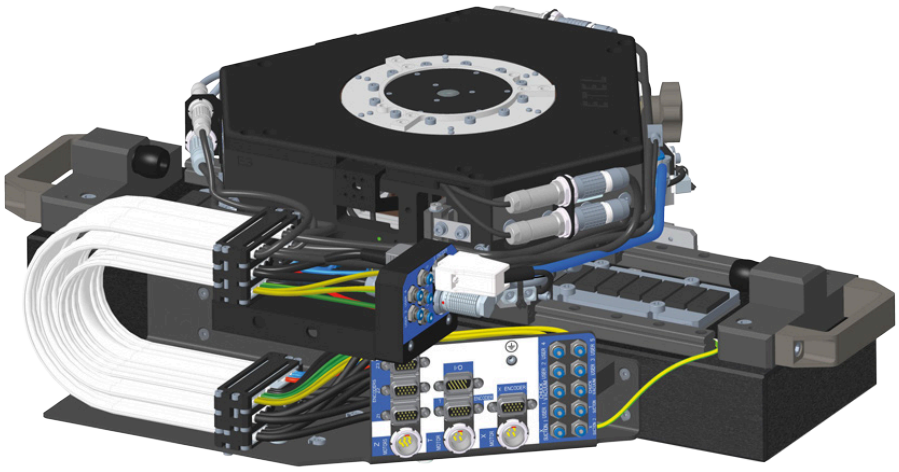

CHARON2 XZ3TM with AccurET VHP

Data Sheet

Version 2.1

AXIS DESIGNATION					
Number of controlled axes		5			
Axes name		X (bottom axis)	Fine Z	Tip-Tilt	Theta
Thrust transmitter: DD (direct drive) or ID (indirect drive)		DD	DD	DD	DD

TESTING CONDITIONS	UNIT				
Position controller	-	VHP 100 10/30 Arms	VHP 48 5/10 Arms		VHP 100 10/30 Arms
Motion controller	-	UltimET (TCP-IP / PCI / PCIe)			
Rated payload (1)	kg	2			
Rated inertia (1)	kg.m^2	-	-	-	0.018
Rated input voltage	VDC	96	48		96
Tool point position	mm	230 (above bottom surface)			
Ambient temperature	°C	22 ±1			
Isolation system	-	QuiET			

DIMENSIONAL DATA	UNIT				
Width	mm	383			
Length	mm	593 (with handles) / 527 (without handles)			
Height	mm	179			
Total stroke	mm or °	205	±2	±0.08	Infinite
Moving mass (without payload)	kg	15	4.2	-	-
Total mass (without payload)	kg	33			
Rotor inertia (without payload)	kg.m^2	-	-	-	0.004

FORCE / TORQUE CAPABILITIES (2)	UNIT				
Peak force / torque	N or Nm	512	65.3	-	7.87
Continuous force / torque	N or Nm	130	15.7	-	1.74
Standstill force / torque	N or Nm	98	-	-	1.32
Max. detent force / torque (average to peak)	N or Nm	7.1	-	-	0
Static friction (maximal value)	N or Nm	22	-	-	1
Dynamic friction (maximal value)	N/(m/s) or Nm/(rad/s)	60	-	-	0.03

LOAD CAPACITIES	UNIT				
Maximum axial load	N	-	-	-	30
Maximum payload	kg	2			

DYNAMIC PERFORMANCE	UNIT				
Duty cycle	%	25	-	-	10
Maximum speed	m/s or rad/s	1	0.1	-	30
Maximum acceleration	m/s^2 or rad/s^2	20	3	-	180
Typical position stability at 2kHz	nm or arcsec	±2	±3	-	±0.02

ACCURACY	UNIT				
Positioning accuracy (without mapping)	µm or arcsec	±15	-	-	-
Positioning accuracy (with mapping)	µm or arcsec	±1	-	-	-
Bidirectional repeatability	µm or arcsec	±0.3	±0.03	-	±2
Horizontal straightness / radial runout	µm	±2.5	-	-	±3.5
Vertical straightness / total axial error at tool point	µm	±2	-	-	±3
XY displacement while moving in Z	µm	-	±0.1	-	-
Roll	arcsec	±3	-	-	-
Pitch	arcsec	±3.5	-	-	-
Yaw	arcsec	±5	-	-	-

WORKING ENVIRONMENT	
Clean room compatibility (3)	ISO 2

ELECTRICAL SPECIFICATIONS (2)		UNIT	X (bottom axis)	Fine Z	Tip-Tilt	Theta
	Motor type	-	Ironcore	Electro-magnet		Toothless
	Motor model	-	LMG10-030-3QB	EMF-14.5-058-1NA-219		TTB0126-030-3NA
	Number of phases	-	3	3x single phase		3
Kt	Force constant	N/Arms or Nm/Arms or N/A_{DC}	26.6	19.6		1.23
Ku	Back EMF constant (4)	Vrms/(m/s) or Vrms/(rad/s) or V_{DC}/(m/s)	16.2	19.6		0.71
Km	Motor constant	Nm/√W	16.8	8.34		-
R20	Electrical resistance at 20 °C (4)	Ohm	1.68	5.50		10.50
L1	Electrical inductance (4)	mH	9.02	13.50		2.65
Ip	Peak current	Arms or A_{DC}	30.0	3.38		6.90
Ic	Continuous current	Arms or A_{DC}	5.00	0.80		1.47
Is	Standstill current	Arms or A_{DC}	3.79	-		1.11
ns	Standstill speed	mm/s or rad/s	0.22	-		0.0016
Um	Max. input voltage	VDC	100	48		100
Pc	Max. cont. power dissipation	W	77.6	3.88		41.9
2τp	Magnetic period	mm	32	-		-
2p	Number of poles	-	-	-		28

ENCODER CHARACTERISTICS	UNIT			
Encoder and signal type	-	Optical - incremental	Optical - incremental	Optical - incremental
Output signal	-	1 Vpp	1 Vpp	1 Vpp
Signal period or line count	µm or period/turn	4	4	18000
Reference mark	-	One	One centered in Z	One
Power supply	V	5	5	5

TYPICAL MOVE AND SETTLE TIMES	UNIT				
Move 1: 10 µm within ±100 nm window	ms	40	-	-	-
Move 2: 25 mm within ±100 nm window	ms	130	-	-	-
Move 3: 80 mm within ±100 nm window	ms	185	-	-	-
Move 4: 100 µm within ±30 nm window	ms	-	60	-	-
Move 5: 1 mm within ±30 nm window	ms	-	100	-	-
Move 6: 90 deg within ±40 µdeg	ms	-	-	-	360
Move 7: 180 deg within ±40 µdeg	ms	-	-	-	525
Move 8: 360 deg within ±40 µdeg	ms	-	-	-	850

GUIDING ELEMENTS			
Type	Ball bearing	Flexures	Crossed roller bearing

MATERIAL AND FINISH			
Baseplate	Granite	Anodized aluminium	-
Carriage	Stainless steel	Anodized aluminium	Stainless steel

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) Under laminar flow conditions at 0.25 m/s along Y axis. Measured at 230 mm from the bottom surface of the stage. Contact ETEL for more details.
(4) Terminal to terminal.