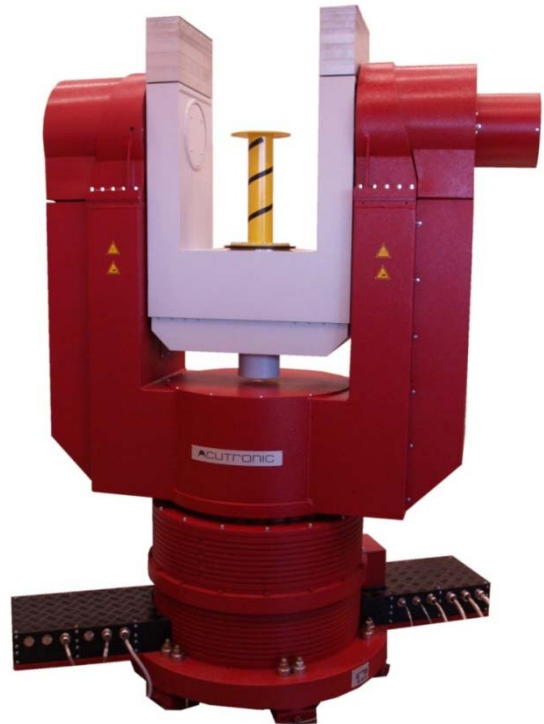


High Dynamic Motion Simulator

Three Axis Motion Simulator Series AC3347-140

Modes of Operation

- Absolute Positioning:
0.00001 deg. resolution
- Rate – absolute and relative, excellent instantaneous rate stability
- Track Mode – for real time simulation of complex motion profiles
- Synthesis mode – Sinusoidal motion, command amplitude and frequency
- Local or remote control via touch sensitive operator panel or digital interface
- Analog readout and command with 16 bit resolution



Description

The AC3347-140 Motion Simulator has three degrees-of-freedom; Roll, Pitch and Yaw or inner, middle and outer respectively

The middle gimbal is an open design allowing unobstructed optical access to the tabletop. The simulator is for this reason often used for the development, testing and calibration of stabilized optical sights or optical seekers. The large offset between the mounting surface or table top and the intersection of the axes offers the possibility to locate the optical axis at the intersection of the axes.

Slipping assemblies featuring power rings and shielded signal rings permit electrical access to the UUT. Beside the standard slipping configuration, there is a wide variety of slipping capsule designs and wiring schematics available. Direct drive permanent magnet brushless torquers drive the axes. The servo feedback transducers are also direct mounted

and consist of a two-pole resolver and a 720-pole Inductosyn.

The ACUTROL®3000 controls the table. The digital controller has a touch sensitive display and scalable analog input/output interfaces. Optionally the standard digital interface, IEEE-488 or Ethernet (TCP/IP) can be supplemented with high speed reflective memory interfaces for real time, flight motion profiling.



ACUTROL®3000 Front Panel

Design Concept

Vertical outer yaw axis, horizontal open middle pitch axis, inner roll axis with table top offset from the axis intersection by 400mm.
 All axes direct drive brushless torquers with continuous rotation. Mechanical stow locks in all axes
 Controller: Three Axis ACUTROL®3000 with analog and digital interfaces for command and readout.
 Power cabinet with amplifiers with power supplies, chokes and motor filters

Dimensions

UUT Size	Up to 250 mm dia x 600mm long		
UUT Interface	Table top material	Aluminum - hard anodized	
	Table top dia	260 mm	
	Table top hole pattern	25 mm grid with M6 inserts	
Optical access	Field of view (cone)	40° from axis intersection	
	Table top offset to axis intersection	400mm	
Unit under Test (UUT)	Mass for test	10kg	
	Mass max.	60kg	
	Dimensions of payload for test	90 mm dia x 400 mm long	
Slipring Lines	60 lines (standard):		
		10 x 20A	50 x 2A
Simulator	Height of simulator, max	2'900 mm (including turn radius)	
	Width across outer axis	1'800 mm	
	Base dia. (Nominal)	1'200 mm	
	Mass of simulator	3'000 kg	
Power Cabinet	Height	2'200 mm	
	Width	2'450 mm	
	Depth	600 mm	

	<u>ROLL, inner axis</u>	<u>PITCH, middle axis</u>	<u>YAW, outer axis</u>
Orthogonality	3 arcsec	5 arcsec	
Wobble	+/-1 arcsec	+/-3 arcsec	+/-2 arcsec
Axis Intersection		<1mm	

Dynamic Parameters

	<u>ROLL, inner axis</u>	<u>PITCH, middle axis</u>	<u>YAW, outer axis</u>
Angular freedom	continuous	continuous	continuous
Positioning accuracy	1 secs RSS	2 secs RSS	1 secs RSS
Rate range	1'500 degs/s	500 degs/s	400 degs/s
Rate resolution (command)	0.00001 deg/s	0.00001 deg/s	0.00001 deg/s
Rate stability over 1° period	0.1%	0.1%	0.1%
	over 10° period	0.005%	0.005%
	over 360° period	0.0001%	0.0001%
Acceleration with 10kg load	15'000 degs/s ²	5'000 degs/s ²	3'000 degs/s ²
Bandwidth (-3db or -90°)	>>50 Hz	20 Hz	20 Hz

Options

- Table platen to customer's specification, different material size and design.
- Digital interface in addition to the standard IEEE-488 and Ethernet (TCP/IP) optionally available are: SCRAMNet or VMIC reflective memory
- Extended dynamic range
- Slipring options: consult ACUTRONIC
 - Gas rotary joints
 - RF Rotary joints
 - 1553 data lines

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