EVO-20 Series

Two-axis rate positioning and rate tables

EVO-20 Series offer a full product range of two-axis positioning and rate table which features and all required performance parameters for test and calibration of MEMS or FOG-based inertial navigation systems or optronic payloads. The addition of the thermal chamber enables users to calibrate the sensors over the full operational environment.

BENEFITS

- Best price/performance ratio on the market
- Horizontal or vertical use
- Best-in-class rate stability
- Unrivaled dynamic performance
- Maintenance free
- Lowest cost of ownership

FEATURES

- Direct drive brushless electric motors
- High accuracy optical encoders
- Custom slipring options
- Climatic chamber option with mechanical refrigeration, CO_2 or LN2

CONTROLLER FEATURES

Exail nGine controller including:
- Auto-tuning of controller parameters
- Adaptive sine
- Auto-tuned anti-cogging
- Real-time built-in-test
- Real-time interface options
- Advanced unbalance and fault detection
- Axis cross-coupling compensation

Exail ProaXe Graphical User Interface (GUI)

TRACK RECORD

Exail has been providing position/rate tables and motion simulators for more than 60 years, including more than 20 years with the combination of direct drive brushless electric motors and optical encoders. This unique experience allows Exail to build the most accurate, stable and dynamic systems, fulfilling all the needs for testing of inertial and optronic payloads.

ADVANCED PERFORMANCES

EVO-20 Series are designed with key components chosen for having the best quality. Brushless motors, optical encoders and slip-ring are critical to the performance of the complete system. Every EVO-20 Series comes with Exail nGine controller and ProaXe Graphical User Interface, which are the most advanced control electronics in terms of performance, efficiency and safety.

A SCALABLE TEST-TABLE

EVO-20 Series can evolve with your process. The two-axis motion simulators may be used for development, production, calibration and verification.

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TECHNICAL SPECIFICATIONS

Payload definition

		EVO-20N	EVO-20M	EVO-20L
Nominal payload mass	kg	10	30	50
Maximum payload mass	kg	40	70	100
Maximum tabletop TT Ø with TC	mm	350	450	600
Maximum tabletop TT Ø without TC	mm	450	650	800
Maximum payload dimensions	mm	Ø350 x 350 Ø450 x 550	Ø450 x 400 Ø650 x 450	Ø600 x 550 Ø800 x 650

Several options and configurations are available, please contact Exail for more details
Note: All above specifications are subject to change or custom requirements

Dynamic specifications

		Inner	Outer	Inner	Outer	Inner	Outer
Angular freedom *	deg	∞	∞	∞	∞	∞	∞
Maximum rate **	deg/s	±3,000	±600	±3,000	±1,200	±1,500	±800
Rate accuracy over 360° **	%	< 0.0005	< 0.0005	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Rate stability over 360° **	%	< 0.0005	< 0.0005	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Peak acceleration **	deg/s^2	±2,000	> ±200	> ±3,000	> ±400	> ±4,000	> ±400
Bandwidth (-3dB/-90deg) **	Hz	> 100	> 20	> 100	> 30	> 80	> 30

Geometrical specifications

		Inner	Outer	Inner	Outer	Inner	Outer
Position accuracy **	arcsec	< ±5	< ±5	< ±1	< ±1	< ±1	< ±1
Position repeatability **	arcsec	< ±2	< ±2	< ±1	< ±1	< ±1	< ±1
Maximum wobble **	arcsec	≤ 3	≤ 3	≤ 2	≤ 3	≤ 2	≤ 2
Orthogonality **	arcsec	< 5		< 2		< 2	

Slip-ring | ROTARY JOINT

Lines	50 lines - 2A – 210VDC	RF lines **	GNSS
Power **	5A 400VAC, 20A 400VAC	Gas lines **	Nitrogen, Inert gases, air etc.
Data type **	Ethernet, RS232, RS422, 1553	Rotary joint **	Fiber optics

Thermal chamber | OPTIONAL

Cooling options		Air or water cooled cascade mechanical refrigeration, CO_2, LN2
Range	°C	–55 to >+100
Stability	°C	< ±1
Gradient	°C/min	> –4 for cooling > +5 for heating
Homogeneity	°C	< ±1.5

* Unlimited and limited motion available
** Subject to custom specification/configuration
Note: All above specifications are subject to change or custom requirements

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TECHNICAL SPECIFICATIONS

nGine controller features

Main features	Auto-tuning of controller parameters, adaptive sine bandwidth, auto tuned anti-cogging, real-time built-in-test, trajectory-file, advanced unbalance and fault detection
Remote interfaces	Standard: USB, RS-232 and Ethernet Optional: IEEE-488.2 (GPIB), SCRAMNet or VMIC
Analog inputs/outputs	Scalable analog inputs and outputs for position and rate Digital inputs for control and trigger Digital outputs, event pulse generation
Graphical User Interface	ProaXe GUI software supplied for user PC

Physical characteristics

EVO-20N	EVO-20M	EVO-20L
2475 x 810 x 1510 mm-height	2210 x 1075 x 1775 mm-height	3075 x 1465 x 2075 mm-height
550 kg	1 300 kg	2 800 kg

Power and control characteristics

Desktop	4U - 19"	36U - 19" Cabinet
360 x 430 x 130 mm-height	485 x 625 x 180 mm-height	840 x 600 x 2015 mm-height
6 kg	14 kg	250 kg