

High Dynamic Motion Simulator

Three Axis Motion Simulator Series AC3347-210



Modes of Operation

- Absolute Positioning: 0.00001 deg. resolution
- Rate – absolute and relative, excellent instantaneous rate stability
- Track Mode – for real time simulation of 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 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 offset between the mounting surface for the UUT 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® ACT3000 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.

Model AC3347-210

Design Concept

Vertical outer yaw axis, horizontal open middle pitch axis, inner roll axis with table top.
All axes direct drive brushless torquers, continuous rotation

Controller: Three Axis ACUTROL®3000 with analog and digital interfaces for command and readout.

Power Amplifier with power supply, chokes and filters

Dimensions

Simulator

Table top material	Aluminum	hard anodized
Table top dia	415 mm	
Mounting hole pattern	50 mm grid	with M6inserts
Height of simulator, max	2'830 mm	
Width across outer axis	1'700 mm	
Base dia. (Nominal)	1'200 mm	
Inner axis offset to Axis middle axis	250mm	
Payload, nominal (peak)	15kg, (60kg)	

Power Cabinet

Height	2'200 mm
Width	3'650 mm
Depth	800 mm

Unit under Test (UUT)

Weight max	60kg
Size max	450 dia x 750 height

Electrical lines to UUT

60 lines total: 10 x 20A
50 x 2A

	<u>ROLL, inner axis</u>	<u>PITCH, middle axis</u>	<u>YAW, outer axis</u>
Orthogonality		3 arcsec	5 arcsec
Wobble	2 arcsec	3 arcsec	2 arcsec
Dynamic Parameters			
Angular freedom	continuous	continuous	continuous
Positioning accuracy	1 secs RSS	1 secs RSS	1 secs RSS
Rate range	1'000 degs/s	500 degs/s	500 degs/s
Rate resolution	0.00001 deg/s	0.00001 deg/s	0.00001 deg/s
Rate accuracy	0.00010%	0.00010%	0.00010%
Acceleration;			
15kg load	>>40'000 degs/s ²	7'000 degs/s ²	6'000 degs/s ²
60kg Load	40'000 degs/s ²	7'000 degs/s ²	6'000 degs/s ²
Bandwidth (-3db)	>>80 Hz	30 Hz	30 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

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