



XYT STACKED PLATFORM

ASME-NNNN-03-0475-0410xx

CHARON2 XYT (DXR+)

Data sheet

Version 1.2

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 1.5/3 Arms
Motion controller	-	UltimET		
Rated payload	kg	2		
Rated inertia	kg.m ²	N/A	N/A	0.023
Tool point position	mm	275 mm above bottom surface		
Ambient temperature	°C	22 °C ± 1 °C		
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 ²	N/A	N/A	0.004

FORCE / TORQUE CAPABILITIES (1)	UNIT			
Fp/Tp Peak force / torque	N or Nm	521	298	7.87
Fc/Tc Continuous force / torque	N or Nm	131	54.3	1.74
Fs/Ts Standstill force / torque	N or Nm	96.9	40.9	1.32
Fd/Td Max. detent force / torque (average to peak)	N or Nm	7.1	7.9	0
Ffrs/Tfrs Static friction (maximal value)	N or Nm	22	22	0.97
Ffrd/Tfrd Dynamic friction (maximal value)	N/(m/s) or Nm/(rad/s)	22	22	4.30E-03

LOAD CAPACITIES	UNIT			
Maximum payload	kg	30		

DYNAMIC PERFORMANCE	UNIT			
Maximum speed	m/s or rad/s (rpm)	1	1	41.8 (400)
Maximum acceleration	m/s ² or rad/s ²	10	10	2200
Typical position stability at 2 kHz	nm or arcsec	±2	±2	±0.02 (at encoder level)
Tracking error at rated speed and 2 kHz	nm	±1000	±1000	-

STAGE 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		N/A
Roll	arcsec	±5	±10	N/A
Pitch	arcsec	±5	±10	N/A
Yaw	arcsec	±10	±10	N/A

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 (2)	Vrms/(m/s) or Vrms/(rad/s)		16.2	14.9	0.712
Km Motor constant	N/√W		16.8	13.2	-
R20 Electrical resistance at 20°C (2)	Ohm		1.68	2.31	10.50
L1 Electrical inductance (2)	mH		9.02	10.8	2.65
Ip Peak current	Arms		31.0	19.9	6.90
Ic Continuous current	Arms		5.01	2.26	1.47
Is Standstill current	Arms		3.80	1.71	1.11
vs Standstill speed	mm/s or rad/s		0.25	0.20	0.02
Udc Nominal input voltage	VDC		96	96	96
Pc Max. cont. power dissipation	W		72.7	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

WORKING ENVIRONMENT		
Clean room compatibility (2)		ISO 2

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

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) Terminal to terminal.

(3) Under laminar flow conditions at 0.25 m/s along Y axis. Measured 230mm from the lower face of the system. Contact ETEL for more details.