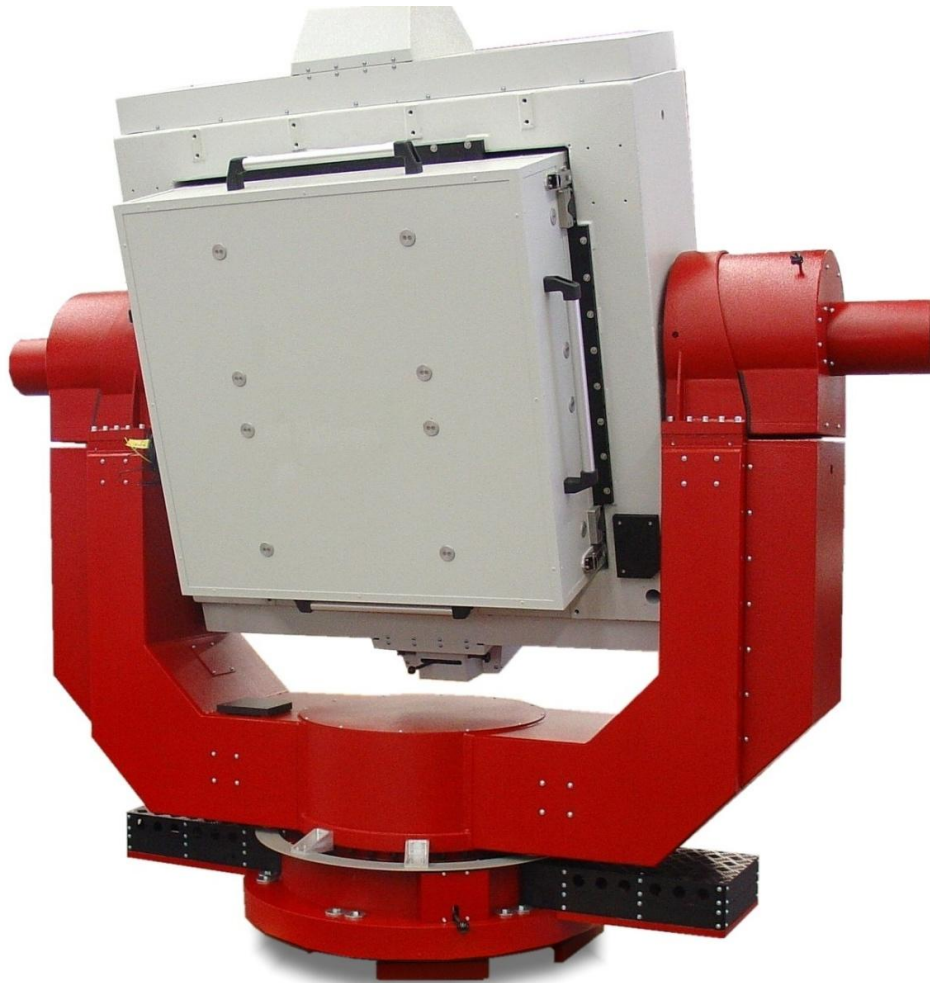




## Inertial Guidance Test and Calibration System

# Three-Axis Motion Simulator AC3380-TC



The AC3380-TC 3-Axis Motion Simulator has three degrees-of-freedom. The middle gimbal (Pitch Axis) and inner gimbal (Roll Axis) are closed frames offering high torsional stiffness. The inner gimbal has mounting surfaces with an M8 hole pattern to fasten the payload adapters. A temperature chamber with gas cooling and electric heating is fastened to the middle axis gimbal. Large removable doors allow access to the UUT. The chamber can be specified with either LN<sub>2</sub> (TCN) or CO<sub>2</sub> (TCC) cooling. CO<sub>2</sub> coolant is not cold in the

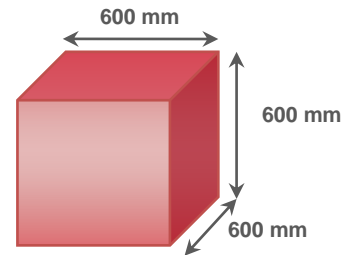
pipes and can pass through tubes in the slipping shaft and enter the system through the pitch axis gimbal, whereas LN<sub>2</sub> requires insulated piping and a rotary joint suspended from a gantry above the simulator.

Slipping assemblies in all axes provide electrical access to the Unit Under Test (UUT). Signal lines have four brush contacts per ring to avoid micro interruptions, which could corrupt digital signals. A wide variety of slipping capsule designs and wiring schematics are optionally available.



### Unit Under Test (UUT)

Mass (max)	100 kg
Mass (nominal)	60 kg
Maximum envelope	600 mm cube
Sliprings to UUT	Signal 90 ways, 2 A @ 150VDC Power 10 ways, 20 A @ 400VAC (custom options available)



### Specifications

	Inner Axis	Middle Axis	Outer Axis
Angular freedom	continuous	continuous	continuous
<b>Position</b>			
Accuracy	1.0 arc sec RSS	1.0 arc sec RSS	1.0 arc sec RSS
Command resolution	0.00001 deg	0.00001 deg	0.00001 deg
Repeatability	< 1 arc sec	< 1 arc sec	< 1 arc sec
<b>Rate</b>			
Range	± 600 deg/sec*	± 400 deg/sec*	± 200 deg/sec*
Stability			
-over 360 deg	0.0001%	0.0001%	0.0001%
-over 10 deg	0.005%	0.005%	0.005%
-over 1 deg	0.05%	0.05%	0.05%
Command resolution	± 0.0001 deg/sec	± 0.0001 deg/sec	± 0.0001 deg/sec
<b>Dynamic</b>			
Small signal bandwidth (No load)	60 Hz -3dB Gain	15 Hz -3dB Gain	20 Hz -3dB Gain
Acceleration (Nominal load)	2'500 deg/sec <sup>2</sup>	600 deg/sec <sup>2</sup>	600 deg/sec <sup>2</sup>
<b>Mechanical</b>			
Wobble	2 arc sec	4 arc sec	3 arc sec
Orthogonality		4 arc sec	4 arc sec

\*Extended Rate Range Possible

### Major Simulator Dimensions (nominal)

Simulator height (max)	2'500 mm
Turn radius outer axis	2'500 mm
Base dia.	1'010 mm

### Temperature Chamber

Coolant	CO <sub>2</sub> Cooling (TCC)	LN <sub>2</sub> Cooling (TCN)
Range	-40 to +85°C	-40 to +85°C
Stability	+/-1°C	+/-1°C
Gradients	-3°C/min +6°C/min	-5°C/min +6°C/min

### Options

- Real time digital interfaces; VMIC or SCRAMNet
- GPS, RF or gas rotary joints
- Custom slipring & rotary joint configurations
- Custom performance parameters
- Increased/ rate/acceleration
- Custom UUT mounting arrangements and fixtures

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.