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VME7653

Rugged Conduction or Air Cooled 6U Third Generation Intel® Core™ i7 Single Board Computer for VME

Power and Flexibility

Orion's VME7653 is a high-performance Intel® Third Generation Core™ i7-based VME64x single board computer (SBC). As a single-width, 6U height board, this high-performance SBC is designed for embedded applications that require significant processing power and system flexibility. Additionally, the conduction cooled rugged version satisfies the most demanding environmental applications.

The VME7653 is designed for both commercial and rugged environments applying BGA CPU packaging and rugged connector systems.

By incorporating the power of the Intel® Third Generation Core™ i7 and the unparalleled complement of configurable I/O via the "Personality Modules", the VME7653 can adapt to almost any Military, Industrial or Commercial application.

The VME7653's 10Gb and four 1Gb Ethernet ports, four Serial ports, five USB 2.0 ports, four SATA ports, twenty-four GPIO, and I/O from two XMC/PMC sites are all accessible through the VME Bus connectors.

Features

- Dual or Quad Core Third Generation Intel® Core™ i7 up to 2.2 GHz
- Mobile Intel® 6 Series Chipset
- 32KB L1 data and instruction caches per core
- 256KB internal L2 cache per core
- Up to 8MB shared data and instruction L3 cache
- Extended Temperature & Rugged Design
- On-board temperature monitoring
- 35W typical power dissipation
- Up to 16GB of DDR3 SDRAM with ECC
- Up to 64GB of on-board NAND Flash
- Trusted Platform Module
- Two 64-bit/133MHz PCI-X PMC slots (PrPMC)
- Two 8-lane PCIe XMC slots (Vita 42.3)
- Four 1Gb Ethernet ports
- One 10Gb Ethernet port
- Four Serial ports: 2x RS232, 2x configurable
- Twenty-four General Purpose I/O, configurable
- Five USB 2.0 ports
- Four SATA ports: 2x 6Gbps, 2x 3Gbps
- One VGA Video port
- Two Digital Video ports
- One Digital Audio port
- Two PMC/XMC sites with front panel & Rear I/O
- On-board Real-Time Clock
- Various Operating System Software Support

2100 N. Alafaya Trail, Suite 100, Orlando, FL 32826
Tel: (407) 476-2120 Fax: (407) 203-7659 Email: info@oriontechnologies.com
www.oriontechnologies.com

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Hardware Specifications

Processor

- Intel®: Dual or Quad Core Third Generation Core™ i7
- Processor Speed: 1.7GHz to 2.5GHz
- Inst. Cache: 32KB
- Data Cache: 32KB
- L2 Cache: 256KB
- L3 Cache: Up to 8MB shared

Processor Features

- Dual or Quad Core with hyper-threading technology
- Integrated Graphics Controller
- Intel® QM67 Chipset
- Dual channel integrated memory controller

VME Bus

- VME Bus Frequency: 33MHz
- VME Address Bus Width: A32
- VME Data Bus Width: D64
- VME Compliance: VME64x 5-row connector
- VME System Controller: Yes, Auto detection
- VME Peripheral Controller: Yes, Auto detection

Local XMC Bus

- XMC Bus Frequency: 100MHz
- XMC Bus Width: Double FAT Pipe (x8 Lanes)
- XMC Signal Voltage: +3.3V

Local PMC Bus

- PCI Bus Frequency: 66MHz or 33MHz
- PCI Bus Width: 32-bit
- PMC Signal Voltage: +3.3V
- PCI Compliance: PCISIG PCI R3.0
- PMC I/O Access: VME P2
- PCI-X Bus Frequency: 133MHz
- PCI-X Bus Width: 64-bit

Memory

- DRAM Memory Type: DDR3 SDRAM
- DRAM Memory Size: Up to 8GB with ECC
- On-Board User FLASH: Up to 64GB
- Boot EEPROM: 32MBit

Security

- Trusted Platform Module: Atmel AT97SC3204 (I2C)

Peripherals

Four 10/100/1000 Ethernet Ports

- Controller: Intel® Integrated MAC/PHY
- Configuration: Auto Negotiating 10/100/1000
- Access: Two VME P0, Two Configurable- Front panel or VME P0

10G BASE-KX4 Ethernet Port

- Controller: Intel Integrated MAC/PHY
- Confuguration: Auto Negotiating 100/1000/10G
- Access: VME P0

Four Serial Ports

- Controller Type: Two LPC Super I/O Dual UART
- Configuration: DTE
- Access: VME Bus
- Signal Levels: Two ports RS-232, Two ports Configurable by Personality Module

General Purpose I/O

- Controller Type: LPC Super I/O
- Access: VME Bus
- Configuration: Up to twenty-four configurable GPIO (Inputs may generate Interrupts)

Five USB 2.0 Ports

- Controller: Integrated on Chipset
- Configuration: Host, USB 2.0
- Access: 4x VM EBus, 1x Front Panel

Four SATA Ports

- Controller: Integrated on Chipset
- Access: VMEBus
- Speed: Two 6Gbps, two 3Gbps

Miscellaneous

Real-Time Clock

Integrated on chipset

Reset

Front panel & VME P2 reset generates VME system reset when System Controller. Resets local logic when Peripheral.

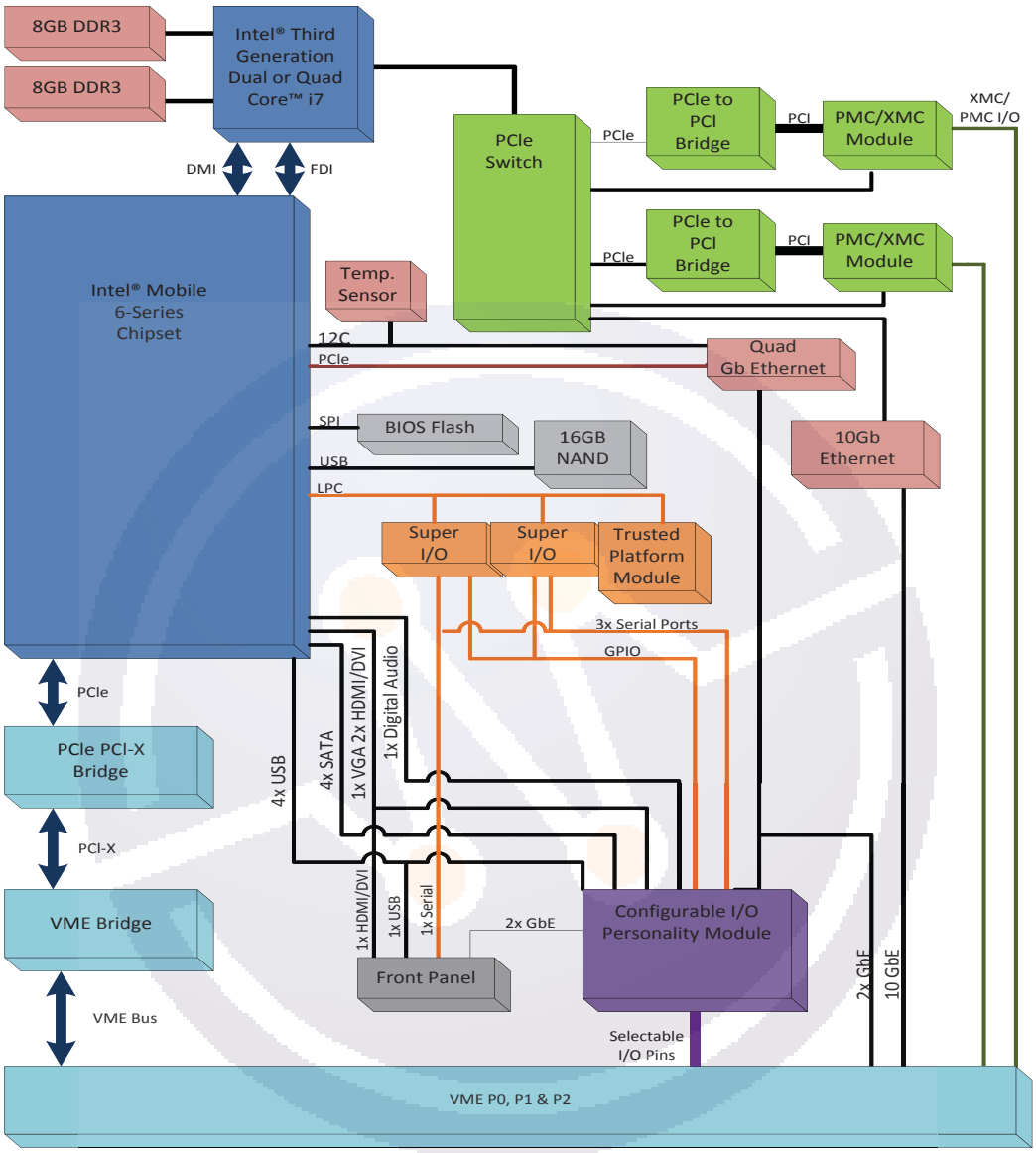
LEDS

- Power Good LED
- SATA Active LED
- Six Ethernet LEDs

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Block Diagram



Environmental

	Level 1	Level 2	Level3	Level 4	Level 5
Cooling Method	Air-Cooled	Air-Cooled	Air-Cooled	Conduction	Conduction
Conformal Coating	Standard	Standard	Standard	Standard	Standard
Operating Temperature	0 to +55°C	-40 to 55° C	-40 to 70° C	-40 to 70° C	-40 to 85° C
Vibration	0.002g²/Hz*	0.002g²/Hz*	0.04g²/Hz*	0.1g²/Hz*	0.1g²/Hz*
Shock	20g Peak sawtooth 11 ms duration	20g Peak sawtooth 11 ms duration	20g Peak sawtooth 11 ms duration	40g Peak sawtooth 11 ms duration	40g Peak sawtooth 11 ms duration
Humidity	0% to 95%, non-condensing	0% to 95%, non-condensing	0% to 95%, non-condensing	0% to 95%, non-condensing	0% to 95%, non-condensing

*Flat repsonse to 1000 Hz

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Ordering Information

VME7653 – A B C D

Base Model Number

Processor Options

1 = 1.7 GHz Dual Core Third Generation Core™ i7 (i7-3517UE)

2 = 2.5 GHz Dual Core Third Generation Core™ i7 (i7-3555LE)

3 = 2.3 GHz Quad Core Third Generation Core™ i7 (i7-3615QE)

Memory Options

1 = 8GB DDR3, 8GB NAND Flash

2 = 8GB DDR3, 64GB NAND Flash

3 = 16GB DDR3, 8GB NAND Flash

4 = 16GB DDR3, 64GB NAND Flash

Reserved

Must be 0

Environmental Options

1 = Level 1

2 = Level 2

3 = Level 3

4 = Level 4

5 = Level 5

Orion has successfully generated products utilizing an extensive assortment of microprocessors since 1990. Our design experience ranges from the development of a single, very low power processors to the latest, high-performance, mulit-core, multi-processor products. Our single board computer product offering includes both custom and standard form factors such as VPX, VME, CompactPCI and PMC. The majority of our products are offered in five ruggedization levels from standard commercial to rugged, extended temperature with conduction cooling.

We guarantee all of our products are free of manufacturing and design defects, and we provide real customer service and support. Whether it's a small quantity, one-time requirement or a high volume product for years to come, we would like to be your partner in embedded solutions.

ORION TECHNOLOGIES

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