

AERO 4000™ Motion Controller

The benefits
are obvious...



- **Architecture Simplicity= HIGH RELIABILITY**
 - Single PC Solution
 - Separate real-time operating system not required
 - Eliminates communication link between two internal computers
 - Reduces long-term hardware and software support
 - Built on PCI Architecture
 - Large developer base for hardware and software
 - Eliminates obsolescence issues associated with ISA and PC-104
 - Fast 32-bit transfers
- **Leading Edge Technology= OPTIMUM PERFORMANCE AND SUPPORT**
 - Fast FPGA logic for angle decoding and compensation
 - Distributed Architecture shortens cable length of sensitive signals
 - COTS technology used throughout the controller provides long term support and upgrade options
- **“Component-Based” Software= PROGRAMMING EASE**
 - Host Computer Interface calls can be made directly from C#, Visual Basic®, or LabVIEW® using Microsoft® .NET Remote Objects
 - GUI may be run remotely on any networked Windows XP® based PC
 - AERO 4000™ software is made up of multiple smaller .NET components simplifying support and providing a solid future upgrade path
 - Included sample .NET remote host application can be customized by end-user to be up and running rapidly
- **High-Performance Retrofits= EXTENDED LIFE OF EXISTING SYSTEMS**
 - The excellent choice for upgrading or retrofitting all electric & hydraulic motion simulation systems from numerous manufacturers including Carco and Contraves®

AERO 4000™ Motion Controller

Ideal Aerosmith's fourth-generation controller, the AERO 4000™, is the most advanced and capable digital servo controller on the market today. It is designed for Ideal's next generation of precision Hardware-in-the-Loop Flight Motion Systems, rate table systems, and precision centrifuges as well as upgrading existing systems currently being used in the field.

The AERO 4000™ controller brings improved performance and new features to users of older flight motion systems and rate tables. By retrofitting older analog and first-generation digital controllers (e.g. MPACS, MADES DR3100/3200, etc.) with the new AERO 4000™, users gain more accuracy, reliability, and service life with a new generation controller that has a well-defined future support path built on PC-based components.

In the AERO 4000™, Ideal continues to adhere to its long-standing philosophy of using COTS (commercial off-the-shelf) technology so that all of its motion-based test systems will benefit customers with the lowest life-cycle cost of ownership. Ideal Aerosmith has more than 20 years of experience supporting this method.

The AERO 4000™ makes complete use of PCI-based COTS hardware. Ideal Aerosmith has partnered with a state-of-the-art motion control card vendor to provide standard DSP control loop hardware, while allowing Ideal Aerosmith engineers to develop and optimize the DSP application code. This partnership ensures cost-effective and long-term hardware support. The DSP operates at up to a 5kHz frame rate for tight closed-loop control. The DSP and reflective memory interface use a proprietary method to exchange information independent of the Windows® Operating System for Hardware-in-the-Loop applications, while the Graphical User Interface (GUI) and other non-real time communications interfaces run on a 32-bit Windows® platform.

AERO 4000™ Key Features

- Advanced trajectory and servo algorithms execute at up to a 5 kHz frame rate for high-fidelity motion control
- Supports Inductosyn®, synchro/resolver, and optical encoder feedback systems
- Digital sampling of analog transducers at the table eliminates noise-prone signal lines, improving signal fidelity
- Windows®-based controller - connects easily to customer network infrastructure
- Optional Drop-in Replacement via Software Command Set emulation for various controllers
- Host Computer Interfaces: GPIB, 100baseT Ethernet, RS-232
- Reflective Memory Interfaces (Optional): SCRAMNet®+ or VMIC®
- Supports brushless and brush-type servo motors as well as hydraulic actuators

