



KOCO
Group

A VARIETY OF APPLICATIONS



PRECISION DC CORELESS MOTOR

1



BRUSHLESS DC MOTOR

2



ELECTRONIC SPEED CONTROLLER

3



PRECISION GEARMOTOR

4



PRECISION SERVO MOTOR

5



DC CORELESS MOTOR

6



FLAT DC MOTOR

7



DC CORE MOTOR

8



MINI STEP MOTOR

9



SONIC MOTOR

10



Overview of the BRUSHLESS DC MOTORS

| | Motor No. | Dia x Length (max) | Max. Power | Page |
|----|---------------------|---------------------------|-------------------|-------------|
| 1 | B1020N | 10.00 x 20.00 mm | 11.50 W | 4 |
| 2 | B1215N2B | 12.00 x 15.00 mm | 4.60 W | 5 |
| 3 | B1220N2B | 12.00 x 20.00 mm | 3.30 W | 6 |
| 4 | B1230N2B | 12.00 x 30.00 mm | 7.80 W | 7 |
| 5 | B1233NH2B | 12.00 x 32.80 mm | 10.00 W | 8 |
| 6 | B1250NH2B | 12.70 x 50.00 mm | 9.00 W | 9 |
| 7 | B1329N2B | 13.00 x 29.00 mm | 4.20 W | 10 |
| 8 | B1635N2B | 16.00 x 35.00 mm | 100.00 W | 11 |
| 9 | BS1635NB2B | 16.00 x 35.00 mm | 4.00 W | 12 |
| 10 | BS1635NBH2B | 16.00 x 35.00 mm | 6.00 W | 13 |
| 11 | B1659NH2B | 16.00 x 58.60 mm | 556.00 W | 14 |
| 12 | B2040N2B | 20.00 x 40.00 mm | 31.00 W | 15 |
| 13 | B2040NIE2B | 20.00 x 40.00 mm | 0.18 W | 16 |
| 14 | B2135NIE2B | 21.00 x 35.00 mm | 2.00 W | 17 |
| 15 | B2440NH2B | 24.00 x 40.00 mm | 56.00 W | 18 |
| 16 | BS2835NB2B | 28.00 x 35.00 mm | 88.00 W | 19 |
| 17 | B2950NH2B | 29.00 x 50.00 mm | 105.00 W | 20 |
| 18 | BS3240NBH2B | 31.00 x 40.00 mm | 6.00 W | 21 |
| 19 | B3265NH2B | 32.00 x 65.00 mm | 215.00 W | 22 |
| 20 | B4040NH2B | 40.00 x 39.10 mm | 70.00 W | 23 |
| 21 | B7584FBHIE2B | 75.00 x 84.00 mm | 49.00 W | 24 |
| 22 | B01410NB2B | 14.20 x 9.60 mm | 0.60 W | 25 |
| 23 | B01509NBH2B | 15.50 x 8.70 mm | 3.20 W | 26 |
| 24 | B01511N2B | 14.20 x 12.00 mm | 29.00 W | 27 |
| 25 | B01613N2B | 16.00 x 13.30 mm | 26.00 W | 28 |
| 26 | B01709NB2B | 17.00 x 9.50 mm | 5.20 W | 29 |
| 27 | B01815N2B | 18.00 x 14.50 mm | 158.00 W | 30 |
| 28 | B02010NB2B | 20.00 x 23.30 mm | 15.00 W | 31 |
| 29 | B02015NB2B | 21.20 x 15.20 mm | 9.00 W | 32 |
| 30 | B02316N2B | 22.80 x 10.20 mm | 70.00 W | 33 |
| 31 | B02414NB2B | 24.50 x 14.00 mm | 1.60 W | 34 |
| 32 | B02814N2B | 27.60 x 14.30 mm | 253.00 W | 35 |
| 33 | B02820N2B | 27.60 x 20.10 mm | 210.00 W | 36 |
| 34 | B02824N2B | 27.70 x 24.00 mm | 169.00 W | 37 |
| 35 | B02826N2B | 27.60 x 25.80 mm | 387.00 W | 38 |
| 36 | B02828N2B | 27.70 x 29.40 mm | 452.00 W | 39 |
| 37 | B02914NBH2B | 46.00 x 43.00 x 14.00 mm | 10.00 W | 40 |
| 38 | BF3211N2B | 32.00 x 11.20 mm | 8.00 W | 41 |
| 39 | B03216NB2B | 31.50 x 15.90 mm | 32.70 W | 42 |
| 40 | B03518N2B | 35.00 x 18.50 mm | 103.00 W | 43 |
| 41 | B03518NB2B | 34.50 x 18.00 mm | 3.30 W | 44 |
| 42 | B03823N2B | 37.60 x 23.00 mm | 215.00 W | 45 |
| 43 | B03828NB2B | 37.10 x 27.60 mm | 292.00 W | 46 |
| 44 | B04316NB2B | 43.20 x 16.40 mm | 37.00 W | 47 |
| 45 | B04326NBH2B | 42.80 x 26.70 mm | 150.00 W | 48 |
| 46 | B04830N2B | 48.00 x 30.00 mm | 560.00 W | 49 |
| 47 | B06133N2B | 61.20 x 33.00 mm | 1750.00 W | 50 |
| 48 | B06452N3B | 63.00 x 52.00 mm | 1764.00 W | 51 |
| 49 | B08724N2B | 87.00 x 22.30 mm | 1892.00 W | 52 |

2

Product Introduction

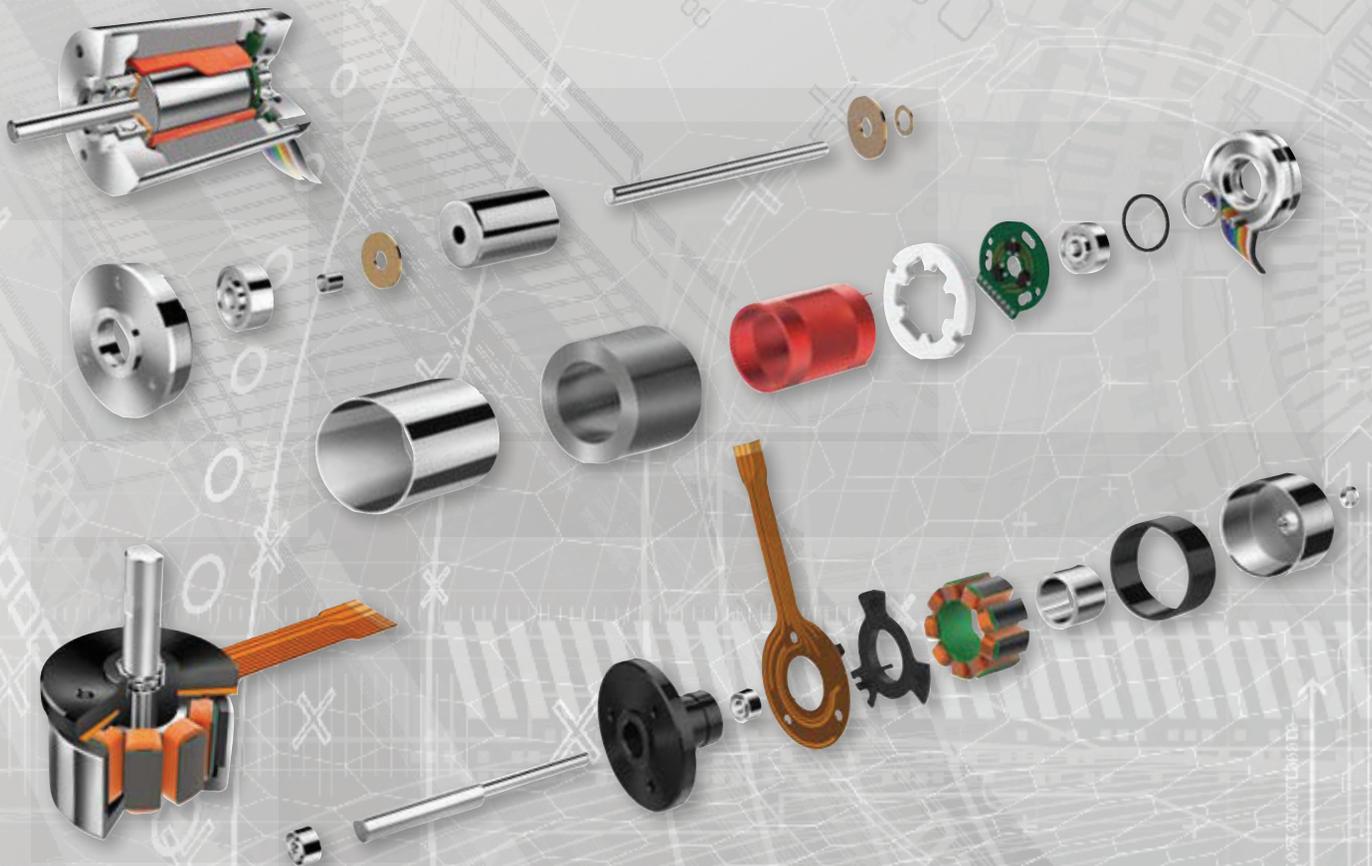


BRUSHLESS DC MOTOR

The brushless dc motor (BLDC) utilizes electronic commutation instead of mechanical commutation which overcomes the weaknesses of contact-type (brush) commutation, while providing excellent reliability and extremely long lifetime. Attributes of the motor's excellent performance include:

- **high reliability**
- **high rotational speed**
- **excellent size to power ratio**
- **high short-term overload capability**
- **low EMI**
- **good speed regulation**
- **can operate in certain poor environment conditions**

These motors are frequently used in application fields such as medical equipment, robotics, industrial equipment, UAV, electrical tools, and small household appliances.

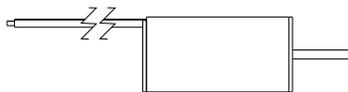


Brushless DC Motor · B1020N

Inner Rotor Without Sensor

| Characteristics | | 01-393-7.4 | |
|-----------------|--|------------------|-----------------|
| 1 | Voltage | V | 7.4 |
| 2 | Terminal resistance | Ω | 1.08 |
| 3 | No-load speed | rpm | 39300 |
| 4 | No-load current | A | 0.32 |
| 5 | Nominal torque | mNm | 2.6 |
| 6 | Nominal speed | rpm | 30000 |
| 7 | Nominal current | A | 1.85 |
| 8 | Max. output power | W | 11.5 |
| 9 | Max. efficiency | % | 61 |
| 10 | Back-EMF constant | mV/rpm | 0.18 |
| 11 | Torque constant | mNm/A | 1.70 |
| 12 | KV Value | rpm/V | 5300 |
| 13 | Speed/torque gradient | rpm/mNm | 3500 |
| 14 | Rotor inertia | gcm ² | 0.06 |
| 15 | Weight | g | 6.8 |
| 16 | Thermal resistance housing-ambient | K/W | 44 |
| 17 | Thermal resistance winding-housing | K/W | 10 |
| 18 | Thermal time constant motor | s | 124 |
| 19 | Thermal time constant winding | s | 119 |
| 20 | Operating temperature range | °C | -20 ~ +100 |
| 21 | Thermal class of winding | °C | 155 |
| 22 | Axial play | mm | 0.012 |
| 23 | Radial play | mm | 0.008 |
| 24 | Axial load dynamic | N | 1 |
| 25 | Axial load static | N | 25 |
| 26 | Radial load at 3 mm from mounting face | N | 6.3 |
| 27 | No. of pole pairs | | 1 |
| 28 | Bearings | | 2 ball bearings |
| 29 | Commutation | | Sensorless |
| 30 | Protection class | | IP 20 |

Approx. actual size



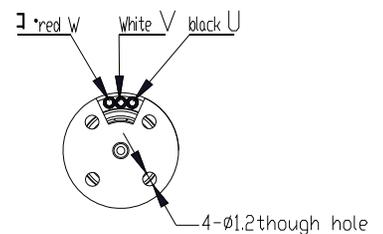
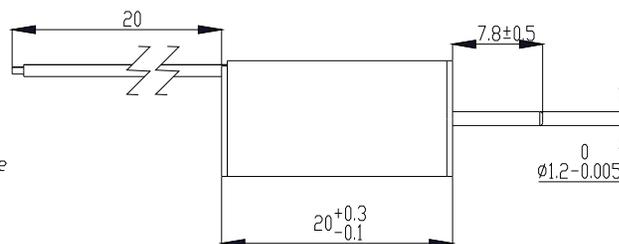
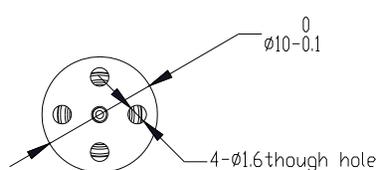
Applications

Precision drives in medical equipment, industrial automation fields

Options

| | |
|-------------------|--------------|
| Lead wires length | Bearing type |
| Shaft length | Hall sensor |
| Special coils | Encoder |
| Gearheads | Driver |

Dimension (mm) · B1020N



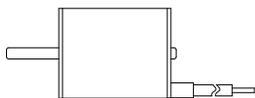


Brushless DC Motor · B1215N2B

Inner Rotor Without Sensor

| Characteristics | | | 09-350-3.6 | 06-145-4.5 | 12-425-7.4 |
|-----------------|--|------------------|-----------------|------------|------------|
| 1 | Voltage | V | 3.6 | 4.5 | 7.4 |
| 2 | Terminal resistance | Ω | 0.67 | 5.2 | 2.6 |
| 3 | No-load speed | rpm | 35000 | 14500 | 42500 |
| 4 | No-load current | A | 0.3 | 0.1 | 0.2 |
| 5 | Nominal torque | mNm | 0.7 | 1.0 | 0.3 |
| 6 | Nominal speed | rpm | 28200 | 4400 | 38000 |
| 7 | Nominal current | A | 1.1 | 0.5 | 0.4 |
| 8 | Max. output power | W | 4.3 | 0.8 | 4.6 |
| 9 | Max. efficiency | % | 58 | 44 | 54 |
| 10 | Back-EMF constant | mV/rpm | 0.10 | 0.27 | 0.16 |
| 11 | Torque constant | mNm/A | 0.93 | 2.62 | 1.55 |
| 12 | KV Value | rpm/V | 9720 | 3220 | 5740 |
| 13 | Speed/torque gradient | rpm/mNm | 7440 | 7230 | 10400 |
| 14 | Rotor inertia | gcm ² | 0.14 | 0.14 | 0.14 |
| 15 | Weight | g | 7 | 7 | 7 |
| 16 | Thermal resistance housing-ambient | K/W | 37.8 | 37.8 | 37.8 |
| 17 | Thermal resistance winding-housing | K/W | 6.2 | 6.2 | 6.2 |
| 18 | Thermal time constant motor | s | 170 | 170 | 170 |
| 19 | Thermal time constant winding | s | 2 | 2 | 2 |
| 20 | Operating temperature range | °C | -40 ~ +100 | -40 ~ +100 | -40 ~ +100 |
| 21 | Thermal class of winding | °C | 155 | 155 | 155 |
| 22 | Axial play | mm | 0.012 | 0.012 | 0.012 |
| 23 | Radial play | mm | 0.008 | 0.008 | 0.008 |
| 24 | Axial load dynamic | N | 1 | 1 | 1 |
| 25 | Axial load static | N | 25 | 25 | 25 |
| 26 | Radial load at 3 mm from mounting face | N | 6.3 | 6.3 | 6.3 |
| 27 | No. of pole pairs | | 1 | 1 | 1 |
| 28 | Bearings | | 2 ball bearings | | |
| 29 | Commutation | | Sensorless | | |
| 30 | Protection class | | IP 20 | | |

Approx. actual size



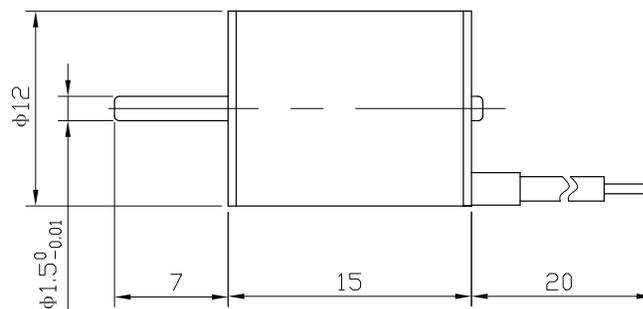
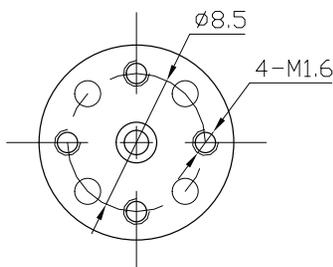
Applications

Precision drives in medical equipment, industrial automation fields

Options

| | |
|-------------------|--------------|
| Lead wires length | Bearing type |
| Shaft length | Hall sensor |
| Special coils | Encoder |
| Gearheads | Driver |

Dimension (mm) · B1215N2B



Brushless DC Motor · B1220N2B

Inner Rotor Without Sensor

| Characteristics | | | 03-230-7.4 | 02-172-6.0 | 01-175-5.0 |
|-----------------|--|------------------|-----------------|------------|------------|
| 1 | Voltage | V | 7.4 | 6 | 5 |
| 2 | Terminal resistance | Ω | 3.8 | 3.4 | 2 |
| 3 | No-load speed | rpm | 23000 | 17200 | 17500 |
| 4 | No-load current | A | 0.1 | 0.15 | 0.18 |
| 5 | Nominal torque | mNm | 1.3 | 1.3 | 1.4 |
| 6 | Nominal speed | rpm | 15300 | 10800 | 11600 |
| 7 | Nominal current | A | 0.57 | 0.6 | 0.78 |
| 8 | Max. output power | W | 3.3 | 2.2 | 2.5 |
| 9 | Max. efficiency | % | 62 | 50 | 51 |
| 10 | Back-EMF constant | mV/rpm | 0.3 | 0.3 | 0.3 |
| 11 | Torque constant | mNm/A | 2.9 | 3.0 | 2.5 |
| 12 | KV Value | rpm/V | 3100 | 2900 | 3500 |
| 13 | Speed/torque gradient | rpm/mNm | 3800 | 3700 | 3030 |
| 14 | Rotor inertia | gcm ² | 0.17 | 0.17 | 0.17 |
| 15 | Weight | g | 9.5 | 9.5 | 9.5 |
| 16 | Thermal resistance housing-ambient | K/W | 32 | 32 | 32 |
| 17 | Thermal resistance winding-housing | K/W | 5.5 | 5.5 | 5.5 |
| 18 | Thermal time constant motor | s | 190 | 190 | 190 |
| 19 | Thermal time constant winding | s | 1.5 | 1.5 | 1.5 |
| 20 | Operating temperature range | °C | -40 ~ +100 | -40 ~ +100 | -40 ~ +100 |
| 21 | Thermal class of winding | °C | 155 | 155 | 155 |
| 22 | Axial play | mm | 0.012 | 0.012 | 0.012 |
| 23 | Radial play | mm | 0.008 | 0.008 | 0.008 |
| 24 | Axial load dynamic | N | 1 | 1 | 1 |
| 25 | Axial load static | N | 25 | 25 | 25 |
| 26 | Radial load at 3 mm from mounting face | N | 6.3 | 6.3 | 6.3 |
| 27 | No. of pole pairs | | 1 | 1 | 1 |
| 28 | Bearings | | 2 ball bearings | | |
| 29 | Commutation | | Sensorless | | |
| 30 | Protection class | | IP 20 | | |

Approx. actual size



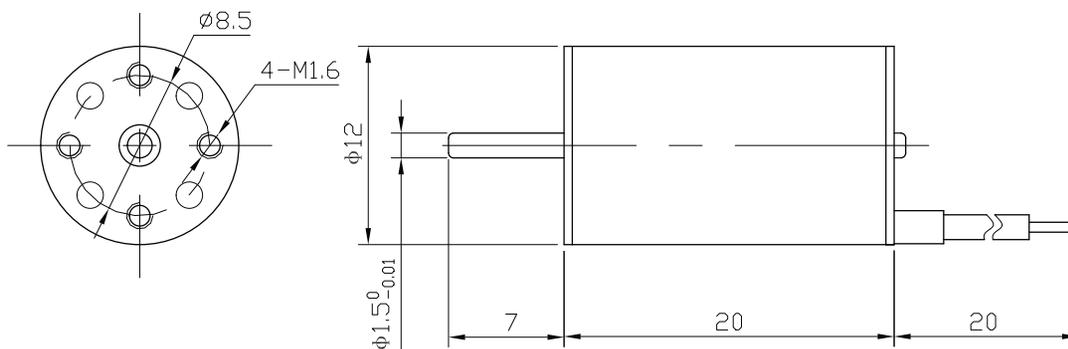
Applications

Precision drives in medical equipment, industrial automation fields

Options

| | |
|-------------------|--------------|
| Lead wires length | Bearing type |
| Shaft length | Hall sensor |
| Special coils | Encoder |
| Gearheads | Driver |

Dimension (mm) · B1220N2B



Brushless DC Motor · B1230N2B

Inner Rotor Without Sensor

| Characteristics | | | 28-115-12.0 | 09-180-9.0 | 15-180-3.7 |
|-----------------|--|------------------|-----------------|------------|------------|
| 1 | Voltage | V | 12 | 9 | 3.7 |
| 2 | Terminal resistance | Ω | 9 | 2.4 | 0.6 |
| 3 | No-load speed | rpm | 11500 | 18000 | 18000 |
| 4 | No-load current | A | 0.05 | 0.15 | 0.23 |
| 5 | Nominal torque | mNm | 3.8 | 2.7 | 2.7 |
| 6 | Nominal speed | rpm | 6800 | 14100 | 12200 |
| 7 | Nominal current | A | 0.45 | 0.74 | 1.7 |
| 8 | Max. output power | W | 3.7 | 7.8 | 5.9 |
| 9 | Max. efficiency | % | 65 | 64 | 67 |
| 10 | Back-EMF constant | mV/rpm | 1.0 | 0.5 | 0.2 |
| 11 | Torque constant | mNm/A | 9.6 | 4.6 | 1.9 |
| 12 | KV Value | rpm/V | 960 | 2000 | 4860 |
| 13 | Speed/torque gradient | rpm/mNm | 930 | 1090 | 1430 |
| 14 | Rotor inertia | gcm ² | 0.21 | 0.21 | 0.21 |
| 15 | Weight | g | 15 | 15 | 15 |
| 16 | Thermal resistance housing-ambient | K/W | 24 | 24 | 24 |
| 17 | Thermal resistance winding-housing | K/W | 4.5 | 4.5 | 4.5 |
| 18 | Thermal time constant motor | s | 240 | 240 | 240 |
| 19 | Thermal time constant winding | s | 2 | 2 | 2 |
| 20 | Operating temperature range | °C | -40 ~ +100 | -40 ~ +100 | -40 ~ +100 |
| 21 | Thermal class of winding | °C | 155 | 155 | 155 |
| 22 | Axial play | mm | 0.012 | 0.012 | 0.012 |
| 23 | Radial play | mm | 0.008 | 0.008 | 0.008 |
| 24 | Axial load dynamic | N | 1 | 1 | 1 |
| 25 | Axial load static | N | 25 | 25 | 25 |
| 26 | Radial load at 3 mm from mounting face | N | 6.3 | 6.3 | 6.3 |
| 27 | No. of pole pairs | | 1 | 1 | 1 |
| 28 | Bearings | | 2 ball bearings | | |
| 29 | Commutation | | Sensorless | | |
| 30 | Protection class | | IP 30 | | |

Approx. actual size



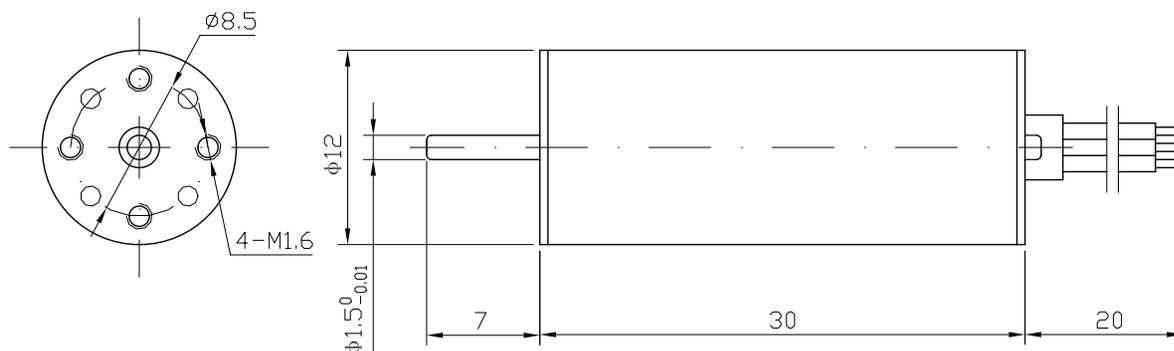
Applications

Precision drives in medical equipment, industrial automation fields

Options

| | |
|-------------------|--------------|
| Lead wires length | Bearing type |
| Shaft length | Hall sensor |
| Special coils | Encoder |
| Gearheads | Driver |

Dimension (mm) · B1230N2B



Brushless DC Motor · B1233NH2B

Inner Rotor With Sensor

| Characteristics | | 42-200-12.0 | |
|-----------------|--|------------------|-----------------|
| 1 | Voltage | V | 12 |
| 2 | Terminal resistance | Ω | 3.3 |
| 3 | No-load speed | rpm | 20000 |
| 4 | No-load current | A | 0.15 |
| 5 | Stall torque | mNm | 19.2 |
| 6 | Stall current | A | 3.6 |
| 7 | Nominal torque | mNm | 1.1 |
| 8 | Nominal speed | rpm | 18900 |
| 9 | Nominal current | A | 0.35 |
| 10 | Max. output power | W | 10 |
| 11 | Max. efficiency | % | 63 |
| 12 | Back-EMF constant | mV/rpm | 0.6 |
| 13 | Torque constant | mNm/A | 5.5 |
| 14 | KV value | rpm/V | 1660 |
| 15 | Speed/torque gradient | rpm/mNm | 1040 |
| 16 | Rotor inertia | gcm ² | 0.21 |
| 17 | Weight | g | 16 |
| 18 | Thermal resistance housing-ambient | K/W | 24 |
| 19 | Thermal resistance winding-housing | K/W | 4.5 |
| 20 | Thermal time constant motor | s | 240 |
| 21 | Thermal time constant winding | s | 2 |
| 22 | Operating temperature range | °C | -40 ~ +100 |
| 23 | Thermal class of winding | °C | 155 |
| 24 | Axial play | mm | 0.012 |
| 25 | Radial play | mm | 0.008 |
| 26 | Axial load dynamic | N | 1 |
| 27 | Axial load static | N | 25 |
| 28 | Radial load at 3 mm from mounting face | N | 6.3 |
| 29 | No. of pole pairs | | 1 |
| 30 | Bearings | | 2 ball bearings |
| 31 | Commutation | | Hall sensor |
| 32 | Protection class | | IP 20 |

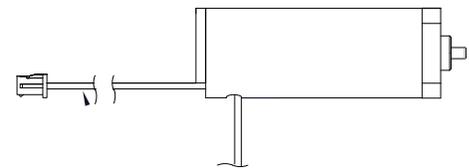
Options

| | |
|-------------------|--------------|
| Lead wires length | Bearing type |
| Shaft length | Hall sensor |
| Special coils | Encoder |
| Gearheads | Driver |

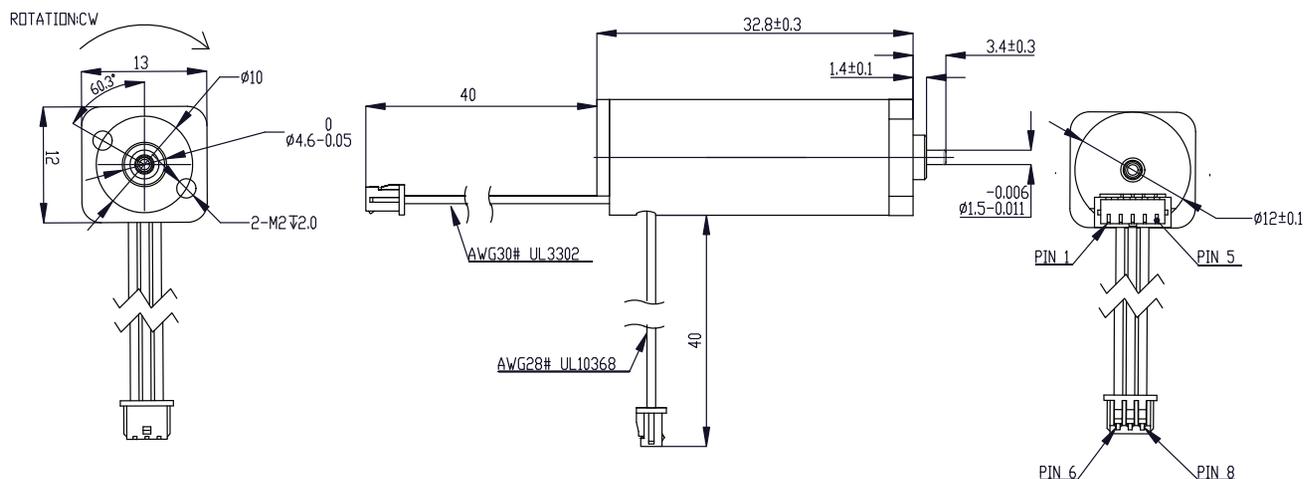
Applications

Precision drives in medical equipment, industrial automation fields

Approx. actual size



Dimension (mm) · B1233NH2B



Brushless DC Motor · B1250NH2B

Inner Rotor With Sensor

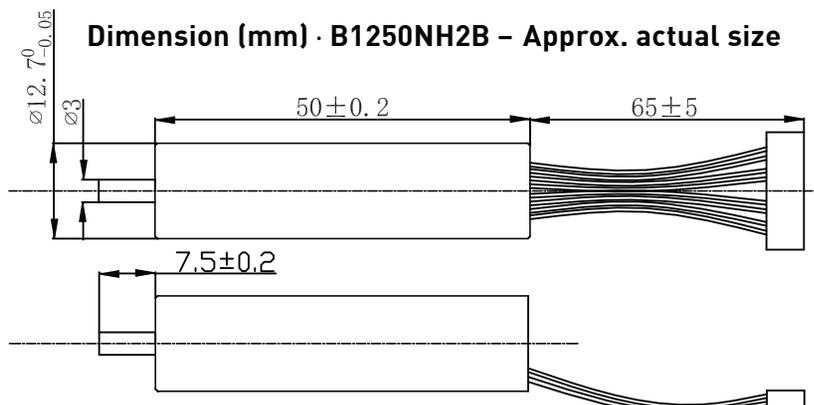
| Characteristics | | -145-24.0 | |
|-----------------|--|------------------|-----------------|
| 1 | Voltage | V | 24 |
| 2 | Terminal resistance | Ω | 14.5 |
| 3 | No-load speed | rpm | 14500 |
| 4 | No-load current | A | 0.1 |
| 5 | Stall torque | mNm | 23 |
| 6 | Stall current | A | 1.7 |
| 7 | Nominal torque | mNm | 4.3 |
| 8 | Nominal speed | rpm | 10800 |
| 9 | Nominal current | A | 0.4 |
| 10 | Max. output power | W | 9 |
| 11 | Max. efficiency | % | 57 |
| 12 | Back-EMF constant | mV/rpm | 1.6 |
| 13 | Torque constant | mNm/A | 15.3 |
| 14 | KV Value | rpm/V | 600 |
| 15 | Speed/torque gradient | rpm/mNm | 600 |
| 16 | Rotor inertia | gcm ² | 4 |
| 17 | Weight | g | 29 |
| 18 | Thermal resistance housing-ambient | K/W | 16 |
| 19 | Thermal resistance winding-housing | K/W | 0.7 |
| 20 | Thermal time constant motor | s | 800 |
| 21 | Thermal time constant winding | s | 5 |
| 22 | Operating temperature range | °C | -40 ~ +100 |
| 23 | Thermal class of winding | °C | 155 |
| 24 | Axial play | mm | 0.012 |
| 25 | Radial play | mm | 0.008 |
| 26 | Axial load dynamic | N | 5 |
| 27 | Axial load static | N | 80 |
| 28 | Radial load at 3 mm from mounting face | N | 29 |
| 29 | No. of pole pairs | | 2 |
| 30 | Bearings | | 2 ball bearings |
| 31 | Commutation | | Hall sensor |
| 32 | Protection class | | IP 20 |

Applications

Precision drives in medical equipment, industrial automation fields

Options

| | |
|-------------------|--------------|
| Lead wires length | Bearing type |
| Shaft length | Hall sensor |
| Special coils | Encoder |
| Gearheads | Driver |



Brushless DC Motor · B1329N2B

Inner Rotor Without Sensor

| Characteristics | | 01-250-12.0 | |
|-----------------|--|------------------|-----------------|
| 1 | Voltage | V | 12 |
| 2 | Terminal resistance | Ω | 7.5 |
| 3 | No-load speed | rpm | 25000 |
| 4 | No-load current | A | 0.1 |
| 5 | Nominal torque | mNm | 1.7 |
| 6 | Nominal speed | rpm | 15300 |
| 7 | Nominal current | A | 0.51 |
| 8 | Max. output power | W | 4.2 |
| 9 | Max. efficiency | % | 56.0 |
| 10 | Back-EMF constant | mV/rpm | 0.45 |
| 11 | Torque constant | mNm/A | 4.3 |
| 12 | KV Value | rpm/V | 2100 |
| 13 | Speed/torque gradient | rpm/mNm | 3900 |
| 14 | Rotor inertia | gcm ² | 0.18 |
| 15 | Weight | g | 15 |
| 16 | Thermal resistance housing-ambient | K/W | 24 |
| 17 | Thermal resistance winding-housing | K/W | 4.5 |
| 18 | Thermal time constant motor | s | 250 |
| 19 | Thermal time constant winding | s | 2 |
| 20 | Operating temperature range | °C | -40 ~ +120 |
| 21 | Thermal class of winding | °C | 155 |
| 22 | Axial play | mm | 0.012 |
| 23 | Radial play | mm | 0.008 |
| 24 | Axial load dynamic | N | 1.5 |
| 25 | Axial load static | N | 37 |
| 26 | Radial load at 3 mm from mounting face | N | 12 |
| 27 | No. of pole pairs | | 1 |
| 28 | Bearings | | 2 ball bearings |
| 29 | Commutation | | Sensorless |
| 30 | Protection class | | IP 30 |

Approx. actual size



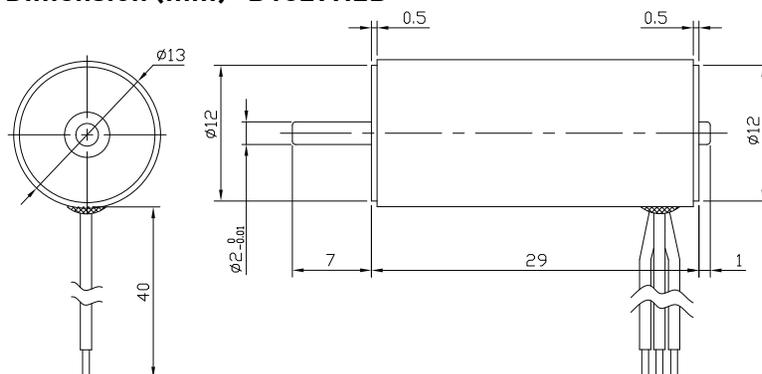
Applications

Precision drives in medical equipment, industrial automation fields

Options

| | |
|-------------------|--------------|
| Lead wires length | Bearing type |
| Shaft length | Hall sensor |
| Special coils | Encoder |
| Gearheads | Driver |

Dimension (mm) · B1329N2B

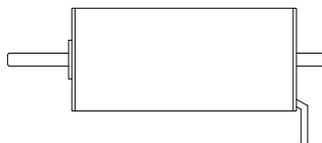


Brushless DC Motor · B1635N2B

Inner Rotor Without Sensor

| Characteristics | | 01-450-12.0 | |
|-----------------|--|------------------|-----------------|
| 1 | Voltage | V | 12 |
| 2 | Terminal resistance | Ω | 0.35 |
| 3 | No-load speed | rpm | 45000 |
| 4 | No-load current | A | 0.35 |
| 5 | Nominal torque | mNm | 1.5 |
| 6 | Nominal speed | rpm | 43800 |
| 7 | Nominal current | A | 0.96 |
| 8 | Max. output power | W | 100 |
| 9 | Max. efficiency | % | 81 |
| 10 | Back-EMF constant | mV/rpm | 0.26 |
| 11 | Torque constant | mNm/A | 2.5 |
| 12 | KV Value | rpm/V | 3750 |
| 13 | Speed/torque gradient | rpm/mNm | 530 |
| 14 | Rotor inertia | gcm ² | 1.5 |
| 15 | Weight | g | 40 |
| 16 | Thermal resistance housing-ambient | K/W | 17 |
| 17 | Thermal resistance winding-housing | K/W | 4.8 |
| 18 | Thermal time constant motor | s | 250 |
| 19 | Thermal time constant winding | s | 6 |
| 20 | Operating temperature range | °C | -40 ~ +120 |
| 21 | Thermal class of winding | °C | 155 |
| 22 | Axial play | mm | 0.012 |
| 23 | Radial play | mm | 0.008 |
| 24 | Axial load dynamic | N | 1.5 |
| 25 | Axial load static | N | 37 |
| 26 | Radial load at 3 mm from mounting face | N | 12 |
| 27 | No. of pole pairs | | 1 |
| 28 | Bearings | | 2 ball bearings |
| 29 | Commutation | | Sensorless |
| 30 | Protection class | | IP 20 |

Approx. actual size



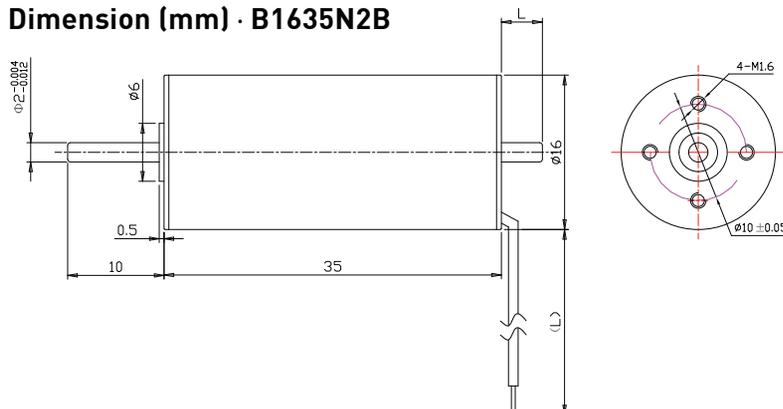
Applications

Precision drives in medical equipment, industrial automation fields

Options

| | |
|-------------------|--------------|
| Lead wires length | Bearing type |
| Shaft length | Hall sensor |
| Special coils | Encoder |
| Gearheads | Driver |

Dimension (mm) · B1635N2B

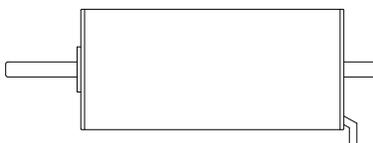


Brushless DC Motor · BS1635NB2B

Inner Rotor Without Sensor

| Characteristics | | 12-120-12.0 | |
|-----------------|--|------------------|-----------------|
| 1 | Voltage | V | 12 |
| 2 | Terminal resistance | Ω | 7.3 |
| 3 | No-load speed | rpm | 12000 |
| 4 | No-load current | A | 0.09 |
| 5 | Nominal torque | mNm | 0.6 |
| 6 | Nominal speed | rpm | 11000 |
| 7 | Nominal current | A | 0.16 |
| 8 | Max. output power | W | 4 |
| 9 | Max. efficiency | % | 58 |
| 10 | Back-EMF constant | mV/rpm | 0.26 |
| 11 | Torque constant | mNm/A | 9.0 |
| 12 | KV Value | rpm/V | 1000 |
| 13 | Speed/torque gradient | rpm/mNm | 520 |
| 14 | Rotor inertia | gcm ² | 1.3 |
| 15 | Weight | g | 40 |
| 16 | Thermal resistance housing-ambient | K/W | 17 |
| 17 | Thermal resistance winding-housing | K/W | 4.8 |
| 18 | Thermal time constant motor | s | 250 |
| 19 | Thermal time constant winding | s | 6 |
| 20 | Operating temperature range | °C | -40 ~ +120 |
| 21 | Thermal class of winding | °C | 155 |
| 22 | Axial play | mm | 0.012 |
| 23 | Radial play | mm | 0.008 |
| 24 | Axial load dynamic | N | 1.5 |
| 25 | Axial load static | N | 37 |
| 26 | Radial load at 3 mm from mounting face | N | 12 |
| 27 | No. of pole pairs | | 2 |
| 28 | Bearings | | 2 ball bearings |
| 29 | Commutation | | Sensorless |
| 30 | Protection class | | IP 20 |

Approx. actual size



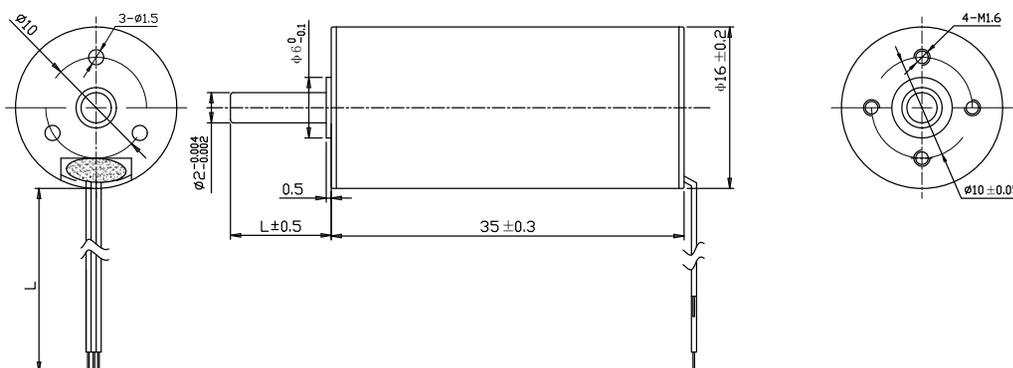
Applications

Precision drives in medical equipment, industrial automation fields

Options

| | |
|-------------------|--------------|
| Lead wires length | Bearing type |
| Shaft length | Hall sensor |
| Special coils | Encoder |
| Gearheads | Driver |

Dimension (mm) · BS1635NB2B



Brushless DC Motor · BS1635NBH2B

Inner Rotor With Sensor

| Characteristics | | 09-300-12.0 | |
|-----------------|--|------------------|-----------------|
| 1 | Voltage | V | 12 |
| 2 | Terminal resistance | Ω | 3.5 |
| 3 | No-load speed | rpm | 30000 |
| 4 | No-load current | A | 0.30 |
| 5 | Stall torque | mNm | 11 |
| 6 | Stall current | A | 3.4 |
| 7 | Nominal torque | mNm | 0.6 |
| 8 | Nominal speed | rpm | 28000 |
| 9 | Nominal current | A | 0.4 |
| 10 | Max. output power | W | 6.0 |
| 11 | Max. efficiency | % | 51 |
| 12 | Back-EMF constant | mV/rpm | 2.25 |
| 13 | Torque constant | mNm/A | 3.5 |
| 14 | KV value | rpm/V | 2500 |
| 15 | Speed/torque gradient | rpm/mNm | 130 |
| 16 | Rotor inertia | gcm ² | 1.3 |
| 17 | Weight | g | 40 |
| 18 | Thermal resistance housing-ambient | K/W | 14 |
| 19 | Thermal resistance winding-housing | K/W | 2.8 |
| 20 | Thermal time constant motor | s | 620 |
| 21 | Thermal time constant winding | s | 4 |
| 22 | Operating temperature range | °C | -40 ~ +100 |
| 23 | Thermal class of winding | °C | 155 |
| 24 | Axial play | mm | 0.012 |
| 25 | Radial play | mm | 0.008 |
| 26 | Axial load dynamic | N | 5 |
| 27 | Axial load static | N | 80 |
| 28 | Radial load at 3 mm from mounting face | N | 29 |
| 29 | No. of pole pairs | | 2 |
| 30 | Bearings | | 2 ball bearings |
| 31 | Commutation | | Hall sensor |
| 32 | Protection class | | IP 30 |

Approx. actual size



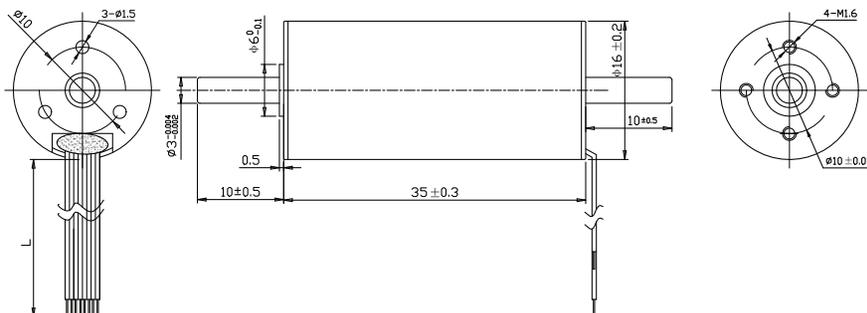
Applications

Precision drives in medical equipment, industrial automation fields

Options

| | |
|-------------------|--------------|
| Lead wires length | Bearing type |
| Shaft length | Hall sensor |
| Special coils | Encoder |
| Gearheads | Driver |

Dimension (mm) · BS1635NBH2B

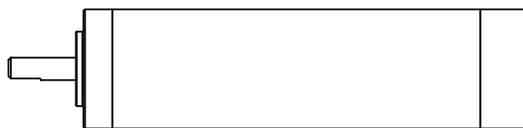


Brushless DC Motor · B1659NH2B

Inner Rotor, Slotless, Sensored

| Characteristics | | | 01-425-32.0-0030 | 03-645-36.0-**** |
|-----------------|--|------------------|------------------|------------------|
| 1 | Voltage | V | 32.0 | 36.0 |
| 2 | Terminal resistance | Ω | 1.42 | 0.58 |
| 3 | No-load speed | rpm | 41000 | 64500 |
| 4 | No-load current | A | 0.12 | 0.18 |
| 5 | Stall torque | mNm | 166.2 | 328.9 |
| 6 | Stall current | A | 22.5 | 62.1 |
| 7 | Nominal torque | mNm | 8.6 | 11.5 |
| 8 | Nominal speed | rpm | 38880 | 62240 |
| 9 | Nominal current | A | 1.31 | 2.35 |
| 10 | Max. output power | W | 179 | 556 |
| 11 | Max. efficiency | % | 86.0 | 89.6 |
| 12 | Back-EMF constant | mV/rpm | 0.776 | 0.557 |
| 13 | Torque constant | mNm/A | 7.41 | 5.31 |
| 14 | KV value | rpm/V | 1280 | 1790 |
| 15 | Speed/torque gradient | rpm/mNm | 247 | 196 |
| 16 | Rotor inertia | gcm ² | 0.65 | 0.65 |
| 17 | Weight | g | 51.5 | 52.0 |
| 18 | Thermal resistance housing-ambient | K/W | | 15.3 |
| 19 | Thermal resistance winding-housing | K/W | | 18.7 |
| 20 | Thermal time constant motor | s | | 362 |
| 21 | Thermal time constant winding | s | | 233 |
| 22 | Operating temperature range | °C | | -40 ~ +120 |
| 23 | Thermal class of winding | °C | | 155 |
| 24 | Axial play | mm | | 0.012 |
| 25 | Radial play | mm | | 0.008 |
| 26 | Axial load dynamic | N | | 1.5 |
| 27 | Axial load static | N | | 60 |
| 28 | Radial load at 3 mm from mounting face | N | | 10 |
| 29 | No. of pole pairs | | | 1 |
| 30 | Bearings | | | 2 ball bearings |
| 31 | Commutation | | | Hall sensor |
| 32 | Protection class | | | IP 20 |

Approx. actual size



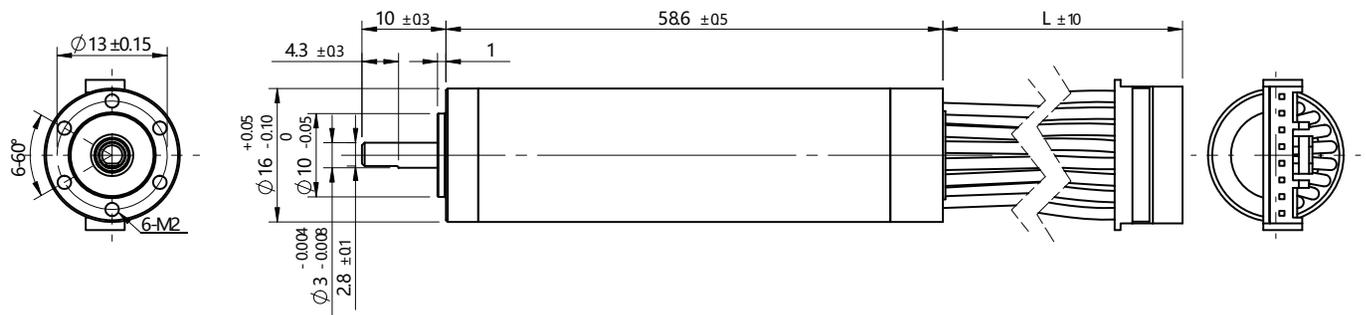
Applications

Precision drives in medical equipment, industrial automation fields

Options

| | |
|-------------------|--------------|
| Lead wires length | Bearing type |
| Shaft length | Hall sensor |
| Special coils | Encoder |
| Gearheads | Driver |

Dimension (mm) · B1659NH2B



Brushless DC Motor · B2040N2B

Inner Rotor Without Sensor

| Characteristics | | | 01-150-12.0 | 02-80-12.0 | 03-67-9.0 |
|-----------------|--|------------------|-----------------|------------|------------|
| 1 | Voltage | V | 12 | 12 | 9 |
| 2 | Terminal resistance | Ω | 1.1 | 3.6 | 2.5 |
| 3 | No-load speed | rpm | 15000 | 8000 | 6700 |
| 4 | No-load current | A | 0.25 | 0.22 | 0.2 |
| 5 | Nominal torque | mNm | 7.6 | 7.6 | 10.2 |
| 6 | Nominal speed | rpm | 13000 | 5900 | 4300 |
| 7 | Nominal current | A | 1.3 | 0.8 | 1.1 |
| 8 | Max. output power | W | 31 | 8.7 | 7.2 |
| 9 | Max. efficiency | % | 72 | 55 | 58 |
| 10 | Back-EMF constant | mV/rpm | 0.78 | 1.4 | 1.3 |
| 11 | Torque constant | mNm/A | 7.5 | 13.4 | 12.1 |
| 12 | KV Value | rpm/V | 1250 | 670 | 745 |
| 13 | Speed/torque gradient | rpm/mNm | 190 | 190 | 163 |
| 14 | Rotor inertia | gcm ² | 2 | 2 | 2 |
| 15 | Weight | g | 55 | 55 | 55 |
| 16 | Thermal resistance housing-ambient | K/W | 16 | 16 | 16 |
| 17 | Thermal resistance winding-housing | K/W | 3.5 | 3.5 | 3.5 |
| 18 | Thermal time constant motor | s | 620 | 620 | 620 |
| 19 | Thermal time constant winding | s | 4 | 4 | 4 |
| 20 | Operating temperature range | °C | -40 ~ +100 | -40 ~ +100 | -40 ~ +100 |
| 21 | Thermal class of winding | °C | 155 | 155 | 155 |
| 22 | Axial play | mm | 0.012 | 0.012 | 0.012 |
| 23 | Radial play | mm | 0.008 | 0.008 | 0.008 |
| 24 | Axial load dynamic | N | 5 | 5 | 5 |
| 25 | Axial load static | N | 80 | 80 | 80 |
| 26 | Radial load at 3 mm from mounting face | N | 29 | 29 | 29 |
| 27 | No. of pole pairs | | 1 | 1 | 1 |
| 28 | Bearings | | 2 ball bearings | | |
| 29 | Commutation | | Sensorless | | |
| 30 | Protection class | | IP 20 | | |

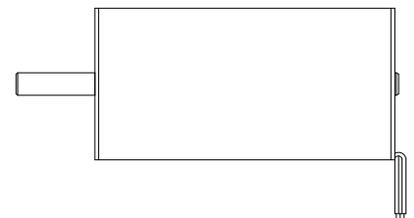
Applications

Precision drives in medical equipment, industrial automation fields

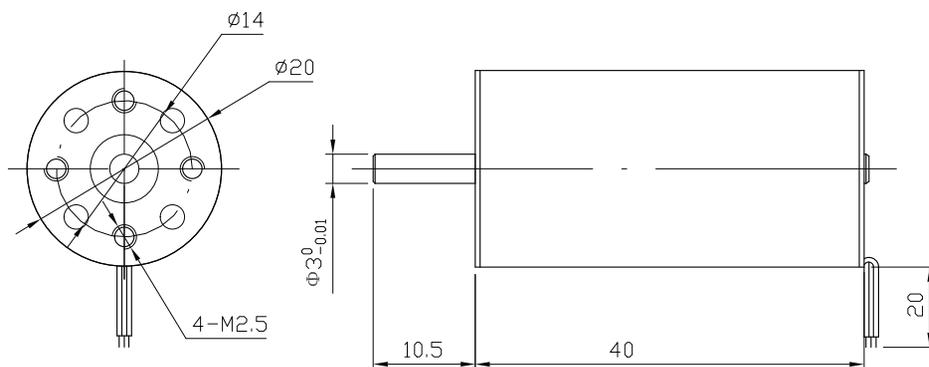
Options

| | |
|-------------------|--------------|
| Lead wires length | Bearing type |
| Shaft length | Hall sensor |
| Special coils | Encoder |
| Gearheads | Driver |

Approx. actual size



Dimension (mm) · B2040N2B



Brushless DC Motor · B2040NIE2B

Interior Rotor With Integrated Driver

| Characteristics | | 01-29-6.5 | |
|-----------------|--|------------------|-----------------|
| 1 | Voltage | V | 6.5 |
| 2 | Operating voltage | V | 5.8 ~ 10 |
| 3 | Terminal resistance | Ω | 42 |
| 4 | No-load speed | rpm | 2900 |
| 5 | No-load current | A | 0.02 |
| 6 | Nominal torque | mNm | 1.4 |
| 7 | Nominal speed | rpm | 1200 |
| 8 | Nominal current | A | 0.1 |
| 9 | Max. output power | W | 0.18 |
| 10 | Max. efficiency | % | 38 |
| 11 | Back-EMF constant | mV/rpm | 1.9 |
| 12 | Torque constant | mNm/A | 18 |
| 13 | KV value | rpm/V | 450 |
| 14 | Speed/torque gradient | rpm/mNm | 1200 |
| 15 | Rotor inertia | gcm ² | 6.95 |
| 16 | Weight | g | 47 |
| 17 | Thermal resistance housing-ambient | K/W | 8 |
| 18 | Thermal resistance winding-housing | K/W | 10 |
| 19 | Thermal time constant motor | s | 800 |
| 20 | Thermal time constant winding | s | 7 |
| 21 | Operating temperature range | °C | -40 ~ +100 |
| 22 | Thermal class of winding | °C | 130 |
| 23 | Axial play | mm | 0.012 |
| 24 | Radial play | mm | 0.008 |
| 25 | Axial load dynamic | N | 5 |
| 26 | Axial load static | N | 80 |
| 27 | Radial load at 3 mm from mounting face | N | 29 |
| 28 | No. of pole pairs | | 1 |
| 29 | Bearings | | 2 ball bearings |
| 30 | Commutation | | Sensorless |
| 31 | Protection class | | IP 42 |

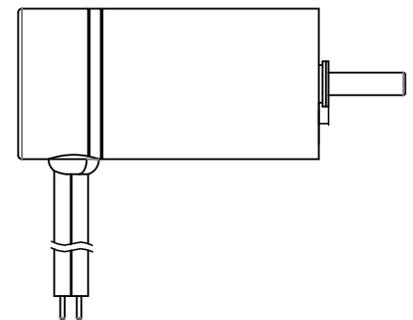
Applications

Precision drives in medical equipment, industrial automation fields

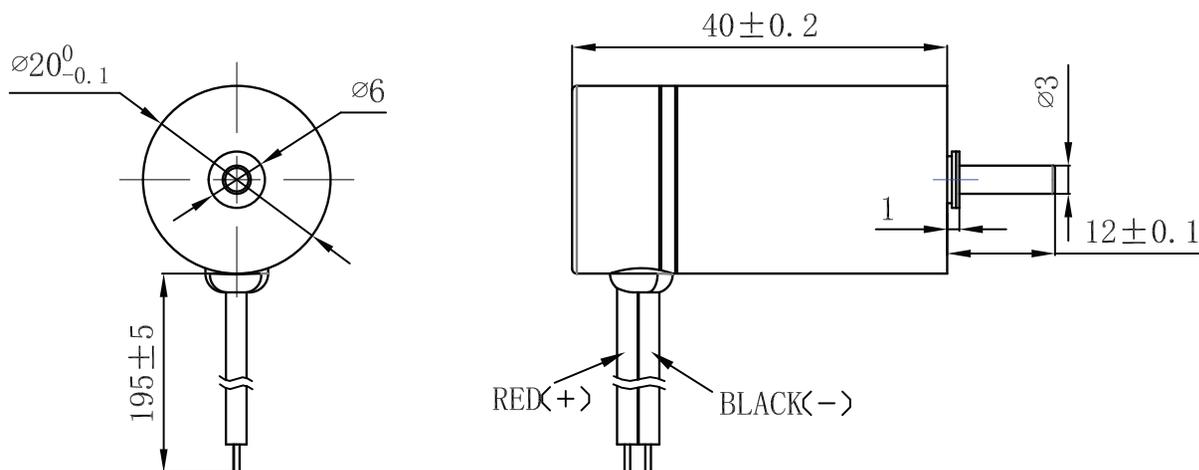
Options

| | |
|-------------------|--------------|
| Lead wires length | Gearheads |
| Shaft length | Bearing type |
| Special coils | |

Approx. actual size



Dimension (mm) · B2040NIE2B



Brushless DC Motor · B2135NIE2B

Interior Rotor With Integrated Driver

| Characteristics | | 01-65-12.0 | |
|-----------------|--|------------------|-----------------|
| 1 | Voltage | V | 12 |
| 2 | Operating voltage | V | 8 ~ 15 |
| 3 | Terminal resistance | Ω | 14 |
| 4 | No-load speed | rpm | 6500 |
| 5 | No-load current | A | 0.1 |
| 6 | Nominal torque | mNm | 8.6 |
| 7 | Nominal speed | rpm | 1800 |
| 8 | Nominal current | A | 0.65 |
| 9 | Max. output power | W | 2.00 |
| 10 | Max. efficiency | % | 43 |
| 11 | Back-EMF constant | mV/rpm | 1.63 |
| 12 | Torque constant | mNm/A | 15.6 |
| 13 | KV value | rpm/V | 540 |
| 14 | Speed/torque gradient | rpm/mNm | 550 |
| 15 | Rotor inertia | gcm ² | 2.1 |
| 16 | Weight | g | 50 |
| 17 | Thermal resistance housing-ambient | K/W | 1.8 |
| 18 | Thermal resistance winding-housing | K/W | 16 |
| 19 | Thermal time constant motor | s | 600 |
| 20 | Thermal time constant winding | s | 3 |
| 21 | Operating temperature range | °C | -40 ~ +100 |
| 22 | Thermal class of winding | °C | 155 |
| 23 | Axial play | mm | 0.012 |
| 24 | Radial play | mm | 0.008 |
| 25 | Axial load dynamic | N | 1.5 |
| 26 | Axial load static | N | 37 |
| 27 | Radial load at 3 mm from mounting face | N | 12 |
| 28 | No. of pole pairs | | 1 |
| 29 | Bearings | | 2 ball bearings |
| 30 | Commutation | | Sensorless |
| 31 | Protection class | | IP 30 |

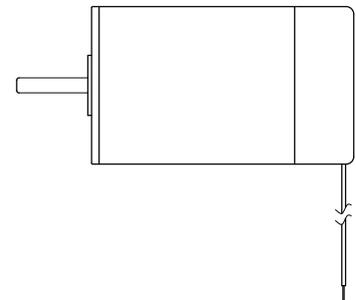
Applications

Precision drives in medical equipment, industrial automation fields

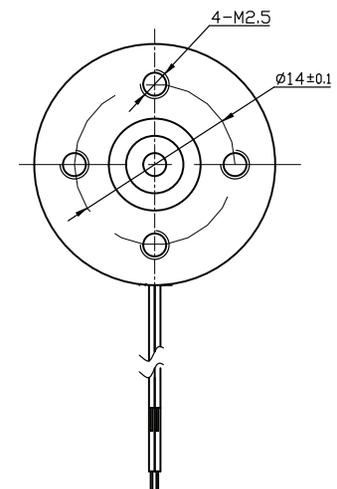
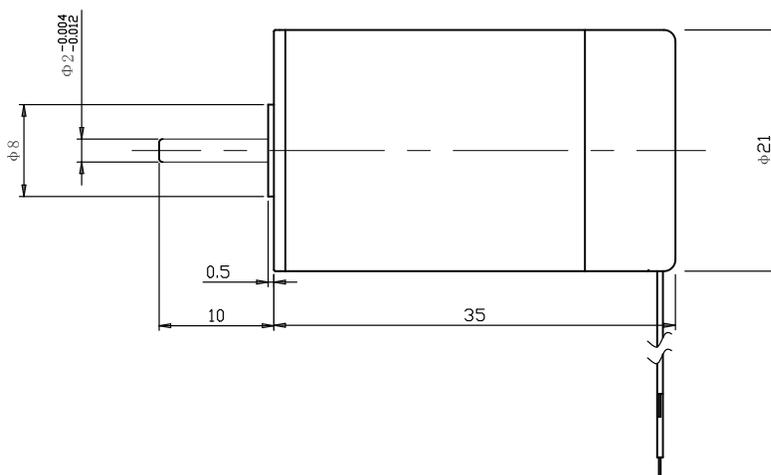
Options

| | |
|-------------------|--------------|
| Lead wires length | Gearheads |
| Shaft length | Bearing type |
| Special coils | |

Approx. actual size



Dimension (mm) · B2135NIE2B

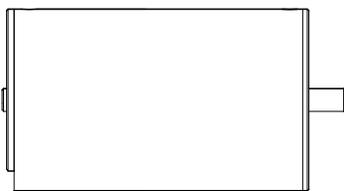


Brushless DC Motor · B2440NH2B

Inner Rotor With Sensor

| Characteristics | | 01-170-24.0 | |
|-----------------|--|------------------|-----------------|
| 1 | Voltage | V | 24 |
| 2 | Terminal resistance | Ω | 2.5 |
| 3 | No-load speed | rpm | 17000 |
| 4 | No-load current | A | 0.15 |
| 5 | Stall torque | mNm | 125.00 |
| 6 | Stall current | A | 9.60 |
| 7 | Nominal torque | mNm | 18.2 |
| 8 | Nominal speed | rpm | 14500 |
| 9 | Nominal current | A | 1.52 |
| 10 | Max. output power | W | 56 |
| 11 | Max. efficiency | % | 76 |
| 12 | Back-EMF constant | mV/rpm | 1.39 |
| 13 | Torque constant | mNm/A | 13.2 |
| 14 | KV value | rpm/V | 708 |
| 15 | Speed/torque gradient | rpm/mNm | 136 |
| 16 | Rotor inertia | gcm ² | 2 |
| 17 | Weight | g | 80 |
| 18 | Thermal resistance housing-ambient | K/W | 9 |
| 19 | Thermal resistance winding-housing | K/W | 3.5 |
| 20 | Thermal time constant motor | s | 620 |
| 21 | Thermal time constant winding | s | 4 |
| 22 | Operating temperature range | °C | -40 ~ +120 |
| 23 | Thermal class of winding | °C | 155 |
| 24 | Axial play | mm | 0.012 |
| 25 | Radial play | mm | 0.008 |
| 26 | Axial load dynamic | N | 5 |
| 27 | Axial load static | N | 80 |
| 28 | Radial load at 3 mm from mounting face | N | 29 |
| 29 | No. of pole pairs | | 1 |
| 30 | Bearings | | 2 ball bearings |
| 31 | Commutation | | Hall sensor |
| 32 | Protection class | | IP 30 |

Approx. actual size



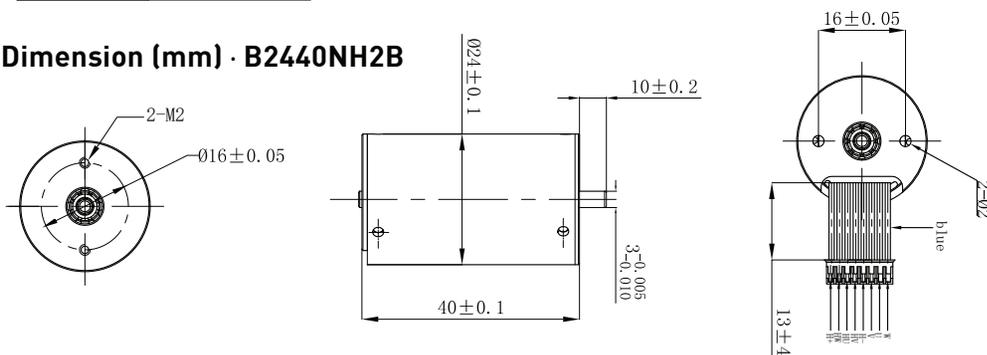
Applications

Precision drives in medical equipment, industrial automation fields

Options

| | |
|-------------------|--------------|
| Lead wires length | Bearing type |
| Shaft length | Hall sensor |
| Special coils | Encoder |
| Gearheads | Driver |

Dimension (mm) · B2440NH2B



Brushless DC Motor · BS2835NB2B

Inner Rotor Without Sensor

| Characteristics | | 01-110-24.0 | |
|-----------------|--|------------------|-----------------|
| 1 | Voltage | V | 24 |
| 2 | Terminal resistance | Ω | 1.6 |
| 3 | No-load speed | rpm | 11000 |
| 4 | No-load current | A | 0.15 |
| 5 | Nominal torque | mNm | 9.7 |
| 6 | Nominal speed | rpm | 10600 |
| 7 | Nominal current | A | 0.6 |
| 8 | Max. output power | W | 88 |
| 9 | Max. efficiency | % | 80 |
| 10 | Back-EMF constant | mV/rpm | 0.27 |
| 11 | Torque constant | mNm/A | 20.0 |
| 12 | KV Value | rpm/V | 458 |
| 13 | Speed/torque gradient | rpm/mNm | 407 |
| 14 | Rotor inertia | gcm ² | 13 |
| 15 | Weight | g | 80 |
| 16 | Thermal resistance housing-ambient | K/W | 17.3 |
| 17 | Thermal resistance winding-housing | K/W | 4 |
| 18 | Thermal time constant motor | s | 600 |
| 19 | Thermal time constant winding | s | 3 |
| 20 | Operating temperature range | °C | -40 ~ +100 |
| 21 | Thermal class of winding | °C | 155 |
| 22 | Axial play | mm | 0.012 |
| 23 | Radial play | mm | 0.008 |
| 24 | Axial load dynamic | N | 5 |
| 25 | Axial load static | N | 80 |
| 26 | Radial load at 3 mm from mounting face | N | 29 |
| 27 | No. of pole pairs | | 2 |
| 28 | Bearings | | 2 ball bearings |
| 29 | Commutation | | Sensorless |
| 30 | Protection class | | IP 20 |

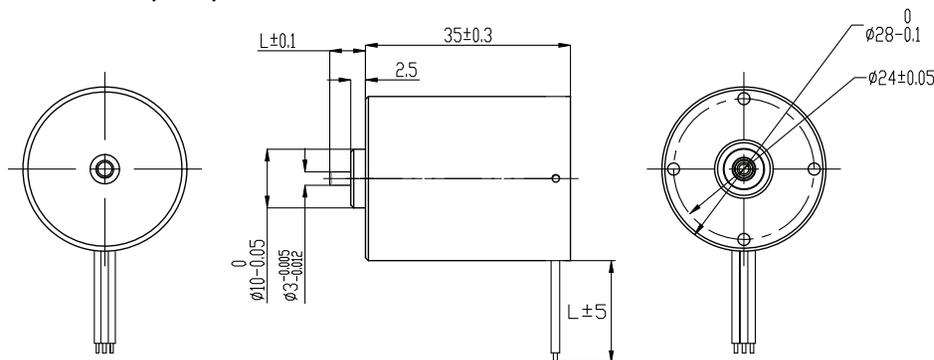
Applications

Precision drives in medical equipment, industrial automation fields

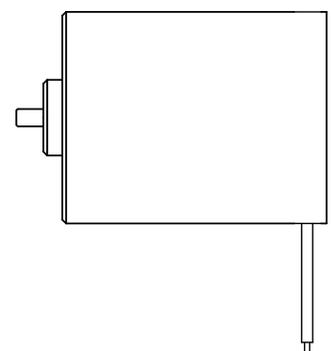
Options

| | |
|-------------------|--------------|
| Lead wires length | Bearing type |
| Shaft length | Hall sensor |
| Special coils | Encoder |
| Gearheads | Driver |

Dimension (mm) · BS2835NB2B



Approx. actual size



Brushless DC Motor · B2950NH2B

Inner Rotor With Sensor

| Characteristics | | 01-130-24.0 | |
|-----------------|--|------------------|-----------------|
| 1 | Voltage | V | 24 |
| 2 | Terminal resistance | Ω | 1.32 |
| 3 | No-load speed | rpm | 13000 |
| 4 | No-load current | A | 0.30 |
| 5 | Stall torque | mNm | 310 |
| 6 | Stall current | A | 18 |
| 7 | Nominal torque | mNm | 28 |
| 8 | Nominal speed | rpm | 11800 |
| 9 | Nominal current | A | 1.9 |
| 10 | Max. output power | W | 105 |
| 11 | Max. efficiency | % | 75 |
| 12 | Back-EMF constant | mV/rpm | 1.8 |
| 13 | Torque constant | mNm/A | 17.3 |
| 14 | KV value | rpm/V | 540 |
| 15 | Speed/torque gradient | rpm/mNm | 42 |
| 16 | Rotor inertia | gcm ² | 5 |
| 17 | Weight | g | 140 |
| 18 | Thermal resistance housing-ambient | K/W | 7.8 |
| 19 | Thermal resistance winding-housing | K/W | 5.9 |
| 20 | Thermal time constant motor | s | 1400 |
| 21 | Thermal time constant winding | s | 20 |
| 22 | Operating temperature range | °C | -40 ~ +100 |
| 23 | Thermal class of winding | °C | 155 |
| 24 | Axial play | mm | 0.012 |
| 25 | Radial play | mm | 0.008 |
| 26 | Axial load dynamic | N | 5 |
| 27 | Axial load static | N | 80 |
| 28 | Radial load at 3 mm from mounting face | N | 29 |
| 29 | No. of pole pairs | | 2 |
| 30 | Bearings | | 2 ball bearings |
| 31 | Commutation | | Hall sensor |
| 32 | Protection class | | IP 20 |

20

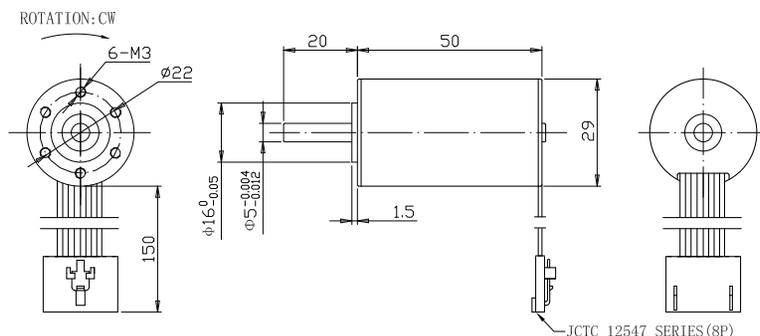
Applications

Precision drives in medical equipment, industrial automation fields

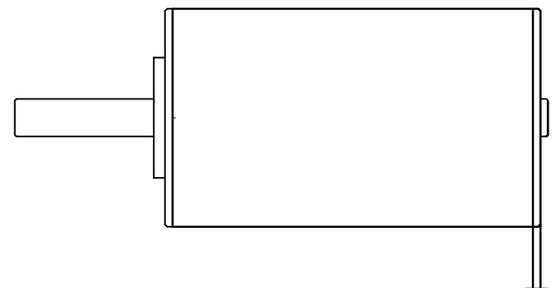
Options

| | |
|-------------------|--------------|
| Lead wires length | Bearing type |
| Shaft length | Hall sensor |
| Special coils | Encoder |
| Gearheads | Driver |

Dimension (mm) · B2950NH2B



Approx. actual size



Brushless DC Motor · BS3240NBH2B

Inner Rotor With Sensor

| Characteristics | | 01-33-6.0 | |
|-----------------|--|------------------|-----------------|
| 1 | Voltage | V | 6 |
| 2 | Terminal resistance | Ω | 1.3 |
| 3 | No-load speed | rpm | 3300 |
| 4 | No-load current | A | 0.15 |
| 5 | Stall torque | mNm | 74.00 |
| 6 | Stall current | A | 4.60 |
| 7 | Nominal torque | mNm | 2.2 |
| 8 | Nominal speed | rpm | 3200 |
| 9 | Nominal current | A | 0.28 |
| 10 | Max. output power | W | 6 |
| 11 | Max. efficiency | % | 66 |
| 12 | Back-EMF constant | mV/rpm | 1.8 |
| 13 | Torque constant | mNm/A | 16.5 |
| 14 | KV value | rpm/V | 550 |
| 15 | Speed/torque gradient | rpm/mNm | 445 |
| 16 | Rotor inertia | gcm ² | 24 |
| 17 | Weight | g | 55 |
| 18 | Thermal resistance housing-ambient | K/W | 16 |
| 19 | Thermal resistance winding-housing | K/W | 3.5 |
| 20 | Thermal time constant motor | s | 620 |
| 21 | Thermal time constant winding | s | 4 |
| 22 | Operating temperature range | °C | -40 ~ +120 |
| 23 | Thermal class of winding | °C | 155 |
| 24 | Axial play | mm | 0.012 |
| 25 | Radial play | mm | 0.008 |
| 26 | Axial load dynamic | N | 5 |
| 27 | Axial load static | N | 80 |
| 28 | Radial load at 3 mm from mounting face | N | 29 |
| 29 | No. of pole pairs | | 2 |
| 30 | Bearings | | 2 ball bearings |
| 31 | Commutation | | Hall sensor |
| 32 | Protection class | | IP 30 |

Applications

Precision drives in medical equipment, industrial automation fields

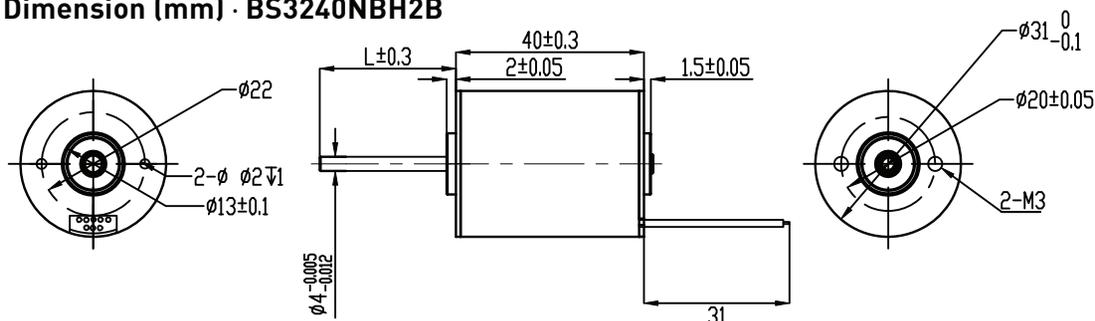
Options

| | |
|-------------------|--------------|
| Lead wires length | Bearing type |
| Shaft length | Hall sensor |
| Special coils | Encoder |
| Gearheads | Driver |

Approx. actual size



Dimension (mm) · BS3240NBH2B



Brushless DC Motor · B3265NH2B

Inner Rotor With Sensor

| Characteristics | | 01-150-24.0 | |
|-----------------|--|------------------|-----------------|
| 1 | Voltage | V | 24 |
| 2 | Terminal resistance | Ω | 0.65 |
| 3 | No-load speed | rpm | 15000 |
| 4 | No-load current | A | 0.55 |
| 5 | Stall torque | mNm | 548 |
| 6 | Stall current | A | 37 |
| 7 | Nominal torque | mNm | 22 |
| 8 | Nominal speed | rpm | 14400 |
| 9 | Nominal current | A | 1.95 |
| 10 | Max. output power | W | 215 |
| 11 | Max. efficiency | % | 78 |
| 12 | Back-EMF constant | mV/rpm | 1.578 |
| 13 | Torque constant | mNm/A | 15 |
| 14 | KV value | rpm/V | 625 |
| 15 | Speed/torque gradient | rpm/mNm | 42 |
| 16 | Rotor inertia | gcm ² | 6 |
| 17 | Weight | g | 180 |
| 18 | Thermal resistance housing-ambient | K/W | 6.8 |
| 19 | Thermal resistance winding-housing | K/W | 4.3 |
| 20 | Thermal time constant motor | s | 1400 |
| 21 | Thermal time constant winding | s | 20 |
| 22 | Operating temperature range | °C | -40 ~ +100 |
| 23 | Thermal class of winding | °C | 155 |
| 24 | Axial play | mm | 0.012 |
| 25 | Radial play | mm | 0.008 |
| 26 | Axial load dynamic | N | 5 |
| 27 | Axial load static | N | 80 |
| 28 | Radial load at 3 mm from mounting face | N | 29 |
| 29 | No. of pole pairs | | 2 |
| 30 | Bearings | | 2 ball bearings |
| 31 | Commutation | | Hall sensor |
| 32 | Protection class | | IP 20 |

Applications

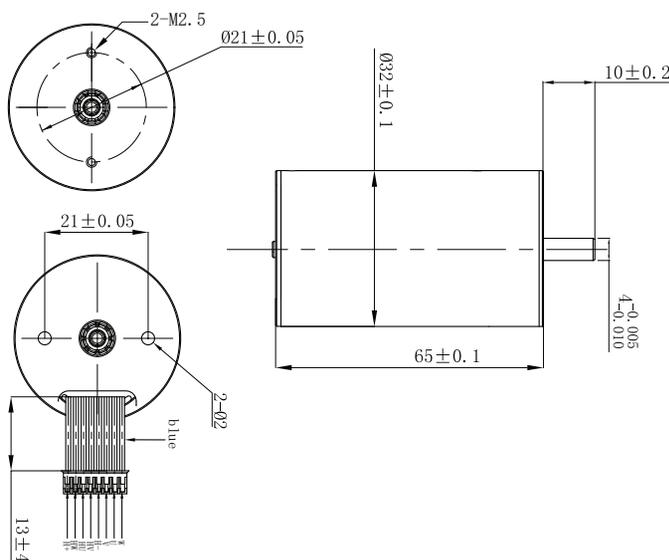
Precision drives in medical equipment, industrial automation fields

Options

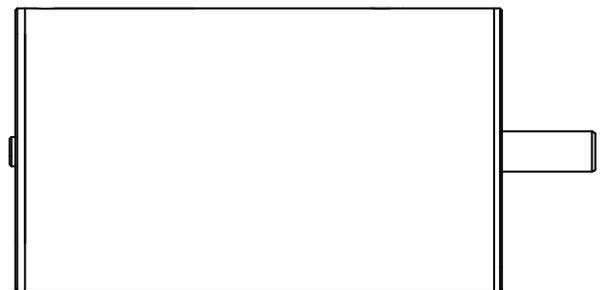
| | |
|-------------------|--------------|
| Lead wires length | Bearing type |
| Shaft length | Hall sensor |
| Special coils | Encoder |
| Gearheads | Driver |

22

Dimension (mm) · B3265NH2B



Approx. actual size



Brushless DC Motor · B4040NH2B

Inner Rotor With Sensor

| Characteristics | | 02-420-24.0 | |
|-----------------|--|------------------|-----------------|
| 1 | Voltage | V | 24 |
| 2 | Terminal resistance | Ω | 2 |
| 3 | No-load speed | rpm | 42000 |
| 4 | No-load current | A | 0.17 |
| 5 | Stall torque | mNm | 64 |
| 6 | Stall current | A | 12 |
| 7 | Nominal torque | mNm | 6.4 |
| 8 | Nominal speed | rpm | 36000 |
| 9 | Nominal current | A | 1.36 |
| 10 | Max. output power | W | 70 |
| 11 | Max. efficiency | % | 78 |
| 12 | Back-EMF constant | mV/rpm | 0.56 |
| 13 | Torque constant | mNm/A | 5.3 |
| 14 | KV value | rpm/V | 1750 |
| 15 | Speed/torque gradient | rpm/mNm | 660 |
| 16 | Rotor inertia | gcm ² | 20 |
| 17 | Weight | g | 200 |
| 18 | Thermal resistance housing-ambient | K/W | 9 |
| 19 | Thermal resistance winding-housing | K/W | 2.4 |
| 20 | Thermal time constant motor | s | 1400 |
| 21 | Thermal time constant winding | s | 20 |
| 22 | Operating temperature range | °C | -40 ~ +120 |
| 23 | Thermal class of winding | °C | 155 |
| 24 | Axial play | mm | 2.3 |
| 25 | Radial play | mm | 0.012 |
| 26 | Axial load dynamic | N | 8 |
| 27 | Axial load static | N | 110 |
| 28 | Radial load at 3 mm from mounting face | N | 31 |
| 29 | No. of pole pairs | | 2 |
| 30 | Bearings | | 2 ball bearings |
| 31 | Commutation | | Hall sensor |
| 32 | Protection class | | IP 20 |

Applications

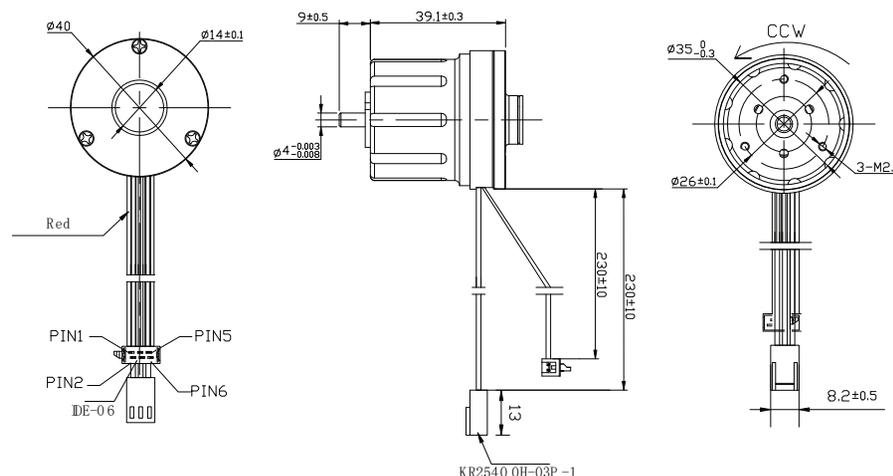
Precision drives in medical equipment, industrial automation fields

Options

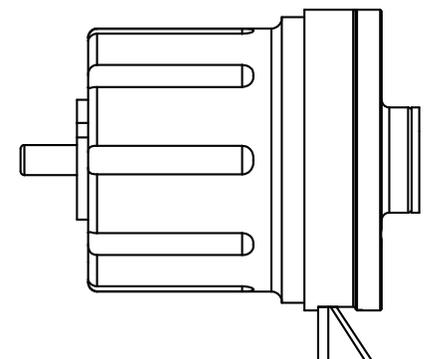
| | |
|-------------------|--------------|
| Lead wires length | Bearing type |
| Shaft length | Hall sensor |
| Special coils | Encoder |
| Gearheads | Driver |

23

Dimension (mm) · B4040NH2B



Approx. actual size



Brushless DC Motor · B7584FBHIE2B

Interior Rotor With Integrated Driver

| Characteristics | | 01-63-24.0 | |
|-----------------|--|------------------|-----------------|
| 1 | Voltage | V | 24 |
| 2 | Operating voltage | V | 12 ~ 26 |
| 3 | Terminal resistance | Ω | 2.8 |
| 4 | No-load speed | rpm | 6300 |
| 5 | No-load current | A | 0.3 |
| 6 | Nominal torque | mNm | 106 |
| 7 | Nominal speed | rpm | 4000 |
| 8 | Nominal current | A | 3.2 |
| 9 | Max. output power | W | 49 |
| 10 | Max. efficiency | % | 69 |
| 11 | Back-EMF constant | mV/rpm | 3.7 |
| 12 | Torque constant | mNm/A | 35 |
| 13 | KV value | rpm/V | 263 |
| 14 | Speed/torque gradient | rpm/mNm | 21 |
| 15 | Rotor inertia | gcm ² | 28 |
| 16 | Weight | g | 1160 |
| 17 | Thermal resistance housing-ambient | K/W | 2 |
| 18 | Thermal resistance winding-housing | K/W | 3 |
| 19 | Thermal time constant motor | s | 112 |
| 20 | Thermal time constant winding | s | 8.9 |
| 21 | Operating temperature range | °C | -40 ~ +100 |
| 22 | Thermal class of winding | °C | 130 |
| 23 | Axial play | mm | 4 |
| 24 | Radial play | mm | 0.3 |
| 25 | Axial load dynamic | N | 10 |
| 26 | Axial load static | N | 300 |
| 27 | Radial load at 3 mm from mounting face | N | 215 |
| 28 | No. of pole pairs | | 2 |
| 29 | Bearings | | 2 ball bearings |
| 30 | Commutation | | Hall sensor |
| 31 | Protection class | | IP 30 |

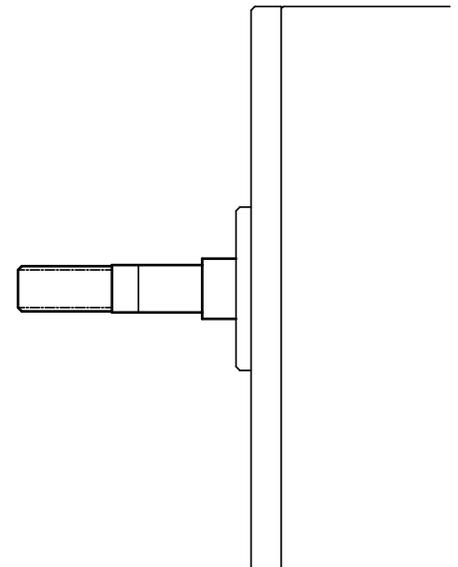
Applications

Precision drives in medical equipment, industrial automation fields

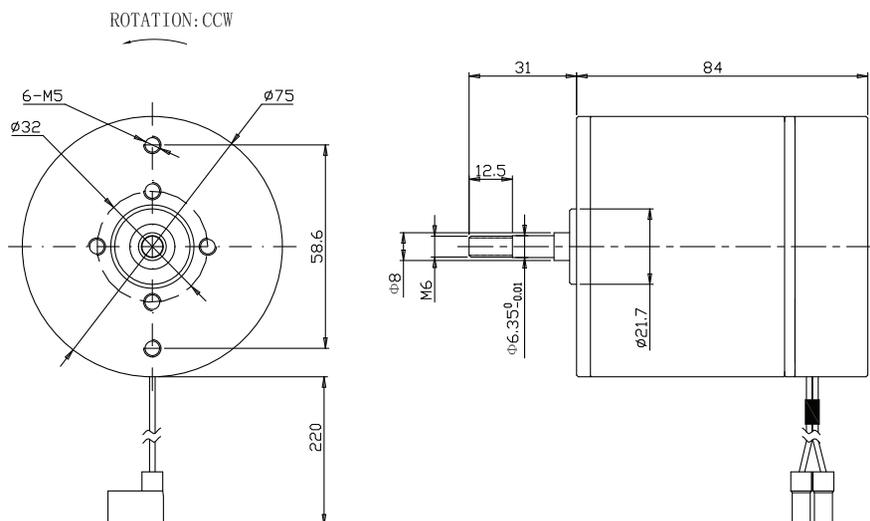
Options

| | |
|-------------------|--------------|
| Lead wires length | Gearheads |
| Shaft length | Bearing type |
| Special coils | |

Approx. actual size



Dimension (mm) · B7584FBHIE2B



Brushless DC Motor · B01410NB2B

Outer Rotor Without Sensor

| Characteristics | | 02-81-6.0 | |
|-----------------|--|-------------|-----------------|
| 1 | Voltage | V | 6 |
| 2 | Terminal resistance | Ω | 13.4 |
| 3 | Terminal inductance | mH | 0.74 |
| 4 | No-load speed | rpm | 8100 |
| 5 | No-load current | A | 0.04 |
| 6 | Nominal torque | mNm | 1.8 |
| 7 | Nominal speed | rpm | -- |
| 8 | Nominal current | A | 0.3 |
| 9 | Max. output power | W | 0.6 |
| 10 | Max. efficiency | % | 52 |
| 11 | Back-EMF constant | mV/rpm | 0.7 |
| 12 | Torque constant | mNm/A | 6.5 |
| 13 | Speed/torque gradient | rpm/mNm | 3010 |
| 14 | Rotor inertia | gcm^2 | 0.6 |
| 15 | Weight | g | 5.1 |
| 16 | Thermal resistance housing-ambient | K/W | 16 |
| 17 | Thermal resistance winding-housing | K/W | 15.3 |
| 18 | Thermal time constant motor | s | 105 |
| 19 | Thermal time constant winding | s | 28 |
| 20 | Operating temperature range | $^{\circ}C$ | -40 ~ +120 |
| 21 | Thermal class of winding | $^{\circ}C$ | 155 |
| 22 | Axial play | mm | 0.012 |
| 23 | Radial play | mm | 0.008 |
| 24 | Axial load dynamic | N | 1 |
| 25 | Axial load static | N | 25 |
| 26 | Radial load at 3 mm from mounting face | N | 6.3 |
| 27 | No. of pole pairs | | 4 |
| 28 | Bearings | | 2 ball bearings |
| 29 | Commutation | | Sensorless |
| 30 | Protection class | | IP 30 |

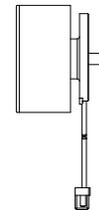
Applications

UAV gimbals and handheld gimbals

Options

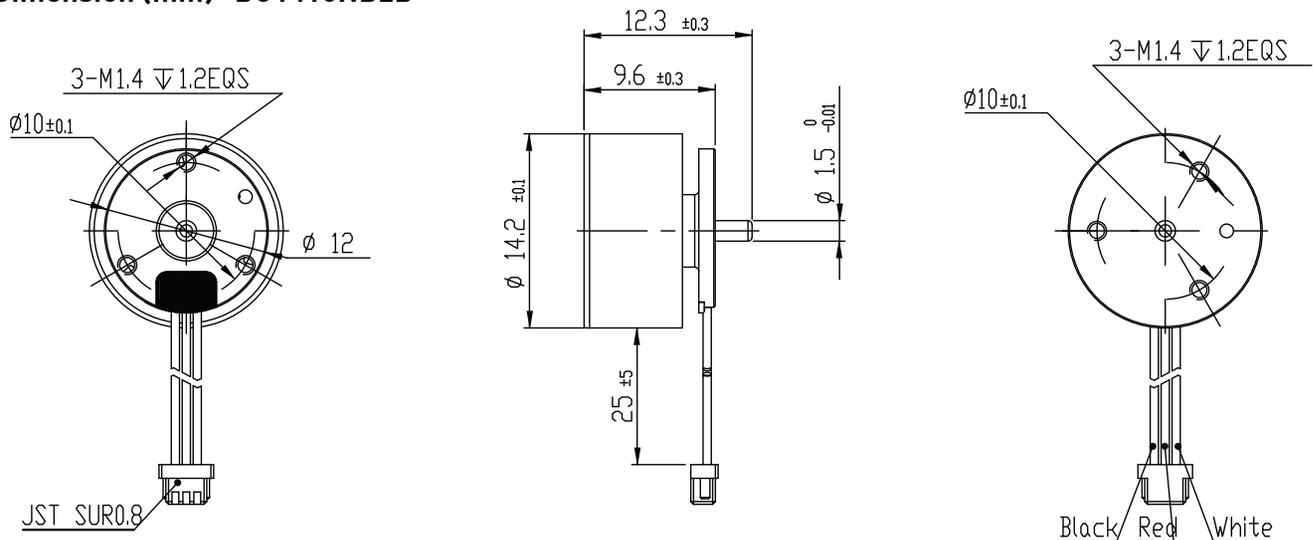
| | |
|-------------------|--------------|
| Lead wires length | Bearing type |
| Shaft length | Hall sensor |
| Special coils | Encoder |
| Gearheads | Driver |

Approx. actual size



25

Dimension (mm) · B01410NB2B



Brushless DC Motor · B01509NBH2B

Outer Rotor Without Sensor

| Characteristics | | 01-280-7.6 | |
|-----------------|--|--------------------|--------------------|
| 1 | Voltage | V | 7.6 |
| 2 | Terminal resistance | Ω | 4.0 |
| 3 | Terminal inductance | mH | 0.21 |
| 4 | No-load speed | rpm | 28000 |
| 5 | No-load current | A | 0.10 |
| 6 | Nominal torque | mNm | 1.7 |
| 7 | Nominal speed | rpm | 12200 |
| 8 | Nominal current | A | 0.8 |
| 9 | Max. output power | W | 3.2 |
| 10 | Max. efficiency | % | 59 |
| 11 | Back-EMF constant | mV/rpm | 0.2 |
| 12 | Torque constant | mNm/A | 2.4 |
| 13 | Speed/torque gradient | rpm/mNm | 6334 |
| 14 | Rotor inertia | gcm^2 | 0.5 |
| 15 | Weight | g | 4.4 |
| 16 | Thermal resistance housing-ambient | K/W | 16.1 |
| 17 | Thermal resistance winding-housing | K/W | 10.2 |
| 18 | Thermal time constant motor | s | 87 |
| 19 | Thermal time constant winding | s | 30 |
| 20 | Operating temperature range | $^{\circ}\text{C}$ | -40 ~ +120 |
| 21 | Thermal class of winding | $^{\circ}\text{C}$ | 155 |
| 22 | Axial play | mm | 0.012 |
| 23 | Radial play | mm | 0.008 |
| 24 | Axial load dynamic | N | 1.5 |
| 25 | Axial load static | N | 37 |
| 26 | Radial load at 3 mm from mounting face | N | 12 |
| 27 | No. of pole pairs | | 4 |
| 28 | Bearings | | 2 ball bearings |
| 29 | Commutation | | Linear Hall sensor |
| 30 | Protection class | | IP 30 |

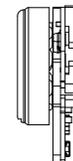
Applications

UAV gimbals and handheld gimbals

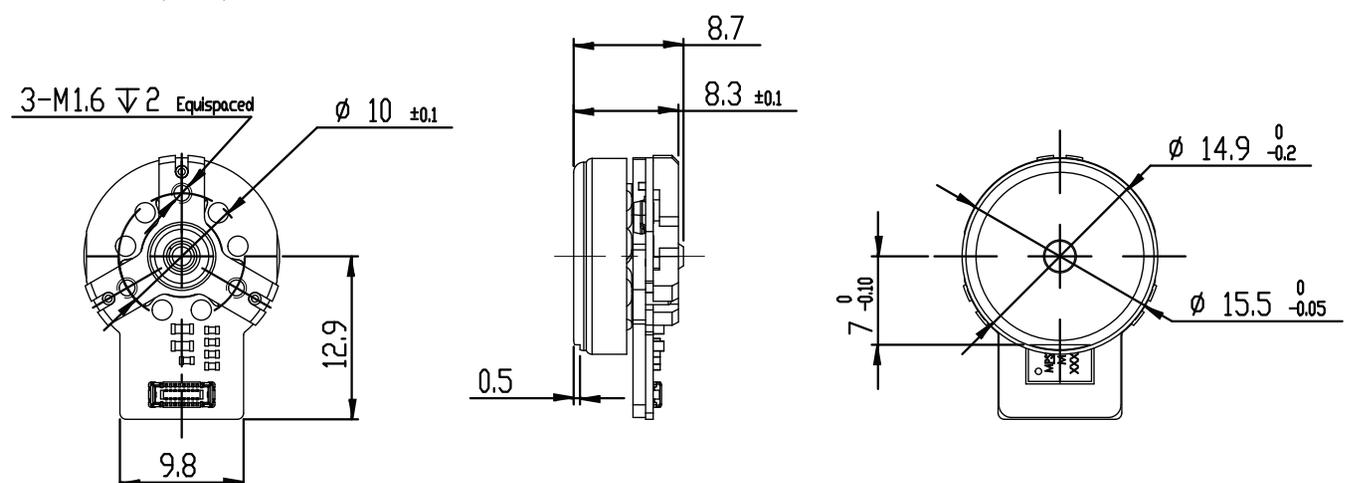
Options

| | |
|-------------------|--------------|
| Lead wires length | Bearing type |
| Shaft length | Hall sensor |
| Special coils | Encoder |
| Gearheads | Driver |

Approx. actual size



Dimension (mm) · B01509NBH2B



Brushless DC Motor · B01511N2B

Outer Rotor Without Sensor

| Characteristics | | 03-350-7.4 | |
|-----------------|--|------------------|-----------------|
| 1 | Voltage | V | 7.4 |
| 2 | Terminal resistance | Ω | 0.45 |
| 3 | No-load speed | rpm | 35000 |
| 4 | No-load current | A | 0.4 |
| 5 | Nominal torque | mNm | 3.3 |
| 6 | Nominal speed | rpm | 30000 |
| 7 | Nominal current | A | 2.1 |
| 8 | Max. output power | W | 29 |
| 9 | Max. efficiency | % | 71 |
| 10 | Back-EMF constant | mV/rpm | 0.21 |
| 11 | Torque constant | mNm/A | 1.97 |
| 12 | KV value | rpm/V | 4700 |
| 13 | Speed/torque gradient | rpm/mNm | 1100 |
| 14 | Rotor inertia | gcm ² | 0.6 |
| 15 | Weight | g | 5.8 |
| 16 | Thermal resistance housing-ambient | K/W | 10 |
| 17 | Thermal resistance winding-housing | K/W | 9 |
| 18 | Thermal time constant motor | s | 80 |
| 19 | Thermal time constant winding | s | 32 |
| 20 | Operating temperature range | °C | -40 ~ +120 |
| 21 | Thermal class of winding | °C | 180 |
| 22 | Axial play | mm | 0.012 |
| 23 | Radial play | mm | 0.008 |
| 24 | Axial load dynamic | N | 1 |
| 25 | Axial load static | N | 25 |
| 26 | Radial load at 3 mm from mounting face | N | 6.3 |
| 27 | No. of pole pairs | | 6 |
| 28 | Bearings | | 2 ball bearings |
| 29 | Commutation | | Sensorless |
| 30 | Protection class | | IP 20 |

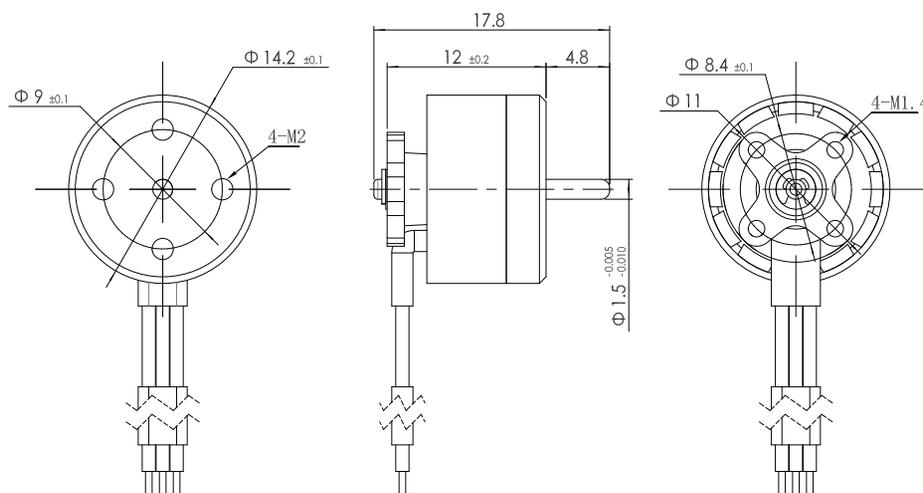
Applications

UAV, Aeromodelling, etc.

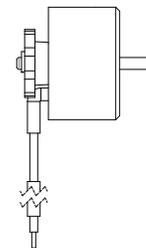
Options

| | |
|-------------------|--------------|
| Lead wires length | Bearing type |
| Shaft length | Encoder |
| Special coils | Driver |
| Gearheads | |

Dimension (mm) · B01511N2B



Approx. actual size



Brushless DC Motor · B01613N2B

Outer Rotor Without Sensor

| Characteristics | | 01-228-7.4 | |
|-----------------|--|------------------|-----------------|
| 1 | Voltage | V | 7.4 |
| 2 | Terminal resistance | Ω | 0.49 |
| 3 | No-load speed | rpm | 22800 |
| 4 | No-load current | A | 0.28 |
| 5 | Nominal torque | mNm | 5.4 |
| 6 | Nominal speed | rpm | 20000 |
| 7 | Nominal current | A | 1.8 |
| 8 | Max. output power | W | 26 |
| 9 | Max. efficiency | % | 74 |
| 10 | Back-EMF constant | mV/rpm | 0.32 |
| 11 | Torque constant | mNm/A | 3 |
| 12 | KV value | rpm/V | 3000 |
| 13 | Speed/torque gradient | rpm/mNm | 506 |
| 14 | Rotor inertia | gcm ² | 1.7 |
| 15 | Weight | g | 7.8 |
| 16 | Thermal resistance housing-ambient | K/W | 15.7 |
| 17 | Thermal resistance winding-housing | K/W | 25.6 |
| 18 | Thermal time constant motor | s | 123 |
| 19 | Thermal time constant winding | s | 100 |
| 20 | Operating temperature range | °C | -40 ~ +120 |
| 21 | Thermal class of winding | °C | 155 |
| 22 | Axial play | mm | 0.012 |
| 23 | Radial play | mm | 0.008 |
| 24 | Axial load dynamic | N | 1 |
| 25 | Axial load static | N | 25 |
| 26 | Radial load at 3 mm from mounting face | N | 6.3 |
| 27 | No. of pole pairs | | 5 |
| 28 | Bearings | | 2 ball bearings |
| 29 | Commutation | | Sensorless |
| 30 | Protection class | | IP 20 |

Applications

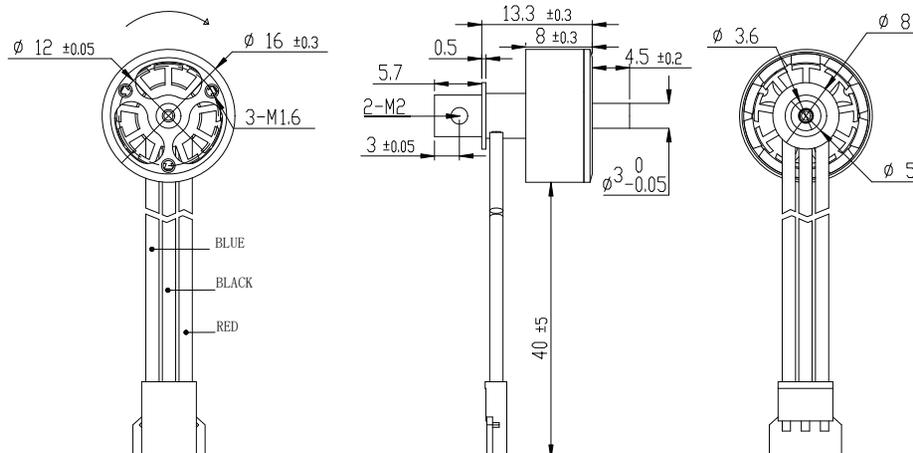
UAV, Aeromodelling, etc.

Options

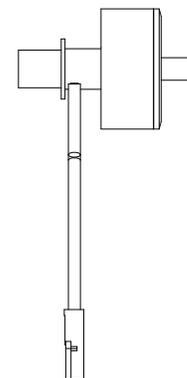
| | |
|-------------------|--------------|
| Lead wires length | Bearing type |
| Shaft length | Encoder |
| Special coils | Driver |
| Gearheads | |

28

Dimension (mm) · B01613N2B



Approx. actual size



Brushless DC Motor · B01709NB2B

Outer Rotor Without Sensor

| Characteristics | | 01-260-10.0 | |
|-----------------|--|------------------|-----------------|
| 1 | Voltage | V | 10 |
| 2 | Terminal resistance | Ω | 4.3 |
| 3 | Terminal inductance | mH | 0.46 |
| 4 | No-load speed | rpm | 26000 |
| 5 | No-load current | A | 0.12 |
| 6 | Nominal torque | mNm | 1.9 |
| 7 | Nominal speed | rpm | 16900 |
| 8 | Nominal current | A | 0.7 |
| 9 | Max. output power | W | 5.2 |
| 10 | Max. efficiency | % | 60 |
| 11 | Back-EMF constant | mV/rpm | 0.4 |
| 12 | Torque constant | mNm/A | 3.5 |
| 13 | Speed/torque gradient | rpm/mNm | 3384 |
| 14 | Rotor inertia | gcm ² | 0.7 |
| 15 | Weight | g | 7.5 |
| 16 | Thermal resistance housing-ambient | K/W | 15.4 |
| 17 | Thermal resistance winding-housing | K/W | 13.6 |
| 18 | Thermal time constant motor | s | 128 |
| 19 | Thermal time constant winding | s | 43 |
| 20 | Operating temperature range | °C | -40 ~ +120 |
| 21 | Thermal class of winding | °C | 155 |
| 22 | Axial play | mm | 0.012 |
| 23 | Radial play | mm | 0.008 |
| 24 | Axial load dynamic | N | 1.5 |
| 25 | Axial load static | N | 37 |
| 26 | Radial load at 3 mm from mounting face | N | 12 |
| 27 | No. of pole pairs | | 4 |
| 28 | Bearings | | 2 ball bearings |
| 29 | Commutation | | Sensorless |
| 30 | Protection class | | IP 30 |

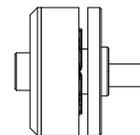
Applications

UAV gimbals and handheld gimbals

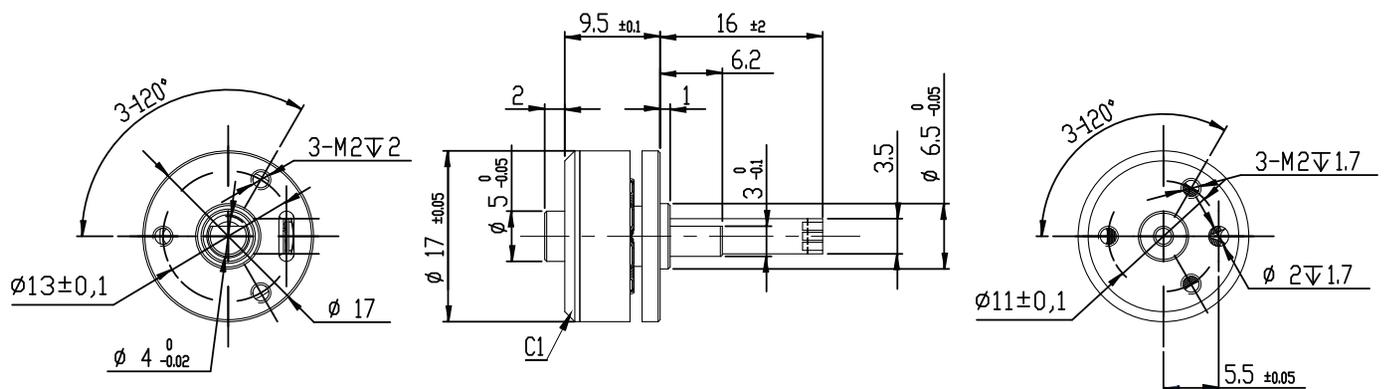
Options

| | |
|-------------------|--------------|
| Lead wires length | Bearing type |
| Shaft length | Hall sensor |
| Special coils | Encoder |
| Gearheads | Driver |

Approx. actual size



Dimension (mm) · B01709NB2B



Brushless DC Motor · B01815N2B

Outer Rotor Without Sensor

| Characteristics | | 10-383-11.1 | |
|-----------------|--|------------------|-----------------|
| 1 | Voltage | V | 11.1 |
| 2 | Terminal resistance | Ω | 0.2 |
| 3 | No-load speed | rpm | 38300 |
| 4 | No-load current | A | 0.5 |
| 5 | Nominal torque | mNm | 16 |
| 6 | Nominal speed | rpm | 33000 |
| 7 | Nominal current | A | 6.3 |
| 8 | Max. output power | W | 158 |
| 9 | Max. efficiency | % | 82 |
| 10 | Back-EMF constant | mV/rpm | 0.3 |
| 11 | Torque constant | mNm/A | 2.7 |
| 12 | KV value | rpm/V | 3450 |
| 13 | Speed/torque gradient | rpm/mNm | 254 |
| 14 | Rotor inertia | gcm ² | 2.8 |
| 15 | Weight | g | 11 |
| 16 | Thermal resistance housing-ambient | K/W | 3.5 |
| 17 | Thermal resistance winding-housing | K/W | 3 |
| 18 | Thermal time constant motor | s | 250 |
| 19 | Thermal time constant winding | s | 2 |
| 20 | Operating temperature range | °C | -40 ~ +120 |
| 21 | Thermal class of winding | °C | 180 |
| 22 | Axial play | mm | 0.012 |
| 23 | Radial play | mm | 0.008 |
| 24 | Axial load dynamic | N | 1.5 |
| 25 | Axial load static | N | 37 |
| 26 | Radial load at 3 mm from mounting face | N | 12 |
| 27 | No. of pole pairs | | 6 |
| 28 | Bearings | | 2 ball bearings |
| 29 | Commutation | | Sensorless |
| 30 | Protection class | | IP 20 |

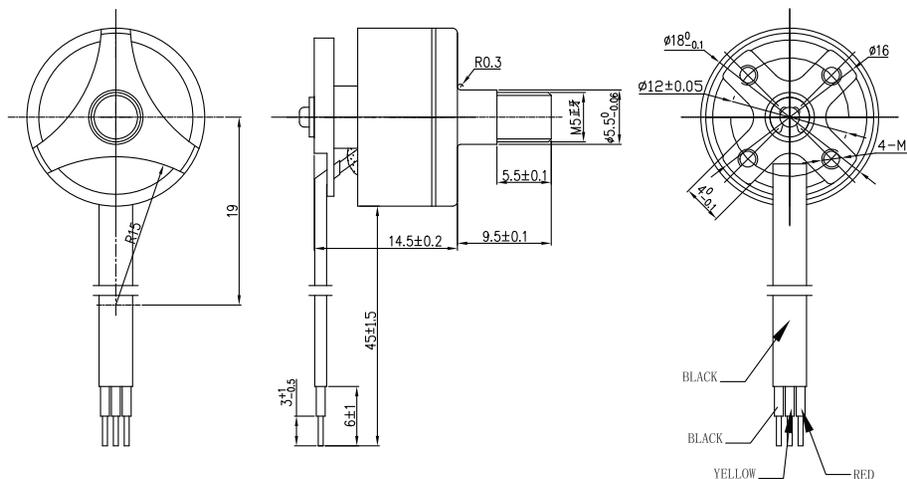
Applications

UAV, Aeromodelling, etc.

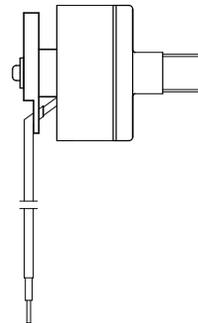
Options

| | |
|-------------------|--------------|
| Lead wires length | Bearing type |
| Shaft length | Encoder |
| Special coils | Driver |
| Gearheads | |

Dimension (mm) · B01815N2B



Approx. actual size



Brushless DC Motor · B02010NB2B

Outer Rotor Without Sensor

| Characteristics | | 03-280-12.0 | |
|-----------------|--|------------------|-----------------|
| 1 | Voltage | V | 12 |
| 2 | Terminal resistance | Ω | 2.2 |
| 3 | Terminal inductance | mH | 0.29 |
| 4 | No-load speed | rpm | 28000 |
| 5 | No-load current | A | 0.20 |
| 6 | Nominal torque | mNm | 3.5 |
| 7 | Nominal speed | rpm | 21420 |
| 8 | Nominal current | A | 1.0 |
| 9 | Max. output power | W | 15.0 |
| 10 | Max. efficiency | % | 72 |
| 11 | Back-EMF constant | mV/rpm | 0.4 |
| 12 | Torque constant | mNm/A | 4.0 |
| 13 | Speed/torque gradient | rpm/mNm | 1311 |
| 14 | Rotor inertia | gcm ² | 2.8 |
| 15 | Weight | g | 12 |
| 16 | Thermal resistance housing-ambient | K/W | 12 |
| 17 | Thermal resistance winding-housing | K/W | 12.5 |
| 18 | Thermal time constant motor | s | 354 |
| 19 | Thermal time constant winding | s | 15 |
| 20 | Operating temperature range | °C | -40 ~ +120 |
| 21 | Thermal class of winding | °C | 155 |
| 22 | Axial play | mm | 0.012 |
| 23 | Radial play | mm | 0.008 |
| 24 | Axial load dynamic | N | 1.5 |
| 25 | Axial load static | N | 37 |
| 26 | Radial load at 3 mm from mounting face | N | 12 |
| 27 | No. of pole pairs | | 4 |
| 28 | Bearings | | 2 ball bearings |
| 29 | Commutation | | Sensorless |
| 30 | Protection class | | IP 20 |

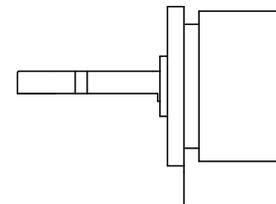
Applications

UAV gimbals and handheld gimbals

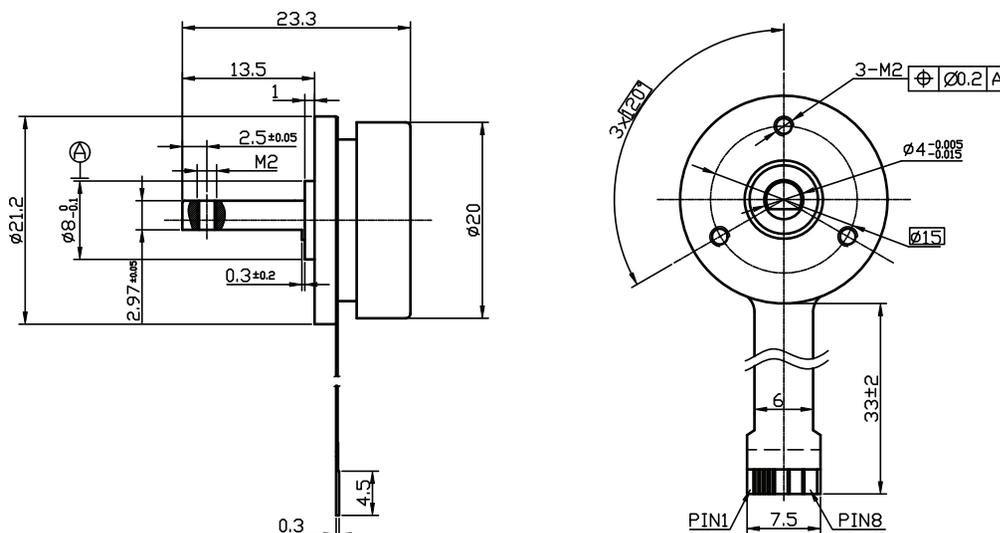
Options

| | |
|-------------------|--------------|
| Lead wires length | Bearing type |
| Shaft length | Hall sensor |
| Special coils | Encoder |
| Gearheads | Driver |

Approx. actual size



Dimension (mm) · B02010NB2B



Brushless DC Motor · B02015NB2B

Outer Rotor Without Sensor

| Characteristics | | 03-113-12.0 | |
|-----------------|--|------------------|-----------------|
| 1 | Voltage | V | 12 |
| 2 | Terminal resistance | Ω | 3.8 |
| 3 | Terminal inductance | mH | 0.61 |
| 4 | No-load speed | rpm | 11300 |
| 5 | No-load current | A | 0.08 |
| 6 | Nominal torque | mNm | 9.1 |
| 7 | Nominal speed | rpm | 6440 |
| 8 | Nominal current | A | 1.01 |
| 9 | Max. output power | W | 9 |
| 10 | Max. efficiency | % | 71 |
| 11 | Back-EMF constant | mV/rpm | 1 |
| 12 | Torque constant | mNm/A | 9.9 |
| 13 | Speed/torque gradient | rpm/mNm | 370 |
| 14 | Rotor inertia | gcm ² | 6.7 |
| 15 | Weight | g | 21 |
| 16 | Thermal resistance housing-ambient | K/W | 8 |
| 17 | Thermal resistance winding-housing | K/W | 9.5 |
| 18 | Thermal time constant motor | s | 354 |
| 19 | Thermal time constant winding | s | 23 |
| 20 | Operating temperature range | °C | -40 ~ +120 |
| 21 | Thermal class of winding | °C | 155 |
| 22 | Axial play | mm | 0.012 |
| 23 | Radial play | mm | 0.08 |
| 24 | Axial load dynamic | N | 1.5 |
| 25 | Axial load static | N | 37 |
| 26 | Radial load at 3 mm from mounting face | N | 12 |
| 27 | No. of pole pairs | | 4 |
| 28 | Bearings | | 2 ball bearings |
| 29 | Commutation | | Sensorless |
| 30 | Protection class | | IP 20 |

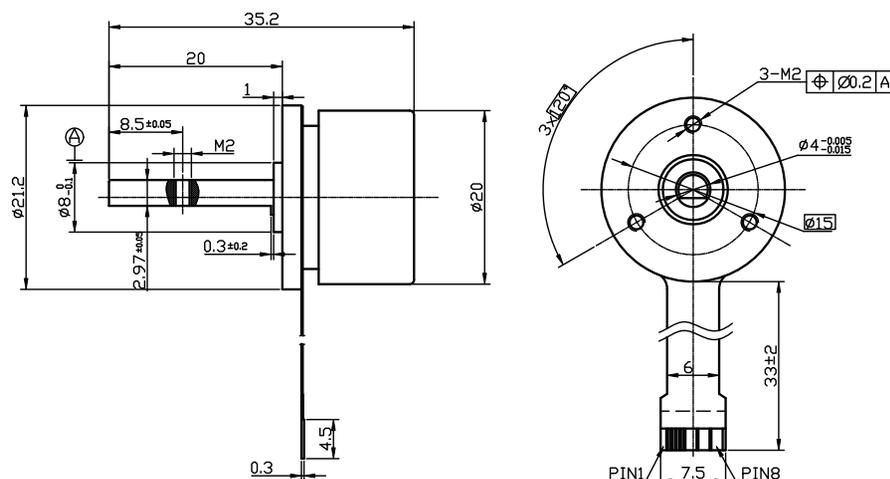
Applications

UAV gimbals and handheld gimbals

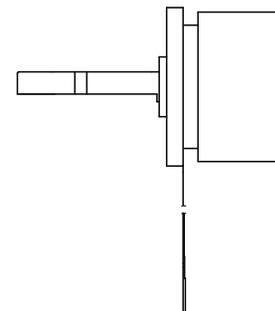
Options

| | |
|-------------------|--------------|
| Lead wires length | Bearing type |
| Shaft length | Hall sensor |
| Special coils | Encoder |
| Gearheads | Driver |

Dimension (mm) · B02015NB2B



Approx. actual size



Brushless DC Motor · B02316N2B

Outer Rotor Without Sensor

| Characteristics | | 05-195-12.0 | |
|-----------------|--|------------------|-----------------|
| 1 | Voltage | V | 12 |
| 2 | Terminal resistance | Ω | 0.5 |
| 3 | No-load speed | rpm | 19500 |
| 4 | No-load current | A | 0.45 |
| 5 | Nominal torque | mNm | 22.7 |
| 6 | Nominal speed | rpm | 15000 |
| 7 | Nominal current | A | 4.4 |
| 8 | Max. output power | W | 70 |
| 9 | Max. efficiency | % | 75 |
| 10 | Back-EMF constant | mV/rpm | 0.6 |
| 11 | Torque constant | mNm/A | 5.8 |
| 12 | KV value | rpm/V | 1625 |
| 13 | Speed/torque gradient | rpm/mNm | 143 |
| 14 | Rotor inertia | gcm ² | 6.3 |
| 15 | Weight | g | 15 |
| 16 | Thermal resistance housing-ambient | K/W | 3 |
| 17 | Thermal resistance winding-housing | K/W | 2.5 |
| 18 | Thermal time constant motor | s | 160 |
| 19 | Thermal time constant winding | s | 26 |
| 20 | Operating temperature range | °C | -40 ~ +120 |
| 21 | Thermal class of winding | °C | 180 |
| 22 | Axial play | mm | 0.014 |
| 23 | Radial play | mm | 0.008 |
| 24 | Axial load dynamic | N | 5 |
| 25 | Axial load static | N | 80 |
| 26 | Radial load at 3 mm from mounting face | N | 29 |
| 27 | No. of pole pairs | | 6 |
| 28 | Bearings | | 2 ball bearings |
| 29 | Commutation | | Sensorless |
| 30 | Protection class | | IP 20 |

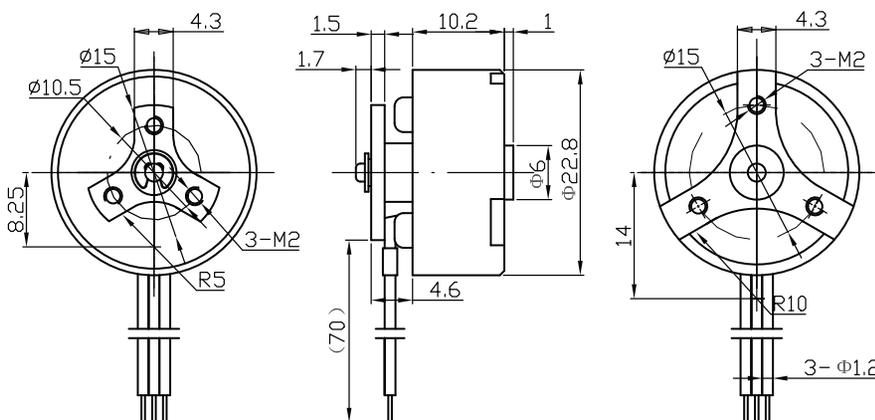
Applications

UAV, Aeromodelling, etc.

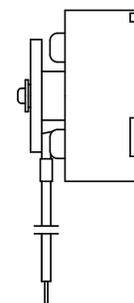
Options

| | |
|-------------------|--------------|
| Lead wires length | Bearing type |
| Shaft length | Encoder |
| Special coils | Driver |
| Gearheads | |

Dimension (mm) · B02316N2B



Approx. actual size



Brushless DC Motor · B02414NB2B

Outer Rotor Without Sensor

| Characteristics | | 02-64-12.0 | |
|-----------------|--|--------------------|-----------------|
| 1 | Voltage | V | 12 |
| 2 | Terminal resistance | Ω | 20.0 |
| 3 | Terminal inductance | mH | 4.50 |
| 4 | No-load speed | rpm | 6400 |
| 5 | No-load current | A | 0.04 |
| 6 | Nominal torque | mNm | 6.3 |
| 7 | Nominal speed | rpm | 160 |
| 8 | Nominal current | A | 0.4 |
| 9 | Max. output power | W | 1.6 |
| 10 | Max. efficiency | % | 57 |
| 11 | Back-EMF constant | mV/rpm | 1.77 |
| 12 | Torque constant | mNm/A | 17 |
| 13 | Speed/torque gradient | rpm/mNm | 672 |
| 14 | Rotor inertia | gcm^2 | 7.2 |
| 15 | Weight | g | 15 |
| 16 | Thermal resistance housing-ambient | K/W | 13.7 |
| 17 | Thermal resistance winding-housing | K/W | 7.6 |
| 18 | Thermal time constant motor | s | 120 |
| 19 | Thermal time constant winding | s | 12 |
| 20 | Operating temperature range | $^{\circ}\text{C}$ | -40 ~ +120 |
| 21 | Thermal class of winding | $^{\circ}\text{C}$ | 155 |
| 22 | Axial play | mm | 0.012 |
| 23 | Radial play | mm | 0.08 |
| 24 | Axial load dynamic | N | 1.5 |
| 25 | Axial load static | N | 37 |
| 26 | Radial load at 3 mm from mounting face | N | 12 |
| 27 | No. of pole pairs | | 6 |
| 28 | Bearings | | 2 ball bearings |
| 29 | Commutation | | Sensorless |
| 30 | Protection class | | IP 20 |

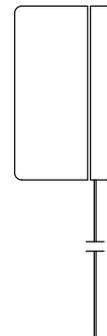
Applications

UAV gimbals and handheld gimbals

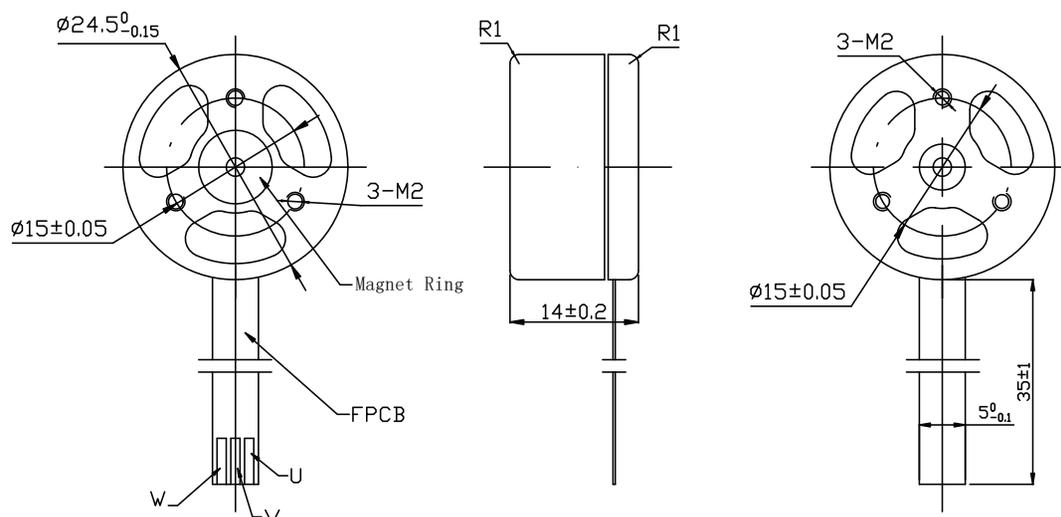
Options

| | |
|-------------------|--------------|
| Lead wires length | Bearing type |
| Shaft length | Hall sensor |
| Special coils | Encoder |
| Gearheads | Driver |

Approx. actual size



Dimension (mm) · B02414NB2B



Brushless DC Motor · B02814N2B

Outer Rotor Without Sensor

| Characteristics | | 03-220-11.1 | |
|-----------------|--|------------------|-----------------|
| 1 | Voltage | V | 11.1 |
| 2 | Terminal resistance | Ω | 0.12 |
| 3 | No-load speed | rpm | 22000 |
| 4 | No-load current | A | 0.65 |
| 5 | Nominal torque | mNm | 42.7 |
| 6 | Nominal speed | rpm | 19000 |
| 7 | Nominal current | A | 9.6 |
| 8 | Max. output power | W | 253 |
| 9 | Max. efficiency | % | 84 |
| 10 | Back-EMF constant | mV/rpm | 0.5 |
| 11 | Torque constant | mNm/A | 4.8 |
| 12 | KV value | rpm/V | 2000 |
| 13 | Speed/torque gradient | rpm/mNm | 51 |
| 14 | Rotor inertia | gcm ² | 12 |
| 15 | Weight | g | 21 |
| 16 | Thermal resistance housing-ambient | K/W | 2.5 |
| 17 | Thermal resistance winding-housing | K/W | 2 |
| 18 | Thermal time constant motor | s | 180 |
| 19 | Thermal time constant winding | s | 25 |
| 20 | Operating temperature range | °C | -40 ~ +120 |
| 21 | Thermal class of winding | °C | 180 |
| 22 | Axial play | mm | 0.014 |
| 23 | Radial play | mm | 0.008 |
| 24 | Axial load dynamic | N | 5 |
| 25 | Axial load static | N | 80 |
| 26 | Radial load at 3 mm from mounting face | N | 29 |
| 27 | No. of pole pairs | | 7 |
| 28 | Bearings | | 2 ball bearings |
| 29 | Commutation | | Sensorless |
| 30 | Protection class | | IP 20 |

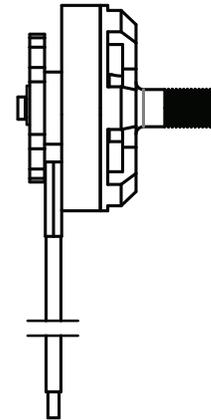
Applications

UAV, Aeromodelling, etc.

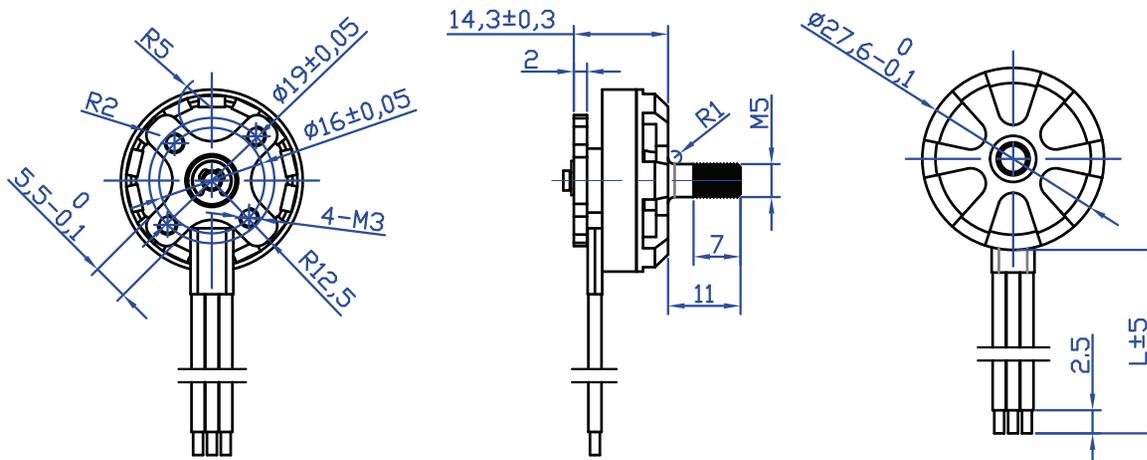
Options

| | |
|-------------------|--------------|
| Lead wires length | Bearing type |
| Shaft length | Encoder |
| Special coils | Driver |
| Gearheads | |

Approx. actual size



Dimension (mm) · B02814N2B



Brushless DC Motor · B02820N2B

Outer Rotor Without Sensor

| Characteristics | | 04-135-10.5 | |
|-----------------|--|------------------|-----------------|
| 1 | Voltage | V | 10.5 |
| 2 | Terminal resistance | Ω | 0.13 |
| 3 | No-load speed | rpm | 13500 |
| 4 | No-load current | A | 0.45 |
| 5 | Nominal torque | mNm | 71 |
| 6 | Nominal speed | rpm | 12300 |
| 7 | Nominal current | A | 10 |
| 8 | Max. output power | W | 210 |
| 9 | Max. efficiency | % | 86 |
| 10 | Back-EMF constant | mV/rpm | 0.77 |
| 11 | Torque constant | mNm/A | 7.4 |
| 12 | KV value | rpm/V | 1290 |
| 13 | Speed/torque gradient | rpm/mNm | 22.8 |
| 14 | Rotor inertia | gcm ² | 19 |
| 15 | Weight | g | 41 |
| 16 | Thermal resistance housing-ambient | K/W | 2.3 |
| 17 | Thermal resistance winding-housing | K/W | 2 |
| 18 | Thermal time constant motor | s | 280 |
| 19 | Thermal time constant winding | s | 37 |
| 20 | Operating temperature range | °C | -40 ~ +120 |
| 21 | Thermal class of winding | °C | 180 |
| 22 | Axial play | mm | 0.012 |
| 23 | Radial play | mm | 0.008 |
| 24 | Axial load dynamic | N | 5 |
| 25 | Axial load static | N | 80 |
| 26 | Radial load at 3 mm from mounting face | N | 29 |
| 27 | No. of pole pairs | | 7 |
| 28 | Bearings | | 2 ball bearings |
| 29 | Commutation | | Sensorless |
| 30 | Protection class | | IP 20 |

Applications

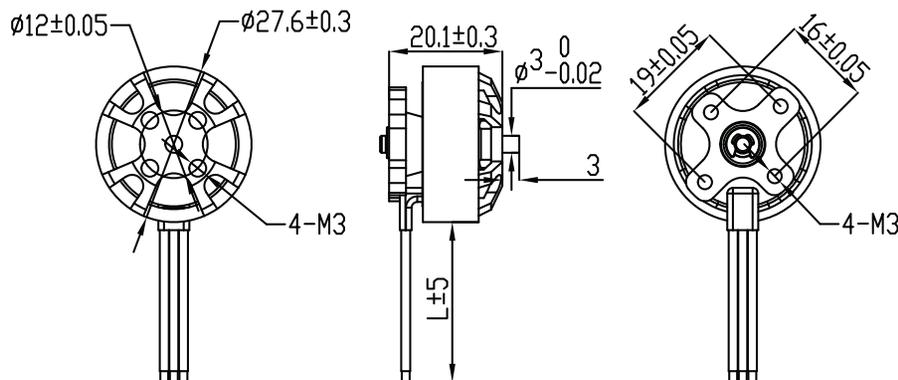
UAV, Aeromodelling, etc.

Options

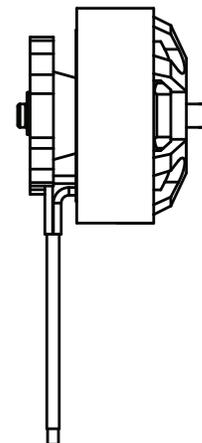
| | |
|-------------------|--------------|
| Lead wires length | Bearing type |
| Shaft length | Encoder |
| Special coils | Driver |
| Gearheads | |

36

Dimension (mm) · B02820N2B



Approx. actual size



Brushless DC Motor · B02824N2B

Outer Rotor Without Sensor

| Characteristics | | 20-102-11.1 | |
|-----------------|--|------------------|-----------------|
| 1 | Voltage | V | 11.1 |
| 2 | Terminal resistance | Ω | 0.18 |
| 3 | No-load speed | rpm | 10200 |
| 4 | No-load current | A | 0.4 |
| 5 | Nominal torque | mNm | 89 |
| 6 | Nominal speed | rpm | 8200 |
| 7 | Nominal current | A | 9 |
| 8 | Max. output power | W | 169 |
| 9 | Max. efficiency | % | 85 |
| 10 | Back-EMF constant | mV/rpm | 1.1 |
| 11 | Torque constant | mNm/A | 10.3 |
| 12 | KV value | rpm/V | 920 |
| 13 | Speed/torque gradient | rpm/mNm | 16.1 |
| 14 | Rotor inertia | gcm ² | 27 |
| 15 | Weight | g | 47 |
| 16 | Thermal resistance housing-ambient | K/W | 2 |
| 17 | Thermal resistance winding-housing | K/W | 2 |
| 18 | Thermal time constant motor | s | 290 |
| 19 | Thermal time constant winding | s | 41 |
| 20 | Operating temperature range | °C | -40 ~ +120 |
| 21 | Thermal class of winding | °C | 180 |
| 22 | Axial play | mm | 0.014 |
| 23 | Radial play | mm | 0.008 |
| 24 | Axial load dynamic | N | 5 |
| 25 | Axial load static | N | 80 |
| 26 | Radial load at 3 mm from mounting face | N | 29 |
| 27 | No. of pole pairs | | 7 |
| 28 | Bearings | | 2 ball bearings |
| 29 | Commutation | | Sensorless |
| 30 | Protection class | | IP 20 |

Applications

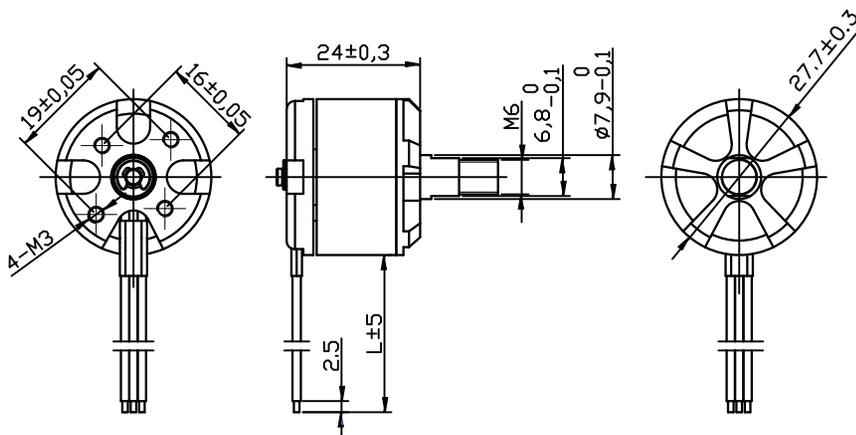
UAV, Aeromodelling, etc.

Options

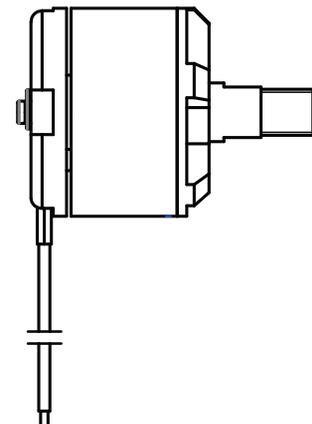
| | |
|-------------------|--------------|
| Lead wires length | Bearing type |
| Shaft length | Encoder |
| Special coils | Driver |
| Gearheads | |

37

Dimension (mm) · B02824N2B



Approx. actual size



Brushless DC Motor · B02826N2B

Outer Rotor Without Sensor

| Characteristics | | 13-135-14.8 | |
|-----------------|--|------------------|-----------------|
| 1 | Voltage | V | 14.8 |
| 2 | Terminal resistance | Ω | 0.14 |
| 3 | No-load speed | rpm | 13500 |
| 4 | No-load current | A | 0.55 |
| 5 | Nominal torque | mNm | 99 |
| 6 | Nominal speed | rpm | 11800 |
| 7 | Nominal current | A | 10 |
| 8 | Max. output power | W | 387 |
| 9 | Max. efficiency | % | 86 |
| 10 | Back-EMF constant | mV/rpm | 1.1 |
| 11 | Torque constant | mNm/A | 10.4 |
| 12 | KV value | rpm/V | 910 |
| 13 | Speed/torque gradient | rpm/mNm | 12.3 |
| 14 | Rotor inertia | gcm ² | 31 |
| 15 | Weight | g | 53 |
| 16 | Thermal resistance housing-ambient | K/W | 1.7 |
| 17 | Thermal resistance winding-housing | K/W | 1.8 |
| 18 | Thermal time constant motor | s | 300 |
| 19 | Thermal time constant winding | s | 43 |
| 20 | Operating temperature range | °C | -40 ~ +120 |
| 21 | Thermal class of winding | °C | 180 |
| 22 | Axial play | mm | 0.014 |
| 23 | Radial play | mm | 0.008 |
| 24 | Axial load dynamic | N | 5 |
| 25 | Axial load static | N | 80 |
| 26 | Radial load at 3 mm from mounting face | N | 29 |
| 27 | No. of pole pairs | | 7 |
| 28 | Bearings | | 2 ball bearings |
| 29 | Commutation | | Sensorless |
| 30 | Protection class | | IP 20 |

Applications

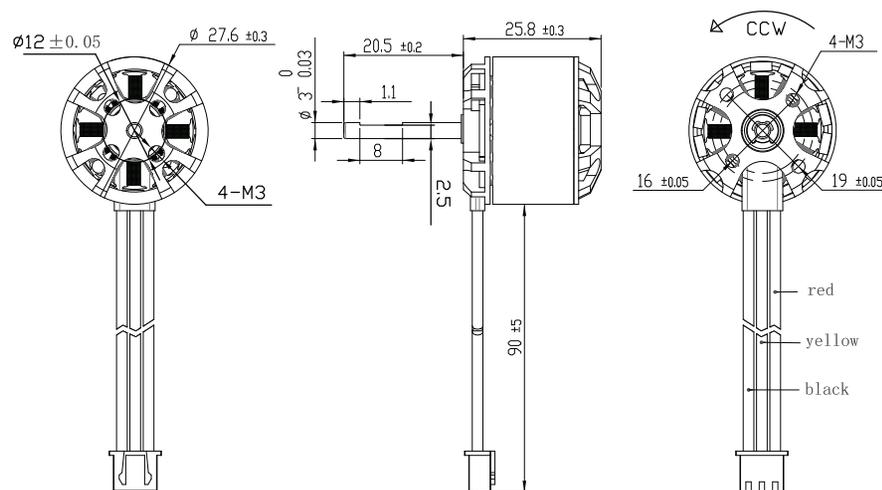
UAV, Aeromodelling, etc.

Options

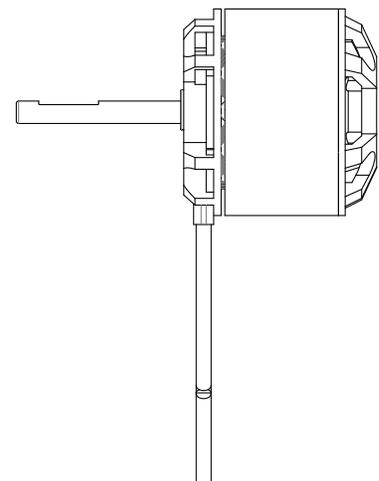
| | |
|-------------------|--------------|
| Lead wires length | Bearing type |
| Shaft length | Encoder |
| Special coils | Driver |
| Gearheads | |

38

Dimension (mm) · B02826N2B



Approx. actual size



Brushless DC Motor · B02828N2B

Outer Rotor Without Sensor

| Characteristics | | 05-130-14.8 | |
|-----------------|--|------------------|-----------------|
| 1 | Voltage | V | 14.8 |
| 2 | Terminal resistance | Ω | 0.12 |
| 3 | No-load speed | rpm | 13000 |
| 4 | No-load current | A | 0.65 |
| 5 | Nominal torque | mNm | 120 |
| 6 | Nominal speed | rpm | 11300 |
| 7 | Nominal current | A | 11.7 |
| 8 | Max. output power | W | 452 |
| 9 | Max. efficiency | % | 86 |
| 10 | Back-EMF constant | mV/rpm | 1.13 |
| 11 | Torque constant | mNm/A | 10.8 |
| 12 | KV value | rpm/V | 880 |
| 13 | Speed/torque gradient | rpm/mNm | 9.8 |
| 14 | Rotor inertia | gcm ² | 35 |
| 15 | Weight | g | 61 |
| 16 | Thermal resistance housing-ambient | K/W | 1.6 |
| 17 | Thermal resistance winding-housing | K/W | 1.4 |
| 18 | Thermal time constant motor | s | 315 |
| 19 | Thermal time constant winding | s | 45 |
| 20 | Operating temperature range | °C | -40 ~ +120 |
| 21 | Thermal class of winding | °C | 180 |
| 22 | Axial play | mm | 0.012 |
| 23 | Radial play | mm | 0.008 |
| 24 | Axial load dynamic | N | 8 |
| 25 | Axial load static | N | 85 |
| 26 | Radial load at 3 mm from mounting face | N | 26 |
| 27 | No. of pole pairs | | 7 |
| 28 | Bearings | | 2 ball bearings |
| 29 | Commutation | | Sensorless |
| 30 | Protection class | | IP 20 |

Applications

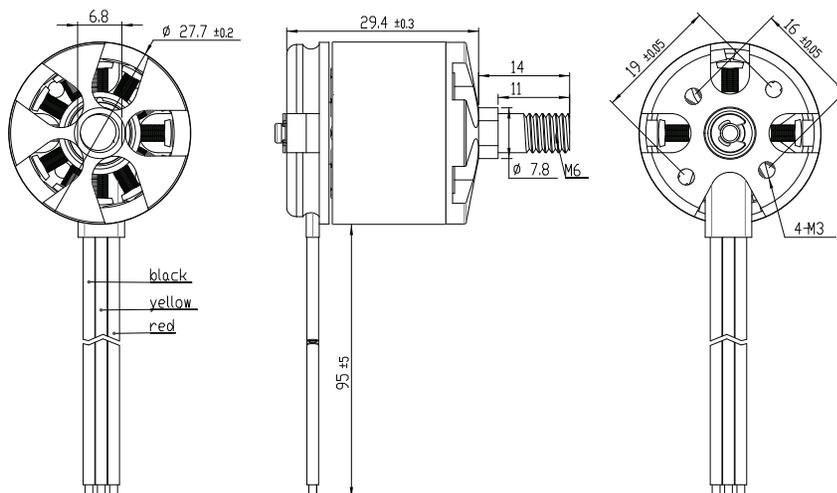
UAV, Aeromodelling, etc.

Options

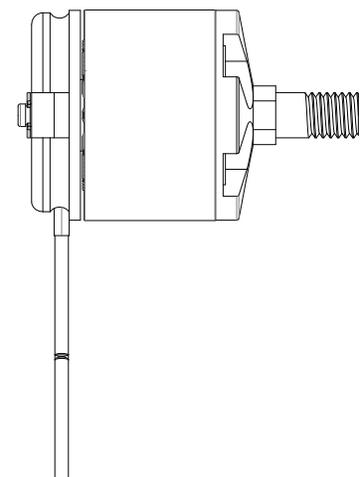
| | |
|-------------------|--------------|
| Lead wires length | Bearing type |
| Shaft length | Encoder |
| Special coils | Driver |
| Gearheads | |

39

Dimension (mm) · B02828N2B



Approx. actual size



Brushless DC Motor · B02914NBH2B

Outer Rotor With Sensor

| Characteristics | | 17-55-24.0 | |
|-----------------|--|------------------|-----------------|
| 1 | Voltage | V | 24 |
| 2 | Terminal resistance | Ω | 12.00 |
| 3 | No-load speed | rpm | 5500 |
| 4 | No-load current | A | 0.1 |
| 5 | Stall torque | mNm | 75 |
| 6 | Stall current | A | 2 |
| 7 | Nominal torque | mNm | 21.0 |
| 8 | Nominal speed | rpm | 3300 |
| 9 | Nominal current | A | 0.64 |
| 10 | Max. output power | W | 10 |
| 11 | Max. efficiency | % | 60 |
| 12 | Back-EMF constant | mV/rpm | 4.1 |
| 13 | Torque constant | mNm/A | 40 |
| 14 | KV value | rpm/V | 230 |
| 15 | Speed/torque gradient | rpm/mNm | 73 |
| 16 | Rotor inertia | gcm ² | 23 |
| 17 | Weight | g | 51 |
| 18 | Thermal resistance housing-ambient | K/W | 7 |
| 19 | Thermal resistance winding-housing | K/W | 5 |
| 20 | Thermal time constant motor | s | 160 |
| 21 | Thermal time constant winding | s | 15 |
| 22 | Operating temperature range | °C | -40 ~ +120 |
| 23 | Thermal class of winding | °C | 155 |
| 24 | Axial play | mm | 0.012 |
| 25 | Radial play | mm | 0.02 |
| 26 | Axial load dynamic | N | 1.5 |
| 27 | Axial load static | N | 37 |
| 28 | Radial load at 3 mm from mounting face | N | 12 |
| 29 | No. of pole pairs | | 6 |
| 30 | Bearings | | 2 ball bearings |
| 31 | Commutation | | Hall sensor |
| 32 | Protection class | | IP 20 |

Applications

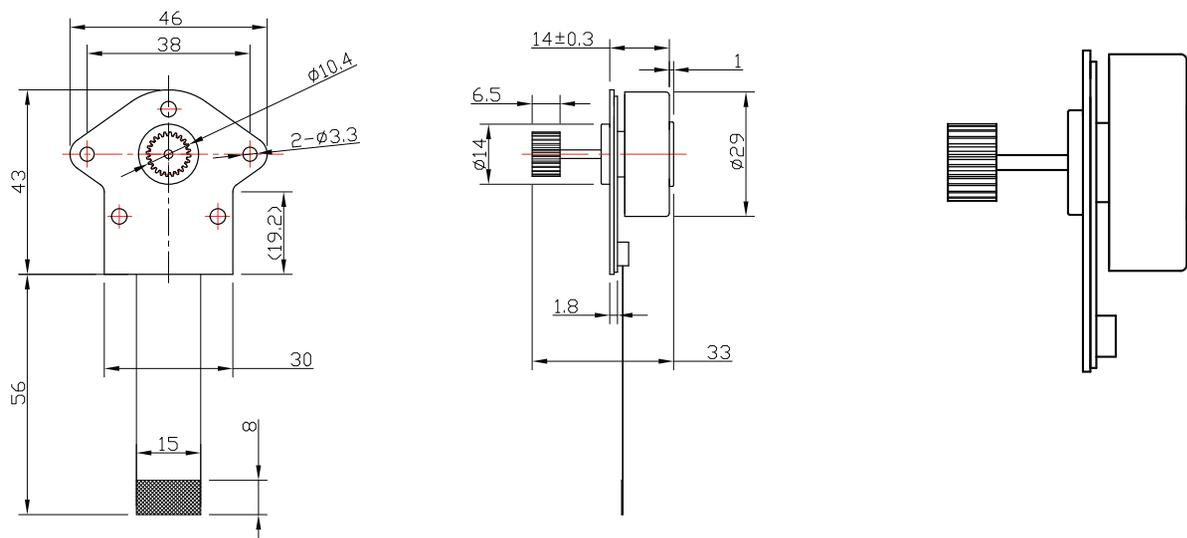
Precision drives in medical equipment, industrial automation fields

Options

| | |
|-------------------|--------------|
| Lead wires length | Bearing type |
| Shaft length | Hall sensor |
| Special coils | Encoder |
| Gearheads | Driver |

40

Dimension (mm) · B02914NBH2B



Approx. actual size

Brushless DC Motor · B03216NB2B

Outer Rotor Without Sensor

| Characteristics | | 02-66-24.0 | |
|-----------------|--|-------------|-----------------|
| 1 | Voltage | V | 24 |
| 2 | Terminal resistance | Ω | 4.2 |
| 3 | Terminal inductance | mH | 1.34 |
| 4 | No-load speed | rpm | 6600 |
| 5 | No-load current | A | 0.1 |
| 6 | Nominal torque | mNm | 41.6 |
| 7 | Nominal speed | rpm | 4520 |
| 8 | Nominal current | A | 1.4 |
| 9 | Max. output power | W | 32.7 |
| 10 | Max. efficiency | % | 73 |
| 11 | Back-EMF constant | mV/rpm | 3.55 |
| 12 | Torque constant | mNm/A | 34 |
| 13 | Speed/torque gradient | rpm/mNm | 35 |
| 14 | Rotor inertia | gcm^2 | 35 |
| 15 | Weight | g | 48 |
| 16 | Thermal resistance housing-ambient | K/W | 3.8 |
| 17 | Thermal resistance winding-housing | K/W | 4 |
| 18 | Thermal time constant motor | s | 110 |
| 19 | Thermal time constant winding | s | 6.9 |
| 20 | Operating temperature range | $^{\circ}C$ | -40 ~ +120 |
| 21 | Thermal class of winding | $^{\circ}C$ | 155 |
| 22 | Axial play | mm | 0.08 |
| 23 | Radial play | mm | 0.006 |
| 24 | Axial load dynamic | N | 5 |
| 25 | Axial load static | N | 80 |
| 26 | Radial load at 3 mm from mounting face | N | 29 |
| 27 | No. of pole pairs | | 7 |
| 28 | Bearings | | 2 ball bearings |
| 29 | Commutation | | Sensorless |
| 30 | Protection class | | IP 20 |

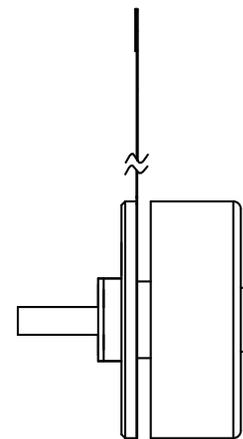
Applications

UAV gimbals and handheld gimbals

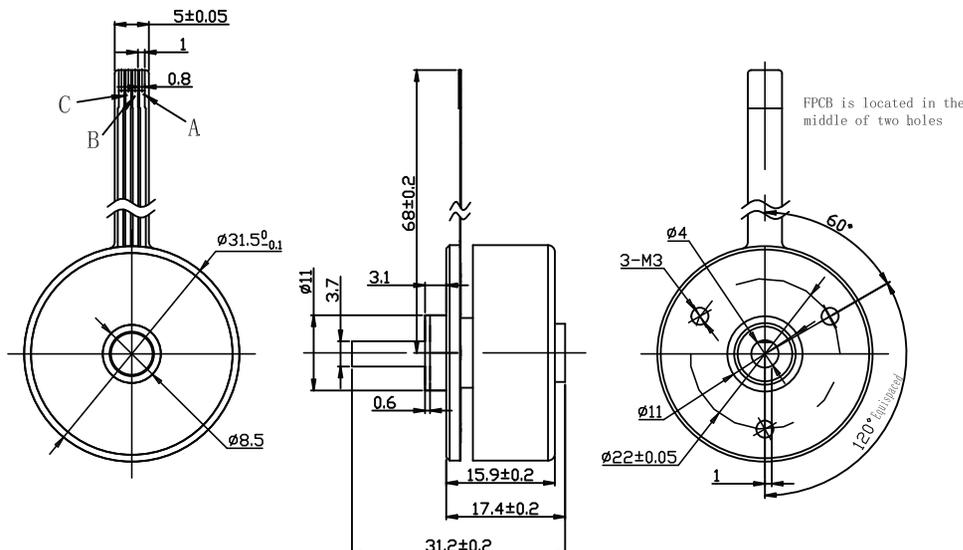
Options

| | |
|-------------------|--------------|
| Lead wires length | Bearing type |
| Shaft length | Hall sensor |
| Special coils | Encoder |
| Gearheads | Driver |

Approx. actual size



Dimension (mm) · B03216NB2B



Brushless DC Motor · B03518N2B

Outer Rotor Without Sensor

| Characteristics | | 01-100-12.0 | |
|-----------------|--|--------------------|-----------------|
| 1 | Voltage | V | 12 |
| 2 | Terminal resistance | Ω | 0.14 |
| 3 | No-load speed | rpm | 10000 |
| 4 | No-load current | A | 0.5 |
| 5 | Nominal torque | mNm | 82 |
| 6 | Nominal speed | rpm | 7100 |
| 7 | Nominal current | A | 7.8 |
| 8 | Max. output power | W | 103 |
| 9 | Max. efficiency | % | 78.4 |
| 10 | Back-EMF constant | mV/rpm | 1.2 |
| 11 | Torque constant | mNm/A | 11.3 |
| 12 | KV value | rpm/V | 830 |
| 13 | Speed/torque gradient | rpm/mNm | 23 |
| 14 | Rotor inertia | gcm^2 | 8.7 |
| 15 | Weight | g | 50 |
| 16 | Thermal resistance housing-ambient | K/W | 1.6 |
| 17 | Thermal resistance winding-housing | K/W | 1.4 |
| 18 | Thermal time constant motor | s | 124 |
| 19 | Thermal time constant winding | s | 9 |
| 20 | Operating temperature range | $^{\circ}\text{C}$ | -40 ~ +120 |
| 21 | Thermal class of winding | $^{\circ}\text{C}$ | 180 |
| 22 | Axial play | mm | 0.07 |
| 23 | Radial play | mm | 0.008 |
| 24 | Axial load dynamic | N | 5 |
| 25 | Axial load static | N | 80 |
| 26 | Radial load at 3 mm from mounting face | N | 29 |
| 27 | No. of pole pairs | | 7 |
| 28 | Bearings | | 2 ball bearings |
| 29 | Commutation | | Sensorless |
| 30 | Protection class | | IP 20 |

Applications

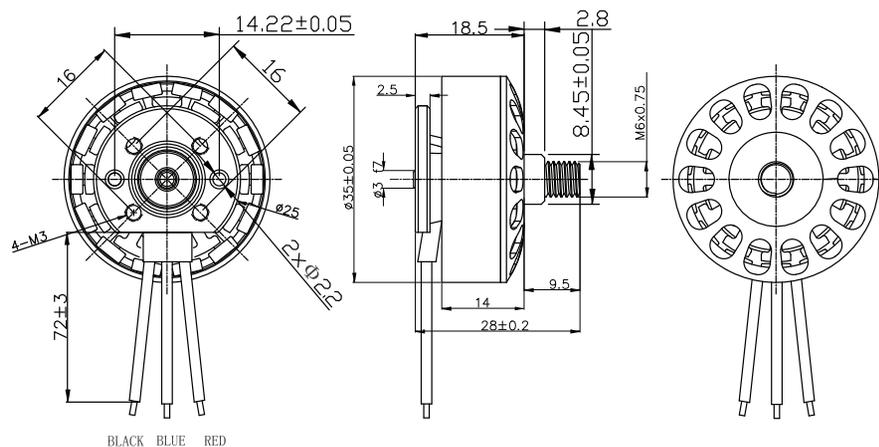
UAV, Aeromodelling, etc.

Options

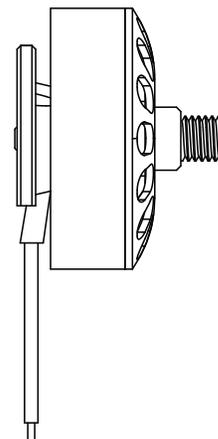
| | |
|-------------------|--------------|
| Lead wires length | Bearing type |
| Shaft length | Encoder |
| Special coils | Driver |
| Gearheads | |

43

Dimension (mm) · B03518N2B



Approx. actual size



Brushless DC Motor · B03518NB2B

Outer Rotor Without Sensor

| Characteristics | | 02-25-12.0 | |
|-----------------|--|--------------------|-----------------|
| 1 | Voltage | V | 12 |
| 2 | Terminal resistance | Ω | 10.0 |
| 3 | Terminal inductance | mH | 3.0 |
| 4 | No-load speed | rpm | 2500 |
| 5 | No-load current | A | 0.05 |
| 6 | Nominal torque | mNm | 30 |
| 7 | Nominal speed | rpm | 310 |
| 8 | Nominal current | A | 0.8 |
| 9 | Max. output power | W | 3.3 |
| 10 | Max. efficiency | % | 63 |
| 11 | Back-EMF constant | mV/rpm | 4.6 |
| 12 | Torque constant | mNm/A | 43.9 |
| 13 | Speed/torque gradient | rpm/mNm | 49.5 |
| 14 | Rotor inertia | gcm^2 | 43 |
| 15 | Weight | g | 44 |
| 16 | Thermal resistance housing-ambient | K/W | 7.3 |
| 17 | Thermal resistance winding-housing | K/W | 5.7 |
| 18 | Thermal time constant motor | s | 120 |
| 19 | Thermal time constant winding | s | 9 |
| 20 | Operating temperature range | $^{\circ}\text{C}$ | -40 ~ +120 |
| 21 | Thermal class of winding | $^{\circ}\text{C}$ | 155 |
| 22 | Axial play | mm | 0.012 |
| 23 | Radial play | mm | 0.008 |
| 24 | Axial load dynamic | N | 1.5 |
| 25 | Axial load static | N | 37 |
| 26 | Radial load at 3 mm from mounting face | N | 12 |
| 27 | No. of pole pairs | | 7 |
| 28 | Bearings | | 2 ball bearings |
| 29 | Commutation | | Sensorless |
| 30 | Protection class | | IP 30 |

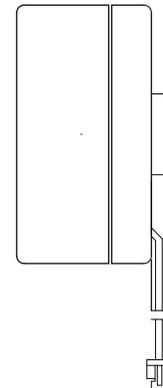
Applications

UAV gimbals and handheld gimbals

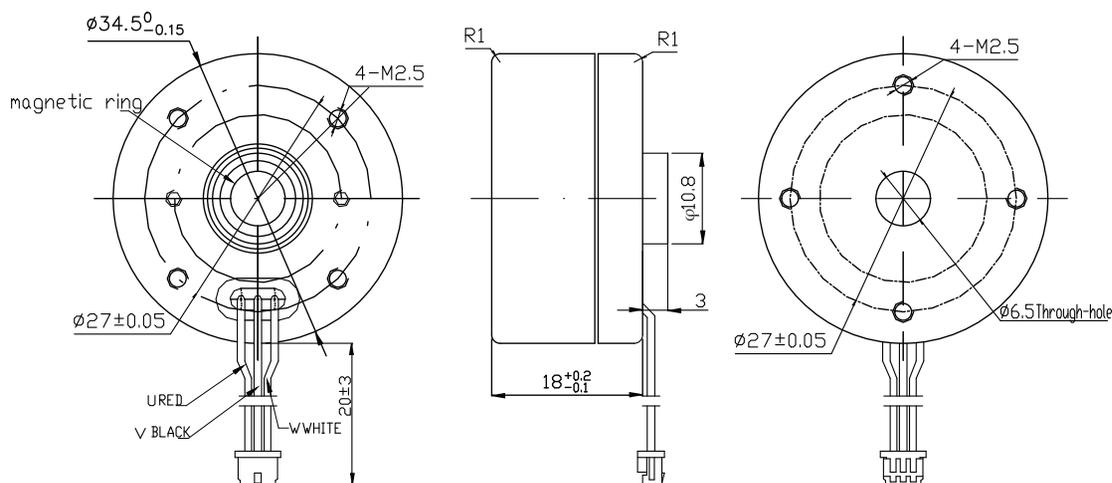
Options

| | |
|-------------------|--------------|
| Lead wires length | Bearing type |
| Shaft length | Hall sensor |
| Special coils | Encoder |
| Gearheads | Driver |

Approx. actual size



Dimension (mm) · B03518NB2B



Brushless DC Motor · B03823N2B

Outer Rotor Without Sensor

| Characteristics | | 01-100-14.8 | |
|-----------------|--|------------------|-----------------|
| 1 | Voltage | V | 14.8 |
| 2 | Terminal resistance | Ω | 0.11 |
| 3 | No-load speed | rpm | 10000 |
| 4 | No-load current | A | 0.65 |
| 5 | Nominal torque | mNm | 194 |
| 6 | Nominal speed | rpm | 9000 |
| 7 | Nominal current | A | 15 |
| 8 | Max. output power | W | 215 |
| 9 | Max. efficiency | % | 86.5 |
| 10 | Back-EMF constant | mV/rpm | 1.47 |
| 11 | Torque constant | mNm/A | 14.1 |
| 12 | KV value | rpm/V | 680 |
| 13 | Speed/torque gradient | rpm/mNm | 5.3 |
| 14 | Rotor inertia | gcm ² | 42 |
| 15 | Weight | g | 73 |
| 16 | Thermal resistance housing-ambient | K/W | 1.3 |
| 17 | Thermal resistance winding-housing | K/W | 1.2 |
| 18 | Thermal time constant motor | s | 300 |
| 19 | Thermal time constant winding | s | 69 |
| 20 | Operating temperature range | °C | -40 ~ +120 |
| 21 | Thermal class of winding | °C | 180 |
| 22 | Axial play | mm | 0.012 |
| 23 | Radial play | mm | 0.008 |
| 24 | Axial load dynamic | N | 8 |
| 25 | Axial load static | N | 110 |
| 26 | Radial load at 3 mm from mounting face | N | 31 |
| 27 | No. of pole pairs | | 7 |
| 28 | Bearings | | 2 ball bearings |
| 29 | Commutation | | Sensorless |
| 30 | Protection class | | IP 20 |

Applications

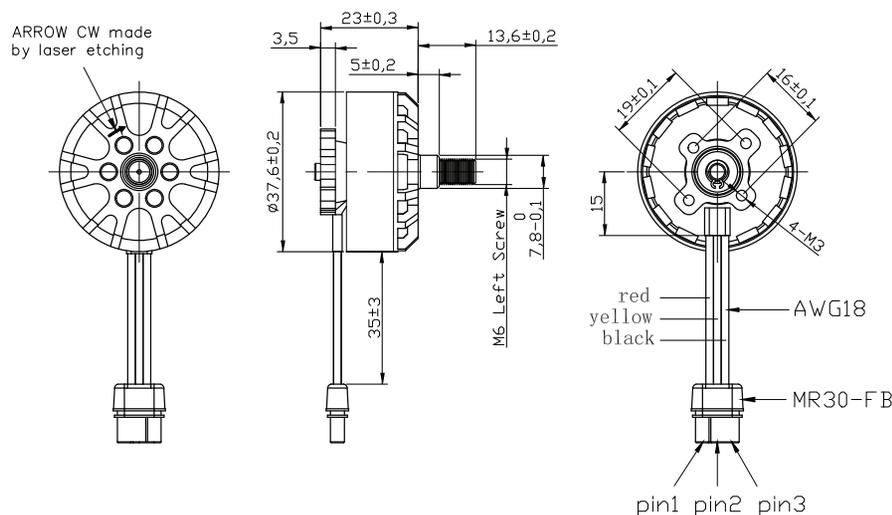
UAV, industrial automation fields, etc.

Options

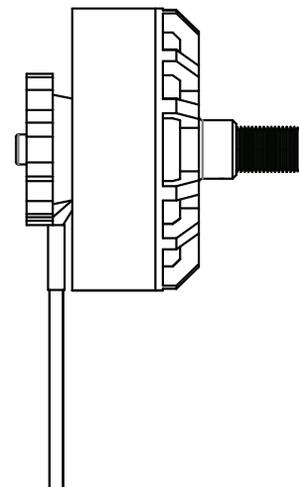
| | |
|-------------------|--------------|
| Lead wires length | Bearing type |
| Shaft length | Hall sensor |
| Special coils | Encoder |
| Gearheads | Driver |

45

Dimension (mm) · B03823N2B



Approx. actual size



Brushless DC Motor · B03828NB2B

Outer Rotor Without Sensor

| Characteristics | | 01-290-24.0 | |
|-----------------|--|------------------|-----------------|
| 1 | Voltage | V | 24 |
| 2 | Terminal resistance | Ω | 0.48 |
| 3 | No-load speed | rpm | 29000 |
| 4 | No-load current | A | 0.7 |
| 5 | Nominal torque | mNm | 22 |
| 6 | Nominal speed | rpm | 26700 |
| 7 | Nominal current | A | 3.6 |
| 8 | Max. output power | W | 292 |
| 9 | Max. efficiency | % | 78 |
| 10 | Back-EMF constant | mV/rpm | 0.82 |
| 11 | Torque constant | mNm/A | 7.8 |
| 12 | KV value | rpm/V | 1200 |
| 13 | Speed/torque gradient | rpm/mNm | 75.5 |
| 14 | Rotor inertia | gcm ² | 96 |
| 15 | Weight | g | 105 |
| 16 | Thermal resistance housing-ambient | K/W | 2.3 |
| 17 | Thermal resistance winding-housing | K/W | 1.8 |
| 18 | Thermal time constant motor | s | 110 |
| 19 | Thermal time constant winding | s | 35 |
| 20 | Operating temperature range | °C | -40 ~ +120 |
| 21 | Thermal class of winding | °C | 155 |
| 22 | Axial play | mm | 0.012 |
| 23 | Radial play | mm | 0.008 |
| 24 | Axial load dynamic | N | 10 |
| 25 | Axial load static | N | 110 |
| 26 | Radial load at 3 mm from mounting face | N | 42 |
| 27 | No. of pole pairs | | 2 |
| 28 | Bearings | | 2 ball bearings |
| 29 | Commutation | | Sensorless |
| 30 | Protection class | | IP 20 |

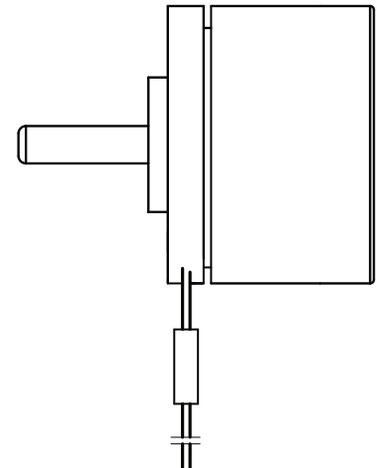
Applications

Precision drives in medical equipment, industrial automation fields

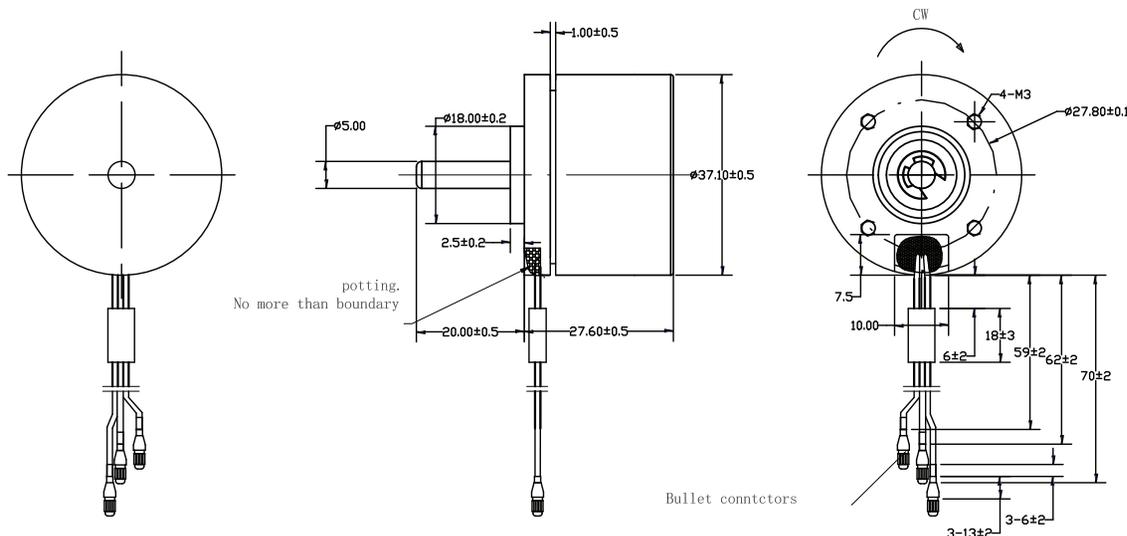
Options

| | |
|-------------------|--------------|
| Lead wires length | Bearing type |
| Shaft length | Hall sensor |
| Special coils | Encoder |
| Gearheads | Driver |

Approx. actual size



Dimension (mm) · B03828NB2B



Brushless DC Motor · B04316NB2B

Outer Rotor Without Sensor

| Characteristics | | 05-38-24.0 | |
|-----------------|--|------------------|-----------------|
| 1 | Voltage | V | 24 |
| 2 | Terminal resistance | Ω | 3.8 |
| 3 | Terminal inductance | mH | 2.8 |
| 4 | No-load speed | rpm | 3800 |
| 5 | No-load current | A | 0.08 |
| 6 | Nominal torque | mNm | 79.7 |
| 7 | Nominal speed | rpm | 2640 |
| 8 | Nominal current | A | 1.43 |
| 9 | Max. output power | W | 37 |
| 10 | Max. efficiency | % | 78.7 |
| 11 | Back-EMF constant | mV/rpm | 6.24 |
| 12 | Torque constant | mNm/A | 59.5 |
| 13 | Speed/torque gradient | rpm/mNm | 10.2 |
| 14 | Rotor inertia | gcm ² | 58 |
| 15 | Weight | g | 71.5 |
| 16 | Thermal resistance housing-ambient | K/W | 2.8 |
| 17 | Thermal resistance winding-housing | K/W | 5.8 |
| 18 | Thermal time constant motor | s | 400 |
| 19 | Thermal time constant winding | s | 13 |
| 20 | Operating temperature range | °C | -40 ~ +120 |
| 21 | Thermal class of winding | °C | 155 |
| 22 | Axial play | mm | 0.012 |
| 23 | Radial play | mm | 0.008 |
| 24 | Axial load dynamic | N | 8 |
| 25 | Axial load static | N | 85 |
| 26 | Radial load at 3 mm from mounting face | N | 26 |
| 27 | No. of pole pairs | | 8 |
| 28 | Bearings | | 2 ball bearings |
| 29 | Commutation | | Sensorless |
| 30 | Protection class | | IP 30 |

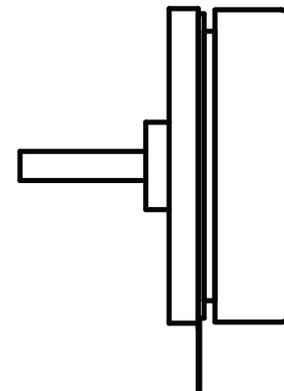
Applications

UAV gimbals and handheld gimbals

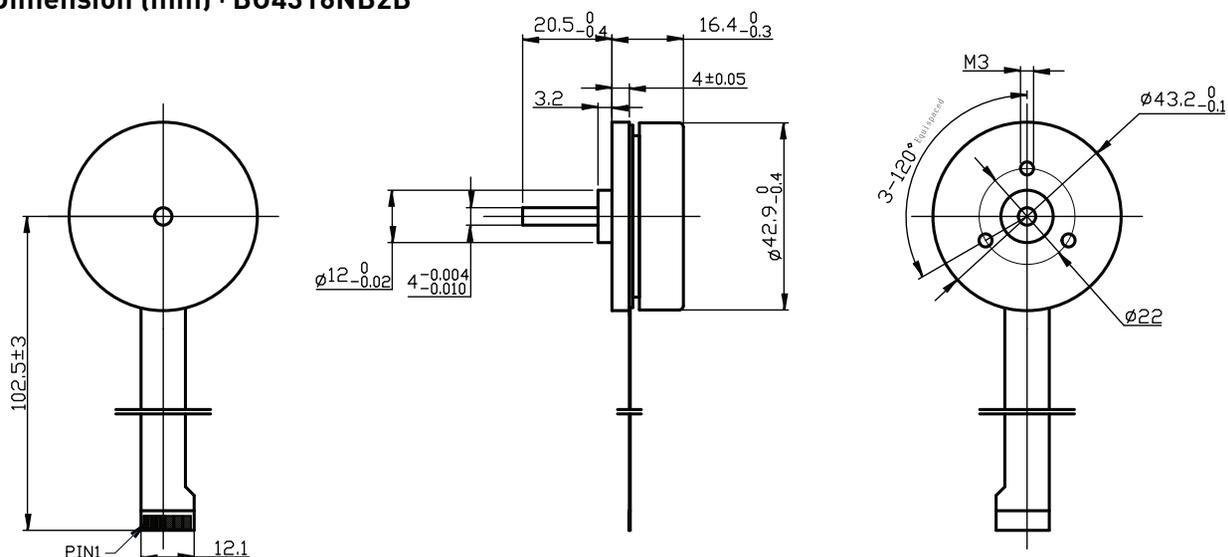
Options

| | |
|-------------------|--------------|
| Lead wires length | Bearing type |
| Shaft length | Hall sensor |
| Special coils | Encoder |
| Gearheads | Driver |

Approx. actual size



Dimension (mm) · B04316NB2B



Brushless DC Motor · B04326NBH2B

Outer Rotor With Sensor

| Characteristics | | 01-56-24.0 | |
|-----------------|--|------------------|-----------------|
| 1 | Voltage | V | 24 |
| 2 | Terminal resistance | Ω | 0.85 |
| 3 | No-load speed | rpm | 5600 |
| 4 | No-load current | A | 0.26 |
| 5 | Stall torque | mNm | 1100 |
| 6 | Stall current | A | 28.24 |
| 7 | Nominal torque | mNm | 155 |
| 8 | Nominal speed | rpm | 4500 |
| 9 | Nominal current | A | 4.1 |
| 10 | Max. output power | W | 150 |
| 11 | Max. efficiency | % | 81.6 |
| 12 | Back-EMF constant | mV/rpm | 4.2 |
| 13 | Torque constant | mNm/A | 40.5 |
| 14 | KV value | rpm/V | 230 |
| 15 | Speed/torque gradient | rpm/mNm | 4.9 |
| 16 | Rotor inertia | gcm ² | 173 |
| 17 | Weight | g | 135 |
| 18 | Thermal resistance housing-ambient | K/W | 2.1 |
| 19 | Thermal resistance winding-housing | K/W | 1.8 |
| 20 | Thermal time constant motor | s | 360 |
| 21 | Thermal time constant winding | s | 69 |
| 22 | Operating temperature range | °C | -40 ~ +120 |
| 23 | Thermal class of winding | °C | 155 |
| 24 | Axial play | mm | 0.012 |
| 25 | Radial play | mm | 0.008 |
| 26 | Axial load dynamic | N | 8 |
| 27 | Axial load static | N | 110 |
| 28 | Radial load at 3 mm from mounting face | N | 31 |
| 29 | No. of pole pairs | | 8 |
| 30 | Bearings | | 2 ball bearings |
| 31 | Commutation | | Hall sensor |
| 32 | Protection class | | IP 20 |

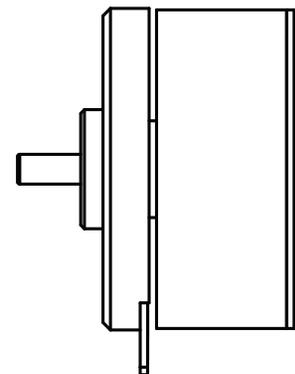
Applications

Robotics, industrial automation, etc.

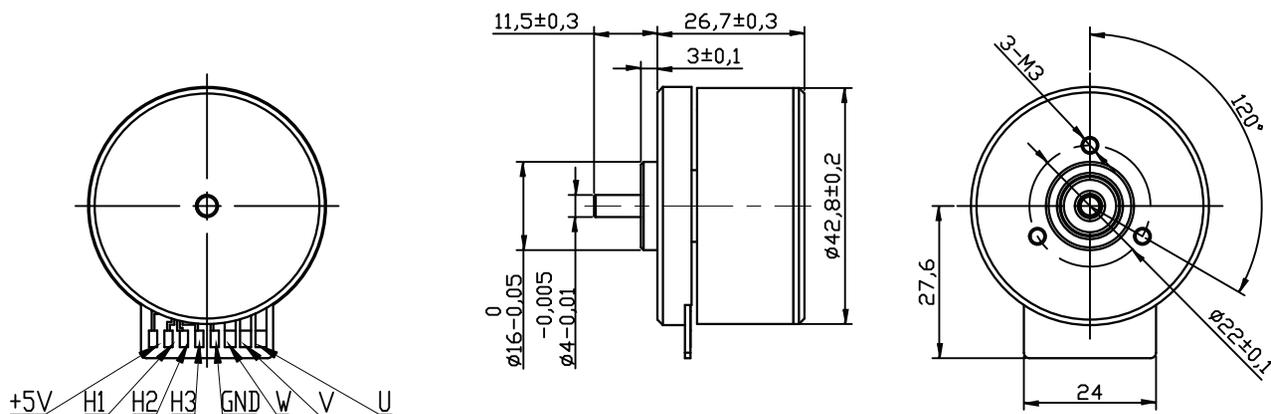
Options

| | |
|-------------------|--------------|
| Lead wires length | Bearing type |
| Shaft length | Hall sensor |
| Special coils | Encoder |
| Gearheads | Driver |

Approx. actual size



Dimension (mm) · B04326NBH2B



Brushless DC Motor · B04830N2B

Outer Rotor Without Sensor

| Characteristics | | 02-106-22.2 | |
|-----------------|--|------------------|-----------------|
| 1 | Voltage | V | 22.2 |
| 2 | Terminal resistance | Ω | 0.075 |
| 3 | No-load speed | rpm | 10600 |
| 4 | No-load current | A | 1 |
| 5 | Nominal torque | mNm | 138 |
| 6 | Nominal speed | rpm | 9800 |
| 7 | Nominal current | A | 8 |
| 8 | Max. output power | W | 560 |
| 9 | Max. efficiency | % | 88.7 |
| 10 | Back-EMF constant | mV/rpm | 2.1 |
| 11 | Torque constant | mNm/A | 20 |
| 12 | KV value | rpm/V | 480 |
| 13 | Speed/torque gradient | rpm/mNm | 1.8 |
| 14 | Rotor inertia | gcm ² | 124 |
| 15 | Weight | g | 160 |
| 16 | Thermal resistance housing-ambient | K/W | 1.6 |
| 17 | Thermal resistance winding-housing | K/W | 1.5 |
| 18 | Thermal time constant motor | s | 350 |
| 19 | Thermal time constant winding | s | 50 |
| 20 | Operating temperature range | °C | -40 ~ +120 |
| 21 | Thermal class of winding | °C | 180 |
| 22 | Axial play | mm | 0.012 |
| 23 | Radial play | mm | 0.008 |
| 24 | Axial load dynamic | N | 10 |
| 25 | Axial load static | N | 110 |
| 26 | Radial load at 3 mm from mounting face | N | 42 |
| 27 | No. of pole pairs | | 7 |
| 28 | Bearings | | 2 ball bearings |
| 29 | Commutation | | Sensorless |
| 30 | Protection class | | IP 20 |

Applications

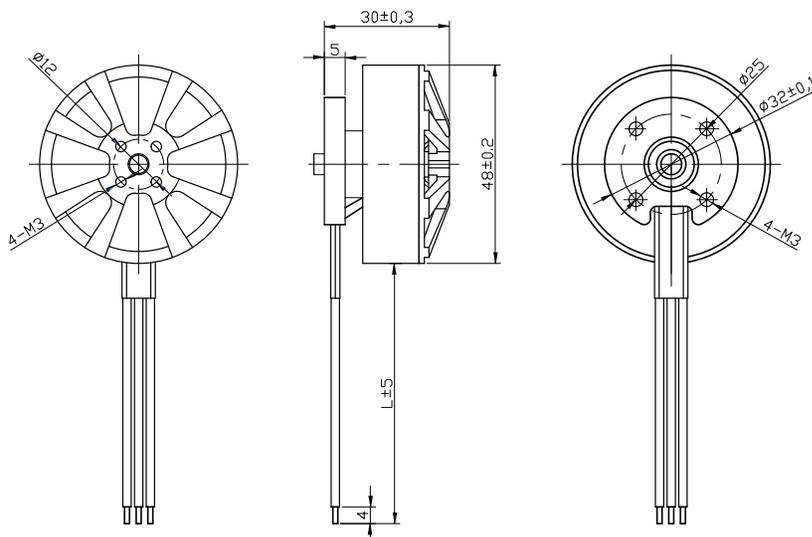
UAV, industrial automation, etc.

Options

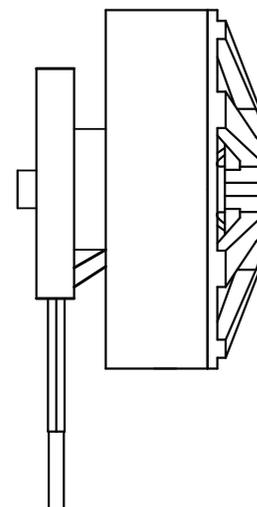
| | |
|-------------------|--------------|
| Lead wires length | Bearing type |
| Shaft length | Encoder |
| Special coils | Driver |
| Gearheads | |

49

Dimension (mm) · B04830N2B



Approx. actual size



Brushless DC Motor · B06133N2B

Outer Rotor Without Sensor

| Characteristics | | 01-64-22.2 | |
|-----------------|--|------------------|-----------------|
| 1 | Voltage | V | 22.2 |
| 2 | Terminal resistance | Ω | 0.07 |
| 3 | No-load speed | rpm | 6400 |
| 4 | No-load current | A | 0.93 |
| 5 | Nominal torque | mNm | 565 |
| 6 | Nominal speed | rpm | 5900 |
| 7 | Nominal current | A | 18 |
| 8 | Max. output power | W | 1750 |
| 9 | Max. efficiency | % | 89.4 |
| 10 | Back-EMF constant | mV/rpm | 3.5 |
| 11 | Torque constant | mNm/A | 33 |
| 12 | KV value | rpm/V | 290 |
| 13 | Speed/torque gradient | rpm/mNm | 0.6 |
| 14 | Rotor inertia | gcm ² | 620 |
| 15 | Weight | g | 230 |
| 16 | Thermal resistance housing-ambient | K/W | 0.9 |
| 17 | Thermal resistance winding-housing | K/W | 1 |
| 18 | Thermal time constant motor | s | 15 |
| 19 | Thermal time constant winding | s | 45 |
| 20 | Operating temperature range | °C | -40 ~ +120 |
| 21 | Thermal class of winding | °C | 180 |
| 22 | Axial play | mm | 0.012 |
| 23 | Radial play | mm | 0.008 |
| 24 | Axial load dynamic | N | 12 |
| 25 | Axial load static | N | 235 |
| 26 | Radial load at 3 mm from mounting face | N | 146 |
| 27 | No. of pole pairs | | 7 |
| 28 | Bearings | | 2 ball bearings |
| 29 | Commutation | | Sensorless |
| 30 | Protection class | | IP 20 |

Applications

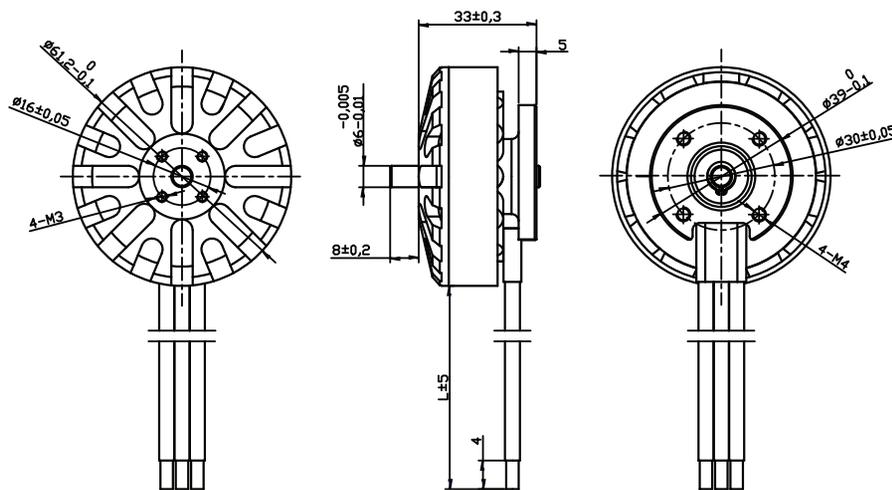
UAV, industrial automation, etc.

Options

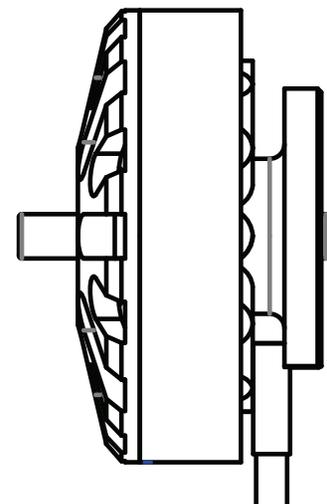
| | |
|-------------------|--------------|
| Lead wires length | Bearing type |
| Shaft length | Driver |
| Special coils | |

50

Dimension (mm) · B06133N2B



Approx. actual size



Brushless DC Motor · B06452N3B

Outer Rotor, Sensorless

| Characteristics | | | 01-80-40.0 | 02-106-24.0 | 03-104-36.0 |
|-----------------|--|------------------|-----------------|-------------|-------------|
| 1 | Voltage | V | 40 | 24 | 36 |
| 2 | Terminal resistance | Ω | 0.08 | 0.018 | 0.043 |
| 3 | No-load speed | rpm | 8000 | 10600 | 10400 |
| 4 | No-load current | A | 1.3 | 3.5 | 3.0 |
| 5 | Stall torque | mNm | - | - | - |
| 6 | Stall current | A | - | - | - |
| 7 | Nominal torque | mNm | 1180 | 1400 | 1500 |
| 8 | Nominal speed | rpm | 7500 | 9800 | 9600 |
| 9 | Nominal current | A | 26 | 70 | 49 |
| 10 | Max. output power | W | 1040 | 1680 | 1764 |
| 11 | Max. efficiency | % | 90.0 | 90.0 | 88.3 |
| 12 | Back-EMF constant | mV/rpm | 5.0 | 2.3 | 3.4 |
| 13 | Torque constant | mNm/A | 47.6 | 21.56 | 32.94 |
| 14 | KV value | rpm/V | 200 | 441.7 | 288.9 |
| 15 | Speed/torque gradient | rpm/mNm | 0.34 | 0.37 | 0.38 |
| 16 | Rotor inertia | gcm ² | 1330 | 1330 | 1330 |
| 17 | Weight | g | 625 | 623 | 235 |
| 18 | Thermal resistance housing-ambient | K/W | 1.9 | 1.9 | 1.9 |
| 19 | Thermal resistance winding-housing | K/W | 1.5 | 1.5 | 1.5 |
| 20 | Thermal time constant motor | s | 180 | 180 | 180 |
| 21 | Thermal time constant winding | s | 60 | 60 | 60 |
| 22 | Operating temperature range | °C | -40 ~ +120 | -40 ~ +120 | -40 ~ +120 |
| 23 | Thermal class of winding | °C | 180 | | |
| 24 | Axial play | mm | 0.012 | | |
| 25 | Radial play | mm | 0.008 | | |
| 26 | Axial load dynamic | N | 12 | | |
| 27 | Axial load static | N | 235 | | |
| 28 | Radial load at 3 mm from mounting face | N | 146 | | |
| 29 | No. of pole pairs | | 4 | | |
| 30 | Bearings | | 2 ball bearings | | |
| 31 | Commutation | | Sensorless | | |
| 32 | Protection class | | IP 30 | | |

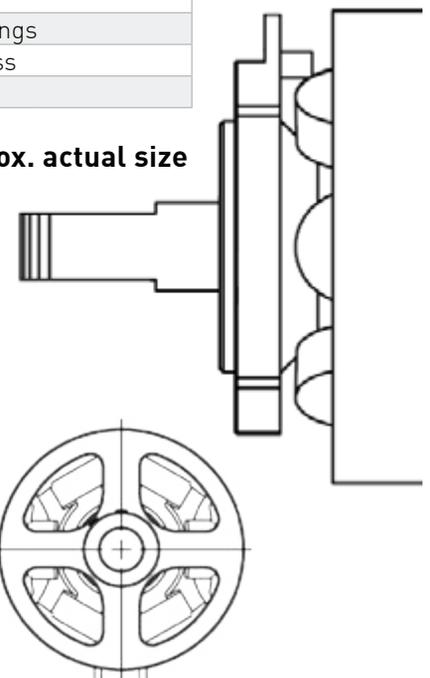
Applications

UAV gimbals and handheld gimbals.

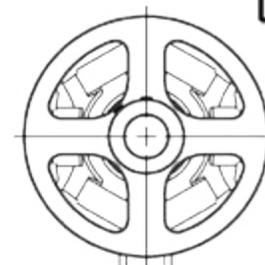
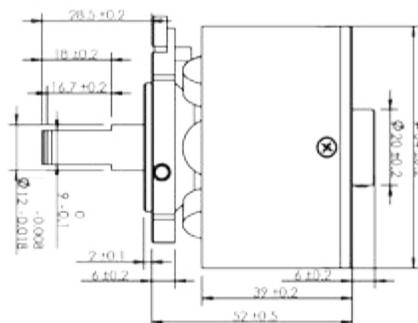
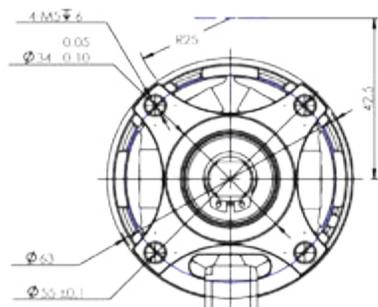
Options

| | |
|-------------------|--------------|
| Lead wires length | Bearing type |
| Shaft length | Driver |
| Special coils | |

Approx. actual size



Dimension (mm) · B06452N3B



M 1:2

Brushless DC Motor · B08724N2B

Outer Rotor Without Sensor

| Characteristics | | 01-36-48.0 | 02-36-36.0 | 03-36-24.0 | |
|-----------------|--|------------------|-----------------|------------|------------|
| 1 | Voltage | V | 48 | 36 | 24 |
| 2 | Terminal resistance | Ω | 0.33 | 0.17 | 0.085 |
| 3 | No-load speed | rpm | 3600 | 3600 | 3200 |
| 4 | No-load current | A | 0.5 | 0.7 | 1.0 |
| 5 | Stall torque | mNm | 18393 | 20089 | 17848 |
| 6 | Stall current | A | 145.5 | 211.8 | 282.3 |
| 7 | Nominal torque | mNm | 1210 | 1210 | 1210 |
| 8 | Nominal speed | rpm | 3200 | 3200 | 3200 |
| 9 | Nominal current | A | 9.7 | 13 | 19.5 |
| 10 | Max. output power | W | 1732 | 1892 | 1681 |
| 11 | Max. efficiency | % | 88.6 | 88.8 | 88.4 |
| 12 | Back-EMF constant | mV/rpm | 13.3 | 10.0 | 6.6 |
| 13 | Torque constant | mNm/A | 126.9 | 95.2 | 64.3 |
| 14 | KV value | rpm/V | 75 | 100 | 133.3 |
| 15 | Speed/torque gradient | rpm/mNm | 0.2 | 0.2 | 0.2 |
| 16 | Rotor inertia | gcm ² | 510 | 510 | 510 |
| 17 | Weight | g | 270 | 270 | 270 |
| 18 | Thermal resistance housing-ambient | K/W | 1.1 | 1.1 | 1.1 |
| 19 | Thermal resistance winding-housing | K/W | 0.48 | 0.48 | 0.48 |
| 20 | Thermal time constant motor | s | 340 | 340 | 340 |
| 21 | Thermal time constant winding | s | 50 | 50 | 50 |
| 22 | Operating temperature range | °C | -40 ~ +120 | -40 ~ +120 | -40 ~ +120 |
| 23 | Thermal class of winding | °C | 180 | | |
| 24 | Axial play | mm | 0.012 | | |
| 25 | Radial play | mm | 0.008 | | |
| 26 | Axial load dynamic | N | 10 | | |
| 27 | Axial load static | N | 140 | | |
| 28 | Radial load at 3 mm from mounting face | N | 145 | | |
| 29 | No. of pole pairs | | 21 | | |
| 30 | Bearings | | 2 ball bearings | | |
| 31 | Commutation | | Sensorless | | |
| 32 | Protection class | | IP 20 | | |

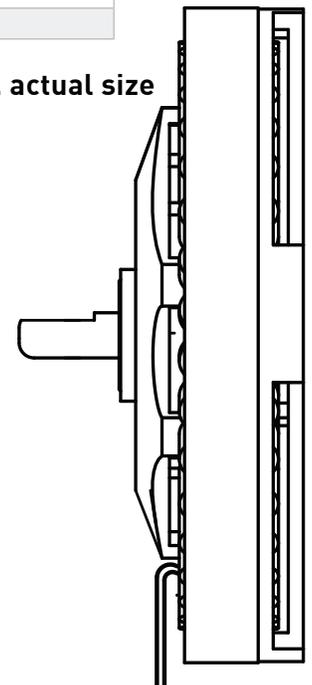
Applications

UAV, E-bike, industrial automation, etc.

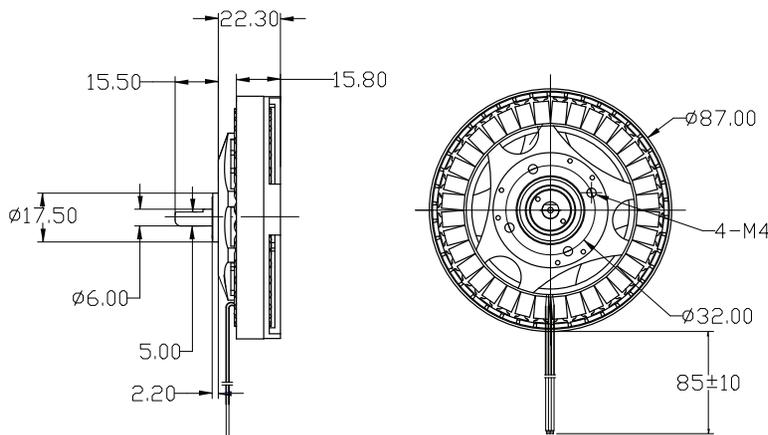
Options

| | |
|-------------------|--------------|
| Lead wires length | Bearing type |
| Shaft length | Driver |
| Special coils | |

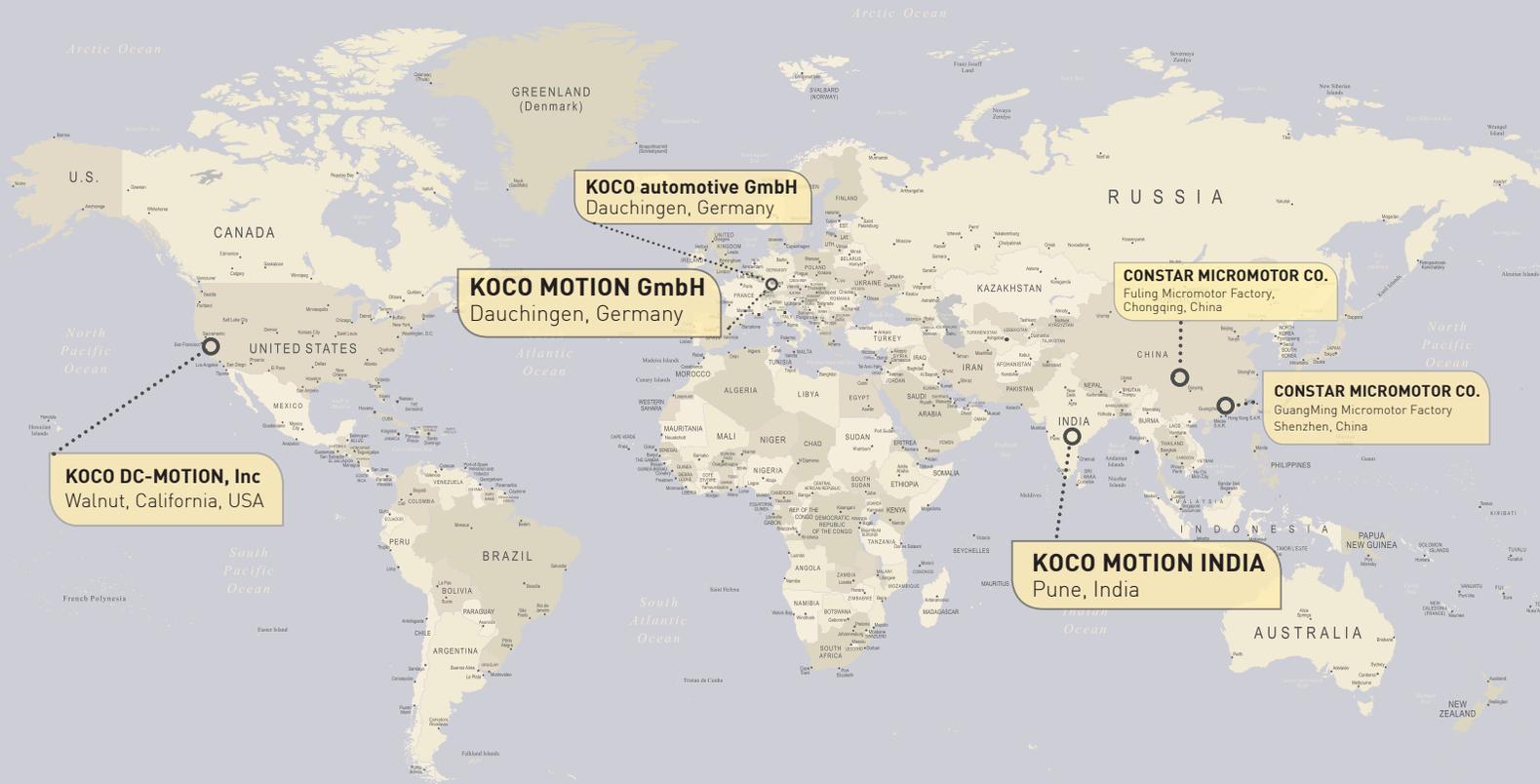
Approx. actual size



Dimension (mm) · B08724N2B



SALES REPRESENTATIVES



INDIA

KOCO MOTION INDIA PVT. LTD.

S. No. 100/5, Ambegaon,
Pune Satara Highway, Pune 411 046
India

Phone +91 95119 54544, 77700 26168
sales@kocomotionindia.com

www.kocomotionindia.com

KOCO MOTION GROUP

KOCO MOTION GmbH

Niedereschacherstr. 54
78083 Dauchingen
Germany
Phone +49 7720 995858-0
info@kocomotion.de
www.kocomotion.de

KOCO automotive GmbH

Niedereschacherstr. 52
78083 Dauchingen
Germany
Phone +49 7720 995164-0
info@kocoautomotive.de
www.kocoautomotive.de

KOCO DC-MOTION, Inc

20676 Carrey Rd.
Walnut, CA 91789
USA
Phone (+1) 909-468-9877
sales@kocodcmotion.com
www.kocodcmotion.com