

Inertial Guidance Test Instrument, Motion Simulator

Three Axis Motion Simulator Model AC3367-TCC

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
- Large temperature chamber with
CO₂ cooling and electric heating



Feature

Direct drive, brushless motors produce high acceleration in all axes. A CO₂ gas cooled temperature chamber is installed on the middle axis gimbal.

Description

The AC3367-TCC Motion Simulator has three degrees-of-freedom. The middle gimbal (Pitch Axis) has an open frame and supports the temperature chamber. The inner axis is of a table top design which is enclosed and rotates within the temperature chamber. The table top has M6 threaded hole pattern on a 50mm grid to secure the Unit Under Test (UUT) or UUT adapter. Special table tops with fixtures, dowels pins or UUT adapters can be supplied on request.

Slipring assemblies feature power rings and shielded signal rings. Signal lines have four brush contacts per ring to avoid micro interruptions, which could corrupt digital signals. A wide variety of slipring capsule designs and wiring schematics are optionally available. A GPS rotary joint and MIL1553 slipring ways are available if required.

The ACUTROL® Model ACT3000 controls the table. The digital controller has a touch sensitive display and scalable analog input/output interface. Optionally, the standard digital interfaces; IEEE-488 and Ethernet (TCP/IP) can be supplemented with a real time VMIC or SCRAMNet interface.

Dimensions

Height, max	2200 mm
Height of axis intersection	1450 mm
Width across outer axis	2250 mm
Base, diameter	1000 mm
Inner - tabletop dia.	660 mm
UUT hold down	M6 x 50mm pitch

Unit Under Test (UUT)

Payload mass, peak	100 kg
UUT Dimensions	550mm dia x 500 high
Electrical lines to UUT (std)	100 lines total: 10 x 20A 90 x 2A

	<u>ROLL, inner axis</u>	<u>PITCH, middle axis</u>	<u>YAW, outer axis</u>
Orthogonality	5 arcsec	5 arcsec	5 arcsec
Wobble	3 arcsec	5 arcsec	5 arcsec
Dynamic Parameters			
Angular freedom	Continuous	continuous	continuous
Positioning accuracy	1 arcsec RSS	1.5 arcsec RSS	1 arcsec RSS
Position resolution	0.00001 deg	0.00001 deg	0.00001 deg
Rate range	1'000 ^o /s	600 ^o /s	400 ^o /s
Rate resolution	0.0001 ^o /s	0.0001 ^o /s	0.0001 ^o /s
Rate stability	0.0001% over 360 ^o	0.0001% over 360 ^o	0.0001% over 360 ^o
Installed torque	90Nm	900Nm	7000Nm
Inertia, no load	1.3 Kgm ²	100 Kgm ²	550Kgm ²
Acceleration, no load	4'000 ^o /s ²	500 ^o /s ²	700 ^o /s ²
Bandwidth (-3dB)	50Hz	25Hz	30Hz
Temperature Chamber			
Range	-40 ^o C to +70 ^o C		
Stability	+/- 1 ^o C		
Gradients	9 ^o C max		
Cooling	CO ₂ gas		

Options

- Optional digital interface are: RS-232, VMIC or SCRAMNet
- Temperature Chamber with extended temperature range (-55°C to +125°C)
- Removable temperature chamber
- Cooling by LN₂ (TCN)
- Slipping options including GPS (HF) and MIL1553

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