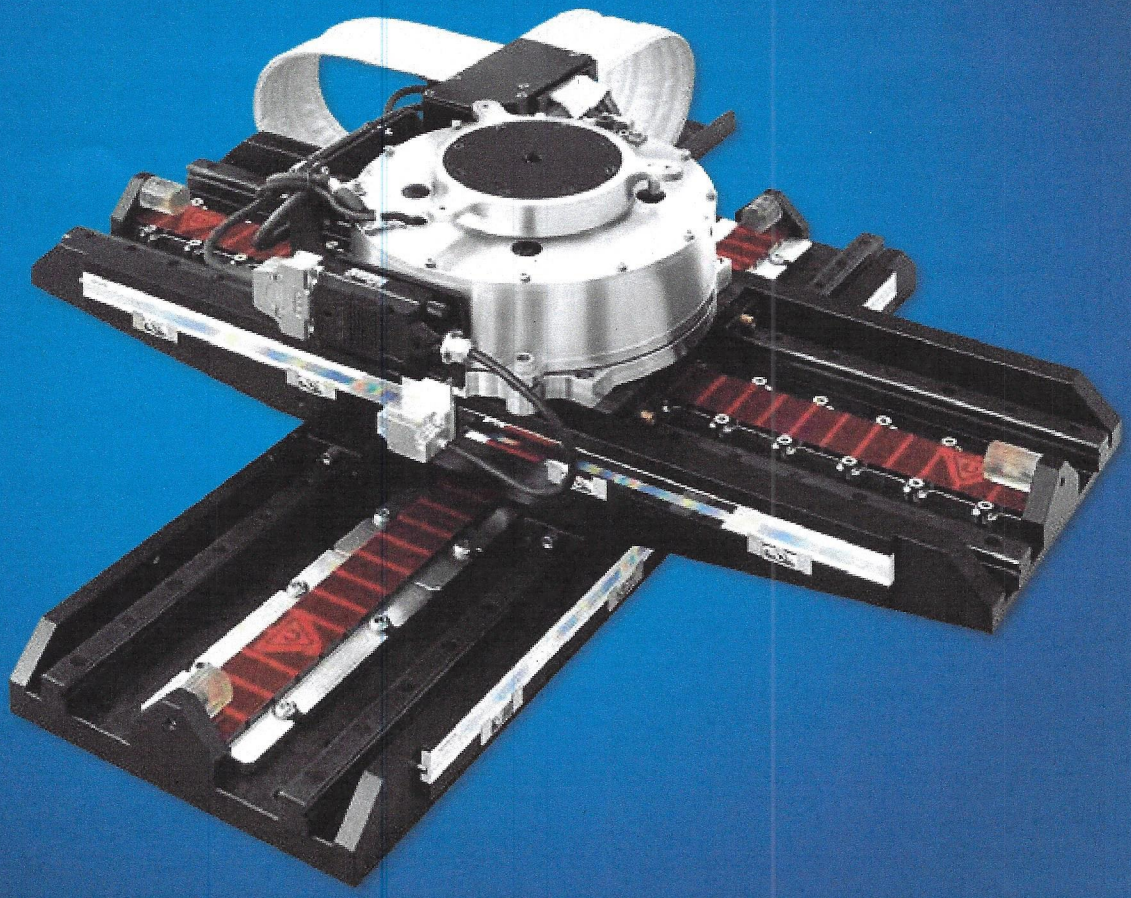


XYT STACKED SYSTEM

ASME-NNNN-03-0365-0355xx

Charon

Data sheet

Version 1.0

ETEL

ETEL MOTION TECHNOLOGY

HIGH PRECISION POSITIONING STAGE

ASME-NNNN-03-0365-0355xx-
XYT STACKED SYSTEM

AXIS DESIGNATION

Number of controlled axis	3		
Axes name	X (lower axis)	Y (upper axis)	Theta
Thrust transmitter: DD (direct drive) or ID (indirect drive	DD	DD	DD

DIMENSIONAL DATA

	UNIT	VALUES		
Stage width	mm (in)	660 (25.9)		
Stage length	mm (in)	543 (21.3)		
Stage height	mm (in)	180 (7)		
Total stroke (1)	mm (in) or deg	365 (14.4)	355 (14)	367
Moving mass (without payload)	kg (lbs)	21.5 (47.4)	9.5 (21)	-
Total mass (without payload)	kg (lbs)	29.5 (65)		
Rotor inertia	$kg.m^2$	-	-	5.68 E-3

FORCE / TORQUE CAPABILITIES (2)

	UNIT	VALUES		
Fp/Tp Peak force / torque	N or Nm	280	280	4.1
Fc/Tc Continuous force / torque (3)	N or Nm	76	59	2

LOAD CAPACITIES

	UNIT	VALUES
Rated payload (4)	kg (lbs)	2.5 (5.5) (please contact ETEL for any other case)

DYNAMIC PERFORMANCE

	UNIT	VALUES		
Maximum speed	m/s (in/s) or rpm	0.6 (23.6)	0.6 (23.6)	60
Maximum acceleration (5)	m/s^2 (in/s^2) or rad/s^2	6 (236.2)	6 (236.2)	169
Typical position stability (6)	nm or arcsec	±2.5	±2.5	±2.59 E-3 (±1.9 nm at R = 150 mm)

STAGE ACCURACY (7)(8)

	UNIT	VALUES		
Positioning accuracy full stroke (6)	µm or arcsec	±16	±16	±3
Positioning accuracy full stroke w/ calibration	µm	±1.5		
Bidirectional repeatability (25 mm on 300 x 300 mm)	µm or arcsec	±0.5	±0.5	±0.3
Bidirectional repeatability (10 µm on 300 x 300 mm)	µm or arcsec	±0.15	±0.15	-
Radial runout	µm	-	-	±0.5
Total axial error (9)	µm	-	-	±2
Flatness XYT	µm	±15		

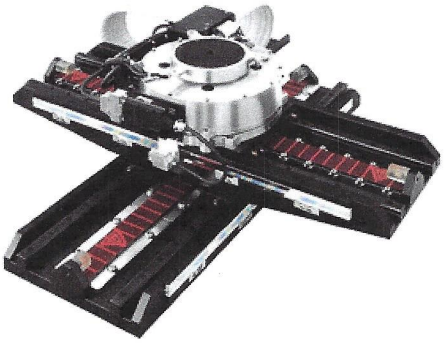
ELECTRICAL SPECIFICATIONS (2)

		UNIT			
	Motor type	-	Ironcore	Ironcore	Toothless
	Motor model	-	LMB06-030-2RA	LMB06-030-2RA	TTB0180-020-2PA
Kt	Force constant	N/Arms or Nm/Arms	25.76	25.76	1.96
Ku	Back EMF constant (10)	Vrms/(m/s) or Vrms(rad/s)	12.88	12.88	0.98
R20	Electrical resistance at 20°C (10)	Ohm	1.80	1.80	6.9
L1	Electrical inductance (10)	mH	9.9	9.9	3.7
Ip	Peak current	Arms	14.2	14.2	2.1
Ic	Continuous current (3)	Arms	2.97	2.3	1
Udc	Nominal input voltage	VDC	48	48	48
Pc	Max. cont. power dissipation (3)	W	36	21	14.9
2τp	Magnetic period	mm	32	32	-
2p	Number of poles	-	-	-	30
	Number of phases	-	2	2	2

STACKED SYSTEMS / PLATFORMS

Multi-axis configuration (XY, XYT, XYZ and XYZT) can be easily provided based on off-the-shelf axes and modules.

ASME-NNNN-03-0365-0355xx-XYT stacked system



The XYT stacked system, Norma, is a three axis Motion System featuring travels compatible with 300 mm wafers and integrating the RTTB super high resolution rotary axis. It can be sold as a standalone system or also further integrated on a granite base and active isolation system. This system is typically used in wafer process control in application such as Overlay, critical dimension and thin film metrology. It can also be used in all applications requiring repeatability in the micrometer range, and/or position stability in the nanometer range.

Main feature:

Total stroke: 365 mm x 355 mm
Position accuracy: ± 16 µm for XY and ± 3 arcsec for T
Bidirectional repeatability: ± 0.5 µm for XY and ± 0.3 arcsec for T
Position stability: ± 2.5 nm and ± 0.00259 arcsec for T
Payload: 2.5 kg
ISO 2 clean room compatible
Equipped with the super high resolution rotary axis

Ask for the corresponding Integration Manual for more information.

ENCODER CHARACTERISTICS	UNIT	VALUES		
Encoder type	-	Optical	Optical	Optical
Output signal	-	1 Vpp	1 Vpp	1 Vpp
Signal period / number of signal period per turn	µm or period/turn	2	2	360'000
Reference mark	-	One - at middle of travel	One - at middle of travel	None

WORKING ENVIRONMENT	
Clean room compatibility	ISO 1

FEATURES	UNIT	
Vacuum supply for Y & T cleanliness		
P Pressure	bars	[-0.08; -0.03]
F Flow	l/min	[5; 10]

TYPICAL MOVE AND SETTLE TIME (7)(11)		
Move 1	5 µm in 60 ms within ±10 nm	1 mdeg in 100 ms within ±0.96 µdeg
Move 2	2 mm in 100 ms within ±100 nm	180 ° in 800 ms within ±0.96 µdeg
Move 3	20 mm in 170 ms within ±100 nm	-
Move 4	100 mm in 340 ms within ±100 nm	-

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 'Integration 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.

(1) Standard stroke. Custom stroke on request.

(2) Hypothesis and tolerances are in ETEL's Handbook.

(3) Coils at 52 °C for linear axis and 45 °C for rotary axis. Ambient temperature = 22 °C

(4) Indicative load capacity with a payload centered on the carriage. Please contact ETEL for any other case.

(5) Recommended value. Please contact ETEL for any other case.

(6) With ETEL's electronics

(7) Specifications measured on a precision mounting surface (typical flatness 10 µm), uniformly supported over its full length with vibration insulation. Specifications measured with ETEL AccurET VHP48 controllers 20 mm above T top surface at an ambient temperature of 22 °C ±1 °C.

(8) Values given at 3 sigmas.

(9) Specifications measured on top plate at radius of 75 mm.

(10) Terminal to terminal.

(11) Measured at encoders level with ETEL AccurET VHP48 controllers.