DSP-Based Data Acquisition

Ixthos has announced a new line of multiprocessor DSP boards and modules integrated into complete data acquisition sub-systems designed specifically for industrial process and control applications. The new integrated sub-systems deliver from 6,400 MIPS of fixed point DSP performance up to 16 GFLOPS of floating point performance in a single 6U VMEbus or CompactPCI slot.
The new range of control sub-systems-on-a-board combines Ixthos' advanced CHAMP (Common Heterogeneous Architecture for Multi-Processing) architecture, quad TI or PowerPC DSP processors, and multiple analog and digital I/O channels, providing fully integrated, tightly coupled real world I/O capabilities tailored to the data acquisition needs of today's most demanding process and control systems.
The new CHAMP-based sub-systems deliver high density, low cost per channel performance for high speed, real-time servo loop, position control and image processing systems. To further enhance performance, Ixthos provides DSP optimized math processing libraries, software development tools and utilities to perform common dynamic signal comparisons and complex control loop tasks. These software tools include Ixthos' proprietary utilities software package IXAtools (or IXCtools), essentially a specialized software toolkit for boosting CHAMP performance, and IXLibs-AV, a comprehensive set of C-callable math functions to exploit processor technology.
Depending on the industry standard PMC modules chosen, the CHAMP boards can provide up to 24 channels of analog I/O (16 A/D inputs, 8 D/A outputs) and 20 digital TTL I/O lines. PMC module capabilities include single ended or differential A/D output with simultaneous sampling with continuous or burst sampling up to 200,000 samples per second per channel (for up to 1.6 M samples/sec), 32 K word FIFO buffer for rapid block transfers and factory configured input ranges of 10 V, 5 V or 2.5 V. Each CHAMP board supports two PMC mezzanines modules, each with dedicated single or dual DSP resources and up to 128 Mbytes of SDRAM memory, 1 to 2 Mbytes SBSRAM per processor and 8 to 16 Mbytes of globally accessible onboard Flash EPROM.
Ixthos can also provide sub-systems to support additional transducers to interface with synchros or resolvers, RVDT/LVDT-to-digital converters, optical quadrature position encoders and more.
For industrial control applications requiring highly customizable digital and data communications I/O requirements, Ixthos' GPIO-1 PMC module provides up to 64 individually programmable LVTTL or 32 LVDS I/O lines with a user-programmable, high capacity Xilinx Virtex FPGA on a single PMC module. Other Ixthos PMCs provide industry standard I/O such as FPDP, Ethernet, Fibre channel and software programmable digital radio up/down converters for wireless remote applications.

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