



# **XYT STACKED SYSTEM**

**ASME-NNNN-03-0475-0410xx**

**CHARON2 XYT (DXR+) with AccurET VHP**

Data sheet

Version 1.3

***ETEL***

AXIS DESIGNATION			
Number of controlled axes	3		
Axes name	X (bottom axis)	Y (top axis)	Theta
Thrust transmitter: DD (direct drive) or ID (indirect drive)	DD	DD	DD

TESTING CONDITIONS	UNIT			
Position controller	-	VHP 100 10/30 Arms	VHP 100 10/30 Arms	VHP 48 5/10 Arms
Motion controller	-	UltimET		
Rated payload	kg	2		
Rated inertia	kg.m <sup>2</sup>	-	-	0.018
Tool point position	mm	275 mm above bottom surface		
Ambient temperature	°C	22 ±1		
Isolation system	-	QuiET		

DIMENSIONAL DATA	UNIT			
Stage width	mm	781		
Stage length	mm	955		
Stage height	mm	227		
Total stroke	mm	475	410	Infinite
Moving mass (without payload)	kg	22.4	9.8	-
Total mass (without payload)	kg	54.7		
Rotor inertia (without payload)	kg.m <sup>2</sup>	-	-	0.004

FORCE / TORQUE CAPABILITIES (1)	UNIT			
Peak force / torque	N or Nm	512	298	7.87
Continuous force / torque	N or Nm	130	54.3	1.74
Standstill force / torque	N or Nm	98	40.9	1.32
Max. detent force / torque (average to peak)	N or Nm	7.1	7.9	0
Static friction (maximal value)	N or Nm	22	22	1
Dynamic friction (maximal value)	N/(m/s) or Nm/(rad/s)	22	22	0.03

LOAD CAPACITIES	UNIT			
Maximum payload	kg	30		

DYNAMIC PERFORMANCE	UNIT			
Maximum speed	m/s or rad/s (rpm)	1	1	41.8
Maximum acceleration	m/s <sup>2</sup> or rad/s <sup>2</sup>	10	10	1000
Typical position stability at 2 kHz	nm or arcsec	±2	±2	±0.02

ACCURACY	UNIT			
Duty cycle	%	25	25	-
Positioning accuracy (without mapping)	µm or arcsec	±20		±30
Positioning accuracy (with mapping)	µm or arcsec	±1		±3
Unidirectional repeatability	µm or arcsec	-		±1
Bidirectional repeatability	µm or arcsec	±0.4		±2
Horizontal straightness / radial runout	µm	±3	±3.5	±3.5
Vertical straightness / total axial error at R = 42.5 mm	µm	±2.5	±5	±3
Orthogonality	arcsec	±15		-
Roll	arcsec	±5	±10	-
Pitch	arcsec	±5	±10	-
Yaw	arcsec	±10	±10	-

WORKING ENVIRONMENT			
Clean room compatibility (2)	ISO 2		

ELECTRICAL SPECIFICATIONS (1)		UNIT	X (bottom axis)	Y (top axis)	Theta
	Motor type	-	Ironcore	Ironcore	Toothless
	Motor model	-	LMG10-030-3QB-H01	LMG05-030-3RA-H01	TTB0126-030-3NA-239
	Number of phases	-	3	3	3
Kt	Force constant	N/Arms or Nm/Arms	26.6	24.6	1.23
Ku	Back EMF constant (3)	Vrms/(m/s) or Vrms/(rad/s)	16.2	14.9	0.712
Km	Motor constant	N/√W or Nm/√W	16.8	13.2	-
R20	Electrical resistance at 20°C (3)	Ohm	1.68	2.31	10.50
L1	Electrical inductance (3)	mH	9.02	10.8	2.65
Ip	Peak current	Arms	30.0	19.9	6.90
Ic	Continuous current	Arms	5.00	2.26	1.47
Is	Standstill current	Arms	3.79	1.71	1.11
vs	Standstill speed	mm/s or rad/s	0.22	0.20	0.02
Udc	Nominal input voltage	VDC	96	96	48
Pc	Max. cont. power dissipation	W	77.6	20.4	41.9
2τp	Magnetic period	mm	32	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	18'000
	Reference mark	-	One	One	One
	Power supply	V	5	5	5

TYPICAL MOVE AND SETTLE TIMES		UNIT			
	Move 1: 10 μm within ±100 nm window	ms	50	-	-
	Move 2: 25 mm within ±100 nm window	ms	170	-	-
	Move 3: 80 mm within ±100 nm window	ms	250	-	-
	Move 4: 1 deg within ±40 μdeg	ms	-	-	100
	Move 5: 180 deg within ±40 μdeg	ms	-	-	500

GUIDING ELEMENTS					
	Type		Ball bearing	Ball bearing	Crossed roller bearing

MATERIAL AND FINISH					
	Baseplate		Granite	Aluminum & Silicon alloy	Aluminum alloy
	Carriage		Aluminum & Silicon alloy	Stainless steel	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) Tolerances on electrical parameters are available on request.

(2) 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.

(3) Terminal to terminal.