ACUTRONIC

The Driving Force in Motion Simulation

Inertial Guidance Test Instrument, Rate and Vibration Table

Single-Axis Rate Table Model AC1180-Air Bearing

The Series AC1180-AB Single-Axis rate table is the most precise single-axis table in the ACUTRONIC range.

The model allows testing of inertial grade Inertial Measurement Units (IMU's) and Inertial Navigation Systems (INS'). The table has been optimized for rotational vibration test and high frequency characterization of inertial components.

High precision and ultra smooth rates are enhanced by the use of an air bearing.

When compared with the highest precision mechanical bearings, air bearings have the advantage of reduced wobble, low friction and no wear. Air bearings air especially useful for angular vibration simulation and where very low, smooth rates are required.

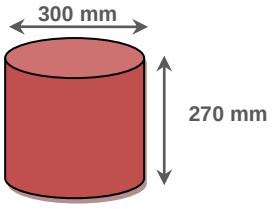
The axis is driven by a direct drive brushless motor. Brushless motors offer high torque, and since they have no wear parts the reliability is excellent. PWM drive amplifiers produce the required current to power the motors. The motion simulator offers the highest instantaneous rate stability in its class and precise, stable absolute positioning.

Slipring capsules take the signals and or power from the table base to the device under test. ACUTRONIC offers three standard slipring packages for better economy.

Simulation is enhanced by the addition of a thermal chamber. The chamber is heated by an electric element and cooling may be by expansion of liquid nitrogen (TCN) expansion of carbon dioxide (TCC) or closed circuit mechanical refrigeration (TCM)

The table is controlled by the ACUTROL®3000e digital controller. For more details, please refer to the ACUTROL®3000e datasheet.

Unit Under Test (UUT)	
Payload mass (nominal)	10 kg
Table Top	Aluminium 400mm dia.
Hole Pattern	50mm grid x M6 threads
Flatness	0.02 to dia. 320mm
Payload envelope*	300 mm dia. x 270 mm h.
*Larger possible	
Sliprings to UUT	Yes, both axes



Payload envelope (nominal)

Specification Summary	
Angular freedom	continuous
Position	
Accuracy	0.5 arc sec RSS
Command resolution	0.00001 deg
Repeatability	< 0.5 arc sec
Rate	
Range	± 1'000 deg/sec
Stability	
-over 10 deg	0.005%
Command resolution	± 0.0001 deg/sec
Dynamic	
Servo bandwidth (constant rate, no load)	≥200 Hz -3dB
Excitation	≥ 600Hz
Peak Acceleration (no load)	57'000 deg/sec^2
Peak Acceleration (with nominal load)	19'000 deg/sec^2
Mechanical	
Wobble	± 0.5 arc sec

Temperature Chamber Option	
Coolant	Liquid Nitorgen (TCN), Carbon Dioxide (TCC), Closed Circuit Mechanical (TCM)
Range	+100°C to -60°C
Stability	± 0.5°C
Uniformity	1°C
Rate of cooling	+n°C/min; -n°C/min

Slipring Options	Ways	Connectors
Wiring Typ 1A	70 lines rated 2A, 150VDC	2x37pin D-Sub
Wiring Typ 2A	45 lines rated 2A, 150VDC	1x 50pin D-Sub
	+10 lines rated 5A, 150VAC	1x 15pin D-Sub
Wiring Typ 3A	45 lines rated 2A, 150VDC	1x 50pin D-Sub
	+4 lines rated 20A, 400VDC	1x 5pin D-Sub (5W5)

Options

- RS422 or GPIB (IEEE488) and Real time digital interfaces; VMIC or SCRAMNet
- Custom slipring & rotary joint configurations: GPS, RF or gas rotary joints. Contactless Ethernet or fiber optic
- Custom performance parameters; increased dynamics - rate/acceleration

The specifications identified in this data sheet are representative of standard systems. To satisfy customer specific requirements ACUTRONIC is able to design systems with specifications that are increased or decreased relative to standard systems.

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