Model 2453H-ER
Three-Axis Electro-Hydraulic
Flight Motion Simulator (FMS)

STANDARD FEATURES

- Position Accuracy: ±10 arc sec
- Inter-axis Orthogonality: 30 arc sec
- Axes intersection: ±0.02" (±0.5mm)
- Rate Accuracy: ±0.01%
- Roll axis rates up to 20 Hz (1200 RPM)
- 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 2453H-ER is Ideal Aerosmith's base model Three-Axis Flight Motion Simulator for Hardware-In-The-Loop (HWIL) Seeker Guidance Testing. Extremely efficient hydraulic actuators allow high system utilization – such as Monte Carlo-type test scenarios – on a time-continuous basis. As with our three-axis FMS systems, Ideal's flexible AERO 4000 Controller affords real-time motion control via several industry-standard high-speed interfaces.

The 2453H-ER features a direct-drive DC brushless motor for the innermost (roll) axis, high-performance
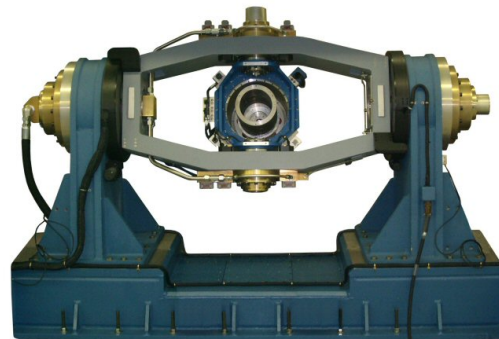
hydraulic vane actuators on the Pitch and Yaw axes, and precision optical encoders on all axes. The AERO 4000 digital signal processors-based (DSP) controller provides accurate and reliable motion control. The user can operate the FMS from the AERO 4000 Graphic User Interface for local control, or remotely 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.

OPTIONS

- Various slipring packages or wire wrap configurations
- Systran Corporation SCRAMNet or VMIC shared-memory interfaces

For more detailed information, contact Ideal to request a Specification Document.
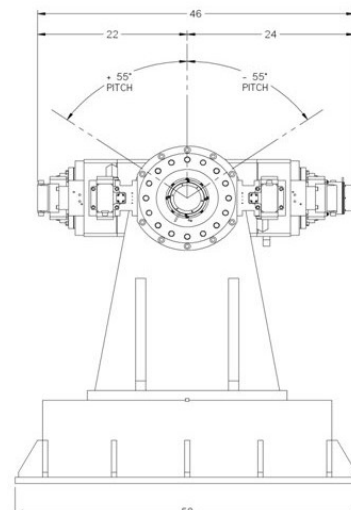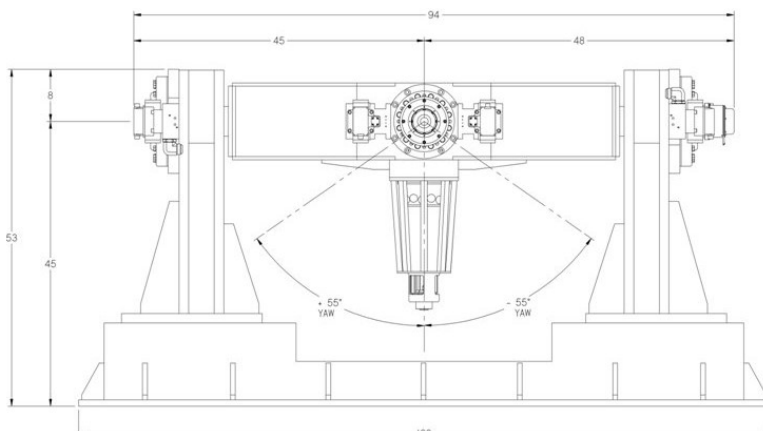
Performance Specifications			
	Inner (Roll)	**Middle (Yaw)**	**Outer (Pitch)**
Rotational Freedom Options	Unlimited	±50	±50
Positioning			
• Accuracy, arc sec (deg)	±10 (±0.0028)	±10 (±0.0028)	±10 (±0.0028)
• Repeatability, arc sec (deg)	±5 (±0.0014)	±5 (±0.0014)	±5 (±0.0014)
• Resolution, (deg)	0.0001	0.0001	0.0001
Rate			
• Maximum, deg/sec	±7200	±400	±400
• Minimum, deg/sec	±0.001	±0.001	±0.001
• Display Resolution, deg/sec	±0.001	±0.001	±0.001
• Accuracy, % ± Resolution	±0.01 (measured over 360° of travel)	±0.02 (measured over 90° of travel)	±0.02 (measured over 90° of travel)
Acceleration, max., deg/sec² (sinusoidal move)	20,000	15,000	15,000
Bandwidth, -3dB, (with nominal payload)	45	35	35

*Values listed are maximum values and are dependent upon system configuration. Performance parameters may vary between various configurations of the Model 2453H-ER.

System Physical Configuration	
Roll plate	The nominal test load is secured by a collet design. Custom tabletop and interface patterns available upon request.
Roll Interface Connectors	MS-type connector(s), located roll/test load interface.
Number of Users Lines	Standard slipring package is 48 lines at 5 amps per line. Custom packages are available.
Test Load	
• Nominal	44 lbs (20kg), 2.75" (70mm) diameter, 24" (600mm) long
• Maximum	132 lbs (60kg), 14" (350mm) diameter, 24" (600mm) long
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. Systran Corporation SCAMNet or VMIC shard-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 D