# XY STACKED SYSTEM

## ASME-NGNN-03-0365-0355xx

## VULCANO2 XY with AccurET VHP

Data sheet

Version 1.1

ETEL

| AXIS DESIGNATION | | | |
|---|---|---|---|
| Number of controlled axes | | 3 | |
| Axes name | | X1-X2 (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 | VHP 100 10/30 Arms |
| Motion controller | - | UltimET | |
| Rated payload | kg | 2 | |
| Tool point position | mm | 325 mm above bottom surface | |
| Ambient temperature | °C | 22 ±1 | |
| Isolation system | - | QuiET | |

| DIMENSIONAL DATA | UNIT | | |
|---|---|---|---|
| Width | mm | 757 | |
| Length | mm | 736 | |
| Height | mm | 281 | |
| Total stroke | mm | 365 | 355 |
| Moving mass (without payload) | kg | 34.3 | 12.3 |
| Total mass (without payload) | kg | 160 | |

| FORCE / TORQUE CAPABILITIES (1) | UNIT | | |
|---|---|---|---|
| Peak force | N | 2560 | 905 |
| Continuous force | N | 540 | 192 |
| Standstill force | N | 408 | 145 |
| Max. detent force (average to peak) | N | 34 | 12 |
| Static friction (maximal value) | N | 10.7 | 11.8 |
| Dynamic friction (maximal value) | N/(m/s) | 23.5 | 28.7 |

| LOAD CAPACITIES | UNIT | |
|---|---|---|
| Maximum payload | kg | 80 |

| DYNAMIC PERFORMANCE | UNIT | | |
|---|---|---|---|
| Maximum speed | m/s | 1.2 | 1.2 |
| Maximum acceleration | $m/s^2$ | 25 | 25 |
| Typical position stability at 2kHz | nm | ±2 | ±2 |

| ACCURACY | UNIT | | |
|---|---|---|---|
| Duty cycle | % | 30 | 50 |
| Positioning accuracy (without mapping) | µm | ±10 | ±30 |
| Positioning accuracy (with mapping) | µm | ±1 | ±1 |
| Bidirectional repeatability | µm | ±0.25 | ±0.25 |
| Horizontal straightness / radial runout | µm | ±1.5 | ±3.5 |
| Vertical straightness / total axial error at R = 42.5 mm | µm | ±3 | ±5 |
| Orthogonality | arcsec | ±15 | |
| Roll | arcsec | ±20 | ±25 |
| Pitch | arcsec | ±20 | ±60 |
| Yaw | arcsec | ±1.5 | ±10.0 |

| WORKING ENVIRONMENT | |
|---|---|
| Clean room compatibility (2) | ISO 2 |

| ELECTRICAL SPECIFICATIONS (1) | | UNIT | | |
|---|---|---|---|---|
| | Motor type | - | Ironcore | Ironcore |
| | Motor model | - | LMG10-070-3SB-H01 | LMG10-050-3UA-H01 |
| | Number of phases | - | 3 | 3 |
| Kt | Force constant | N/Arms | 41.7 | 35.4 |
| Ku | Back EMF constant (3) | Vrms/(m/s) or Vrms/(rad/s) | 25.2 | 21.4 |
| Km | Motor constant | N/√W | 30.4 | 23.9 |
| R20 | Electrical resistance at 20°C (3) | Ohm | 1.25 | 1.46 |
| L1 | Electrical inductance (3) | mH | 8.79 | 8.5 |
| Ip | Peak current | Arms | 46.5 | 39.1 |
| Ic | Continuous current | Arms | 6.77 | 5.66 |
| Is | Standstill current | Arms | 5.13 | 4.28 |
| ns | Standstill speed | m/s | 0.14 | 0.16 |
| Udc | Nominal input voltage | VDC | 96 | 96 |
| Pc | Max. cont. power dissipation | W | 123 | 100 |
| 2τp | 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 | µm or period/turn | 4 | 4 |
| Reference mark | - | One | One |
| Power supply | V | 5 | 5 |

| TYPICAL MOVE AND SETTLE TIMES | UNIT | | |
|---|---|---|---|
| Move 1: 10 µm within ±100 nm window | ms | 40 | 40 |
| Move 2: 25 mm within ±100 nm window | ms | 125 | 125 |
| Move 3: 80 mm within ±100 nm window | ms | 170 | 170 |

| GUIDING ELEMENTS | | |
|---|---|---|
| Type | Ball bearing | Ball bearing |

| MATERIAL AND FINISH | | |
|---|---|---|
| Baseplate | Granite | Stainless steel |
| Carriage | 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 horizontal laminar flow conditions at 0.45 m/s along X axis. Measured at 12 mm above customer mobile interface. Contact ETEL for more details.
(3) Terminal to terminal.




**ETEL S.A.** Zone Industrielle, CH-2112 Môtiers, Switzerland
T +41 (0)32 862 01 00 • F +41 (0)32 862 01 01 • etel@etel.ch • www.etel.ch