

CONTENTS 目录

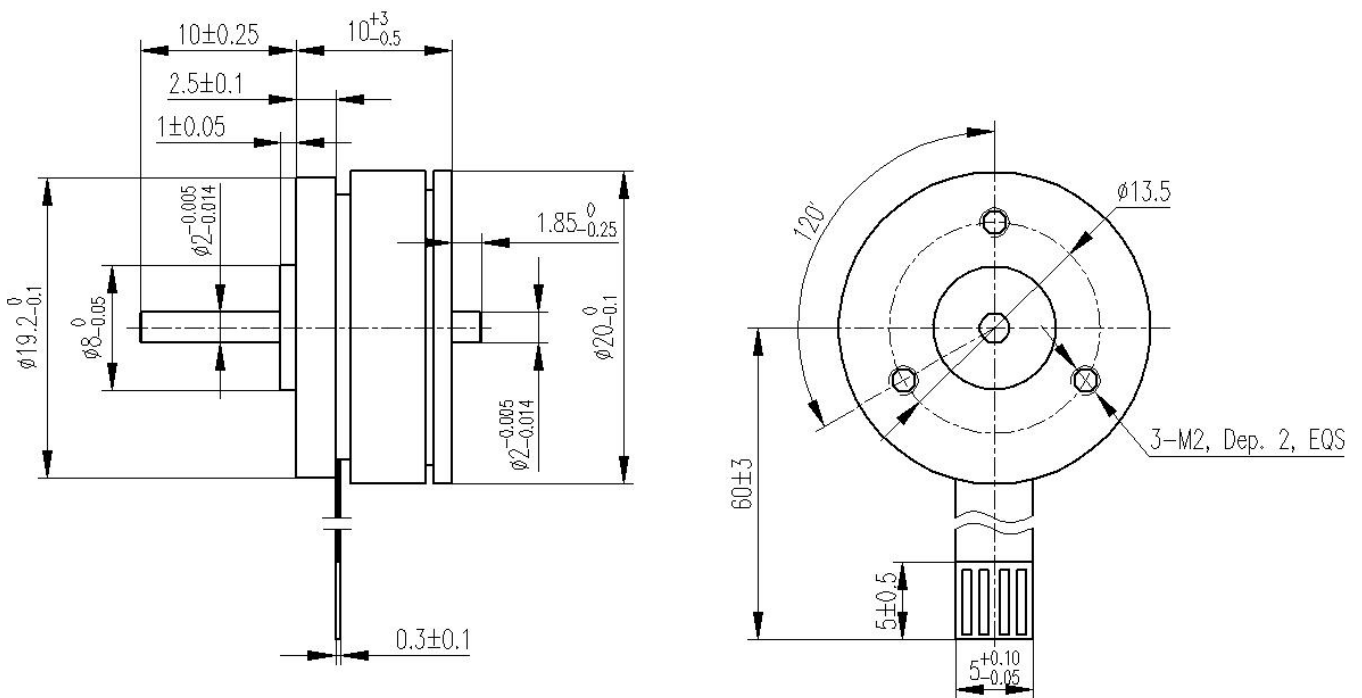
1. Φ 20 系列	page1-2
2. Φ 32 系列	page3-4
3. Φ 41 系列	page5-6
4. Φ 45 系列	page7-8
5. Φ 46 系列	page9-10
6. Φ 62 系列	page13-14
7. Φ 69 系列	page15-16
8. Φ 87 系列	page17-18
9. Φ 90 系列	page19-26
10. Φ 93 系列	page27-28
11. Φ 98 系列	page29-31
12. Φ 120 系列	page32-33

20 mm Series Outer Rotor BLDC Motor



Item	General Specifications
Winding type	Star
Hall Effect Angle	120° Electrical angle
Insulation Class	B
Insulation Resistance	min. 100MΩ, 500VDC
Dielectric Strength	500VAC for one minute
Shaft Radial Play	max. 0.02 (4N-load)
Shaft Axial Play	max. 0.08 (2N-load)
Max. radial force	5N
Max. axial force	2N

Dimensions



20 mm Series Outer Rotor BLDC Motor



Specification

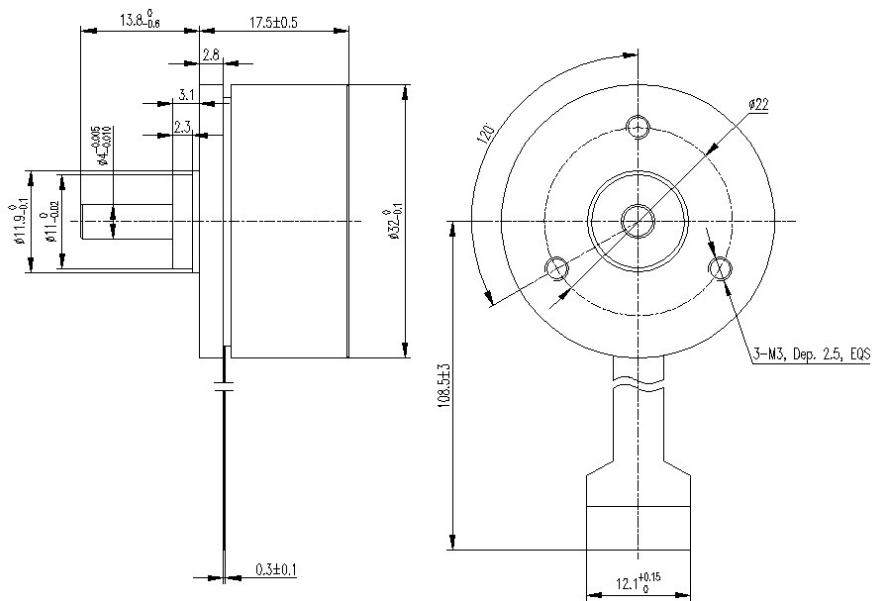
Type	M009BE0004-20-10
Number of Poles	8
Number of Phases	3
Nominal Voltage (VDC)	9
No-load Speed (RPM)	9760
No-load Current (A)	0.35
Rated Speed (RPM)	4180
Rated Torque (mN·m)	4.05
Rated Power (W)	1.8
Peak Torque (mN·m)	12
Peak Current (A)	1.05
Resistance (ohms)	9.4
Inductance (mH)	1.3
Torque Constant (mN·m/A)	8.4
Back EMF (V/KRPM)	0.65
Rotor Inertia (g·cm ²)	3.9
Body Length (mm)	10
Weight (kg)	0.015

32 mm Series Outer Rotor BLDC Motor



Item	General Specifications
Winding type	Star
Hall Effect Angle	120° Electrical angle
Insulation Class	B
Insulation Resistance	min. 100MΩ, 500VDC
Dielectric Strength	500VAC for one minute
Shaft Radial Play	max. 0.02 (4N-load)
Shaft Axial Play	max. 0.15 (4N-load)
Max. radial force	14N
Max. axial force	4.8N

Dimensions



32 mm Series Outer Rotor BLDC Motor



Specification

Type	M009BE0025-32-18	M012BE0025-32-18	M024BE0025-32-18	M048BE0025-32-18
Number of Poles	8	8	8	8
Number of Phases	3	3	3	3
Nominal Voltage (VDC)	9	12	24	48
No-load Speed (RPM)	3720	4610	4530	4780
No-load Current (A)	0.252	0.29	0.14	0.077
Rated Speed (RPM)	2090	2810	2760	2940
Rated Torque (mN · m)	24.6	25.1	25.5	24.7
Rated Power (W)	6	7	7	8
Peak Torque (mN · m)	73.8	75.3	76.5	74.1
Peak Current (A)	3.18	3	1.5	0.78
Resistance (ohms)	2.87	3.43	13.7	53
Inductance (mH)	1.61	1.87	7.73	27.8
Torque Constant (mN · m/A)	23	24.5	50	95
Back EMF (V/KRPM)	1.7	1.84	3.75	7.1
Rotor Inertia (g · cm ²)	35	35	35	35
Body Length (mm)	17.5	17.5	17.5	17.5
Weight (kg)	0.05	0.05	0.05	0.05

41 mm Series Outer Rotor BLDC Motor

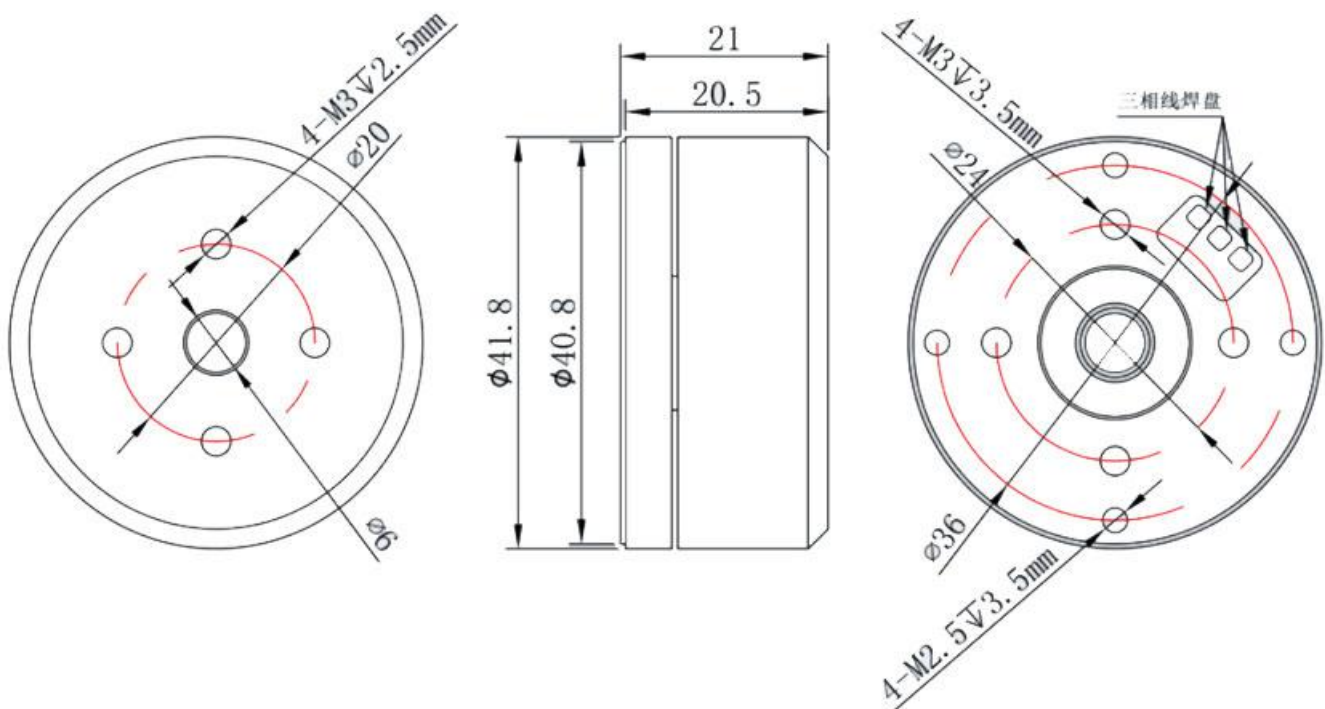


General Specifications



Item	Specifications
Resistance/Line	3.5 Ω
Inductance/Line	2.1 mH
KV	KV100
Torque constant	0.15 Nm/A
Rotor inertia	61 g/cm ²
IP Class	IP45
Magnet temperature resistance class	H 180° C

Dimensions



41 mm Series Outer Rotor BLDC Motor



Technical Specifications

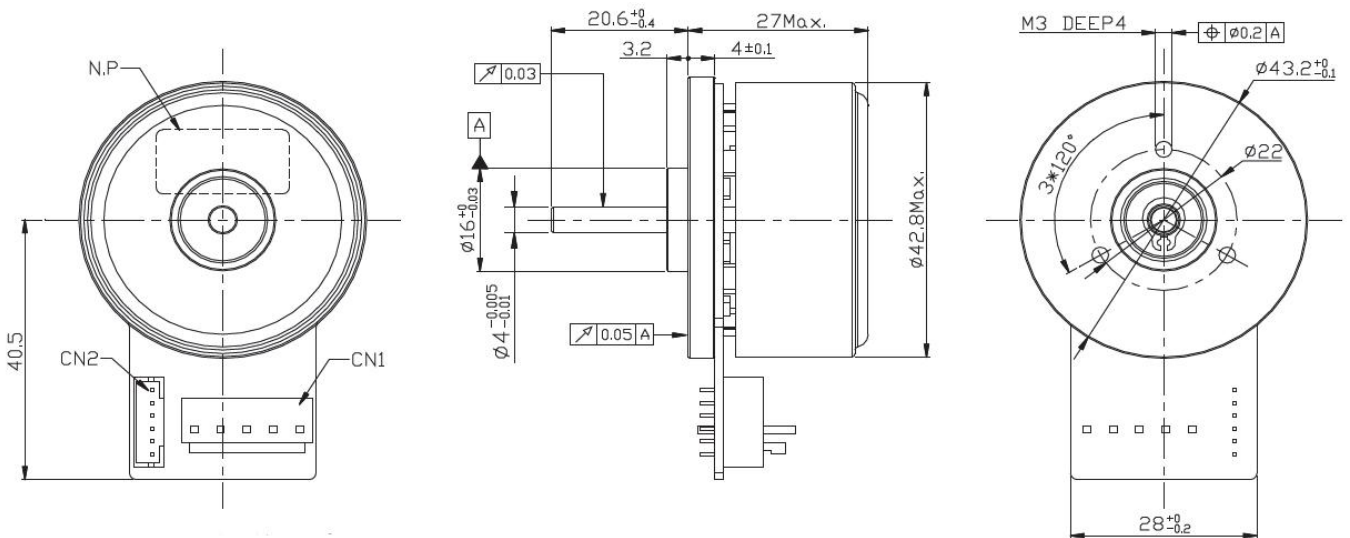
Item	M016BE0150-41-21
Number of poles	12N14P
Voltage (VDC)	16
Rated Current (A)	1.45
Rated Torque (N·m)	0.15
Rated speed (rpm)	900
Peak Current (A)	4.5
Peak Torque (N·m)	0.46
Body Length (mm)	21
Weight (g)	90

45 mm Series Outer Rotor BLDC Motor



Item	General Specifications
Winding type	Star
Hall Effect Angle	120° Electrical angle
Insulation Class	B
Insulation Resistance	min. 100MΩ, 500VDC
Dielectric Strength	500VAC for one minute
Shaft Radial Play	max. 0.02 (4N-load)
Shaft Axial Play	max. 0.14 (4N-load)
Max. radial force	28N
Max. axial force	10N

Dimensions



45 mm Series Outer Rotor BLDC Motor



Specification

Type	M024BE0050-45-18	M024BE0084-45-21	M024BE0130-45-27
Number of Poles	16	16	16
Number of Phases	3	3	3
Nominal Voltage (VDC)	24	24	24
No-load Speed (RPM)	6500	6700	6100
No-load Current (A)	0.27	0.33	0.38
Rated Speed (RPM)	5000	5260	4840
Rated Torque (mN·m)	50	84	130
Rated Power (W)	30	50	70
Peak Torque (mN·m)	150	250	390
Peak Current (A)	4.8	7.8	11
Resistance (ohms)	1.42	0.70	0.56
Inductance (mH)	0.59	0.33	0.27
Torque Constant (mN·m/A)	35.3	34.2	37.2
Back EMF (V/KRPM)	2.61	2.53	2.75
Rotor Inertia (g·cm ²)	99	135	181
Body Length (mm)	18	21	27
Weight (kg)	0.08	0.12	0.15

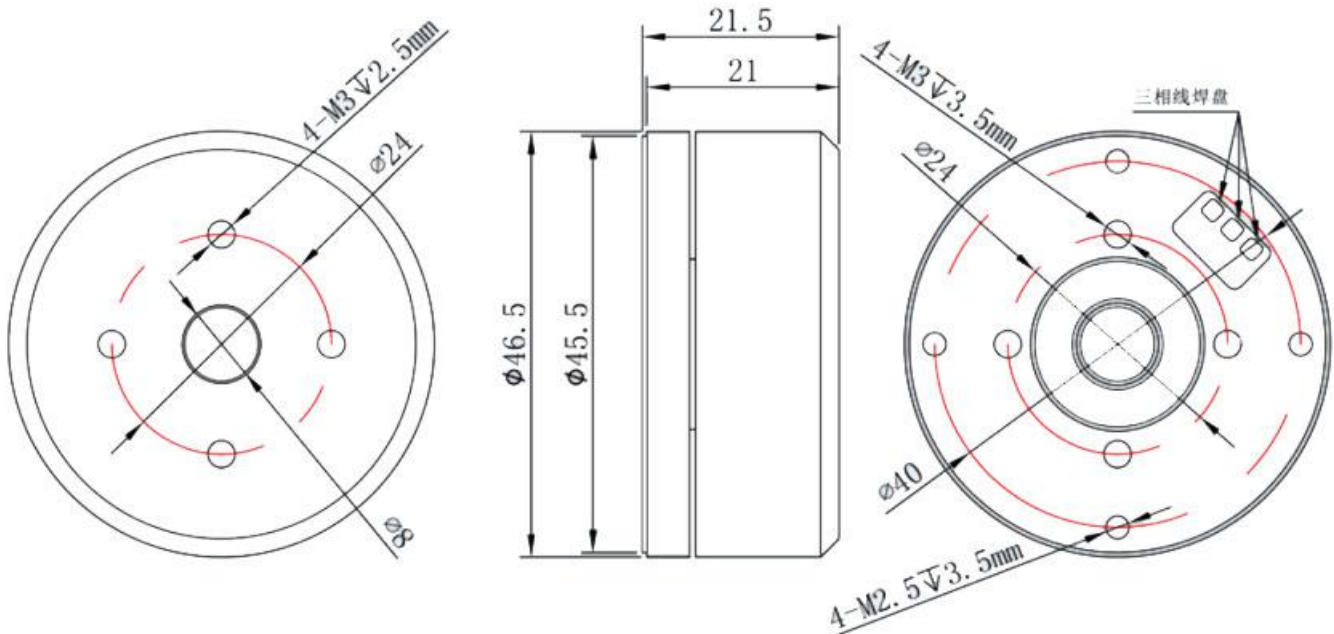
46mm Series Outer Rotor BLDC Motor

General Specifications



Item	Specifications
Resistance/Line	4.5 Ω
Inductance/Line	1.8 mH
KV	KV70
Torque constant	0.14 Nm/A
Rotor inertia	74 g/cm ²
IP Class	IP45
Magnet temperature resistance class	H 180° C

Dimensions



46mm Series Outer Rotor BLDC Motor



Technical Specifications

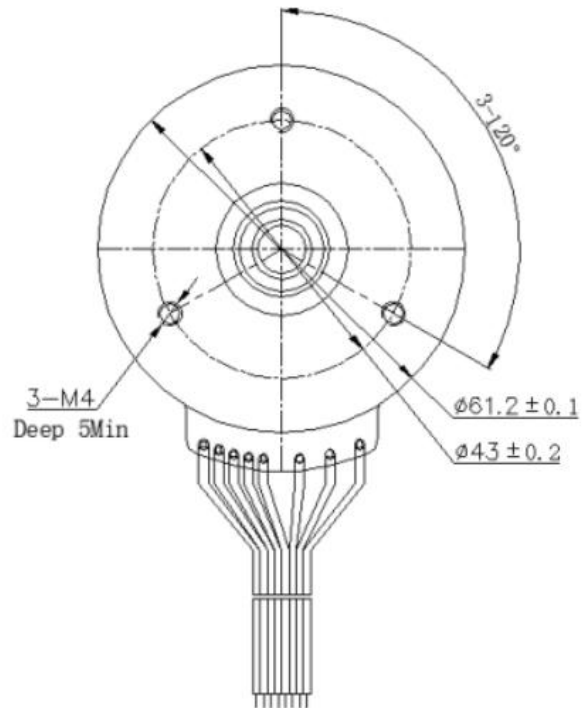
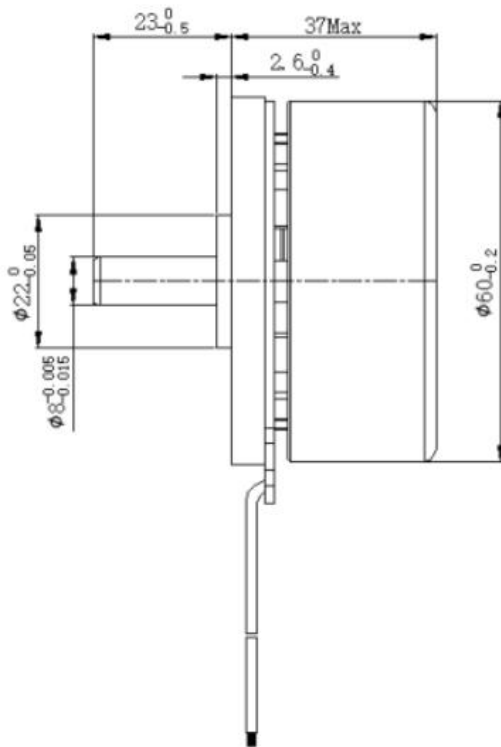
Item	M016BE0250-46-21
Number of poles	24N28P
Voltage (VDC)	16
Rated Current (A)	1.65
Rated Torque (N·m)	0.25
Rated speed (rpm)	600
Peak Current (A)	5
Peak Torque (N·m)	0.73
Body Length (mm)	21
Weight (g)	107

60 mm Series Outer Rotor BLDC Motor



Item	General Specifications
Winding type	Star
Hall Effect Angle	120° Electrical angle
Insulation Class	B
Insulation Resistance	min. 100MΩ, 500VDC
Dielectric Strength	500VAC for one minute
Shaft Radial Play	max. 0.02 (4N-load)
Shaft Axial Play	max. 0.15 (4N-load)
Max. radial force	40N
Max. axial force	15N

Dimensions



60 mm Series Outer Rotor BLDC Motor



Specification

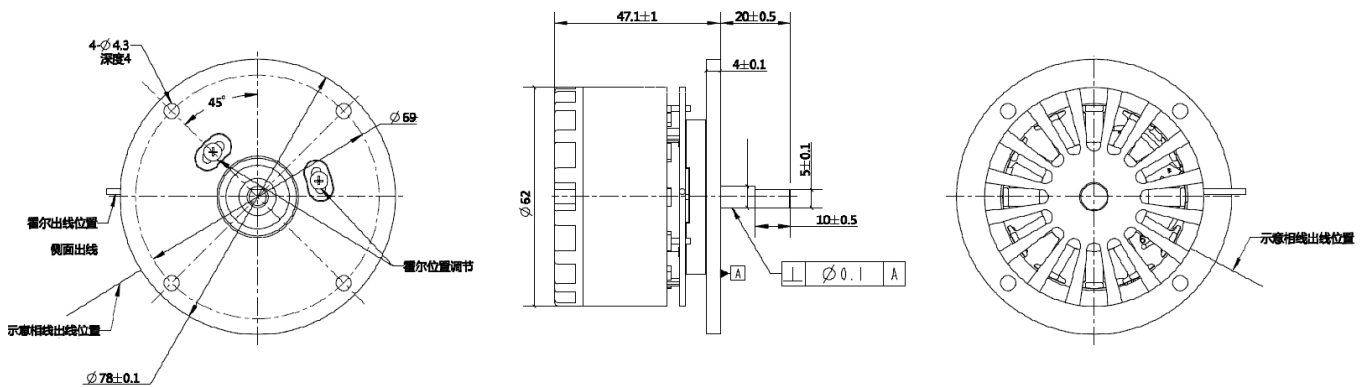
Type	M012BE0267-60-37	M024BE0284-60-37	M048BE0317-60-37
Number of Poles	14	14	14
Number of Phases	3	3	3
Nominal Voltage (VDC)	12	24	48
No-load Speed (RPM)	3710	4250	3970
No-load Current (A)	<0.5	<0.5	<0.5
Rated Speed (RPM)	3190	3740	3500
Rated Torque (mN·m)	267	284	317
Rated Power (W)	90	110	120
Peak Torque (mN·m)	800	852	950
Peak Current (A)	26.64	16.2	8.3
Resistance (ohms)	0.128	0.307	1.1
Inductance (mH)	0.0615	0.188	0.864
Torque Constant (mN·m/A)	30	52.7	114
Back EMF (V/KRPM)	2.22	3.9	8.43
Rotor Inertia (g·cm ²)	1210	1210	1210
Body Length (mm)	37	37	37
Weight (kg)	0.48	0.48	0.48

62 mm Series Outer Rotor BLDC Motor



Item	General Specifications
Winding type	Star
Hall Effect Angle	120° Electrical angle
Insulation Class	B
Insulation Resistance	min. 100MΩ, 500VDC
Dielectric Strength	500VAC for one minute
Shaft Radial Play	max. 0.02 (4N-load)
Shaft Axial Play	max. 0.08 (4N-load)
Max. radial force	28N
Max. axial force	10N

Dimensions



Specification

Type	M025BE0800-62-47
Number of Poles	14
Number of Phases	3
Nominal Voltage (VDC)	25
No-load Speed (RPM)	7000
No-load Current (A)	3
Rated Speed (RPM)	5850

62 mm Series Outer Rotor BLDC Motor

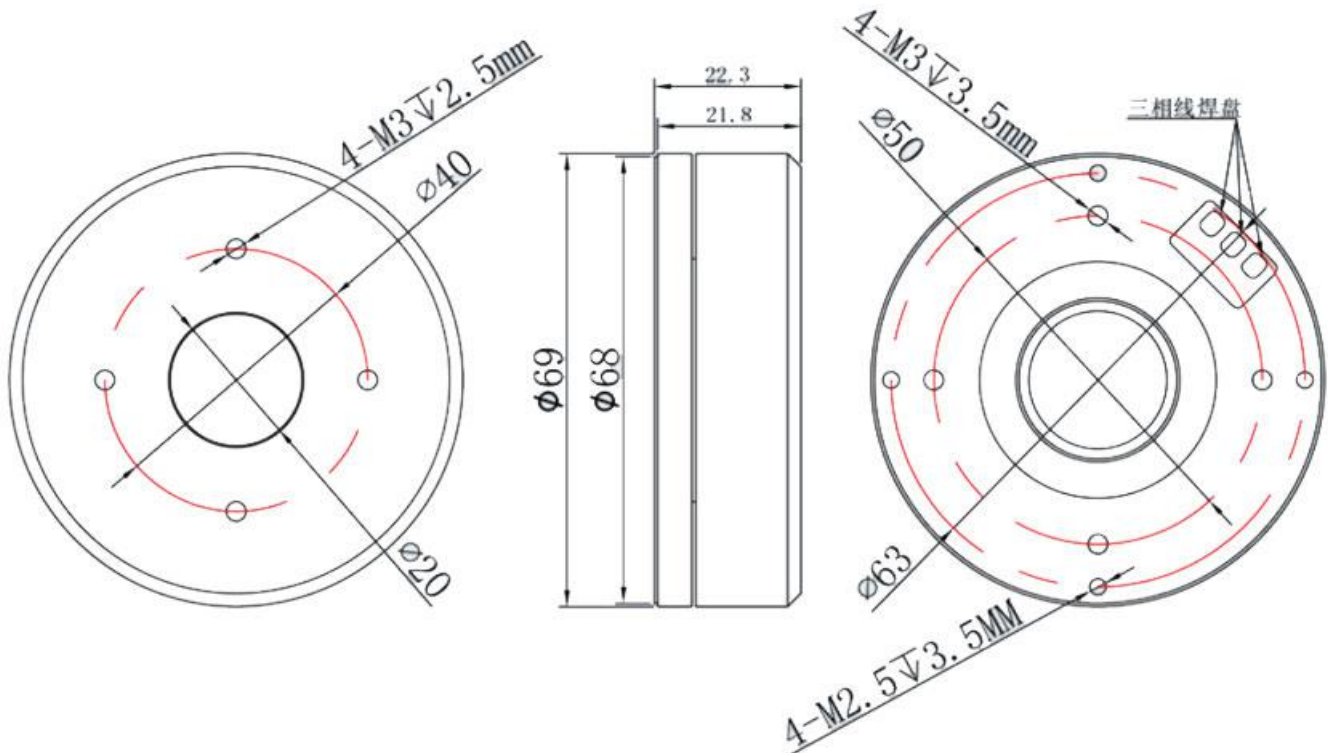
Rated Torque (mN·m)	800
Rated Power (W)	490
Peak Torque (mN·m)	2400
Peak Current (A)	60
Resistance (ohms)	0.05
Inductance (mH)	0.05
Torque Constant (mN·m/A)	33
Back EMF (V/KRPM)	2.55
Rotor Inertia (g·cm ²)	1100
Body Length (mm)	47
Weight (kg)	0.5

General Specifications



Item	Specifications
Resistance/Line	5.5 Ω
Inductance/Line	2.72 mH
KV	KV25
Torque constant	0.4 Nm/A
Rotor inertia	355 g/cm ²
IP Class	IP45
Magnet temperature resistance class	E 180° C

Dimensions



69 mm Series Outer Rotor BLDC Motor



Technical Specifications

Item	M024BE0600-69-22
Number of poles	24N28P
Voltage (VDC)	24
Rated Current (A)	1.43
Rated Torque (N·m)	0.6
Rated speed (rpm)	350
Peak Current (A)	4.2
Peak Torque (N·m)	1.75
Body Length (mm)	22
Weight (g)	230

87 mm Series Outer Rotor BLDC Motor

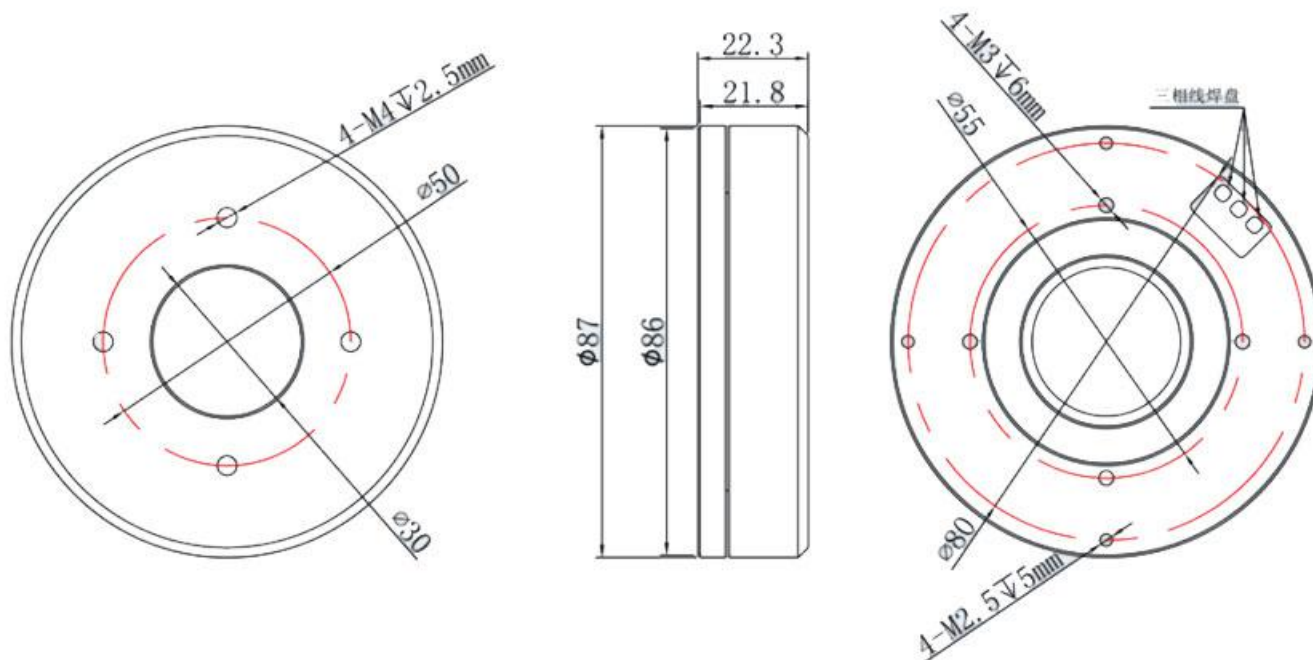


General Specifications



Item	Specifications
Resistance/Line	1.8 Ω
Inductance/Line	1.1 mH
KV	KV30
Torque constant	0.17 Nm/A
Rotor inertia	650 g/cm ²
IP Class	IP45
Magnet temperature resistance class	E 150° C

Dimensions



87 mm Series Outer Rotor BLDC Motor



Technical Specifications

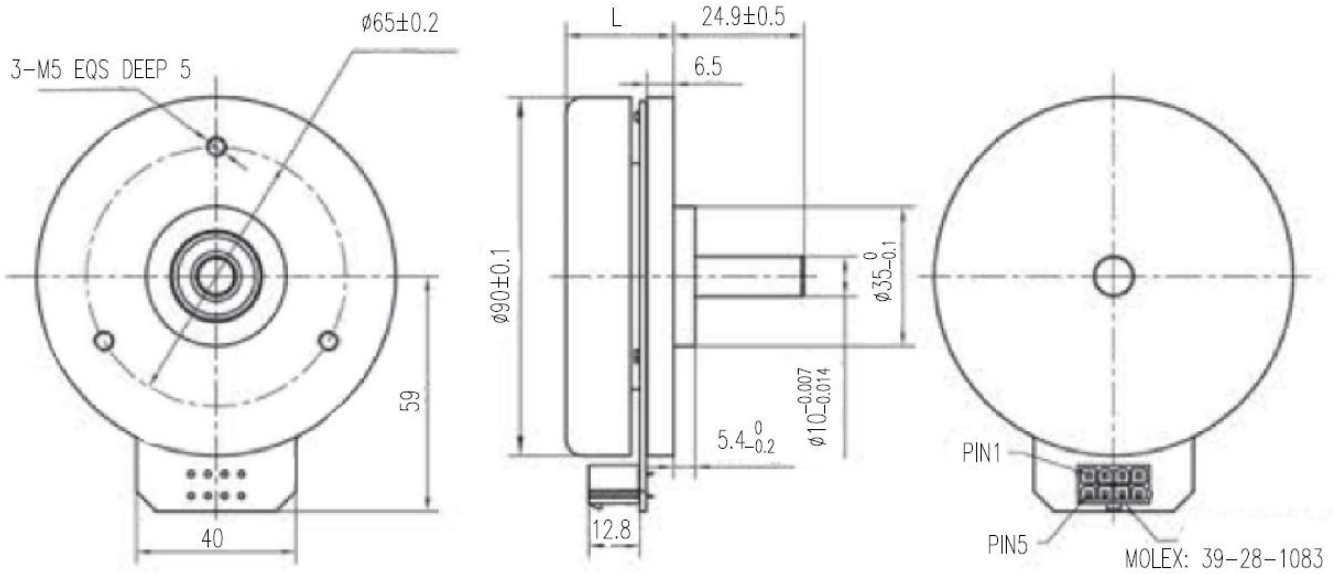
Item	M024BE1000-87-22
Number of poles	36N42P
Voltage (VDC)	24
Rated Current (A)	2.8
Rated Torque (N·m)	1
Rated speed (rpm)	450
Peak Current (A)	8.3
Peak Torque (N·m)	2.9
Body Length (mm)	22
Weight (g)	315

90 mm Series Outer Rotor BLDC Motor



Item	General Specifications
Winding type	Star
Hall Effect Angle	120° Electrical angle
Insulation Class	B
Insulation Resistance	min. 100MΩ, 500VDC
Dielectric Strength	600VAC for one second
Shaft Radial Play	max. 0.02 (4N-load)
Shaft Axial Play	max. 0.14 (4N-load)
Max. radial force	110N @10mm from the flange
Max. axial force	45N

Dimensions



Specification

Type	M024BE0457-90-27	M048BE0964-90-40
Number of Poles	22	22
Number of Phases	3	3
Nominal Voltage (VDC)	24	48
No-load Speed (RPM)	3200	1900
Rated Speed (RPM)	2700	1670
Rated Torque (N·m)	0.457	0.964
Rated Power (W)	130	169
Peak Torque (N·m)	1.6	3
Peak Current (A)	23	13
Resistance (ohms)	0.21	0.65
Inductance (mH)	0.19	0.9
Torque Constant (mN·m/A)	63	241
Back EMF (V/KRPM)	5.2	17.9
Rotor Inertia (g·cm ²)	3000	5000
Body Length (mm) L	27	40
Weight (kg)	0.6	1

90 mm Series Outer Rotor BLDC Motor

M024BE33500-90-45 Characteristics

It can adapt to a variety of heavy load mechanical equipment such as legged robot. More torque. More stable

The maximum output torque is 33.5N.m. Easy to achieve powerful instant power

21 rad / s joint maximum speed makes the instantaneous speed increase beyond imagination



Outstanding
Power



Highly
Integrated



Cross Roller
Bearing



Temperature &
Position Sensor



Low Copper
consumption coil

Function	Parameter
Maximum Torque	33.5 N.m
Weight	about 605g
Operating Voltage	12~30V (Recommended Voltage:24V)
Maximum Current	40A
Maximum Speed	21.0 rad/s (24V Power Supply)
Torque Constant	0.8372N.m/A
Communication Method	RS 485
Communication Control Frequency	1k
Temperature Sensor	Equipped
Motor End Encoder Resolution	15bit
Motor-aware Feedback	Torque, Angle, Angular Velocity, Angular Acceleration, Temperature
Motor Control Instructions	Torque, Angle, Angular Velocity, Stiffness, Damping

Highly Integrated

It integrates motor body and controller, and thus removes cumbersome connecting lines.

Outlet connectors support plug-and-play function.

Quick disassembly design makes maintenance easier

The enclosed design can prevent dust from entering into the motor



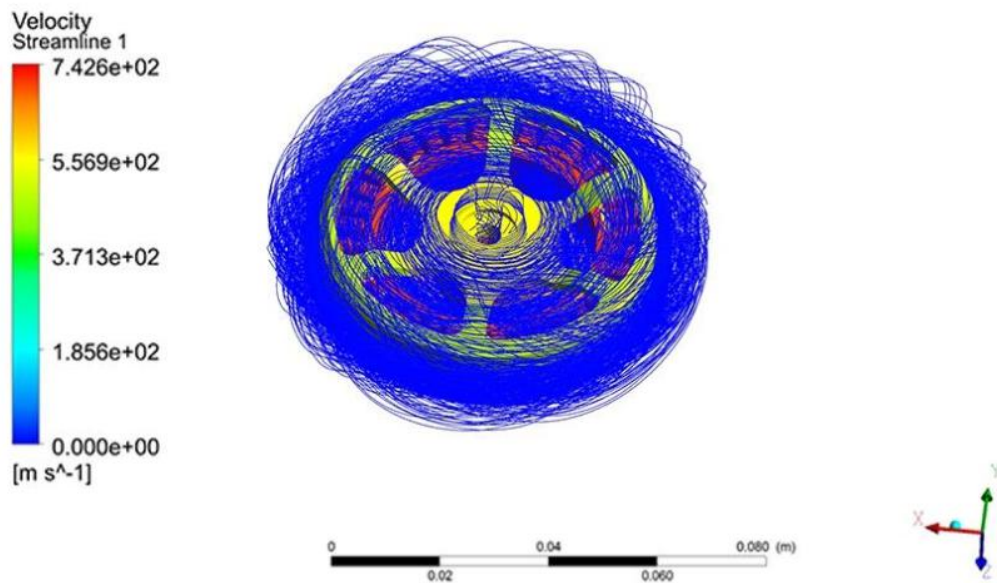
Reasonable Body Design



- Ultra thin design
- Use every 0.1mm space accurately
- Planetary reducer with limit optimization
- Multi-function. Small fuselage. Weight only 605g

Motor Velocity Field Chart

Thousands of times of velocity streamline calculation
Ensure the stability and reliability of the motor in any scenario



High Quality Electromagnetic Wire And Iron Core Technology

- The electromagnetic wire adopts the technology of dipping paint to make the motor temperature get better heat dissipation
- Single stranded copper wire. Reduce copper consumption and current interference between copper wires. At the same time, make the motor more beautiful



- The iron core adopts electrophoresis and high temperature resistant coating technology. It can pass the 48 hour salt spray test. Super rust proof, temperature resistant and pressure resistant
- Choose 0.2mm silicon steel sheet material to reduce iron consumption

Super large industrial grade cross roller bearing

Resistance to axial impact
High precision and long life



Read sensor data in real time

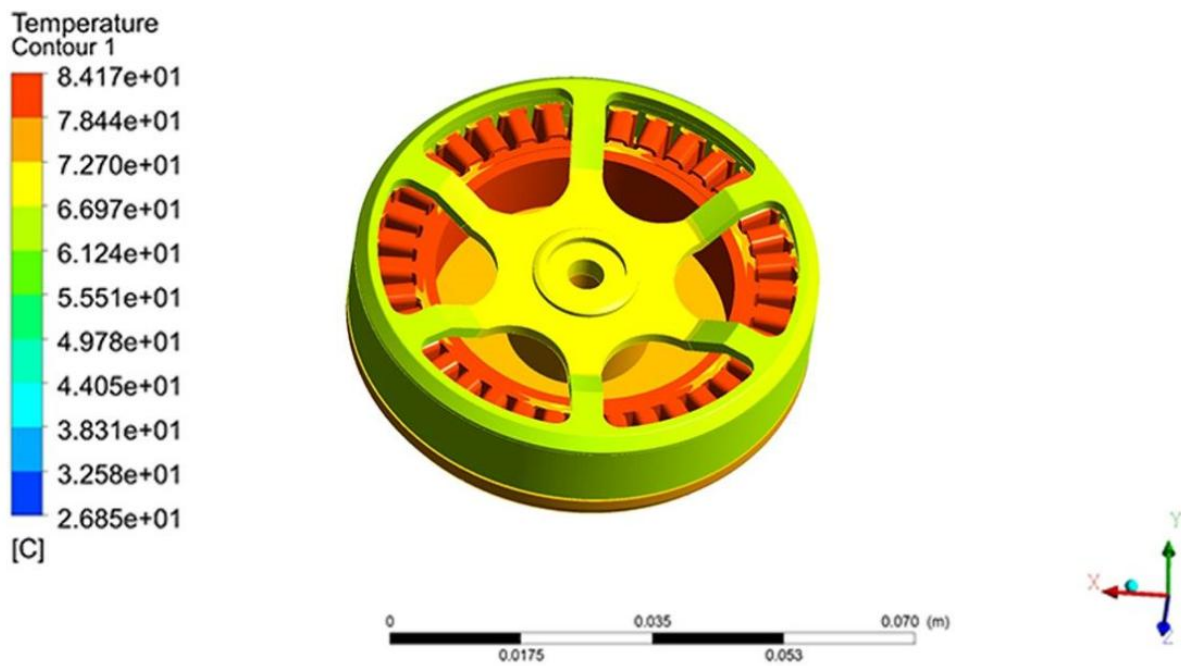
Motor perception feedback: torque, angle, angular speed, angular acceleration, temperature
Motor control command: torque, angle, angular speed, stiffness, damping



Temperature Detection Sensor

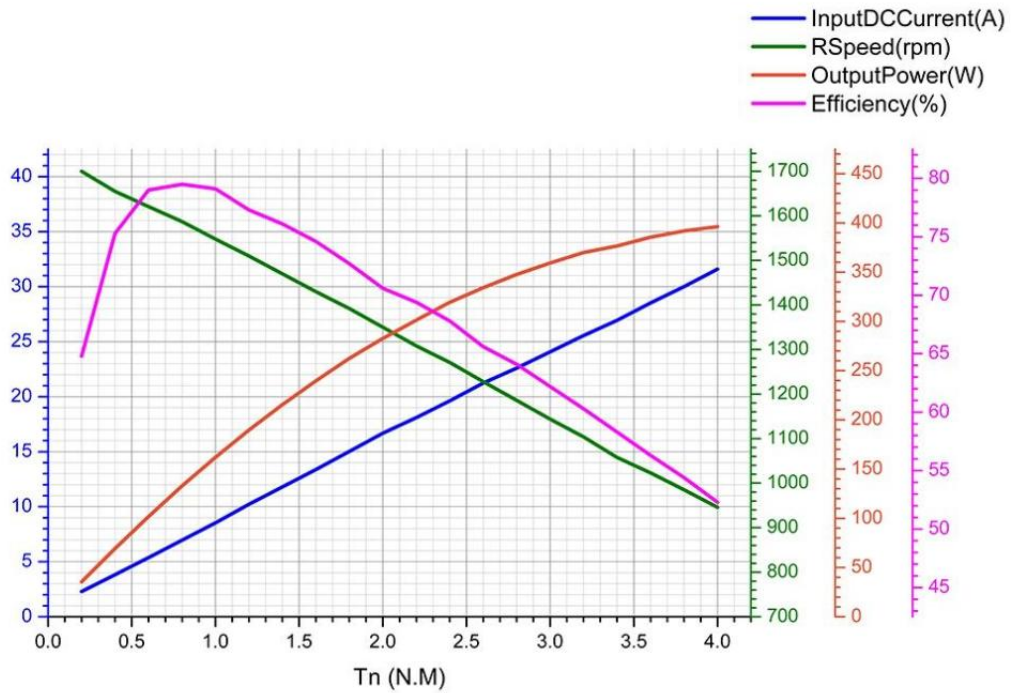
Motor with temperature detection sensor

It can effectively prevent the motor from being damaged due to abnormal temperature



FOC Control Characteristic Curve

FOC control. Torque fluctuation is small. Low noise. Smoother operation



93 mm Series Outer Rotor BLDC Motor



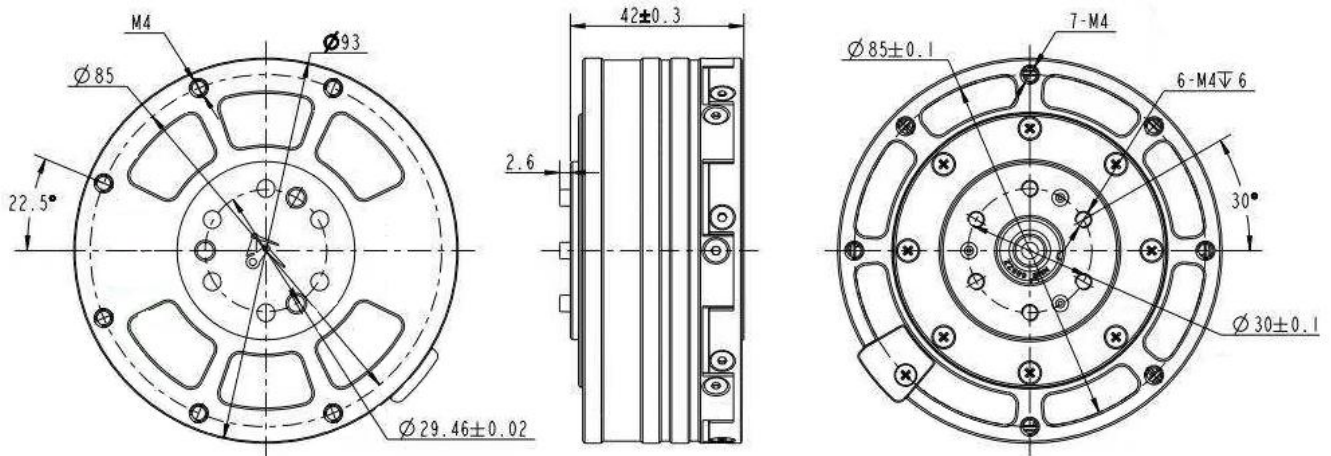
Description: This is a brushless motor with gearbox. This motor is mainly used in the joints of robots.

General Specifications

Item	Specifications
Back EMF	2.07 V/krpm
Torque constant	0.342 N.m/A
Insulation class	F 155° C
Ambient Temperature	-20° C~+50° C
Dielectric streng	600VAC 1SEC
Insulation resist	100MOhm@500VDC
Resistance/Line	0.5 ohms@20° C
Inductance/Line	0.4 mH



Dimensions



93 mm Series Outer Rotor BLDC Motor



Technical Specifications

Item	M036BE2750-93-42
Number of Poles	42
Voltage (VDC)	36
No load speed (rpm)	1200
No load current (A)	0.4
Rated Torque (N.m)	2.75
Rated speed (rpm)	700
Rated Current (A)	8
Peak torque (N.m)	7
Peak current (A)	20.5
Shaft radial play(mm)	0.02 Max@4N
Shaft Axial play	0.14 Max@4N
Length (mm)	42

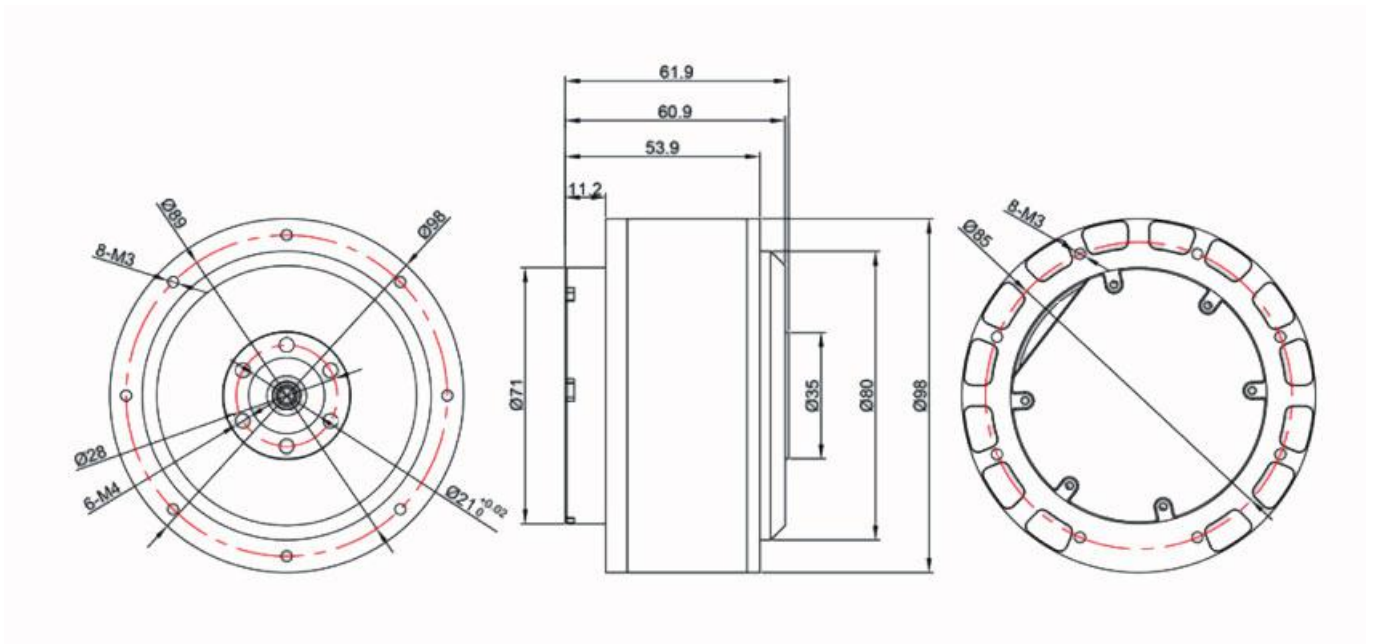
98 mm Series Outer Rotor BLDC Motor



General Specifications

Item	Specifications
Back EMF	0.01 V/rpm
Resistance/Line	161 m Ω
Inductance/Line	73.2 μ H
Ambient Temperature	-20° C ~ +50° C
Motor Constant	0.01 Nm/ \sqrt w
Torque constant	0.095 Nm/A
Speed constant	100 rpm/V
Ratio	80:1

Dimensions

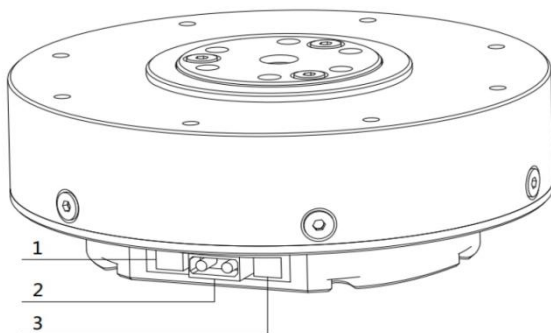


98 mm Series Outer Rotor BLDC Motor

Technical Specifications

Item	M024BE48000-98-42
Number of Poles	21
Voltage (VDC)	24/48
Continuous Torque (N·m)	48
Peak Torque (N·m)	144
Continuous torque max speed (rpm)	28/57
Continuous Current (A)	13
Peak Current (A)	40
Body Length (mm)	42.7
Weight (kg)	0.79

Description



This is a high-end actuator including brushless DC motor, integrated planetary gear reducer, encoder and driver. It can be widely used in the fields of exoskeleton, walking robot, automation equipment, scientific research and education. The driver uses field oriented control (FOC) algorithm, with high precision angle sensor, precise position and torque control can be achieved. The design of 36N42P, rare earth material magnet and high precision planetary gear reducer can provide more stable and larger torque for the motor. The motor supports a variety of communication protocols, it provides a human-machine interaction interface through

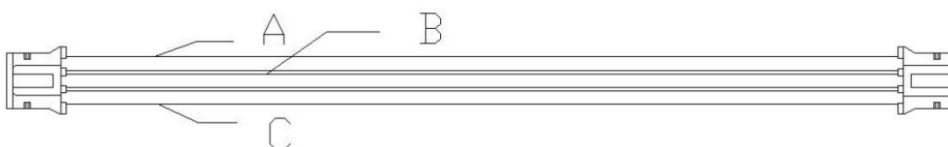
communication with the PC, enabling users to control the motor faster and more accurately.

Interface

1. Serial Signal Port

Link to PC via UART to set motor zero position, calibrate encoder, set driver ID, Max. current and other parameters.

A:GND B:RX C:TX Length of wire:200mm



2. Power interface

The power (rated voltage 24V) is connected to the motor through the XY30 connector.

A:Power(-)—Black B:Power(+)—Red



3. CAN signal interface

External equipment can send control instructions through CAN signal and feedback status information of motor. The CAN bus bit rate is 1 Mbps, the host ID number is 0x00 by default.

A:CAN_H B:CAN_L Length of wire:200mm



CAN Communication Protocol

CAN Rate: 1 MHz

Motor receives message format.

It is used to send control commands to the motor to control the position, speed and current.

Special CAN Code

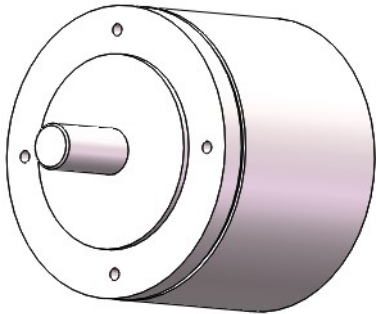
Enter motor control mode {0xFF, 0xFF, 0xFF, 0xFF, 0xFF, 0xFF, 0xFF, 0XFC }

Exit motor control mode {0xFF, 0xFF, 0xFF, 0xFF, 0xFF, 0xFF, 0xFF, 0XFD }

Set the current position of the motor to zero {0xFF, 0xFF, 0xFF, 0xFF, 0xFF, 0xFF, 0xFF, 0XFE }

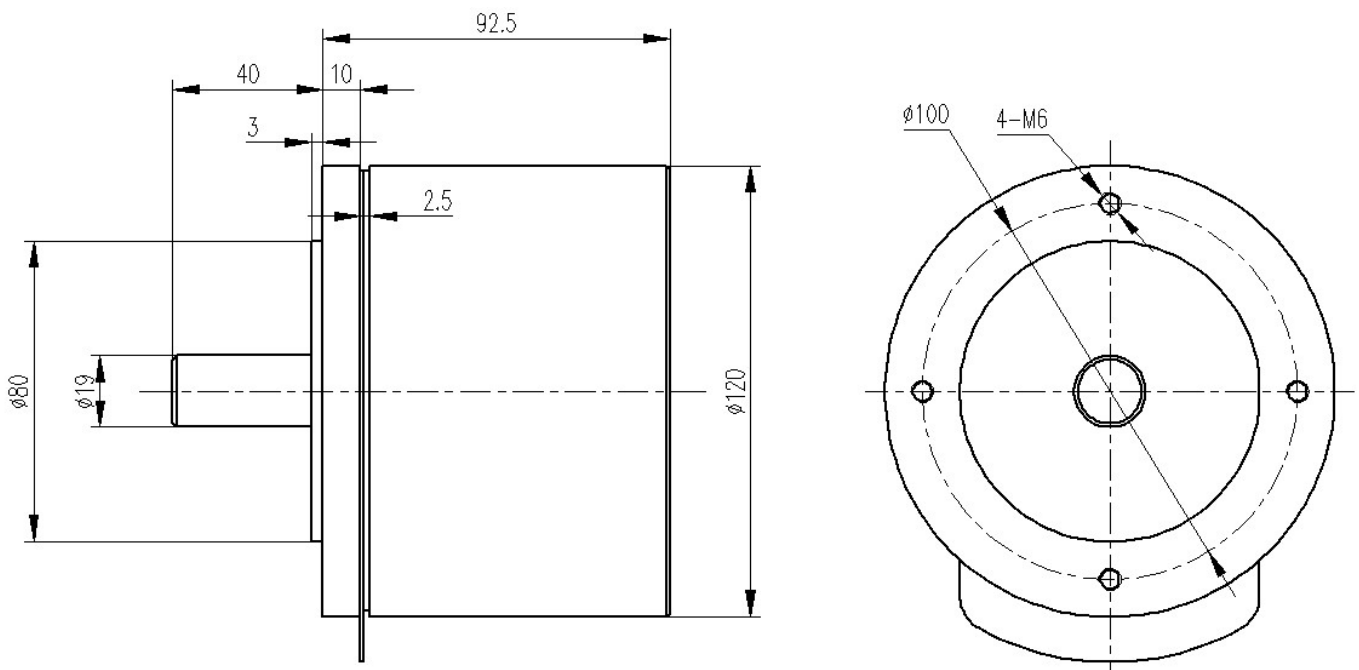
Attention: When using the CAN communication to control motor, you must enter the motor control mode first!

120 mm Series Outer Rotor BLDC Motor



Item	General Specifications
Winding type	Star
Hall Effect Angle	120° Electrical angle
Insulation Class	B/F
Insulation Resistance	min. 100MΩ, 500VDC
Dielectric Strength	500VAC for one minute
Shaft Radial Play	max. 0.02 (4N-load)
Shaft Axial Play	max. 0.08 (4N-load)
Max. radial force	120N @ 10mm from flange
Max. axial force	45N

Dimensions



120 mm Series Outer Rotor BLDC Motor



Specification

Type	M012BE0267-60-37	M024BE0284-60-37
Number of Poles	24	24
Number of Phases	3	3
Nominal Voltage (VDC)	24	36
Rated Speed (RPM)	800	500
Rated Torque (N·m)	4.8	10.5
Rated Power (W)	400	550
Peak Torque (N·m)	12.5	25
Peak Current (A)	60	35
Back EMF (V/KRPM)	21.1	50.8
Body Length (mm)	37	37
Weight (kg)	3.6	3.6