



# **XY STACKED SYSTEM**

**ASME-NNNN-02-0365-0355xx**

**CHARON2 XY with AccurET VHP**

Data sheet

Version 1.4

***ETEL***

AXIS DESIGNATION		
Number of controlled axes	2	
Axes name	X (bottom axis)	Y (top axis)
Thrust transmitter: DD (direct drive) or ID (indirect drive)	DD	DD

TESTING CONDITIONS		UNIT
Position controller	-	VHP 100 10/30 Arms
Motion controller	-	UltimET
Rated payload	kg	5
Rated input voltage	VDC	96
Tool point position	mm	247 mm above bottom surface
Ambient temperature	°C	22 ±1
Isolation system	-	QuiET

DIMENSIONAL DATA		UNIT
Stage width	mm	698
Stage length	mm	835
Stage height	mm	219
Total stroke	mm	365
Moving mass (without payload)	kg	16.8
Total mass (without payload)	kg	42.3

FORCE CAPABILITIES (1)		UNIT
Peak force	N	512
Continuous force	N	130
Standstill force	N	98
Max. detent force (average to peak)	N	7.1
Static friction (maximal value)	N	22
Dynamic friction (maximal value)	N/(m/s)	22

LOAD CAPACITIES		UNIT
Maximum payload	kg	30

DYNAMIC PERFORMANCE		UNIT
Duty cycle	%	25
Maximum speed	m/s	1
Maximum acceleration	m/s <sup>2</sup>	10
Typical position stability at 2kHz	nm	±2

ACCURACY		UNIT
Positioning accuracy (without mapping)	µm	±20
Positioning accuracy (with mapping)	µm	±1
Bidirectional repeatability	µm	±0.4
Horizontal straightness / radial runout	µm	±3
Vertical straightness	µm	±2.5
Orthogonality	arcsec	±15
Roll	arcsec	±5
Pitch	arcsec	±5
Yaw	arcsec	±10

WORKING ENVIRONMENT	
Clean room compatibility (2)	ISO 2

ELECTRICAL SPECIFICATIONS (1)		UNIT	X (bottom axis)	Y (top axis)
	Motor type	-	Ironcore	Ironcore
	Motor model	-	LMG10-030-3QB-H01	LMG05-030-3RA-H01
	Number of phases	-	3	3
<b>Kt</b>	Force constant	N/Arms	26.6	24.6
<b>Ku</b>	Back EMF constant (3)	Vrms/(m/s)	16.2	14.9
<b>Km</b>	Motor constant	Nm/ $\sqrt{W}$	16.8	13.2
<b>R20</b>	Electrical resistance at 20 °C (3)	Ohm	1.68	2.31
<b>L1</b>	Electrical inductance (3)	mH	9.02	10.8
<b>Ip</b>	Peak current	Arms	30.0	19.9
<b>Ic</b>	Continuous current	Arms	5.00	2.26
<b>Is</b>	Standstill current	Arms	3.79	1.71
<b>vs</b>	Standstill speed	mm/s	0.22	0.20
<b>Um</b>	Max. input voltage	VDC	100	100
<b>Pc</b>	Max. cont. power dissipation	W	77.6	20.4
<b>2tp</b>	Magnetic period	mm	32	32

ENCODER CHARACTERISTICS		UNIT		
	Encoder and signal type	-	Optical - incremental	Optical - incremental
	Output signal	-	1 Vpp	1 Vpp
	Signal period or line count	$\mu$ m	4	4
	Reference mark	-	One	One
	Power supply	V	5	5

TYPICAL MOVE AND SETTLE TIMES		UNIT		
	Move 1: 10 $\mu$ m within $\pm$ 100 nm window	ms		50
	Move 2: 25 mm within $\pm$ 100 nm window	ms		170
	Move 3: 80 mm within $\pm$ 100 nm window	ms		250

GUIDING ELEMENTS				
	Type		Ball bearing	Ball bearing

MATERIAL AND FINISH				
	Baseplate		Granite	Aluminum & Silicon alloy
	Carriage		Aluminum & Silicon alloy	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.