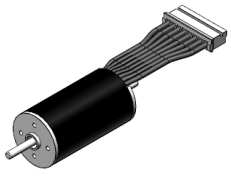
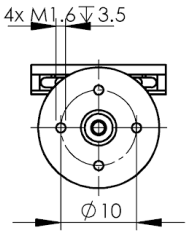
# 716-402 Brushless motor Slotless (inrunner)

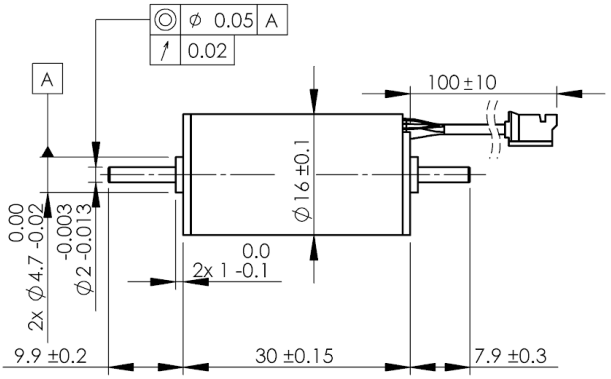
Ø16 x 30mm / with dual shafts / with sensors / fit for gearbox and encoder

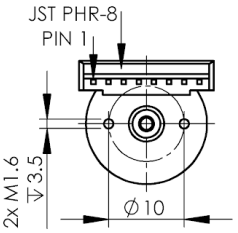
PRECISION MICRODRIVES ™



| PIN | Description |
|---|---|
| 1 | U |
| 2 | V |
| 3 | W |
| 4 | GND |
| 5 | Hu |
| 6 | Hv |
| 7 | Hw |
| 8 | Vcc |

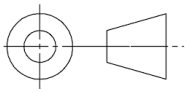



DIMENSIONS ARE IN mm
SURFACE FINISH: N7
TOLERANCES:
LINEAR: ±0.2
ANGULAR: ±1°

3RD ANGLE PROJECTION



| | | | Samples available | Manufacturable on request | Custom design |
|---|---|---|---|---|---|
| **Design and accessories** | | **Units** | **716-402** | **716-600** | **716-XXX** |
| A | Availability | | Stocked design | 8 weeks | 8 weeks |
| B | Motor Type | | Brushless | Brushless | Brushless |
| C | Commutation | | Digital Hall | Digital Hall | Sensored / sensorless |
| D | Shafts | | Dual | Dual | Dual / single |
| E | Encoder | | Not fitted | Not fitted | Magnetic / optical |
| F | Gearbox | | Not fitted | Not fitted | Range 1:4 ~ 1:3373 |
| G | Connections | | 8-pinned JST PHR-8 | 8-pinned JST PHR-8 | To requirement |
| H | Cable | | 100mm x AWG26 | 100mm x AWG26 | To requirement |
| I | Housing Material | | Aluminium alloy | Aluminium alloy | Aluminium alloy |
| J | Body diameter | mm | 16 | 16 | |
| K | Body length | mm | 30 | 30 | |
| L | Weight | g | 25.0 | 25.0 | |
| **Performance characteristics** | | | | | |
| 1 | Nominal voltage | v | 12 | 18 | This motor can be wound for nominal voltages in a 12 ~ 24V range. Nominal load, no load, and stall points , and efficiency will depend on the winding design. Please contact support@pmdri.com |
| 2 | No load speed | rpm | 22 680 | 23 470 | |
| 3 | No load current | A | 0.13 | 0.11 | |
| 4 | Nominal speed | rpm | 17 070 | 17 270 | |
| 5 | Nominal torque | mNm | 4.80 | 4.70 | |
| 6 | Nominal current | A | 1.11 | 0.78 | |
| 7 | Stall torque | mNm | 20.06 | 18.59 | |
| 8 | Stall current | A | 4.10 | 2.65 | |
| 9 | Maximum efficiency | % | 67.9 | 63.4 | |
| **Winding specific characteristics** | | | | | |
| 10 | Terminal resistance | Ω | 2.93 | 6.80 | Winding dependent |
| 11 | Terminal inductance | mH | 0.11 | 0.23 | |
| 12 | Torque constant (Kt) | mNm/A | 4.90 | 7.02 | |
| 13 | Speed constant (Kv) | rpm/V | 1 950 | 1 360 | |
| 14 | Speed / torque gradient | rpm/mNm | 1 167 | 1 317 | |
| 15 | Mechanical time constant | ms | 5.9 | 6.6 | |
| 16 | Rotor inertia | g·cm² | 0.48 | 0.48 | |

| **Motor body characteristics** | | | | |
|---|---|---|---|---|
| 17 | Thermal resistance housing-ambient | | °C/W | 20.0 |
| 18 | Thermal resistance winding-housing | | °C/W | 8.8 |
| 19 | Thermal time constant winding | | s | 8 |
| 20 | Thermal time constant motor | | s | 236 |
| 21 | Ambient temperature | min | °C | -30 |
| | | max | °C | +100 |
| 22 | Max. permissable winding temperature | | °C | +150 |
| 23 | Max. permissable rotor speed | | rpm | 30 000 |
| 24 | Axial play at axial load | | mm | 0.3 max |
| 25 | Radial play | | | Preloaded |
| 26 | Max. axial load (dynamic) | | N | 1.3 |
| 27 | Max. force for press fits (static) | | N | 15.0 |
| | with shaft supported | | N | 350 |
| 28 | Max. radial loading (5mm from flange) | | N | 5.0 |
| 29 | Number of pole pairs | | | 1 |
| 30 | Number of winding phases | | | 3 |

**Operating range** (based on ambient 25°C)

**716-402**