Rugged CompactPCI SBC Integrates Large Memories with High-Performance Processor for ISR Applications

More computing performance and throughput now available in a standard 3U CompactPCI platform

Aitech Defense Systems now offers the C802, a 3U CompactPCI SBC (single board computer) based on the high-performance Intel Core i7 processor. Speeds can be factory configured to a high performance 2.53 GHz, a lower power 2.0 GHz or an ultra low power 1.33 GHz depending on application needs.

The C802, the next generation of Aitech's popular C800 SBC, is an expansion to the company's growing CompactPCI-based product line. The new board implements the latest in Intel's processing architectures while incorporating enhanced memory capabilities to enable system designers to maintain their technology investments in the proven 3U CompactPCI platform.

The shock and vibration resistant SBC offers an operating temperature of -55°C to +85°C, the widest standard range available in the rugged embedded computing industry. It is ideal for high performance, data and graphics intensive applications in extreme environmental conditions, such as manned and robotic vehicles, avionics and more advanced ISR (Intelligence, Surveillance, Reconnaissance) applications.

The board is also ideal for a number of other embedded and harsh environment military and defense applications because of its advanced Core i7 Pentiumarchitecture, large on-board memory arrays, high quantity of flexible and configurable I/O, rugged configuration and advanced power management, coupled with industry-standard real time operating systems or Linux.

The rugged board combines Intel's dual-core processing and hyper-threading technology with an integrated on-chip data and instruction cache, per core, of 32 kB for L1 and 256 kB for L2 as well as a 4 MB L3 shared cache.

In addition to the large, on-die data and instruction caches, the new SBC features extensive, high speed DDR3 and Flash memory arrays to provide large volatile and non-volatile memory, including up to 4 GB of fast DDR3 SDRAM operating at 1066 MHz and 4 MB of flash BIOS.

The on-board, high speed 64 GB SATA Flash solid state disk (SSD), controlled directly from an ICH8M I/O controller hub, hosts the operating system and user application code. Additional virtual SATA SSDs can be added via the on-board PMC/SATA site or via the external USB ports.

The C802's extensive I/O capabilities include automatic system/peripheral detection, two Gigabit Ethernet ports, one SATA II port, two serial UART communication ports, two USB 2.0 interfaces, HDMI/DVI and CRT video interfaces, a high definition stereo audio input or output and up to eight single-ended general purpose discrete I/O channels that are independently configurable as input or output. An integrated 2D/3D graphics GPU engine supports graphics and video processing and provides the HDMI/DVI and CRT video output channels.

An industry-standard PMC/XMC slot further extends the board's I/O functions and supports 32-bit/33MHz PCI bus, while the VITA 42-compliant XMC implements a PCIe interface to support x8, x4, x2 and x1 lane widths.

The C802 SBC is available in five 100% software compatible versions including a commercial air-cooled version for lab development, two extended temperature air-cooled formats (per PICMG 2.0 Rev. 3.0) and two extended temperature, rugged conduction formats (per ANSI/VITA 30.1-2002).

The conduction-cooled versions utilize a thermal management frame coupled with a custom heat sink for optimal heat dissipation and higher reliability. Two temperature sensors monitor the board and provide data to the user application software.

Supported operating systems include Windows Embedded and XP Professional, Linux, and WindRiver VxWorks.

For more information, please visit www.rugged.com [1].

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[1] http://www.rugged.com