T STANDALONE AXIS

ASME-DXRH_1800203RAS0000

DXR^{H} with AccurET VHP

Data sheet

Version 1.0

ETEL

AXIS DESIGNATION	
Number of controlled axes	1
Axes name	Theta
Thrust transmitter: DD (direct drive) or ID (indirect drive)	DD

TESTING CONDITIONS	UNIT	
Position controller	-	VHP 48 5/10 Arms
Motion controller	-	UltimET
Rated payload (1)	kg	2
Rated inertia (1)	$kg.m^2$	0.018
Rated input voltage	VDC	48
Tool point position	mm	20 (above interface plate)
Ambient temperature	°C	22 ±1
Isolation system	-	QuiET

DIMENSIONAL DATA	UNIT	
Inside diameter	mm	53
Width	mm	228
Length	mm	228
Height	mm	63.5
Total stroke	°	Infinite (limited stroke is an option)
Total mass (without payload)	kg	6
Rotor inertia (without payload)	$kg.m^2$	0.006

TORQUE CAPABILITIES (2)	UNIT	
Peak torque	Nm	14.9
Continuous torque	Nm	2
Standstill torque	Nm	1.51

LOAD CAPACITIES	UNIT	
Maximum axial load	N	300
Maximum radial load	N	300
Maximum payload (3)	kg	12.5

DYNAMIC PERFORMANCE	UNIT	
Duty cycle	%	70
Maximum speed	rad/s	6.28
Maximum acceleration	rad/s^2	200 (at rated payload and inertia)
Typical position stability at 2kHz	arcsec	±2.5 E-3 (±1.8 nm at R = 150 mm)

ACCURACY	UNIT	
Positioning accuracy (without mapping)	arcsec	±3
Bidirectional repeatability	arcsec	± 0.25
Radial runout	µm	±1
Total axial error at 0 [mm] radius	µm	± 2

WORKING ENVIRONMENT		
Clean room compatibility (4)	-	ISO1
IP protection grade	-	IP40

ELECTRICAL SPECIFICATIONS (2)		UNIT	
	Motor type	-	Toothless
	Motor model	-	TTB0180-020-3RAS
	Number of phases	-	3
Kt	Force constant	Nm/Arms	1.16
Ku	Back EMF constant (5)	Vrms/(rad/s)	0.669
Km	Motor constant	Nm/√W	0.464
R20	Electrical resistance at 20°C (5)	Ohm	4.16
L1	Electrical inductance (5)	mH	1.66
Ip	Peak current	Arms	13.2
Ic	Continuous current	Arms	1.75
Is	Standstill current	Arms	1.32
ns	Standstill speed	rad/s	0.0017
Um	Max. input voltage	VDC	100
Pc	Max. cont. power dissipation	W	20.9
2p	Number of poles	-	32

ENCODER CHARACTERISTICS	UNIT	
Encoder and signal type	-	Optical - incremental
Output signal	-	1 Vpp
Signal period or line count	period/turn	360'000
Reference mark	-	External index sensor
Power supply	V	5 ± 5 %

VACUUM CHARACTERISTICS	UNIT	
Vacuum supply for axis cleanliness		
Vacuum flow	l/min	5

TYPICAL MOVE AND SETTLE TIMES	UNIT	
Move 1: 0.004 deg ± 20 µdeg	ms	30
Move 2: 1 deg ± 20 µdeg	ms	80
Move 3: 90 deg ± 20 µdeg	ms	400
Move 4: 180 deg ± 20 µdeg	ms	670
Move 5: 360 deg ± 20 µdeg	ms	1160

GUIDING ELEMENTS		
Type	-	Angular contact ball bearing

MATERIAL AND FINISH		
Baseplate	-	Steel
Carriage	-	Steel

OPTIONS / ACCESSORIES / FEATURES	UNIT	
All options	-	Configurable. Refer to the interface drawing
Air purge	-	Pneumatic fitting for axis cleanliness

According to the Machinery Directive 2006/42/EC, the system presently described falls into the "partly completed machinery" category and fully complies with it as long as the system is operated according to the working conditions described in the corresponding manual. Customer is responsible for setting safeties/limitations that will keep the motor in its safe operating area. ETEL cannot be held responsible if the system is used in an improper way.

Notes: The specifications given may be mutually exclusive. Unless stated otherwise, all measurements are made within the testing conditions.
(1) Payload can be assimilated to a cylinder of diameter 270 mm, 19 mm thick, weighting 2 kg. Inertia is expressed with respect to the center of gravity of the payload, Z being the axis of rotation.
(2) Tolerances on electrical parameters are available on request.
(3) For 1 g acceleration. For 2.5 g acceleration, derate at 5 kg.
(4) Under laminar flow conditions at 0.25 m/s perpendicular to rotation axis. Measured at interface plate level. Contact ETEL for more details.
(5) Terminal to terminal.

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