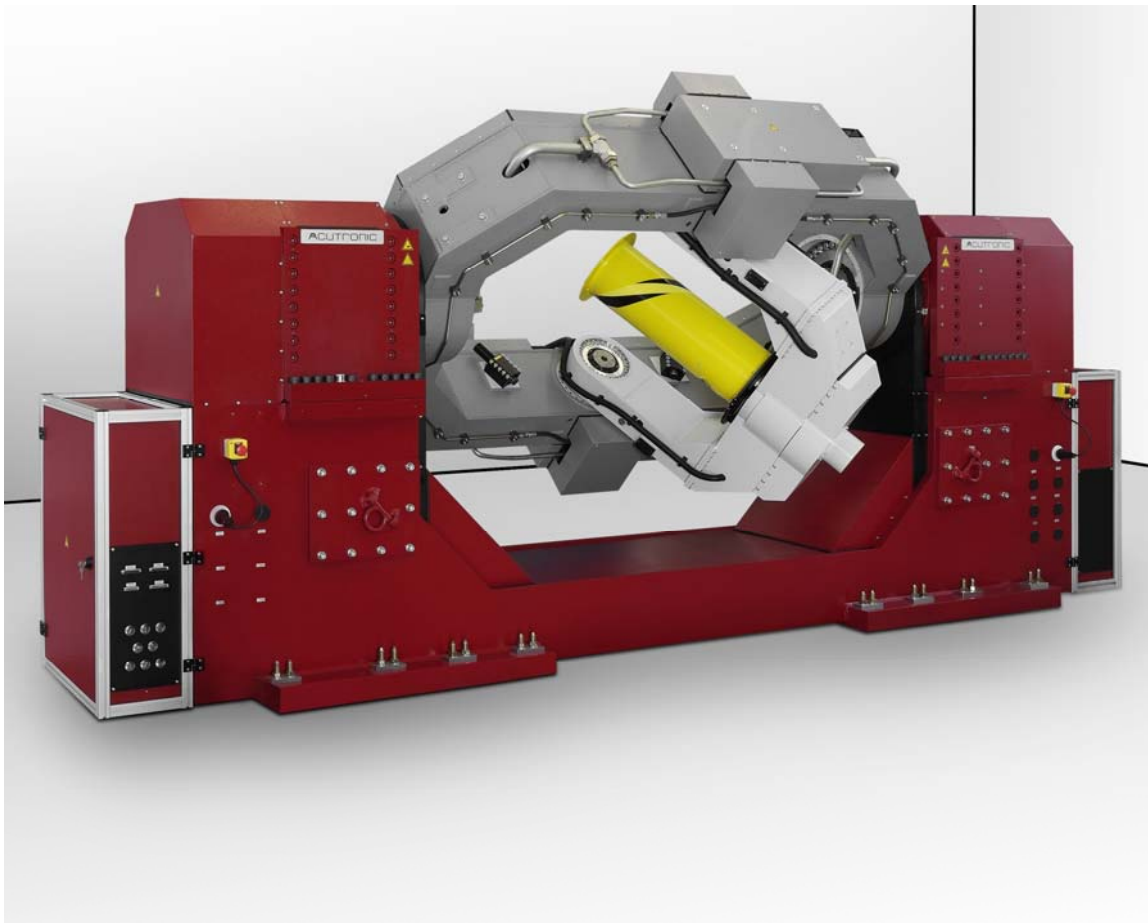


Hardware-in-The Loop Flight Motion Simulator

HD33-500-600-TT Three Axis Flight Motion Simulator



Description

The Series HD33-500-600-TT Flight Motion Simulator (FMS) is a precision, high dynamic 3-Axis Missile FMS. The system is designed for high dynamic missile test. The HD33-500-600-TT provides a comprehensive platform for Hardware-in-the-Loop (HWIL) simulation of guided missiles, munitions and other inertial systems.

The 3-Axis FMS is configured with a horizontal outer (pitch) axis, a middle (yaw) axis, which is orthogonal to the outer axis and an inner (roll) axis supported by the middle axis gimbal. The inner axis is the payload mounting area.

The inner axis has continuous angular freedom and is driven by a high torque brushless AC motor. The middle and outer axes have limited angular motion and are driven by hydraulic actuators. A hard-anodized aluminum tabletop on the roll axis serves as the payload mounting surface. As an option, a bearing ring attached to the middle axis can support

the Unit Under Test (UUT) during high dynamic motion.

Construction materials used are treated for long-term dimensional stability. The stiffness of the system is such that orthogonality of the axes and bearing wobble are maintained, virtually independent of axis rate or position. Protective coatings are used to prevent corrosion and outer surfaces are painted.

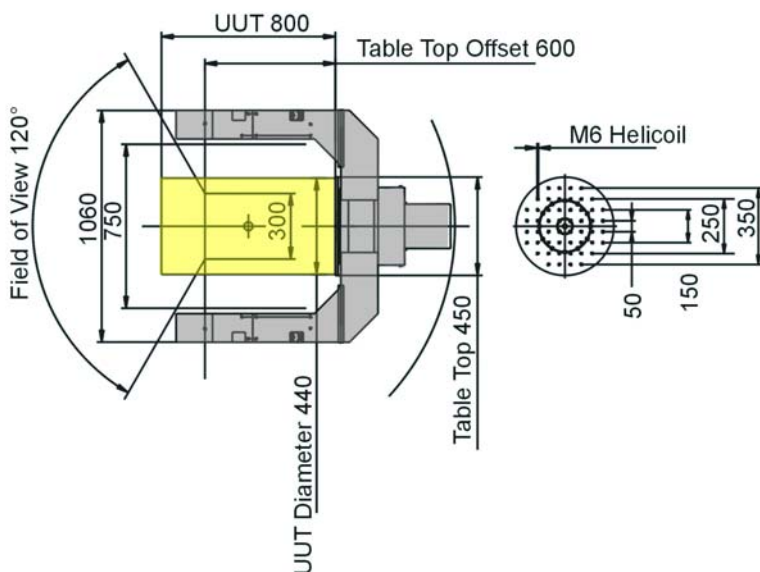
The real time digital controller, ACUTROL® Model ACT3000 controls the table. The controller has a colour, touch sensitive operator interface flat panel and scalable analog input/output interfaces. Programmable Event Pulses can be used for calibration and synchronization with external computers or test equipment. Typically, the standard digital interface Ethernet (TCP/IP) and IEEE-488 are supplemented with a real time computer interface. SCRAMNet and VMIC reflective memory interfaces are the preferred standard in the HWIL test environment.

Performance Specification FMS

	ROLL	YAW	PITCH
	Inner	Middle	Outer
Design Features			
Actuator	AC-torquer	Dual vane hydraulic	Single vane hydraulic
Electrical access to UUT	Slipring	Twist cable	Twist cable
Axis Intersection within sphere of	1 mm radius		
UUT			
Payload Size, Nominal	380 mm dia. x 800 mm long		
Payload Mass, Nominal	80 kg		
Table Top	450mm Dia. M6 Hole Pattern on 50mm grid		
Payload, inertia	0.8kg.m ² roll; 5.5kg.m ² pitch & yaw		
Slipring lines to UUT (Standard)	10 x 20A; 50 x 2A,		
Field Of View	120° Cone from intersection of axis with 300mm dia aperture		
Specification			
Angular freedom, nominal	continuous	+/-60 deg	+110 / -110 deg
Position resolution	0.00001 deg	0.00001 deg	0.00001 deg
Position accuracy	+/-0.001deg	+/-0.002deg	+/-0.002deg
Position repeatability	+/-0.001deg	+/-0.001deg	+/-0.001deg
Rate, peak	+/-1'200 deg/s	+/-240 deg/s	+/-240 deg/s
Rate, minimum	0.001 deg/s	0.003 deg/s	0.003 deg/s
Rate, accuracy 1°/s over 10°	0.10%	0.10%	0.10%
Acceleration peak with load	18'000 deg/s ²	10'000 deg/s ²	10'000 deg/s ²
Dynamic performance			
Bandwidth -3db, nominal (tolerance +/-5Hz)	40Hz	18Hz	18Hz

Options

- Extended rate range
- Custom Table Tops
- Customer Specified Sliprings including:
 - RF slipring
 - 1553 Data Lines
 - GPS slipring
 - Gas slipring
- Real Time Interfaces
 - VMIC
 - SCRAMNet



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