

IOxOS Technologies releases the third generation of its PCI Express to VME64x Transparent Bridge targeting Xilinx Artix-7 devices for low cost and power efficient single chip solutions

Geneva, 10 of September 2014 - IOxOS Technologies is releasing the ALTHEA 7910 solution, a PCI Express x4 GEN1/GEN2 to VME64x transparent bridge embedding a DMA engine that works with on-chip memory and an optional DDR3 external device.

The ALTHEA 7910 implements a true PCI Express Endpoint fully compliant with revision 2.1, supporting PCI Express x4, x2 and x1 transfers in both GEN1 and GEN2. This approach allows to have the whole VME address translation space mapped on the PCI Express device tree.

This solution is aimed to upgrade VME COTS to the next generation of high-performance PCI Express embedded systems, providing a full VME64x Master/Slave interface with Slot-1 functions and interrupt management with a direct bridge to a PCI Express upstream port, that makes possible an extremely low latency combined with a high data bandwidth. Advanced VME64x data transport 2eVME and 2eSST modes, including broadcast, are natively supported with maximal burst length capability. Large data-transaction buffers guarantee maximal 2eSST data transfer support for continuous operation. A key element for this high performance is an embedded dual channel Intelligent DMA Controller (IDMAC), which allows high bandwidth simultaneous Read/Write transactions exceeding 1'600 MBytes/s data rates with PCI Express GEN2.

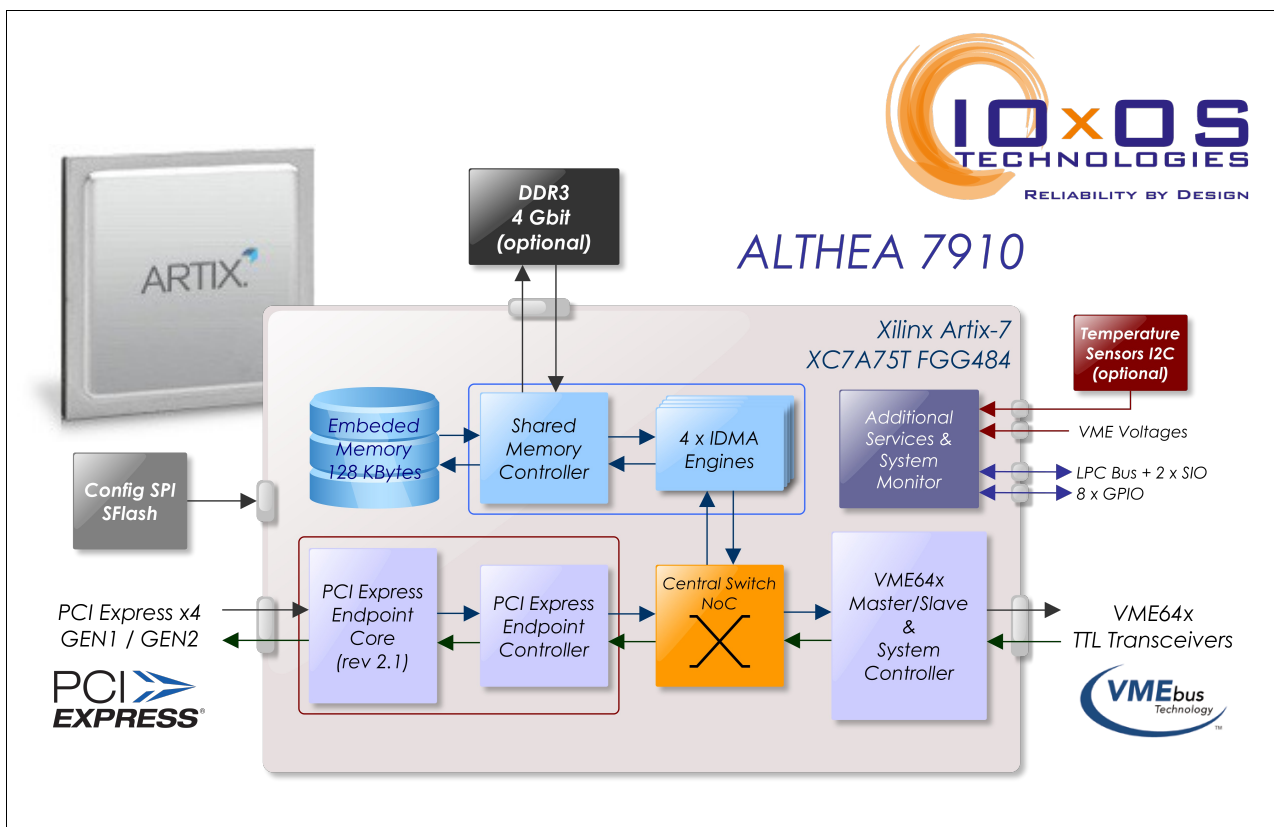


Figure 1. ALTEA 7910 High-level Block Diagram

The full solution is delivered as an encrypted binary file targeting a Xilinx Artix-7 device (XC7A75T in 23x23 [mm] FGG484 package) that is available in commercial, extended and industrial temperature grades (military temperature grade requires the XQ7A100T device). The result is a low cost and low power single chip solution which provides higher performance in comparison with existing VME interfaces, a faster integration process and a robust obsolescence management strategy. The implementation, which is done entirely in VHDL, guarantees its portability to coming generations of FPGA devices, significantly extending the operational life of the solution.

The PCI Express to VME64x bridge core function has been successfully implemented and validated in all IOxOS Technologies' VME Single Board Computers since 2009, leveraging Intel x86 (Xeon, i5/i7), AMD (Opteron) and PowerPC (QorIQ P and T series) platforms running under Windows XP/7, Linux and VxWorks. This widespread deployment allows the ALTHEA 7910 solution to reach the high maturity and reliability levels required by the Mil/Aero, Transport and High Energy Physics (HEP) applications where these COTS have been installed.

Due to its long and proven experience in VME design, IOxOS Technologies provides an active support to guide the end user throughout the integration process, considering the customization of the solution upon request.

An Artix-7 based VME64x board (PEV_7911) featuring a PCI Express External Cabling connection is available to evaluate the ALTHEA 7910 solution as well as to anticipate the development of related software.

For safety critical airborne applications, a DO-254 DAL C compliant certification package can be provided upon request together with support for hardware reviews (SOI) and audits.

The ALTHEA 7910 solution includes an encrypted binary programming file with a predefined number of Run Time (RT) licenses, technical documentation (user manual, application notes, and a fully functional reference design), the software kit (device drivers, user libraries and XprsMon integration tool) and one-year technical online support and maintenance.

To get unlimited access to this technology, a perpetual license model is available, granting full access to VHDL source code.

For further information, please contact info@ioxos.ch

ALTHEA 7910 Key Features

- ✓ Transparent PCI Express - VME64x Master / Slave Bridge with embedded chained DMA and local shared memory
- ✓ Single chip, low power solution (< 1.5[W])
- ✓ Performance-enhancing Network on Chip (NoC) based architecture
- ✓ True PCI Express End Point x4 GEN1/GEN2 (v 2.1)
- ✓ Targets Xilinx Artix-7 XC7A75T device in FGG484 package
- ✓ Available in Commercial, Industrial and Military (XQ7A100T device) temperature ranges
- ✓ Higher performance compared to legacy ASIC solutions
- ✓ Low Read latency (PCI Express-VME64x)
- ✓ VME 3 and 5 rows support
- ✓ Little / Big endian conversion by hardware
- ✓ High performance DMA (>1'600 MBytes/s with PCI Express GEN2)
- ✓ IO Space for CSR mapping
- ✓ Programmable Memory Space window size (Prefetchable and Non-Prefetchable)
- ✓ INgress MMU based IO scatter-gather on PCI Express and VME Slave ports
- ✓ VME Address CFG, A16, A24, A32, ADO, and ADOH
- ✓ VME Data D08, D16, D32, BLT32, MBLT64, 2eVME, 2eSST, and 2eSST Broadcast to access multiple VME slaves
- ✓ System Controller PRI, RRS, BTO, 2eBTO
- ✓ Customization upon request
- ✓ DO-254 DAL C compliant certification package upon request
- ✓ Drivers for Windows XP/7, Linux and VxWorks

IOxOS Technologies SA, based in the Geneva area (Switzerland), is an electronic design company offering innovative solutions to system integrators in the Mil/Aero, Transport and High Energy Physics industries. It combines a comprehensive product line with engineering, consulting and training services covering both hardware and software

