IDEAL AEROSMITH
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Datasheet

# Model 2433HV
# Three-Axis 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%
- Inner axis rates up to 10 Hz (600 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 2433HV 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 2433HV 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

- 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. (vertical 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
- 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 Options** | Continuous or limited | ±55 | ±115 |
| **Positioning** | | | |
| • Accuracy, arc sec (deg) | ±30 (±0.01) | ±10 (±0.003) | ±10 (±0.003) |
| • Repeatability, arc sec (deg) | ±10 (±0.003) | ±5 (±0.0014) | ±5 (±0.0014) |
| • Resolution, (deg) | 0.0001 | 0.0001 | 0.0001 |
| **Rate** | | | |
| • Maximum, deg/sec | ±600 | ±400 | ±400 |
| • 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) | 30,000 | 10,000 | 10,000 |
| **Bandwidth, -3dB,** (with nominal payload) | 35 | 20 | 20 |

*Values listed are maximum values and are dependent upon system configuration. Performance parameters may vary between various configurations of the Model 2433H.

| System Physical Configuration | |
|---|---|
| **Inner (roll) tabletop** | The nominal test load is secured by a collet design.<br>Custom tabletop and interface patterns available upon request. |
| **Number of User Lines** | Standard 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 | 44 lbs (20kg), 8” (400mm) diameter, 24” (600mm) long |
| • Maximum | 150 lbs (68kg), 14” (350mm) diameter, 30” (750mm) 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. SCRAMNet 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 -