ACUTRONIC

The Driving Force in Motion Simulation

Inertial Guidance Test and Calibration System

Three-Axis Model AC317-TCN

- **Suitable for inertial sensor characterization and calibration**
- **Cost-effective table with short lead-times**
- **Integrated electronics to provide position, rate and acceleration control**
- **Commercial off-the-shelf controller, drive system and absolute sine encoder**
- **Configurable analog I/O (16 Bit, 10V) and event pulse output on BNC**
- **4 Programmable digital inputs**

The AC317-TCN features an integrated motion controller which allows precise measurement and closed-loop controls of position, rate and acceleration. This integrated motion controller is at the heart of the AC317's compact and economical design, allowing all power, control, sensing and communication electronics to be integrated within the motion simulator structure. The AC317 can be configured and controlled either locally, using a keyboard, monitor and mouse, or remotely from a host computer using a 10/100 Base-T Ethernet port.

To maintain compatibility with other ACUTROL® systems, the AC317 is pre-equipped with the EasyACL application which supports a subset of the industry standard ACUTROL Command Language (ACL).

Each AC317-TCN system comes complete with the 3-axis motion table, a separate 19 in temperature control rack with an interconnecting Ethernet cable, an LN2 rotary joint support gantry, and system documentation.

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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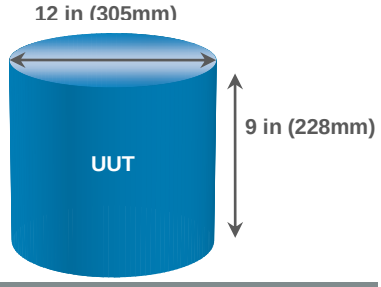
Unit Under Test (UUT)	
Mass	40 lbs (18 kg)
Maximum envelope	12 in x 9 in (304.8 mm x 228.6 mm)
Table top diameter	13 inch (330.2 mm) diameter aluminum tabletop that rotates inside of the temperature chamber. Typical mounting pattern is ¼-20 tapped holes on a 2 inch (25.4 mm) grid.
Sliprings to UUT	25 customer slipring lines rated at 2 amps per line terminated in Sub D connectors at the tabletop and base.



Specifications	Inner Axis	Middle Axis	Outer Axis
Angular freedom	continuous	continuous	continuous
Position			
Accuracy	± 15 arc sec	± 15 arc sec	± 15 arc sec
Command resolution	0.001 deg	0.001 deg	0.001 deg
Repeatability	± 5 arc sec	± 5 arc sec	± 5 arc sec
Rate			
Range: individually	± 1,000 deg/sec	± 500 deg/sec	± 500 deg/sec
simultaneous	± 1,000 deg/sec	± 150 deg/sec	± 150 deg/sec
Stability			
-over 360 deg	0.001%	0.001%	0.001%
-over 10 deg	NS	NS	NS
-over 1 deg	NS	NS	NS
Command resolution	± 0.001 deg/sec	± 0.001 deg/sec	± 0.001 deg/sec
Dynamic			
Acceleration (no load)	3,000 deg/sec^2	50 deg/sec^2	50 deg/sec^2
Mechanical			
Wobble	20 arc sec max	20 arc sec max	20 arc sec max
Orthogonality	< 30 arc sec	< 30 arc sec	

Major Simulator Dimensions	
Simulator (L x W x H)	115 in x 36 in x 93 in (2,921 mm x 914 mm x 2,362mm)
Payload / table top height (from floor)	59 in (1,498 mm)
Intersection of Axes	59 in (1,498 mm)

Temperature Chamber (TC)	
Working volume	13.5 in x 17 in x 9 in height (above tabletop) (342.9 mm x 431.8 mm x 228.6 mm height)
Temperature range	-45°C to +85°C
Temperature stability (working volume)	±1°C
Cooling gradients LN_2 (TC**N**)	-5°C/min
Heating gradient	5°C/min

Options

- Custom tabletop or UUT mounting fixture
- Increased simultaneous rates (requires the addition of counterweights to optimize weight distribution and axis inertias)
- GN_2 purge for the temperature chamber
- Model AC317 without temperature chamber, with an 18 inch (457.2 mm) diameter aluminum tabletop
- Installation support, training and calibration

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