

3 Mechanical and Electrical Interfacing

3.1 PD-x-1670 Dimensions

The PD42-x-1670 PANdrive™ includes the TCM-1670 BLDC motor controller/driver module, a 42mm flange size BLDC motor with 8 poles and an integrated hall sensor based encoder for closed-loop operation. Currently, there is a choice between three 42mm flange size BLDC motors with different lengths and different torque ranges. The dimensions of the controller/driver unit are approx. 42mm x 42mm flange size and overall length of 53mm, 73mm or 93mm length (without motor axis and connectors).

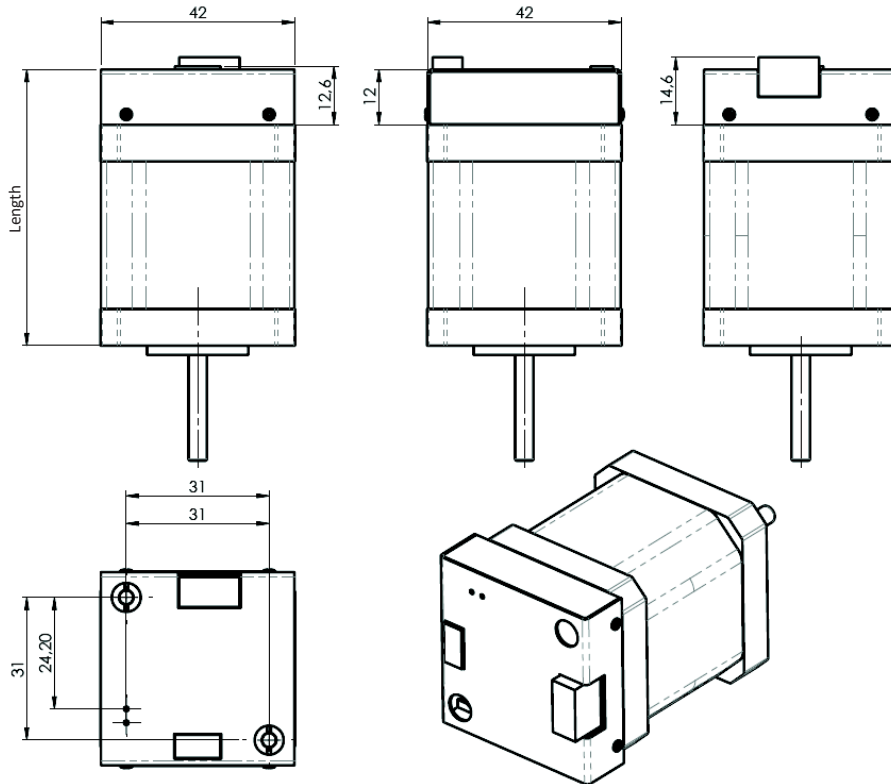


Figure 1: PD42-x-1670 overall dimensions in mm

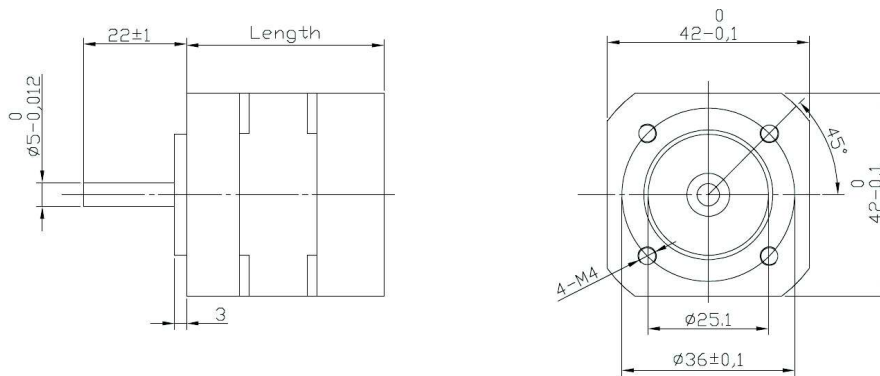


Figure 2: Motor without electronics - all dimensions in mm



When mounted to the BLDC motor the overall size of the PANdrive is the housing height (12mm) plus motor body size. The overall size does not include the connectors and mating connectors and the motor axes.

| Order Code | Motor body length | Overall length in mm |
|-------------|-------------------|----------------------|
| PD42-1-1670 | 41 | 53 |
| PD42-2-1670 | 61 | 73 |
| PD42-3-1670 | 81 | 93 |

Table 4: Length of unit



3.2 PD-x-1670 Motor Parameters

| Specifications | Unit | PD42-1-1670 | PD42-2-1670 | PD42-3-1670 |
|-------------------------------------|------|-------------|-------------|-------------|
| No. of Poles | | 8 | 8 | 8 |
| No. of Phases | | 3 | 3 | 3 |
| Shaft radial play (450g load) | mm | 0.02 | 0.02 | 0.02 |
| Shaft axial play (450g load) | mm | 0.08 | 0.08 | 0.08 |
| Max radial force (10mm from flange) | N | 28 | 28 | 28 |
| Max axial force | N | 10 | 10 | 10 |
| Rated voltage | V | 24 | 24 | 24 |
| Rated phase current | A | 1.79 | 3.47 | 5.14 |
| Rated Speed | RPM | 4000 | 4000 | 4000 |
| Rated Torque | Nm | 0.0625 | 0.125 | 0.185 |
| Max Peak Torque | Nm | 0.19 | 0.38 | 0.56 |
| Torque Constant | Nm/A | 0.035 | 0.036 | 0.036 |
| Rated Current (RMS) | A | 1.78 | 3.47 | 5.14 |
| Rated Current (Peak) | A | 2.5 | 4.9 | 7.27 |
| Line to Line Resistance | Ohm | 1.8 | 0.72 | 0.55 |
| Line to Line Inductance | mH | 2.6 | 1.2 | 0.8 |
| Max Peak Current | A | 5.4 | 10.6 | 15.5 |
| Motor Length | mm | 41 | 61 | 81 |
| Insulation Class | | B | B | B |

Table 5: BLDC motor technical data

