

## FDD-331-TC ■

The FDA-332-TC Motion Simulator is a high dynamic precision test instrument. The system is designed to simulate both vibration and precise slow motion while maintaining high pointing accuracy. The simulator is often used as a Flight Motion Simulator (FMS) in a Hardware-In-The-Loop (HWIL) simulation environment or for the development, testing and calibration of any inertial navigation sensors and systems, such as INSs, IMUs, IRUs, FOGs, RLGs and micro electromechanical systems (MEMS).

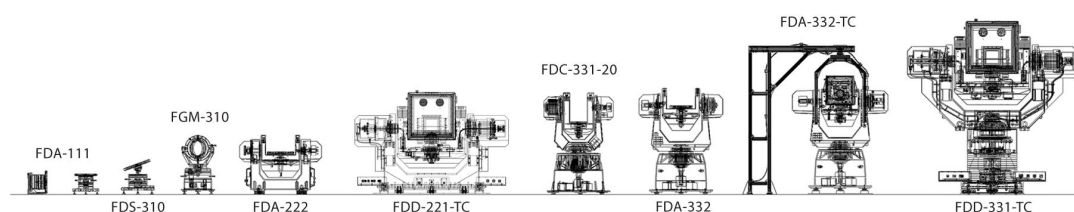
This model has three degrees-of-freedom; Roll, Pitch and Yaw or inner, middle and outer respectively. Temperature chamber with gas cooling and electric heating is fastened to the middle axis gimbal. The TC gas cooling performs by the open-loop carbon dioxide or liquid nitrogen cooling system. Mechanical cooling system can be requested as an option.



Slip ring assemblies featuring power rings and shielded signal rings permit electrical access to the UUT and allow to simulate continuous rotation. Beside the standard slip ring configuration, there is a wide variety of slip ring capsule designs and wiring schematics available.

AC direct drive permanent magnet brushless motor use for all the simulator's axes. The servo feedback transducers are also direct mounted to the axes and perform high precise positioning performances.

The ACCUDYNA nonlinear multi-variable controller is embedded in a special console, which has a power cabinet with amplifiers, power supplies, chokes, and motor filters. The controller can be configured as determined by the customer's application. It is capable of providing position, rate and acceleration control either manually from the GUI or remotely through the RS232/RS422 computer interfaces. UDP (Up to 4 kHz) can be an option.

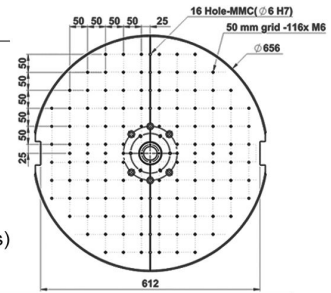


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## FDD-331-TC PARAMETERS

### UUT SPECIFICATIONS

UUT weight	50 Kg (Option: Up to 100)
UUT dimensions	H: 550 mm, D: 600 mm
Flatness	0.03 mm
Material	Aluminum (Hard Anodized)
Table top mounting pattern	50 mm grid M6, 16Hole-MMC(ø6H7)
Table top distance from floor	2004 mm
Axes intersection distance from floor	2074mm
Electrical lines to UUT	50 lines rated 2A (Option: Up to 70 lines) With D-Sub or KPT style type connectors



### SIMULATOR SPECIFICATIONS

		INNER AXIS (ROLL)	OUTER AXIS (PITCH)	OUTER AXIS (YAW)
Degrees of freedom				
Angular freedom		Continuous	Continuous (Option: ±180°) Direct / AC brushless motors	Continuous
Position				
Accuracy	arcsec	< ± 2 P-P	< ± 2 P-P	< ± 2 P-P
Repeatability	arcsec	< 1	< 1	< 1
Cmd. resolution	deg	0.00001	0.00001	0.00001
Rate				
Range	°/s	± 1'500 (Option: 3600)	± 500 (± 100 with limited rotation)	± 300
Resolution	°/s	0.00001	0.00001	0.00001
Stability (Over 360° interval)	%	< 0.0001 (1 ppm)	< 0.0001 (1 ppm)	< 0.0001 (1 ppm)
Dynamic				
Maximum torque	N.m	115	858 (Option: 1274)	2198 (Option: 9278)
Momentum inertia	kg.m <sup>2</sup>	1.4	115	840
Bandwidth (-3db, no load)	Hz	Up to 100	Up to 45	Up to 15
Acceleration (no load)	°/s <sup>2</sup>	± 5'000	± 400 (Option: 700)	± 150 (Option: 580)
Orientation error				
Wobble	arcsec	< ± 3 P-P	< ± 3 P-P	< ± 1 P-P
Orthogonality	arcsec		< 3 (Option: < 1)	
Temperature chamber				
Temperature range	°c		-45 to +90 (Option: -75 to +150)	
Stability	°c		± 1	
Thermal gradient (Heating & cooling)	°c/min		± 3 (Option: ±10 with LN2)	
According to standard IEC 60068-3-5			(Option: Linear function of temp. rate)	
Operating and physical conditions				
Operating temperature	°c		22 ± 2	
Storage temperature	°c		0 to 50	
EMC/EMI considerations			According to IEC61000-5	
Rate table dimensions	mm		(L x W x H) 2628 x 1528 x 2749	
Rate table weight	kg		3558	
Power supply			380V ± 10 %, 50 Hz, 3 Phase, N, PE, 58 A	
Software				
Language of software			Russian or English	

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