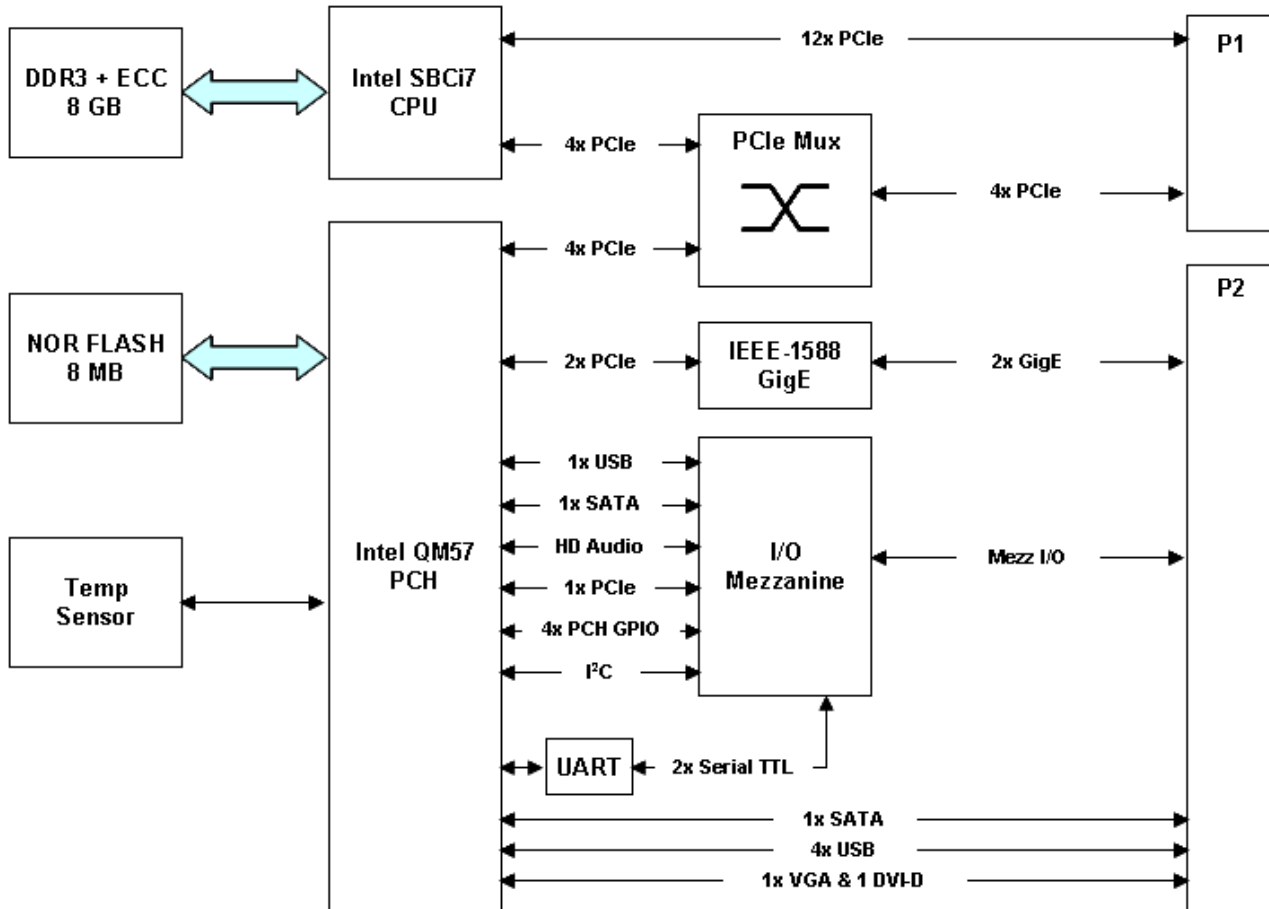
This board is available in several ruggedization grades from Commercial Air Cooled to full MIL Conduction Cooled..



TSBCi7-300X

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TSBCi7-300X Single Board Computer Block Diagram



I/O Mezzanine Board Options

The I/O Mezzanine boards has several pre-defined optional configurations available to provide various combinations of

- User FLASH
- RS-232 / 422 / 485 Serial Interfaces with full handshaking
- RS-232 / 422 / 485 Serial Interfaces without handshaking
- High Definition Audio In and Out
- Line Level Audio In and Out
- GPIO with Interrupts from the PCH
- GPIO generated onboard the I/O Mezzanine via the I2C Bus
- MIL-STD-1553 Data, Address and Parity

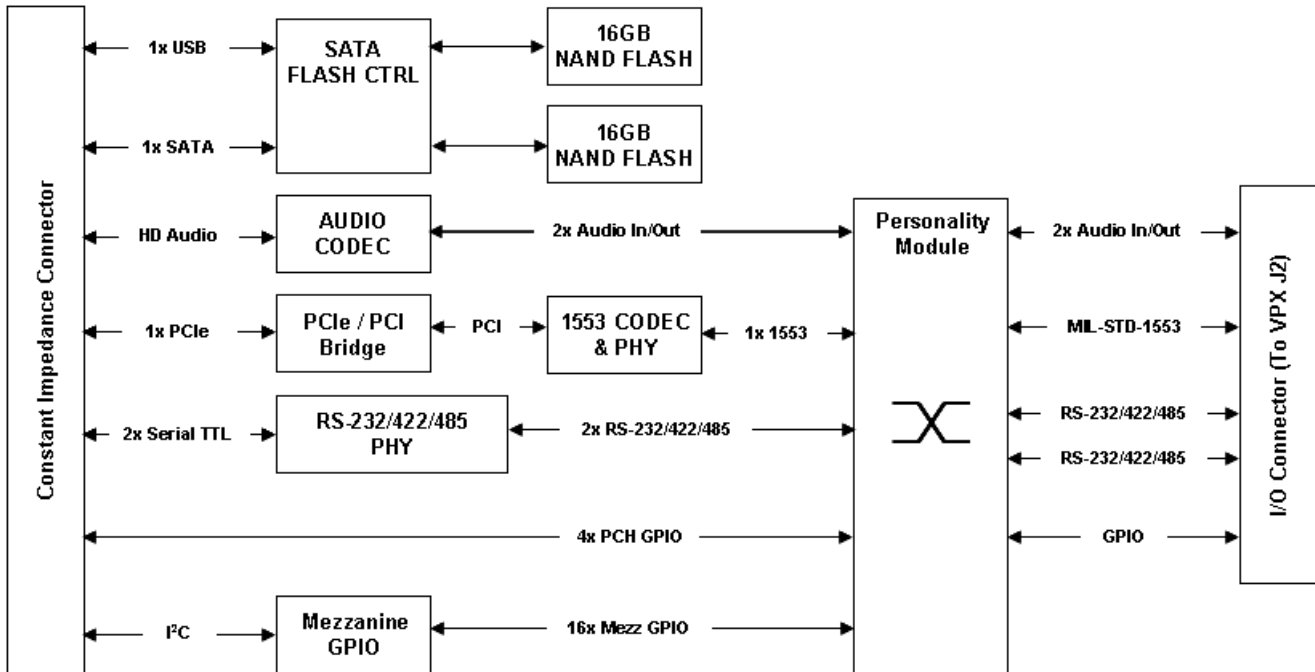
On the I/O Mezzanine Board is a Personality Module which is used to shuffle the existing mezzanine I/O among the existing 19 available I/O pins on VPX Connector J2. Themis has defined 4x standard Personality Module configurations. Consult Themis factory for other Personality Module requirements.

If Custom I/O is needed on the SBC, the I/O Mezzanine Board offers a unique opportunity to add I/O to the TSBCi7-300X without having to re-design the entire SBC. Consult Themis factory with specific I/O requirements for a quote.

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TSBCi7-300X I/O Mezzanine Board Block Diagram



TSBCi7-300X Pre-Configured Personality Module Options

PM Configuration A

- 1553 Primary & Secondary data buses, Transformer Coupled
- 1553 Primary & Secondary data buses, Direct Coupled
- RS-232 Serial Interface, 3 Wire
- Audio Line Inputs, Left & Right
- Audio Line Outputs, Left & Right
- 2x Discrete I/O with Interrupts

PM Configuration B

- 1553 Primary & Secondary data buses, Transformer Coupled
- 1553 Primary & Secondary data buses, Direct Coupled
- Audio Line Inputs, Left & Right
- Audio Line Outputs, Left & Right
- 4x Discrete I/O with Interrupts

PM Configuration C

- 2x RS-232 Serial Interface, Full Function with Handshaking
- 1x Discrete I/O with Interrupts
- 2x Discrete I/O

PM Configuration D

- 2x RS-422/485 Serial Interface, Full Function with Clocks & Handshaking
- 1x Discrete I/O with Interrupts
- 2x Discrete I/O

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PCI Express (PCIe) Configurations

The TSBCi7-300X Single Board Computer has a total of 20x PCIe Data Buses, 16x from the Intel i7 CPU and 4x from the QM57 PCH. The bottom 4x data buses from the CPU and the 4x buses from the PCH are routed to a multiplexer such that 4x buses can be selected to send to P1 of the VPX Connector, allowing great flexibility for selecting bus pairing and bus widths. Refer to the table below for TSBCi7-300X PCI Express Bus Configuration Options.

VPX P1 PCI Express Buses									
Fat Pipe A		Fat Pipe B		Fat Pipe C		Fat Pipe D			
Bus Configuration	CPU 8x			CPU 8x					
	CPU 12x					PCH 4x			
	CPU 8x			CPU 4x		PCH 4x			
	CPU 12x					PCH 2x	PCH 1x	PCH 1x	
	CPU 8x			CPU 4x		PCH 2x	PCH 1x	PCH 1x	
	CPU 12x					PCH 1x	PCH 1x	PCH 1x	PCH 1x
	CPU 8x			CPU 4x		PCH 1x	PCH 1x	PCH 1x	PCH 1x

Compliance Specifications:

The TSBCi7-300X Single Board Computer is designed to meet CE Emissions specification EN 55022, CE Immunity specification EN 50082-2 and FCC 47 CFR, Part 15, Class A when tested in a shielded enclosure.

Standard Air Cooled Configuration: TSBCi7-300X1-000-CBBAE

Commercial Temp, 0 to +55C, .8" Card Pitch, RS-232, Stereo Audio, 2x Discrete I/O, Intel Corei7-620LE, 4 GB SDRAM+ECC, 16 GB FLASH, PCIe X8, X4, X2, X1, X1

Standard Conduction Cooled Configuration: TSBCi7-300X5-111-CBBAE

Rugged Conduction Cooled, -40C to +85C, VPX Redi Cover, Conformal Coating, 1.0" Card Pitch, RS-232, Stereo Audio, 2x Discrete I/O, Intel Corei7-620LE, 4 GB SDRAM+ECC, 16 GB FLASH, PCIe X8, X4, X2, X1, X1

Consult factory to order other configurations



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