



# **XYT STACKED SYSTEM**

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

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

Data sheet

Version 1.0

**PRELIMINARY**

***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	-		VHP100 (10/30A)	VHP100 (7/15A)
Motion controller	-		UltimET	
Rated payload	kg		-	2
Rated inertia	kg.m <sup>2</sup>		-	0.018
Rated input voltage	VDC		96	96
Tool point position	mm		246.5 mm above bottom surface	
Ambient temperature	°C		22 ± 1	
Isolation system	-		QuiET	

DIMENSIONAL DATA		UNIT			
Width	mm		786		
Length	mm		948		
Height	mm		226		
Total stroke	mm or °		475	410	Infinite
Moving mass (without payload)	kg		31.6	11.4	-
Total mass (without payload)	kg		60		
Rotor inertia (without payload)	kg.m <sup>2</sup>		-	-	0.004

FORCE / TORQUE CAPABILITIES (1)		UNIT			
Peak force / torque	N or Nm		991	681	7.87
Continuous force / torque	N or Nm		360	193	1.74
Standstill force / torque	N or Nm		272	145	1.32
Max. detent force / torque (average to peak)	N or Nm		26	16	0
Static friction (maximal value)	N or Nm		25	25	1
Dynamic friction (maximal value)	N/(m/s) or Nm/(rad/s)		25	25	0.03

LOAD CAPACITIES		UNIT		
Maximum payload	kg		30	

DYNAMIC PERFORMANCE		UNIT			
Duty cycle	%		25	60	10
Maximum speed	m/s or rad/s		1.25	1.25	30
Maximum acceleration	m/s <sup>2</sup> or rad/s <sup>2</sup>		20	20	180
Typical position stability at 2 kHz	nm or arcsec		±2	±2	±0.02

ACCURACY		UNIT			
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 tool point	µm		±2.5	±5	±3
Orthogonality	arcsec		±15		-
Roll	arcsec		±5	±10	-
Pitch	arcsec		±5	±25	-
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	-	LMS15-050-3TC	LMG10-050-3TB	TTB0126-030-3NA-239
	Number of phases	-	3	3	3
<b>Kt</b>	Force constant	N/Arms or Nm/Arms	45.4	26.8	1.23
<b>Ku</b>	Back EMF constant (3)	Vrms/(m/s) or Vrms/(rad/s)	27.1	16.3	0.712
<b>Km</b>	Motor constant	Nm/√W	45.5	28.2	-
<b>R20</b>	Electrical resistance at 20°C (3)	Ohm	0.663	0.605	10.5
<b>L1</b>	Electrical inductance (3)	mH	6.74	3.77	2.65
<b>Ip</b>	Peak current	Arms	30	30	6.9
<b>Ic</b>	Continuous current	Arms	8.14	7.33	1.47
<b>Is</b>	Standstill current	Arms	6.17	5.55	1.11
<b>ns</b>	Standstill speed	m/s or rad/s	0.15	0.16	0.0016
<b>Um</b>	Max. input voltage	VDC	100	100	100
<b>Pc</b>	Max. cont. power dissipation	W	74	56.3	41.9
<b>2τp</b>	Magnetic period	mm	32	32	-
<b>2p</b>	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

VACUUM CHARACTERISTICS		UNIT			
	<b>Vacuum supply for wafer chuck</b>				
	Vacuum at interface output	bar		-0.6	
	<b>Vacuum supply for axis cleanliness</b>				
	Vacuum flow	l/min	10	6	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		180	-
	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	-	Anodized aluminum	Aluminium & silicon alloy	Aluminum alloy
	Carriage	-	Aluminium & silicon alloy	Anodized aluminum	Stainless steel

OPTIONS / ACCESSORIES / FEATURES					
	Temperature sensors	-	Yes	No	No

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 vertical laminar flow conditions at 0.5 m/s . Measured at tool point level. Contact ETEL for more details.
- (3) Terminal to terminal.