FDC -331-20

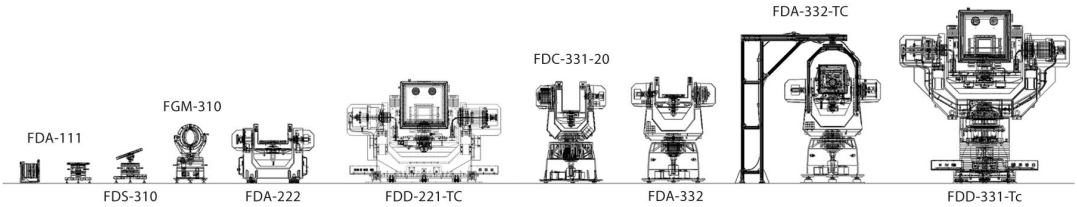
The FDC-331-20 motion simulator is a high dynamic, precision test instrument. The system is designed to simulate both vibration and precise slow motion while maintaining high pointing accuracy. The simulator is often used as a Flight Motion Simulator (FMS) in a Hardware-In-The-Loop (HWIL) simulation environment or for the development, testing and calibration of stabilized optical sights or optical seekers.

This model has three degrees-of-freedom; Roll, Pitch and Yaw or inner, middle and outer respectively. The middle gimbal has a “U-shape” design allowing unobstructed optical access to the tabletop. This feature makes the above mantioned application possible. The large offset between the mounting surface or table top and the intersection of the axes offers the possibility to locate the optical axis at the intersection of the axes.

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, a wide variety of slip ring capsule designs and wiring schematics are available.

AC direct drive brushless motors are used 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.

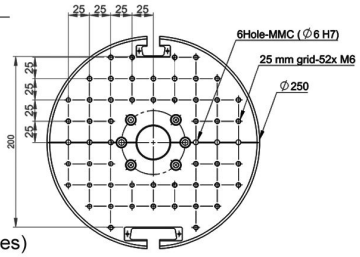


We can do more !

FDC-331-20 PARAMETERS

UUT SPECIFICATIONS

UUT weight	10 Kg (Option: Up to 25)
UUT dimensions	D: 200 mm
Flatness	0.03 mm
Material	Aluminum (Hard Anodized)
Table top mounting pattern	25 mm grid M6, 6Hole-MMC(ø6H7)
Table top distance from floor	1200 mm
Table top offset to axes intersection (Optional)	220 mm
Field of view (Optional)	63°
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	< ± 3 P-P	< ± 3 P-P	< ± 3 P-P
Repeatability	arcsec	< ± 1.5	< ± 1.5	< ± 1.5
Cmd. resolution	deg	0.00001	0.00001	0.00001
Rate				
Range	°/s	± 1500 (Option: 3600)	± 600 (± 100 with limited rotation)	± 500
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	14.4	332	1075
Momentum inertia	kg.m²	0.02	4	24.9
Bandwidth (-3db, no load)	Hz	Up to 120	Up to 40	Up to 25
Acceleration (no load)	°/s²	± 35000	± 4000	± 2000
Orientation error				
Wobble	arcsec	< ± 3 P-P	< ± 5 P-P	< ± 3 P-P
Orthogonality	arcsec	< 3	< 3	
Temperature chamber (Option)				
Temperature range	°C	-45 to +90		
Stability	°C	± 1		
Thermal gradiant (Heating & cooling)	°C/min	± 3		
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) 1100 x 1150 x 1950		
Rate table weight	kg	770		
Power supply		380V ± 10 %, 50 Hz, 3 Phase, N, PE, 20 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.