IDEAL AEROSMITH
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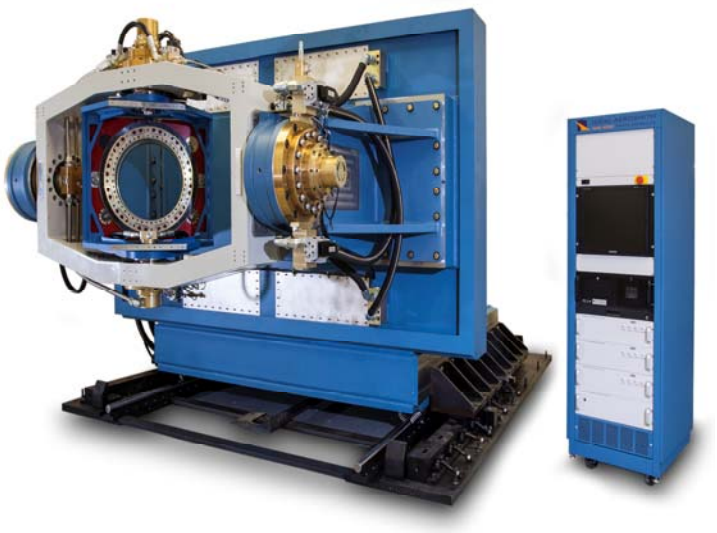
Datasheet

Model 2443H-HR
Three-Axis Hydraulic
Flight Motion Simulator (FMS)



STANDARD FEATURES

- Position Accuracy: ±10 arc sec
- Rate Accuracy: ±0.05%
- Inner axis rate: 360 deg/sec
- Rack-mounted AERO 4000 Digital Controller
  - Front panel display of status and data
  - Local and remote operation
  - Trapezoidal velocity profiles (in rate mode) with programmable velocity and acceleration
  - Sinusoidal motion generator, with programmable amplitude and frequency
  - Profile mode for position, velocity, and flight (PVA) commands
  - Programmable analog inputs and outputs

DESCRIPTION

The 2443H-HR is one of Ideal Aerosmith's standard Three-Axis Flight Motion Simulator models designed for Hardware-In-The-Loop (HWIL) Seeker Guidance Testing. This system is configured for interfacing to an RF chamber. Extremely efficient hydraulic actuators allow high system utilization, such as Monte Carlo-type test scenarios, on a time-continuous basis. This three-axis FMS system is controlled with Ideal's flexible AERO 4000 Controller which provides real-time motion control via several industry-standard high-speed interfaces.

The 2443H-HR features a geared hydraulic drive on the innermost axis, high-performance direct drive hydraulic vane actuators on the Middle and Outer axes and precision optical encoders on all axes. The AERO 4000 digital signal processor-based (DSP) controller provides accurate and reliable motion control. The user can operate the FMS from the AERO 4000 Graphic User Interface for local control, or remotely via a computer interface. It affords easy operation, and can accommodate the Ideal Aerosmith Table Language (ATL) for remote operation. The AERO 4000 controller comes standard with IEEE-488, RS-232, and Ethernet communication interfaces.

SPECIAL FEATURES

- Optional servo valves and manifolds available to provide higher axis rates
- RF shielding enclosure integrated into the base structure design with accommodations for interfacing table base to RF chamber and customer wiring penetrations
- Table base configured with an actuated linear positioning system and multiple mounting/anchoring positions to simplify test article loading and system calibration
- Vertical base design that will accommodate either a vertical or horizontal outer axis orientation. (horizontal outer axis shown in photograph)
- Middle axis gimbal that accommodates interchangeable inner axis drive designs to satisfy future testing requirements

OPTIONS

- Various slip ring packages or wire wrap configurations
- Electric drive assembly on inner axis to satisfy high-speed test requirements
- SCRAMNet or VMIC shared-memory interfaces
- GPS and/or 10MHz timing synchronization module

For more detailed information, contact Ideal to request a Specification Document.

Performance Specifications			
	Inner	**Middle**	**Outer**
Rotational Freedom (deg)	± 540	±60	±55
Positioning			
• Accuracy, arc sec (deg)	±20 (±0.006)	±10 (±0.003)	±10(±0.003)
• Repeatability, arc sec (deg)	±3.6 (±0.001)	±3.6 (±0.001)	±3.6 (±0.001)
• Resolution, (deg)	0.0001	0.0001	0.0001
Rate			
• Maximum, deg/sec	±360	±300	±300
• Minimum, deg/sec	±0.001	±0.001	±0.001
• Display Resolution, deg/sec	±0.0001	±0.0001	±0.0001
Acceleration, max., deg/sec² (sinusoidal move)	10,000	6,000	6,000
Bandwidth, -3dB, (with nominal payload)	18	14	14

*Values listed are maximum values and are dependent upon system configuration. Performance parameters may vary between various configurations of the Model 2443H.

System Physical Configuration	
Inner (roll) axis	The nominal test load may be secured to a precision mounting diameter and corresponding hole pattern. Custom tabletop and interface patterns available upon request.
Number of User Lines	Optional slip ring package is 48 lines at 5 amps per line. Custom packages are available. System shown has limited travel configuration without slip rings.
Test Load	
• Nominal	100 lbs (45.5kg), 15” (380mm) diameter, 50” (1270mm overall) (30” (762mm) long from intersection of axes to rear of payload)
• Maximum	275 lbs (125kg), 15” (380mm) diameter, 50” (1270mm overall) (30” (762mm) long from intersection of axes to rear of payload)
AERO 4000 Digital Controller	Request an AERO 4000 Controller data sheet for more information.
• Type & Configuration	AERO 4000 Test Table Controller configured in a 19-inch Cabinet.
• Communication Interfaces	IEEE-488, RS-232 and Ethernet ports available to user. SCRAMNet or VMIC reflective-memory interfaces available as options.

For additional information or special requirements, contact Ideal Aerosmith. Specifications subject to change without notice. Please call for pricing. Rev B