

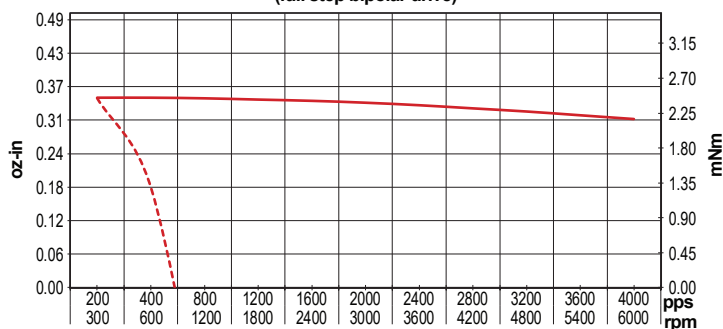
Dimensions in mm.

| Electrical Data                                  | PH1010 104 |                        |        | Unit                                |
|--|------------|------------------------|--------|-------------------------------------|
|  | 020 02     | 010 02                 | 003 02 |                                     |
| 1 Resistance per Phase, typ                      | 19.0       | 10.0                   | 3.0    | Ohms                                |
| 2 Inductance per Phase, typ                      | 8.4        | 4.2                    | 1.3    | mH                                  |
| 3 Nominal Phase Current (2 ph. On)               | 0.15       | 0.20                   | 0.37   | A                                   |
| 4 Nominal Phase Current (1 ph. On)               | 0.21       | 0.28                   | 0.52   | A                                   |
| 5 Back EMF Amplitude                             | 1.58       | 1.18                   | 0.64   | V/kstep/s                           |
| General Data                                     |            |                        |        |                                     |
| 6 Holding Torque, nominal current                |            | 2.1 (0.3)              |        | mNm (oz-in)                         |
| 7 Holding Torque, 1.5x nominal current (1)       |            | 3.16 (0.45)            |        | mNm (oz-in)                         |
| 8 Detent Torque                                  |            | 1 (0.14)               |        | mNm (oz-in)                         |
| 9 Rotor Inertia                                  |            | 0.070                  |        | kgm <sup>2</sup> x 10 <sup>-7</sup> |
| 10 Step Angle                                    |            | 9                      |        | Degree                              |
| 11 Absolute Accuracy 2 ph. On, Full step mode    |            | +/- 5%                 |        | % Full Step                         |
| 12 Steps Per Revolution                          |            | 40                     |        |                                     |
| 13 Ambient Temperature Range (operating)         |            | -20 to 50 (-4 to 122)  |        | °C (°F)                             |
| 14 Maximum Coil Temperature                      |            | 130 (266)              |        | °C (°F)                             |
| 15 Thermal Resistance Coil-ambient (2)           |            | 100                    |        | °C/W                                |
| 16 Natural Resonance Frequency (nominal current) |            | 276                    |        | Hz                                  |
| 17 Electrical Time Constant                      |            | 0.42                   |        | ms                                  |
| 18 Angular Acceleration (nominal current)        |            | 301,758                |        | rad/s <sup>2</sup>                  |
| 19 Bearing Type                                  |            | Ball                   |        |                                     |
| 20 Dielectric Withstanding Voltage               |            | 500 VRMS for 5 seconds |        | VAC                                 |
| 21 Radial Shaft Play                             |            | 30@2N                  |        | µm                                  |
| 22 Axial Shaft Play                              |            | 40@2N                  |        | µm                                  |
| 23 Maximum Radial Shaft Load                     |            | 2.5 (9)                |        | N (oz)                              |
| 24 Maximum Axial Shaft Load (3)                  |            | 2.5 (9)                |        | N (oz)                              |
| 25 Weight  |            | 9 (0.32)               |        | g (oz)                              |
| 26 Power Rate (nominal current)                  |            | 0.5                    |        | kW/s                                |

Notes:

1. Measured with 1 phase ON. The max coil temperature must be respected
2. Motor unmounted
3. Shaft must be supported when press-fitting a pulley or pinion

Turbo Disc PH1010 104 003 Torque vs Speed  
(full step bipolar drive)



— PH1010 104 003 Pull-Out Torque @ 0.6A, 12V    - - - PH1010 104 003 Pull-In Torque @ 0.6A, 12V