

HDB MOTOR  
SHENZHEN BOSTO Co.,Ltd.  
Email: [hdbmotor@hdbmotors.com](mailto:hdbmotor@hdbmotors.com)  
Phone: +086 15999961401  
Website: [www.hdbmotors.com](http://www.hdbmotors.com)

Authorized Dealer:

HDB MOTOR 汉德保电机 Main Product Catalog

# Main Product Catalog

Stepper Motors  
Brushless Motors  
Gear Motors  
Motor Drivers  
Hollow Rotary Platforms

2020版

2020版

HDB MOTOR 汉德保电机  
兼匠心质造 驱动民族工业



## COMPANY INTRODUCTION

HDB MOTOR, established in 2004, we specializes in the field of precision micro-control motors. Its main product range includes stepper motors and drivers, hybrid servo motors and drivers, brushless DC motors and drivers, precision planetary gear reducers, precision modules, and other motion control products and solution development services.

HDBMOTOR is recognized as a national high-tech enterprise, a Shenzhen high-tech enterprise, a Shenzhen double-soft enterprise, and a technology-oriented SME. Since its founding in 2004, the company has continuously invested in R&D and design for 15 years. It currently holds 84 authorized patents, including 2 invention patents, 27 utility model patents, 4 design patents, and 43 software copyrights.

HDB technology originates from the core R&D team of a well-known German motor brand. The leading technical backbone members have extensive research and industry experience in renowned German motor companies. The company employs one Ph.D. in mechatronics, three postgraduate engineers specializing in motors, and eleven engineers and assistant engineers with bachelor's degrees. In addition, there are more than ten senior professionals with over six years of experience in the industrial motion control field.

The HDB team has always adhered to the core value of "Quality Awareness," emphasizing the quality of both products and services. We take pride in continuously creating unique value for our customers. Our products have successively passed international certifications such as CE and RoHS, and we strictly operate under the ISO9001:2008 quality management system to ensure product quality.



## QUALITY MANAGEMENT

### We implement comprehensive quality management to achieve "Quality First."

Market-oriented, we strive to understand and meet customer and regulatory requirements, aiming to become the most trusted brand.

We commit to following quality policies and establishing an effective quality management system in compliance with ISO-9001, implementing preventive measures and continuous improvements across all processes.

### Quality Management System Certification

HDB adopts international standard systems as tools for continuous improvement and quality management. To ensure product stability and reliability, HDB guarantees product quality and performance through design source control, reaching advanced industry standards and fully meeting the diverse needs of customers.



### Core Component Brands of Drivers:



Freescale Main Control Chip



Rubycon Electrolytic Capacitors (Japan)



Avago High-Speed Optocouplers (USA)



Mitsubishi IPM Modules (Japan)



TDK Chip Capacitors



IR Power Transistors (USA)

### Core Component Brands of Motors:



NSK Bearings (Japan) – Ranked among the top three globally in the industry



Kuroda Molds (Japan) – The world's best stepper motor mold manufacturer



Yuma Stamped Iron Cores – The world's largest supplier of stepper motor iron cores



Baosteel NH38 – China's top magnetic steel supplier with the highest magnetic density

### PAST 15 YEARS

We have combined great passion and professional expertise in our work, striving to stand out in a fiercely competitive environment.

### NEXT 30 YEARS

We wholeheartedly focus on one thing: crafting with dedication to drive intelligent industry!

### COOPERATIVE SUPPLIERS

HDB engages in mutual learning with numerous component brands worldwide and establishes long-term strategic partnerships. In addition, we strive to achieve harmonious coexistence with our suppliers, acting as good partners to enable both sides to further leverage their respective strengths.

Diversity is an important feature of HDB's value system and a critical driver of our business. We are committed to providing opportunities to all suppliers and enhancing the diversity of our supplier base. Our goal is to offer more enterprises the chance to participate in our cooperation opportunities.

## Naming Rules

## Two-Phase Open-Loop Stepper Motor

20mm Series	04
28mm Series	05
35mm Series	06
42mm Series	07
43mm Series	08
56mm Series	09
57mm Series	10
59mm Series	11
60mm Series	12
85mm Series	13
86mm Series	14

## Three-Phase Open-Loop Stepper Motor

86mm Series	16
110mm Series	17
130mm Series	18

## Two-phase brake stepper motor

42mm Series	20
57mm Series	21
86mm Series	22

## Two-Phase Waterproof Stepper Motors

42mm Series	24
57mm Series	25
60mm Series	26
86mm Series	27

## Hollow Shaft Stepper Motors

20mm Series	30
28mm Series	31
42mm Series	32
57mm Series	33

## Planetary Reduction Stepper Motors

42mm	36
43mm	38
57mm	40
59mm	42
86mm	46
110mm(Three-Phase)	52

## Brushless DC Motors

42mm Series	58
56mm Series	59
57mm Series	60
60mm Series	61
80mm Series	62
92mm Series	63
123mm Series	64

## Planetary Reduction Brushless Motors

42mm Series	66
56mm Series	68
57mm Series	70
60mm Series	72
80mm Series	74

## Integrated Pulse Stepper Motors

42mm Series	80
57mm Series	82

## Two-Phase Closed-Loop Motors

42mm (1000 lines)	86
57mm (1000 lines)	87
60mm (1000 lines)	88
86mm (1000 lines)	89
42mm (2500 lines)	90
57mm (2500 lines)	91
60mm (2500 lines)	92
86mm (2500 lines)	93

## Rotary Platforms

DF Series Hollow Rotary Platform	96
JH Series Hollow Rotary Platform	100
5Z Series Micro Rotary Shaft	103
MTT Series Right-Angle Hollow Rotary Platform	104
HR Series Rotary Encoder	106

## Motor Drivers

### Open-Loop Series

S-224D (Two-Phase Pulse Stepper Driver)	110
S-245D (Two-Phase Pulse Stepper Driver)	112
S-266D (Two-Phase Pulse Stepper Driver)	114
ASA872R (Low Voltage AC Two-Phase Pulse Stepper Driver)	116
S-2822H (High Voltage AC Two-Phase Pulse Stepper Driver)	118
CSH-2242R (High Voltage AC Three-Phase Pulse Stepper Driver)	120
CSH-2272R (High Voltage AC Three-Phase Pulse Stepper Driver)	122
CSH-2285R (High Voltage AC Three-Phase Pulse Stepper Driver)	124
IO/AI Series (Intelligent Two-Phase Low Voltage Driver)	126

### Communication Series

Ether CAT Series	127
RS485 Series	128
CANopen	129

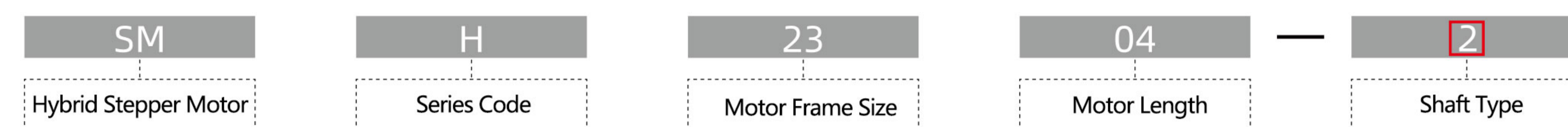
### Closed-Loop Series

SSA Series (Two-Phase Pulse Stepper Driver)	130
CLA Series (Two-Phase Pulse Stepper Driver)	132
SSD Series (Two-Phase Pulse Stepper Driver)	134
CLD Series (Two-Phase Pulse Stepper Driver)	136

### Brushless Series

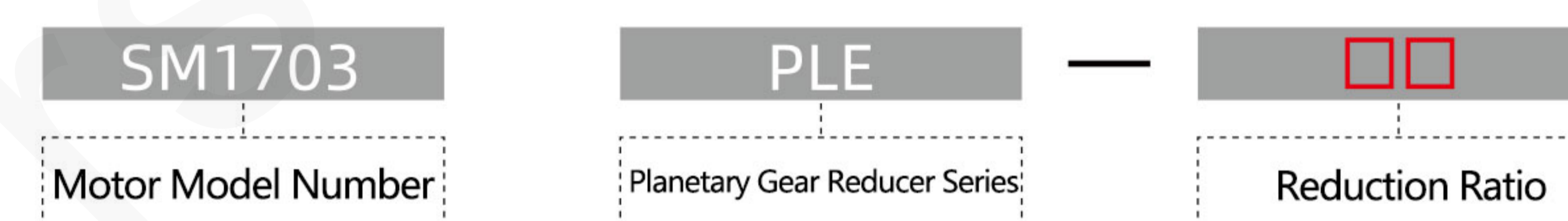
R Series	138
H Series	140
DS Series	142

## Open-Loop Stepper Motor



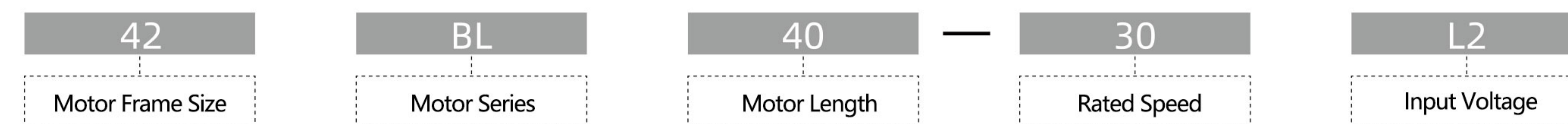
Hybrid Stepper Motor Codes	SM
Series Code	H: High-performance two-phase stepper motor C: Three-phase stepper motor E: Five-phase stepper motor B: Brake stepper motor K: Hollow stepper motor F: Waterproof stepper motor None: Standard two-phase stepper motor
Motor Frame Size	08=20MM 11=28MM 14=35MM 17=42MM 23=57MM 24=60MM 34=86MM 42=110MM 54=130MM
Motor Length	Motor length code
Shaft Type	2 = Double shaft None = Single shaft

## Planetary Gear Reduction Stepper Motor



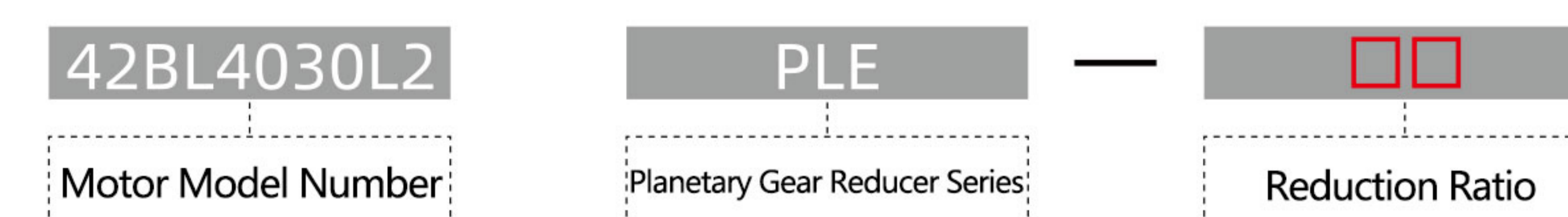
Motor Model Number	Reference Stepper Motor Model Number
Planetary Gear Reducer Series	PLE/PLF/PS/PZF/PT/PZT.....
Reduction Ratio	10=10: 1

## Brushless DC Motor Series



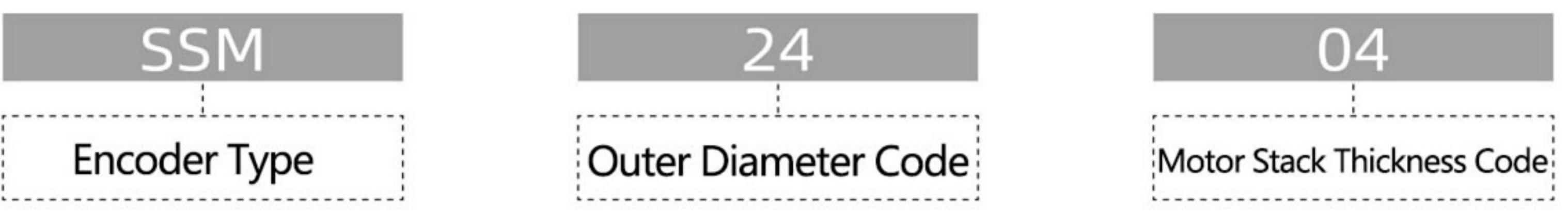
Motor Frame Size	42MM 57MM 60MM 80MM 92MM 123MM
Motor Series	BL = Square frame industrial-grade brushless motor BS = Round frame industrial-grade brushless motor
Motor Length	40=40mm
Rated Speed	30=3000rpm
Input Voltage	L2=24VDC L4=48VDC H2=220VAC

## Planetary Gear Reduction Brushless Motor



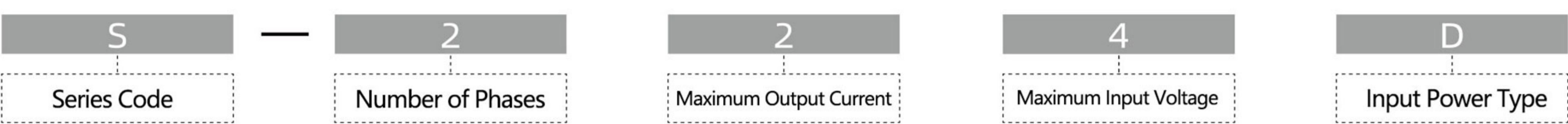
Motor Model Number	Reference Brushless Motor Model Number
Planetary Gear Reducer Series	PLE/PLF/PS/PZF/PT/PZT.....
Reduction Ratio	10=10: 1

### Closed-Loop Motor



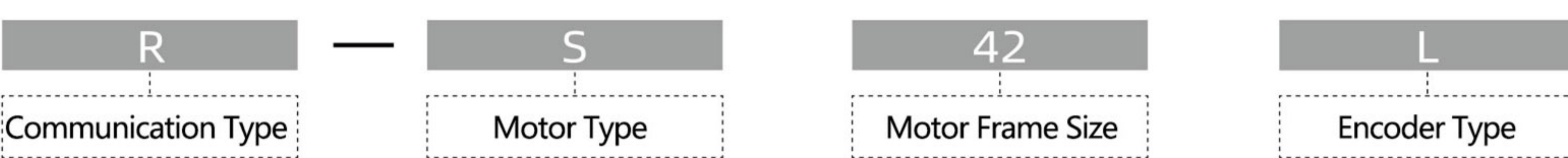
Encoder Type	SSM: Indicates the motor can drive 2500-step stepper servo (A, B, Z three channels) CLM: Indicates the motor can drive 1000-line closed-loop stepper (A, B two channels)
Outer Diameter Code	17=42MM    23=57MM    24=60MM    34=86MM
Motor Stack Thickness Code	42: indicates diameter 42mm    57: indicates diameter 57mm

### Open-Loop Driver



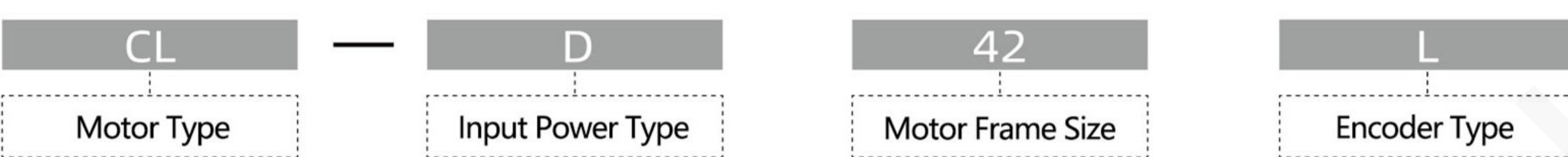
Series Code	S = S series open-loop stepper driver
Number of Phases	2 = two-phase, 3 = three-phase, 5 = five-phase
Maximum Output Current	2=2.2A    4=4.5A    6=6.0A
Maximum Input Voltage	4=40VDC    5=50VDC    6=60VDC
Input Power Type	D = DC input, A = AC input (24~80VAC), H = AC 220VAC input

### Bus Driver



Communication Type	R: RS-485 (RTU)    E: EtherCAT    T: CANopen communication    None: Regular pulse-type driver
Motor Type	S: Open-loop    I: Closed-loop    O: Open-loop digital display    Q: Closed-loop digital display
Motor Frame Size	42: Diameter 42mm    57: Diameter 57mm
Encoder Type	L: 1000 lines    H: 2500 lines

### Closed-Loop Driver



Motor Type	CL: Closed-loop stepper    SS: Stepper servo
Input Power Type	D = DC input    A = AC input (24~80VAC)    H = AC 220VAC input
Motor Frame Size	42: Diameter 42mm    57: Diameter 57mm
Encoder Type	L: 1000 lines    H: 2500 lines

### Brushless DC Driver



Brushless DC Driver Code	DBL: Low voltage type (12~48VDC)    DBH: High voltage type (110~245VAC)
Rated Voltage of Driver	24=24VDC    36=36VDC    48=48VDC
Peak Current of Driver	20=20A    50=50A
Driver Series Code	R series: DSP chip control    H series: Low voltage high current series    DS series: With digital display function

# Two-Phase Open-Loop Stepper Motor



The actual product size is subject to the physical item

# 20mm Two-Phase Open-Loop Stepper Motor SM Series



The image is for reference only; please refer to the actual product!

1.8° /step  
 Flange size: □20mm  
 Angular error: ±0.09°  
 Insulation withstand voltage: 500V AC / 1 minute  
 Insulation resistance: 100MΩ  
 Maximum surface temperature of the motor: 100°C  
 Humidity range: 20% RH – 90% RH  
 Permissible axial load: 3N  
 Permissible radial load: 15N (at 5mm from the mounting surface)

## Technical Parameters

Stepper motors are not constant torque motors; the higher the running speed, the smaller the output torque. Therefore, when paying attention to the holding torque parameter of the motor, one should also focus on the output torque of the motor at the actual working speed (refer to the dynamic torque curve). We recommend reserving a 1.5 times margin to avoid step loss of the stepper motor under overload conditions.

Model (MODEL)	Holding Torque (N.m)	Rated Current (A)	Phase Resistance (Ω/phase)	Phase Inductance (mH/phase)	Rotor Inertia (g.cm <sup>2</sup> )	Max Motor Length (mm)	Motor Weight (Kg)	Suitable Driver (Recommendation)
SM0801- [2]	0.016	0.6	6.5	1.7	1.6	≤28.0	0.04	S-224D 12~48VDC
SM0803- [2]	0.032	0.8	5.4	1.5	2.9	≤42.0	0.06	
SM0804- [2]	0.038	0.5	20.3	4.2	3.1	≤47.0	0.09	

- Note on model number [2]: 2 indicates a double shaft; single shaft is omitted.
- The above recommended "Suitable Driver" is a pulse-type stepper motor driver. HDB motors can also be supplied with:
  - Bus-type stepper motor drivers (RS485, CANopen, EtherCAT communication control, etc.)
  - Intelligent stepper motor drivers (with position tuning, built-in PLC programming functions, etc.)

Unit: mm

Model	Shaft Diameter D	Shaft Length L1	Flat Length L2
SM0801	4	10	0.5×7
SM0803	4	10	0.5×7
SM0804	4	10	0.5×7

**Precautions:**

- The motor front cover must be installed with a locating boss, and pay attention to tolerance fit to strictly ensure the coaxiality between the motor output shaft and the load.
- To reduce noise caused by motor vibration, the motor must be firmly fixed on a rigid metal surface.
- When connecting the motor and the driver, do not connect the phases incorrectly.

**Optional accessories:**

- Planetary reducer
- Electromagnetic brake

Unit: mm

Model	Shaft Diameter D	Shaft Length L1	Flat Length L2
SM1101	5	15	0.5×1 0
SM1102	5	15	0.5×1 0
SM1103	5	15	0.5×1 0

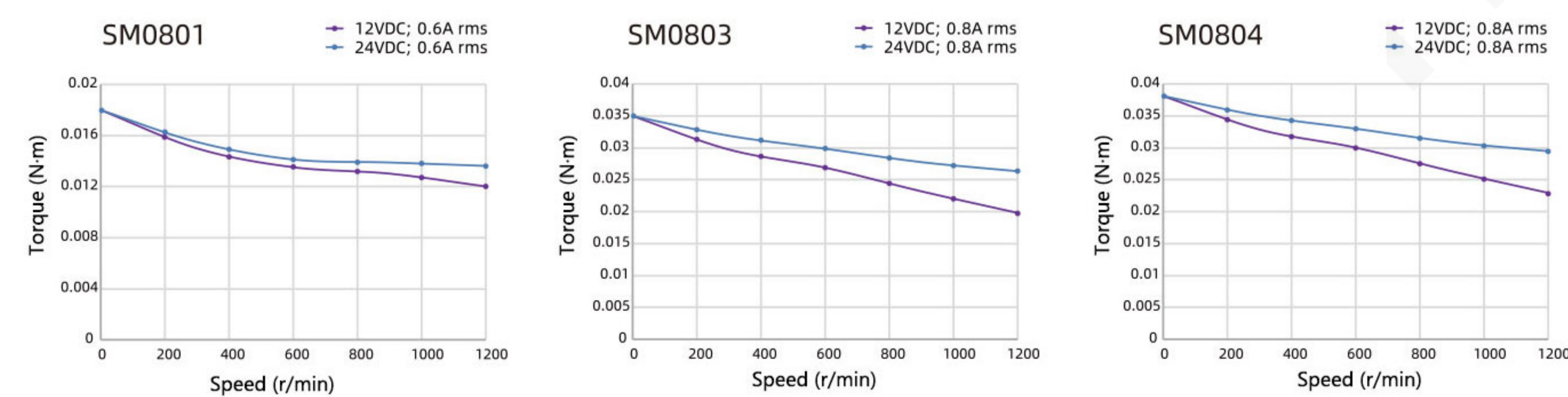
**Precautions:**

- The motor front cover must be installed with a locating boss, and pay attention to tolerance fit to strictly ensure the coaxiality between the motor output shaft and the load.
- To reduce noise caused by motor vibration, the motor must be firmly fixed on a rigid metal surface.
- When connecting the motor and the driver, do not connect the phases incorrectly.

**Optional accessories:**

- Planetary reducer
- Electromagnetic brake

## Dynamic Torque Curve (Reference Value)



### Warm Reminder

The torque-frequency characteristic curve of the same motor will vary when using different drivers and different voltages; therefore, it is recommended to reserve at least 1.5 times the torque margin when selecting the model. The higher the driving voltage, the greater the high-speed output torque; recommended voltage: ≤ 24VDC.

# 28mm Two-Phase Open-Loop Stepper Motor SM Series



The image is for reference only; please refer to the actual product!

1.8° /step  
 Flange size: □28mm  
 Angular error: ±0.09°  
 Insulation withstand voltage: 500V AC / 1 minute  
 Insulation resistance: 100MΩ  
 Maximum surface temperature of the motor: 100°C  
 Humidity range: 20% RH – 90% RH  
 Permissible axial load: 5N  
 Permissible radial load: 25N (at 10mm from the mounting surface)

## Technical Parameters

Stepper motors are not constant torque motors; the higher the running speed, the smaller the output torque. Therefore, when paying attention to the holding torque parameter of the motor, one should also focus on the output torque of the motor at the actual working speed (refer to the dynamic torque curve). We recommend reserving a 1.5 times margin to avoid step loss of the stepper motor under overload conditions.

Model (MODEL)	Holding Torque (N.m)	Rated Current (A)	Phase Resistance (Ω/phase)	Phase Inductance (mH/phase)	Rotor Inertia (g.cm <sup>2</sup> )	Max Motor Length (mm)	Motor Weight (Kg)	Suitable Driver (Recommendation)
SM1101- [2]	0.08	0.95	5.7	3.5	9	≤30.2	0.11	S-224D 12~48VDC
SM1102- [2]	0.12	0.95	8.5	6.5	12	≤45.0	0.15	
SM1103- [2]	0.14	0.95	9.9	6.7	17	≤51.5	0.19	

- Note on model number [2]: 2 indicates a double shaft; single shaft is omitted.
- The above recommended "Suitable Driver" is a pulse-type stepper motor driver. HDB motors can also be supplied with:
  - Bus-type stepper motor drivers (RS485, CANopen, EtherCAT communication control, etc.)
  - Intelligent stepper motor drivers (with position tuning, built-in PLC programming functions, etc.)

Unit: mm

Model	Shaft Diameter D	Shaft Length L1	Flat Length L2
SM1101	5	15	0.5×1 0
SM1102	5	15	0.5×1 0
SM1103	5	15	0.5×1 0

**Precautions:**

- The motor front cover must be installed with a locating boss, and pay attention to tolerance fit to strictly ensure the coaxiality between the motor output shaft and the load.
- To reduce noise caused by motor vibration, the motor must be firmly fixed on a rigid metal surface.
- When connecting the motor and the driver, do not connect the phases incorrectly.

**Optional accessories:**

- Planetary reducer
- Electromagnetic brake

Unit: mm

Model	Shaft Diameter D	Shaft Length L1	Flat Length L2
SM1101	5	15	0.5×1 0
SM1102	5	15	0.5×1 0
SM1103	5	15	0.5×1 0

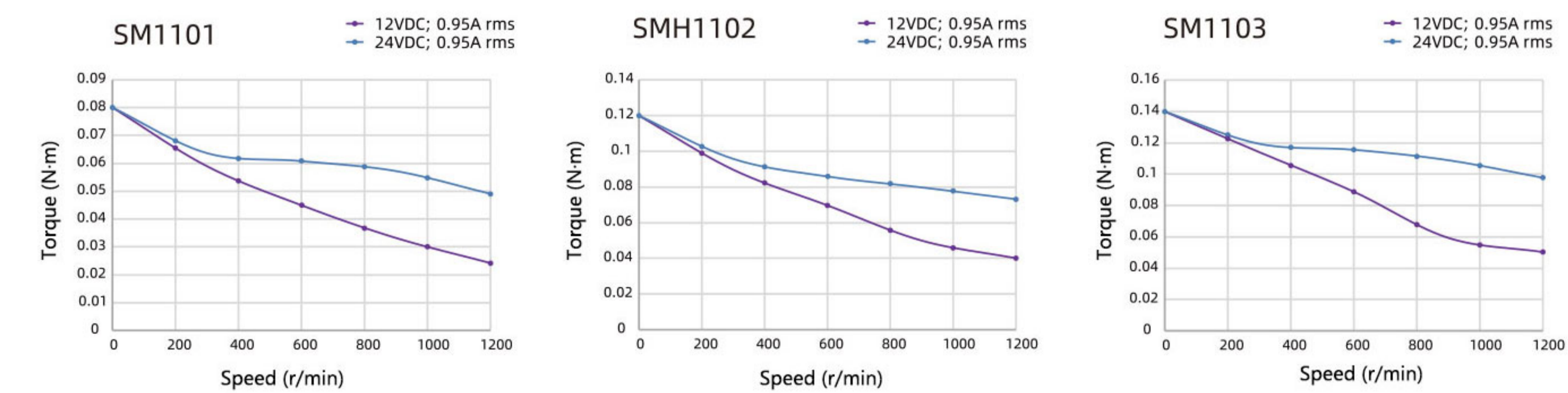
**Precautions:**

- The motor front cover must be installed with a locating boss, and pay attention to tolerance fit to strictly ensure the coaxiality between the motor output shaft and the load.
- To reduce noise caused by motor vibration, the motor must be firmly fixed on a rigid metal surface.
- When connecting the motor and the driver, do not connect the phases incorrectly.

**Optional accessories:**

- Planetary reducer
- Electromagnetic brake

## Dynamic Torque Curve (Reference Value)



### Warm Reminder

The torque-frequency characteristic curve of the same motor will vary when using different drivers and different voltages; therefore, it is recommended to reserve at least 1.5 times the torque margin when selecting the model. The higher the driving voltage, the greater the high-speed output torque; recommended voltage: ≤ 24VDC.

# □35mm Two-Phase Open-Loop Stepper Motor SM Series



The image is for reference only; please refer to the actual product!

1.8° /step  
 Flange size: □35mm  
 Angular error: ±0.09°  
 Insulation withstand voltage: 500V AC / 1 minute  
 Insulation resistance: 100MΩ  
 Maximum surface temperature of the motor: 100°C  
 Humidity range: 20% RH – 90% RH  
 Permissible axial load: 10N  
 Permissible radial load: 25N (at 15mm from the mounting surface)

## Technical Parameters

Stepper motors are not constant torque motors; the higher the running speed, the smaller the output torque. Therefore, when paying attention to the holding torque parameter of the motor, one should also focus on the output torque of the motor at the actual working speed (refer to the dynamic torque curve). We recommend reserving a 1.5 times margin to avoid step loss of the stepper motor under overload conditions.

Model (MODEL)	Holding Torque (N.m)	Rated Current (A)	Phase Resistance (Ω/phase)	Phase Inductance (mH/phase)	Rotor Inertia (g.cm <sup>2</sup> )	Max Motor Length (mm)	Motor Weight (Kg)	Suitable Driver (Recommendation)
SM1401- [2]	0.08	0.6	9.1	7.3	12	≤26.0	0.11	S-224D 12~48VDC
SM1402- [2]	0.16	0.85	5.8	9.5	20	≤34.0	0.28	
SM1403- [2]	0.21	1.0	4.3	7.8	35	≤40.0	0.21	
SM1404- [2]	0.38	1.2	4.5	6.5	43	≤52.5	0.28	

- Note on model number [2]: 2 indicates a double shaft; single shaft is omitted.
- The above recommended "Suitable Driver" is a pulse-type stepper motor driver. HDB motors can also be supplied with:
  - Bus-type stepper motor drivers (RS485, CANopen, EtherCAT communication control, etc.)
  - Intelligent stepper motor drivers (with position tuning, built-in PLC programming functions, etc.)

Unit: mm

Model	Shaft Diameter D	Shaft Length L1	Flat Length L2
SM1401	5	24	0.5×15
SM1402	5	24	0.5×15
SM1403	5	24	0.5×15
SM1404	5	24	0.5×15

**Precautions:**

- The motor front cover must be installed with a locating boss, and pay attention to tolerance fit to strictly ensure the coaxiality between the motor output shaft and the load.
- To reduce noise caused by motor vibration, the motor must be firmly fixed on a rigid metal surface.
- When connecting the motor and the driver, do not connect the phases incorrectly.

Optional accessories:

- Planetary reducer
- Electromagnetic brake

Unit: mm

Model	Shaft Diameter D	Shaft Length L1	Flat Length L2
SM1702	5	24	0.5×15
SM1703	5	24	0.5×15
SM1704	5	24	0.5×15
SM1705	5	24	0.5×15

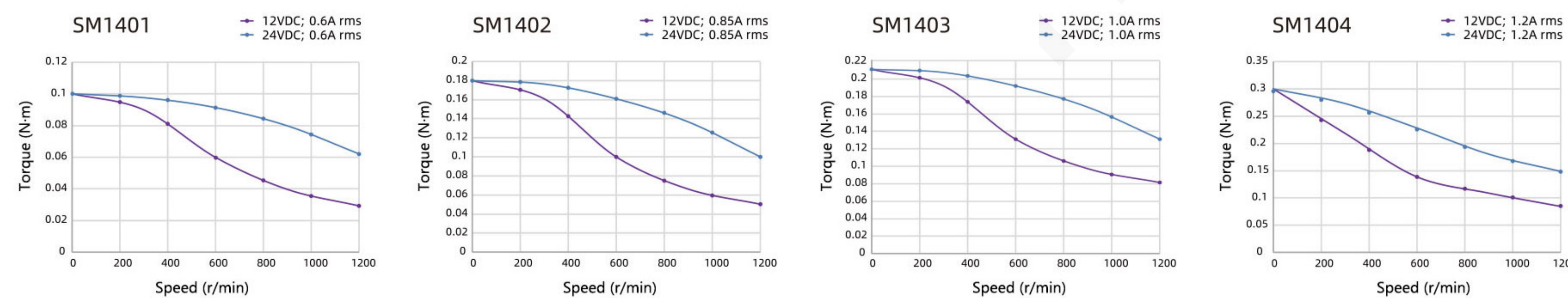
**Precautions:**

- The motor front cover must be installed with a locating boss, and pay attention to tolerance fit to strictly ensure the coaxiality between the motor output shaft and the load.
- To reduce noise caused by motor vibration, the motor must be firmly fixed on a rigid metal surface.
- When connecting the motor and the driver, do not connect the phases incorrectly.

Optional accessories:

- Planetary reducer
- Electromagnetic brake

## Dynamic Torque Curve (Reference Value)



### Warm Reminder

The torque-frequency characteristic curve of the same motor will vary when using different drivers and different voltages; therefore, it is recommended to reserve at least 1.5 times the torque margin when selecting the model. The higher the driving voltage, the greater the high-speed output torque; recommended voltage: ≤ 24VDC.

# □42mm Two-Phase Open-Loop Stepper Motor SM Series



The image is for reference only; please refer to the actual product!

1.8° /step  
 Flange size: □42mm  
 Angular error: ±0.09°  
 Insulation withstand voltage: 500V AC / 1 minute  
 Insulation resistance: 100MΩ  
 Maximum surface temperature of the motor: 100°C  
 Humidity range: 20% RH – 90% RH  
 Permissible axial load: 10N  
 Permissible radial load: 25N (at 15mm from the mounting surface)

## Technical Parameters

Stepper motors are not constant torque motors; the higher the running speed, the smaller the output torque. Therefore, when paying attention to the holding torque parameter of the motor, one should also focus on the output torque of the motor at the actual working speed (refer to the dynamic torque curve). We recommend reserving a 1.5 times margin to avoid step loss of the stepper motor under overload conditions.

Model (MODEL)	Holding Torque (N.m)	Rated Current (A)	Phase Resistance (Ω/phase)	Phase Inductance (mH/phase)	Rotor Inertia (g.cm <sup>2</sup> )	Max Motor Length (mm)	Motor Weight (Kg)	Suitable Driver (Recommendation)
SM1702- [2]	0.30	1.4	2.10	3.3	33.0	≤35.0	0.24	S-224D 12~48VDC
SM1703- [2]	0.40	1.7	1.65	3.6	56.0	≤41.0	0.29	
SM1704- [2]	0.53	2.0	1.31	2.9	77.0	≤48.0	0.36	
SM1705- [2]	0.72	2.0	1.49	3.8	123.0	≤61.0	0.60	

- Note on model number [2]: 2 indicates a double shaft; single shaft is omitted.
- The above recommended "Suitable Driver" is a pulse-type stepper motor driver. HDB motors can also be supplied with:
  - Bus-type stepper motor drivers (RS485, CANopen, EtherCAT communication control, etc.)
  - Intelligent stepper motor drivers (with position tuning, built-in PLC programming functions, etc.)

Unit: mm

Model	Shaft Diameter D	Shaft Length L1	Flat Length L2
SM1702	5	24	0.5×15
SM1703	5	24	0.5×15
SM1704	5	24	0.5×15
SM1705	5	24	0.5×15

**Precautions:**

- The motor front cover must be installed with a locating boss, and pay attention to tolerance fit to strictly ensure the coaxiality between the motor output shaft and the load.
- To reduce noise caused by motor vibration, the motor must be firmly fixed on a rigid metal surface.
- When connecting the motor and the driver, do not connect the phases incorrectly.

Optional accessories:

- Planetary reducer
- Electromagnetic brake

Unit: mm

Model	Shaft Diameter D	Shaft Length L1	Flat Length L2
SM1702	5	24	0.5×15
SM1703	5	24	0.5×15
SM1704	5	24	0.5×15
SM1705	5	24	0.5×15

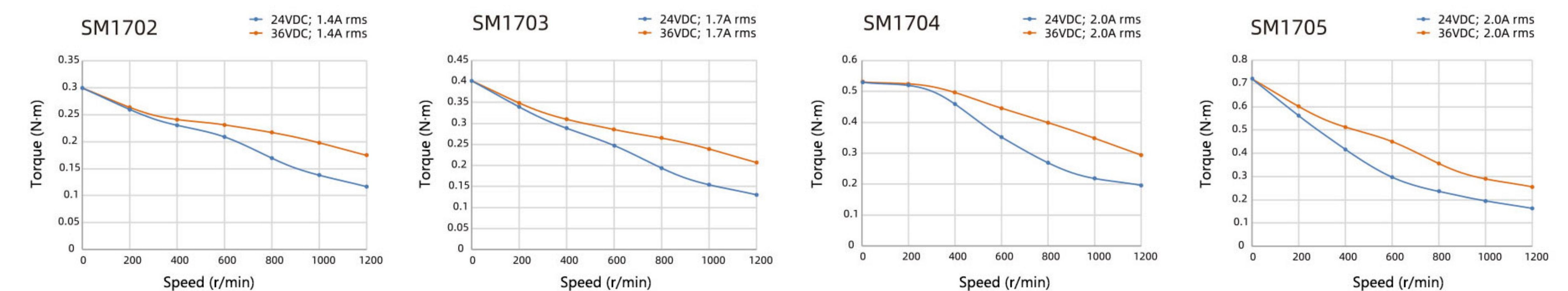
**Precautions:**

- The motor front cover must be installed with a locating boss, and pay attention to tolerance fit to strictly ensure the coaxiality between the motor output shaft and the load.
- To reduce noise caused by motor vibration, the motor must be firmly fixed on a rigid metal surface.
- When connecting the motor and the driver, do not connect the phases incorrectly.

Optional accessories:

- Planetary reducer
- Electromagnetic brake

## Dynamic Torque Curve (Reference Value)



### Warm Reminder

The torque-frequency characteristic curve of the same motor will vary when using different drivers and different voltages; therefore, it is recommended to reserve at least 1.5 times the torque margin when selecting the model. The higher the driving voltage, the greater the high-speed output torque; recommended voltage: ≤ 36VDC.

# 43mm Two-Phase Open-Loop Stepper Motor SM Series



The image is for reference only; please refer to the actual product!

1.8° /step

Flange size: □43mm  
 Angular error: ±0.09°  
 Insulation withstand voltage: 500V AC / 1 minute  
 Insulation resistance: 100MΩ  
 Maximum surface temperature of the motor: 100°C  
 Humidity range: 20% RH – 90% RH  
 Permissible axial load: 10N  
 Permissible radial load: 25N (at 15mm from the mounting surface)

## Technical Parameters

Stepper motors are not constant torque motors; the higher the running speed, the smaller the output torque. Therefore, when paying attention to the holding torque parameter of the motor, one should also focus on the output torque of the motor at the actual working speed (refer to the dynamic torque curve). We recommend reserving a 1.5 times margin to avoid step loss of the stepper motor under overload conditions.

Model (MODEL)	Holding Torque (N.m)	Rated Current (A)	Phase Resistance (Ω/phase)	Phase Inductance (mH/phase)	Rotor Inertia (g.cm <sup>2</sup> )	Max Motor Length (mm)	Motor Weight (Kg)	Suitable Driver (Recommendation)
SMH1704- 2	0.58	2.3	1.0	2.9	77	≤51.0	0.45	S-245D 24~48VDC
SMH1705- 2	0.78	2.3	1.4	3.2	115	≤67.0	0.58	

- Note on model number 2: 2 indicates a double shaft; single shaft is omitted.
- The above recommended "Suitable Driver" is a pulse-type stepper motor driver. HDB motors can also be supplied with:
  - Bus-type stepper motor drivers (RS485, CANopen, EtherCAT communication control, etc.)
  - Intelligent stepper motor drivers (with position tuning, built-in PLC programming functions, etc.)

Unit: mm

Model	Shaft Diameter D	Shaft Length L1	Flat Length L2
SMH1704	8	24	0.5×15
SMH1705	8	24	0.5×15

⚠ Precautions:

- 1.The motor front cover must be installed with a locating boss, and pay attention to tolerance fit to strictly ensure the coaxiality between the motor output shaft and the load.
- 2.To reduce noise caused by motor vibration, the motor must be firmly fixed on a rigid metal surface.
- 3.When connecting the motor and the driver, do not connect the phases incorrectly.

Optional accessories:

- Planetary reducer
- Electromagnetic brake

- This illustration shows a double-shaft product; single-shaft products do not have the shaft part marked in red.
- We can modify the motor according to your requirements:
  - Output shaft size and shape
  - Wire specifications
  - Motor body length
  - Cable outlet method, etc.

## Dynamic Torque Curve (Reference Value)

### Warm Reminder

The torque-frequency characteristic curve of the same motor will vary when using different drivers and different voltages; therefore, it is recommended to reserve at least 1.5 times the torque margin when selecting the model. The higher the driving voltage, the greater the high-speed output torque; recommended voltage: ≤ 48VDC.

# 56mm Two-Phase Open-Loop Stepper Motor SM Series

The image is for reference only; please refer to the actual product!

1.8° /step

Flange size: □56mm  
 Angular error: ±0.09°  
 Insulation withstand voltage: 500V AC / 1 minute  
 Insulation resistance: 100MΩ  
 Maximum surface temperature of the motor: 100°C  
 Humidity range: 20% RH – 90% RH  
 Permissible axial load: 15N  
 Permissible radial load: 90N (at 15mm from the mounting surface)

## Technical Parameters

Stepper motors are not constant torque motors; the higher the running speed, the smaller the output torque. Therefore, when paying attention to the holding torque parameter of the motor, one should also focus on the output torque of the motor at the actual working speed (refer to the dynamic torque curve). We recommend reserving a 1.5 times margin to avoid step loss of the stepper motor under overload conditions.

Model (MODEL)	Holding Torque (N.m)	Rated Current (A)	Phase Resistance (Ω/phase)	Phase Inductance (mH/phase)	Rotor Inertia (g.cm <sup>2</sup> )	Max Motor Length (mm)	Motor Weight (Kg)	Suitable Driver (Recommendation)
SMH2301- 2	0.87	2.8	0.65	2.0	145	≤42.0	0.46	S-245D 24~48VDC
SMH2302- 2	1.41	2.8	0.85	3.0	280	≤56.0	0.72	
SMH2303- 2	1.62	3.5	0.91	3.0	350	≤65.0	0.85	
SMH2304- 2	2.40	3.5	0.85	3.3	520	≤80.0	1.11	

- Note on model number 2: 2 indicates a double shaft; single shaft is omitted.
- The above recommended "Suitable Driver" is a pulse-type stepper motor driver. HDB motors can also be supplied with:
  - Bus-type stepper motor drivers (RS485, CANopen, EtherCAT communication control, etc.)
  - Intelligent stepper motor drivers (with position tuning, built-in PLC programming functions, etc.)

Unit: mm

Model	Shaft Diameter D	Shaft Length L1	Flat Length L2
SMH2301	8	24	0.5×15
SMH2302	8	24	0.5×15
SMH2303	8	24	0.5×15
SMH2304	8	24	0.5×15

⚠ Precautions:

- 1.The motor front cover must be installed with a locating boss, and pay attention to tolerance fit to strictly ensure the coaxiality between the motor output shaft and the load.
- 2.To reduce noise caused by motor vibration, the motor must be firmly fixed on a rigid metal surface.
- 3.When connecting the motor and the driver, do not connect the phases incorrectly.

Optional accessories:

- Planetary reducer
- Electromagnetic brake

- This illustration shows a double-shaft product; single-shaft products do not have the shaft part marked in red.
- We can modify the motor according to your requirements:
  - Output shaft size and shape
  - Wire specifications
  - Motor body length
  - Cable outlet method, etc.

## Dynamic Torque Curve (Reference Value)

### Warm Reminder

The torque-frequency characteristic curve of the same motor will vary when using different drivers and different voltages; therefore, it is recommended to reserve at least 1.5 times the torque margin when selecting the model. The higher the driving voltage, the greater the high-speed output torque; recommended voltage: ≤ 48VDC.

08 Official Website: www.hdbmotors.com

Official Website: www.hdbmotors.com 09

# 57mm Two-Phase Open-Loop Stepper Motor SM Series



The image is for reference only; please refer to the actual product!

1.8° /step

Flange size: □57mm  
 Angular error: ±0.09°  
 Insulation withstand voltage: 500V AC / 1 minute  
 Insulation resistance: 100MΩ  
 Maximum surface temperature of the motor: 100°C  
 Humidity range: 20% RH – 90% RH  
 Permissible axial load: 15N  
 Permissible radial load: 90N (at 15mm from the mounting surface)

## Technical Parameters

Stepper motors are not constant torque motors; the higher the running speed, the smaller the output torque. Therefore, when paying attention to the holding torque parameter of the motor, one should also focus on the output torque of the motor at the actual working speed (refer to the dynamic torque curve). We recommend reserving a 1.5 times margin to avoid step loss of the stepper motor under overload conditions.

Model (MODEL)	Holding Torque (N.m)	Rated Current (A)	Phase Resistance (Ω/phase)	Phase Inductance (mH/phase)	Rotor Inertia (g.cm <sup>2</sup> )	Max Motor Length (mm)	Motor Weight (Kg)	Suitable Driver (Recommendation)
SM2301- <input type="checkbox"/>	0.87	3.5	0.43	1.3	145	≤42.0	0.46	S-245D 24~48VDC
SM2302- <input type="checkbox"/>	1.41	3.5	0.55	2.0	280	≤56.0	0.72	
SM2303- <input type="checkbox"/>	1.62	4.2	0.50	1.6	350	≤65.0	0.85	
SM2304- <input type="checkbox"/>	2.44	4.2	0.60	2.2	520	≤80.0	1.11	

- Note on model number  : 2 indicates a double shaft; single shaft is omitted.
- The above recommended "Suitable Driver" is a pulse-type stepper motor driver. HDB motors can also be supplied with:
  - Bus-type stepper motor drivers (RS485, CANopen, EtherCAT communication control, etc.)
  - Intelligent stepper motor drivers (with position tuning, built-in PLC programming functions, etc.)

Model	Shaft Diameter D	Shaft Length L1	Flat Length L2
SM2301	8	21	0.5×15
SM2302	8	21	0.5×15
SM2303	8	21	0.5×15
SM2304	8	21	0.5×15

Unit: mm

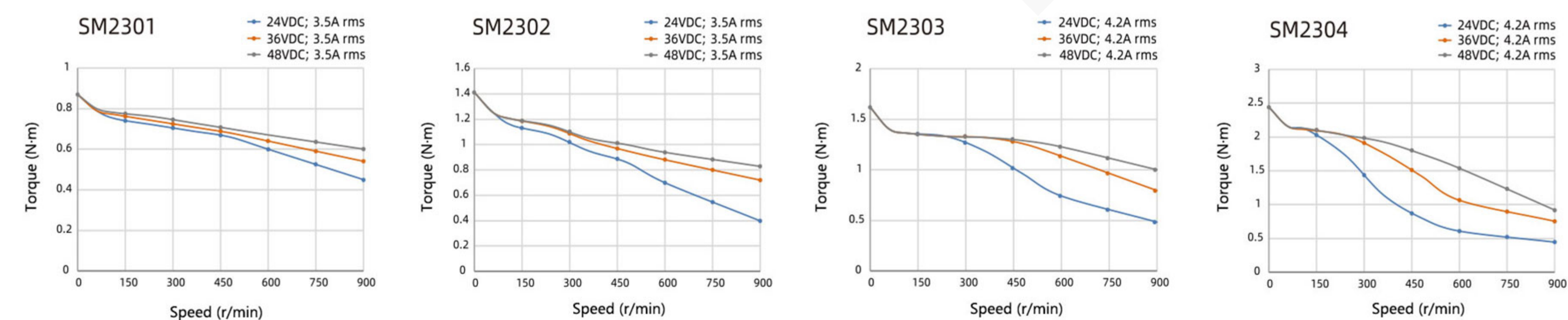
**Precautions:**

- The motor front cover must be installed with a locating boss, and pay attention to tolerance fit to strictly ensure the coaxiality between the motor output shaft and the load.
- To reduce noise caused by motor vibration, the motor must be firmly fixed on a rigid metal surface.
- When connecting the motor and the driver, do not connect the phases incorrectly.

**Optional accessories:**

- Planetary reducer
- Electromagnetic brake

## Dynamic Torque Curve (Reference Value)



### Warm Reminder

The torque-frequency characteristic curve of the same motor will vary when using different drivers and different voltages; therefore, it is recommended to reserve at least 1.5 times the torque margin when selecting the model. The higher the driving voltage, the greater the high-speed output torque; recommended voltage: ≤ 48VDC.

# 59mm Two-Phase Open-Loop Stepper Motor SM Series



The image is for reference only; please refer to the actual product!

1.8° /step

Flange size: □59mm  
 Angular error: ±0.09°  
 Insulation withstand voltage: 500V AC / 1 minute  
 Insulation resistance: 100MΩ  
 Maximum surface temperature of the motor: 100°C  
 Humidity range: 20% RH – 90% RH  
 Permissible axial load: 20N  
 Permissible radial load: 90N (at 15mm from the mounting surface)

## Technical Parameters

Stepper motors are not constant torque motors; the higher the running speed, the smaller the output torque. Therefore, when paying attention to the holding torque parameter of the motor, one should also focus on the output torque of the motor at the actual working speed (refer to the dynamic torque curve). We recommend reserving a 1.5 times margin to avoid step loss of the stepper motor under overload conditions.

Model (MODEL)	Holding Torque (N.m)	Rated Current (A)	Phase Resistance (Ω/phase)	Phase Inductance (mH/phase)	Rotor Inertia (g.cm <sup>2</sup> )	Max Motor Length (mm)	Motor Weight (Kg)	Suitable Driver (Recommendation)
SMH2402- <input type="checkbox"/>	1.5	4.0	0.44	1.1	340	≤56.0	0.8	Low Speed S-266D 24~60VDC
SMH2403- <input type="checkbox"/>	2.1	4.0	0.60	1.9	490	≤68.0	1.0	
SMH2404- <input type="checkbox"/>	3.2	5.0	0.43	1.7	690	≤85.0	1.3	High Speed ASA872R 24~80VAC
SMH2405- <input type="checkbox"/>	3.7	5.0	0.70	3.0	1200	≤100.0	1.65	

- Note on model number  : 2 indicates a double shaft; single shaft is omitted.
- The above recommended "Suitable Driver" is a pulse-type stepper motor driver. HDB motors can also be supplied with:
  - Bus-type stepper motor drivers (RS485, CANopen, EtherCAT communication control, etc.)
  - Intelligent stepper motor drivers (with position tuning, built-in PLC programming functions, etc.)

Model	Shaft Diameter D	Shaft Length L1	Flat Length L2
SMH2402	8	24	0.5×15
SMH2403	8	24	0.5×15
SMH2404	8	24	0.5×15
SMH2405	10	24	0.5×15

Unit: mm

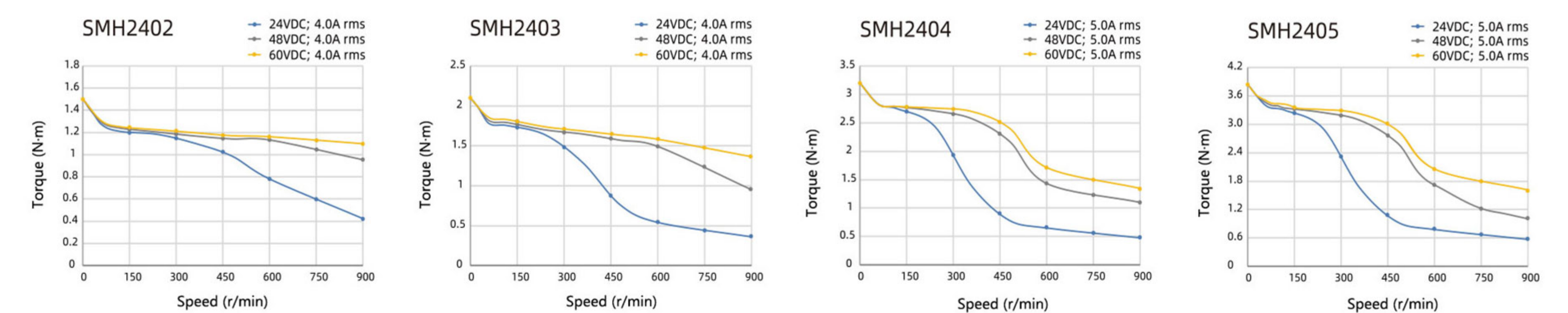
**Precautions:**

- The motor front cover must be installed with a locating boss, and pay attention to tolerance fit to strictly ensure the coaxiality between the motor output shaft and the load.
- To reduce noise caused by motor vibration, the motor must be firmly fixed on a rigid metal surface.
- When connecting the motor and the driver, do not connect the phases incorrectly.

**Optional accessories:**

- Planetary reducer
- Electromagnetic brake

## Dynamic Torque Curve (Reference Value)



### Warm Reminder

The torque-frequency characteristic curve of the same motor will vary when using different drivers and different voltages; therefore, it is recommended to reserve at least 1.5 times the torque margin when selecting the model. The higher the driving voltage, the greater the high-speed output torque; recommended voltage: ≤ 48VDC.



The image is for reference only; please refer to the actual product!

1.8° /step

Flange size: 60mm  
 Angular error: ±0.09°  
 Insulation withstand voltage: 500V AC / 1 minute  
 Insulation resistance: 100MΩ  
 Maximum surface temperature of the motor: 100°C  
 Humidity range: 20% RH – 90% RH  
 Permissible axial load: 20N  
 Permissible radial load: 90N (at 15mm from the mounting surface)

## Technical Parameters

Stepper motors are not constant torque motors; the higher the running speed, the smaller the output torque. Therefore, when paying attention to the holding torque parameter of the motor, one should also focus on the output torque of the motor at the actual working speed (refer to the dynamic torque curve). We recommend reserving a 1.5 times margin to avoid step loss of the stepper motor under overload conditions.

Model (MODEL)	Holding Torque (N.m)	Rated Current (A)	Phase Resistance (Ω/phase)	Phase Inductance (mH/phase)	Rotor Inertia (g.cm <sup>2</sup> )	Max Motor Length (mm)	Motor Weight (Kg)	Suitable Driver (Recommendation)
SM2402-2	1.5	4.0	0.44	1.1	340	≤56.0	0.8	Low Speed S-266D 24~60VDC
SM2403-2	2.1	4.0	0.60	1.9	490	≤68.0	1.0	
SM2404-2	3.2	5.0	0.43	1.7	690	≤85.0	1.3	High Speed ASA872R 24~80VAC
SM2405-2	3.7	5.0	0.70	3.0	1200	≤100.0	1.65	

- Note on model number 2: 2 indicates a double shaft; single shaft is omitted.
- The above recommended "Suitable Driver" is a pulse-type stepper motor driver. HDB motors can also be supplied with:
  - Bus-type stepper motor drivers (RS485, CANopen, EtherCAT communication control, etc.)
  - Intelligent stepper motor drivers (with position tuning, built-in PLC programming functions, etc.)

Unit: mm

Model	Shaft Diameter D	Shaft Length L1	Flat Length L2
SM2402	8	24	0.5×15
SM2403	8	24	0.5×15
SM2404	8	24	0.5×15
SM2405	10	24	0.5×15

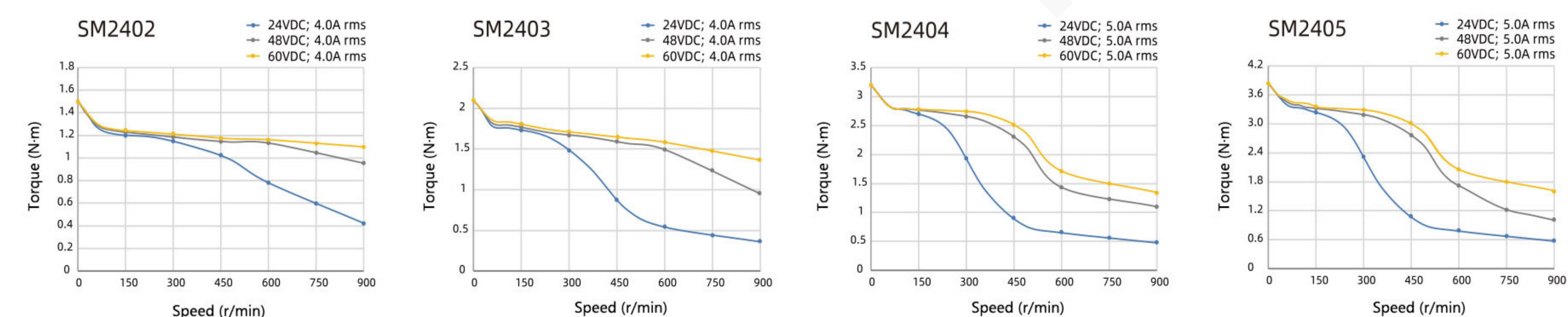
**Precautions:**

- The motor front cover must be installed with a locating boss, and pay attention to tolerance fit to strictly ensure the coaxiality between the motor output shaft and the load.
- To reduce noise caused by motor vibration, the motor must be firmly fixed on a rigid metal surface.
- When connecting the motor and the driver, do not connect the phases incorrectly.

Optional accessories:

- Planetary reducer
- Electromagnetic brake

## Dynamic Torque Curve (Reference Value)



### Warm Reminder

The torque-frequency characteristic curve of the same motor will vary when using different drivers and different voltages; therefore, it is recommended to reserve at least 1.5 times the torque margin when selecting the model. The higher the driving voltage, the greater the high-speed output torque; recommended voltage: ≤ 48VDC.



The image is for reference only; please refer to the actual product!

1.8° /step

Flange size: 85mm  
 Angular error: ±0.09°  
 Insulation withstand voltage: 500V AC / 1 minute  
 Insulation resistance: 100MΩ  
 Maximum surface temperature of the motor: 100°C  
 Humidity range: 20% RH – 90% RH  
 Permissible axial load: 60N  
 Permissible radial load: 320N (at 15mm from the mounting surface)

## Technical Parameters

Stepper motors are not constant torque motors; the higher the running speed, the smaller the output torque. Therefore, when paying attention to the holding torque parameter of the motor, one should also focus on the output torque of the motor at the actual working speed (refer to the dynamic torque curve). We recommend reserving a 1.5 times margin to avoid step loss of the stepper motor under overload conditions.

Model (MODEL)	Holding Torque (N.m)	Rated Current (A)	Phase Resistance (Ω/phase)	Phase Inductance (mH/phase)	Rotor Inertia (g.cm <sup>2</sup> )	Max Motor Length (mm)	Motor Weight (Kg)	Suitable Driver (Recommendation)
SMH3401-2	3.6	4.5	0.5	3.3	1100	≤67.0	1.8	Low Speed 24~60VDC
SMH3402-2	7.2	6.0	0.45	3.5	2800	≤98.0	2.9	
SMH3403-2	8.5	6.0	0.6	5.5	4200	≤126.0	4.1	High Speed 24~80VAC

- Note on model number 2: 2 indicates a double shaft; single shaft is omitted.
- The above recommended "Suitable Driver" is a pulse-type stepper motor driver. HDB motors can also be supplied with:
  - Bus-type stepper motor drivers (RS485, CANopen, EtherCAT communication control, etc.)
  - Intelligent stepper motor drivers (with position tuning, built-in PLC programming functions, etc.)

Unit: mm

Model	Shaft Diameter D	Shaft Length L1	Key Length L2
SMH3401	14	37	5×5×2.5
SMH3402	14	37	5×5×2.5
SMH3403	14	37	5×5×2.5

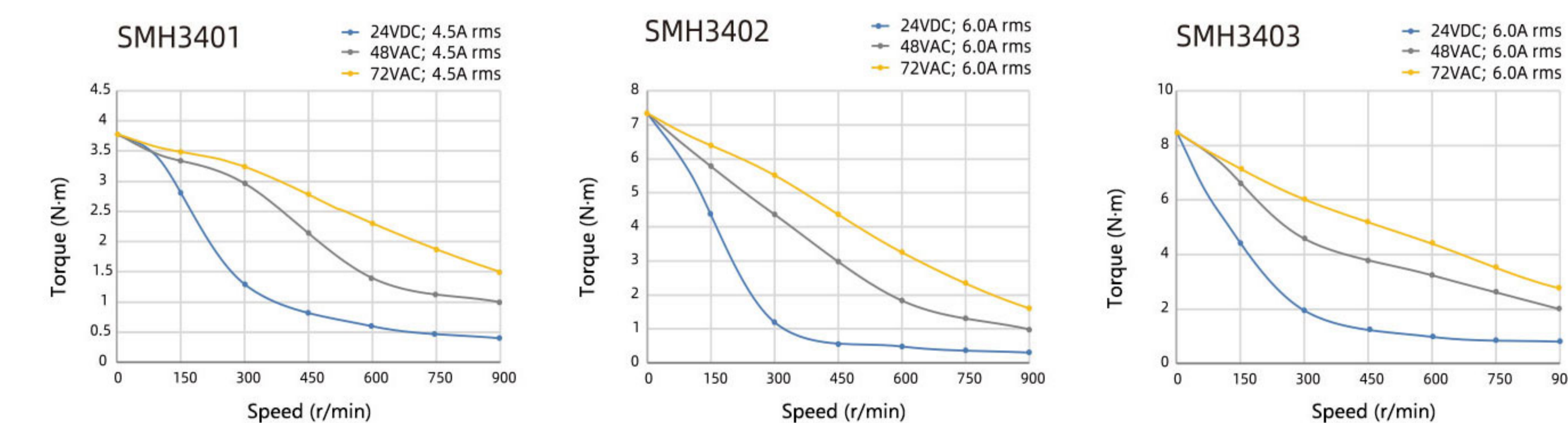
**Precautions:**

- The motor front cover must be installed with a locating boss, and pay attention to tolerance fit to strictly ensure the coaxiality between the motor output shaft and the load.
- To reduce noise caused by motor vibration, the motor must be firmly fixed on a rigid metal surface.
- When connecting the motor and the driver, do not connect the phases incorrectly.

Optional accessories:

- Planetary reducer
- Electromagnetic brake

## Dynamic Torque Curve (Reference Value)



### Warm Reminder

The torque-frequency characteristic curve of the same motor will vary when using different drivers and different voltages; therefore, it is recommended to reserve at least 1.5 times the torque margin when selecting the model. The higher the driving voltage, the greater the high-speed output torque; recommended voltage: ≤ 72VDC.

# 86mm Two-Phase Open-Loop Stepper Motor SM Series



1.8° /step

Flange size: 86mm  
 Angular error: ±0.09°  
 Insulation withstand voltage: 500V AC / 1 minute  
 Insulation resistance: 100MΩ  
 Maximum surface temperature of the motor: 100°C  
 Humidity range: 20% RH – 90% RH  
 Permissible axial load: 60N  
 Permissible radial load: 320N (at 20mm from the mounting surface)

The image is for reference only; please refer to the actual product!

## Technical Parameters

Stepper motors are not constant torque motors; the higher the running speed, the smaller the output torque. Therefore, when paying attention to the holding torque parameter of the motor, one should also focus on the output torque of the motor at the actual working speed (refer to the dynamic torque curve). We recommend reserving a 1.5 times margin to avoid step loss of the stepper motor under overload conditions.

Model (MODEL)	Holding Torque (N.m)	Rated Current (A)	Phase Resistance (Ω/phase)	Phase Inductance (mH/phase)	Rotor Inertia (g.cm <sup>2</sup> )	Max Motor Length (mm)	Motor Weight (Kg)	Suitable Driver (Recommendation)
SM3401-□	3.4	4.5	0.50	3.3	1000	≤66.0	1.8	Low Speed S-266D 24~60VDC
SM3402-□	4.5	4.5	0.60	4.5	1400	≤80.0	2.1	
SM3403-□	8.5	6.0	0.54	5.0	2700	≤118.0	3.6	High Speed S-288A 24~80VAC
SM3404-□	12.0	7.0	0.46	6.3	4000	≤156.0	5.0	

The above recommended "Suitable Driver" is a pulse-type stepper motor driver. HDB motors can also be supplied with:

- Bus-type stepper motor drivers (RS485, CANopen, EtherCAT communication control, etc.)
- Intelligent stepper motor drivers (with position tuning, built-in PLC programming functions, etc.)

Unit: mm

Model	Shaft Diameter D	Shaft Length L1	Key Length L2
SM3401	14	32	5 × 5 × 2.5
SM3402	14	32	5 × 5 × 2.5
SM3403	14	32	5 × 5 × 2.5
SM3404	14	32	5 × 5 × 2.5

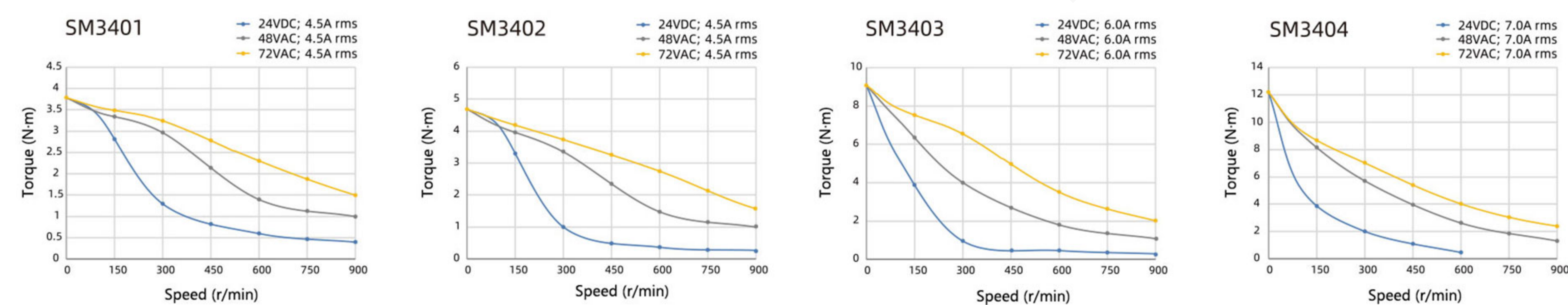
**Precautions:**

- The motor front cover must be installed with a locating boss, and pay attention to tolerance fit to strictly ensure the coaxiality between the motor output shaft and the load.
- To reduce noise caused by motor vibration, the motor must be firmly fixed on a rigid metal surface.
- When connecting the motor and the driver, do not connect the phases incorrectly.

**Optional accessories:**

- Planetary reducer
- Electromagnetic brake

## Dynamic Torque Curve (Reference Value)



### Warm Reminder

The torque-frequency characteristic curve of the same motor will vary when using different drivers and different voltages; therefore, it is recommended to reserve at least 1.5 times the torque margin when selecting the model. The higher the driving voltage, the greater the high-speed output torque; recommended voltage: ≤ 72VDC.

# Three-phase open-loop stepper motor



The actual product size is subject to the physical item



The image is for reference only; please refer to the actual product!

1.2° /step

Flange size: □86mm  
 Angular error: ±0.06°  
 Insulation withstand voltage: 500V AC / 1 minute  
 Insulation resistance: 100MΩ  
 Maximum surface temperature of the motor: 100°C  
 Humidity range: 20% RH – 90% RH  
 Permissible axial load: 60N  
 Permissible radial load: 320N (at 20mm from the mounting surface)

## Technical Parameters

Stepper motors are not constant torque motors; the higher the running speed, the smaller the output torque. Therefore, when paying attention to the holding torque parameter of the motor, one should also focus on the output torque of the motor at the actual working speed (refer to the dynamic torque curve). We recommend reserving a 1.5 times margin to avoid step loss of the stepper motor under overload conditions.

Model (MODEL)	Holding Torque (N.m)	Rated Current (A)	Phase Resistance (Ω/phase)	Phase Inductance (mH/phase)	Rotor Inertia (g.cm <sup>2</sup> )	Max Motor Length (mm)	Motor Weight (Kg)	Suitable Driver (Recommendation)
SMC3402-□	4.0	2.0	4.65	14.6	2400	≤97.0	2.8	CSH-2242R 110~245VAC
SMC3403-□	6.0	3.0	2.0	8.0	3480	≤125.0	3.8	
SMC3404-□	8.5	3.2	2.6	9.57	4560	≤145.0	4.7	

- Note on model number □: 2 indicates a double shaft; single shaft is omitted.
- The above recommended "Suitable Driver" is a pulse-type stepper motor driver. HDB motors can also be supplied with:
  - Bus-type stepper motor drivers (RS485, CANopen, EtherCAT communication control, etc.)
  - Intelligent stepper motor drivers (with position tuning, built-in PLC programming functions, etc.)

Model	Shaft Diameter D	Shaft Length L1	Key Length L2
SMC3402	14	32	5×5×25
SMC3403	14	32	5×5×25
SMC3404	14	32	5×5×25

Unit: mm

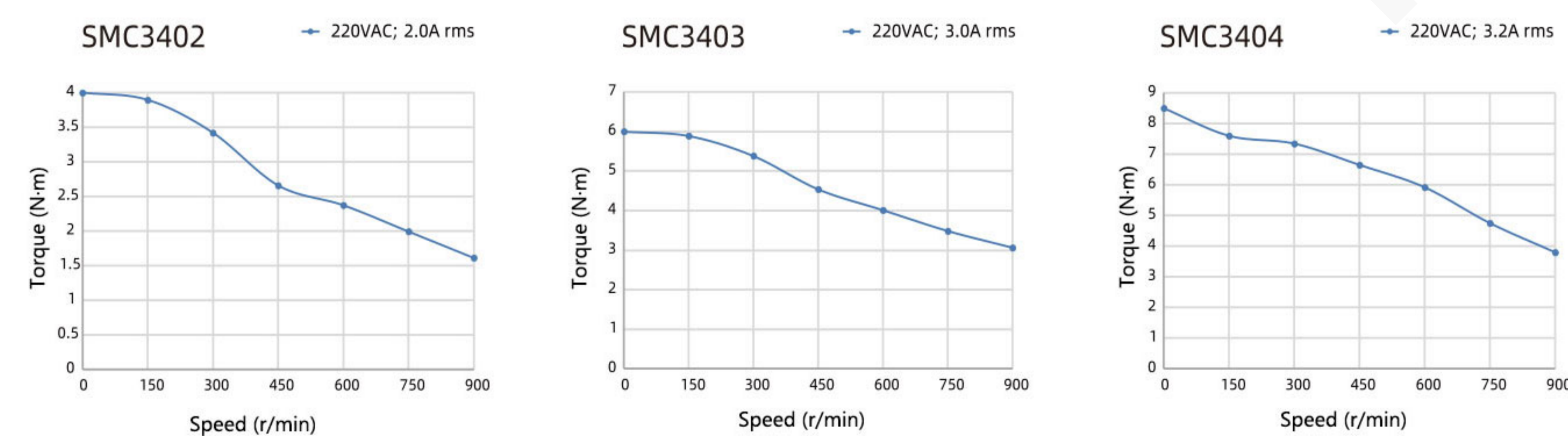
**Precautions:**

- The motor front cover must be installed with a locating boss, and pay attention to tolerance fit to strictly ensure the coaxiality between the motor output shaft and the load.
- To reduce noise caused by motor vibration, the motor must be firmly fixed on a rigid metal surface.
- When connecting the motor and the driver, do not connect the phases incorrectly.

Optional accessories:

- Planetary reducer
- Electromagnetic brake

## Dynamic Torque Curve (Reference Value)



### Warm Reminder

The torque-frequency characteristic curve of the same motor will vary when using different drivers and different voltages; therefore, it is recommended to reserve at least 1.5 times the torque margin when selecting the model. The higher the driving voltage, the greater the high-speed output torque; recommended voltage: ≤ 220VDC.



The image is for reference only; please refer to the actual product!

1.2° /step

Flange size: □110mm  
 Angular error: ±0.06°  
 Insulation withstand voltage: 1500V AC / 1 minute  
 Insulation resistance: 100MΩ  
 Maximum surface temperature of the motor: 100°C  
 Humidity range: 20% RH – 90% RH  
 Permissible axial load: 150N  
 Permissible radial load: 490N (at 25mm from the mounting surface)

## Technical Parameters

Stepper motors are not constant torque motors; the higher the running speed, the smaller the output torque. Therefore, when paying attention to the holding torque parameter of the motor, one should also focus on the output torque of the motor at the actual working speed (refer to the dynamic torque curve). We recommend reserving a 1.5 times margin to avoid step loss of the stepper motor under overload conditions.

Model (MODEL)	Holding Torque (N.m)	Rated Current (A)	Phase Resistance (Ω/phase)	Phase Inductance (mH/phase)	Rotor Inertia (g.cm <sup>2</sup> )	Max Motor Length (mm)	Motor Weight (Kg)	Suitable Driver (Recommendation)
SMC4201	8.0	4.3	1.04	4.3	6000	≤127.0	5.0	CSH-2272R 110~245VAC
SMC4202	12	6.0	0.6	2.67	9720	≤151.0	6.3	
SMC4203	16	6.4	0.7	2.96	13560	≤185.0	8.5	
SMC4204	20	6.9	0.57	2.46	17400	≤219.0	10.7	

- The above recommended "Suitable Driver" is a pulse-type stepper motor driver. HDB motors can also be supplied with:
  - Bus-type stepper motor drivers (RS485, CANopen, EtherCAT communication control, etc.)
  - Intelligent stepper motor drivers (with position tuning, built-in PLC programming functions, etc.)

Model	Shaft Diameter D	Shaft Length L1	Key Length L2
SMC4201	19	41	6×6×30
SMC4202	19	41	6×6×30
SMC4203	19	41	6×6×30
SMC4204	19	41	6×6×30

Unit: mm

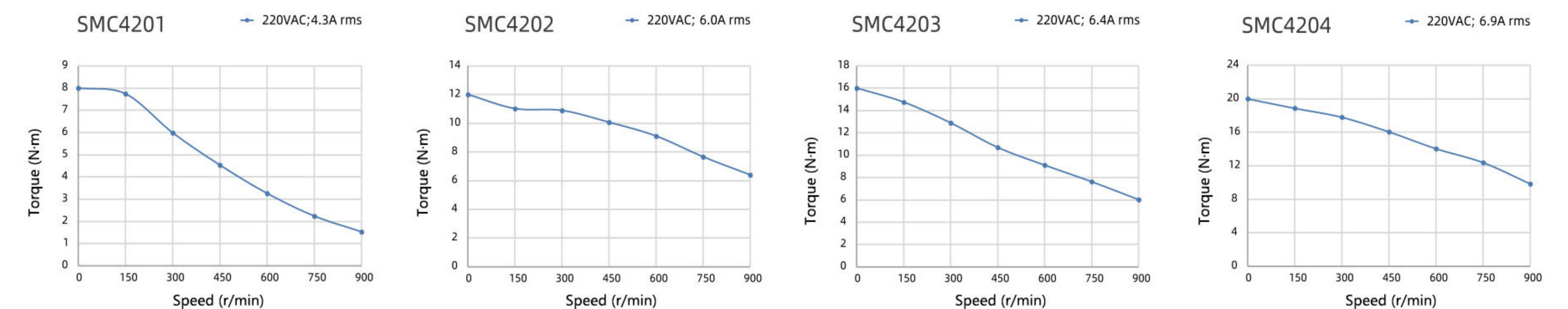
**Precautions:**

- The motor front cover must be installed with a locating boss, and pay attention to tolerance fit to strictly ensure the coaxiality between the motor output shaft and the load.
- To reduce noise caused by motor vibration, the motor must be firmly fixed on a rigid metal surface.
- When connecting the motor and the driver, do not connect the phases incorrectly.

Optional accessories:

- Planetary reducer
- Electromagnetic brake

## Dynamic Torque Curve (Reference Value)



### Warm Reminder

The torque-frequency characteristic curve of the same motor will vary when using different drivers and different voltages; therefore, it is recommended to reserve at least 1.5 times the torque margin when selecting the model. The higher the driving voltage, the greater the high-speed output torque; recommended voltage: ≤ 220VDC.

# □130mm Three-phase open-loop stepper motor SMC Series



1.2° /step

- Flange size: □130mm
- Angular error: ±0.06°
- Insulation withstand voltage: 1500V AC / 1 minute
- Insulation resistance: 100MΩ
- Maximum surface temperature of the motor: 100°C
- Humidity range: 20% RH – 90% RH
- Permissible axial load: 260N
- Permissible radial load: 720N (at 30mm from the mounting surface)

The image is for reference only; please refer to the actual product!

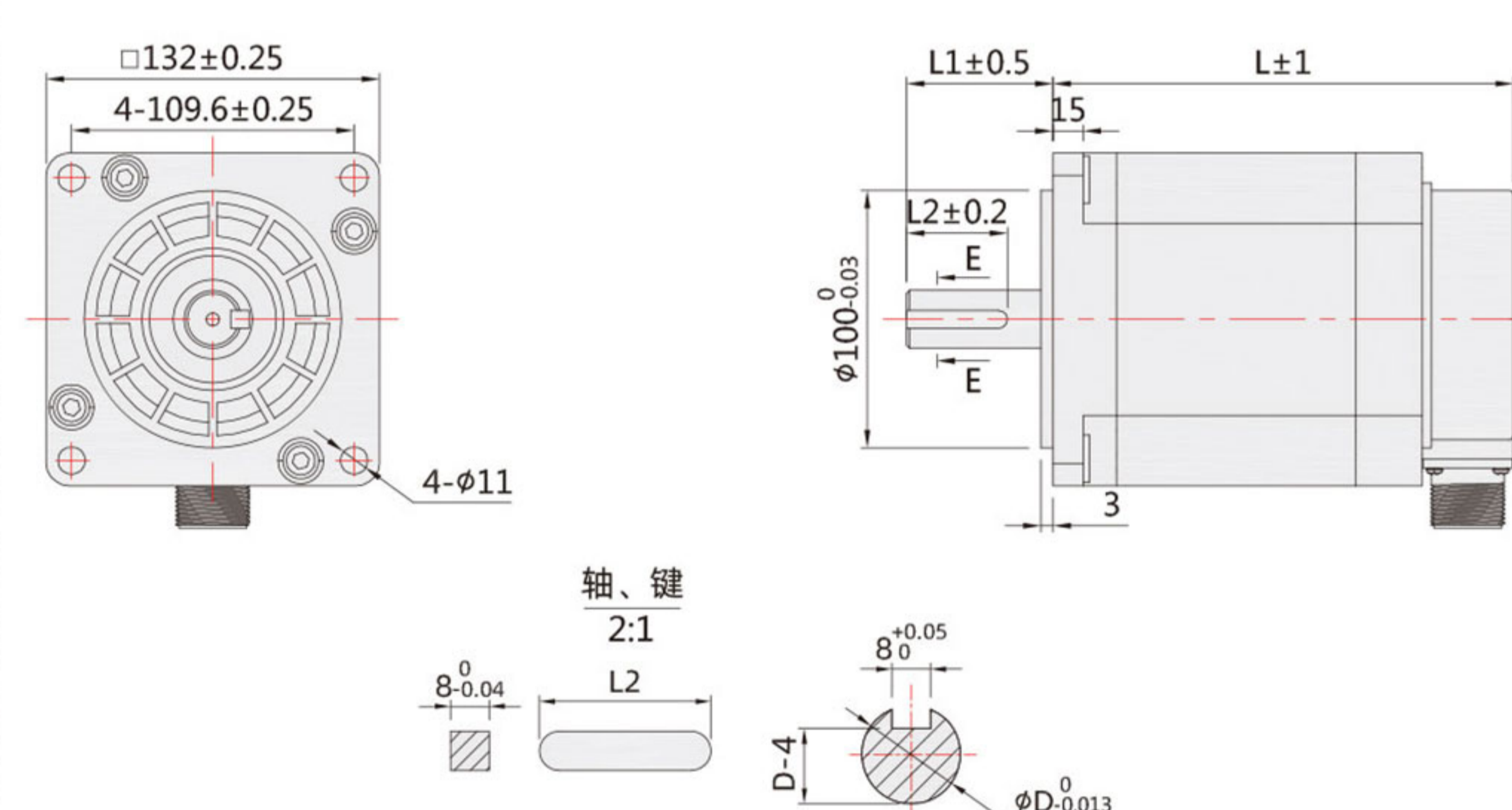
## Technical Parameters

Stepper motors are not constant torque motors; the higher the running speed, the smaller the output torque. Therefore, when paying attention to the holding torque parameter of the motor, one should also focus on the output torque of the motor at the actual working speed (refer to the dynamic torque curve). We recommend reserving a 1.5 times margin to avoid step loss of the stepper motor under overload conditions.

Model (MODEL)	Holding Torque (N.m)	Rated Current (A)	Phase Resistance (Ω/phase)	Phase Inductance (mH/phase)	Rotor Inertia (g.cm <sup>2</sup> )	Max Motor Length (mm)	Motor Weight (Kg)	Suitable Driver (Recommendation)
SMC5401	20	7.0	0.72	4.7	26700	≤190.0	14.1	CSH-2285R 110~245VAC
SMC5402	28	7.0	0.95	6.1	33970	≤222.0	17.2	
SMC5403	35	7.0	1.1	7.4	41240	≤254.0	19.8	
SMC5404	50	7.0	1.4	9.82	55780	≤318.0	26.0	

• The above recommended "Suitable Driver" is a pulse-type stepper motor driver. HDB motors can also be supplied with:

- Bus-type stepper motor drivers (RS485, CANopen, EtherCAT communication control, etc.)
- Intelligent stepper motor drivers (with position tuning, built-in PLC programming functions, etc.)



Unit: mm

Model	Shaft Diameter D	Shaft Length L1	Key Length L2
SMC5401	24	50	8×8×30
SMC5402	24	50	8×8×30
SMC5403	24	50	8×8×30
SMC5404	24	50	8×8×30

### Precautions:

- The motor front cover must be installed with a locating boss, and pay attention to tolerance fit to strictly ensure the coaxiality between the motor output shaft and the load.
- To reduce noise caused by motor vibration, the motor must be firmly fixed on a rigid metal surface.
- When connecting the motor and the driver, do not connect the phases incorrectly.

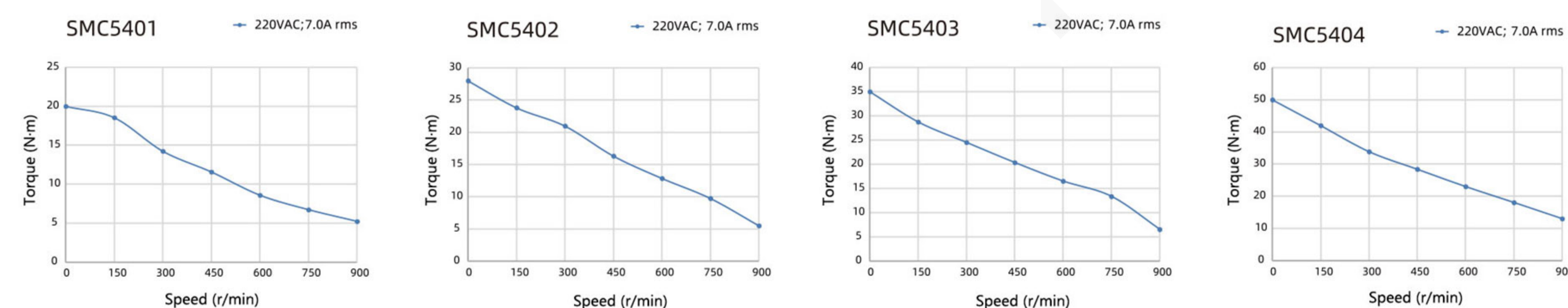
• We can modify the motor according to your requirements:

- Output shaft size and shape
- Wire specifications
- Motor body length
- Cable outlet method, etc.

Optional accessories:

- Planetary reducer
- Electromagnetic brake

## Dynamic Torque Curve (Reference Value)



### Warm Reminder

The torque-frequency characteristic curve of the same motor will vary when using different drivers and different voltages; therefore, it is recommended to reserve at least 1.5 times the torque margin when selecting the model. The higher the driving voltage, the greater the high-speed output torque; recommended voltage: ≤ 220VDC.

# Two-phase brake stepper motor



The actual product size is subject to the physical item

# 42mm Two-phase brake stepper motor SMB Series



1.8° /step

Flange size: 42mm  
 Angular error: ±0.09°  
 Insulation withstand voltage: 500V AC / 1 minute  
 Insulation resistance: 100MΩ  
 Maximum surface temperature of the motor: 100°C  
 Humidity range: 20% RH – 90% RH  
 Permissible axial load: 10N  
 Permissible radial load: 25N (at 15mm from the mounting surface)

The image is for reference only; please refer to the actual product!

## Technical Parameters

Stepper motors are not constant torque motors; the higher the running speed, the smaller the output torque. Therefore, when paying attention to the holding torque parameter of the motor, one should also focus on the output torque of the motor at the actual working speed (refer to the dynamic torque curve). We recommend reserving a 1.5 times margin to avoid step loss of the stepper motor under overload conditions.

Model (MODEL)	Holding Torque (N.m)	Rated Current (A)	Phase Resistance (Ω/phase)	Phase Inductance (mH/phase)	Rotor Inertia (g.cm <sup>2</sup> )	Max Motor Length (mm)	Motor Weight (Kg)	Brake Torque (N.m)	Suitable Driver (Recommendation)
SMB1703	0.43	1.7	1.65	3.6	56.0	41(L)+32	0.50	0.6	S-224D 12~48VDC
SMB1704	0.53	2.0	1.31	2.9	77.0	49(L)+32	0.56		
SMB1705	0.72	2.0	1.49	3.8	123.0	61(L)+32	0.72		

- The above recommended "Suitable Driver" is a pulse-type stepper motor driver. HDB motors can also be supplied with:
  - Bus-type stepper motor drivers (RS485, CANopen, EtherCAT communication control, etc.)
  - Intelligent stepper motor drivers (with position tuning, built-in PLC programming functions, etc.)

Model	Shaft Diameter D	Shaft Length L1	Flat Length L2
SMB1703	5	24	0.5×15
SMB1704	5	24	0.5×15
SMB1705	5	24	0.5×15

Unit: mm

**Precautions:**

- 1.The motor front cover must be installed with a locating boss, and pay attention to tolerance fit to strictly ensure the coaxiality between the motor output shaft and the load.
- 2.To reduce noise caused by motor vibration, the motor must be firmly fixed on a rigid metal surface.
- 3.When connecting the motor and the driver, do not connect the phases incorrectly.

**Brake Specifications**

Model	Brake Type	Power Supply Voltage	Brake Power	Response Time	Temperature Rise
17BK06N24	Electromagnetic Brake	24VDC±5%	3.5W	50ms	≤55°C

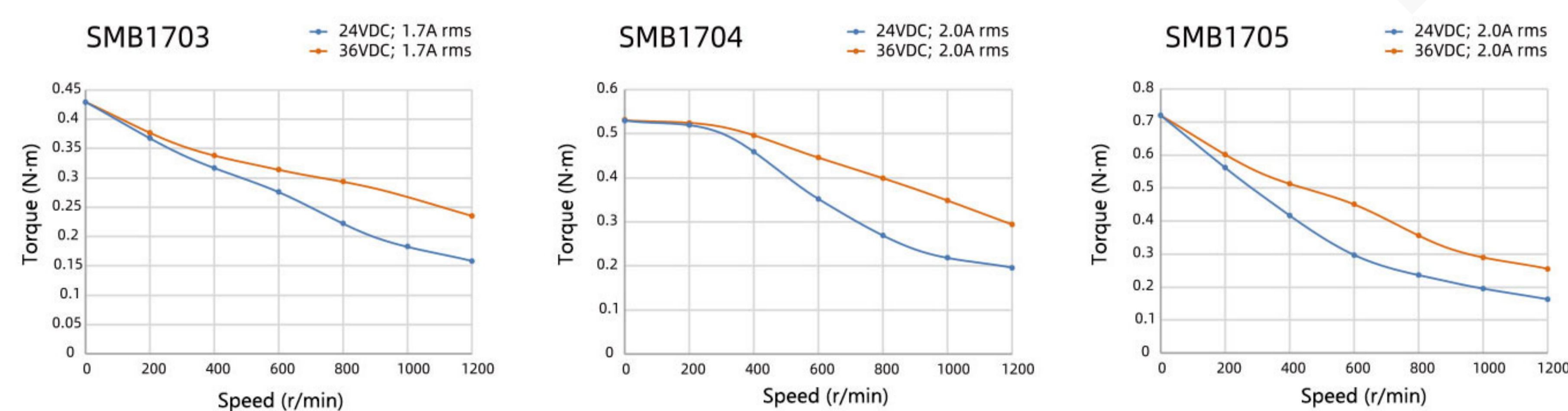
• We can modify the motor according to your requirements:

- Output shaft size and shape
- Motor body length
- Wire specifications
- Cable outlet method, etc.

Optional accessories:

- Planetary reducer

## Dynamic Torque Curve (Reference Value)



### Warm Reminder

The torque-frequency characteristic curve of the same motor will vary when using different drivers and different voltages; therefore, it is recommended to reserve at least 1.5 times the torque margin when selecting the model. The higher the driving voltage, the greater the high-speed output torque; recommended voltage: ≤ 36VDC.

# 57mm Two-phase brake stepper motor SMB Series



1.8° /step

Flange size: 57mm  
 Angular error: ±0.09°  
 Insulation withstand voltage: 500V AC / 1 minute  
 Insulation resistance: 100MΩ  
 Maximum surface temperature of the motor: 100°C  
 Humidity range: 20% RH – 90% RH  
 Permissible axial load: 15N  
 Permissible radial load: 90N (at 15mm from the mounting surface)

The image is for reference only; please refer to the actual product!

## Technical Parameters

Stepper motors are not constant torque motors; the higher the running speed, the smaller the output torque. Therefore, when paying attention to the holding torque parameter of the motor, one should also focus on the output torque of the motor at the actual working speed (refer to the dynamic torque curve). We recommend reserving a 1.5 times margin to avoid step loss of the stepper motor under overload conditions.

Model (MODEL)	Holding Torque (N.m)	Rated Current (A)	Phase Resistance (Ω/phase)	Phase Inductance (mH/phase)	Rotor Inertia (g.cm <sup>2</sup> )	Max Motor Length (mm)	Motor Weight (Kg)	Brake Torque (N.m)	Suitable Driver (Recommendation)
SMB2302	1.41	3.5	0.55	2.0	280	56(L)+38	1.7	1.6	S-245D 24~48VDC
SMB2304	2.44	4.2	0.60	2.2	520	80(L)+38	2.0		

- The above recommended "Suitable Driver" is a pulse-type stepper motor driver. HDB motors can also be supplied with:
  - Bus-type stepper motor drivers (RS485, CANopen, EtherCAT communication control, etc.)
  - Intelligent stepper motor drivers (with position tuning, built-in PLC programming functions, etc.)

Model	Shaft Diameter D	Shaft Length L1	Flat Length L2
SMB2302	8	21	0.5×15
SMB2304	8	21	0.5×15

Unit: mm

**Precautions:**

- 1.The motor front cover must be installed with a locating boss, and pay attention to tolerance fit to strictly ensure the coaxiality between the motor output shaft and the load.
- 2.To reduce noise caused by motor vibration, the motor must be firmly fixed on a rigid metal surface.
- 3.When connecting the motor and the driver, do not connect the phases incorrectly.

**Brake Specifications**

Model	Brake Type	Power Supply Voltage	Brake Power	Response Time	Temperature Rise
23BK15N24	Electromagnetic Brake	24VDC±5%	5W	50ms	≤55°C

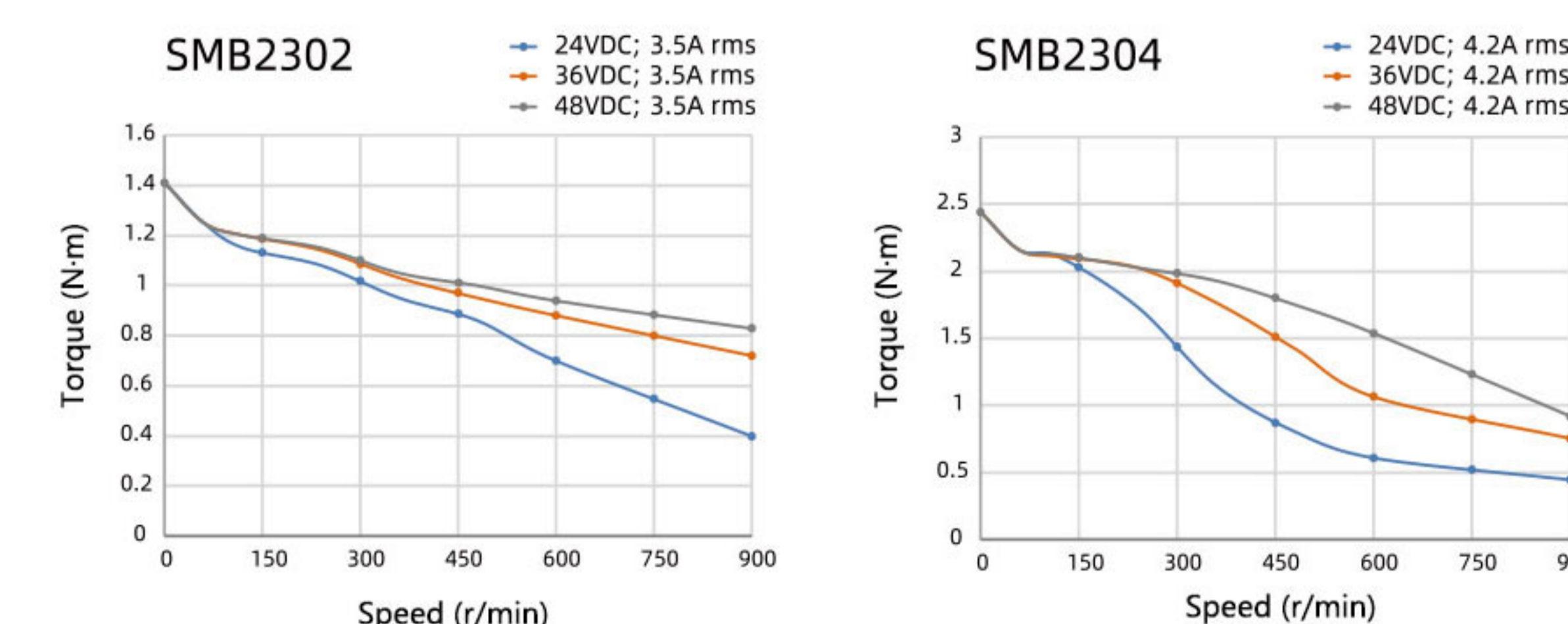
• We can modify the motor according to your requirements:

- Output shaft size and shape
- Motor body length
- Wire specifications
- Cable outlet method, etc.

Optional accessories:

- Planetary reducer

## Dynamic Torque Curve (Reference Value)



### Warm Reminder

The torque-frequency characteristic curve of the same motor will vary when using different drivers and different voltages; therefore, it is recommended to reserve at least 1.5 times the torque margin when selecting the model. The higher the driving voltage, the greater the high-speed output torque; recommended voltage: ≤ 48VDC.

# □86mm Two-phase brake stepper motor SMB Series



1.8° /step

Flange size: □86mm  
 Angular error: ±0.09°  
 Insulation withstand voltage: 500V AC / 1 minute  
 Insulation resistance: 100MΩ  
 Maximum surface temperature of the motor: 100°C  
 Humidity range: 20% RH – 90% RH  
 Permissible axial load: 60N  
 Permissible radial load: 550N (at 10mm from the mounting surface)

The image is for reference only; please refer to the actual product!

## Technical Parameters

Stepper motors are not constant torque motors; the higher the running speed, the smaller the output torque. Therefore, when paying attention to the holding torque parameter of the motor, one should also focus on the output torque of the motor at the actual working speed (refer to the dynamic torque curve). We recommend reserving a 1.5 times margin to avoid step loss of the stepper motor under overload conditions.

Model (MODEL)	Holding Torque (N.m)	Rated Current (A)	Phase Resistance (Ω/phase)	Phase Inductance (mH/phase)	Rotor Inertia (g.cm <sup>2</sup> )	Max Motor Length (mm)	Motor Weight (Kg)	Brake Torque (N.m)	Suitable Driver (Recommendation)
SMB3402	4.5	4.5	0.6	4.5	1400	80(L)+42	3.4	4.5	Low Speed: S-266D 24~60VDC High Speed: S-288A 24~80VAC
SMB3403	8.5	6.0	0.5	3.1	2700	118(L)+42	5.4		
SMB3404	12.0	7.0	0.46	6.3	4000	156(L)+42	6.3		

- The above recommended "Suitable Driver" is a pulse-type stepper motor driver. HDB motors can also be supplied with:
  - Bus-type stepper motor drivers (RS485, CANopen, EtherCAT communication control, etc.)
  - Intelligent stepper motor drivers (with position tuning, built-in PLC programming functions, etc.)

Unit: mm

Model	Shaft Diameter D	Shaft Length L1	Key Length L2
SMB3402	14	37	5×5×25
SMB3403	14	37	5×5×25
SMB3404	14	37	5×5×25

⚠ Precautions:

- The motor front cover must be installed with a locating boss, and pay attention to tolerance fit to strictly ensure the coaxiality between the motor output shaft and the load.
- To reduce noise caused by motor vibration, the motor must be firmly fixed on a rigid metal surface.
- When connecting the motor and the driver, do not connect the phases incorrectly.

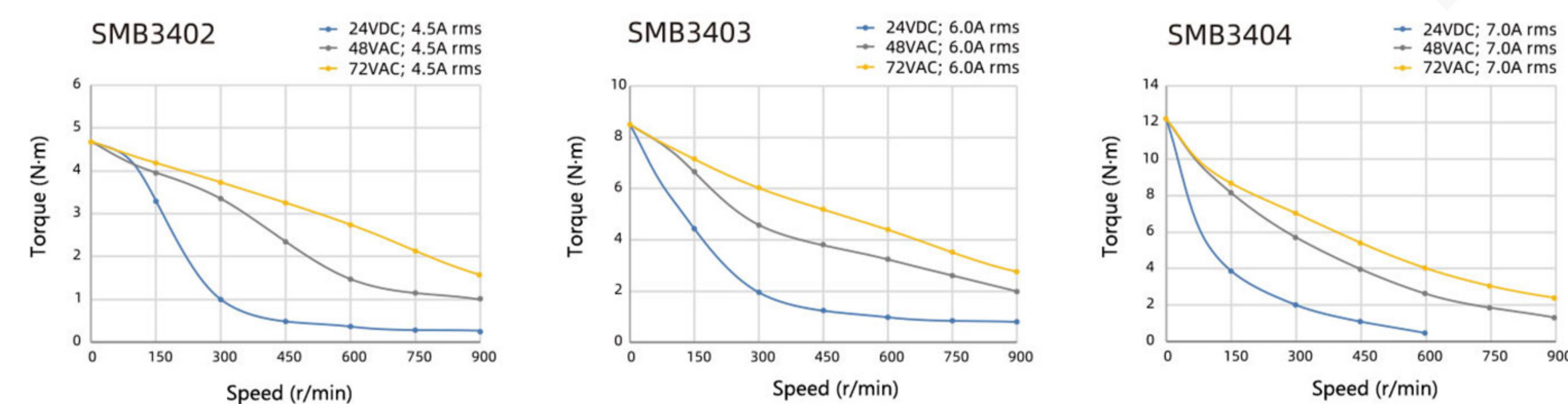
### Brake Specifications

Model	Brake Type	Power Supply Voltage	Brake Power	Response Time	Temperature Rise
34BK45N24	Electromagnetic Brake	24VDC±5%	7.5W	50ms	≤55°C

- We can modify the motor according to your requirements:
  - Output shaft size and shape
  - Motor body length
  - Wire specifications
  - Cable outlet method, etc.

- Optional accessories:
  - Planetary reducer

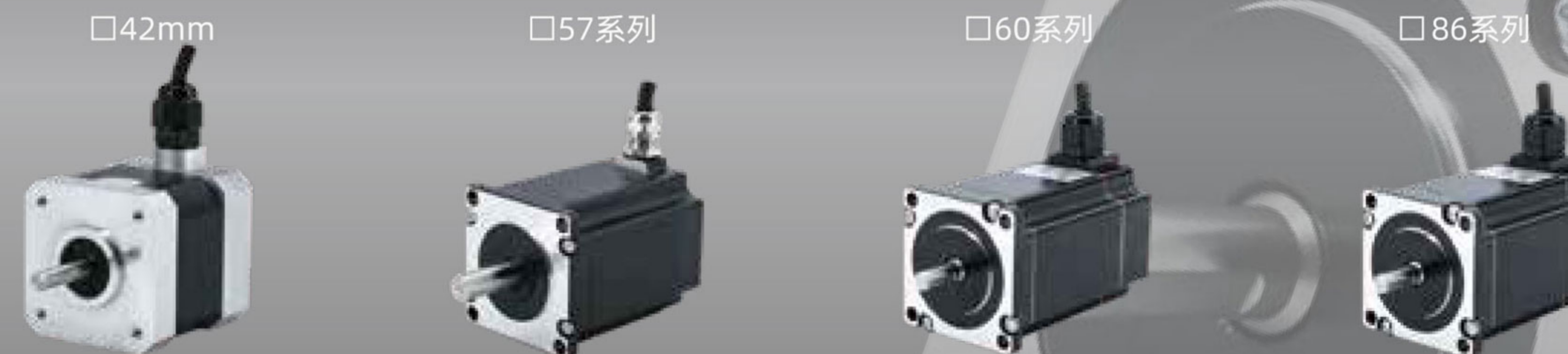
## Dynamic Torque Curve (Reference Value)



### Warm Reminder

The torque-frequency characteristic curve of the same motor will vary when using different drivers and different voltages; therefore, it is recommended to reserve at least 1.5 times the torque margin when selecting the model. The higher the driving voltage, the greater the high-speed output torque; recommended voltage: ≤ 72VAC.

# Two-phase waterproof stepper motor



The actual product size is subject to the physical item

# 42mm Two-phase waterproof stepper motor SMF Series



The image is for reference only; please refer to the actual product!

1.8° /step

Flange size: 42mm  
 Angular error: ±0.09°  
 Insulation withstand voltage: 500V AC / 1 minute  
 Insulation resistance: 100MΩ  
 Maximum surface temperature of the motor: 100°C  
 Humidity range: 20% RH – 90% RH  
 Permissible axial load: 10N  
 Permissible radial load: 25N (at 15mm from the mounting surface)

## Technical Parameters

Stepper motors are not constant torque motors; the higher the running speed, the smaller the output torque. Therefore, when paying attention to the holding torque parameter of the motor, one should also focus on the output torque of the motor at the actual working speed (refer to the dynamic torque curve). We recommend reserving a 1.5 times margin to avoid step loss of the stepper motor under overload conditions.

Model (MODEL)	Holding Torque (N.m)	Rated Current (A)	Phase Resistance (Ω/phase)	Phase Inductance (mH/phase)	Rotor Inertia (g.cm <sup>2</sup> )	Max Motor Length (mm)	Motor Weight (Kg)	Waterproof Level	Suitable Driver (Recommendation)
SMF1702	0.35	1.3	3.0	3.3	57	≤46.5	0.32	IP65	S-224D 12~48VDC

- The above recommended "Suitable Driver" is a pulse-type stepper motor driver. HDB motors can also be supplied with:
  - Bus-type stepper motor drivers (RS485, CANopen, EtherCAT communication control, etc.)
  - Intelligent stepper motor drivers (with position tuning, built-in PLC programming functions, etc.)

Unit: mm			
Model	Shaft Diameter D	Shaft Length L1	Flat Length L2
SMF1702	5	24	0.5×15

**⚠ Precautions:**

- 1.The motor front cover must be installed with a locating boss, and pay attention to tolerance fit to strictly ensure the coaxiality between the motor output shaft and the load.
- 2.To reduce noise caused by motor vibration, the motor must be firmly fixed on a rigid metal surface.
- 3.When connecting the motor and the driver, do not connect the phases incorrectly.

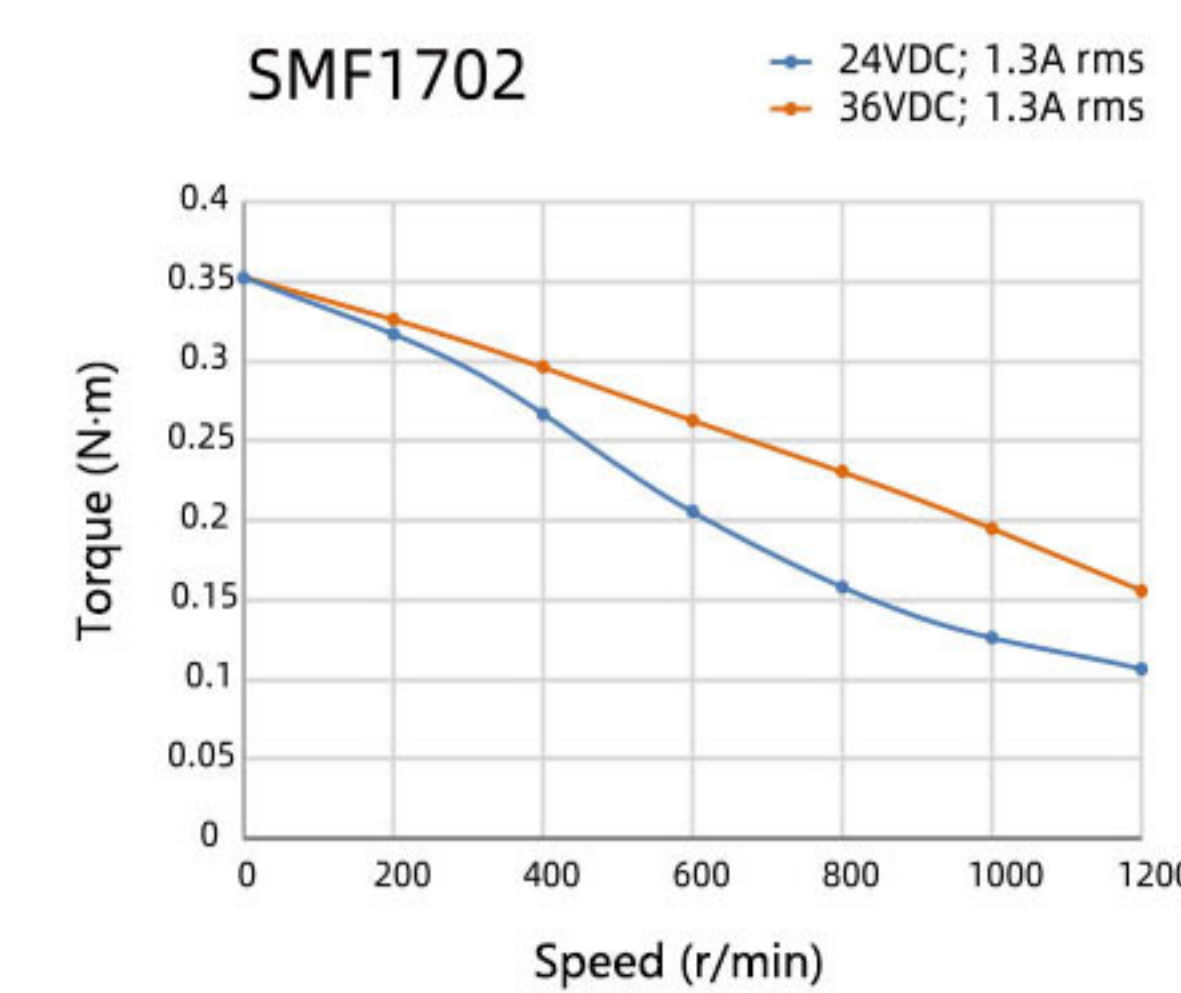
• We can modify the motor according to your requirements:

<input checked="" type="checkbox"/> Output shaft size and shape	<input checked="" type="checkbox"/> Wire specifications
<input checked="" type="checkbox"/> Motor body length	<input checked="" type="checkbox"/> Cable outlet method, etc.

Optional accessories:

Planetary reducer

## Dynamic Torque Curve (Reference Value)



### Warm Reminder

The torque-frequency characteristic curve of the same motor will vary when using different drivers and different voltages; therefore, it is recommended to reserve at least 1.5 times the torque margin when selecting the model. The higher the driving voltage, the greater the high-speed output torque; recommended voltage: ≤ 36VDC.

# 57mm Two-phase waterproof stepper motor SMF Series



The image is for reference only; please refer to the actual product!

1.8° /step

Flange size: 57mm  
 Angular error: ±0.09°  
 Insulation withstand voltage: 500V AC / 1 minute  
 Insulation resistance: 100MΩ  
 Maximum surface temperature of the motor: 100°C  
 Humidity range: 20% RH – 90% RH  
 Permissible axial load: 15N  
 Permissible radial load: 90N (at 15mm from the mounting surface)

## Technical Parameters

Stepper motors are not constant torque motors; the higher the running speed, the smaller the output torque. Therefore, when paying attention to the holding torque parameter of the motor, one should also focus on the output torque of the motor at the actual working speed (refer to the dynamic torque curve). We recommend reserving a 1.5 times margin to avoid step loss of the stepper motor under overload conditions.

Model (MODEL)	Holding Torque (N.m)	Rated Current (A)	Phase Resistance (Ω/phase)	Phase Inductance (mH/phase)	Rotor Inertia (g.cm <sup>2</sup> )	Max Motor Length (mm)	Motor Weight (Kg)	Waterproof Level	Suitable Driver (Recommendation)
SMF2303	1.2	4.0	0.45	1.4	280	≤65.0	1.5	IP65	S-245D 24~48VDC
SMF2304	2.2	5.0	0.37	1.8	480	≤86.0	2.4	IP65	

- The above recommended "Suitable Driver" is a pulse-type stepper motor driver. HDB motors can also be supplied with:
  - Bus-type stepper motor drivers (RS485, CANopen, EtherCAT communication control, etc.)
  - Intelligent stepper motor drivers (with position tuning, built-in PLC programming functions, etc.)

Unit: mm			
Model	Shaft Diameter D	Shaft Length L1	Flat Length L2
SMF2303	8	21	0.5×15
SMF2304	8	21	0.5×15

**⚠ Precautions:**

- 1.The motor front cover must be installed with a locating boss, and pay attention to tolerance fit to strictly ensure the coaxiality between the motor output shaft and the load.
- 2.To reduce noise caused by motor vibration, the motor must be firmly fixed on a rigid metal surface.
- 3.When connecting the motor and the driver, do not connect the phases incorrectly.

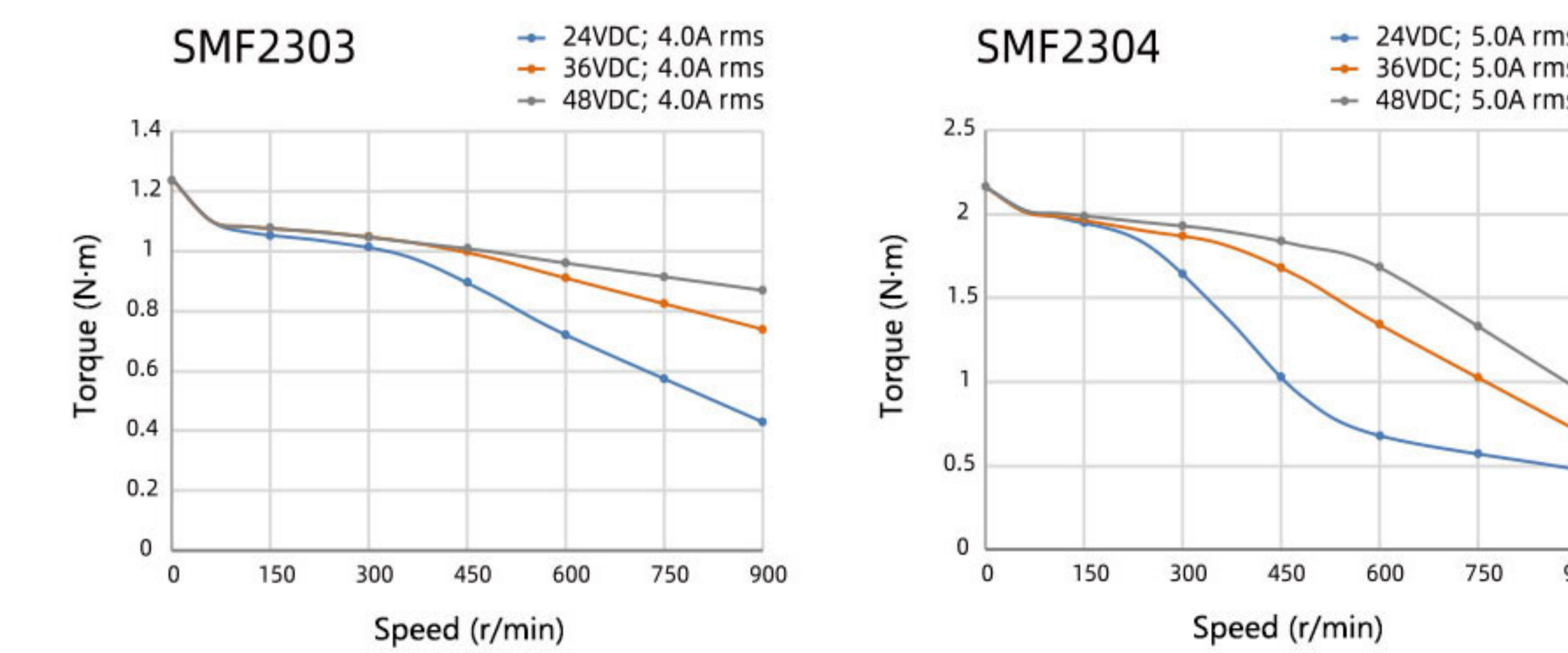
• We can modify the motor according to your requirements:

<input checked="" type="checkbox"/> Output shaft size and shape	<input checked="" type="checkbox"/> Wire specifications
<input checked="" type="checkbox"/> Motor body length	<input checked="" type="checkbox"/> Cable outlet method, etc.

Optional accessories:

Planetary reducer     Encoder

## Dynamic Torque Curve (Reference Value)



### Warm Reminder

The torque-frequency characteristic curve of the same motor will vary when using different drivers and different voltages; therefore, it is recommended to reserve at least 1.5 times the torque margin when selecting the model. The higher the driving voltage, the greater the high-speed output torque; recommended voltage: ≤ 48VDC.

# 60mm Two-phase waterproof stepper motor SMF Series



1.8° /step

Flange size: 60mm  
 Angular error: ±0.09°  
 Insulation withstand voltage: 500V AC / 1 minute  
 Insulation resistance: 100MΩ  
 Maximum surface temperature of the motor: 100°C  
 Humidity range: 20% RH – 90% RH  
 Permissible axial load: 20N  
 Permissible radial load: 120N (at 15mm from the mounting surface)

The image is for reference only; please refer to the actual product!

## Technical Parameters

Stepper motors are not constant torque motors; the higher the running speed, the smaller the output torque. Therefore, when paying attention to the holding torque parameter of the motor, one should also focus on the output torque of the motor at the actual working speed (refer to the dynamic torque curve). We recommend reserving a 1.5 times margin to avoid step loss of the stepper motor under overload conditions.

Model (MODEL)	Holding Torque (N.m)	Rated Current (A)	Phase Resistance (Ω/phase)	Phase Inductance (mH/phase)	Rotor Inertia (g.cm <sup>2</sup> )	Max Motor Length (mm)	Motor Weight (Kg)	Waterproof Level	Suitable Driver (Recommendation)
SMF2403	2.1	4.0	0.6	1.9	490	≤70.0	1.0	IP65	Low Speed: S-245D 24~48VDC High Speed: S-266D 24~60VAC
SMF2405	3.0	5.0	0.7	3.0	1200	≤100.0	1.65	IP65	

- The above recommended "Suitable Driver" is a pulse-type stepper motor driver. HDB motors can also be supplied with:
  - Bus-type stepper motor drivers (RS485, CANopen, EtherCAT communication control, etc.)
  - Intelligent stepper motor drivers (with position tuning, built-in PLC programming functions, etc.)

Model	Shaft Diameter D	Shaft Length L1	Flat Length L2
SMF2403	8	24	0.5×15
SMF2405	10	24	0.5×15

Unit: mm

**Precautions:**

- The motor front cover must be installed with a locating boss, and pay attention to tolerance fit to strictly ensure the coaxiality between the motor output shaft and the load.
- To reduce noise caused by motor vibration, the motor must be firmly fixed on a rigid metal surface.
- When connecting the motor and the driver, do not connect the phases incorrectly.

**Optional accessories:**

- Planetary reducer
- Encoder

# 86mm Two-phase waterproof stepper motor SMF Series



1.8° /step

Flange size: 86mm  
 Angular error: ±0.09°  
 Insulation withstand voltage: 500V AC / 1 minute  
 Insulation resistance: 100MΩ  
 Maximum surface temperature of the motor: 100°C  
 Humidity range: 20% RH – 90% RH  
 Permissible axial load: 60N  
 Permissible radial load: 320N (at 20mm from the mounting surface)

The image is for reference only; please refer to the actual product!

## Technical Parameters

Stepper motors are not constant torque motors; the higher the running speed, the smaller the output torque. Therefore, when paying attention to the holding torque parameter of the motor, one should also focus on the output torque of the motor at the actual working speed (refer to the dynamic torque curve). We recommend reserving a 1.5 times margin to avoid step loss of the stepper motor under overload conditions.

Model (MODEL)	Holding Torque (N.m)	Rated Current (A)	Phase Resistance (Ω/phase)	Phase Inductance (mH/phase)	Rotor Inertia (g.cm <sup>2</sup> )	Max Motor Length (mm)	Motor Weight (Kg)	Waterproof Level	Suitable Driver (Recommendation)
SMF3402	4.5	6.0	0.3	2.4	1200	≤88.0	4.6	IP65	Low Speed: S-266D 24~60VDC High Speed: S-288A 24~80VAC
SMF3403	8.5	6.0	0.5	5.0	3600	≤126.0	7.9	IP65	
SMF3404	12.0	6.0	0.7	7.3	5400	≤162.0	11.0	IP65	

- The above recommended "Suitable Driver" is a pulse-type stepper motor driver. HDB motors can also be supplied with:
  - Bus-type stepper motor drivers (RS485, CANopen, EtherCAT communication control, etc.)
  - Intelligent stepper motor drivers (with position tuning, built-in PLC programming functions, etc.)

Model	Shaft Diameter D	Shaft Length L1	Key Length L2
SMF3402	14	37	5×5×25
SMF3403	14	37	5×5×25
SMF3404	14	37	5×5×25

Unit: mm

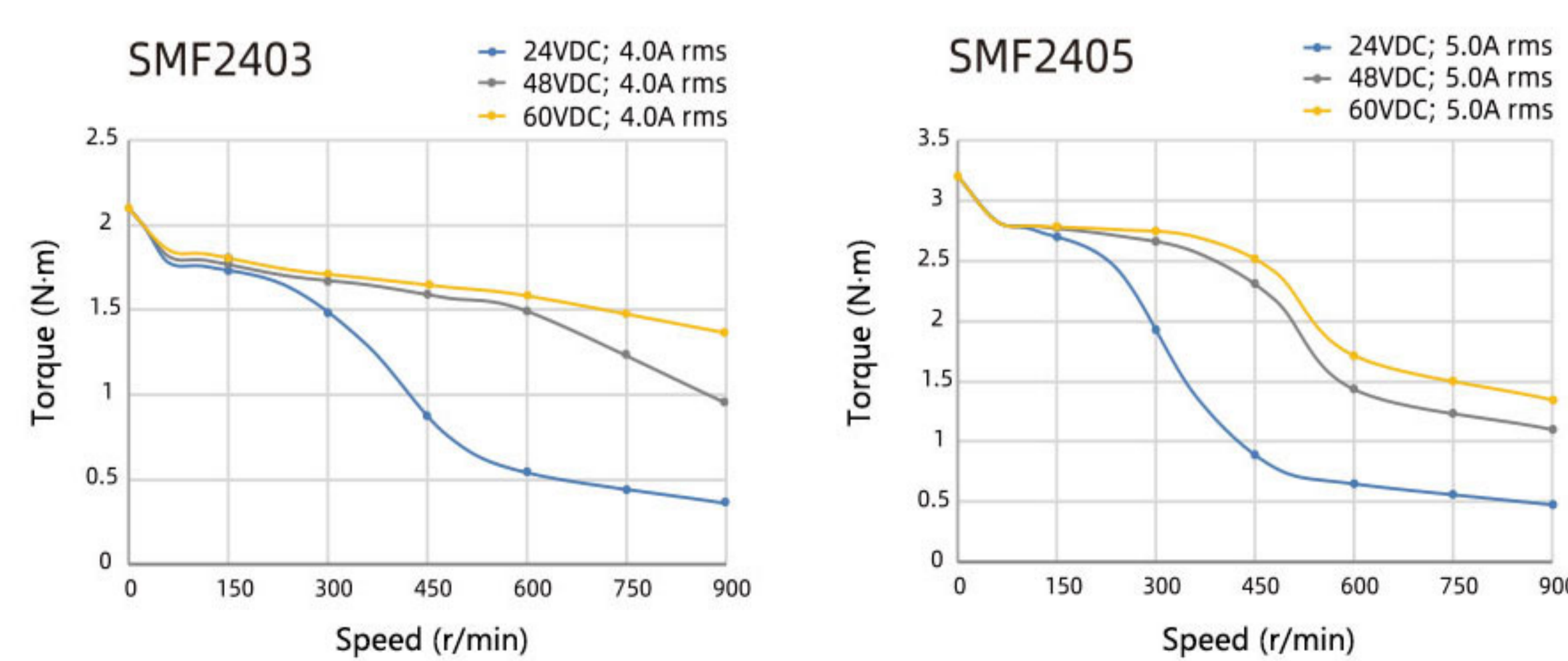
**Precautions:**

- The motor front cover must be installed with a locating boss, and pay attention to tolerance fit to strictly ensure the coaxiality between the motor output shaft and the load.
- To reduce noise caused by motor vibration, the motor must be firmly fixed on a rigid metal surface.
- When connecting the motor and the driver, do not connect the phases incorrectly.

**Optional accessories:**

- Planetary reducer
- Encoder

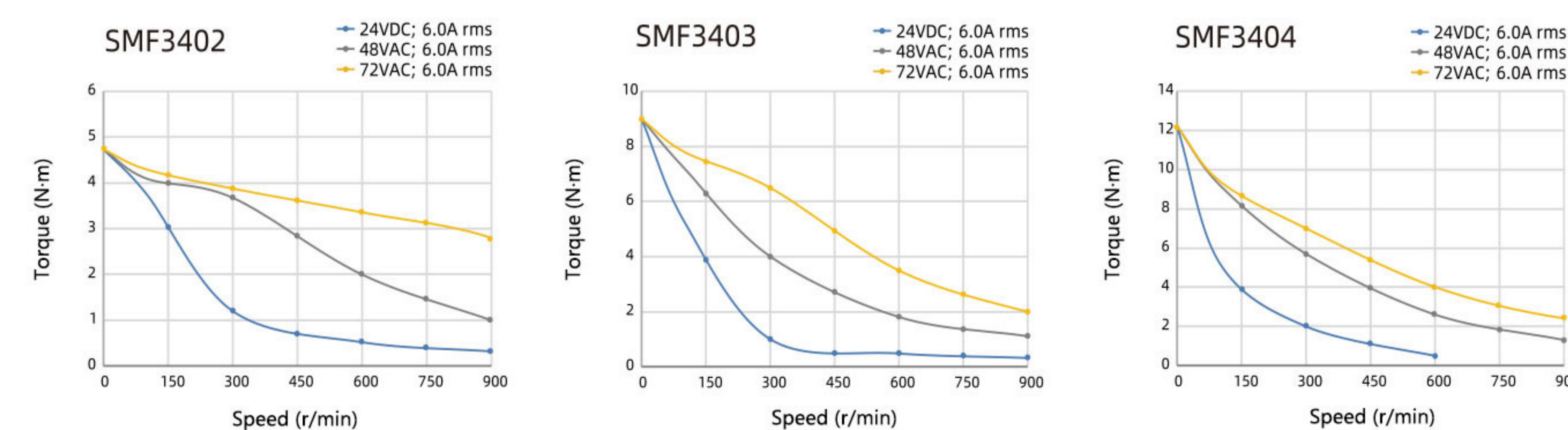
## Dynamic Torque Curve (Reference Value)



### Warm Reminder

The torque-frequency characteristic curve of the same motor will vary when using different drivers and different voltages; therefore, it is recommended to reserve at least 1.5 times the torque margin when selecting the model. The higher the driving voltage, the greater the high-speed output torque; recommended voltage: ≤ 48VDC.

## Dynamic Torque Curve (Reference Value)



### Warm Reminder

The torque-frequency characteristic curve of the same motor will vary when using different drivers and different voltages; therefore, it is recommended to reserve at least 1.5 times the torque margin when selecting the model. The higher the driving voltage, the greater the high-speed output torque; recommended voltage: ≤ 48VDC.

# Hollow shaft stepper motor

□20mm



□28系列



□42系列



□57系列



The actual product size is subject to the physical item



1.8° /step

Flange size: □20mm  
 Angular error: ±0.09°  
 Insulation withstand voltage: 500V AC / 1 minute  
 Insulation resistance: 100MΩ  
 Maximum surface temperature of the motor: 100°C  
 Humidity range: 20% RH – 90% RH  
 Permissible axial load: 3N  
 Permissible radial load: 15N (at 5mm from the mounting surface)

The image is for reference only, please refer to the actual product!

## Technical Parameters

Stepper motors are not constant torque motors; the higher the running speed, the smaller the output torque. Therefore, when paying attention to the holding torque parameter of the motor, one should also focus on the output torque of the motor at the actual working speed (refer to the dynamic torque curve). We recommend reserving a 1.5 times margin to avoid step loss of the stepper motor under overload conditions.

Model (MODEL)	Holding Torque (N.m)	Rated Current (A)	Phase Resistance (Ω/phase)	Phase Inductance (mH/phase)	Rotor Inertia (g.cm <sup>2</sup> )	Max Motor Length (mm)	Motor Weight (Kg)	Output shaft inner diameter (mm)	Suitable Driver (Recommendation)
SMK0801	0.018	0.6	6.5	2.2	1.6	≤28.0	0.04	3.0	S-224D 12~48VDC
SMK0803	0.036	0.8	6.5	2.5	2.9	≤40.0	0.06	3.0	

- The above recommended "Suitable Driver" is a pulse-type stepper motor driver. HDB motors can also be supplied with:
  - Bus-type stepper motor drivers (RS485, CANopen, EtherCAT communication control, etc.)
  - Intelligent stepper motor drivers (with position tuning, built-in PLC programming functions, etc.)

Unit: mm

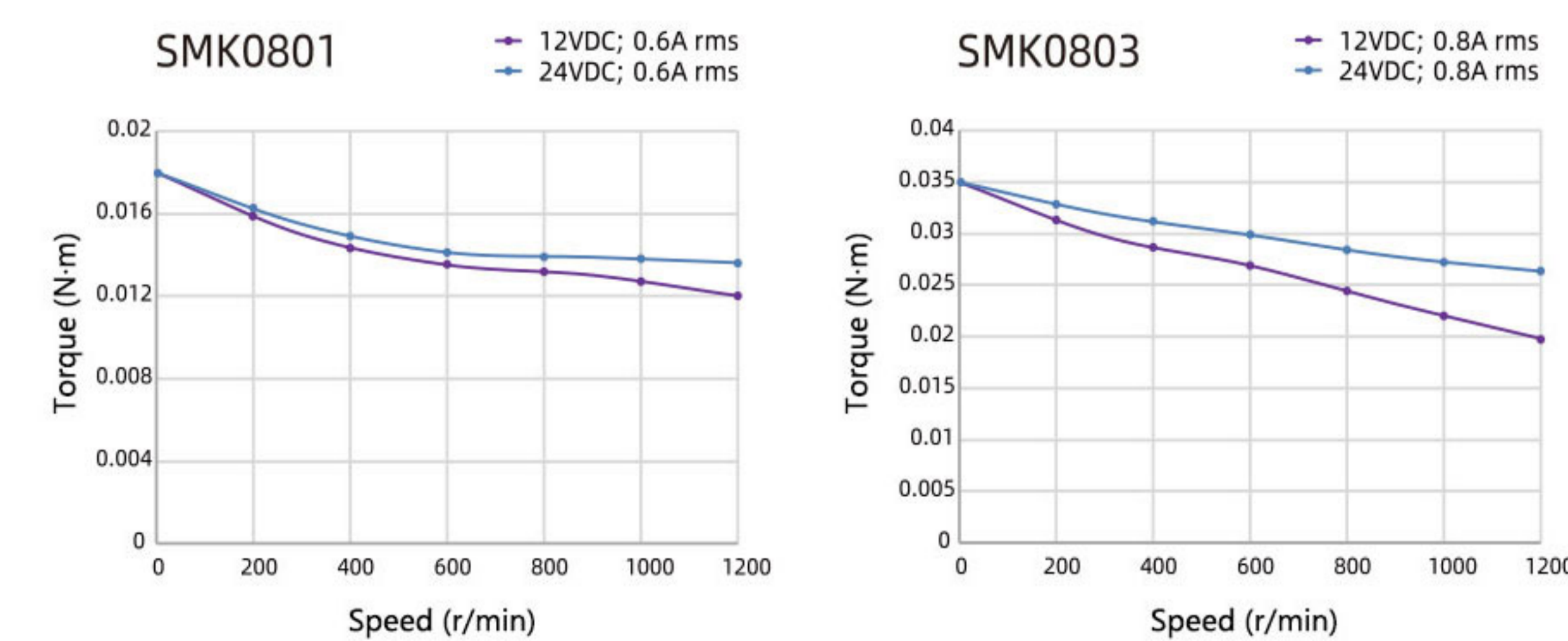
Model	Shaft Diameter D	Front Shaft Length L1	Rear Shaft Length L2
SMK0801	5	7	7.5
SMK0803	5	7	7.5

⚠ Precautions:  
 1. The motor front cover must be installed with a locating boss, and pay attention to tolerance fit to strictly ensure the coaxiality between the motor output shaft and the load.  
 2. To reduce noise caused by motor vibration, the motor must be firmly fixed on a rigid metal surface.  
 3. When connecting the motor and the driver, do not connect the phases incorrectly.

• We can modify the motor according to your requirements:

- Output shaft size and shape
- Wire specifications
- Motor body length
- Cable outlet method, etc.

## Dynamic Torque Curve (Reference Value)



### Warm Reminder

The torque-frequency characteristic curve of the same motor will vary when using different drivers and different voltages; therefore, it is recommended to reserve at least 1.5 times the torque margin when selecting the model. The higher the driving voltage, the greater the high-speed output torque; recommended voltage: ≤ 24VDC.



1.8° /step

Flange size: □28mm  
 Angular error: ±0.09°  
 Insulation withstand voltage: 500V AC / 1 minute  
 Insulation resistance: 100MΩ  
 Maximum surface temperature of the motor: 100°C  
 Humidity range: 20% RH – 90% RH  
 Permissible axial load: 5N  
 Permissible radial load: 25N (at 10mm from the mounting surface)

The image is for reference only, please refer to the actual product!

## Technical Parameters

Stepper motors are not constant torque motors; the higher the running speed, the smaller the output torque. Therefore, when paying attention to the holding torque parameter of the motor, one should also focus on the output torque of the motor at the actual working speed (refer to the dynamic torque curve). We recommend reserving a 1.5 times margin to avoid step loss of the stepper motor under overload conditions.

Model (MODEL)	Holding Torque (N.m)	Rated Current (A)	Phase Resistance (Ω/phase)	Phase Inductance (mH/phase)	Rotor Inertia (g.cm <sup>2</sup> )	Max Motor Length (mm)	Motor Weight (Kg)	Output shaft inner diameter (mm)	Suitable Driver (Recommendation)
SMK1101	0.08	1.0	5.7	3.5	9	≤32.0	0.11	6.0	S-224D 12~48VDC
SMK1102	0.12	1.0	8.5	6.5	12	≤45.0	0.15	6.0	

- The above recommended "Suitable Driver" is a pulse-type stepper motor driver. HDB motors can also be supplied with:
  - Bus-type stepper motor drivers (RS485, CANopen, EtherCAT communication control, etc.)
  - Intelligent stepper motor drivers (with position tuning, built-in PLC programming functions, etc.)

Unit: mm

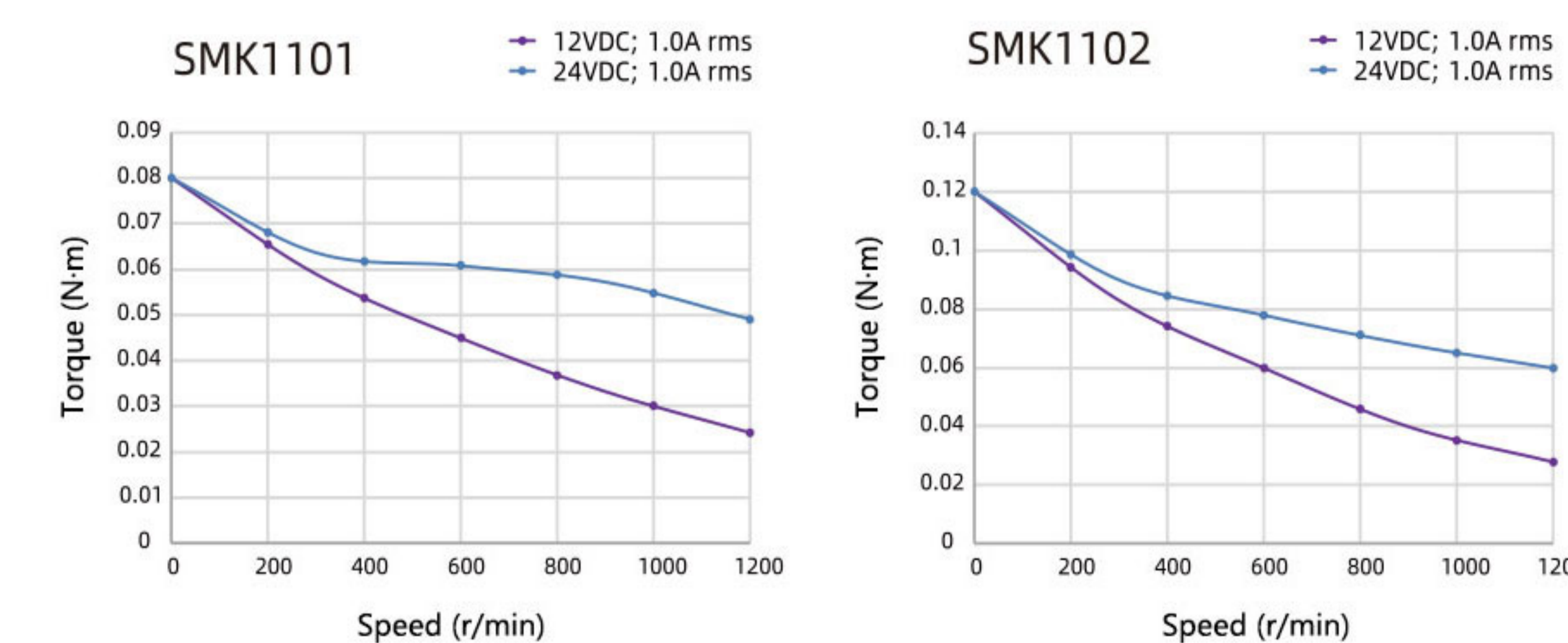
Model	Shaft Diameter D	Front Shaft Length L1	Rear Shaft Length L2
SMK1101	8	7	7.5
SMK1102	8	7	7.5

⚠ Precautions:  
 1. The motor front cover must be installed with a locating boss, and pay attention to tolerance fit to strictly ensure the coaxiality between the motor output shaft and the load.  
 2. To reduce noise caused by motor vibration, the motor must be firmly fixed on a rigid metal surface.  
 3. When connecting the motor and the driver, do not connect the phases incorrectly.

• We can modify the motor according to your requirements:

- Output shaft size and shape
- Wire specifications
- Motor body length
- Cable outlet method, etc.

## Dynamic Torque Curve (Reference Value)



### Warm Reminder

The torque-frequency characteristic curve of the same motor will vary when using different drivers and different voltages; therefore, it is recommended to reserve at least 1.5 times the torque margin when selecting the model. The higher the driving voltage, the greater the high-speed output torque; recommended voltage: ≤ 24VDC.

# □42mm Two-phase hollow shaft stepper motor SMK Series



The image is for reference only; please refer to the actual product!

1.8° /step

Flange size: □42mm  
 Angular error: ±0.09°  
 Insulation withstand voltage: 500V AC / 1 minute  
 Insulation resistance: 100MΩ  
 Maximum surface temperature of the motor: 100°C  
 Humidity range: 20% RH – 90% RH  
 Permissible axial load: 10N  
 Permissible radial load: 25N (at 15mm from the mounting surface)

## Technical Parameters

Stepper motors are not constant torque motors; the higher the running speed, the smaller the output torque. Therefore, when paying attention to the holding torque parameter of the motor, one should also focus on the output torque of the motor at the actual working speed (refer to the dynamic torque curve). We recommend reserving a 1.5 times margin to avoid step loss of the stepper motor under overload conditions.

Model (MODEL)	Holding Torque (N.m)	Rated Current (A)	Phase Resistance (Ω/phase)	Phase Inductance (mH/phase)	Rotor Inertia (g.cm <sup>2</sup> )	Max Motor Length (mm)	Motor Weight (Kg)	Output shaft inner diameter (mm)	Suitable Driver (Recommendation)
SMK1702	0.32	1.4	2.10	3.3	33.0	≤35.0	0.24	8.0	S-224D 12~48VDC
SMK1704	0.53	2.0	1.31	2.9	77.0	≤49.0	0.36	8.0	

- The above recommended "Suitable Driver" is a pulse-type stepper motor driver. HDB motors can also be supplied with:
  - Bus-type stepper motor drivers (RS485, CANopen, EtherCAT communication control, etc.)
  - Intelligent stepper motor drivers (with position tuning, built-in PLC programming functions, etc.)

Model	Shaft Diameter D	Front Shaft Length L1	Rear Shaft Length L2
SMK1702	10	7	7.5
SMK1704	10	7	7.5

Unit: mm

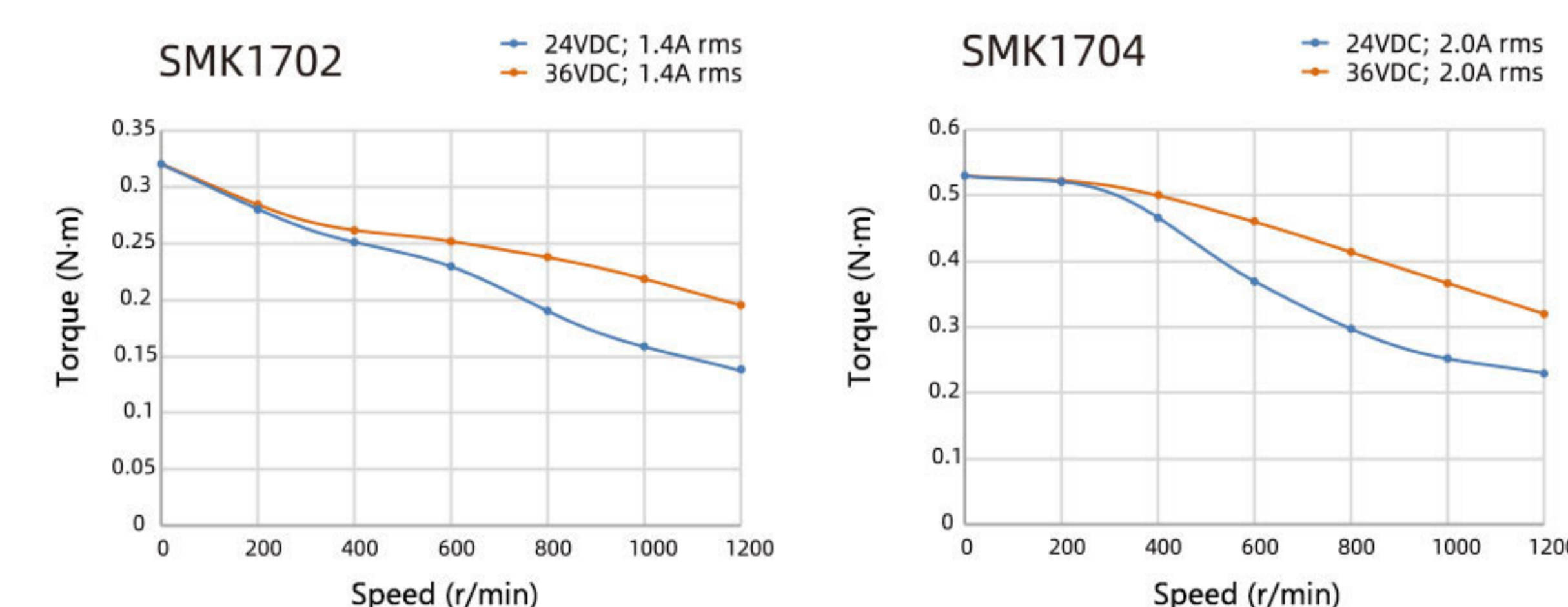
**⚠ Precautions:**

- The motor front cover must be installed with a locating boss, and pay attention to tolerance fit to strictly ensure the coaxiality between the motor output shaft and the load.
- To reduce noise caused by motor vibration, the motor must be firmly fixed on a rigid metal surface.
- When connecting the motor and the driver, do not connect the phases incorrectly.

● We can modify the motor according to your requirements:

- Output shaft size and shape
- Motor body length
- Wire specifications
- Cable outlet method, etc.

## Dynamic Torque Curve (Reference Value)



### Warm Reminder

The torque-frequency characteristic curve of the same motor will vary when using different drivers and different voltages; therefore, it is recommended to reserve at least 1.5 times the torque margin when selecting the model. The higher the driving voltage, the greater the high-speed output torque; recommended voltage: ≤ 36VDC.

# □57mm Two-phase hollow shaft stepper motor SMK Series



The image is for reference only; please refer to the actual product!

1.8° /step

Flange size: □57mm  
 Angular error: ±0.09°  
 Insulation withstand voltage: 500V AC / 1 minute  
 Insulation resistance: 100MΩ  
 Maximum surface temperature of the motor: 100°C  
 Humidity range: 20% RH – 90% RH  
 Permissible axial load: 15N  
 Permissible radial load: 90N (at 15mm from the mounting surface)

## Technical Parameters

Stepper motors are not constant torque motors; the higher the running speed, the smaller the output torque. Therefore, when paying attention to the holding torque parameter of the motor, one should also focus on the output torque of the motor at the actual working speed (refer to the dynamic torque curve). We recommend reserving a 1.5 times margin to avoid step loss of the stepper motor under overload conditions.

Model (MODEL)	Holding Torque (N.m)	Rated Current (A)	Phase Resistance (Ω/phase)	Phase Inductance (mH/phase)	Rotor Inertia (g.cm <sup>2</sup> )	Max Motor Length (mm)	Motor Weight (Kg)	Output shaft inner diameter (mm)	Suitable Driver (Recommendation)
SMK2302	1.10	4.2	0.40	1.2	280	≤56.0	0.70	12.0	S-245D 24~48VDC
SMK2304	1.80	4.2	0.60	1.8	440	≤76.0	1.00	12.0	

- The above recommended "Suitable Driver" is a pulse-type stepper motor driver. HDB motors can also be supplied with:
  - Bus-type stepper motor drivers (RS485, CANopen, EtherCAT communication control, etc.)
  - Intelligent stepper motor drivers (with position tuning, built-in PLC programming functions, etc.)

Model	Shaft Diameter D	Front Shaft Length L1	Rear Shaft Length L2
SMK2302	15	7	7.5
SMK2304	15	7	7.5

Unit: mm

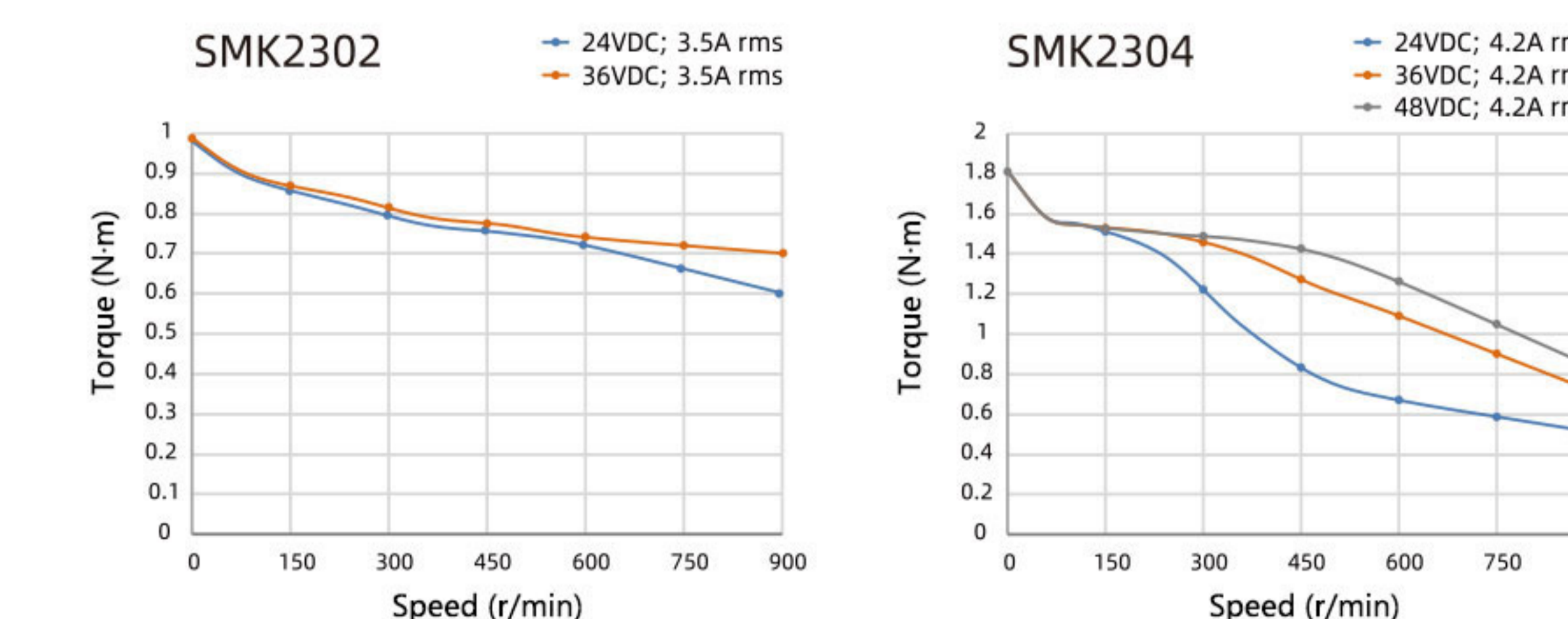
**⚠ Precautions:**

- The motor front cover must be installed with a locating boss, and pay attention to tolerance fit to strictly ensure the coaxiality between the motor output shaft and the load.
- To reduce noise caused by motor vibration, the motor must be firmly fixed on a rigid metal surface.
- When connecting the motor and the driver, do not connect the phases incorrectly.

● We can modify the motor according to your requirements:

- Output shaft size and shape
- Motor body length
- Wire specifications
- Cable outlet method, etc.

## Dynamic Torque Curve (Reference Value)



### Warm Reminder

The torque-frequency characteristic curve of the same motor will vary when using different drivers and different voltages; therefore, it is recommended to reserve at least 1.5 times the torque margin when selecting the model. The higher the driving voltage, the greater the high-speed output torque; recommended voltage: ≤ 48VDC.

# Planetary gear reduction stepper motor

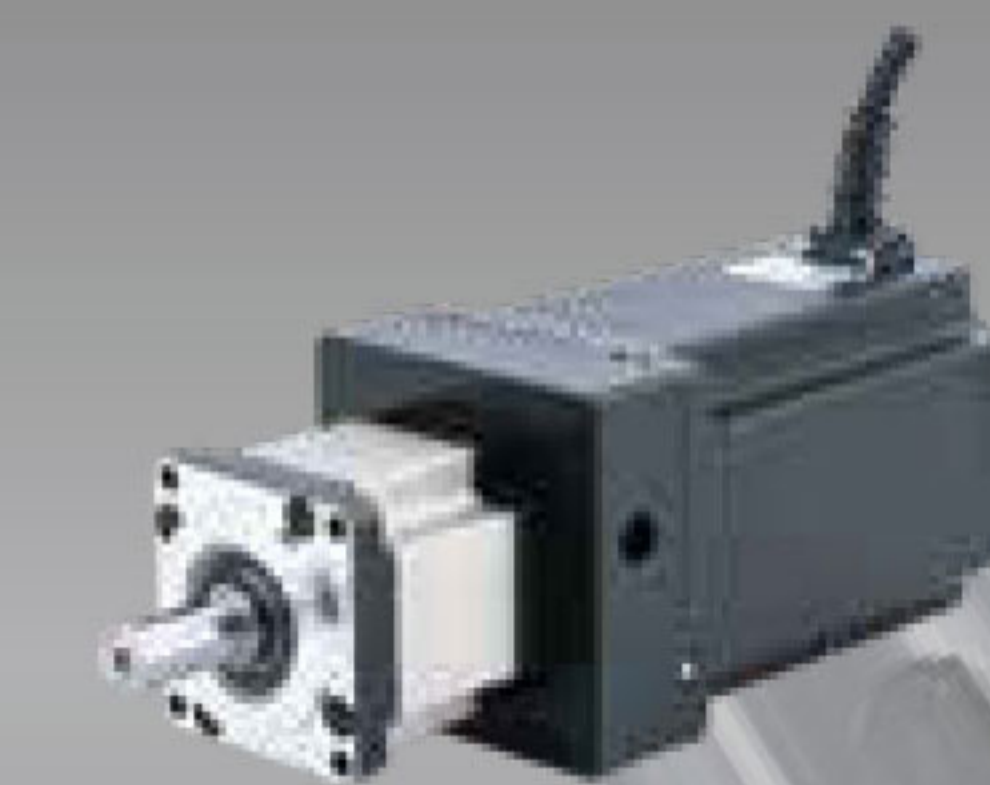
□ PLE系列



□ PLF系列



□ PS系列



□ PZH系列



□ PF系列



□ PZF系列



□ PT系列



□ PZT系列



The actual product size is subject to the physical item



The image is for reference only; please refer to the actual product!

**Product Features:**

- Output end screw connection, standardized installation size, strong versatility.
- Single cantilever structure, simple design, excellent cost performance.
- Steel gear structure runs smoothly, low noise, long service life.
- Fast delivery, far superior to products of the same price on the market.

**Technical Parameters**

Stepper motors are not constant torque motors; the higher the running speed, the smaller the output torque. Therefore, when paying attention to the holding torque parameter of the motor, one should also focus on the output torque of the motor at the actual working speed (refer to the dynamic torque curve). We recommend reserving a 1.5 times margin to avoid step loss of the stepper motor under overload conditions.

Model (MODEL)	Step Angle	Holding Torque (N·m)	Rated Current (A)	Length LC (mm)	Motor Weight (kg)	Operating Voltage Range (Recommended Model)
SM1703PLE-□□	1.8°	0.43	1.7	41.0	0.29	S-224D 12~48VDC
SM1704PLE-□□	1.8°	0.53	2.0	49.0	0.35	
SM1705PLE-□□	1.8°	0.72	2.0	61.0	0.51	

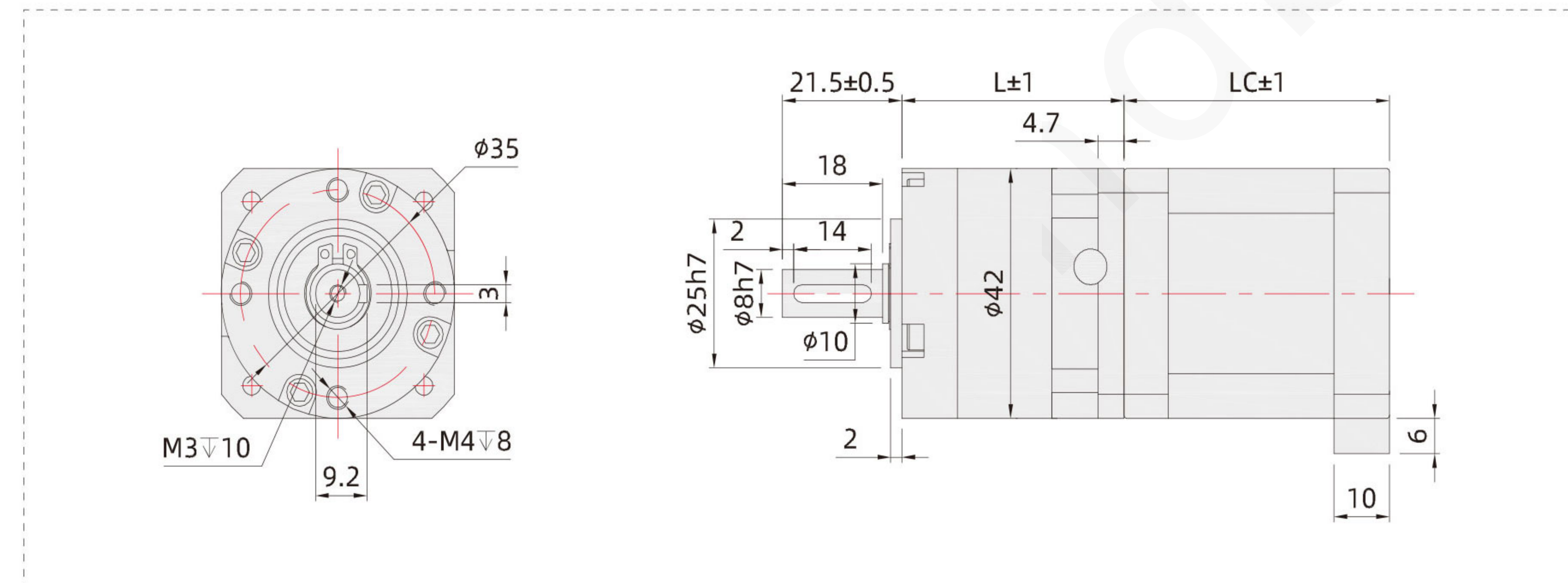
Note: For product curves and unlisted parameters, please refer to page 07.

☒ Customization needs such as wire specifications, motor length, wiring methods, etc. are provided. Please consult Handebao Motor sales staff or contact authorized Handebao Motor agents.

When selecting a planetary reduction stepper motor, the rated output torque of the reducer and the motor torque-frequency characteristic curve should be checked to ensure they meet the usage requirements and transmission efficiency. It is recommended that the input speed be less than 800 rpm, and the final torque should be less than the rated torque to avoid reducing the lifespan of the reducer.

Parameter	Reduction Ratio															
	3	4	5	7	8	10	12	16	20	25	28	35	40	50	70	100
Rated Output Torque N·m	○	8	7	6	○	4	○	11	10	8	9	8	8	7	6	○
Efficiency (%)	96%								94%							
Backlash (arcmin)	≤15								≤20							
Input Speed (rpm)	≤1000								≤1000							
Motor Length L / Weight	L=40(mm)/0.25(kg)								L=51(mm)/0.35(kg)							
Radial Force (N)	260															
Axial Force (N)	80															
Maximum Allowable Output Torque	1.6 times rated torque															

☒ For customization requirements, shaft specifications, positioning bosses, etc., please consult Handebao Motor sales staff or contact authorized Handebao Motor agents.



Planetary gear reduction stepper motor



The image is for reference only; please refer to the actual product!

**Product Features:**

- Integrated design, compact size, easy installation
- Cage-type planetary frame structure, with high reliability, suitable for frequent forward and reverse rotation
- Special bearing structure, can bear larger radial and axial forces
- Short delivery time, superior to similar products on the market in the same price range

**Technical Parameters**

Stepper motors are not constant torque motors; the higher the running speed, the smaller the output torque. Therefore, when paying attention to the holding torque parameter of the motor, one should also focus on the output torque of the motor at the actual working speed (refer to the dynamic torque curve). We recommend reserving a 1.5 times margin to avoid step loss of the stepper motor under overload conditions.

Model (MODEL)	Step Angle	Holding Torque (N·m)	Rated Current (A)	Length LC (mm)	Motor Weight (kg)	Operating Voltage Range (Recommended Model)
SM1703PLF-□□	1.8°	0.43	1.7	41.0	0.29	S-224D 12~48VDC
SM1704PLF-□□	1.8°	0.53	2.0	49.0	0.35	
SM1705PLF-□□	1.8°	0.72	2.0	61.0	0.51	

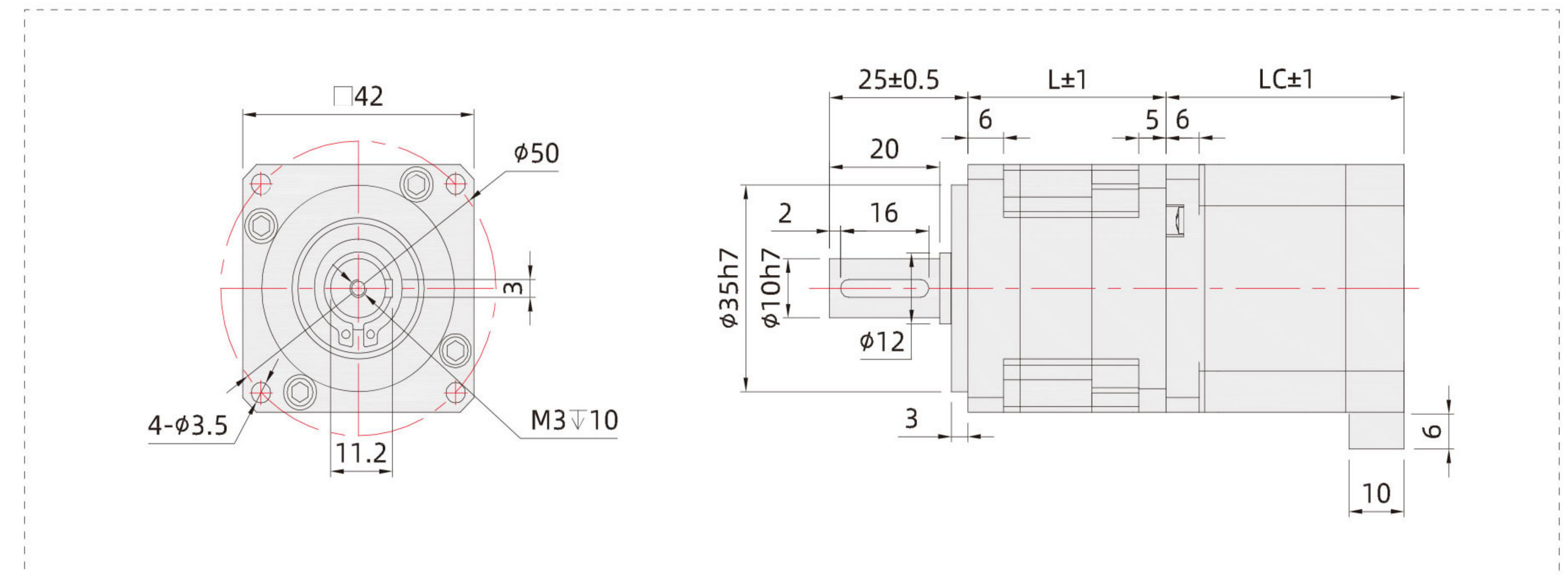
Note: For product curves and unlisted parameters, please refer to page 07.

☒ Customization needs such as wire specifications, motor length, wiring methods, etc. are provided. Please consult Handebao Motor sales staff or contact authorized Handebao Motor agents.

When selecting a planetary reduction stepper motor, the rated output torque of the reducer and the motor torque-frequency characteristic curve should be checked to ensure they meet the usage requirements and transmission efficiency. It is recommended that the input speed be less than 800 rpm, and the final torque should be less than the rated torque to avoid reducing the lifespan of the reducer.

Parameter	Reduction Ratio															
	3	4	5	7	8	10	12	16	20	25	28	35	40	50	70	100
Rated Output Torque N·m	○	9	8	7	○	5	○	12	11	9	10	9	9	8	7	○
Efficiency (%)	96%								94%							
Backlash (arcmin)	≤15								≤20							
Input Speed (rpm)	≤1000								≤1000							
Motor Length L / Weight	L=35(mm)/0.25(kg)								L=46(mm)/0.35(kg)							
Radial Force (N)	300															
Axial Force (N)	100															
Maximum Allowable Output Torque	1.6 times rated torque															

☒ For customization requirements, shaft specifications, positioning bosses, etc., please consult Handebao Motor sales staff or contact authorized Handebao Motor agents.



Planetary gear reduction stepper motor



The image is for reference only; please refer to the actual product!

**Product Features:**

- Integrated design, compact size, easy installation
- Cage-type planetary frame structure, with high reliability, suitable for frequent forward and reverse rotation
- Special bearing structure, can bear larger radial and axial forces
- Short delivery time, superior to similar products on the market in the same price range

**Technical Parameters**

Stepper motors are not constant torque motors; the higher the running speed, the smaller the output torque. Therefore, when paying attention to the holding torque parameter of the motor, one should also focus on the output torque of the motor at the actual working speed (refer to the dynamic torque curve). We recommend reserving a 1.5 times margin to avoid step loss of the stepper motor under overload conditions.

Model (MODEL)	Step Angle	Holding Torque (N·m)	Rated Current (A)	Length LC (mm)	Motor Weight (kg)	Operating Voltage Range (Recommended Model)
SMH1704PS- □□	1.8°	0.58	2.3	51.0	0.45	S-224D 12~48VDC
SMH1705PS- □□	1.8°	0.78	2.3	67.0	0.58	

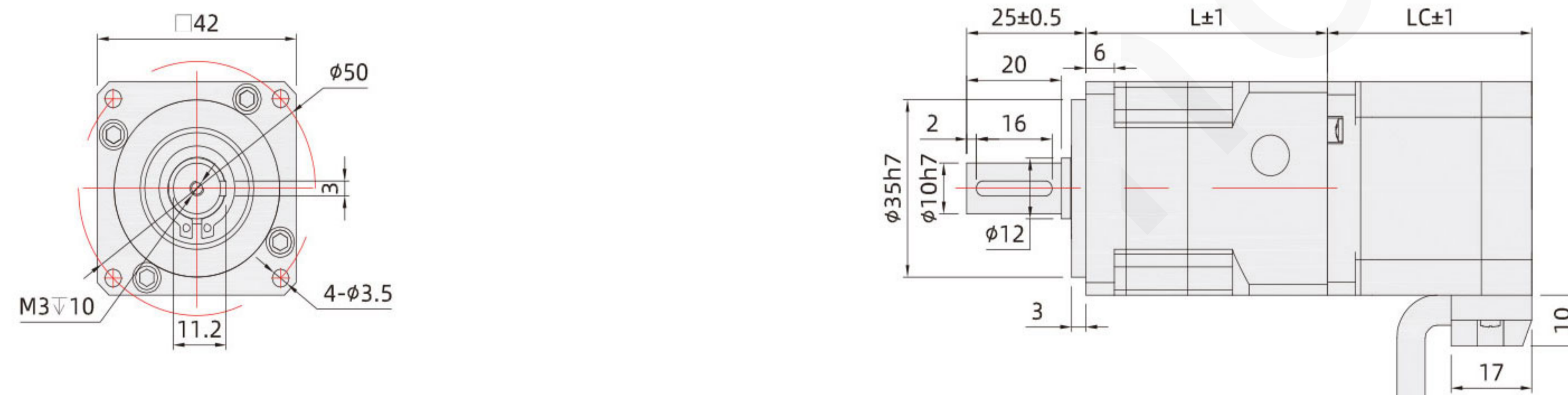
Note: For product curves and unlisted parameters, please refer to page 07.

☒ Customization needs such as wire specifications, motor length, wiring methods, etc. are provided. Please consult Handebao Motor sales staff or contact authorized Handebao Motor agents.

When selecting a planetary reduction stepper motor, the rated output torque of the reducer and the motor torque-frequency characteristic curve should be checked to ensure they meet the usage requirements and transmission efficiency. It is recommended that the input speed be less than 800 rpm, and the final torque should be less than the rated torque to avoid reducing the lifespan of the reducer.

Parameter	Reduction Ratio															
	3	4	5	7	8	10	12	16	20	25	28	35	40	50	70	100
Rated Output Torque N·m	○	9	8	7	○	5	○	12	11	9	10	9	9	8	7	○
Efficiency (%)	96%								94%							
Backlash (arcmin)	≤15								≤20							
Input Speed (rpm)	≤1000								≤1000							
Motor Length L / Weight	L=35(mm)/0.25(kg)								L=46(mm)/0.35(kg)							
Radial Force (N)	300															
Axial Force (N)	100															
Maximum Allowable Output Torque	1.6 times rated torque															

☒ For customization requirements, shaft specifications, positioning bosses, etc., please consult Handebao Motor sales staff or contact authorized Handebao Motor agents.



Planetary gear reduction stepper motor



The image is for reference only; please refer to the actual product!

**Product Features:**

- Fully integrated design, maximizing precision improvement.
- Double-support cage-type planetary gear structure, with high reliability, suitable for frequent forward and reverse rotation.
- Helical gear transmission, smoother operation, greater load capacity.
- Low backlash, more accurate positioning.
- Special bearing structure, capable of bearing larger radial and axial forces.
- Worm gear reversing mechanism, enabling right-angle output.
- Worm gear undergoes carburizing treatment, with hardness reaching HRC58-62, providing excellent wear resistance.

**Technical Parameters**

Stepper motors are not constant torque motors; the higher the running speed, the smaller the output torque. Therefore, when paying attention to the holding torque parameter of the motor, one should also focus on the output torque of the motor at the actual working speed (refer to the dynamic torque curve). We recommend reserving a 1.5 times margin to avoid step loss of the stepper motor under overload conditions.

Model (MODEL)	Step Angle	Holding Torque (N·m)	Rated Current (A)	Length LC (mm)	Motor Weight (kg)	Operating Voltage Range (Recommended Model)
SMH1704PZH- □□	1.8°	0.58	2.3	51.0	0.45	S-224D 12~48VDC
SMH1705PZH- □□	1.8°	0.78	2.3	67.0	0.58	

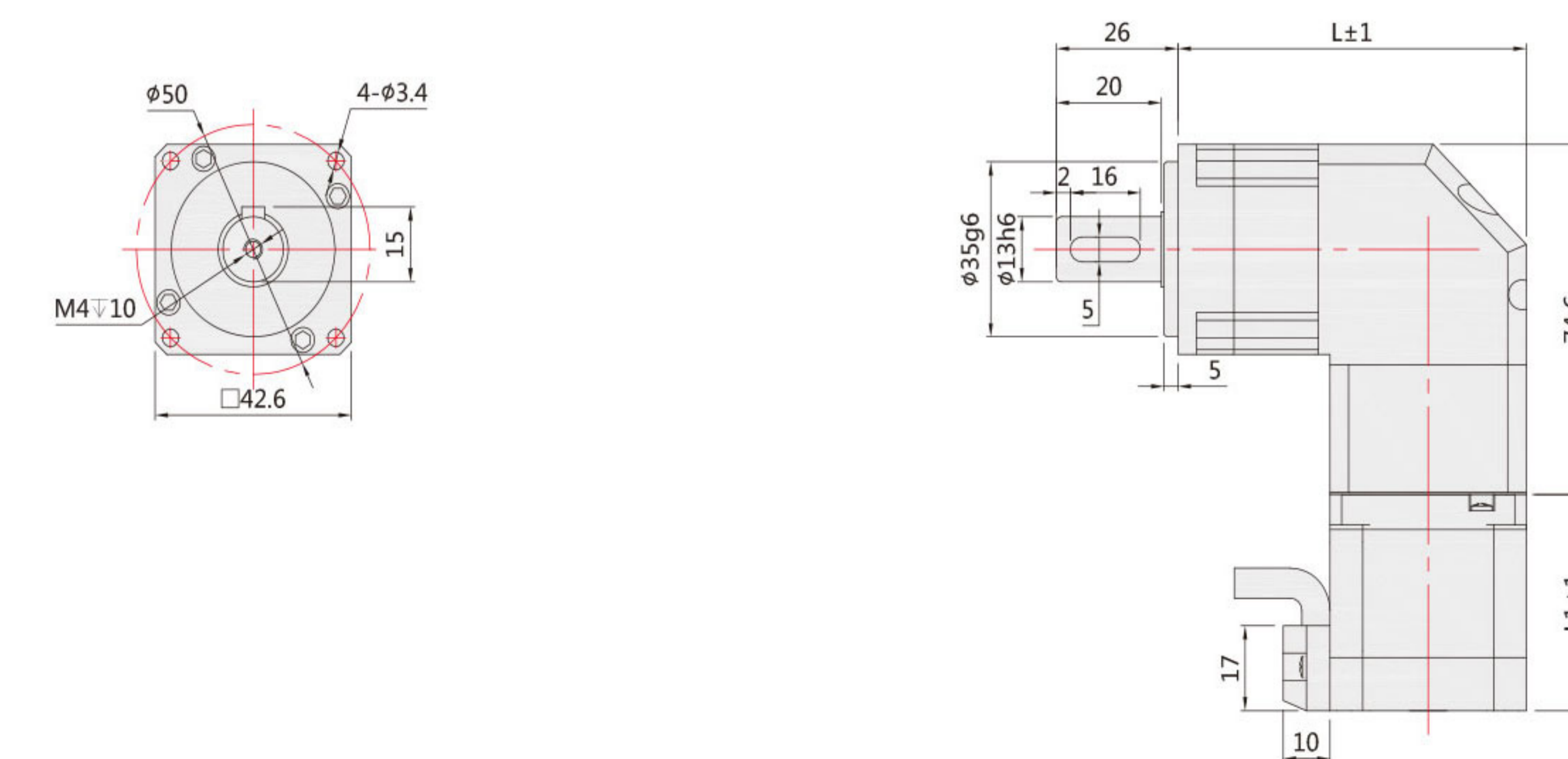
Note: For product curves and unlisted parameters, please refer to page 07.

☒ Customization needs such as wire specifications, motor length, wiring methods, etc. are provided. Please consult Handebao Motor sales staff or contact authorized Handebao Motor agents.

When selecting a planetary reduction stepper motor, the rated output torque of the reducer and the motor torque-frequency characteristic curve should be checked to ensure they meet the usage requirements and transmission efficiency. It is recommended that the input speed be less than 800 rpm, and the final torque should be less than the rated torque to avoid reducing the lifespan of the reducer.

Parameter	Reduction Ratio															
	3	4	5	7	8	10	12	16	20	25	28	35	40	50	70	100
Rated Output Torque N·m	○	20	20	19	○	14	○	20	20	20	19	19	20	20	19	14
Efficiency (%)	96%								94%							
Backlash (arcmin)	≤5								≤20							
Input Speed (rpm)	≤3000								≤3000							
Motor Length L / Weight	L=108(mm)/1.0(kg)								L=128(mm)/1.2(kg)							
Radial Force (N)	700															
Axial Force (N)	160															
Maximum Allowable Output Torque	2 times rated torque															

☒ For customization requirements, shaft specifications, positioning bosses, etc., please consult Handebao Motor sales staff or contact authorized Handebao Motor agents.



Planetary gear reduction stepper motor

**57mm** Two-phase planetary gear reduction stepper motor **PS42 Series**



- Product Features:**
- Integrated design, compact size, easy installation
  - Cage-type planetary frame structure, with high reliability, suitable for frequent forward and reverse rotation
  - Special bearing structure, can bear larger radial and axial forces
  - Short delivery time, superior to similar products on the market in the same price range

The image is for reference only; please refer to the actual product!

**Technical Parameters**

Stepper motors are not constant torque motors; the higher the running speed, the smaller the output torque. Therefore, when paying attention to the holding torque parameter of the motor, one should also focus on the output torque of the motor at the actual working speed (refer to the dynamic torque curve). We recommend reserving a 1.5 times margin to avoid step loss of the stepper motor under overload conditions.

Model (MODEL)	Step Angle	Holding Torque (N·m)	Rated Current (A)	Length LC (mm)	Motor Weight (kg)	Operating Voltage Range (Recommended Model)
SM2301PS42-□□	1.8°	0.87	3.5	42.0	0.45	S-245D 24~48VDC
SM2302PS42-□□	1.8°	1.41	3.5	56.0	0.58	

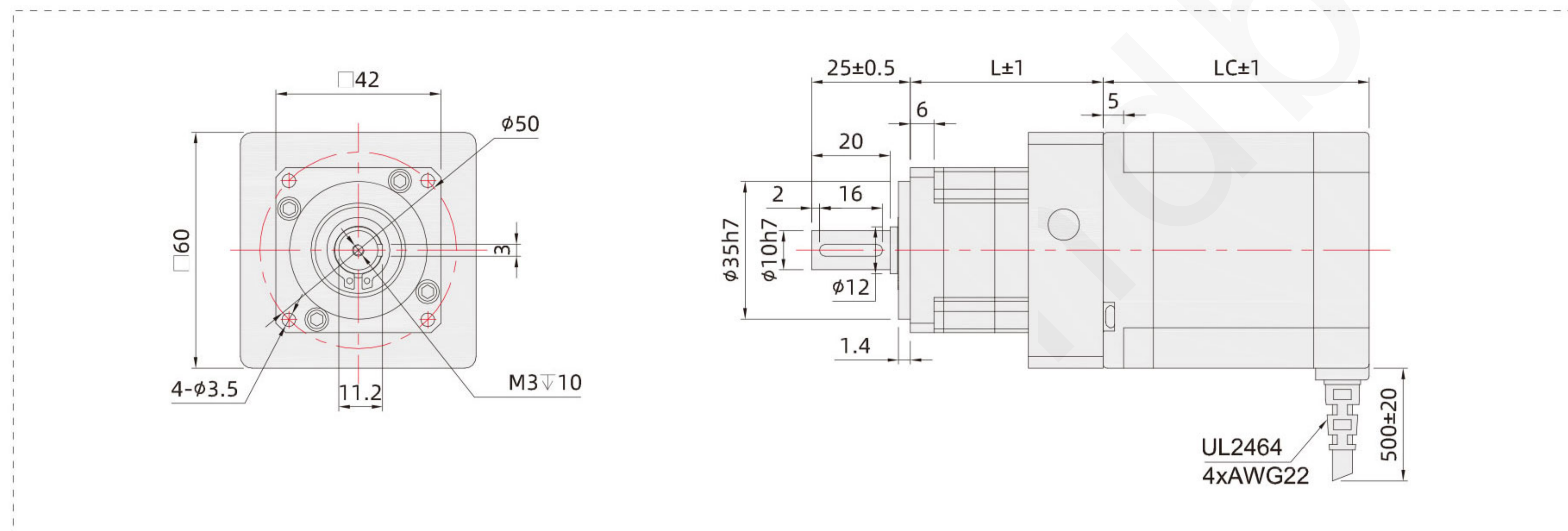
Note: For product curves and unlisted parameters, please refer to page 10.

☒ Customization needs such as wire specifications, motor length, wiring methods, etc. are provided. Please consult Handebao Motor sales staff or contact authorized Handebao Motor agents.

When selecting a planetary reduction stepper motor, the rated output torque of the reducer and the motor torque-frequency characteristic curve should be checked to ensure they meet the usage requirements and transmission efficiency. It is recommended that the input speed be less than 800 rpm, and the final torque should be less than the rated torque to avoid reducing the lifespan of the reducer.

Parameter	Reduction Ratio															
	3	4	5	7	8	10	12	16	20	25	28	35	40	50	70	100
Rated Output Torque N·m	○	9	8	7	○	5	○	12	11	9	10	9	9	8	7	○
Efficiency (%)	96%								94%							
Backlash (arcmin)	≤15								≤20							
Input Speed (rpm)	≤1000								≤1000							
Motor Length L / Weight	L=35(mm)/0.25(kg)								L=46(mm)/0.35(kg)							
Radial Force (N)	300															
Axial Force (N)	100															
Maximum Allowable Output Torque	1.6 times rated torque															

☒ For customization requirements, shaft specifications, positioning bosses, etc., please consult Handebao Motor sales staff or contact authorized Handebao Motor agents.



Planetary gear reduction stepper motor

**57mm** Two-phase planetary gear reduction stepper motor **PLF Series**



- Product Features:**
- Output end connected by square flange, standardized installation dimensions, strong versatility.
  - Single cantilever structure, simple design, excellent cost performance.
  - Steel gear structure runs smoothly, low noise, long service life.
  - Short delivery time, superior to similar products on the market in the same price range.

The image is for reference only; please refer to the actual product!

**Technical Parameters**

Stepper motors are not constant torque motors; the higher the running speed, the smaller the output torque. Therefore, when paying attention to the holding torque parameter of the motor, one should also focus on the output torque of the motor at the actual working speed (refer to the dynamic torque curve). We recommend reserving a 1.5 times margin to avoid step loss of the stepper motor under overload conditions.

Model (MODEL)	Step Angle	Holding Torque (N·m)	Rated Current (A)	Length LC (mm)	Motor Weight (kg)	Operating Voltage Range (Recommended Model)
SM2302PLF-□□	1.8°	1.41	3.5	56.0	0.58	S-245D 24~48VDC
SM2304PLF-□□	1.8°	2.44	4.2	80.0	1.11	

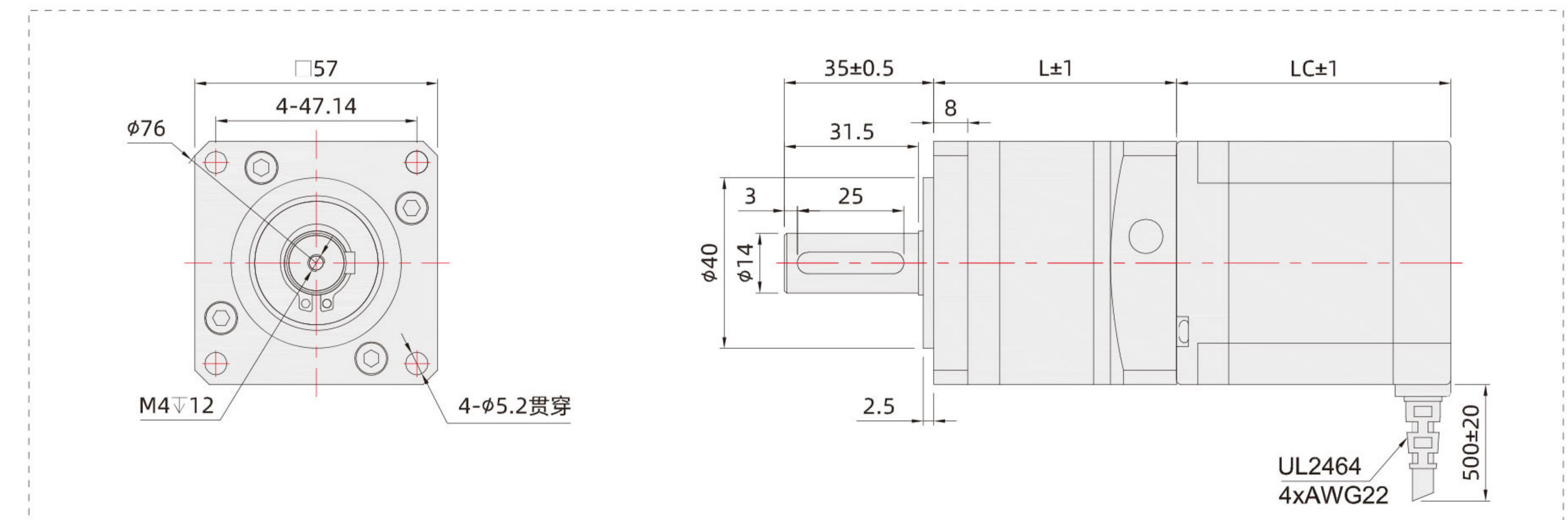
Note: For product curves and unlisted parameters, please refer to page 10.

☒ Customization needs such as wire specifications, motor length, wiring methods, etc. are provided. Please consult Handebao Motor sales staff or contact authorized Handebao Motor agents.

When selecting a planetary reduction stepper motor, the rated output torque of the reducer and the motor torque-frequency characteristic curve should be checked to ensure they meet the usage requirements and transmission efficiency. It is recommended that the input speed be less than 800 rpm, and the final torque should be less than the rated torque to avoid reducing the lifespan of the reducer.

Parameter	Reduction Ratio															
	3	4	5	7	8	10	12	16	20	25	28	35	40	50	70	100
Rated Output Torque N·m	○	24	26	19	○	10	○	28	28	30	28	30	28	30	20	○
Efficiency (%)	96%								94%							
Backlash (arcmin)	≤15								≤20							
Input Speed (rpm)	≤1500								≤1500							
Motor Length L / Weight	L=57.5(mm)/1.0(kg)								L=73.5(mm)/1.2(kg)							
Radial Force (N)	400															
Axial Force (N)	200															
Maximum Allowable Output Torque	1.6 times rated torque															

☒ For customization requirements, shaft specifications, positioning bosses, etc., please consult Handebao Motor sales staff or contact authorized Handebao Motor agents.



Planetary gear reduction stepper motor

**59mm** Two-phase planetary gear reduction stepper motor **PF Series**



The image is for reference only; please refer to the actual product!

**Product Features:**

- Single cantilever structure, simple design, excellent cost performance.
- Smooth operation, low noise.
- Accuracy of 8-16 arc minutes, suitable for the vast majority of applications.

**Technical Parameters**

Stepper motors are not constant torque motors; the higher the running speed, the smaller the output torque. Therefore, when paying attention to the holding torque parameter of the motor, one should also focus on the output torque of the motor at the actual working speed (refer to the dynamic torque curve). We recommend reserving a 1.5 times margin to avoid step loss of the stepper motor under overload conditions.

Model (MODEL)	Step Angle	Holding Torque (N·m)	Rated Current (A)	Length LC (mm)	Motor Weight (kg)	Operating Voltage Range (Recommended Model)
SMH2402PF-□□	1.8°	1.5	4.0	56.0	0.8	S-266D 24~60VDC ASA872R 24~80VAC
SMH2403PF-□□	1.8°	2.1	4.0	68.0	1.0	
SMH2404PF-□□	1.8°	3.2	5.0	85.0	1.3	

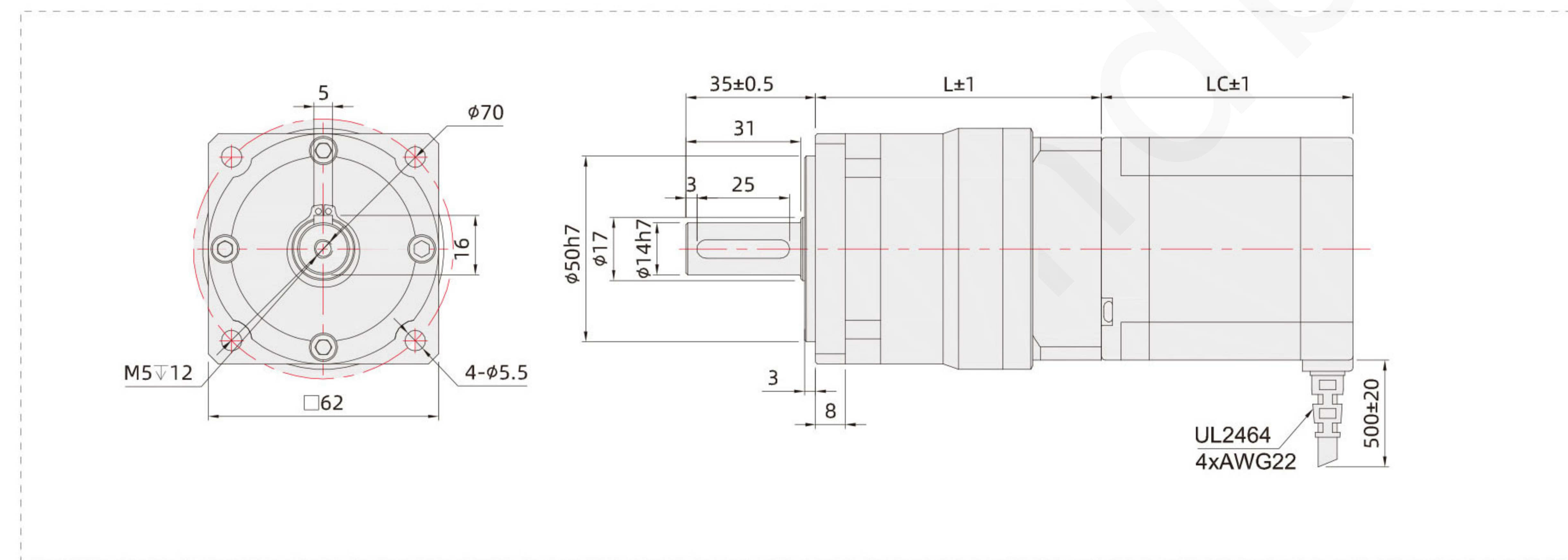
Note: For product curves and unlisted parameters, please refer to page 11.

☒ Customization needs such as wire specifications, motor length, wiring methods, etc. are provided. Please consult Handebao Motor sales staff or contact authorized Handebao Motor agents.

When selecting a planetary reduction stepper motor, the rated output torque of the reducer and the motor torque-frequency characteristic curve should be checked to ensure they meet the usage requirements and transmission efficiency. It is recommended that the input speed be less than 800 rpm, and the final torque should be less than the rated torque to avoid reducing the lifespan of the reducer.

Reduction Ratio	3	4	5	7	8	10	12	16	20	25	28	35	40	50	70	100
Parameter	15	25	27	19	19	12	28	29	29	31	29	31	29	31	22	○
Rated Output Torque N·m	96%						94%									
Efficiency (%)	≤8						≤10									
Backlash (arcmin)	≤3000						≤3000									
Input Speed (rpm)	L=77.5(mm)/0.25(kg)						L=93.5(mm)/0.35(kg)									
Motor Length L / Weight	400						300									
Radial Force (N)	2 times rated torque						2 times rated torque									
Axial Force (N)																
Maximum Allowable Output Torque																

☒ For customization requirements, shaft specifications, positioning bosses, etc., please consult Handebao Motor sales staff or contact authorized Handebao Motor agents.



**59mm** Two-phase planetary gear reduction stepper motor **PZF Series**



The image is for reference only; please refer to the actual product!

**Product Features:**

- Equipped with a bevel gear reversing mechanism, enabling right-angle output and greatly saving space.
- Simple design, reliable performance, excellent cost performance.
- Bevel gears undergo carburizing treatment, hardness reaches HRC58, with excellent wear resistance.
- Compact structure, large torque transmission on the hardened tooth surface, high precision, and stable operation.

**Technical Parameters**

Stepper motors are not constant torque motors; the higher the running speed, the smaller the output torque. Therefore, when paying attention to the holding torque parameter of the motor, one should also focus on the output torque of the motor at the actual working speed (refer to the dynamic torque curve). We recommend reserving a 1.5 times margin to avoid step loss of the stepper motor under overload conditions.

Model (MODEL)	Step Angle	Holding Torque (N·m)	Rated Current (A)	Length LC (mm)	Motor Weight (kg)	Operating Voltage Range (Recommended Model)
SMH2402PZF-□□	1.8°	1.5	4.0	56.0	0.8	S-266D 24~60VDC ASA872R 24~80VAC
SMH2403PZF-□□	1.8°	2.1	4.0	68.0	1.0	
SMH2404PZF-□□	1.8°	3.2	5.0	85.0	1.3	

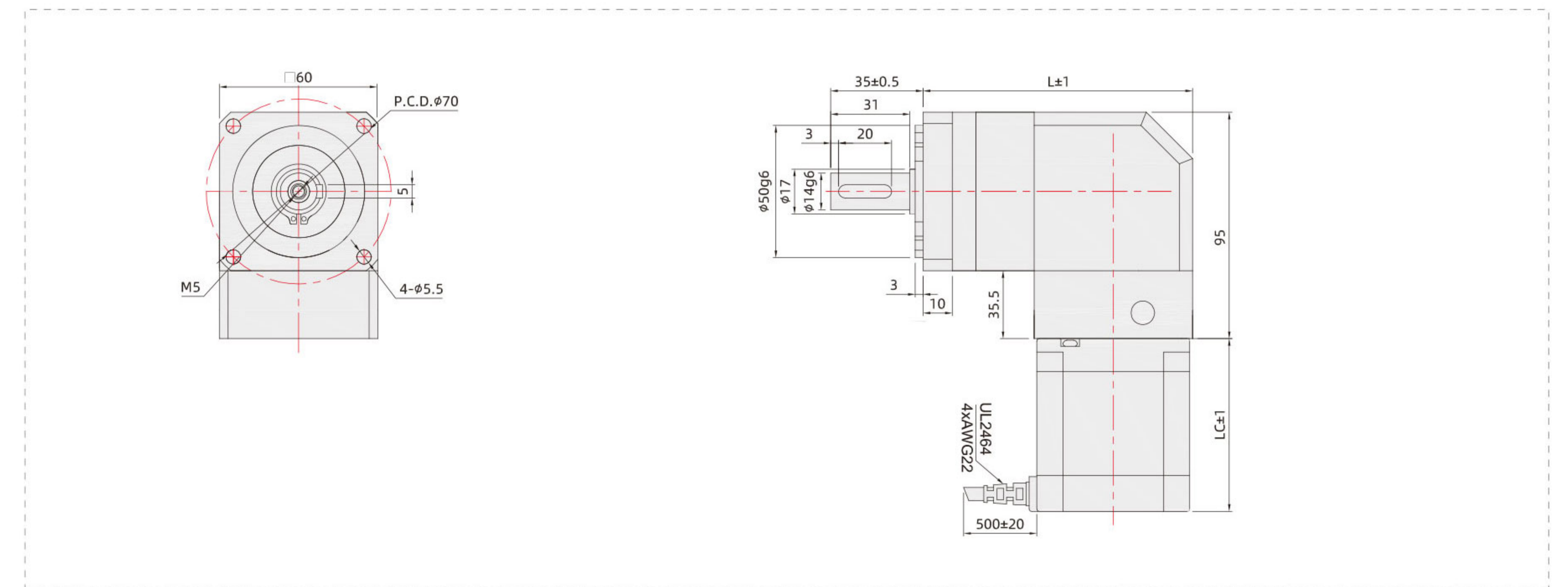
Note: For product curves and unlisted parameters, please refer to page 11.

☒ Customization needs such as wire specifications, motor length, wiring methods, etc. are provided. Please consult Handebao Motor sales staff or contact authorized Handebao Motor agents.

When selecting a planetary reduction stepper motor, the rated output torque of the reducer and the motor torque-frequency characteristic curve should be checked to ensure they meet the usage requirements and transmission efficiency. It is recommended that the input speed be less than 800 rpm, and the final torque should be less than the rated torque to avoid reducing the lifespan of the reducer.

Reduction Ratio	3	4	5	7	8	10	12	15	20	25	30	35	40	50	70	100
Parameter	22	34	35	27	○	16	28	28	35	37	25	35	35	37	30	16
Rated Output Torque N·m	96%						94%									
Efficiency (%)	≤8						≤12									
Backlash (arcmin)	≤1500						≤1500									
Input Speed (rpm)	L=105.5(mm)/1.1(kg)						L=121.5(mm)/1.5(kg)									
Motor Length L / Weight	240						220									
Radial Force (N)	2.0 times rated torque						2.0 times rated torque									
Axial Force (N)																
Maximum Allowable Output Torque																

☒ For customization requirements, shaft specifications, positioning bosses, etc., please consult Handebao Motor sales staff or contact authorized Handebao Motor agents.



# 59mm Two-phase planetary gear reduction stepper motor PT Series



The image is for reference only; please refer to the actual product!

### Product Features:

- Unique flange disc output, providing greater installation flexibility.
- Shorter body size, requiring less installation space.
- Low backlash, more accurate positioning.
- Double-support cage-type planetary gear structure, high reliability, suitable for frequent forward and reverse rotation.
- The rotating frame is equipped with round roller bearings, meeting heavy-duty requirements.

## Technical Parameters

Stepper motors are not constant torque motors; the higher the running speed, the smaller the output torque. Therefore, when paying attention to the holding torque parameter of the motor, one should also focus on the output torque of the motor at the actual working speed (refer to the dynamic torque curve). We recommend reserving a 1.5 times margin to avoid step loss of the stepper motor under overload conditions.

Model (MODEL)	Step Angle	Holding Torque (N·m)	Rated Current (A)	Length LC (mm)	Motor Weight (kg)	Operating Voltage Range (Recommended Model)
SMH2402PT-□□	1.8°	1.5	4.0	56.0	0.8	S-266D ASA872R 24~60VDC 24~80VAC
SMH2403PT-□□	1.8°	2.1	4.0	68.0	1.0	
SMH2404PT-□□	1.8°	3.2	5.0	85.0	1.3	

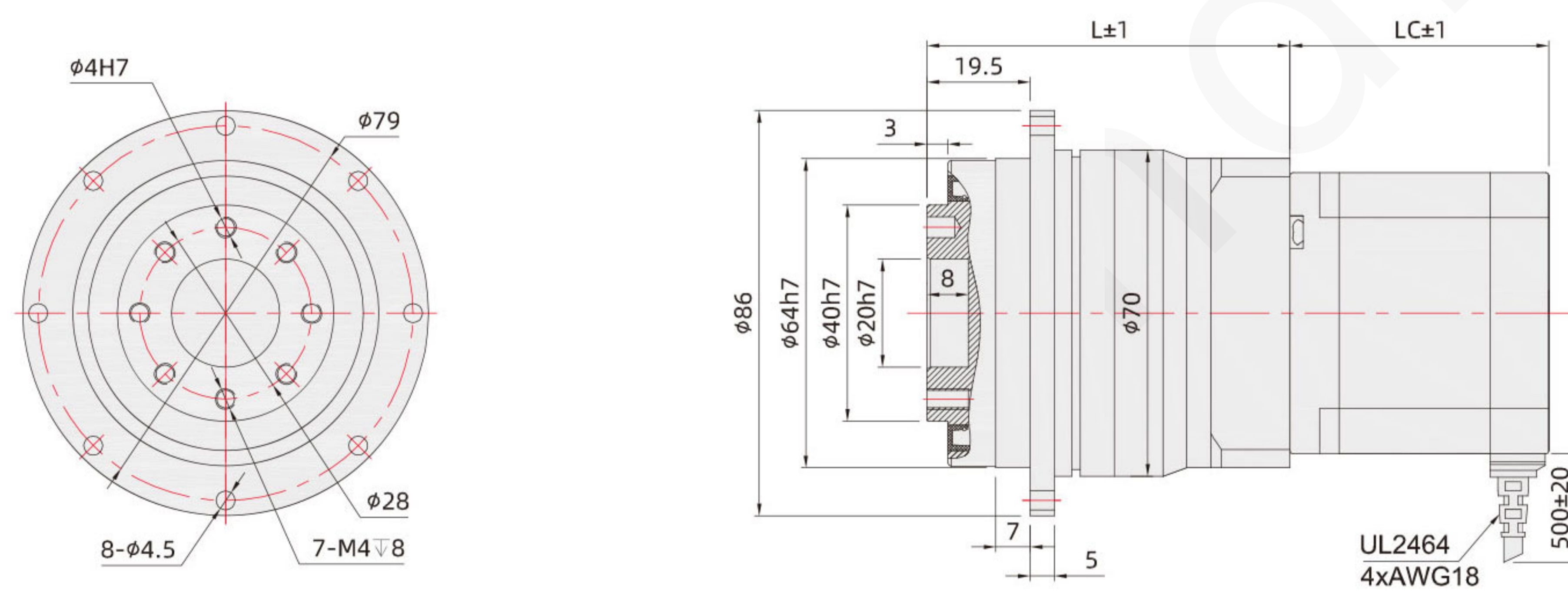
Note: For product curves and unlisted parameters, please refer to page 11.

☒ Customization needs such as wire specifications, motor length, wiring methods, etc. are provided. Please consult Handebao Motor sales staff or contact authorized Handebao Motor agents.

When selecting a planetary reduction stepper motor, the rated output torque of the reducer and the motor torque-frequency characteristic curve should be checked to ensure they meet the usage requirements and transmission efficiency. It is recommended that the input speed be less than 800 rpm, and the final torque should be less than the rated torque to avoid reducing the lifespan of the reducer.

Parameter	Reduction Ratio															
	3	4	5	7	8	10	12	16	20	25	28	35	40	50	70	100
Rated Output Torque N·m	○	25	27	19	○	12	28	29	29	31	29	31	29	31	22	○
Efficiency (%)	96%								94%							
Backlash (arcmin)	≤8								≤10							
Input Speed (rpm)	≤3000								≤3000							
Motor Length L / Weight	L=99.5(mm)/1.8(kg)								L=115.5(mm)/2.1(kg)							
Radial Force (N)	1825															
Axial Force (N)	2250															
Maximum Allowable Output Torque	2 times rated torque															

☒ For customization requirements, shaft specifications, positioning bosses, etc., please consult Handebao Motor sales staff or contact authorized Handebao Motor agents.



# 59mm Two-phase planetary gear reduction stepper motor PZT Series



The image is for reference only; please refer to the actual product!

### Product Features:

- Unique flange disc output, providing greater installation flexibility.
- Shorter body size, requiring less installation space.
- Low backlash, more accurate positioning.
- Double-support cage-type planetary gear structure, high reliability, suitable for frequent forward and reverse rotation.
- The rotating frame is equipped with round roller bearings, meeting heavy-duty requirements.

## Technical Parameters

Stepper motors are not constant torque motors; the higher the running speed, the smaller the output torque. Therefore, when paying attention to the holding torque parameter of the motor, one should also focus on the output torque of the motor at the actual working speed (refer to the dynamic torque curve). We recommend reserving a 1.5 times margin to avoid step loss of the stepper motor under overload conditions.

Model (MODEL)	Step Angle	Holding Torque (N·m)	Rated Current (A)	Length LC (mm)	Motor Weight (kg)	Operating Voltage Range (Recommended Model)
SMH2402PZT-□□	1.8°	1.5	4.0	56.0	0.8	S-266D 24~60VDC ASA872R 24~80VAC
SMH2403PZT-□□	1.8°	2.1	4.0	68.0	1.0	
SMH2404PZT-□□	1.8°	3.2	5.0	85.0	1.3	

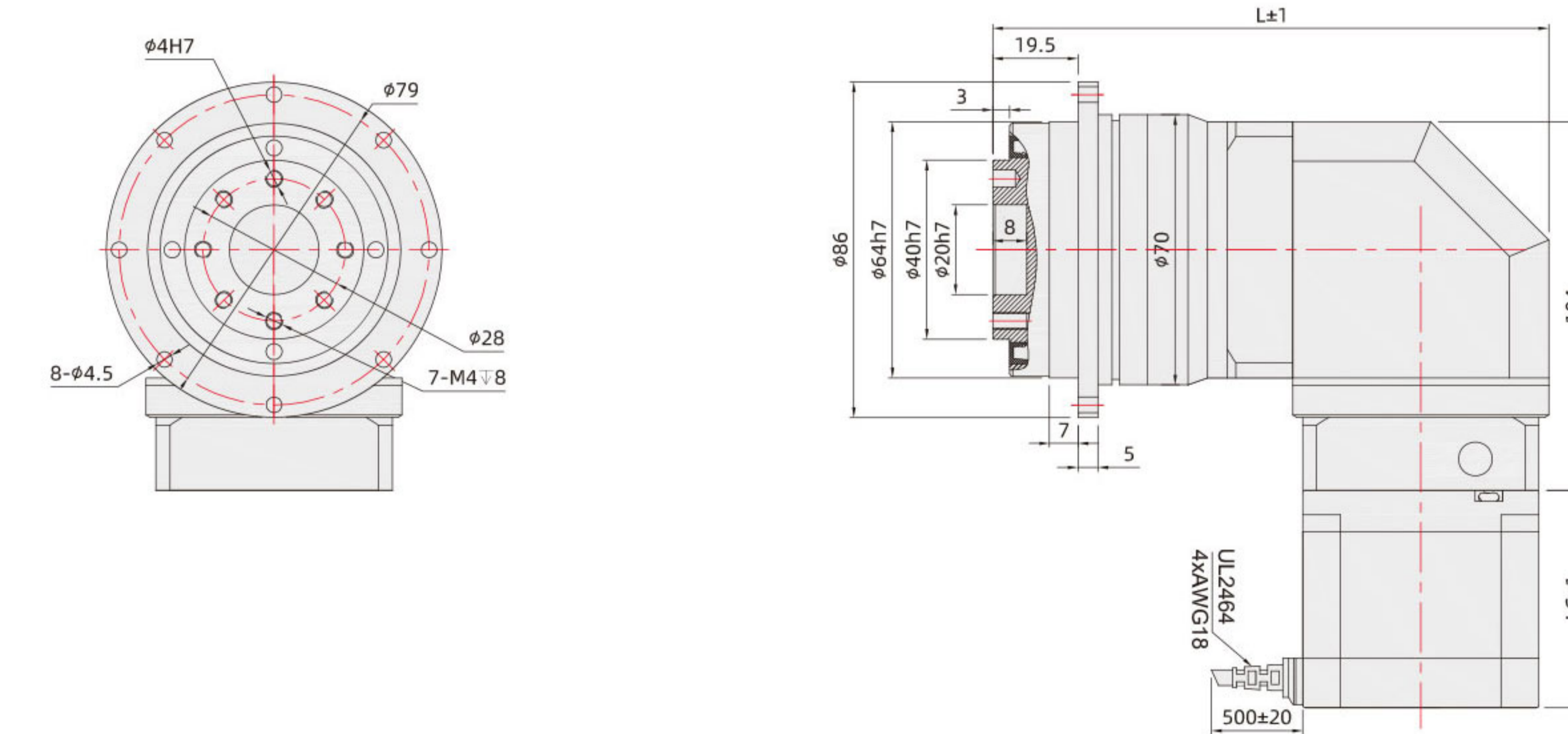
Note: For product curves and unlisted parameters, please refer to page 11.

☒ Customization needs such as wire specifications, motor length, wiring methods, etc. are provided. Please consult Handebao Motor sales staff or contact authorized Handebao Motor agents.

When selecting a planetary reduction stepper motor, the rated output torque of the reducer and the motor torque-frequency characteristic curve should be checked to ensure they meet the usage requirements and transmission efficiency. It is recommended that the input speed be less than 800 rpm, and the final torque should be less than the rated torque to avoid reducing the lifespan of the reducer.

Parameter	Reduction Ratio															
	3	4	5	7	8	10	12	16	20	25	28	35	40	50	70	100
Rated Output Torque N·m	○	25	27	19	○	12	28	29	29	31	29	31	29	31	22	○
Efficiency (%)	94%								92%							
Backlash (arcmin)	≤8								≤10							
Input Speed (rpm)	≤3000								≤3000							
Motor Length L / Weight	L=123.5(mm)/2.0(kg)								L=139.5(mm)/2.3(kg)							
Radial Force (N)	1825															
Axial Force (N)	2250															
Maximum Allowable Output Torque	2 times rated torque															

☒ For customization requirements, shaft specifications, positioning bosses, etc., please consult Handebao Motor sales staff or contact authorized Handebao Motor agents.



**86mm** Two-phase planetary gear reduction stepper motor **PF60 Series**



The image is for reference only; please refer to the actual product!

**Product Features:**

- Single cantilever structure, simple design, excellent cost performance.
- Smooth operation, low noise.
- Accuracy of 8-16 arc minutes, suitable for the vast majority of applications.

**Technical Parameters**

Stepper motors are not constant torque motors; the higher the running speed, the smaller the output torque. Therefore, when paying attention to the holding torque parameter of the motor, one should also focus on the output torque of the motor at the actual working speed (refer to the dynamic torque curve). We recommend reserving a 1.5 times margin to avoid step loss of the stepper motor under overload conditions.

Model (MODEL)	Step Angle	Holding Torque (N·m)	Rated Current (A)	Length LC (mm)	Motor Weight (kg)	Operating Voltage Range (Recommended Model)
SM3401PF60-□□	1.8°	3.4	4.5	67.0	1.8	S-266D ASA872R 24~60VDC 24~80VAC
SM3402PF60-□□	1.8°	4.5	4.5	80.0	2.1	

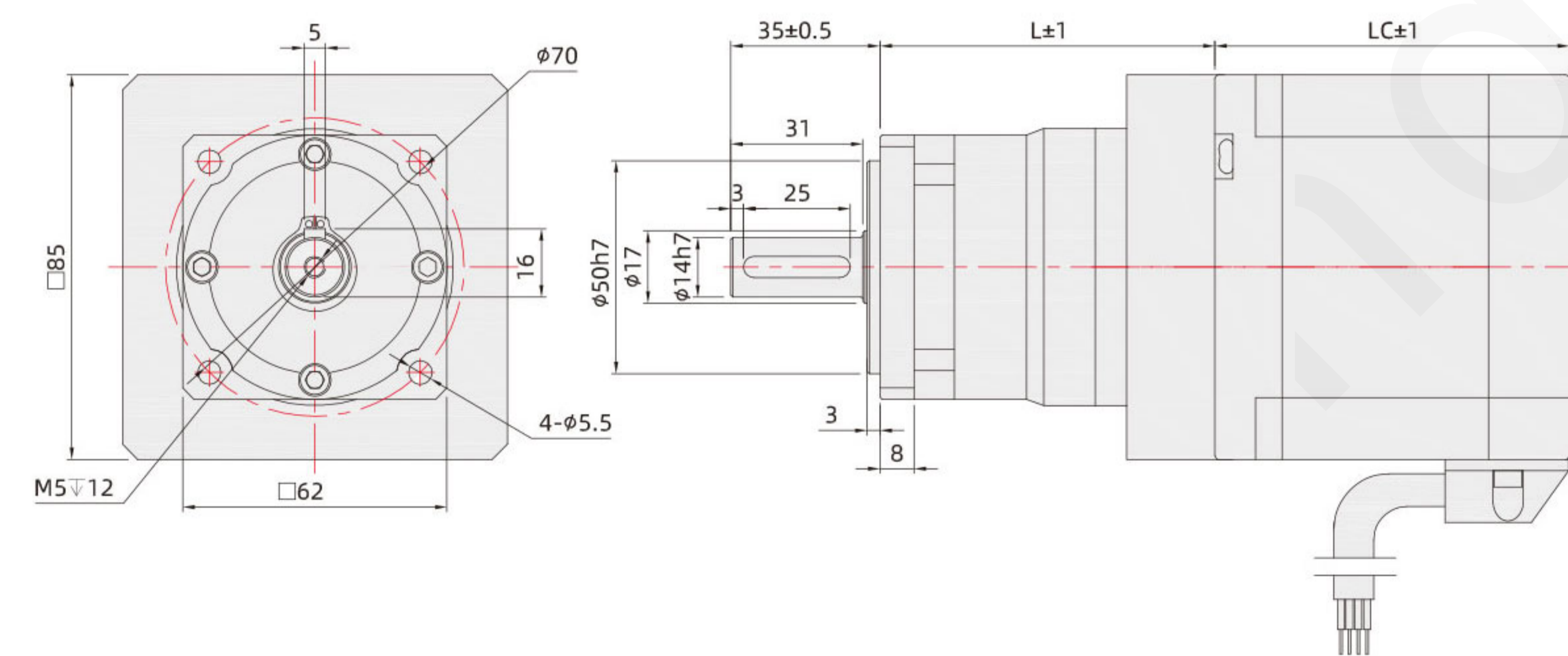
Note: For product curves and unlisted parameters, please refer to page 14.

☒ Customization needs such as wire specifications, motor length, wiring methods, etc. are provided. Please consult Handebao Motor sales staff or contact authorized Handebao Motor agents.

When selecting a planetary reduction stepper motor, the rated output torque of the reducer and the motor torque-frequency characteristic curve should be checked to ensure they meet the usage requirements and transmission efficiency. It is recommended that the input speed be less than 800 rpm, and the final torque should be less than the rated torque to avoid reducing the lifespan of the reducer.

Parameter	Reduction Ratio															
	3	4	5	7	8	10	12	16	20	25	28	35	40	50	70	100
Rated Output Torque N·m	15	25	27	19	19	12	28	29	29	31	29	31	29	31	22	○
Efficiency (%)	96%								94%							
Backlash (arcmin)	≤8								≤10							
Input Speed (rpm)	≤3000								≤3000							
Motor Length L / Weight	L=82.5(mm)/1.1(kg)								L=98.5(mm)/1.4(kg)							
Radial Force (N)	400															
Axial Force (N)	300															
Maximum Allowable Output Torque	2 times rated torque															

☒ For customization requirements, shaft specifications, positioning bosses, etc., please consult Handebao Motor sales staff or contact authorized Handebao Motor agents.



Planetary gear reduction stepper motor

**86mm** Two-phase planetary gear reduction stepper motor **PF Series**



The image is for reference only; please refer to the actual product!

**Product Features:**

- Single cantilever structure, simple design, excellent cost performance.
- Smooth operation, low noise.
- Accuracy of 8-16 arc minutes, suitable for the vast majority of applications.

**Technical Parameters**

Stepper motors are not constant torque motors; the higher the running speed, the smaller the output torque. Therefore, when paying attention to the holding torque parameter of the motor, one should also focus on the output torque of the motor at the actual working speed (refer to the dynamic torque curve). We recommend reserving a 1.5 times margin to avoid step loss of the stepper motor under overload conditions.

Model (MODEL)	Step Angle	Holding Torque (N·m)	Rated Current (A)	Length LC (mm)	Motor Weight (kg)	Operating Voltage Range (Recommended Model)
SM3403PF-□□	1.8°	8.5	6.0	118.0	3.6	S-266D ASA872R 24~60VDC 24~80VAC
SM3404PF-□□	1.8°	12.0	7.0	156.0	5.0	

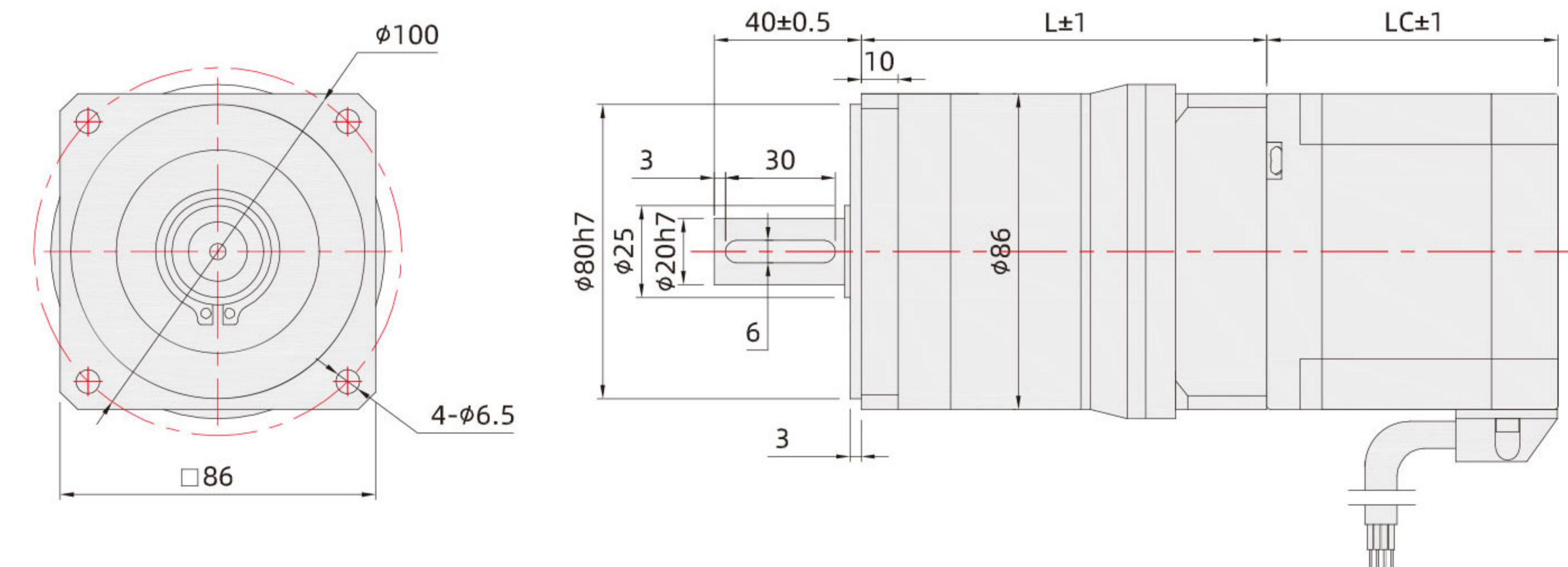
Note: For product curves and unlisted parameters, please refer to page 14.

☒ Customization needs such as wire specifications, motor length, wiring methods, etc. are provided. Please consult Handebao Motor sales staff or contact authorized Handebao Motor agents.

When selecting a planetary reduction stepper motor, the rated output torque of the reducer and the motor torque-frequency characteristic curve should be checked to ensure they meet the usage requirements and transmission efficiency. It is recommended that the input speed be less than 800 rpm, and the final torque should be less than the rated torque to avoid reducing the lifespan of the reducer.

Parameter	Reduction Ratio															
	3	4	5	7	8	10	12	16	20	25	28	35	40	50	70	100
Rated Output Torque N·m	60	88	95	66	66	40	98	98	98	105	98	105	98	105	75	○
Efficiency (%)	94%								92%							
Backlash (arcmin)	≤8								≤10							
Input Speed (rpm)	≤3000								≤3000							
Motor Length L / Weight	L=110.5(mm)/2.7(kg)								L=134.5(mm)/3.3(kg)							
Radial Force (N)	650															
Axial Force (N)	550															
Maximum Allowable Output Torque	2 times rated torque															

☒ For customization requirements, shaft specifications, positioning bosses, etc., please consult Handebao Motor sales staff or contact authorized Handebao Motor agents.



Planetary gear reduction stepper motor

**86mm** Two-phase planetary gear reduction stepper motor **PZF60 Series**



- Product Features:**
- Equipped with a bevel gear reversing mechanism, enabling right-angle output and greatly saving space.
  - Compact structure, large torque transmission on hardened tooth surface, high precision, and stable operation.
  - High-quality ground gears, transmission efficiency over 90%.
  - Bevel gears undergo carburizing treatment, hardness reaches HRC58, with excellent wear resistance.

The image is for reference only; please refer to the actual product!

**Technical Parameters**

Stepper motors are not constant torque motors; the higher the running speed, the smaller the output torque. Therefore, when paying attention to the holding torque parameter of the motor, one should also focus on the output torque of the motor at the actual working speed (refer to the dynamic torque curve). We recommend reserving a 1.5 times margin to avoid step loss of the stepper motor under overload conditions.

Model (MODEL)	Step Angle	Holding Torque (N-m)	Rated Current (A)	Length LC (mm)	Motor Weight (kg)	Operating Voltage Range (Recommended Model)
SM3401PZF60-□□	1.8°	3.4	4.5	67.0	1.8	S-266D ASA872R 24~60VDC 24~80VAC
SM3402PZF60-□□	1.8°	4.5	4.5	80.0	2.1	

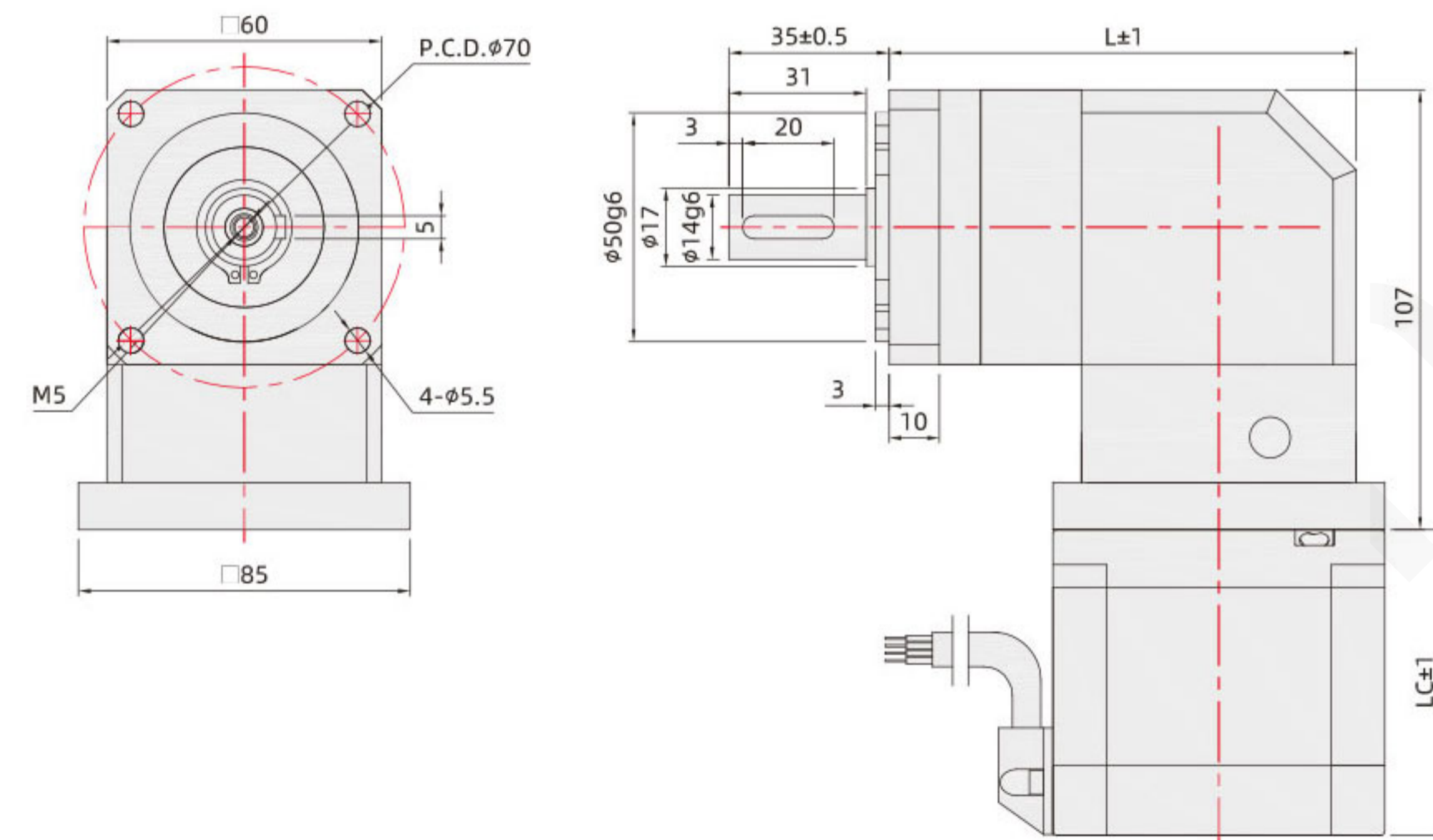
Note: For product curves and unlisted parameters, please refer to page 14.

☒ Customization needs such as wire specifications, motor length, wiring methods, etc. are provided. Please consult Handebao Motor sales staff or contact authorized Handebao Motor agents.

When selecting a planetary reduction stepper motor, the rated output torque of the reducer and the motor torque-frequency characteristic curve should be checked to ensure they meet the usage requirements and transmission efficiency. It is recommended that the input speed be less than 800 rpm, and the final torque should be less than the rated torque to avoid reducing the lifespan of the reducer.

Parameter	Reduction Ratio															
	3	4	5	7	8	10	12	16	20	25	28	35	40	50	70	100
Rated Output Torque N-m	15	25	27	19	19	12	28	29	29	31	29	31	29	31	22	○
Efficiency (%)	96%								94%							
Backlash (arcmin)	≤8								≤10							
Input Speed (rpm)	≤3000								≤3000							
Motor Length L / Weight	L=105.5(mm)/1.7(kg)								L=121.5(mm)/1.9(kg)							
Radial Force (N)	400															
Axial Force (N)	300															
Maximum Allowable Output Torque	2 times rated torque															

☒ For customization requirements, shaft specifications, positioning bosses, etc., please consult Handebao Motor sales staff or contact authorized Handebao Motor agents.



Planetary gear reduction stepper motor

**86mm** Two-phase planetary gear reduction stepper motor **PZF Series**



- Product Features:**
- Equipped with a bevel gear reversing mechanism, enabling right-angle output and greatly saving space.
  - Compact structure, large torque transmission on hardened tooth surface, high precision, and stable operation.
  - High-quality ground gears, transmission efficiency over 90%.
  - Bevel gears undergo carburizing treatment, hardness reaches HRC58, with excellent wear resistance.

The image is for reference only; please refer to the actual product!

**Technical Parameters**

Stepper motors are not constant torque motors; the higher the running speed, the smaller the output torque. Therefore, when paying attention to the holding torque parameter of the motor, one should also focus on the output torque of the motor at the actual working speed (refer to the dynamic torque curve). We recommend reserving a 1.5 times margin to avoid step loss of the stepper motor under overload conditions.

Model (MODEL)	Step Angle	Holding Torque (N-m)	Rated Current (A)	Length LC (mm)	Motor Weight (kg)	Operating Voltage Range (Recommended Model)
SM3403PZF-□□	1.8°	8.5	6.0	118.0	3.6	S-266D ASA872R 24~60VDC 24~80VAC
SM3404PZF-□□	1.8°	12.0	7.0	156.0	5.0	

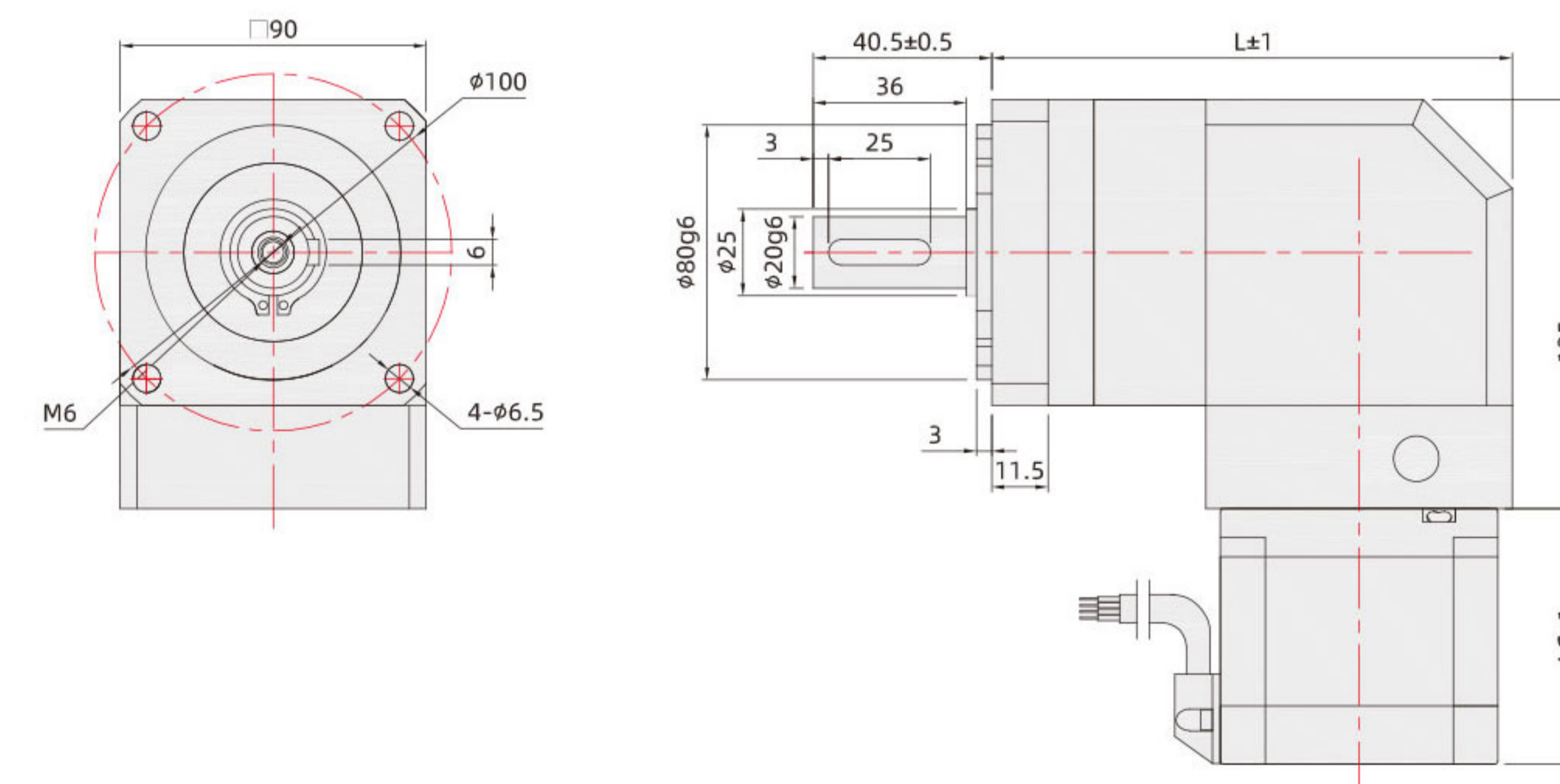
Note: For product curves and unlisted parameters, please refer to page 14.

☒ Customization needs such as wire specifications, motor length, wiring methods, etc. are provided. Please consult Handebao Motor sales staff or contact authorized Handebao Motor agents.

When selecting a planetary reduction stepper motor, the rated output torque of the reducer and the motor torque-frequency characteristic curve should be checked to ensure they meet the usage requirements and transmission efficiency. It is recommended that the input speed be less than 800 rpm, and the final torque should be less than the rated torque to avoid reducing the lifespan of the reducer.

Parameter	Reduction Ratio															
	3	4	5	7	8	10	12	16	20	25	28	35	40	50	70	100
Rated Output Torque N-m	60	88	95	66	66	40	98	98	98	105	98	105	98	105	75	○
Efficiency (%)	94%								92%							
Backlash (arcmin)	≤8								≤10							
Input Speed (rpm)	≤3000								≤3000							
Motor Length L / Weight	L=150.5(mm)/4.4(kg)								L=174.5(mm)/5.0(kg)							
Radial Force (N)	650															
Axial Force (N)	550															
Maximum Allowable Output Torque	2 times rated torque															

☒ For customization requirements, shaft specifications, positioning bosses, etc., please consult Handebao Motor sales staff or contact authorized Handebao Motor agents.



Planetary gear reduction stepper motor

**86mm** Two-phase planetary gear reduction stepper motor **PT Series**



The image is for reference only, please refer to the actual product!

**Product Features:**

- Unique flange disc output method, with extremely high axial and radial load capacity.
- Shorter body size, requiring less installation space.
- Low backlash, more precise positioning.
- Double-support cage-type planetary gear structure, high reliability, suitable for frequent reverse rotation.

**Technical Parameters**

Stepper motors are not constant torque motors; the higher the running speed, the smaller the output torque. Therefore, when paying attention to the holding torque parameter of the motor, one should also focus on the output torque of the motor at the actual working speed (refer to the dynamic torque curve). We recommend reserving a 1.5 times margin to avoid step loss of the stepper motor under overload conditions.

Model (MODEL)	Step Angle	Holding Torque (N-m)	Rated Current (A)	Length LC (mm)	Motor Weight (kg)	Operating Voltage Range (Recommended Model)
SM3403PT-□□	1.8°	8.5	6.0	118.0	3.6	S-266D ASA872R
SM3404PT-□□	1.8°	12.0	7.0	156.0	5.0	24~60VDC 24~80VAC

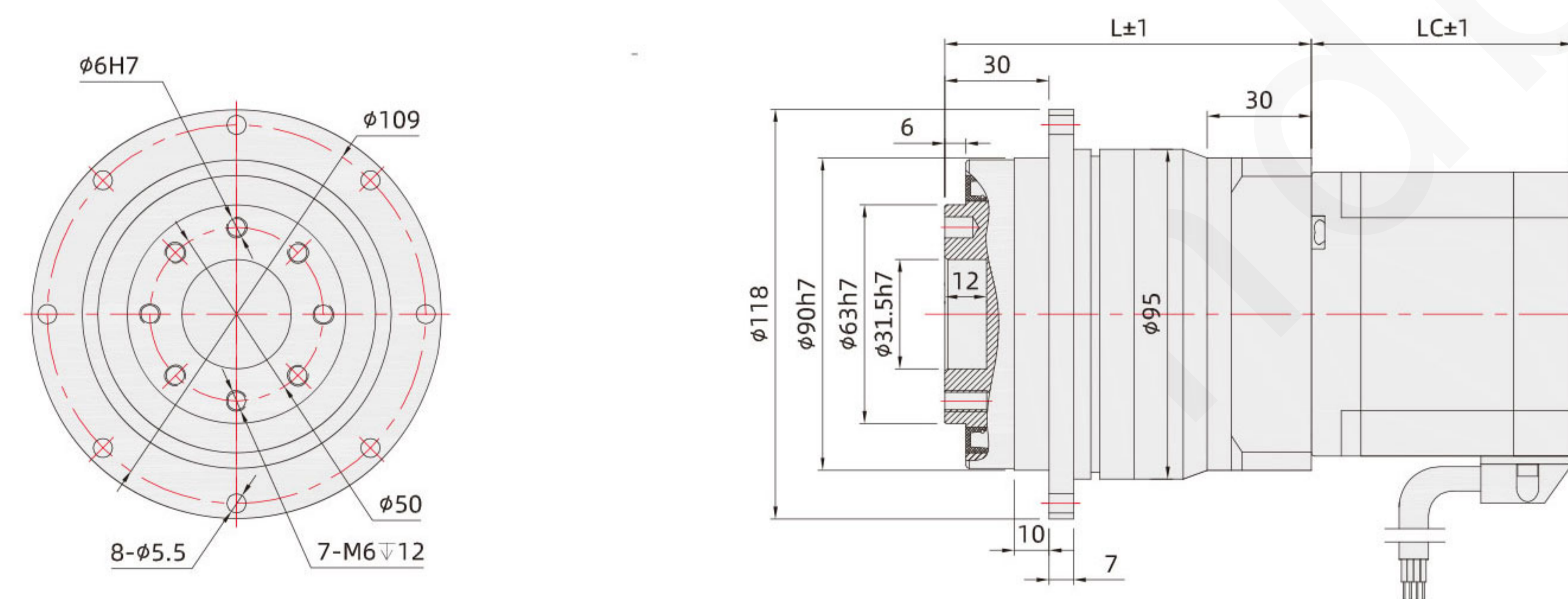
Note: For product curves and unlisted parameters, please refer to page 14.

☒ Customization needs such as wire specifications, motor length, wiring methods, etc. are provided. Please consult Handebao Motor sales staff or contact authorized Handebao Motor agents.

When selecting a planetary reduction stepper motor, the rated output torque of the reducer and the motor torque-frequency characteristic curve should be checked to ensure they meet the usage requirements and transmission efficiency. It is recommended that the input speed be less than 800 rpm, and the final torque should be less than the rated torque to avoid reducing the lifespan of the reducer.

Parameter	Reduction Ratio															
	3	4	5	7	8	10	12	16	20	25	28	35	40	50	70	100
Rated Output Torque N-m	60	88	95	66	66	40	98	98	98	105	98	105	98	105	75	○
Efficiency (%)	96%								94%							
Backlash (arcmin)	≤8								≤10							
Input Speed (rpm)	≤3000								≤3000							
Motor Length L / Weight	L=108.5(mm)/3.2(kg)								L=133.5(mm)/3.8(kg)							
Radial Force (N)	1400															
Axial Force (N)	750															
Maximum Allowable Output Torque	2 times rated torque															

☒ For customization requirements, shaft specifications, positioning bosses, etc., please consult Handebao Motor sales staff or contact authorized Handebao Motor agents.



Planetary gear reduction stepper motor

**86mm** Two-phase planetary gear reduction stepper motor **PZT Series**



The image is for reference only, please refer to the actual product!

**Product Features:**

- Unique flange disc output method, with extremely high axial and radial load capacity.
- Shorter body size, requiring less installation space.
- Low backlash, more precise positioning.
- Double-support cage-type planetary gear structure, high reliability, suitable for frequent forward and reverse rotation.
- Equipped with a bevel gear reversing mechanism, enabling right-angle output.

**Technical Parameters**

Stepper motors are not constant torque motors; the higher the running speed, the smaller the output torque. Therefore, when paying attention to the holding torque parameter of the motor, one should also focus on the output torque of the motor at the actual working speed (refer to the dynamic torque curve). We recommend reserving a 1.5 times margin to avoid step loss of the stepper motor under overload conditions.

Model (MODEL)	Step Angle	Holding Torque (N-m)	Rated Current (A)	Length LC (mm)	Motor Weight (kg)	Operating Voltage Range (Recommended Model)
SM3403PZT-□□	1.8°	8.5	6.0	118.0	3.6	S-266D ASA872R
SM3404PZT-□□	1.8°	12.0	7.0	156.0	5.0	24~60VDC 24~80VAC

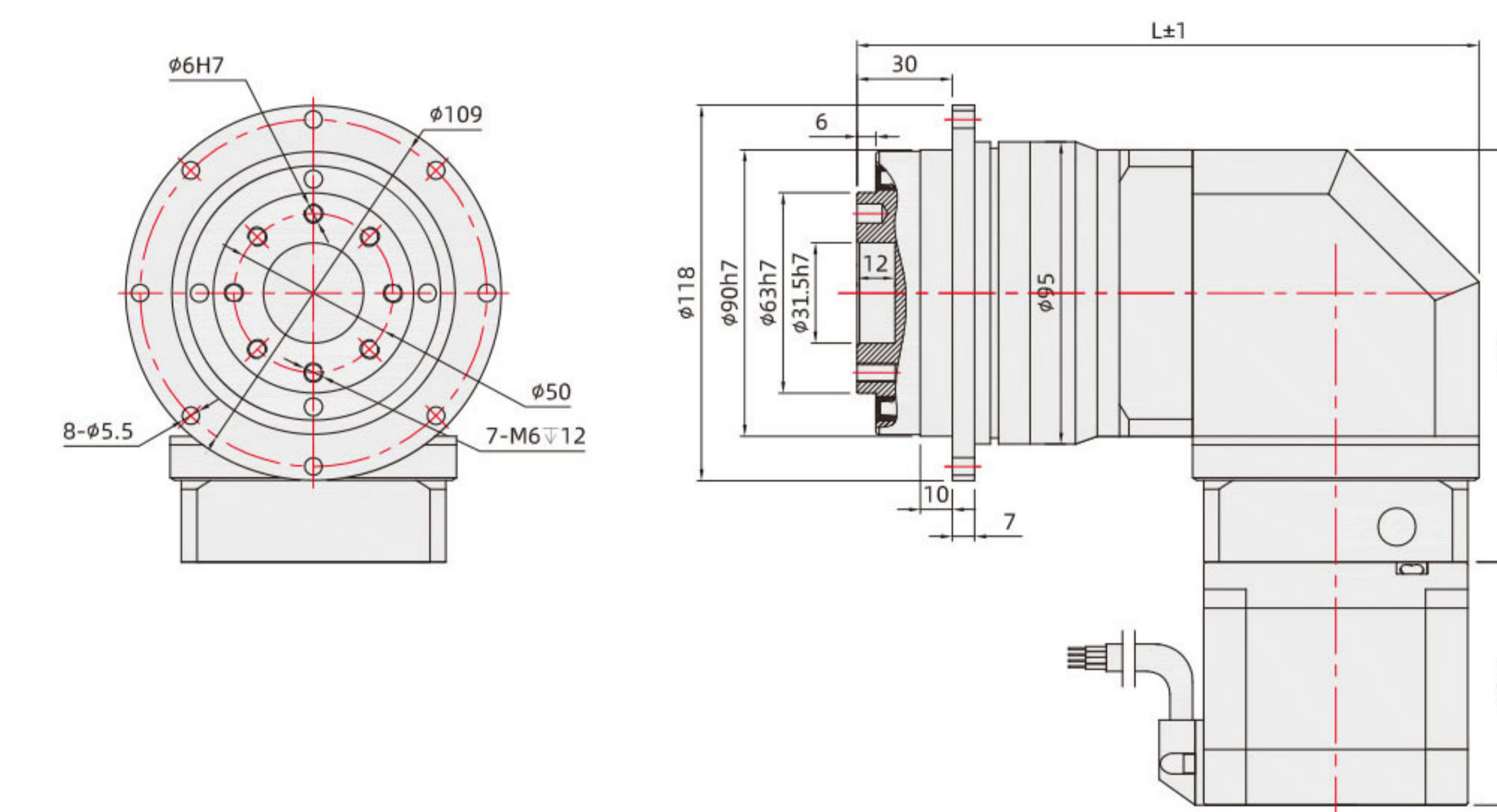
Note: For product curves and unlisted parameters, please refer to page 14.

☒ Customization needs such as wire specifications, motor length, wiring methods, etc. are provided. Please consult Handebao Motor sales staff or contact authorized Handebao Motor agents.

When selecting a planetary reduction stepper motor, the rated output torque of the reducer and the motor torque-frequency characteristic curve should be checked to ensure they meet the usage requirements and transmission efficiency. It is recommended that the input speed be less than 800 rpm, and the final torque should be less than the rated torque to avoid reducing the lifespan of the reducer.

Parameter	Reduction Ratio															
	3	4	5	7	8	10	12	16	20	25	28	35	40	50	70	100
Rated Output Torque N-m	60	88	95	66	66	40	98	98	98	105	98	105	98	105	75	○
Efficiency (%)	96%								94%							
Backlash (arcmin)	≤10								≤12							
Input Speed (rpm)	≤3000								≤3000							
Motor Length L / Weight	L=108.5(mm)/3.2(kg)								L=133.5(mm)/3.8(kg)							
Radial Force (N)	1400															
Axial Force (N)	750															
Maximum Allowable Output Torque	2 times rated torque															

☒ For customization requirements, shaft specifications, positioning bosses, etc., please consult Handebao Motor sales staff or contact authorized Handebao Motor agents.



Planetary gear reduction stepper motor

# 110mm Two-phase planetary gear reduction stepper motor PF90 Series



The image is for reference only, please refer to the actual product!

### Product Features:

- Single cantilever structure, simple design, excellent cost performance.
- Smooth operation, low noise.
- Accuracy of 8-16 arc minutes, suitable for the vast majority of applications.

## Technical Parameters

Stepper motors are not constant torque motors; the higher the running speed, the smaller the output torque. Therefore, when paying attention to the holding torque parameter of the motor, one should also focus on the output torque of the motor at the actual working speed (refer to the dynamic torque curve). We recommend reserving a 1.5 times margin to avoid step loss of the stepper motor under overload conditions.

Model (MODEL)	Step Angle	Holding Torque (N·m)	Rated Current (A)	Length LC (mm)	Motor Weight (kg)	Operating Voltage Range (Recommended Model)
SMC4203PF90-□□	1.2°	8.0	4.3	185.0	8.5	CSH-2272R 110~245VAC
SMC4204PF90-□□	1.2°	12	6.0	219.0	10.7	

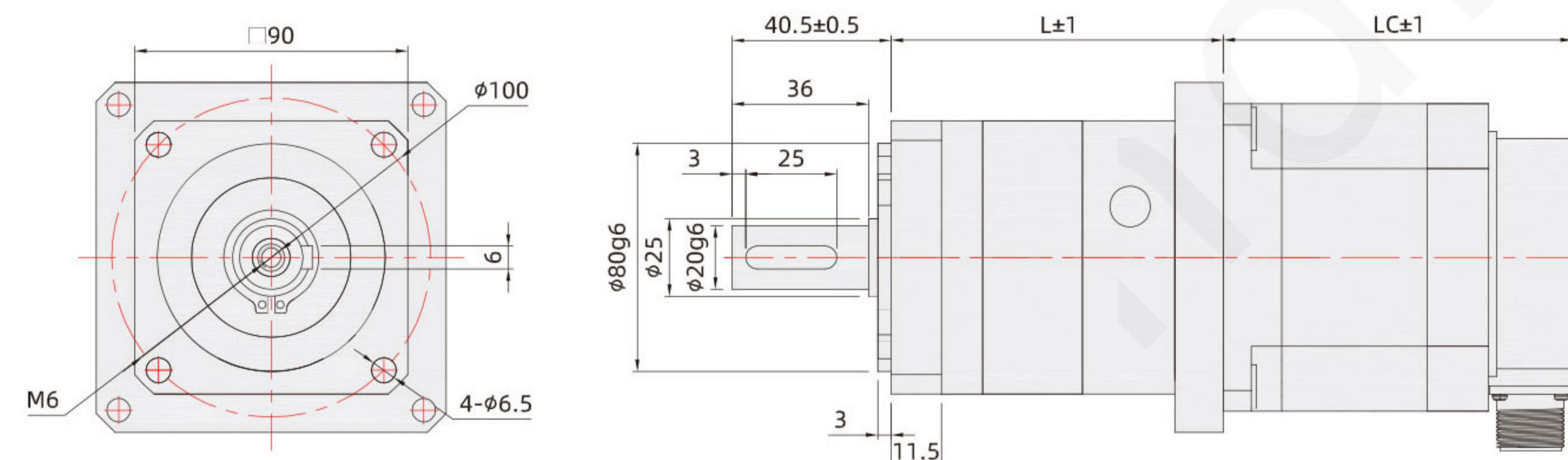
Note: For product curves and unlisted parameters, please refer to page 17.

☒ Customization needs such as wire specifications, motor length, wiring methods, etc. are provided. Please consult Handebao Motor sales staff or contact authorized Handebao Motor agents.

When selecting a planetary reduction stepper motor, the rated output torque of the reducer and the motor torque-frequency characteristic curve should be checked to ensure they meet the usage requirements and transmission efficiency. It is recommended that the input speed be less than 800 rpm, and the final torque should be less than the rated torque to avoid reducing the lifespan of the reducer.

Reduction Ratio	3	4	5	7	8	10	12	16	20	25	28	35	40	50	70	100
Rated Output Torque N·m	60	88	95	66	66	40	98	98	98	105	98	105	98	105	75	○
Efficiency (%)	94%						92%									
Backlash (arcmin)	≤8						≤10									
Input Speed (rpm)	≤3000						≤3000									
Motor Length L / Weight	L=129.5(mm)/3.1(kg)						L=152.5(mm)/3.8(kg)									
Radial Force (N)	650						650									
Axial Force (N)	550						550									
Maximum Allowable Output Torque	2 times rated torque															

☒ For customization requirements, shaft specifications, positioning bosses, etc., please consult Handebao Motor sales staff or contact authorized Handebao Motor agents.



# 110mm Two-phase planetary gear reduction stepper motor PF Series



The image is for reference only, please refer to the actual product!

### Product Features:

- Single cantilever structure, simple design, excellent cost performance.
- Smooth operation, low noise.
- Accuracy of 8-16 arc minutes, suitable for the vast majority of applications.

## Technical Parameters

Stepper motors are not constant torque motors; the higher the running speed, the smaller the output torque. Therefore, when paying attention to the holding torque parameter of the motor, one should also focus on the output torque of the motor at the actual working speed (refer to the dynamic torque curve). We recommend reserving a 1.5 times margin to avoid step loss of the stepper motor under overload conditions.

Model (MODEL)	Step Angle	Holding Torque (N·m)	Rated Current (A)	Length LC (mm)	Motor Weight (kg)	Operating Voltage Range (Recommended Model)
SMC4203PF-□□	1.2°	16	6.4	127.0	5.0	CSH-2272R 110~245VAC
SMC4204PF-□□	1.2°	20	6.9	151.0	6.3	

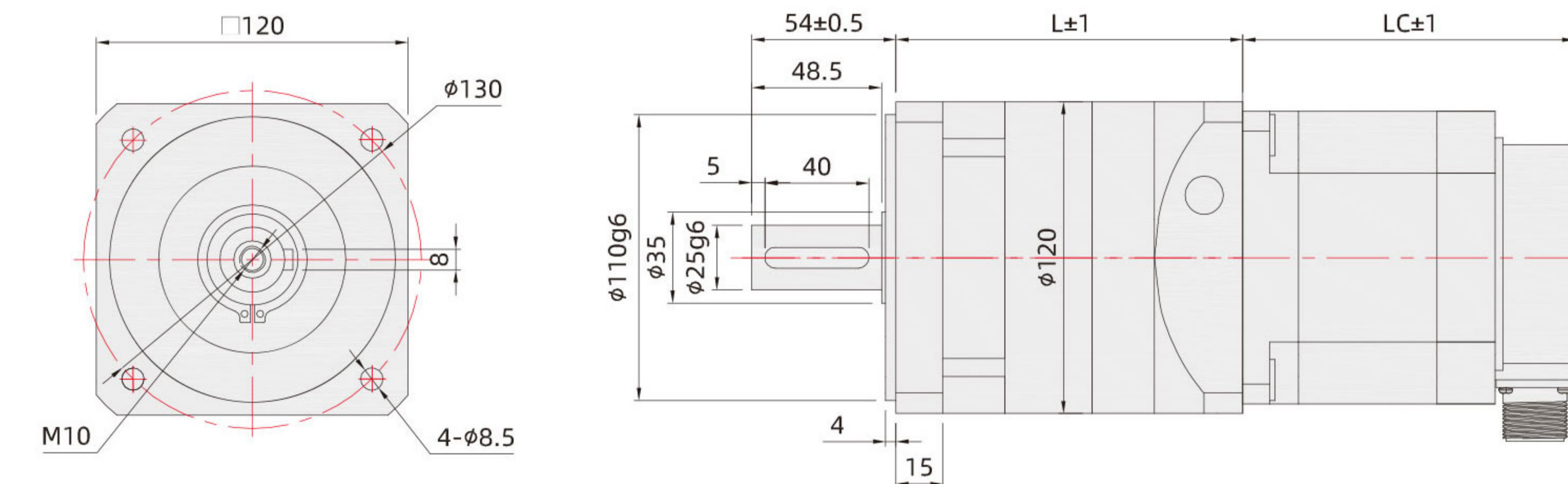
Note: For product curves and unlisted parameters, please refer to page 17.

☒ Customization needs such as wire specifications, motor length, wiring methods, etc. are provided. Please consult Handebao Motor sales staff or contact authorized Handebao Motor agents.

When selecting a planetary reduction stepper motor, the rated output torque of the reducer and the motor torque-frequency characteristic curve should be checked to ensure they meet the usage requirements and transmission efficiency. It is recommended that the input speed be less than 800 rpm, and the final torque should be less than the rated torque to avoid reducing the lifespan of the reducer.

Reduction Ratio	3	4	5	7	8	10	12	16	20	25	28	35	40	50	70	100
Rated Output Torque N·m	160	210	210	170	○	86	160	210	210	210	210	210	210	210	170	86
Efficiency (%)	94%						92%									
Backlash (arcmin)	≤16						≤20									
Input Speed (rpm)	≤2000						≤2000									
Motor Length L / Weight	L=150.5(mm)/7.2(kg)						L=179.5(mm)/8.7(kg)									
Radial Force (N)	1240						1240									
Axial Force (N)	1000						1000									
Maximum Allowable Output Torque	2 times rated torque															

☒ For customization requirements, shaft specifications, positioning bosses, etc., please consult Handebao Motor sales staff or contact authorized Handebao Motor agents.



Planetary gear reduction stepper motor

Planetary gear reduction stepper motor

**110mm** Two-phase planetary gear reduction stepper motor **PZF90 Series**



The image is for reference only; please refer to the actual product!

**Product Features:**

- Bevel gear reversing mechanism, right-angle output, greatly saving space.
- Compact structure, large torque transmission on hardened tooth surface, high precision and stable operation.
- High-quality ground gears, transmission efficiency over 90%.
- Bevel gears undergo carburizing treatment, hardness reaches HRC58, with excellent wear resistance.
- The frame is equipped with round roller bearings, meeting heavy load working condition requirements.

**Technical Parameters**

Stepper motors are not constant torque motors; the higher the running speed, the smaller the output torque. Therefore, when paying attention to the holding torque parameter of the motor, one should also focus on the output torque of the motor at the actual working speed (refer to the dynamic torque curve). We recommend reserving a 1.5 times margin to avoid step loss of the stepper motor under overload conditions.

Model (MODEL)	Step Angle	Holding Torque (N-m)	Rated Current (A)	Length LC (mm)	Motor Weight (kg)	Operating Voltage Range (Recommended Model)
SMC4203PZF90- □□	1.2°	8.0	4.3	185.0	8.5	CSH-2272R 110~245VAC
SMC4204PZF90- □□	1.2°	12	6.0	219.0	10.7	

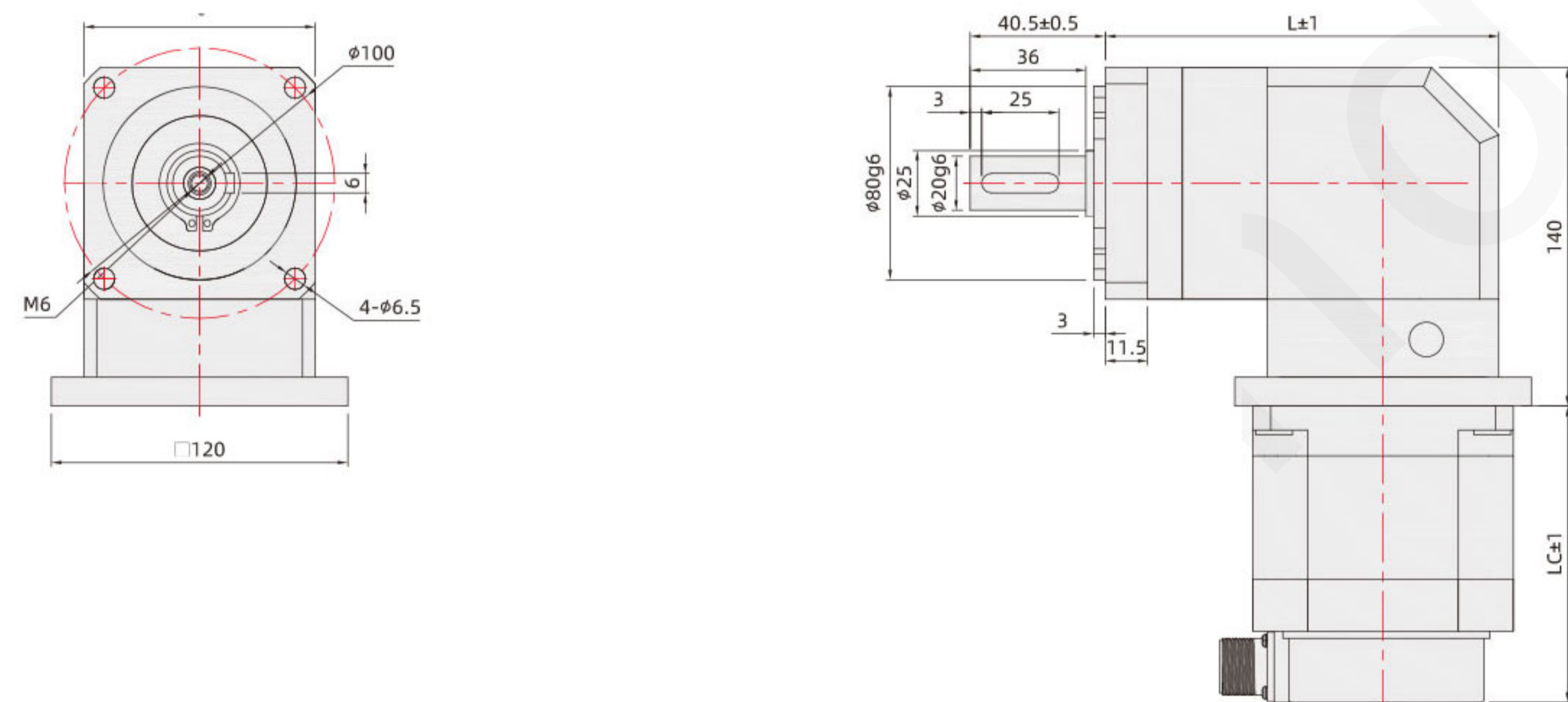
Note: For product curves and unlisted parameters, please refer to page 17.

☒ Customization needs such as wire specifications, motor length, wiring methods, etc. are provided. Please consult Handebao Motor sales staff or contact authorized Handebao Motor agents.

When selecting a planetary reduction stepper motor, the rated output torque of the reducer and the motor torque-frequency characteristic curve should be checked to ensure they meet the usage requirements and transmission efficiency. It is recommended that the input speed be less than 800 rpm, and the final torque should be less than the rated torque to avoid reducing the lifespan of the reducer.

Parameter	Reduction Ratio															
	3	4	5	7	8	10	12	16	20	25	28	35	40	50	70	100
Rated Output Torque N-m	60	88	95	66	66	40	98	98	98	105	98	105	98	105	75	○
Efficiency (%)	94%								92%							
Backlash (arcmin)	≤8								≤10							
Input Speed (rpm)	≤3000								≤3000							
Motor Length L / Weight	L=150.5(mm)/4.0(kg)								L=147.5(mm)/5.0(kg)							
Radial Force (N)	650															
Axial Force (N)	550															
Maximum Allowable Output Torque	2 times rated torque															

☒ For customization requirements, shaft specifications, positioning bosses, etc., please consult Handebao Motor sales staff or contact authorized Handebao Motor agents.



Planetary gear reduction stepper motor

**110mm** Two-phase planetary gear reduction stepper motor **PZF Series**



The image is for reference only; please refer to the actual product!

**Product Features:**

- Bevel gear reversing mechanism, right-angle output, greatly saving space.
- Compact structure, large torque transmission on hardened tooth surface, high precision and stable operation.
- High-quality ground gears, transmission efficiency over 90%.
- Bevel gears undergo carburizing treatment, hardness reaches HRC58, with excellent wear resistance.
- The frame is equipped with round roller bearings, meeting heavy load working condition requirements.

**Technical Parameters**

Stepper motors are not constant torque motors; the higher the running speed, the smaller the output torque. Therefore, when paying attention to the holding torque parameter of the motor, one should also focus on the output torque of the motor at the actual working speed (refer to the dynamic torque curve). We recommend reserving a 1.5 times margin to avoid step loss of the stepper motor under overload conditions.

Model (MODEL)	Step Angle	Holding Torque (N-m)	Rated Current (A)	Length LC (mm)	Motor Weight (kg)	Operating Voltage Range (Recommended Model)
SMC4203PZF- □□	1.2°	16	6.4	127.0	5.0	CSH-2272R 110~245VAC
SMC4204PZF- □□	1.2°	20	6.9	151.0	6.3	

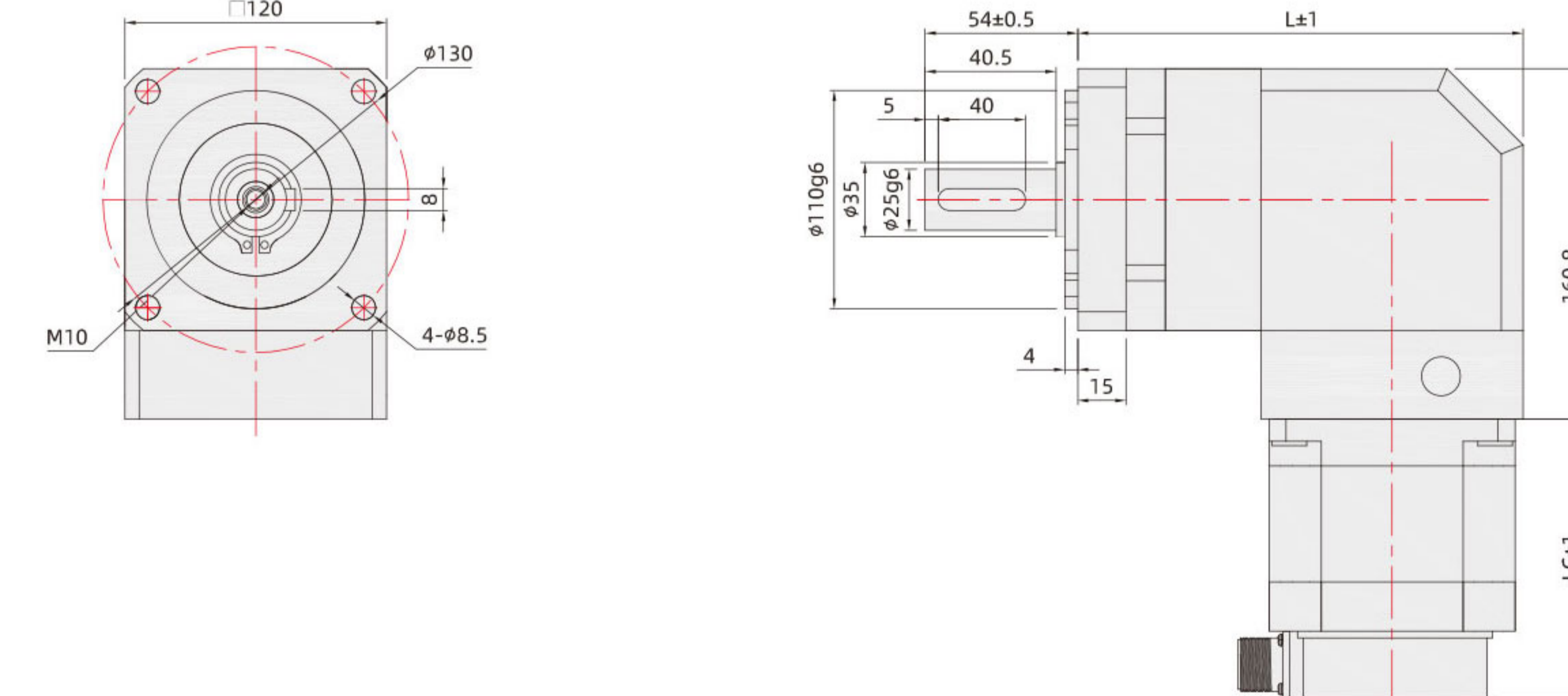
Note: For product curves and unlisted parameters, please refer to page 17.

☒ Customization needs such as wire specifications, motor length, wiring methods, etc. are provided. Please consult Handebao Motor sales staff or contact authorized Handebao Motor agents.

When selecting a planetary reduction stepper motor, the rated output torque of the reducer and the motor torque-frequency characteristic curve should be checked to ensure they meet the usage requirements and transmission efficiency. It is recommended that the input speed be less than 800 rpm, and the final torque should be less than the rated torque to avoid reducing the lifespan of the reducer.

Parameter	Reduction Ratio															
	3	4	5	7	8	10	12	16	20	25	28	35	40	50	70	100
Rated Output Torque N-m	160	210	210	170	○	86	160	210	210	210	210	210	210	210	170	86
Efficiency (%)	94%								92%							
Backlash (arcmin)	≤16								≤20							
Input Speed (rpm)	≤2000								≤2000							
Motor Length L / Weight	L=195.5(mm)/12.0(kg)								L=225.5(mm)/14.0(kg)							
Radial Force (N)	1240															
Axial Force (N)	1000															
Maximum Allowable Output Torque	2 times rated torque															

☒ For customization requirements, shaft specifications, positioning bosses, etc., please consult Handebao Motor sales staff or contact authorized Handebao Motor agents.



Planetary gear reduction stepper motor

# Brushless DC Motor

□42mm



□56mm



□57mm



□60mm



□80mm



□92mm



□123mm



The actual product size is subject to the physical item



Phase number: 3-phase  
 Operating type: Continuous  
 Insulation class: Class B  
 Protection level: IP40  
 Insulation withstand voltage: AC 500V / 50Hz / 1 minute  
 Ambient temperature: -20 to 60°C  
 Ambient humidity: 20% RH - 90% RH (non-condensing)  
 Rotation direction: Clockwise (CW)

The image is for reference only; please refer to the actual product!



Phase number: 3-phase  
 Operating type: Continuous  
 Insulation class: Class B  
 Protection level: IP40  
 Insulation withstand voltage: AC 500V / 50Hz / 1 minute  
 Ambient temperature: -20 to 60°C  
 Ambient humidity: 20% RH - 90% RH (non-condensing)  
 Rotation direction: Clockwise (CW)

The image is for reference only; please refer to the actual product!

### Technical Parameters

Model (MODEL)	Output Power (W)	Power Supply Voltage (VDC)	Rated Torque (N·m)	Rated Speed (RPM)	Max Length (mm)	Motor Weight (Kg)	Poles (P)	Suitable Driver (Recommendation)
42BL40-30L2	30	24	0.06	3000	40	0.3	8	DBL-2420R 22~36VDC
42BL60-30L2	38	24	0.12	3000	60	0.46	8	
42BL80-30L2	56	24	0.18	3000	80	0.63	8	
42BL100-30L2	80	24	0.25	3000	100	0.75	8	

In addition to the "Suitable Driver" listed above, HDB motors can also provide customers with:

- Bus-type stepper drivers (RS485, CAN open)
- Customized brushless drivers

### Technical Parameters

Model (MODEL)	Output Power (W)	Power Supply Voltage (VDC)	Rated Torque (N·m)	Rated Speed (RPM)	Max Length (mm)	Motor Weight (Kg)	Poles (P)	Suitable Driver (Recommendation)
5701BS30L2	25	24	0.08	3000	42	0.39	4	DBL-2420R 22~36VDC
5702BS30L2	50	24	0.16	3000	54	0.51	4	
5703BS30L2	100	24	0.32	3000	74	0.75	4	
5704BS30L2	140	24	0.45	3000	94	1.01	4	
5705BS30L2	200	24	0.64	3000	115	1.51	4	

In addition to the "Suitable Driver" listed above, HDB motors can also provide customers with:

- Bus-type stepper drivers (RS485, CAN open)
- Customized brushless drivers

**Precautions:**

- The installation boss on the front end cover of the motor must be used for positioning, and attention should be paid to tolerance matching to strictly ensure the concentricity between the motor output shaft and the load.
- To reduce the noise caused by motor vibration, the motor must be firmly fixed on a rigid metal surface.
- When connecting the motor to the driver, do not connect the phases incorrectly.
- Do not plug or unplug the connector while the brushless DC motor is powered on.
- The brushless DC motor must not be reassembled for use after disassembly.

**Optional accessories:**

- Planetary reducer
- Encoder

**We can modify the motor according to your requirements:**

- Output power
- Input voltage
- Input speed
- Output shaft customization

**Precautions:**

- The installation boss on the front end cover of the motor must be used for positioning, and attention should be paid to tolerance matching to strictly ensure the concentricity between the motor output shaft and the load.
- To reduce the noise caused by motor vibration, the motor must be firmly fixed on a rigid metal surface.
- When connecting the motor to the driver, do not connect the phases incorrectly.
- Do not plug or unplug the connector while the brushless DC motor is powered on.
- The brushless DC motor must not be reassembled for use after disassembly.

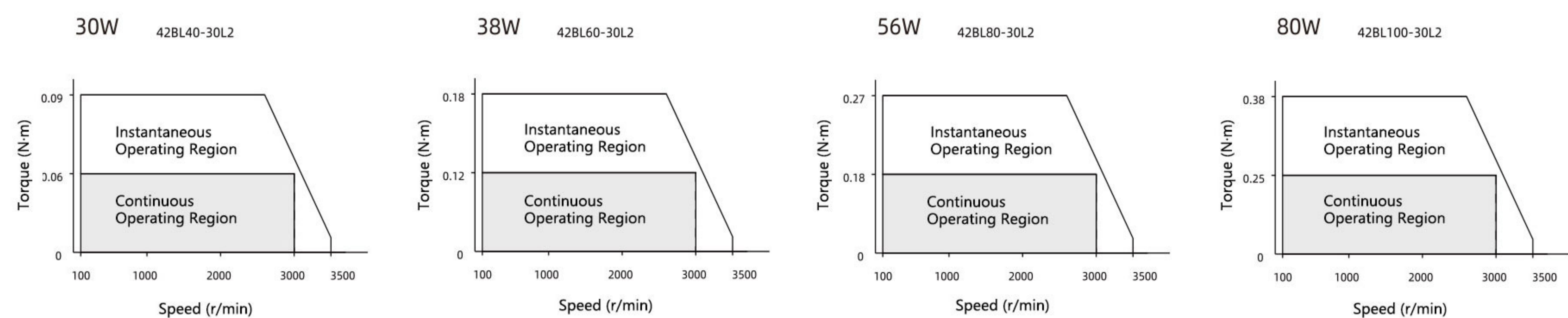
**Optional accessories:**

- Planetary reducer
- Encoder

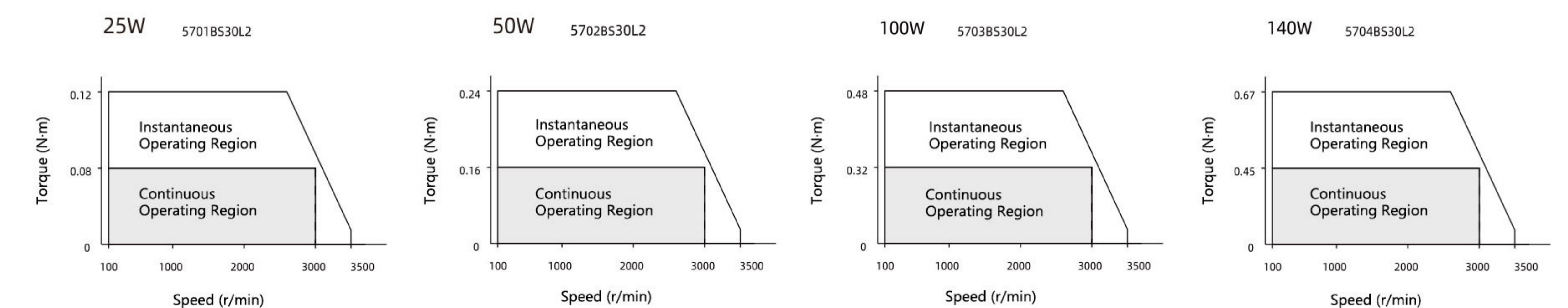
**We can modify the motor according to your requirements:**

- Output power
- Input voltage
- Input speed
- Output shaft customization

### Dynamic Torque Curve (Reference Value)



### Dynamic Torque Curve (Reference Value)



# 57mm Brushless DC Motor BL Series



Phase number: 3-phase  
 Operating type: Continuous  
 Insulation class: Class B  
 Protection level: IP40  
 Insulation withstand voltage: AC 500V / 50Hz / 1 minute  
 Ambient temperature: -20 to 60°C  
 Ambient humidity: 20% RH - 90% RH (non-condensing)  
 Rotation direction: Clockwise (CW)

The image is for reference only; please refer to the actual product!

## Technical Parameters

Model (MODEL)	Output Power (W)	Power Supply Voltage (VDC)	Rated Torque (N·m)	Rated Speed (RPM)	Max Length (mm)	Motor Weight (Kg)	Poles (P)	Suitable Driver (Recommendation)
57BL73-30L2	100	24	0.3	3000	73	0.6	10	DBL-2420R 22~36VDC
57BL103-30L2	150	24	0.45	3000	103	0.6	10	
57BL103-30L4	150	48	0.45	3000	103	0.93	10	DBL-4820R 22~56VDC
57BL133-30L4	300	48	0.9	3000	133	0.93	10	
57BL133-30H2	300	220	0.9	3000	133	1.27	10	DBH-400DS 110~260VAC

In addition to the "Suitable Driver" listed above, HDB motors can also provide customers with:

- Bus-type stepper drivers (RS485, CAN open)
- Customized brushless drivers

**Precautions:**

- The installation boss on the front end cover of the motor must be used for positioning, and attention should be paid to tolerance matching to strictly ensure the concentricity between the motor output shaft and the load.
- To reduce the noise caused by motor vibration, the motor must be firmly fixed on a rigid metal surface.
- When connecting the motor to the driver, do not connect the phases incorrectly.
- Do not plug or unplug the connector while the brushless DC motor is powered on.
- The brushless DC motor must not be reassembled for use after disassembly.

**We can modify the motor according to your requirements:**

- Output power
- Input voltage
- Input speed
- Output shaft customization

**Optional accessories:**

- Planetary reducer
- Encoder

# 60mm Brushless DC Motor BL Series



Phase number: 3-phase  
 Operating type: Continuous  
 Insulation class: Class B  
 Protection level: IP40  
 Insulation withstand voltage: AC 500V / 50Hz / 1 minute  
 Ambient temperature: -20 to 60°C  
 Ambient humidity: 20% RH - 90% RH (non-condensing)  
 Rotation direction: Clockwise (CW)

The image is for reference only; please refer to the actual product!

## Technical Parameters

Model (MODEL)	Output Power (W)	Power Supply Voltage (VDC)	Rated Torque (N·m)	Rated Speed (RPM)	Max Length (mm)	Motor Weight (Kg)	Poles (P)	Suitable Driver (Recommendation)
60BL77-30L2	200	24	0.6	3000	77	0.6	10	DBL-2420R 22~36VDC
60BL77-30L4	200	48	0.6	3000	77	0.6	10	
60BL92-30L4	400	48	1.2	3000	92	0.93	10	DBL-4850H 22~56VDC
60BL77-30H2	200	220	0.6	3000	77	0.93	10	
60BL92-30H2	400	220	1.2	3000	92	1.27	10	DBH-400DS 110~260VAC

In addition to the "Suitable Driver" listed above, HDB motors can also provide customers with:

- Bus-type stepper drivers (RS485, CAN open)
- Customized brushless drivers

**Precautions:**

- The installation boss on the front end cover of the motor must be used for positioning, and attention should be paid to tolerance matching to strictly ensure the concentricity between the motor output shaft and the load.
- To reduce the noise caused by motor vibration, the motor must be firmly fixed on a rigid metal surface.
- When connecting the motor to the driver, do not connect the phases incorrectly.
- Do not plug or unplug the connector while the brushless DC motor is powered on.
- The brushless DC motor must not be reassembled for use after disassembly.

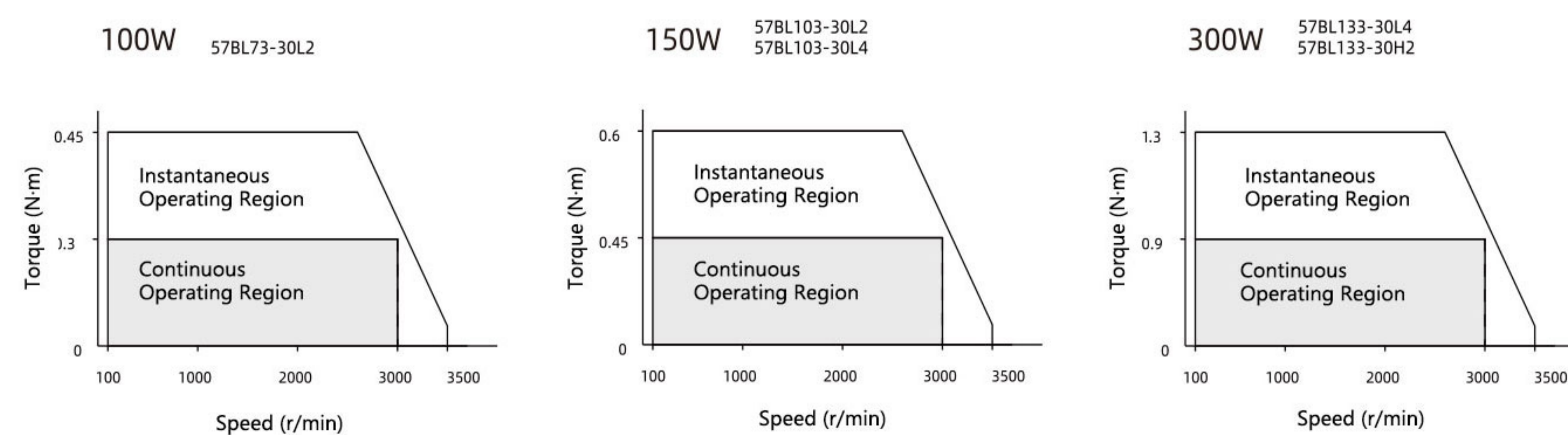
**We can modify the motor according to your requirements:**

- Output power
- Input voltage
- Input speed
- Output shaft customization

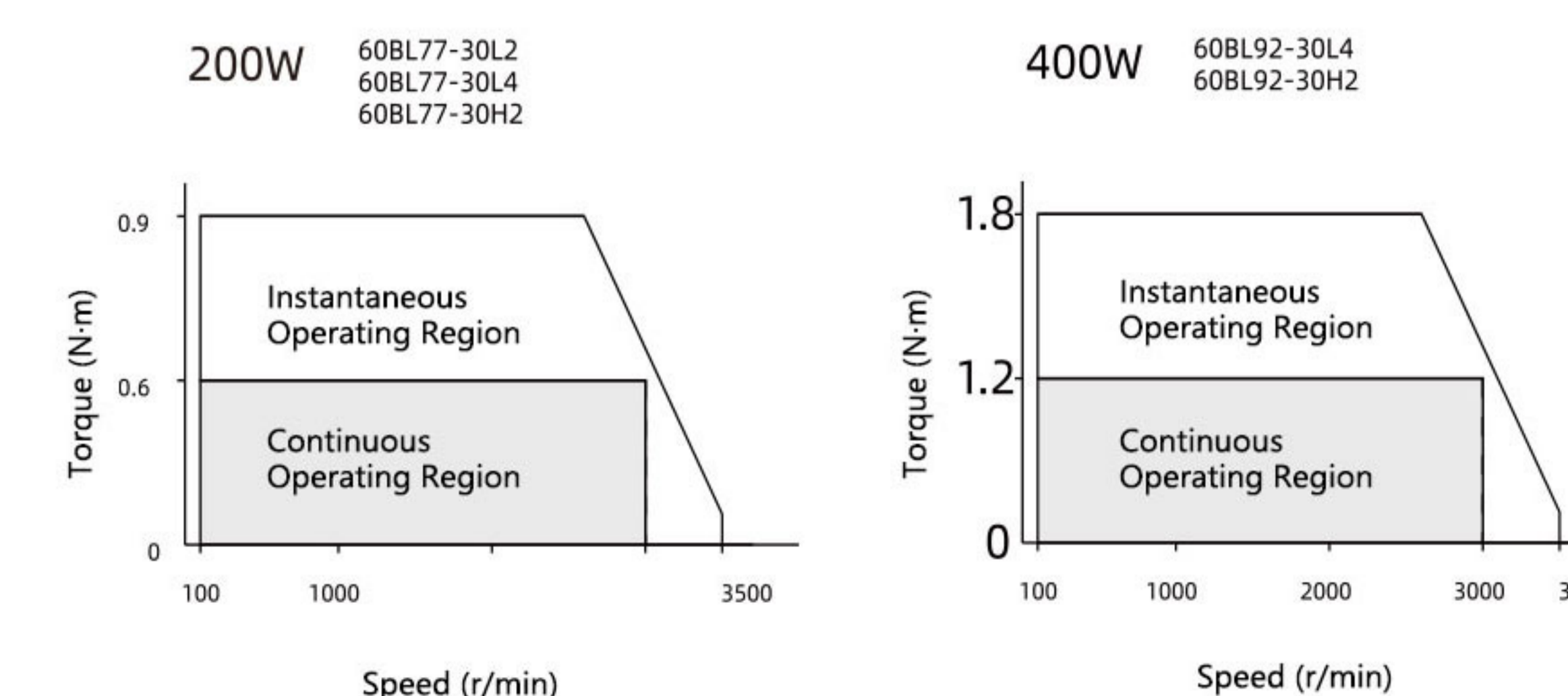
**Optional accessories:**

- Planetary reducer
- Encoder

## Dynamic Torque Curve (Reference Value)



## Dynamic Torque Curve (Reference Value)





Phase number: 3-phase  
 Operating type: Continuous  
 Insulation class: Class B  
 Protection level: IP40  
 Insulation withstand voltage: AC 500V / 50Hz / 1 minute  
 Ambient temperature: -20 to 60°C  
 Ambient humidity: 20% RH - 90% RH (non-condensing)  
 Rotation direction: Clockwise (CW)

The image is for reference only; please refer to the actual product!



Phase number: 3-phase  
 Operating type: Continuous  
 Insulation class: Class B  
 Protection level: IP40  
 Insulation withstand voltage: AC 500V / 50Hz / 1 minute  
 Ambient temperature: -20 to 60°C  
 Ambient humidity: 20% RH - 90% RH (non-condensing)  
 Rotation direction: Clockwise (CW)

The image is for reference only; please refer to the actual product!

### Technical Parameters

Model (MODEL)	Output Power (W)	Power Supply Voltage (VDC)	Rated Torque (N-m)	Rated Speed (RPM)	Max Length (mm)	Motor Weight (Kg)	Poles (P)	Suitable Driver (Recommendation)
80BL120-30L4	500	48	1.6	3000	120	0.6	10	DBL-4850H 22~56VDC
80BL135-30L4	750	48	2.3	3000	135	0.93	10	
80BL120-30H2	500	220	1.6	3000	120	0.6	10	DBH-750DS 110~260VAC
80BL135-30H2	750	220	2.3	3000	135	0.93	10	
80BL150-30H2	1000	220	3.1	3000	150	1.27	10	DBH-1500DS 110~260VAC

In addition to the "Suitable Driver" listed above, HDB motors can also provide customers with:

- Bus-type stepper drivers (RS485, CAN open)
- Customized brushless drivers

**Precautions:**

- The installation boss on the front end cover of the motor must be used for positioning, and attention should be paid to tolerance matching to strictly ensure the concentricity between the motor output shaft and the load.
- To reduce the noise caused by motor vibration, the motor must be firmly fixed on a rigid metal surface.
- When connecting the motor to the driver, do not connect the phases incorrectly.
- Do not plug or unplug the connector while the brushless DC motor is powered on.
- The brushless DC motor must not be reassembled for use after disassembly.

**Optional accessories:**

- Planetary reducer
- Encoder

### Technical Parameters

Model (MODEL)	Output Power (W)	Power Supply Voltage (VDC)	Rated Torque (N-m)	Rated Speed (RPM)	Max Length (mm)	Motor Weight (Kg)	Poles (P)	Suitable Driver (Recommendation)
92BL81-30L2	300	24	0.9	3000	81	0.6	10	DBL-2450H 22~36VDC
92BL81-30L4	300	48	0.9	3000	81	0.6	10	
92BL111-30H2	500	48	1.5	3000	111	0.93	10	DBL-4850H 22~56VDC
92BL111-30L4	500	220	1.5	3000	111	0.93	10	
92BL141-30H2	750	220	2.3	3000	141	1.27	10	DBH-750DS 110~260VAC

In addition to the "Suitable Driver" listed above, HDB motors can also provide customers with:

- Bus-type stepper drivers (RS485, CAN open)
- Customized brushless drivers

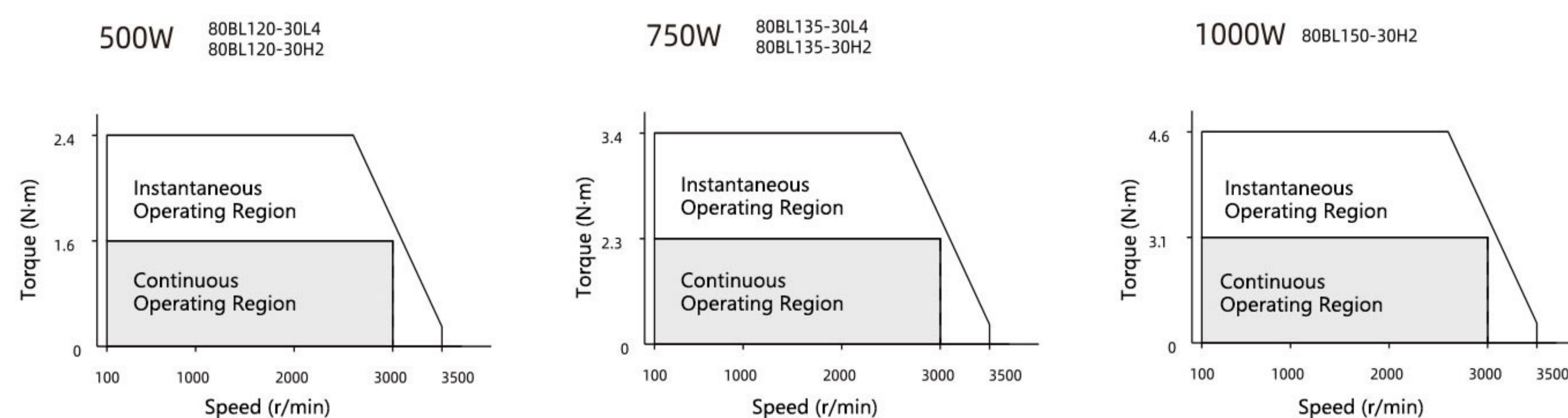
**Precautions:**

- The installation boss on the front end cover of the motor must be used for positioning, and attention should be paid to tolerance matching to strictly ensure the concentricity between the motor output shaft and the load.
- To reduce the noise caused by motor vibration, the motor must be firmly fixed on a rigid metal surface.
- When connecting the motor to the driver, do not connect the phases incorrectly.
- Do not plug or unplug the connector while the brushless DC motor is powered on.
- The brushless DC motor must not be reassembled for use after disassembly.

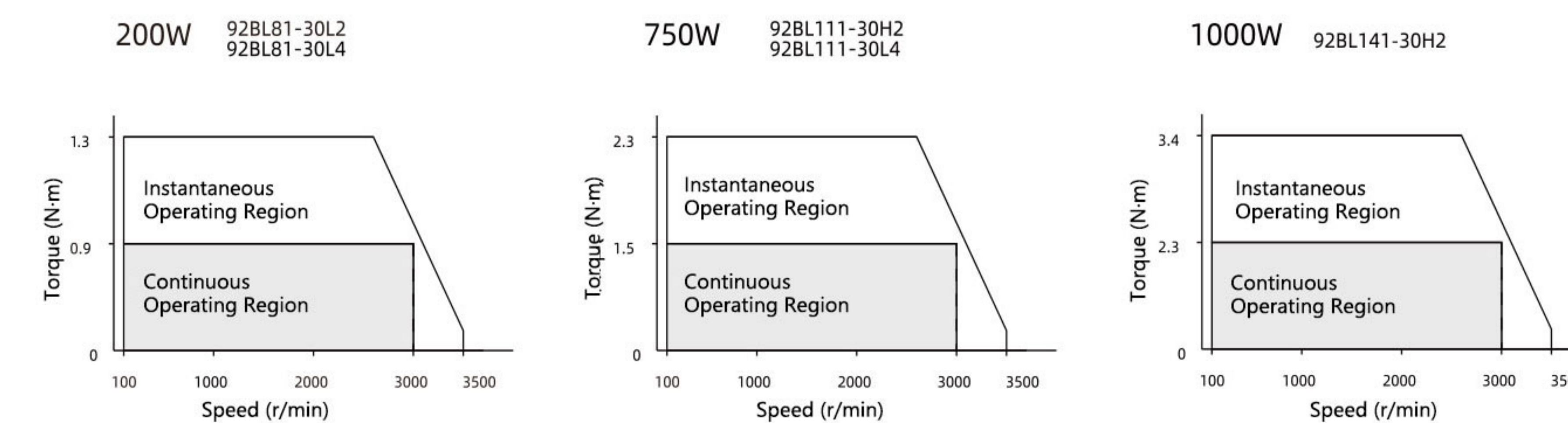
**Optional accessories:**

- Planetary reducer
- Encoder

### Dynamic Torque Curve (Reference Value)



### Dynamic Torque Curve (Reference Value)



# □ 123mm Brushless DC Motor BL Series



Phase number: 3-phase  
 Operating type: Continuous  
 Insulation class: Class B  
 Protection level: IP40  
 Insulation withstand voltage: AC 500V / 50Hz / 1 minute  
 Ambient temperature: -20 to 60°C  
 Ambient humidity: 20% RH - 90% RH (non-condensing)  
 Rotation direction: Clockwise (CW)

The image is for reference only;  
 please refer to the actual product!

## Technical Parameters

Model (MODEL)	Output Power (W)	Power Supply Voltage (VDC)	Rated Torque (N·m)	Rated Speed (RPM)	Max Length (mm)	Motor Weight (Kg)	Poles (P)	Suitable Driver (Recommendation)
123BL148-30L4	1000	48	3.1	3000	148	0.6	10	DBL-48100H 22~56VDC
123BL148-30H2	1000	220	3.1	3000	148	0.6	10	DBH-1500DS 110~260VAC
123BL160-30L4	1500	220	4.7	3000	160	0.93	10	
123BL184-30H2	2200	220	7.0	3000	184	0.93	10	

- In addition to the "Suitable Driver" listed above, HDB motors can also provide customers with:
  - Bus-type stepper drivers (RS485, CAN open)
  - Customized brushless drivers

Dimensions: 123±0.2, φ145, 4-φ9, 54±0.5, 16, L±1, 46, 2, 35±0.2, φ110<sup>+0.025</sup>, 3.5, 400±20, 6, 19±0.1, φ22<sup>-0.013</sup>.

**⚠ Precautions:**

1. The installation boss on the front end cover of the motor must be used for positioning, and attention should be paid to tolerance matching to strictly ensure the concentricity between the motor output shaft and the load.
2. To reduce the noise caused by motor vibration, the motor must be firmly fixed on a rigid metal surface.
3. When connecting the motor to the driver, do not connect the phases incorrectly.
4. Do not plug or unplug the connector while the brushless DC motor is powered on.
5. The brushless DC motor must not be reassembled for use after disassembly.

• We can modify the motor according to your requirements:

<input checked="" type="checkbox"/> Output power	<input checked="" type="checkbox"/> Input voltage
<input checked="" type="checkbox"/> Input speed	<input checked="" type="checkbox"/> Output shaft customization

Optional accessories:

<input checked="" type="checkbox"/> Planetary reducer	<input checked="" type="checkbox"/> Encoder
---	---

# Planetary Reduction Brushless Motor

□ PLE Series

□ PLF Series

□ PS Series

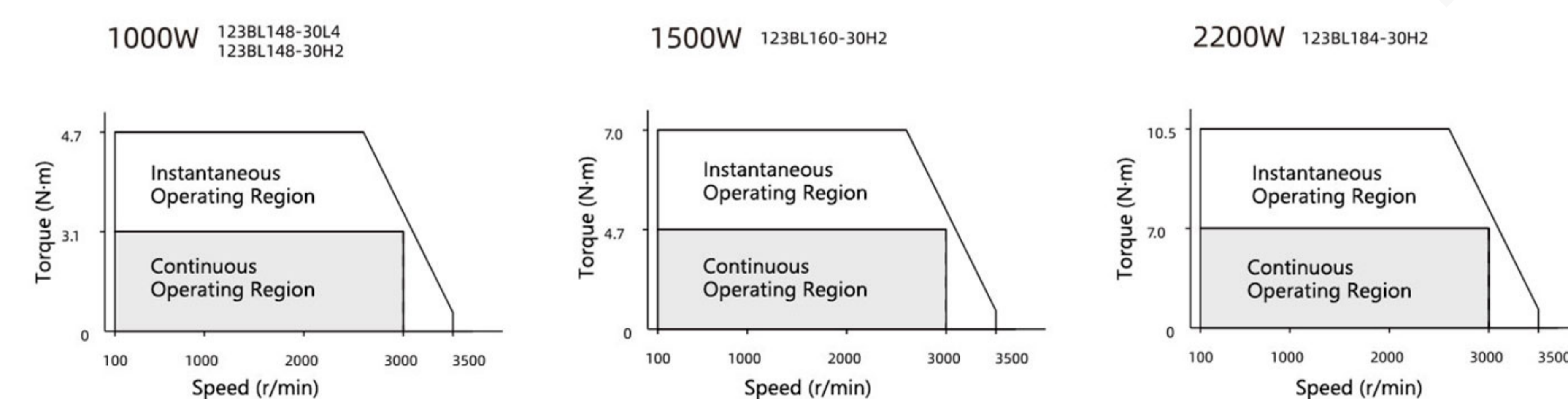
□ PF Series



□ PZF Series



## Dynamic Torque Curve (Reference Value)



The actual product size is subject to the physical item



The image is for reference only; please refer to the actual product!

Product Features:

- Output end screw connection, standardized installation dimensions, strong versatility.
- Single cantilever structure, simple design, excellent cost performance.
- Steel gear structure ensures stable operation, low noise, and long service life.
- Fast delivery, far superior to products of the same price on the market.

Technical Parameters

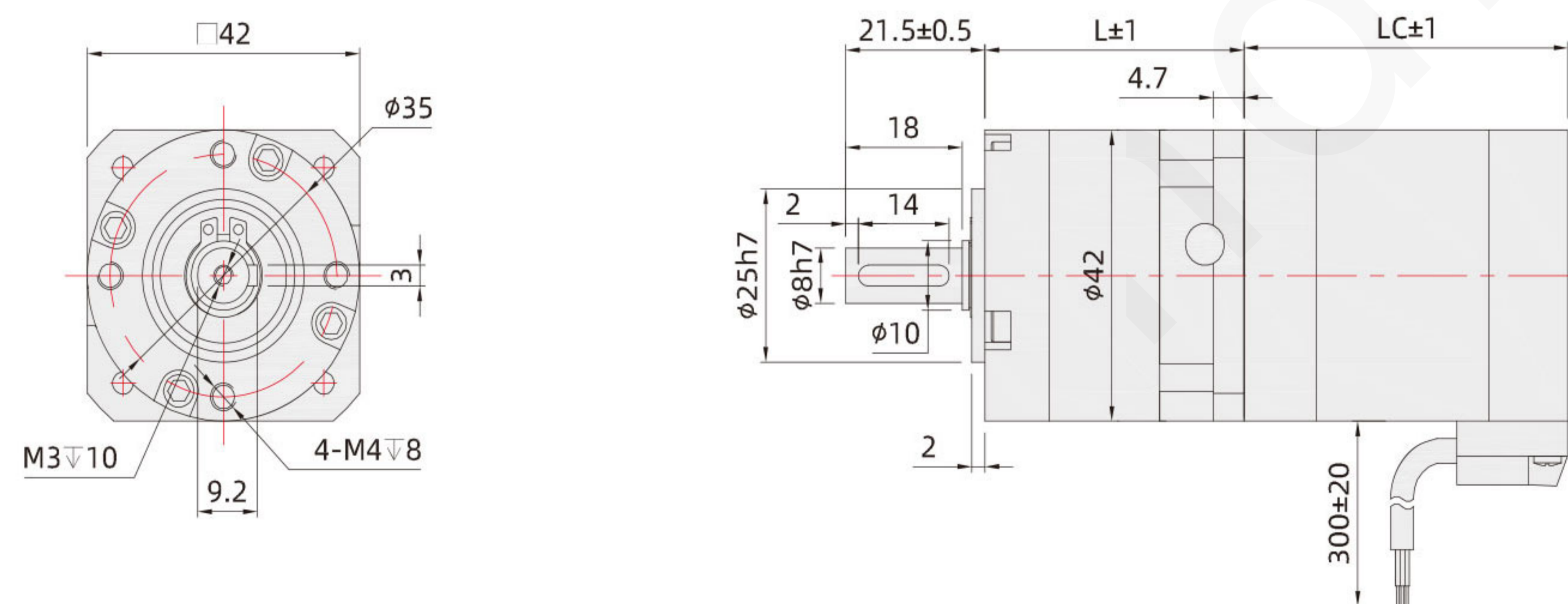
Model (MODEL)	Output Power (W)	Power Supply Voltage (VDC)	Rated Torque (N·m)	Rated Speed (RPM)	Max Length (mm)	Motor Weight (Kg)	Poles (P)	Suitable Driver (Recommendation)
42BL40L2PLE- □□	30	24	0.06	3000	40	0.3	8	DBL-2420R 22~36VDC
42BL60L2PLE- □□	38	24	0.12	3000	60	0.46	8	
42BL80L2PLE- □□	56	24	0.18	3000	80	0.63	8	
42BL100L2PLE- □□	80	24	0.25	3000	100	0.75	8	

- The above recommended "matching drivers" are standard motor drivers. It is recommended to control the motor speed within 2000 RPM for better protection and longer service life of the motor and reducer. HDB motors can also provide customers with:
  - Bus-type stepper drivers (RS485, CAN open)
  - Customized brushless drivers

When selecting a planetary reduction brushless motor, the rated output torque of the reducer should be checked to see if it meets the usage requirements and multiplied by the transmission efficiency; it is recommended that the input speed be less than 2000 rpm, and the final torque should be less than the rated torque to avoid reducing the service life of the reducer.

Parameter	Reduction Ratio															
	3	4	5	7	8	10	12	16	20	25	28	35	40	50	70	100
Rated Output Torque N·m	○	8	7	6	○	4	○	11	10	8	9	8	8	7	6	○
Efficiency (%)	96%								94%							
Backlash (arcmin)	≤15								≤20							
Input Speed (rpm)	≤2000								≤2000							
Motor Length L / Weight	L=40(mm)/0.25(kg)								L=51(mm)/0.35(kg)							
Radial Force (N)	260															
Axial Force (N)	80															
Maximum Allowable Output Torque	1.6 times rated torque															

- For customization requirements, shaft specifications, positioning bosses, etc., please consult Handebao Motor sales staff or contact authorized Handebao Motor agents.



Planetary Reduction Brushless Motor



The image is for reference only; please refer to the actual product!

Product Features:

- Integrated design, compact size, easy installation.
- Cage-type planetary gear structure with high reliability, suitable for frequent forward and reverse rotation.
- Special frame structure can bear larger radial and axial forces.
- Fast delivery, far superior to products of the same price on the market.

Technical Parameters

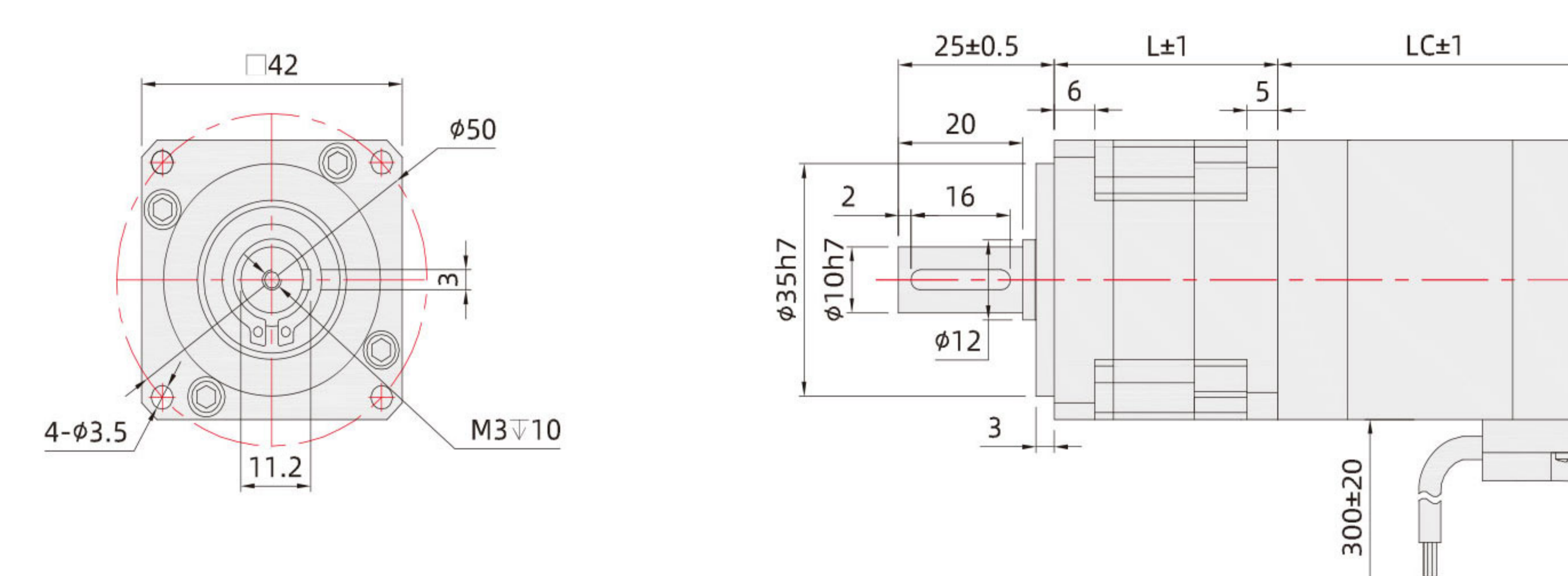
Model (MODEL)	Output Power (W)	Power Supply Voltage (VDC)	Rated Torque (N·m)	Rated Speed (RPM)	Max Length (mm)	Motor Weight (Kg)	Poles (P)	Suitable Driver (Recommendation)
42BL40L2PLF- □□	30	24	0.06	3000	40	0.3	8	DBL-2420R 22~36VDC
42BL60L2PLF- □□	38	24	0.12	3000	60	0.46	8	
42BL80L2PLF- □□	56	24	0.18	3000	80	0.63	8	
42BL100L2PLF- □□	80	24	0.25	3000	100	0.75	8	

- The above recommended "matching drivers" are standard motor drivers. It is recommended to control the motor speed within 2000 RPM for better protection and longer service life of the motor and reducer. HDB motors can also provide customers with:
  - Bus-type stepper drivers (RS485, CAN open)
  - Customized brushless drivers

When selecting a planetary reduction brushless motor, the rated output torque of the reducer should be checked to see if it meets the usage requirements and multiplied by the transmission efficiency; it is recommended that the input speed be less than 2000 rpm, and the final torque should be less than the rated torque to avoid reducing the service life of the reducer.

Parameter	Reduction Ratio															
	3	4	5	7	8	10	12	16	20	25	28	35	40	50	70	100
Rated Output Torque N·m	○	9	8	7	○	5	○	12	11	9	10	9	9	8	7	○
Efficiency (%)	96%								94%							
Backlash (arcmin)	≤15								≤20							
Input Speed (rpm)	≤2000								≤2000							
Motor Length L / Weight	L=35(mm)/0.25(kg)								L=46(mm)/0.35(kg)							
Radial Force (N)	300															
Axial Force (N)	100															
Maximum Allowable Output Torque	1.6 times rated torque															

- For customization requirements, shaft specifications, positioning bosses, etc., please consult Handebao Motor sales staff or contact authorized Handebao Motor agents.



Planetary Reduction Brushless Motor



The image is for reference only, please refer to the actual product!

Product Features:

- Integrated design, compact size, easy installation, strong versatility.
- Cage-type planetary gear structure, highly reliable, suitable for frequent forward and reverse rotation.
- Special frame structure can bear larger radial and axial forces.
- Fast delivery, far superior to products of the same price on the market.

Technical Parameters

Model (MODEL)	Output Power (W)	Power Supply Voltage (VDC)	Rated Torque (N-m)	Rated Speed (RPM)	Max Length (mm)	Motor Weight (Kg)	Poles (P)	Suitable Driver (Recommendation)
5701BSL2PS42- □□	25	24	0.08	3000	42	0.39	4	DBL-2420R 18~36VDC
5702BSL2PS42- □□	50	24	0.16	3000	54	0.51	4	
5703BSL2PS42- □□	100	24	0.32	3000	74	0.75	4	
5704BSL2PS42- □□	140	24	0.45	3000	94	1.01	4	
5705BSL2PS42- □□	200	24	0.64	3000	115	1.51	4	

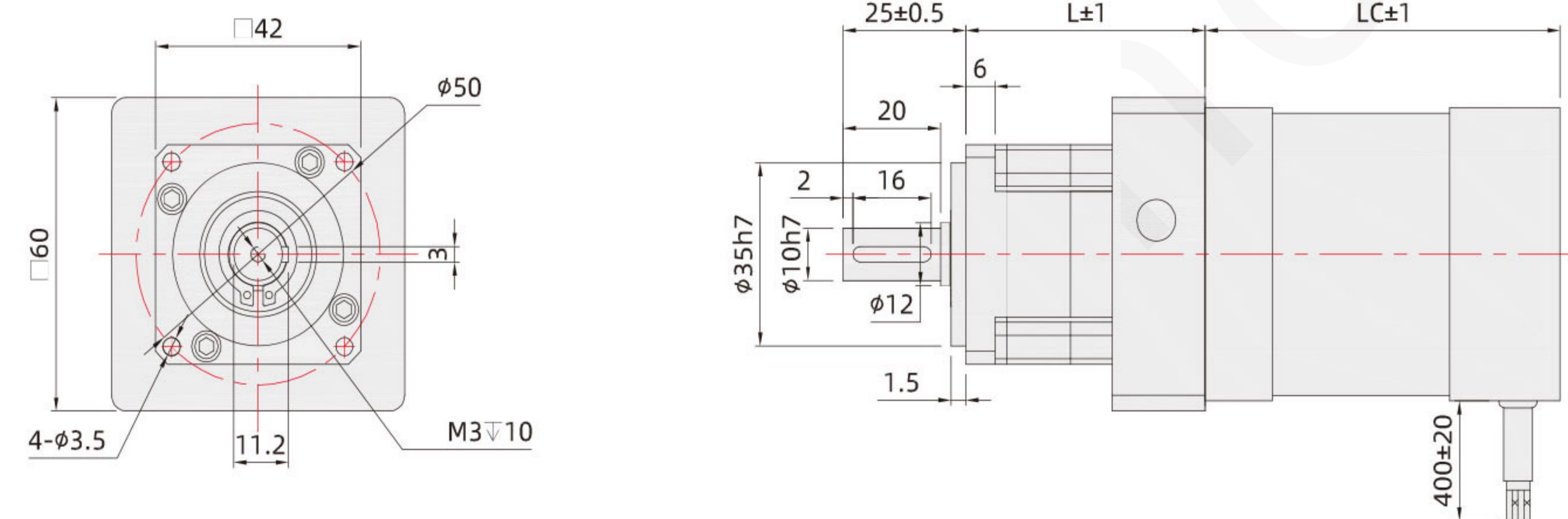
• The above recommended "matching drivers" are standard motor drivers. It is recommended to control the motor speed within 2000 RPM for better protection and longer service life of the motor and reducer. HDB motors can also provide customers with:

- Bus-type stepper drivers (RS485, CAN open)
- Customized brushless drivers

When selecting a planetary reduction brushless motor, the rated output torque of the reducer should be checked to see if it meets the usage requirements and multiplied by the transmission efficiency; it is recommended that the input speed be less than 2000 rpm, and the final torque should be less than the rated torque to avoid reducing the service life of the reducer.

Parameter	Reduction Ratio															
	3	4	5	7	8	10	12	16	20	25	28	35	40	50	70	100
Rated Output Torque N-m	○	9	8	7	○	5	○	12	11	9	10	9	9	8	7	○
Efficiency (%)	96%								94%							
Backlash (arcmin)	≤15								≤20							
Input Speed (rpm)	≤2000								≤2000							
Motor Length L / Weight	L=35(mm)/0.25(kg)								L=46(mm)/0.35(kg)							
Radial Force (N)	300															
Axial Force (N)	100															
Maximum Allowable Output Torque	1.6 times rated torque															

For customization requirements, shaft specifications, positioning bosses, etc., please consult Handebao Motor sales staff or contact authorized Handebao Motor agents.



The image is for reference only, please refer to the actual product!

Product Features:

- Square flange connection at the output end, standardized installation dimensions, strong versatility.
- Single cantilever structure, simple design, excellent cost performance.
- Steel gear structure operates smoothly, low noise, long service life.
- Fast delivery, far superior to products of the same price on the market.
- Fast delivery, far superior to products of the same price on the market.

Technical Parameters

Model (MODEL)	Output Power (W)	Power Supply Voltage (VDC)	Rated Torque (N-m)	Rated Speed (RPM)	Max Length (mm)	Motor Weight (Kg)	Poles (P)	Suitable Driver (Recommendation)
5701BSL2PLF- □□	25	24	0.08	3000	42	0.39	4	DBL-2420R 18~36VDC
5702BSL2PLF- □□	50	24	0.16	3000	54	0.51	4	
5703BSL2PLF- □□	100	24	0.32	3000	74	0.75	4	
5704BSL2PLF- □□	140	24	0.45	3000	94	1.01	4	
5705BSL2PLF- □□	200	24	0.64	3000	115	1.51	4	

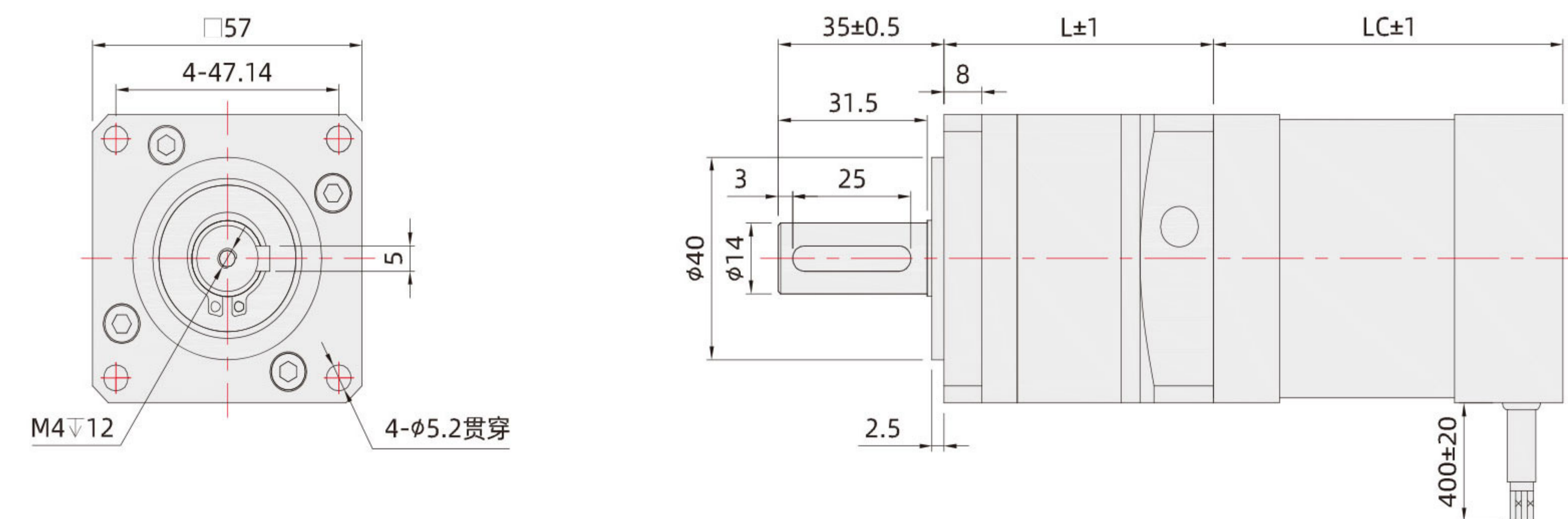
• The above recommended "matching drivers" are standard motor drivers. It is recommended to control the motor speed within 2000 RPM for better protection and longer service life of the motor and reducer. HDB motors can also provide customers with:

- Bus-type stepper drivers (RS485, CAN open)
- Customized brushless drivers

When selecting a planetary reduction brushless motor, the rated output torque of the reducer should be checked to see if it meets the usage requirements and multiplied by the transmission efficiency; it is recommended that the input speed be less than 2000 rpm, and the final torque should be less than the rated torque to avoid reducing the service life of the reducer.

Parameter	Reduction Ratio															
	3	4	5	7	8	10	12	16	20	25	28	35	40	50	70	100
Rated Output Torque N-m	○	24	26	19	○	10	○	28	28	30	28	30	28	30	20	○
Efficiency (%)	96%								94%							
Backlash (arcmin)	≤15								≤20							
Input Speed (rpm)	≤2000								≤2000							
Motor Length L / Weight	L=57.5(mm)/1.1(kg)								L=73.5(mm)/1.5(kg)							
Radial Force (N)	400															
Axial Force (N)	200															
Maximum Allowable Output Torque	1.6 times rated torque															

For customization requirements, shaft specifications, positioning bosses, etc., please consult Handebao Motor sales staff or contact authorized Handebao Motor agents.



Planetary Reduction Brushless Motor

Planetary Reduction Brushless Motor



The image is for reference only; please refer to the actual product!

**Product Features:**

- Integrated design, compact size, easy installation, strong versatility.
- Cage-type planetary gear structure, highly reliable, suitable for frequent forward and reverse rotation.
- Special frame structure can bear larger radial and axial forces.
- Fast delivery, far superior to products of the same price on the market.

**Technical Parameters**

Model (MODEL)	Output Power (W)	Power Supply Voltage (VDC)	Rated Torque (N-m)	Rated Speed (RPM)	Max Length (mm)	Motor Weight (Kg)	Poles (P)	Suitable Driver (Recommendation)
57BL73L2PS42- □□	100	24	0.3	3000	73	0.6	10	DBL-2420R 22~36VDC
57BL103L2PS42- □□	150	24	0.45	3000	103	0.6	10	
57BL103L4PS42- □□	150	48	0.45	3000	103	0.93	10	DBL-4820R 22~56VDC
57BL133L4PS42- □□	300	48	0.9	3000	133	0.93	10	
57BL133H2PS42- □□	300	220	0.9	3000	133	1.27	10	DBH-400DS 110~260VAC

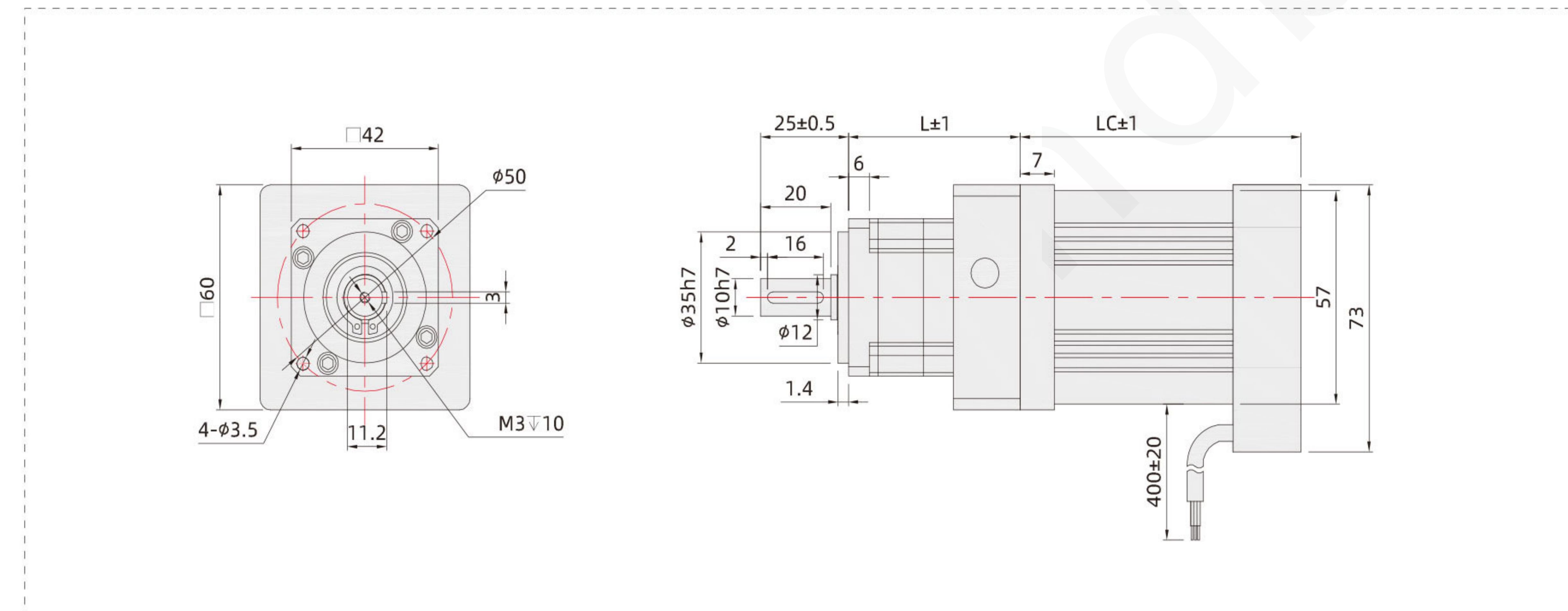
The above recommended "matching drivers" are standard motor drivers. It is recommended to control the motor speed within 2000 RPM for better protection and longer service life of the motor and reducer. HDB motors can also provide customers with:

- Bus-type stepper drivers (RS485, CAN open)
- Customized brushless drivers

When selecting a planetary reduction brushless motor, the rated output torque of the reducer should be checked to see if it meets the usage requirements and multiplied by the transmission efficiency; it is recommended that the input speed be less than 2000 rpm, and the final torque should be less than the rated torque to avoid reducing the service life of the reducer.

Parameter	Reduction Ratio															
	3	4	5	7	8	10	12	16	20	25	28	35	40	50	70	100
Rated Output Torque N-m	○	9	8	7	○	5	○	12	11	9	10	9	9	8	7	○
Efficiency (%)	96%								94%							
Backlash (arcmin)	≤15								≤20							
Input Speed (rpm)	≤2000								≤2000							
Motor Length L / Weight	L=35(mm)/0.25(kg)								L=46(mm)/0.35(kg)							
Radial Force (N)	300								300							
Axial Force (N)	100								100							
Maximum Allowable Output Torque	1.6 times rated torque															

For customization requirements, shaft specifications, positioning bosses, etc., please consult Handebao Motor sales staff or contact authorized Handebao Motor agents.



The image is for reference only; please refer to the actual product!

**Product Features:**

- Square flange connection at the output end, standardized installation dimensions, strong versatility.
- Single cantilever structure, simple design, excellent cost performance.
- Steel gear structure operates smoothly, low noise, long service life.
- Fast delivery, far superior to products of the same price on the market.
- Fast delivery, far superior to products of the same price on the market.

**Technical Parameters**

Model (MODEL)	Output Power (W)	Power Supply Voltage (VDC)	Rated Torque (N-m)	Rated Speed (RPM)	Max Length (mm)	Motor Weight (Kg)	Poles (P)	Suitable Driver (Recommendation)
57BL73L2PF- □□	100	24	0.3	3000	73	0.6	10	DBL-2420R 22~36VDC
57BL103L2PF- □□	150	24	0.45	3000	103	0.6	10	
57BL103L4PF- □□	150	48	0.45	3000	103	0.93	10	DBL-4820R 22~56VDC
57BL133L4PF- □□	300	48	0.9	3000	133	0.93	10	
57BL133H2PF- □□	300	220	0.9	3000	133	1.27	10	DBH-400DS 110~260VAC

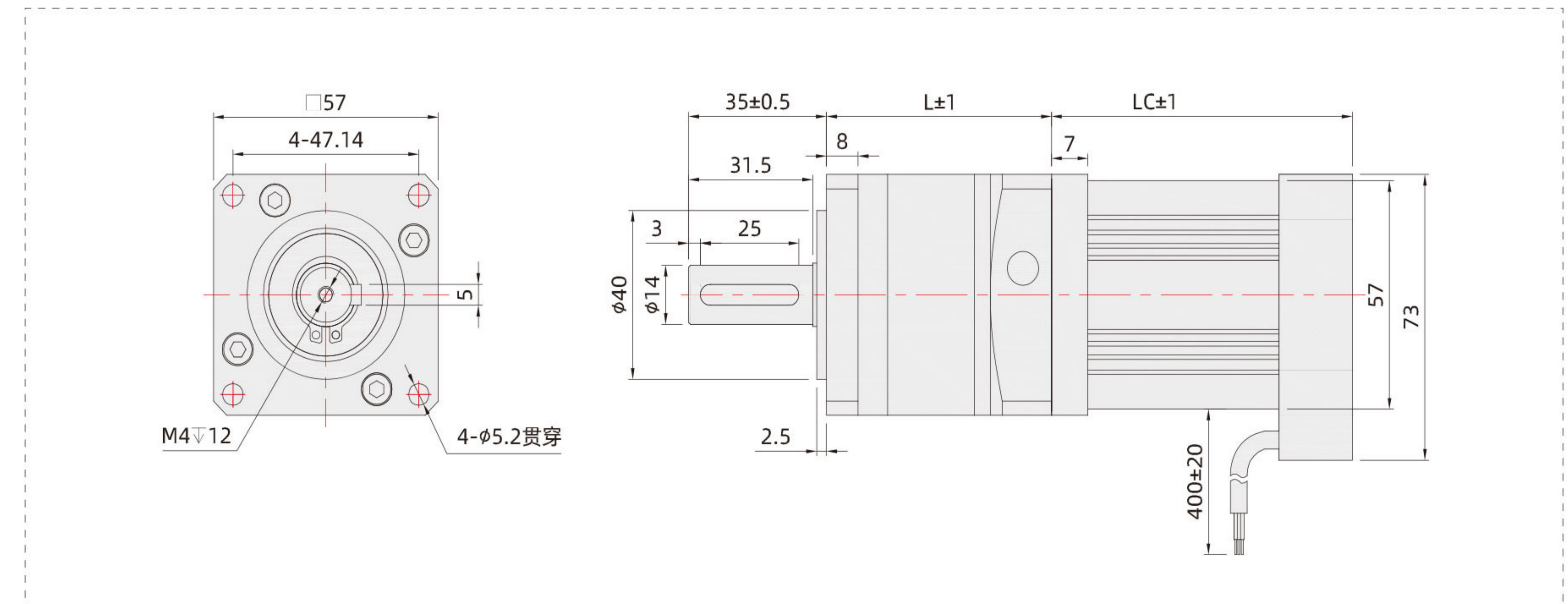
The above recommended "matching drivers" are standard motor drivers. It is recommended to control the motor speed within 2000 RPM for better protection and longer service life of the motor and reducer. HDB motors can also provide customers with:

- Bus-type stepper drivers (RS485, CAN open)
- Customized brushless drivers

When selecting a planetary reduction brushless motor, the rated output torque of the reducer should be checked to see if it meets the usage requirements and multiplied by the transmission efficiency; it is recommended that the input speed be less than 2000 rpm, and the final torque should be less than the rated torque to avoid reducing the service life of the reducer.

Parameter	Reduction Ratio															
	3	4	5	7	8	10	12	16	20	25	28	35	40	50	70	100
Rated Output Torque N-m	○	24	26	19	○	10	○	28	28	30	28	30	28	30	20	○
Efficiency (%)	96%								94%							
Backlash (arcmin)	≤15								≤20							
Input Speed (rpm)	≤2000								≤2000							
Motor Length L / Weight	L=77.5(mm)/1.2(kg)								L=93.5(mm)/1.5(kg)							
Radial Force (N)	400								400							
Axial Force (N)	200								200							
Maximum Allowable Output Torque	1.6 times rated torque															

For customization requirements, shaft specifications, positioning bosses, etc., please consult Handebao Motor sales staff or contact authorized Handebao Motor agents.





The image is for reference only; please refer to the actual product!

**Product Features:**

- Single cantilever structure, simple design, excellent cost performance.
- Smooth operation, low noise.
- Accuracy of 8-16 arc minutes, suitable for the vast majority of applications.

## Technical Parameters

Model (MODEL)	Output Power (W)	Power Supply Voltage (VDC)	Rated Torque (N-m)	Rated Speed (RPM)	Max Length (mm)	Motor Weight (Kg)	Poles (P)	Suitable Driver (Recommendation)
60BL77L2PF- □□	200	24	0.6	3000	77	0.6	10	DBL-2420R 22~36VDC
60BL77L4PF- □□	200	48	0.6	3000	77	0.6	10	DBL-4820R 22~56VDC
60BL92L4PF- □□	400	48	1.2	3000	92	0.93	10	
60BL77H2PF- □□	200	220	0.6	3000	77	0.93	10	DBH-400DS 110~260VAC
60BL92H2PF- □□	400	220	1.2	3000	92	1.27	10	

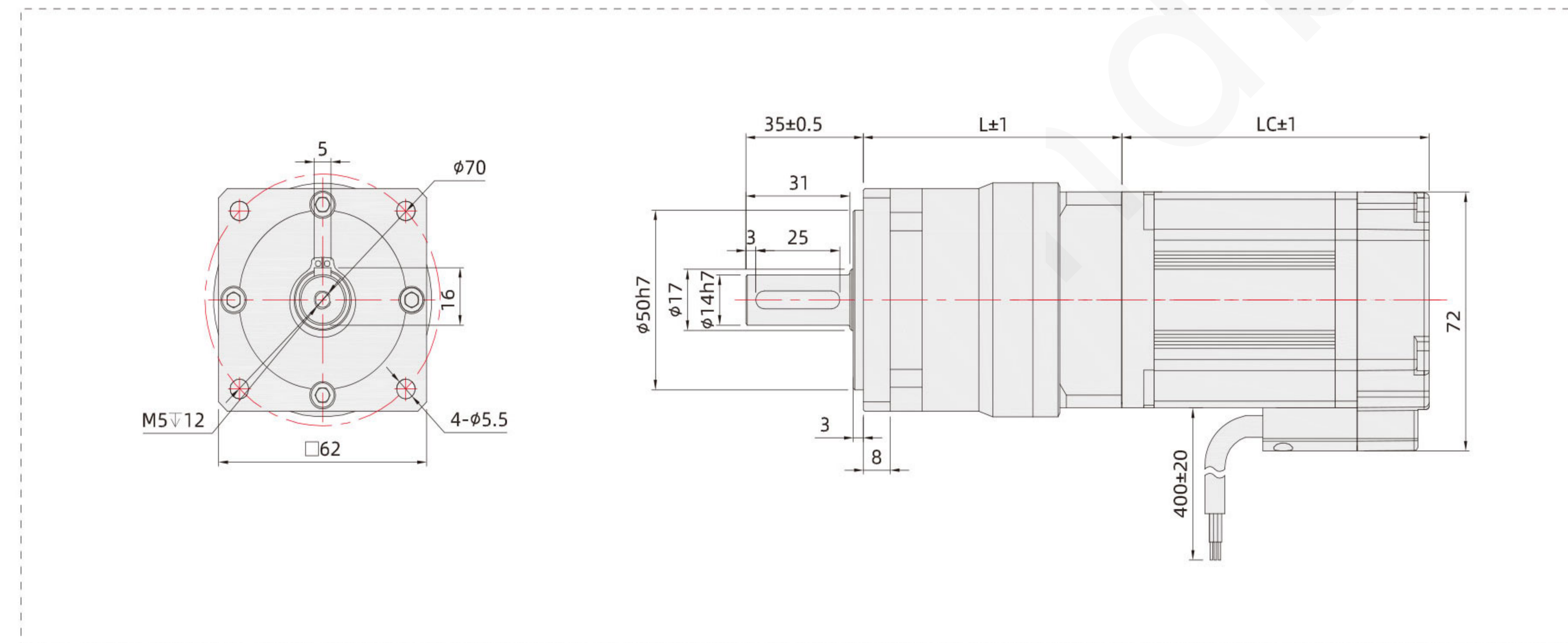
• The above recommended "matching drivers" are standard motor drivers. It is recommended to control the motor speed within 2000 RPM for better protection and longer service life of the motor and reducer. HDB motors can also provide customers with:

- Bus-type stepper drivers (RS485, CAN open)
- Customized brushless drivers

When selecting a planetary reduction brushless motor, the rated output torque of the reducer should be checked to see if it meets the usage requirements and multiplied by the transmission efficiency; it is recommended that the input speed be less than 2000 rpm, and the final torque should be less than the rated torque to avoid reducing the service life of the reducer.

Parameter	Reduction Ratio															
	3	4	5	7	8	10	12	16	20	25	28	35	40	50	70	100
Rated Output Torque N-m	15	25	27	19	19	12	28	29	29	31	29	31	29	31	22	○
Efficiency (%)	96%								94%							
Backlash (arcmin)	≤8								≤10							
Input Speed (rpm)	≤2000								≤2000							
Motor Length L / Weight	L=77.5(mm)/1.2(kg)								L=93.5(mm)/1.5(kg)							
Radial Force (N)	400															
Axial Force (N)	300															
Maximum Allowable Output Torque	1.6 times rated torque															

For customization requirements, shaft specifications, positioning bosses, etc., please consult Handebao Motor sales staff or contact authorized Handebao Motor agents.



The image is for reference only; please refer to the actual product!

**Product Features:**

- Equipped with bevel gear shifting mechanism, enabling right-angle output and greatly saving space.
- Simple design, reliable performance, excellent cost performance.
- Bevel gears undergo carburizing treatment with hardness up to HRC58, offering superior wear resistance.
- Compact structure, hardened gear surfaces transmit large torque, ensuring high-precision and stable operation.

## Technical Parameters

Model (MODEL)	Output Power (W)	Power Supply Voltage (VDC)	Rated Torque (N-m)	Rated Speed (RPM)	Max Length (mm)	Motor Weight (Kg)	Poles (P)	Suitable Driver (Recommendation)
60BL77L2PZF- □□	200	24	0.6	3000	77	0.6	10	DBL-2420R 22~36VDC
60BL77L4PZF- □□	200	48	0.6	3000	77	0.6	10	DBL-4820R 22~56VDC
60BL92L4PZF- □□	400	48	1.2	3000	92	0.93	10	
60BL77H2PZF- □□	200	220	0.6	3000	77	0.93	10	DBH-400DS 110~260VAC
60BL92H2PZF- □□	400	220	1.2	3000	92	1.27	10	

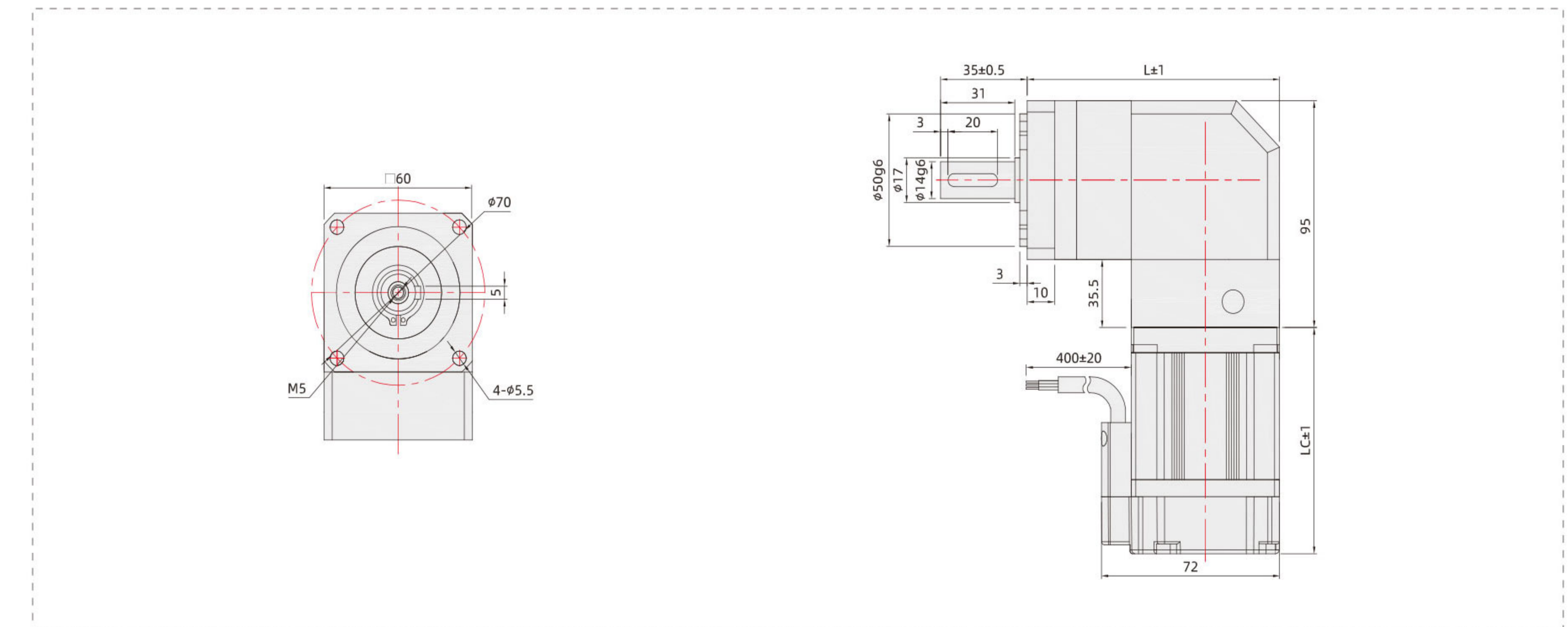
• The above recommended "matching drivers" are standard motor drivers. It is recommended to control the motor speed within 2000 RPM for better protection and longer service life of the motor and reducer. HDB motors can also provide customers with:

- Bus-type stepper drivers (RS485, CAN open)
- Customized brushless drivers

When selecting a planetary reduction brushless motor, the rated output torque of the reducer should be checked to see if it meets the usage requirements and multiplied by the transmission efficiency; it is recommended that the input speed be less than 2000 rpm, and the final torque should be less than the rated torque to avoid reducing the service life of the reducer.

Parameter	Reduction Ratio															
	3	4	5	7	8	10	12	16	20	25	28	35	40	50	70	100
Rated Output Torque N-m	22	34	35	27	○	16	28	28	35	37	25	35	35	37	30	16
Efficiency (%)	96%								94%							
Backlash (arcmin)	≤8								≤12							
Input Speed (rpm)	≤2000								≤2000							
Motor Length L / Weight	L=105.5(mm)/1.7(kg)								L=121.5(mm)/1.9(kg)							
Radial Force (N)	240															
Axial Force (N)	220															
Maximum Allowable Output Torque	2.0 times rated torque															

For customization requirements, shaft specifications, positioning bosses, etc., please consult Handebao Motor sales staff or contact authorized Handebao Motor agents.





The image is for reference only; please refer to the actual product!

Product Features:

- Single cantilever structure, simple design, excellent cost performance.
- Smooth operation, low noise.
- Accuracy of 8-16 arc minutes, suitable for the vast majority of applications.

Technical Parameters

Model (MODEL)	Output Power (W)	Power Supply Voltage (VDC)	Rated Torque (N·m)	Rated Speed (RPM)	Max Length (mm)	Motor Weight (Kg)	Poles (P)	Suitable Driver (Recommendation)
80BL120L4PF60-□□	500	48	1.6	3000	120	0.6	10	DBL-4850H 22~56VDC
80BL135L4PF60-□□	750	48	2.3	3000	135	0.93	10	
80BL120H2PF60-□□	500	220	1.6	3000	120	0.6	10	DBH-750DS 110~260VAC
80BL135H2PF60-□□	750	220	2.3	3000	135	0.93	10	
80BL150H2PF60-□□	1000	220	3.1	3000	150	1.27	10	DBH-1500DS 110~260VAC

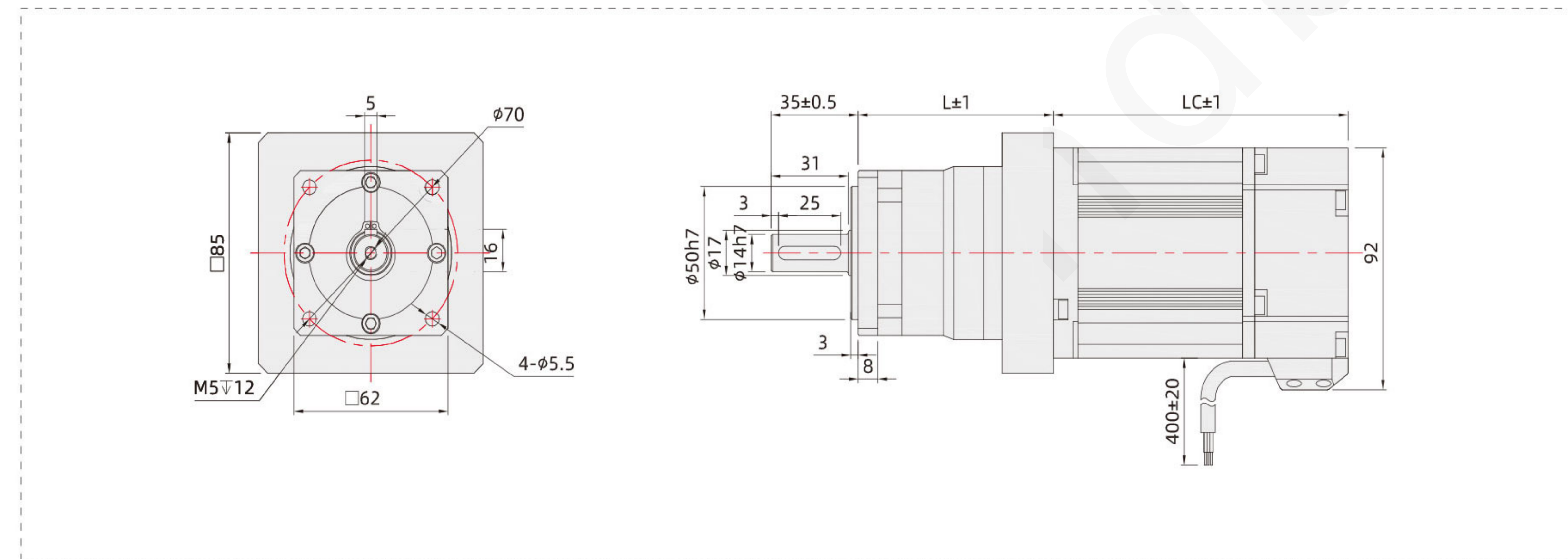
• The above recommended "matching drivers" are standard motor drivers. It is recommended to control the motor speed within 2000 RPM for better protection and longer service life of the motor and reducer. HDB motors can also provide customers with:

- Bus-type stepper drivers (RS485, CAN open)
- Customized brushless drivers

When selecting a planetary reduction brushless motor, the rated output torque of the reducer should be checked to see if it meets the usage requirements and multiplied by the transmission efficiency; it is recommended that the input speed be less than 2000 rpm, and the final torque should be less than the rated torque to avoid reducing the service life of the reducer.

Reduction Ratio	3	4	5	7	8	10	12	16	20	25	28	35	40	50	70	100
Rated Output Torque N·m	15	25	27	19	19	12	28	29	29	31	29	31	29	31	22	○
Efficiency (%)	96%						94%									
Backlash (arcmin)	≤8						≤10									
Input Speed (rpm)	≤2000						≤2000									
Motor Length L / Weight	L=77(mm)/1.2(kg)						L=93.5(mm)/1.4(kg)									
Radial Force (N)	400						650									
Axial Force (N)	300						550									
Maximum Allowable Output Torque	2.0 times rated torque															

For customization requirements, shaft specifications, positioning bosses, etc., please consult Handebao Motor sales staff or contact authorized Handebao Motor agents.



Planetary Reduction Brushless Motor



The image is for reference only; please refer to the actual product!

Product Features:

- Single cantilever structure, simple design, excellent cost performance.
- Smooth operation, low noise.
- Accuracy of 8-16 arc minutes, suitable for the vast majority of applications.

Technical Parameters

Model (MODEL)	Output Power (W)	Power Supply Voltage (VDC)	Rated Torque (N·m)	Rated Speed (RPM)	Max Length (mm)	Motor Weight (Kg)	Poles (P)	Suitable Driver (Recommendation)
80BL120L4PF-□□	500	48	1.6	3000	120	0.6	10	DBL-4850H 22~56VDC
80BL135L4PF-□□	750	48	2.3	3000	135	0.93	10	
80BL120H2PF-□□	500	220	1.6	3000	120	0.6	10	DBH-750DS 110~260VAC
80BL135H2PF-□□	750	220	2.3	3000	135	0.93	10	
80BL150H2PF-□□	1000	220	3.1	3000	150	1.27	10	DBH-1500DS 110~260VAC

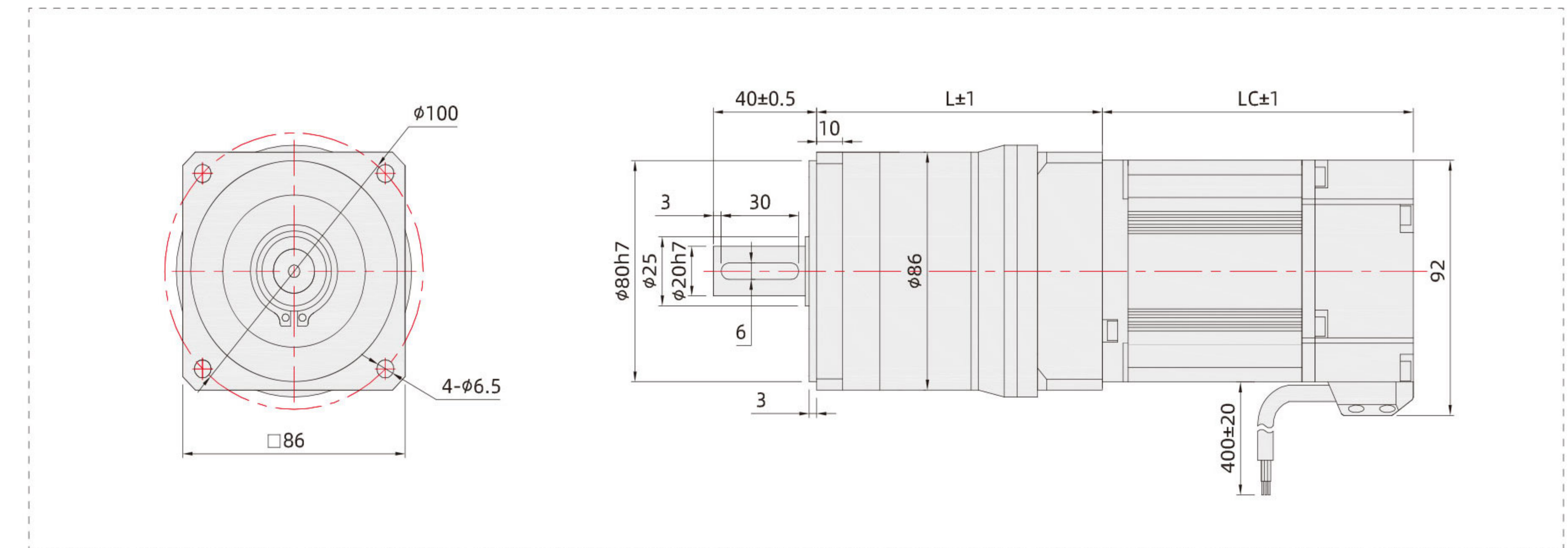
• The above recommended "matching drivers" are standard motor drivers. It is recommended to control the motor speed within 2000 RPM for better protection and longer service life of the motor and reducer. HDB motors can also provide customers with:

- Bus-type stepper drivers (RS485, CAN open)
- Customized brushless drivers

When selecting a planetary reduction brushless motor, the rated output torque of the reducer should be checked to see if it meets the usage requirements and multiplied by the transmission efficiency; it is recommended that the input speed be less than 2000 rpm, and the final torque should be less than the rated torque to avoid reducing the service life of the reducer.

Reduction Ratio	3	4	5	7	8	10	12	16	20	25	28	35	40	50	70	100
Rated Output Torque N·m	60	88	95	66	66	40	98	98	98	105	98	105	98	105	75	○
Efficiency (%)	94%						92%									
Backlash (arcmin)	≤8						≤10									
Input Speed (rpm)	≤2000						≤2000									
Motor Length L / Weight	L=110.5(mm)/2.7(kg)						L=134.5(mm)/3.3(kg)									
Radial Force (N)	650						550									
Axial Force (N)	550						2.0 times rated torque									
Maximum Allowable Output Torque	2.0 times rated torque															

For customization requirements, shaft specifications, positioning bosses, etc., please consult Handebao Motor sales staff or contact authorized Handebao Motor agents.



Planetary Reduction Brushless Motor



The image is for reference only; please refer to the actual product!

Product Features:

- Equipped with bevel gear shifting mechanism, enabling right-angle output and greatly saving space.
- Compact structure, hardened gear surfaces transmit large torque, ensuring high-precision and stable operation.
- Hypoid gears with transmission efficiency over 90%.
- Bevel gears undergo carburizing treatment with hardness up to HRC58, offering superior wear resistance.

Technical Parameters

Model (MODEL)	Output Power (W)	Power Supply Voltage (VDC)	Rated Torque (N·m)	Rated Speed (RPM)	Max Length (mm)	Motor Weight (Kg)	Poles (P)	Suitable Driver (Recommendation)
80BL120L4PZF60-□□	500	48	1.6	3000	120	0.6	10	DBL-4850H 22~56VDC
80BL135L4PZF60-□□	750	48	2.3	3000	135	0.93	10	
80BL120H2PZF60-□□	500	220	1.6	3000	120	0.6	10	DBH-750DS 110~260VAC
80BL135H2PZF60-□□	750	220	2.3	3000	135	0.93	10	
80BL150H2PZF60-□□	1000	220	3.1	3000	150	1.27	10	DBH-1500DS 110~260VAC

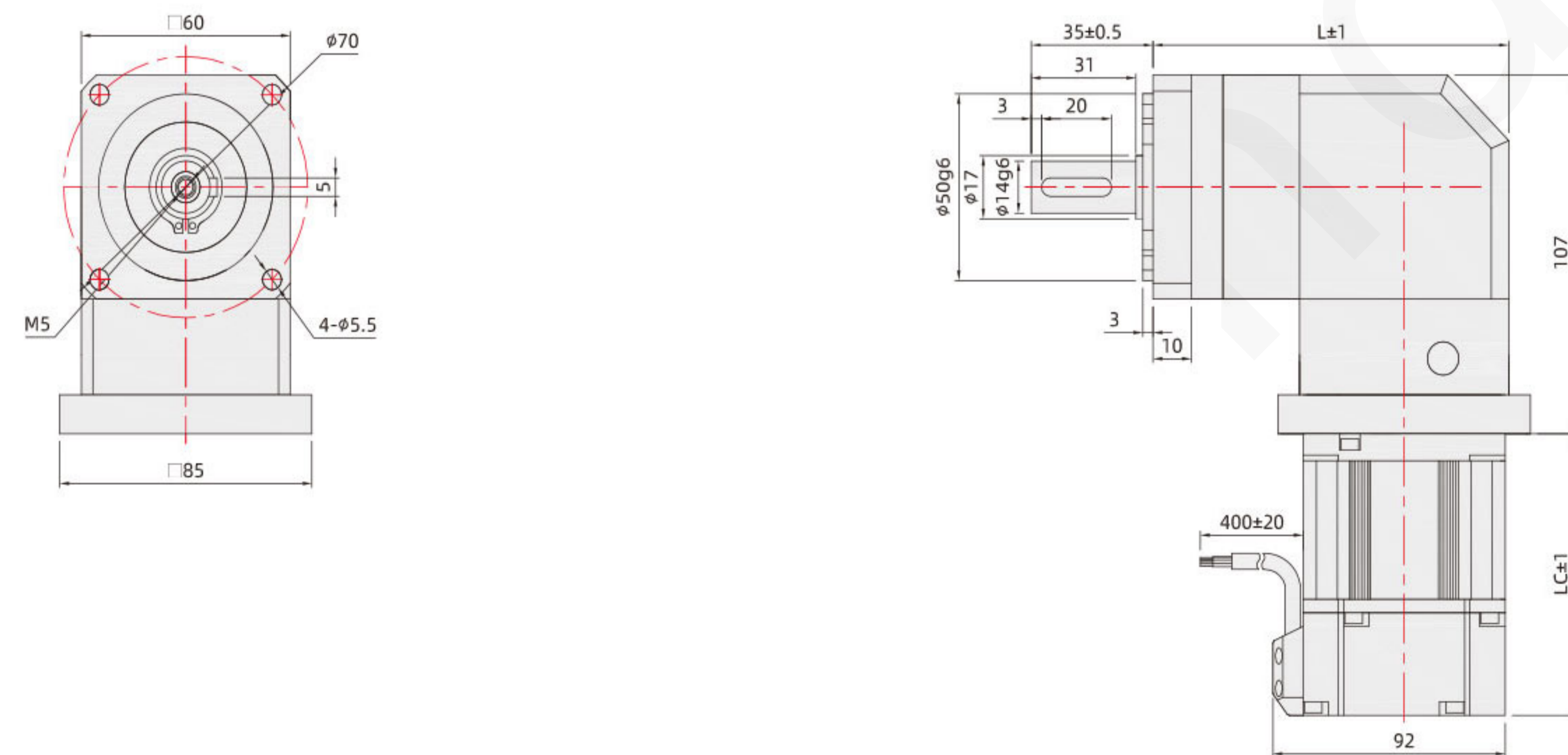
• The above recommended "matching drivers" are standard motor drivers. It is recommended to control the motor speed within 2000 RPM for better protection and longer service life of the motor and reducer. HDB motors can also provide customers with:

- Bus-type stepper drivers (RS485, CAN open)
- Customized brushless drivers

When selecting a planetary reduction brushless motor, the rated output torque of the reducer should be checked to see if it meets the usage requirements and multiplied by the transmission efficiency; it is recommended that the input speed be less than 2000 rpm, and the final torque should be less than the rated torque to avoid reducing the service life of the reducer.

Parameter	Reduction Ratio															
	3	4	5	7	8	10	12	16	20	25	28	35	40	50	70	100
Rated Output Torque N·m	15	25	27	19	19	12	28	29	29	31	29	31	29	31	22	○
Efficiency (%)	96%								94%							
Backlash (arcmin)	≤8								≤10							
Input Speed (rpm)	≤2000								≤2000							
Motor Length L / Weight	L=105.5(mm)/1.7(kg)								L=121.5(mm)/1.9(kg)							
Radial Force (N)	400								650							
Axial Force (N)	300								550							
Maximum Allowable Output Torque	2.0 times rated torque															

For customization requirements, shaft specifications, positioning bosses, etc., please consult Handebao Motor sales staff or contact authorized Handebao Motor agents.



Planetary Reduction Brushless Motor



The image is for reference only; please refer to the actual product!

Product Features:

- Equipped with bevel gear shifting mechanism, enabling right-angle output and greatly saving space.
- Compact structure, hardened gear surfaces transmit large torque, ensuring high-precision and stable operation.
- Hypoid gears with transmission efficiency over 90%.
- Bevel gears undergo carburizing treatment with hardness up to HRC58, offering superior wear resistance.

Technical Parameters

Model (MODEL)	Output Power (W)	Power Supply Voltage (VDC)	Rated Torque (N·m)	Rated Speed (RPM)	Max Length (mm)	Motor Weight (Kg)	Poles (P)	Suitable Driver (Recommendation)
80BL120L4PZF-□□	500	48	1.6	3000	120	0.6	10	DBL-4850H 22~56VDC
80BL135L4PZF-□□	750	48	2.3	3000	135	0.93	10	
80BL120H2PZF-□□	500	220	1.6	3000	120	0.6	10	DBH-750DS 110~260VAC
80BL135H2PZF-□□	750	220	2.3	3000	135	0.93	10	
80BL150H2PZF-□□	1000	220	3.1	3000	150	1.27	10	DBH-1500DS 110~260VAC

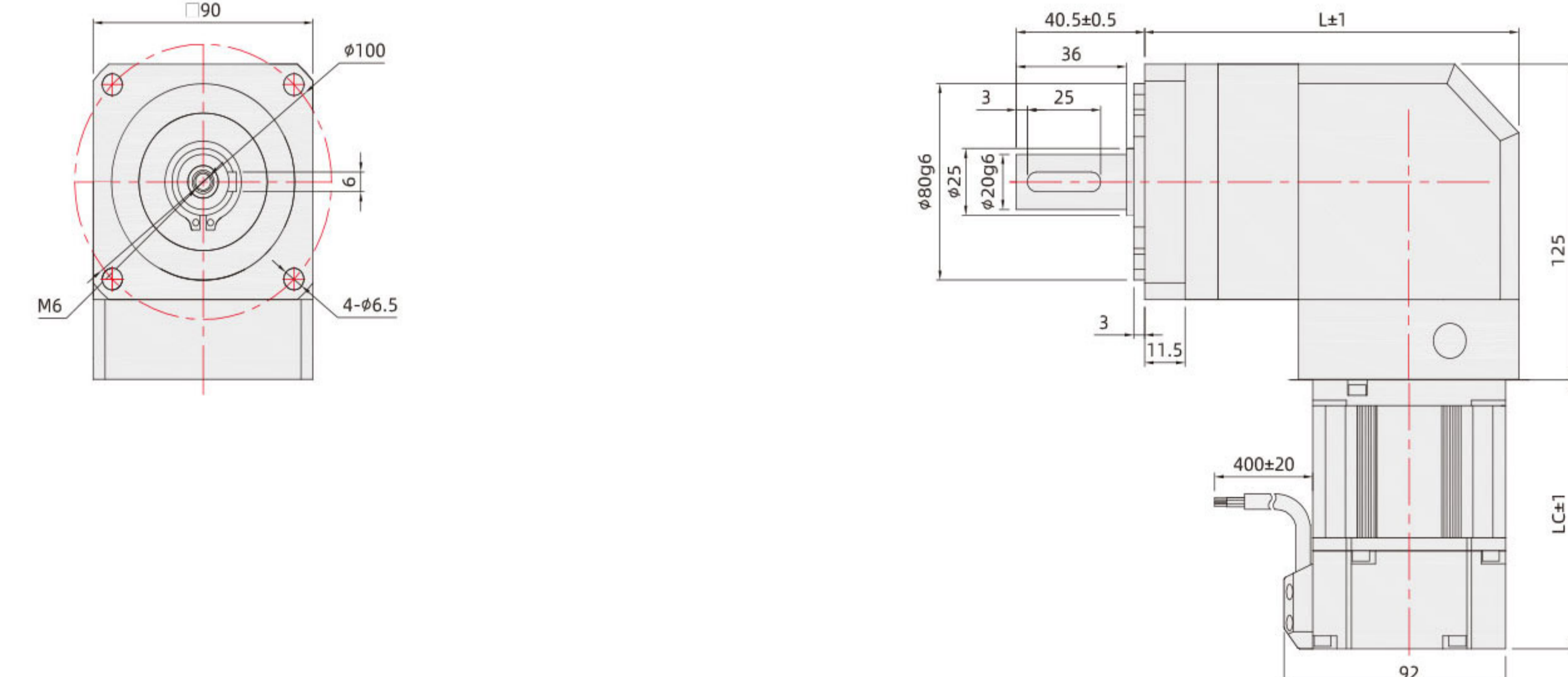
• The above recommended "matching drivers" are standard motor drivers. It is recommended to control the motor speed within 2000 RPM for better protection and longer service life of the motor and reducer. HDB motors can also provide customers with:

- Bus-type stepper drivers (RS485, CAN open)
- Customized brushless drivers

When selecting a planetary reduction brushless motor, the rated output torque of the reducer should be checked to see if it meets the usage requirements and multiplied by the transmission efficiency; it is recommended that the input speed be less than 2000 rpm, and the final torque should be less than the rated torque to avoid reducing the service life of the reducer.

Parameter	Reduction Ratio															
	3	4	5	7	8	10	12	16	20	25	28	35	40	50	70	100
Rated Output Torque N·m	60	88	95	66	66	40	98	98	98	105	98	105	98	105	75	○
Efficiency (%)	94%								92%							
Backlash (arcmin)	≤8								≤10							
Input Speed (rpm)	≤2000								≤2000							
Motor Length L / Weight	L=152.5(mm)/4.4(kg)								L=174.5(mm)/5.0(kg)							
Radial Force (N)	650								550							
Axial Force (N)	550								650							
Maximum Allowable Output Torque	2.0 times rated torque															

For customization requirements, shaft specifications, positioning bosses, etc., please consult Handebao Motor sales staff or contact authorized Handebao Motor agents.



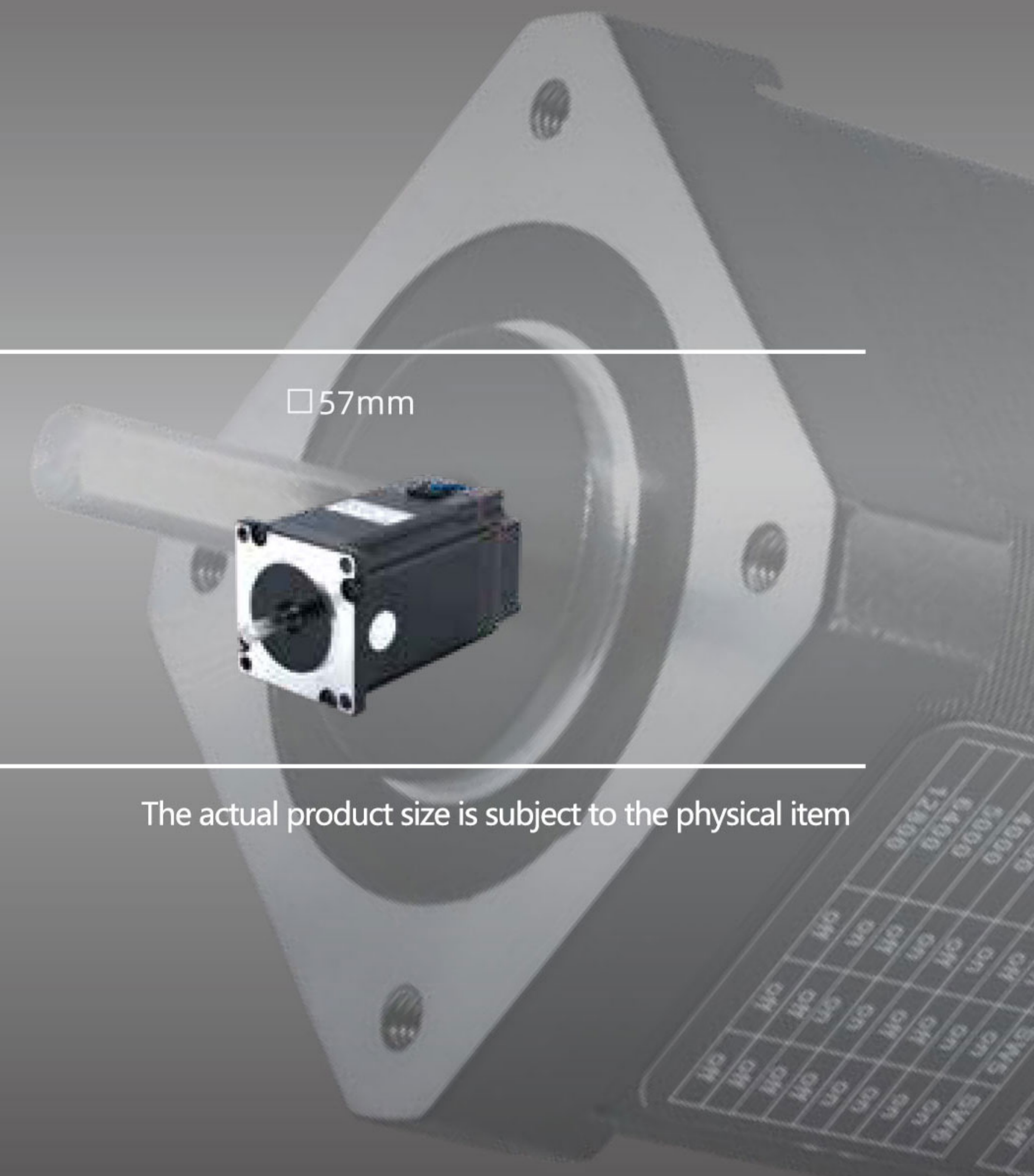
Planetary Reduction Brushless Motor

# Integrated Pulse-type Stepper Motor

□42mm



□57mm



The actual product size is subject to the physical item



The image is for reference only; please refer to the actual product!

### Product Features:

- 32-bit DSP digital processing technology.
- Motor and driver integrated, saving wiring labor and reducing installation space.
- Built-in microstepping algorithm to achieve low-step control commands and high-resolution operation.
- Low vibration, low noise, and smooth operation.
- Convenient current setting, can be freely selected between 0.1-2.2A (peak).
- Microstepping setting range is 200-25600.
- Equipped with protection functions such as overvoltage, undervoltage, and overcurrent.
- Built-in high-resolution and smoothing filter functions.
- Compact size and fast response.

## Electrical / Mechanical / Environmental Specifications

### Electrical Specifications

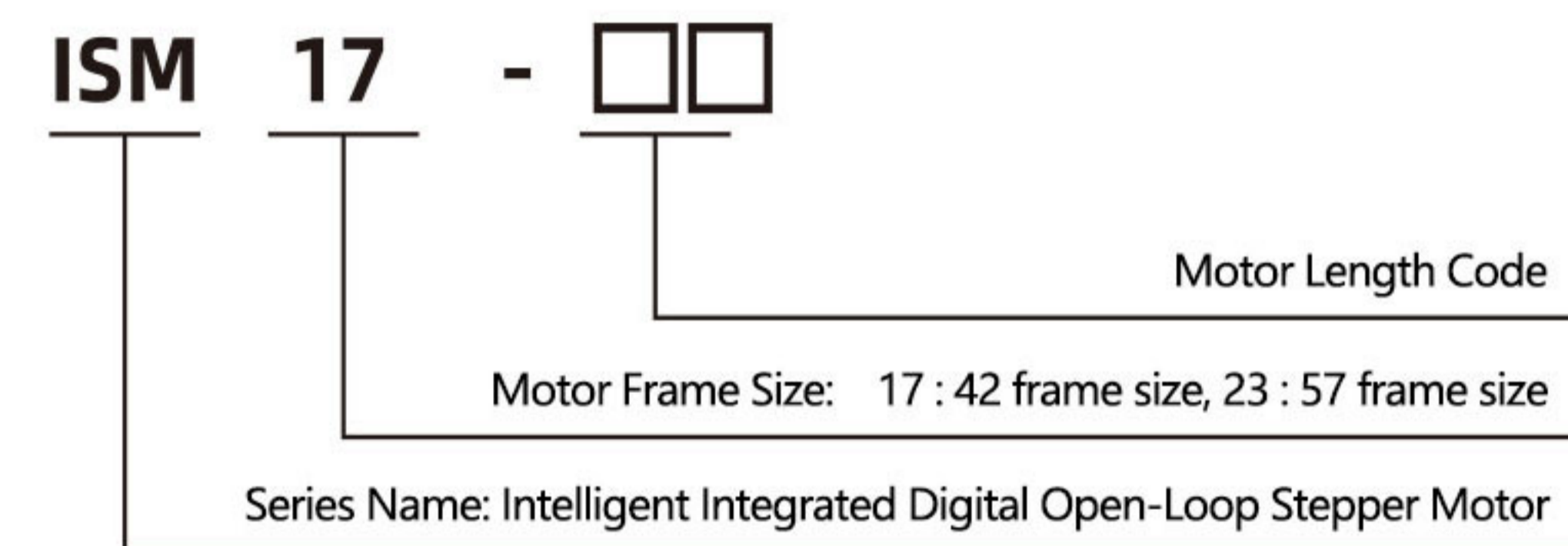
Description	ISM17			Unit
	Minimum	Typical	Maximum	
Output Current (Peak)	0.1	-	2.2	A
Input Voltage (DC)	15	24	32	VDC
Control Signal Input Current	6	10	16	mA
Control Signal Input Voltage	-	5	-	VDC
Minimum High-Level Pulse Width	1.5	-	-	μs
Overvoltage Threshold	35	36	37	VDC
Step Pulse Frequency	0	-	200	KHz
Insulation Resistance	100	-	-	MΩ

### Operating Environment and Parameters

Cooling Method	Natural cooling or forced air cooling
Operating Environment	Environment: Should not be placed near other heat-generating equipment; avoid dust, oil mist, corrosive gases, excessive humidity, and strong vibration; flammable gases and conductive dust are prohibited.
	Temperature: 0 ~ +45°C
	Humidity: 40 ~ 90%RH
	Vibration: 10 ~ 55Hz / 0.15mm
Storage Temperature	-20°C ~ +65°C
Weight	Approximately 0.4 kg

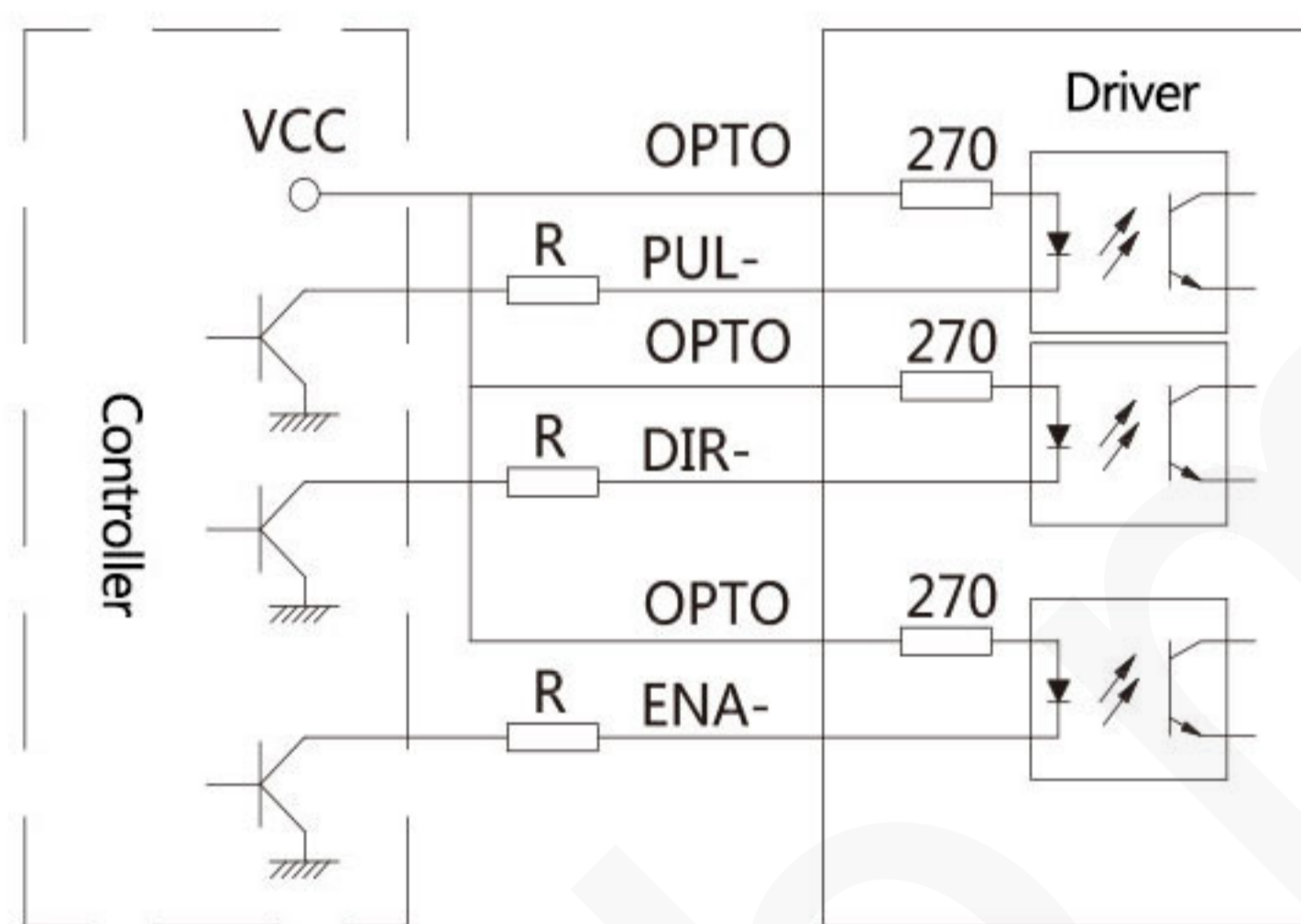
## Product Diagram

### Electrical Specifications



### Control Signal Interface Circuit

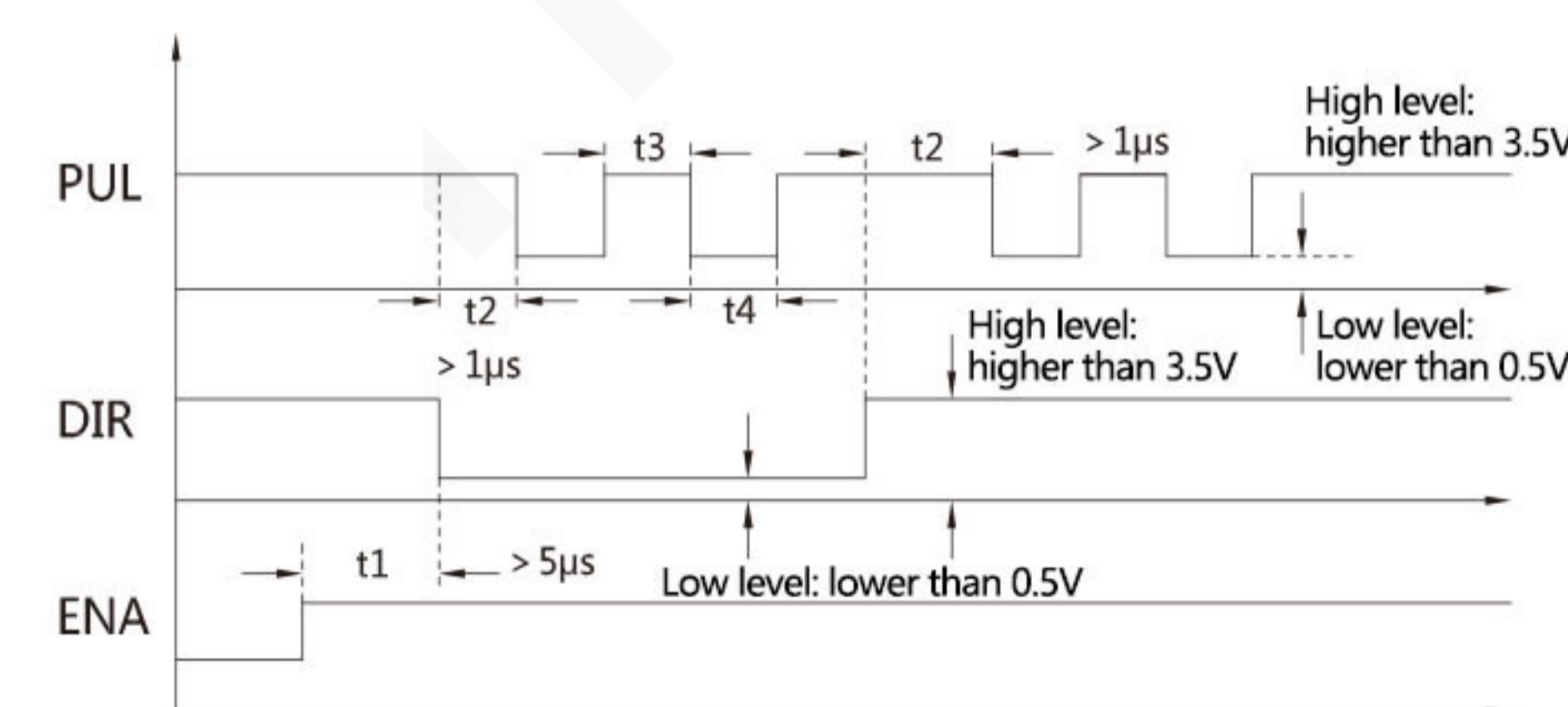
The signal input is a single-ended common-anode interface, with a built-in high-speed optocoupler isolation. The single-ended common-anode interface connection method is as follows:



#### Note:

- When VCC is 5V, R is shorted.
- When VCC is 12V, R is 1KΩ, and the resistor R power rating should be greater than 1/8W.
- When VCC is 24V, R is 2KΩ, and the resistor R power rating should be greater than 1/8W.

### Control Signal Timing Diagram

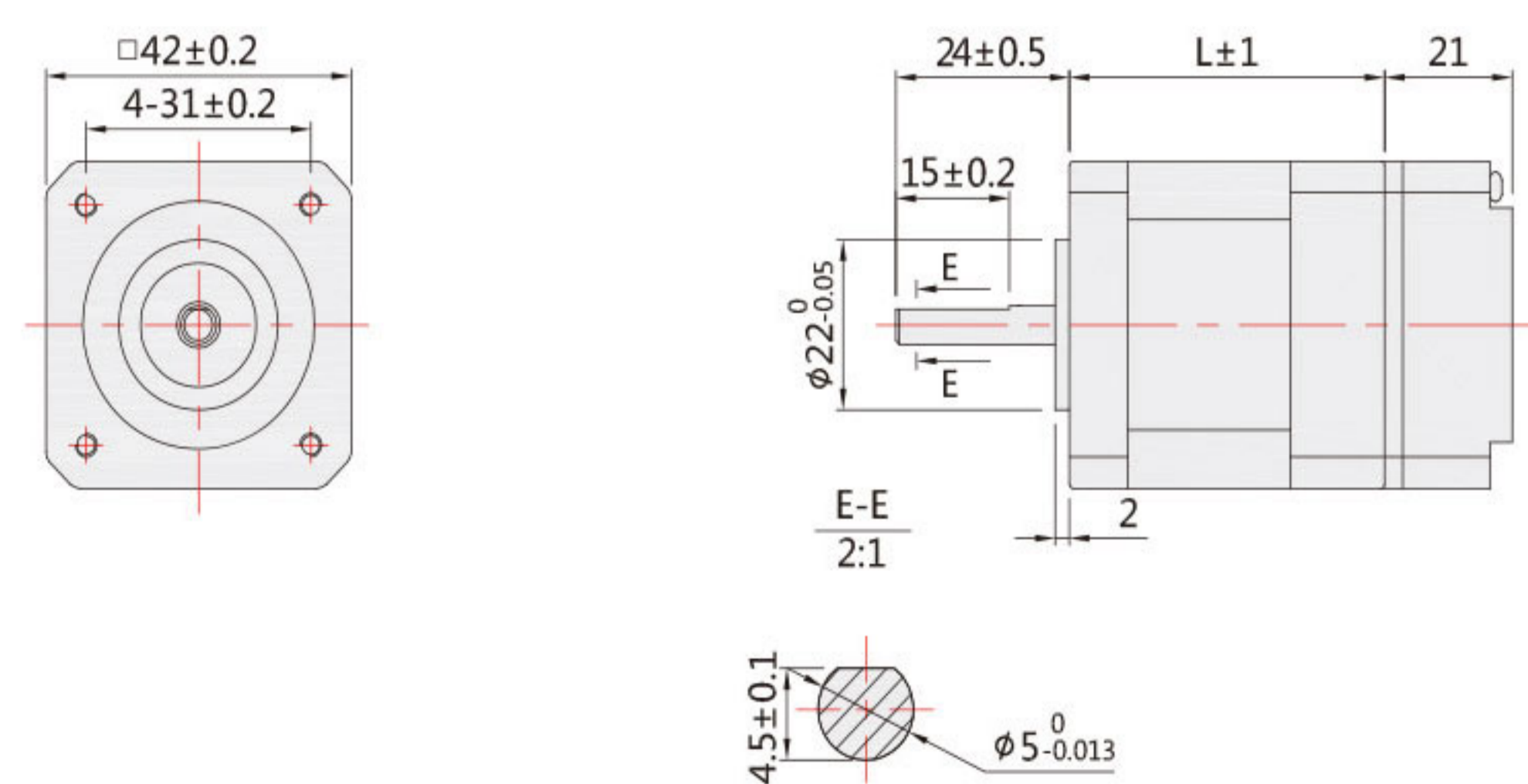


#### Note:

- t1: ENA (enable signal) should be set high at least 5μs before DIR; generally, it is recommended to keep it idle beforehand.
- t2: DIR should be set at least 1μs before the falling edge of PUL to confirm its high or low state.
- t3: Pulse width should be no less than 1.5μs.
- t4: Low-level width should be no less than 1.5μs.

MODEL	Holding Torque (N·m)	Rated Current (A)	Phase Resistance (Ω/phase)	Phase Inductance (mH/phase)	Rotational Inertia (g·cm <sup>2</sup> )	Motor Length (mm)	Motor Weight (Kg)
ISM1704	0.53	2.0	1.31	2.9	77.0	≤48.0	0.36
ISM1705	0.72	2.0	1.49	3.8	123.0	≤61.0	0.60

### Installation Dimensions: (Unit: mm)



## Driver Interface and Status Indicators

### Control signal and power input interface

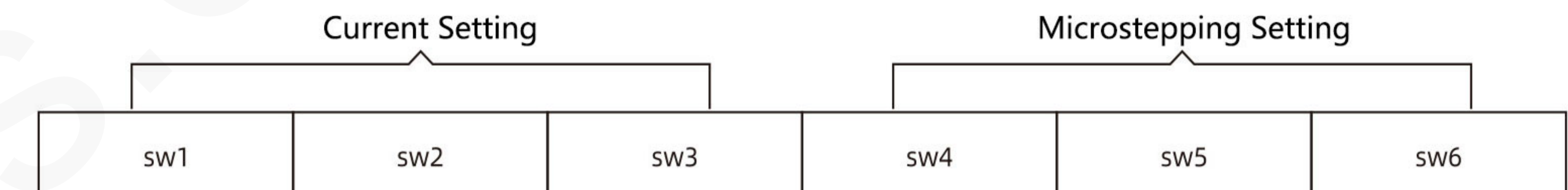
Pin No.	Signal Name	Function Description
1	VDC	Power positive input: DC voltage 15-32VDC
2	GND	Power negative input: DC voltage GND
3	OPTO	Pulse, direction, and enable common anode input, DC 5V
4	PUL-	Pulse, direction, and enable common anode input, DC 5V
5	DIR-	Direction control signal input (negative)
6	ENA-	Enable control signal input (negative)
7	TXD	RS485 serial port TXD, default factory setting is serial port 232
8	RXD	RS485 serial port RXD, default factory setting is serial port 232

### Status Indicators

The green LED is the power indicator. When the driver is powered on, the green LED stays on; when the driver is powered off, the green LED goes off. The red LED is the fault indicator. When a fault occurs, the red LED flashes in a 3-second cycle; when the fault is cleared by the user, the red LED stays off. The number of red LED flashes within 3 seconds represents different fault information. The specific meanings are shown in the table below:

No.	LED Flash Pattern	Fault Description	Solution
3	● 1 red flash	Overcurrent or phase-to-phase short circuit	Check for short circuit or wrong phase
4	●● 2 red flashes	Overvoltage fault (Voltage > 37VDC)	Lower the power supply voltage

## Current and Microstepping DIP Switch Settings



Using the three-position DIP switches SW1 to SW3, a total of 8 current levels can be set. Please refer to the table below.

Output Peak Current	Output RMS Current	SW1	SW2	SW3
0.5A	0.35A	ON	ON	ON
0.7A	0.50A	OFF	ON	ON
1.0A	0.71A	ON	OFF	ON
1.2A	0.85A	OFF	OFF	ON
1.5A	1.00A	ON	ON	OFF
1.8A	1.28A	OFF	ON	OFF
2.0A	1.42A	ON	OFF	OFF
2.2A	1.58A	OFF	OFF	OFF

Note: The peak current setting of the driver must be less than the rated current of the matching motor; otherwise, it may cause excessive motor temperature rise and affect the motor's service life.

Using the three-position DIP switches SW4 to SW6, 8 microstepping levels can be set. Please refer to the table below:

RPM (Revolutions per Minute)	SW4	SW5	SW6
400	ON	ON	ON
800	OFF	ON	ON
1600	ON	OFF	ON
3200	OFF	OFF	ON
4000	ON	ON	OFF
5000	OFF	ON	OFF
6400	ON	OFF	OFF
12800	OFF	OFF	OFF

Note: Microstepping can increase the resolution per step, but its main purpose is not to improve motor accuracy, rather to improve motor performance.

### Warm Reminder

1. When wiring, pay attention to the correct polarity of the power supply; do not reverse the positive and negative connections.
2. When using a switching power supply, the output current of the power supply should be greater than or equal to the operating current of the driver.



# Two-phase closed-loop stepper motor

□42 mm (1000 LPR encoder)



□57 mm (1000 LPR encoder)



□60 mm (1000 LPR encoder)



□86 mm (1000 LPR encoder)



□42 mm (2500 LPR encoder)



□57 mm (2500 LPR encoder)



□60 mm (2500 LPR encoder)



□86 mm (2500 LPR encoder)



The actual product size is subject to the physical item



# 60mm Two-Phase Closed-Loop Stepper Motor CLM Series



The image is for reference only; please refer to the actual product!

1.8°/step 1000 LPR (A/B dual-channel)

No missed steps; precise positioning.  
Low heat, low noise, high efficiency.  
Ultra-fast dynamic positioning response.  
High torque, high speed, more stable.  
No complex parameter tuning required; easier and simpler to use.  
Lower cost; economical and practical.  
This series complies with CE and RoHS certification standards.

## Technical Parameters

Stepper motors are not constant torque motors; the higher the running speed, the smaller the output torque. Therefore, when paying attention to the holding torque parameter of the motor, one should also focus on the output torque of the motor at the actual working speed (refer to the dynamic torque curve). We recommend reserving a 1.5 times margin to avoid step loss of the stepper motor under overload conditions.

Model (MODEL)	Holding Torque (N.m)	Rated Current (A)	Phase Resistance (Ω/phase)	Phase Inductance (mH/phase)	Rotor Inertia (g.cm <sup>2</sup> )	Max Motor Length (mm)	Motor Weight (Kg)	Index signal	Encoder output circuit	Encoder resolution (CPR)	Suitable Driver (Recommendation)
CLM2403	2.1	5.0	0.34	1.1	490	79	1.05	None	Differential output	1000	CLD24L
CLM2404	3.0	5.0	0.43	1.7	690	107	1.35				24~80VDC

The above recommended "Suitable Driver" is a pulse-type stepper motor driver. HDB motors can also be supplied with:

- Bus-type stepper motor drivers (RS485, CANopen, EtherCAT communication control, etc.)
- Intelligent stepper motor drivers (with position tuning, built-in PLC programming functions, etc.)

Model	Shaft Diameter D	Shaft Length L1	Flat Length L2
CLM2403	8	24	0.5×15
CLM2404	8	24	0.5×15

**Unit: mm**

**Precautions:**

- The motor front cover must be installed with a locating boss, and pay attention to tolerance fit to strictly ensure the coaxiality between the motor output shaft and the load.
- To reduce noise caused by motor vibration, the motor must be firmly fixed on a rigid metal surface.
- When connecting the motor and the driver, do not connect the phases incorrectly.

**Wiring Definition Diagram**

Motor Lead Definition	View from wire-entry side	Encoder Lead Definition	View from wire-entry side
1 A+		1 EB+ 6 NA	
2 A-		2 EB- 7 +5V	
3 B+		3 EA+ 8 GND	
4 B-		4 EA- 9 shield wire	
5 NA		5 NA	

**Motor Extension Cable Assembly (sold separately)**

Model	Cable Length	Remarks
CLM-M-200	2.0m	Cable spec: 4 × 0.5 mm <sup>2</sup> ; Flex life: ≥ 5 million cycles.
CLM-M-300	3.0m	Note: Ultra-high-flex drag-chain cable (10 million cycles) available by special order—please specify when ordering.
CLM-M-500	5.0m	

**Encoder Extension Cable Assembly (sold separately)**

Model	Cable Length	Remarks
CLM-P-200	2.0m	Cable spec: 3 × 2 × 0.2 mm <sup>2</sup> ; Flex life: ≥ 5 million cycles.
CLM-P-300	3.0m	Note: Ultra-high-flex drag-chain cable (10 million cycles) available by special order—please specify when ordering.
CLM-P-500	5.0m	

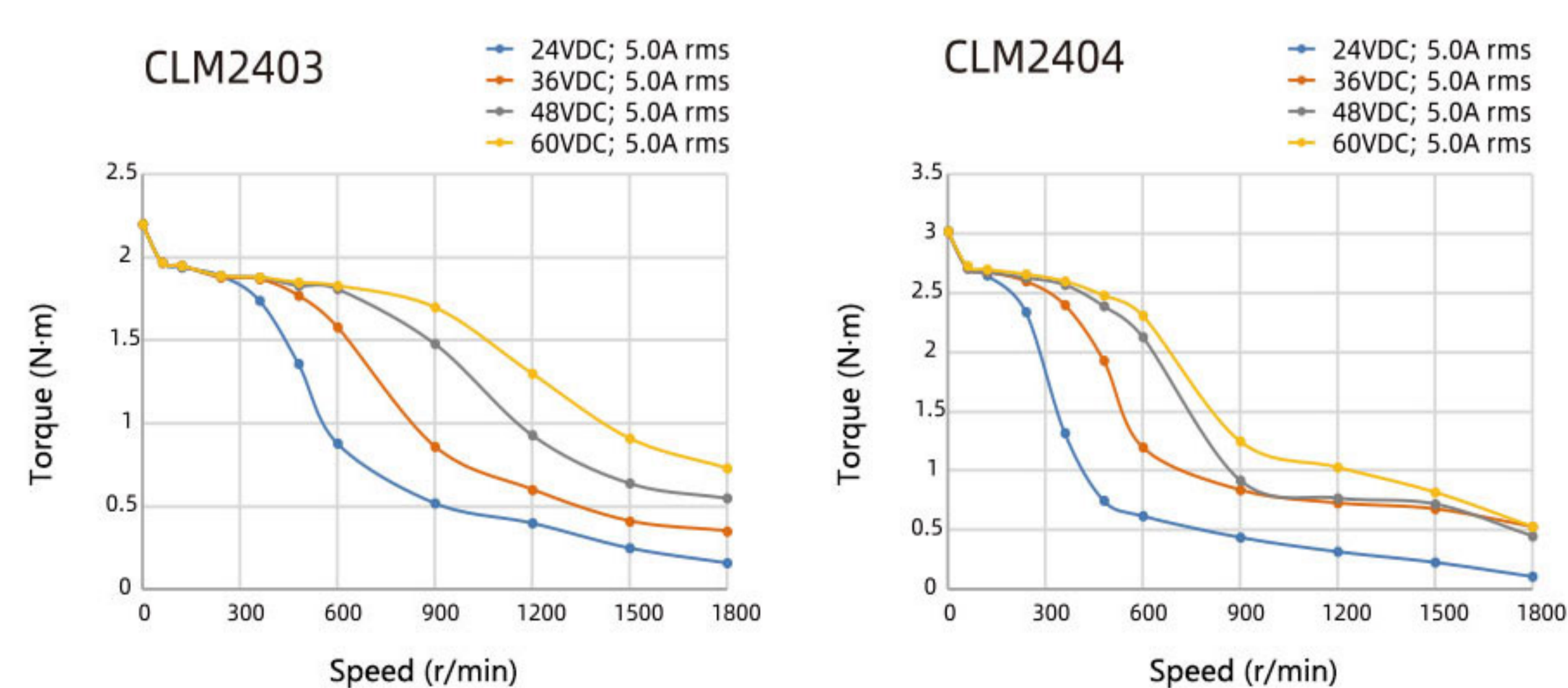
**Optional accessories:**

- Planetary gearbox
- Electromagnetic brake

**We can modify the motor according to your requirements:**

- Output shaft size and shape
- Wire specifications
- Motor body length
- Lead-out wiring method
- Z-phase signal, etc.

## Dynamic Torque Curve (Reference Value)



### Warm Reminder

The torque-frequency characteristic curve of the same motor will vary when using different drivers and different voltages; therefore, it is recommended to reserve at least 1.5 times the torque margin when selecting the model. The higher the driving voltage, the greater the high-speed output torque; recommended voltage: ≤ 48VDC.

# 86mm Two-Phase Closed-Loop Stepper Motor CLM Series



The image is for reference only; please refer to the actual product!

1.8°/step 1000 LPR (A/B dual-channel)

No missed steps; precise positioning.  
Low heat, low noise, high efficiency.  
Ultra-fast dynamic positioning response.  
High torque, high speed, more stable.  
No complex parameter tuning required; easier and simpler to use.  
Lower cost; economical and practical.  
This series complies with CE and RoHS certification standards.

## Technical Parameters

Stepper motors are not constant torque motors; the higher the running speed, the smaller the output torque. Therefore, when paying attention to the holding torque parameter of the motor, one should also focus on the output torque of the motor at the actual working speed (refer to the dynamic torque curve). We recommend reserving a 1.5 times margin to avoid step loss of the stepper motor under overload conditions.

Model (MODEL)	Holding Torque (N.m)	Rated Current (A)	Phase Resistance (Ω/phase)	Phase Inductance (mH/phase)	Rotor Inertia (g.cm <sup>2</sup> )	Max Motor Length (mm)	Motor Weight (Kg)	Index signal	Encoder output circuit	Encoder resolution (CPR)	Suitable Driver (Recommendation)
CLM3402	4.5	6.0	0.34	2.4	1800	116	2.15	None	Differential output	1000	CLD34L
CLM3403	8.5	6.0	0.54	5	3600	135	3.65				24~80VDC
CLM3404	12	6.0	0.72	7.3	5400	175	5.5				24~80VAC

The above recommended "Suitable Driver" is a pulse-type stepper motor driver. HDB motors can also be supplied with:

- Bus-type stepper motor drivers (RS485, CANopen, EtherCAT communication control, etc.)
- Intelligent stepper motor drivers (with position tuning, built-in PLC programming functions, etc.)

Model	Shaft Diameter D	Shaft Length L1	Key Length L2
CLM3402	14	32	5×5×25
CLM3403	14	32	5×5×25
CLM3404	14	32	5×5×25

**Unit: mm**

**Precautions:**

- The motor front cover must be installed with a locating boss, and pay attention to tolerance fit to strictly ensure the coaxiality between the motor output shaft and the load.
- To reduce noise caused by motor vibration, the motor must be firmly fixed on a rigid metal surface.
- When connecting the motor and the driver, do not connect the phases incorrectly.

**Wiring Definition Diagram**

Motor Lead Definition	View from wire-entry side	Encoder Lead Definition	View from wire-entry side
1 A+		1 EB+ 6 NA	
2 A-		2 EB- 7 +5V	
3 B+		3 EA+ 8 GND	
4 B-		4 EA- 9 shield wire	
5 NA		5 NA	

**Motor Extension Cable Assembly (sold separately)**

Model	Cable Length	Remarks
CLM-M-200	2.0m	Cable spec: 4 × 0.5 mm <sup>2</sup> ; Flex life: ≥ 5 million cycles.
CLM-M-300	3.0m	Note: Ultra-high-flex drag-chain cable (10 million cycles) available by special order—please specify when ordering.
CLM-M-500	5.0m	

**Encoder Extension Cable Assembly (sold separately)**

Model	Cable Length	Remarks
CLM-P-200	2.0m	Cable spec: 3 × 2 × 0.2 mm <sup>2</sup> ; Flex life: ≥ 5 million cycles.
CLM-P-300	3.0m	Note: Ultra-high-flex drag-chain cable (10 million cycles) available by special order—please specify when ordering.
CLM-P-500	5.0m	

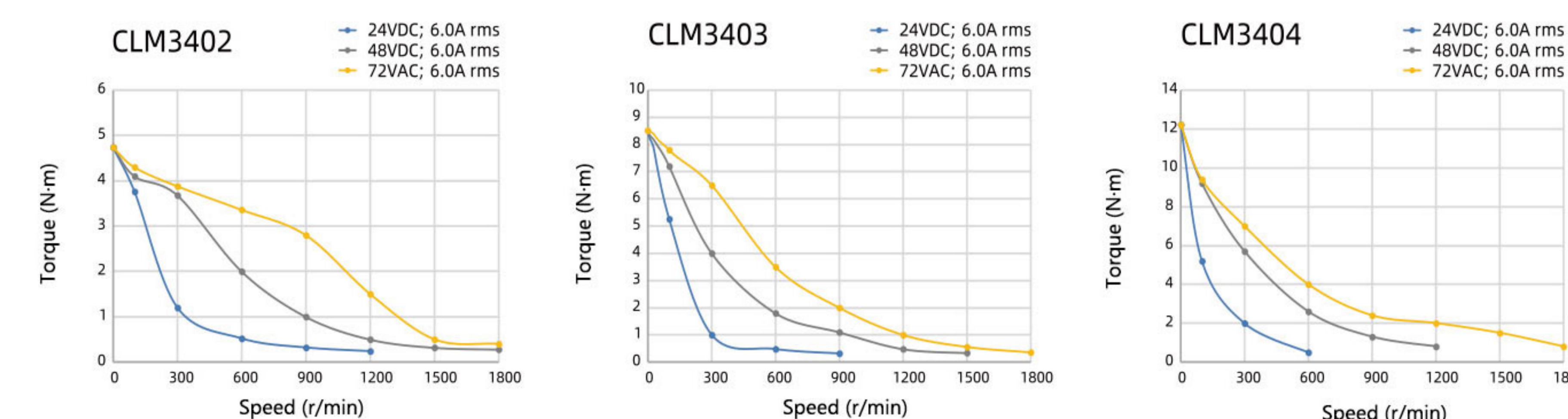
**Optional accessories:**

- Planetary gearbox
- Electromagnetic brake

**We can modify the motor according to your requirements:**

- Output shaft size and shape
- Wire specifications
- Motor body length
- Lead-out wiring method
- Z-phase signal, etc.

## Dynamic Torque Curve (Reference Value)



### Warm Reminder

The torque-frequency characteristic curve of the same motor will vary when using different drivers and different voltages; therefore, it is recommended to reserve at least 1.5 times the torque margin when selecting the model. The higher the driving voltage, the greater the high-speed output torque; recommended voltage: ≤ 72VDC.

# 42mm Two-phase Closed-loop Servo Motor SSM Series



1.8°/step 2500 LPR (A/B/Z dual channels)

No missed steps, precise positioning.  
 Low heat, low noise, high efficiency.  
 Ultra-fast dynamic positioning response.  
 High torque, high speed, more stable.  
 No complex parameter tuning, easier and more convenient to use.  
 Lower cost, economical and practical.  
 This series complies with CE and RoHS certification standards.

The image is for reference only; please refer to the actual product!

## Technical Parameters

Stepper motors are not constant torque motors; the higher the running speed, the smaller the output torque. Therefore, when paying attention to the holding torque parameter of the motor, one should also focus on the output torque of the motor at the actual working speed (refer to the dynamic torque curve). We recommend reserving a 1.5 times margin to avoid step loss of the stepper motor under overload conditions.

Model (MODEL)	Holding Torque (N.m)	Rated Current (A)	Phase Resistance (Ω/phase)	Phase Inductance (mH/phase)	Rotor Inertia (g.cm <sup>2</sup> )	Max Motor Length (mm)	Motor Weight (Kg)	Index signal	Encoder output circuit	Encoder resolution (CPR)	Suitable Driver (Recommendation)
SSM1704	0.48	2.0	1.35	3.2	77	68	0.41	Yes	Differential output	2500	SSD17H 24~48VDC
SSM1705	0.72	2.0	1.75	4.0	110	80	1.00				

- The above recommended "Suitable Driver" is a pulse-type stepper motor driver. HDB motors can also be supplied with:
  - Bus-type stepper motor drivers (RS485, CANopen, EtherCAT communication control, etc.)
  - Intelligent stepper motor drivers (with position tuning, built-in PLC programming functions, etc.)

Model	Shaft Diameter D	Shaft Length L1	Flat Length L2
SSM1704	8	24	0.5×15
SSM1705	8	24	0.5×15

**Precautions:**

- The motor front cover must be installed with a locating boss, and pay attention to tolerance fit to strictly ensure the coaxiality between the motor output shaft and the load.
- To reduce noise caused by motor vibration, the motor must be firmly fixed on a rigid metal surface.
- When connecting the motor and the driver, do not connect the phases incorrectly.

**Wiring Definition Diagram**

Motor Lead Definition	View from wire-entry side	Encoder Lead Definition	View from wire-entry side
1 A+		1 EB+	
2 A-		2 EB-	
3 B+		3 EA+	
4 B-		4 EA-	
		5 EZ-	9 shield wire

**Motor Extension Cable Assembly (sold separately)**

Model	Cable Length	Remarks
SSM-M-200	2.0m	Cable spec: 4 × 0.5 mm <sup>2</sup> ; Flex life: ≥ 5 million cycles.
SSM-M-300	3.0m	Note: Ultra-high-flex drag-chain cable (10 million cycles) available by special order—please specify when ordering.
SSM-M-500	5.0m	

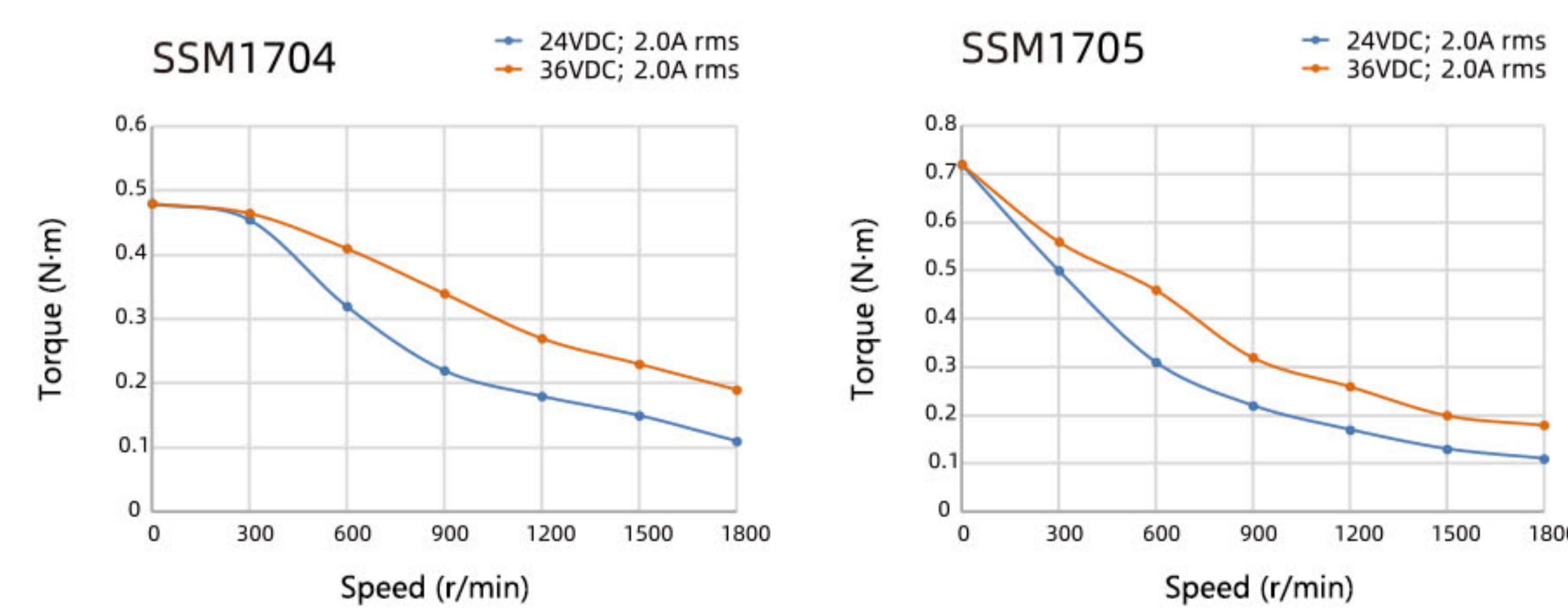
**Encoder Extension Cable Assembly (sold separately)**

Model	Cable Length	Remarks
SSM-P-200	2.0m	Cable spec: 3 × 2 × 0.2 mm <sup>2</sup> ; Flex life: ≥ 5 million cycles.
SSM-P-300	3.0m	Note: Ultra-high-flex drag-chain cable (10 million cycles) available by special order—please specify when ordering.
SSM-P-500	5.0m	

**Optional accessories:**

- Planetary gearbox
- Electromagnetic brake

## Dynamic Torque Curve (Reference Value)



### Warm Reminder

The torque-frequency characteristic curve of the same motor will vary when using different drivers and different voltages; therefore, it is recommended to reserve at least 1.5 times the torque margin when selecting the model. The higher the driving voltage, the greater the high-speed output torque; recommended voltage: ≤ 36VDC.

# 57mm Two-phase Closed-loop Servo Motor SSM Series



1.8°/step 2500 LPR (A/B/Z dual channels)

No missed steps, precise positioning.  
 Low heat, low noise, high efficiency.  
 Ultra-fast dynamic positioning response.  
 High torque, high speed, more stable.  
 No complex parameter tuning, easier and more convenient to use.  
 Lower cost, economical and practical.  
 This series complies with CE and RoHS certification standards.

The image is for reference only; please refer to the actual product!

## Technical Parameters

Stepper motors are not constant torque motors; the higher the running speed, the smaller the output torque. Therefore, when paying attention to the holding torque parameter of the motor, one should also focus on the output torque of the motor at the actual working speed (refer to the dynamic torque curve). We recommend reserving a 1.5 times margin to avoid step loss of the stepper motor under overload conditions.

Model (MODEL)	Holding Torque (N.m)	Rated Current (A)	Phase Resistance (Ω/phase)	Phase Inductance (mH/phase)	Rotor Inertia (g.cm <sup>2</sup> )	Max Motor Length (mm)	Motor Weight (Kg)	Index signal	Encoder output circuit	Encoder resolution (CPR)	Suitable Driver (Recommendation)
SSM2302	1.2	4.0	0.45	1.4	280	77	0.77	Yes	Differential output	2500	SSD23H 24~80VDC
SSM2304	2.0	5.0	0.37	1.8	480	98	1.15				

- The above recommended "Suitable Driver" is a pulse-type stepper motor driver. HDB motors can also be supplied with:
  - Bus-type stepper motor drivers (RS485, CANopen, EtherCAT communication control, etc.)
  - Intelligent stepper motor drivers (with position tuning, built-in PLC programming functions, etc.)

Model	Shaft Diameter D	Shaft Length L1	Flat Length L2
SSM2302	8	21	0.5×15
SSM2304	8	21	0.5×15

**Precautions:**

- The motor front cover must be installed with a locating boss, and pay attention to tolerance fit to strictly ensure the coaxiality between the motor output shaft and the load.
- To reduce noise caused by motor vibration, the motor must be firmly fixed on a rigid metal surface.
- When connecting the motor and the driver, do not connect the phases incorrectly.

**Wiring Definition Diagram**

Motor Lead Definition	View from wire-entry side	Encoder Lead Definition	View from wire-entry side
1 A+		1 EB+	
2 A-		2 EB-	
3 B+		3 EA+	
4 B-		4 EA-	
		5 EZ-	9 shield wire

**Motor Extension Cable Assembly (sold separately)**

Model	Cable Length	Remarks
SSM-M-200	2.0m	Cable spec: 4 × 0.5 mm <sup>2</sup> ; Flex life: ≥ 5 million cycles.
SSM-M-300	3.0m	Note: Ultra-high-flex drag-chain cable (10 million cycles) available by special order—please specify when ordering.
SSM-M-500	5.0m	

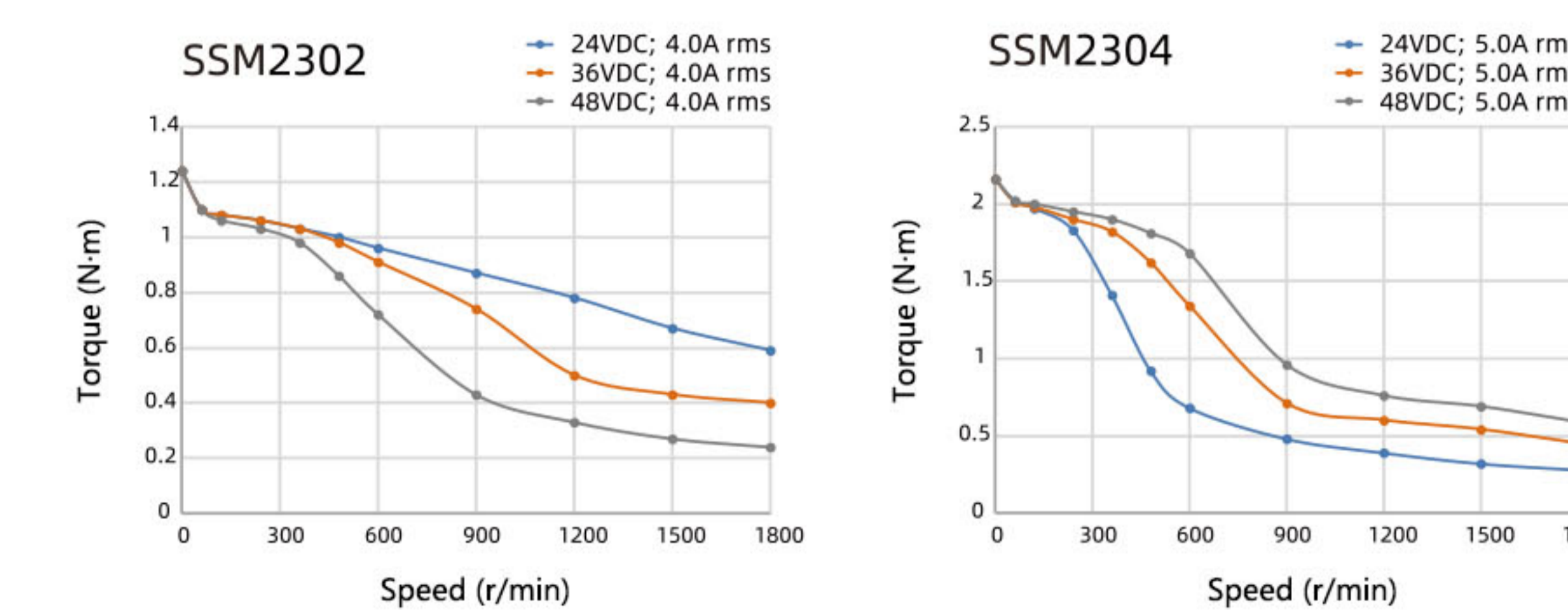
**Encoder Extension Cable Assembly (sold separately)**

Model	Cable Length	Remarks
SSM-P-200	2.0m	Cable spec: 3 × 2 × 0.2 mm <sup>2</sup> ; Flex life: ≥ 5 million cycles.
SSM-P-300	3.0m	Note: Ultra-high-flex drag-chain cable (10 million cycles) available by special order—please specify when ordering.
SSM-P-500	5.0m	

**Optional accessories:**

- Planetary gearbox
- Electromagnetic brake

## Dynamic Torque Curve (Reference Value)



### Warm Reminder

The torque-frequency characteristic curve of the same motor will vary when using different drivers and different voltages; therefore, it is recommended to reserve at least 1.5 times the torque margin when selecting the model. The higher the driving voltage, the greater the high-speed output torque; recommended voltage: ≤ 48VDC.

# 60mm Two-phase Closed-loop Servo Motor SSM Series



The image is for reference only; please refer to the actual product!

1.8°/step 2500 LPR (A/B/Z dual channels)

No missed steps, precise positioning.  
Low heat, low noise, high efficiency.  
Ultra-fast dynamic positioning response.  
High torque, high speed, more stable.  
No complex parameter tuning, easier and more convenient to use.  
Lower cost, economical and practical.  
This series complies with CE and RoHS certification standards.

## Technical Parameters

Stepper motors are not constant torque motors; the higher the running speed, the smaller the output torque. Therefore, when paying attention to the holding torque parameter of the motor, one should also focus on the output torque of the motor at the actual working speed (refer to the dynamic torque curve). We recommend reserving a 1.5 times margin to avoid step loss of the stepper motor under overload conditions.

Model (MODEL)	Holding Torque (N.m)	Rated Current (A)	Phase Resistance (Ω/phase)	Phase Inductance (mH/phase)	Rotor Inertia (g.cm <sup>2</sup> )	Max Motor Length (mm)	Motor Weight (Kg)	Index signal	Encoder output circuit	Encoder resolution (CPR)	Suitable Driver (Recommendation)
SSM2403	2.1	5.0	0.34	1.1	490	79	1.05	Yes	Differential output	2500	SSD24H
SSM2404	3.0	5.0	0.43	1.7	690	107	1.35				24~80VDC

- The above recommended "Suitable Driver" is a pulse-type stepper motor driver. HDB motors can also be supplied with:
  - Bus-type stepper motor drivers (RS485, CANopen, EtherCAT communication control, etc.)
  - Intelligent stepper motor drivers (with position tuning, built-in PLC programming functions, etc.)

Model	Shaft Diameter D	Shaft Length L1	Flat Length L2
SSM2403	8	24	0.5×15
SSM2404	8	24	0.5×15

**Precautions:**

- The motor front cover must be installed with a locating boss, and pay attention to tolerance fit to strictly ensure the coaxiality between the motor output shaft and the load.
- To reduce noise caused by motor vibration, the motor must be firmly fixed on a rigid metal surface.
- When connecting the motor and the driver, do not connect the phases incorrectly.

**Wiring Definition Diagram**

Motor Lead Definition	View from wire-entry side	Encoder Lead Definition	View from wire-entry side
1 A+	1	EB+	6 EZ+
2 A-	2	EB-	7 +5V
3 B+	3	EA+	8 GND
4 B-	4	EA-	9 shield wire
	5	EZ-	

**Motor Extension Cable Assembly (sold separately)**

Model	Cable Length	Remarks
SSM-M-200	2.0m	Cable spec: 4 × 0.5 mm <sup>2</sup> ; Flex life: ≥ 5 million cycles. Note: Ultra-high-flex drag-chain cable (10 million cycles) available by special order—please specify when ordering.
SSM-M-300	3.0m	
SSM-M-500	5.0m	

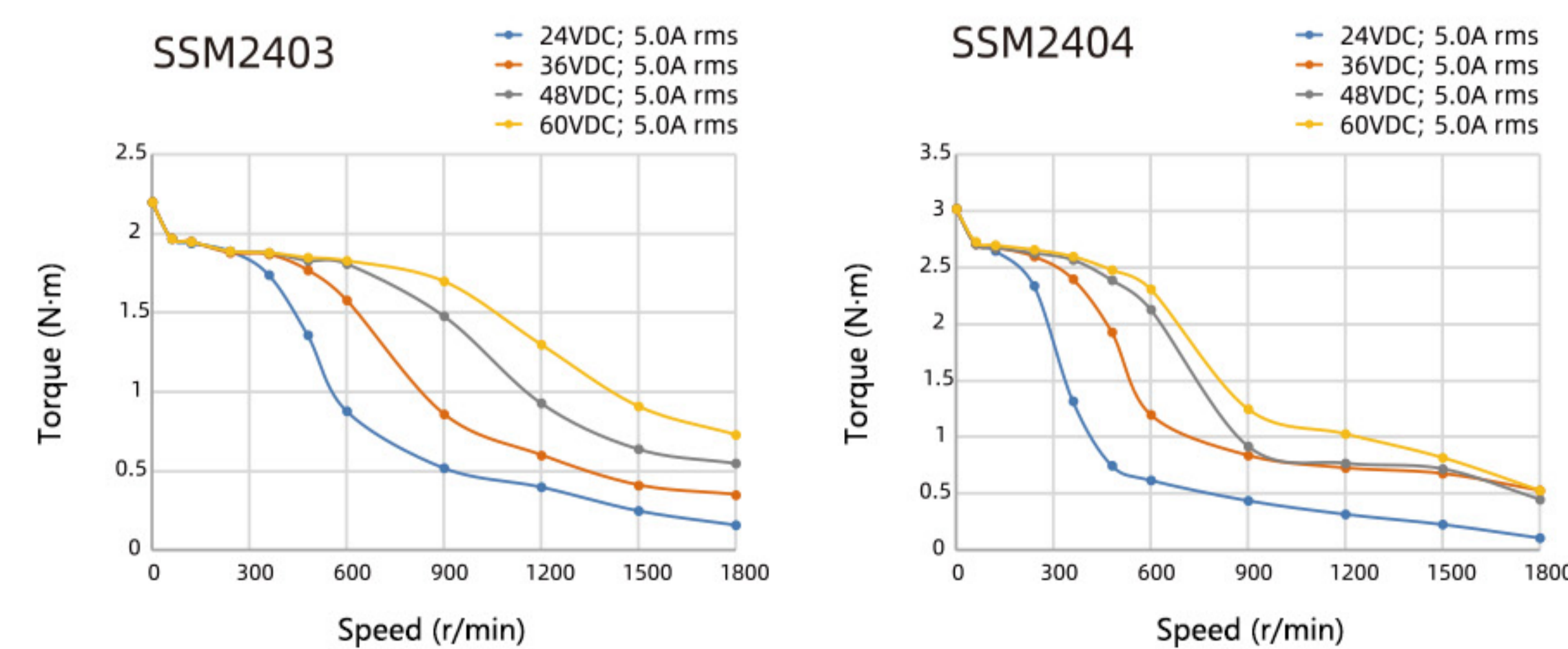
**Encoder Extension Cable Assembly (sold separately)**

Model	Cable Length	Remarks
SSM-P-200	2.0m	Cable spec: 3 × 2 × 0.2 mm <sup>2</sup> ; Flex life: ≥ 5 million cycles. Note: Ultra-high-flex drag-chain cable (10 million cycles) available by special order—please specify when ordering.
SSM-P-300	3.0m	
SSM-P-500	5.0m	

**Optional accessories:**

- Planetary gearbox
- Electromagnetic brake

## Dynamic Torque Curve (Reference Value)



### Warm Reminder

The torque-frequency characteristic curve of the same motor will vary when using different drivers and different voltages; therefore, it is recommended to reserve at least 1.5 times the torque margin when selecting the model. The higher the driving voltage, the greater the high-speed output torque; recommended voltage: ≤ 48VDC.

# 86mm Two-phase Closed-loop Servo Motor SSM Series



The image is for reference only; please refer to the actual product!

1.8°/step 2500 LPR (A/B/Z dual channels)

No missed steps, precise positioning.  
Low heat, low noise, high efficiency.  
Ultra-fast dynamic positioning response.  
High torque, high speed, more stable.  
No complex parameter tuning, easier and more convenient to use.  
Lower cost, economical and practical.  
This series complies with CE and RoHS certification standards.

## Technical Parameters

Stepper motors are not constant torque motors; the higher the running speed, the smaller the output torque. Therefore, when paying attention to the holding torque parameter of the motor, one should also focus on the output torque of the motor at the actual working speed (refer to the dynamic torque curve). We recommend reserving a 1.5 times margin to avoid step loss of the stepper motor under overload conditions.

Model (MODEL)	Holding Torque (N.m)	Rated Current (A)	Phase Resistance (Ω/phase)	Phase Inductance (mH/phase)	Rotor Inertia (g.cm <sup>2</sup> )	Max Motor Length (mm)	Motor Weight (Kg)	Index signal	Encoder output circuit	Encoder resolution (CPR)	Suitable Driver (Recommendation)
SSM3402	4.5	6.0	0.34	2.4	1800	116	2.15	Yes	Differential output	2500	SSD34H
SSM3403	8.5	6.0	0.54	5.0	3600	135	3.65				24~80VDC
SSM3404	12	6.0	0.72	7.3	5400	175	5.5				SSA34H

- The above recommended "Suitable Driver" is a pulse-type stepper motor driver. HDB motors can also be supplied with:
  - Bus-type stepper motor drivers (RS485, CANopen, EtherCAT communication control, etc.)
  - Intelligent stepper motor drivers (with position tuning, built-in PLC programming functions, etc.)

Model	Shaft Diameter D	Shaft Length L1	Key Length L2
SSM3402	14	32	5×5×25
SSM3403	14	32	5×5×25
SSM3404	14	32	5×5×25

**Precautions:**

- The motor front cover must be installed with a locating boss, and pay attention to tolerance fit to strictly ensure the coaxiality between the motor output shaft and the load.
- To reduce noise caused by motor vibration, the motor must be firmly fixed on a rigid metal surface.
- When connecting the motor and the driver, do not connect the phases incorrectly.

**Wiring Definition Diagram**

Motor Lead Definition	View from wire-entry side	Encoder Lead Definition	View from wire-entry side
1 A+	1	EB+	6 EZ+
2 A-	2	EB-	7 +5V
3 B+	3	EA+	8 GND
4 B-	4	EA-	9 shield wire
	5	EZ-	

**Motor Extension Cable Assembly (sold separately)**

Model	Cable Length	Remarks
SSM-M-200	2.0m	Cable spec: 4 × 0.5 mm <sup>2</sup> ; Flex life: ≥ 5 million cycles. Note: Ultra-high-flex drag-chain cable (10 million cycles) available by special order—please specify when ordering.
SSM-M-300	3.0m	
SSM-M-500	5.0m	

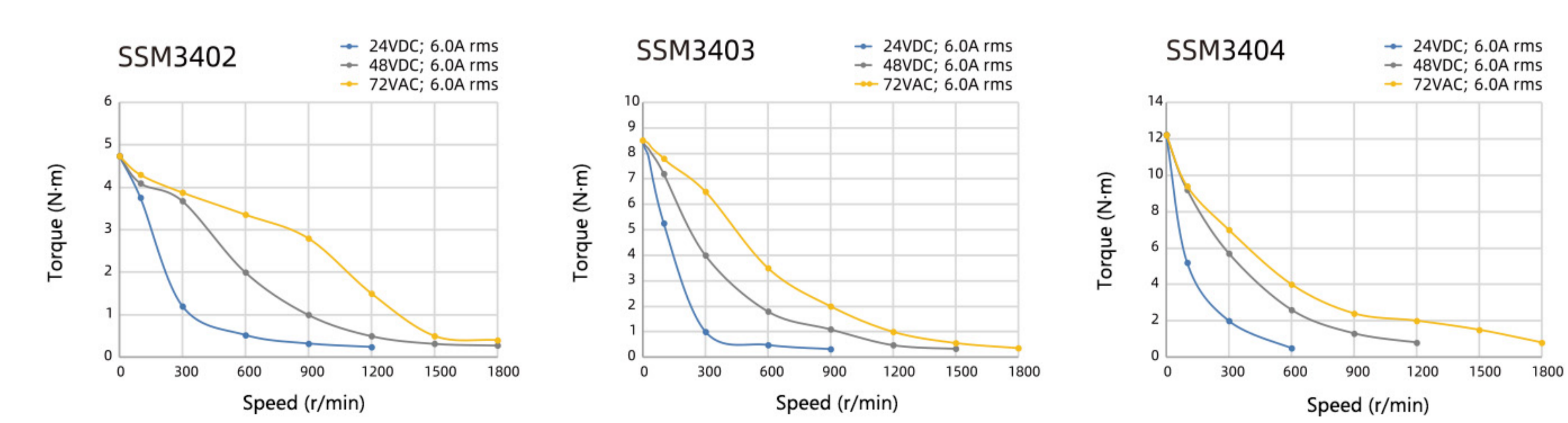
**Encoder Extension Cable Assembly (sold separately)**

Model	Cable Length	Remarks
SSM-P-200	2.0m	Cable spec: 3 × 2 × 0.2 mm <sup>2</sup> ; Flex life: ≥ 5 million cycles. Note: Ultra-high-flex drag-chain cable (10 million cycles) available by special order—please specify when ordering.
SSM-P-300	3.0m	
SSM-P-500	5.0m	

**Optional accessories:**

- Planetary gearbox
- Electromagnetic brake

## Dynamic Torque Curve (Reference Value)



### Warm Reminder

The torque-frequency characteristic curve of the same motor will vary when using different drivers and different voltages; therefore, it is recommended to reserve at least 1.5 times the torque margin when selecting the model. The higher the driving voltage, the greater the high-speed output torque; recommended voltage: ≤ 72VDC.

# Rotary Platform

□DF Series  
Hollow Rotary Platform



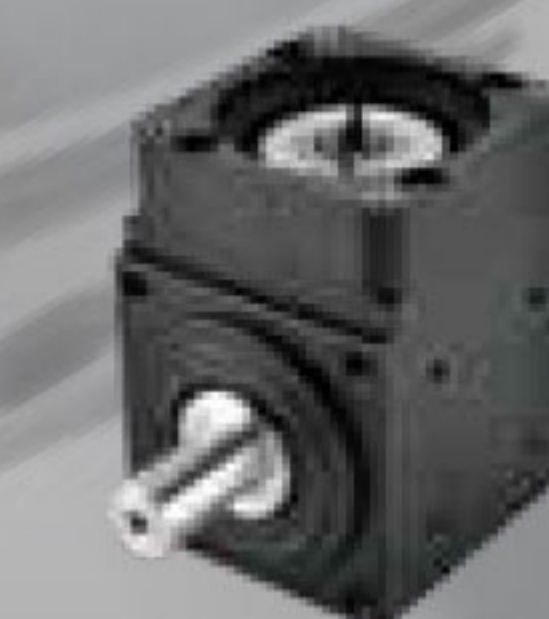
□JH Series  
Hollow Rotary Platform



□MTT Series  
Right-Angle  
Hollow Rotary Platform



□HR Series  
Rotary Indexer



□5Z Series  
Miniature Rotary Shaft



The actual product size is subject to the physical item

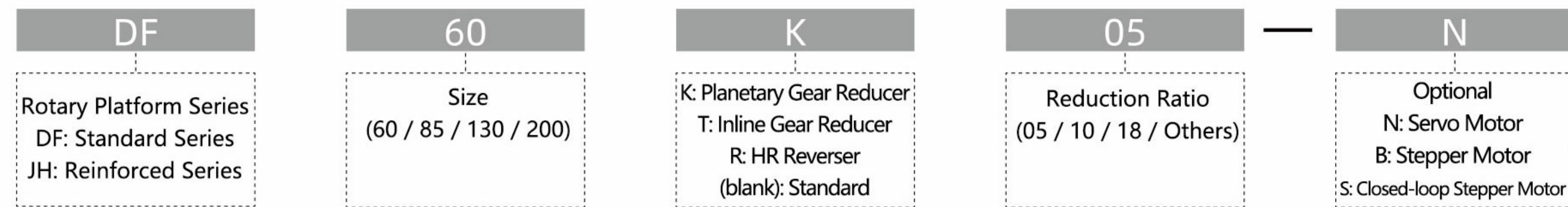
# DF Series Hollow Rotary Platform



The image is for reference only, please refer to the actual product!

- IP65 Protection: Waterproof rating suitable for relatively humid environments.
- High Rigidity and High Torque: Alloy steel exterior and large module gear root design, ideal for rotary applications with heavy loads.
- High Precision: Gears meet JIS 0 grade requirements (gear tooth profile deviation  $\leq 0.002\text{mm}$ ), with ultra-low backlash.
- High Transmission Efficiency: Gear design follows a helical worm guide, achieving a transmission efficiency of up to 96% through sliding motion.
- Ultra-low Noise: Operating noise at 1500 rpm is less than 50 dB.
- Long Service Life: Made with high hardness, high-density gear materials, ensuring excellent precision and longevity.

## Model Example



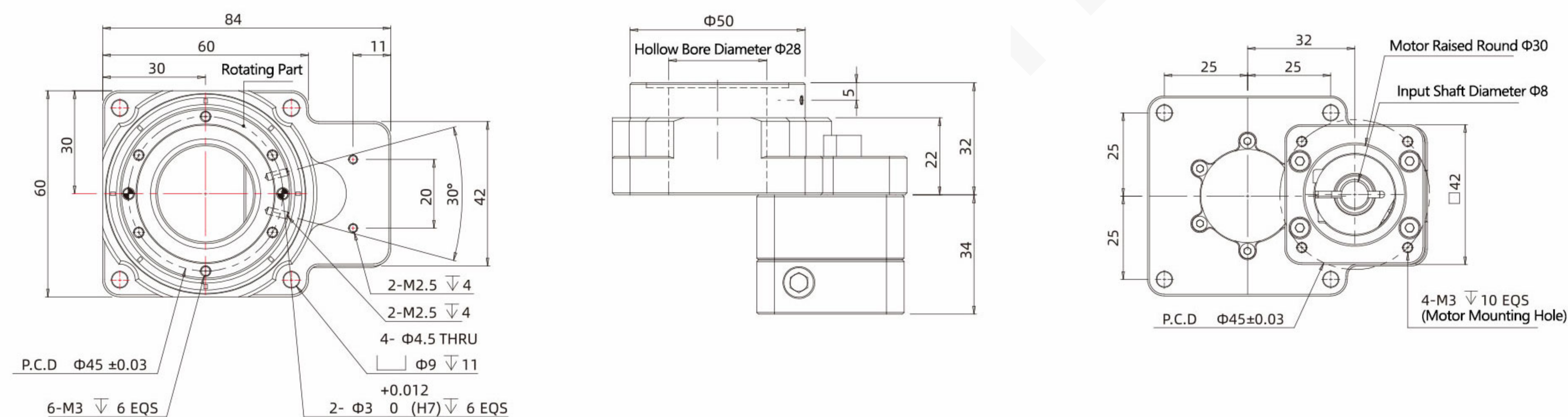
## Technical Specifications

Product Model	Unit	DF60	DF85	DF130	DF200
Reduction Ratio		5	5/10/18	10/18	10/18
Matching Servo Motor	W	100	400/400/100	400	750
Bearing Structure		Crossed Roller Bearing	Crossed Roller Bearing	Crossed Roller Bearing	Crossed Roller Bearing
Permissible Torque	N.M	5	40/18	55/35	90/60
Rotational Inertia	2kg.m	4500×10 <sup>-7</sup>	21090×10 <sup>-7</sup>	110725×10 <sup>-7</sup>	876410×10 <sup>-7</sup>
Permissible Output Speed (Table Surface)	r/min	200	200	200	200
Permissible Inertia Load Torque	N.M	9	62/27	90/58	140/96
Permissible Axial Load	N	300	800	2500	4500
Repeatability Positioning Accuracy	arc-sec	±5	±5	±5	±5
Positioning Accuracy	arc-min	±0.5	±0.5	±0.5	±0.5
Rotary Platform Surface Deviation (Flatness Runout)	mm	±0.005	±0.005	±0.005	±0.005
Rotary Platform Concentricity	mm	±0.01	±0.01	±0.01	±0.01
Rotary Platform Parallelism	mm	±0.015	±0.015	±0.015	±0.015
Precision Life	h	25000	25000	25000	25000
Protection Level		IP40	IP40	IP40	IP40
Weight	kg	0.54	1.4/1	2.5	8

● Note: The above technical parameters are for reference only. Actual technical parameters and dimensions will be provided based on customer data.

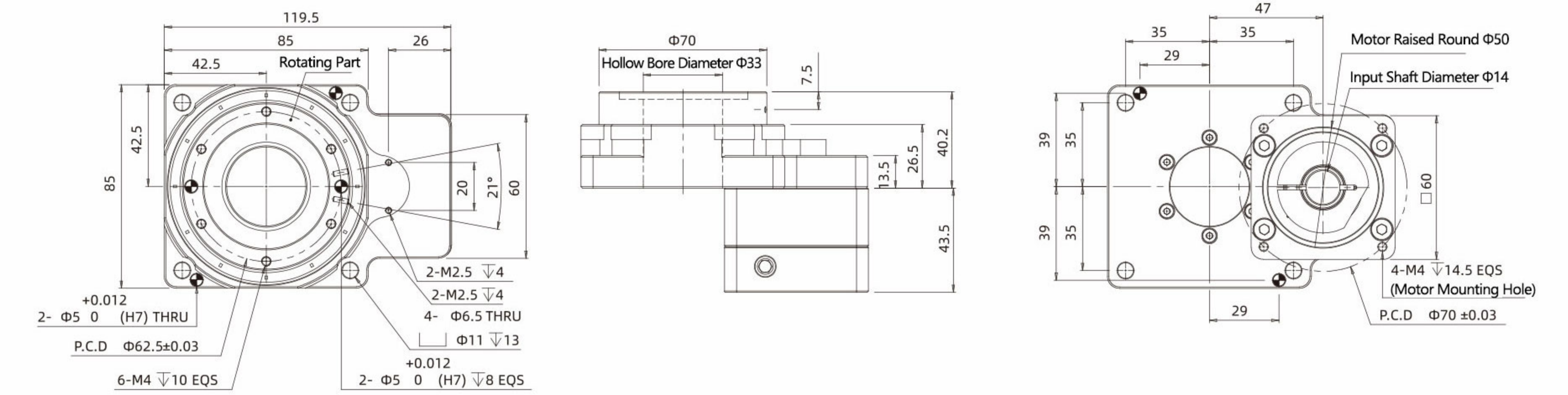
## Outline Dimension Drawing

MTN60-05-N

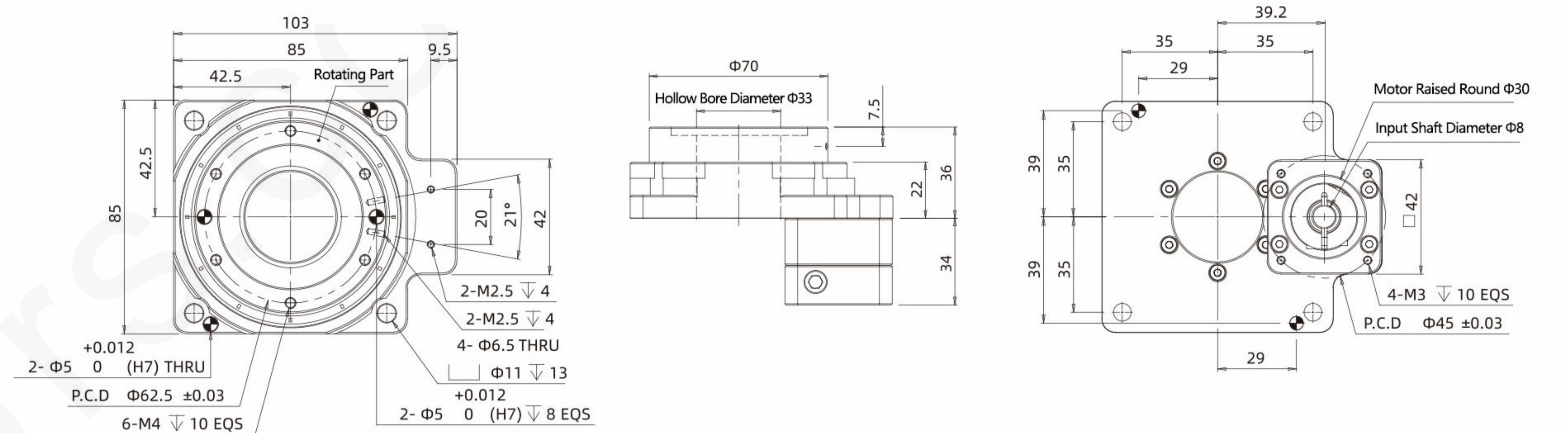


# DF Series Hollow Rotary Platform

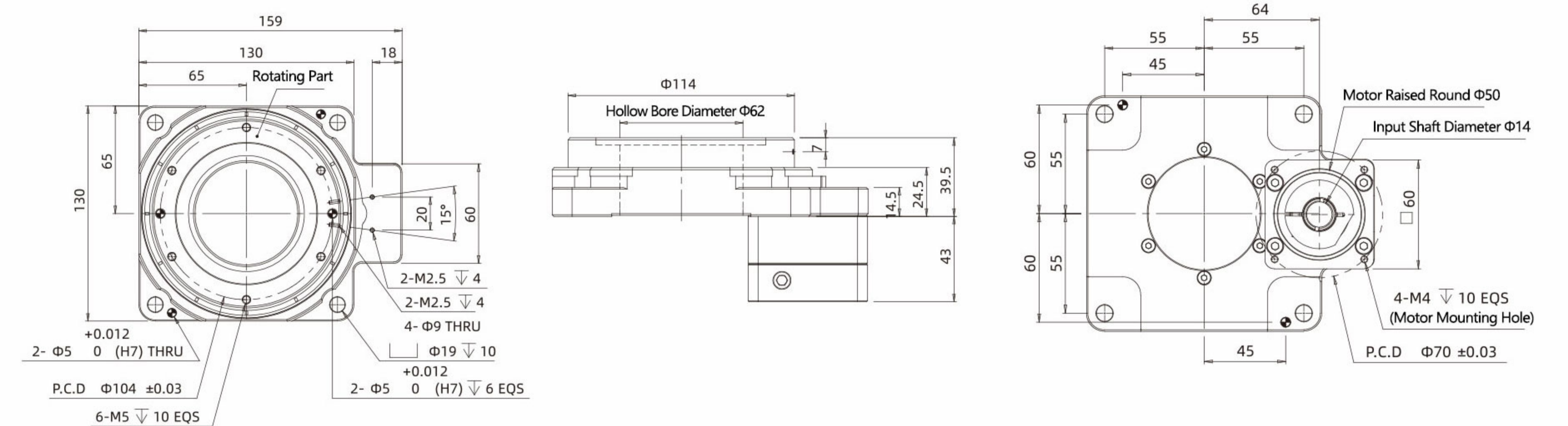
DF85-05/10-N



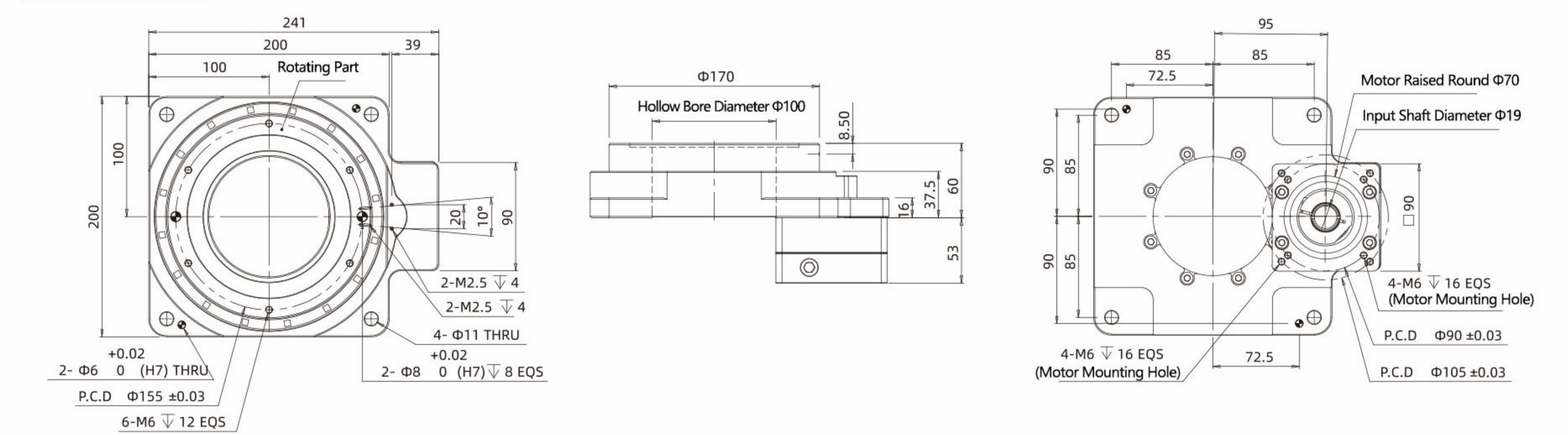
DF85-18-N



DF130-10/18-N



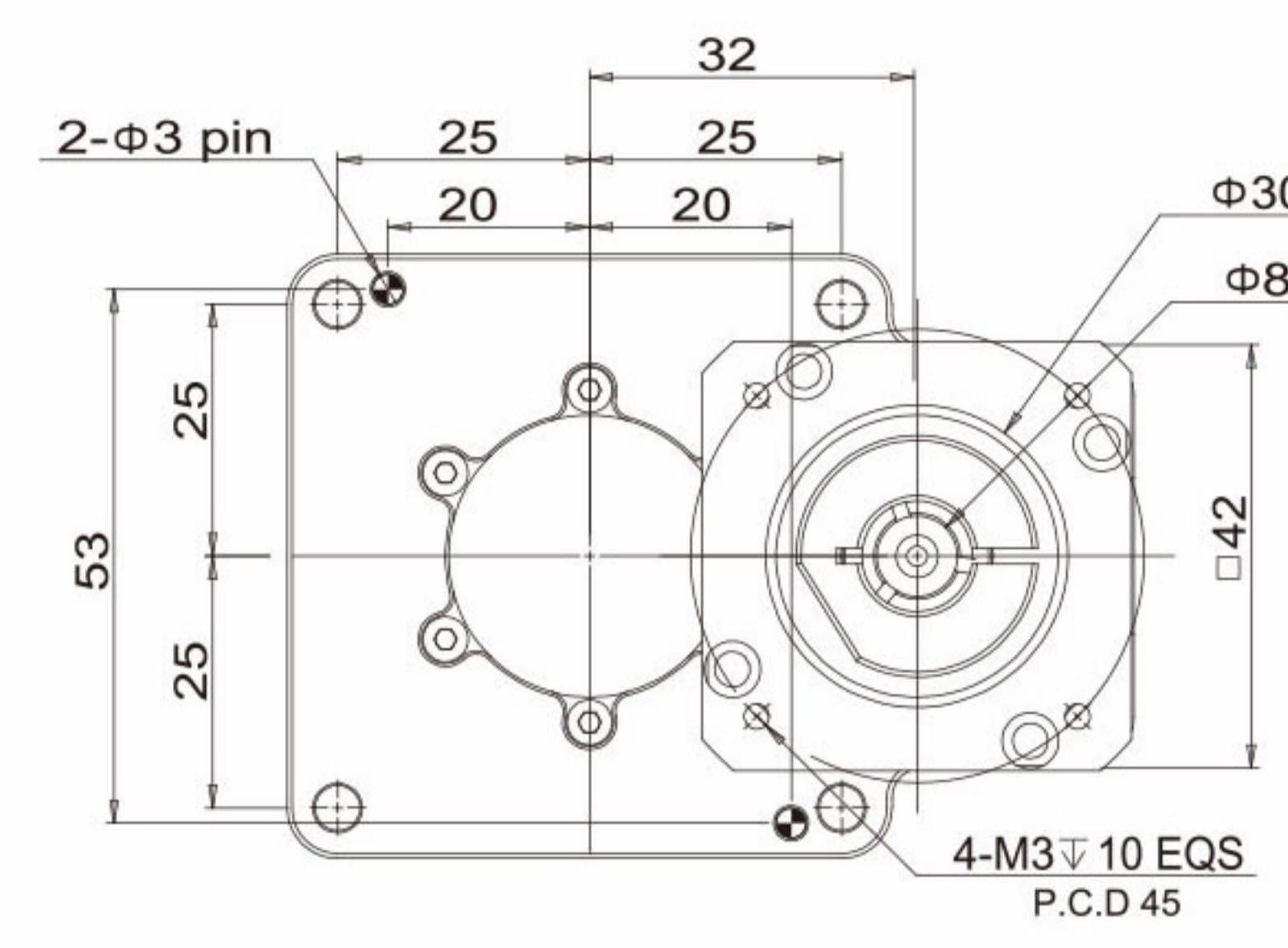
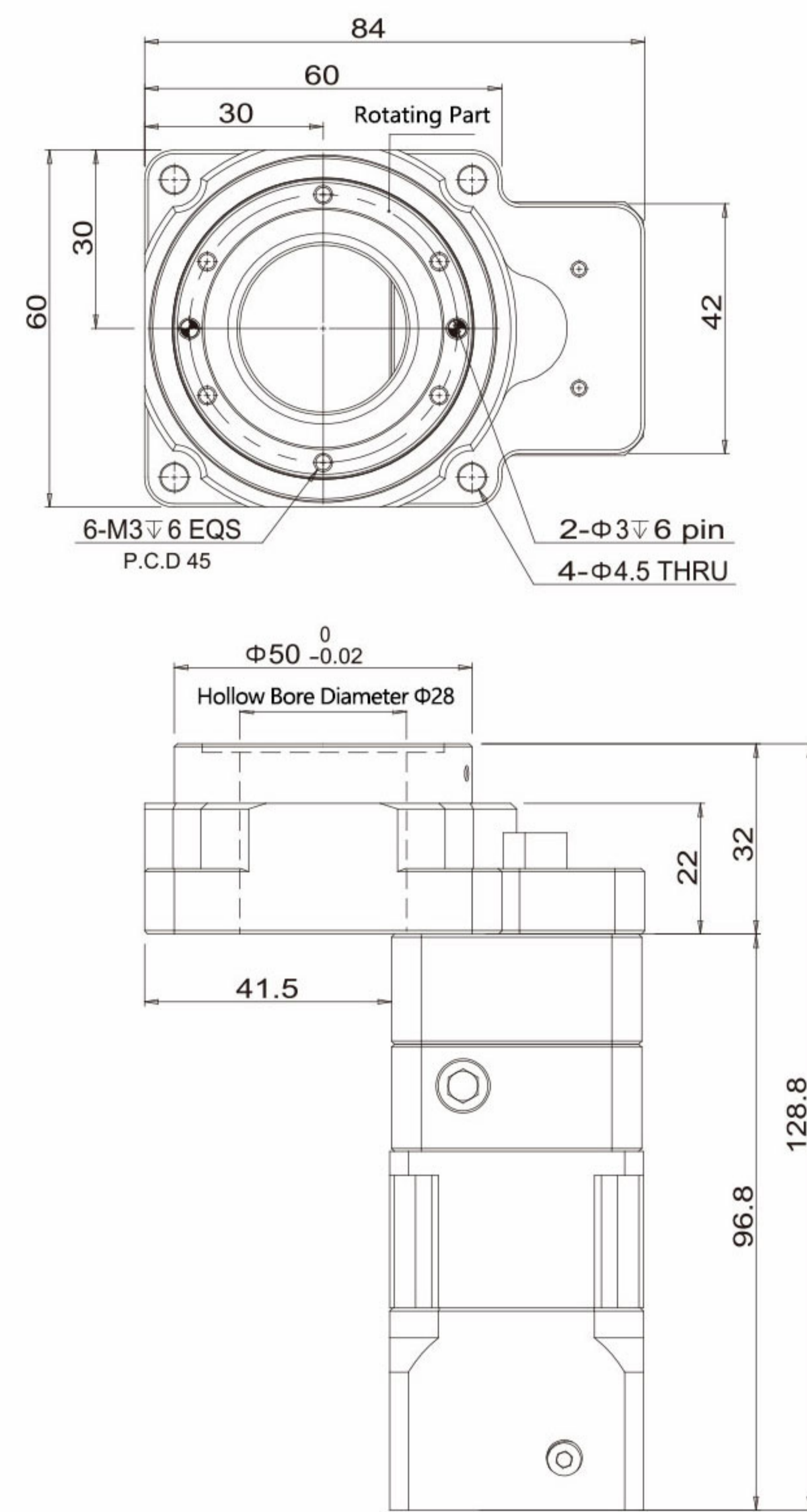
DF200-10/18-N



● The above drawing dimensions are for reference only. Actual technical parameters and dimensions will be provided based on data supplied by the customer.  
 ● Origin sensor set: DF series equipped with OMRON EE-SX674.

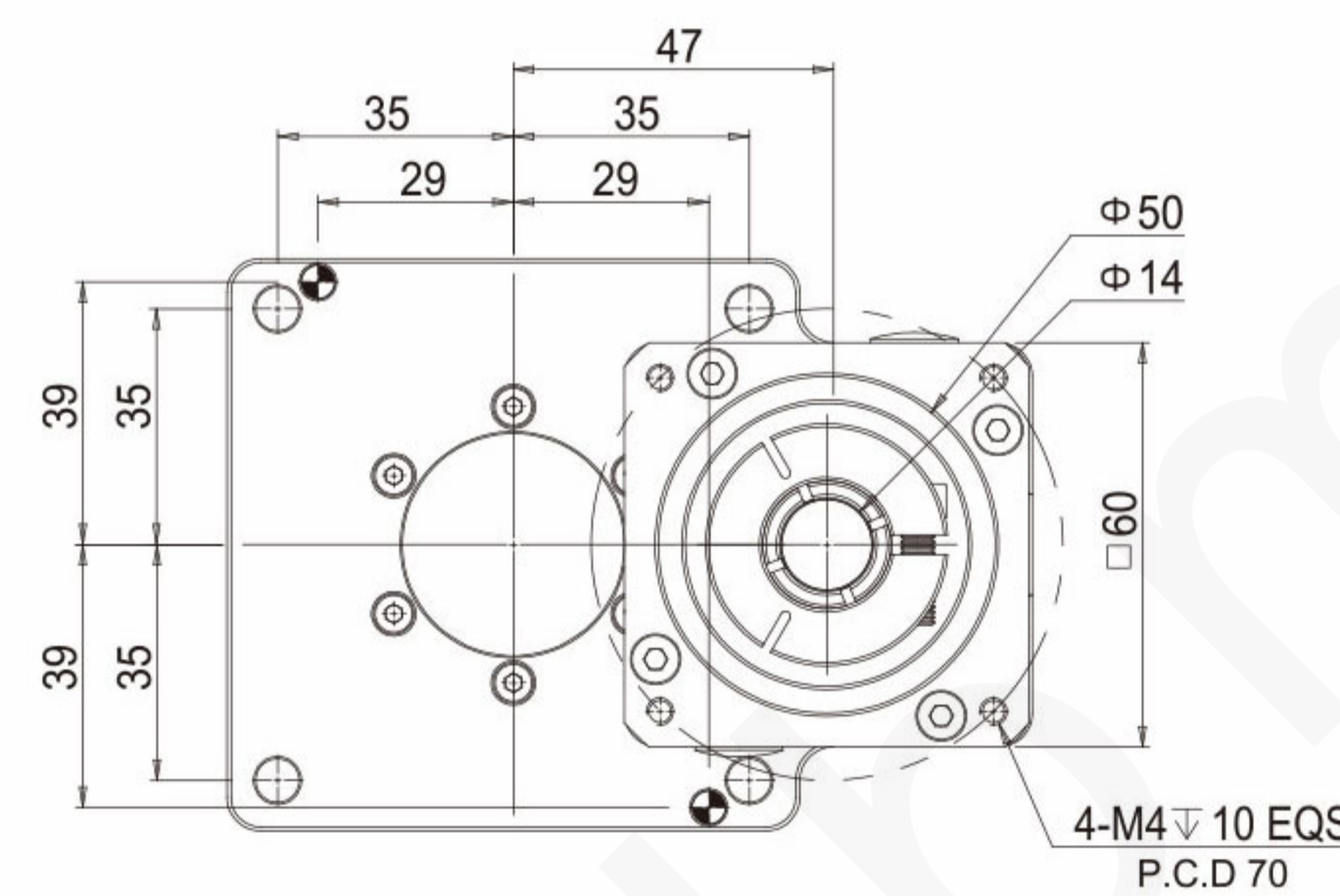
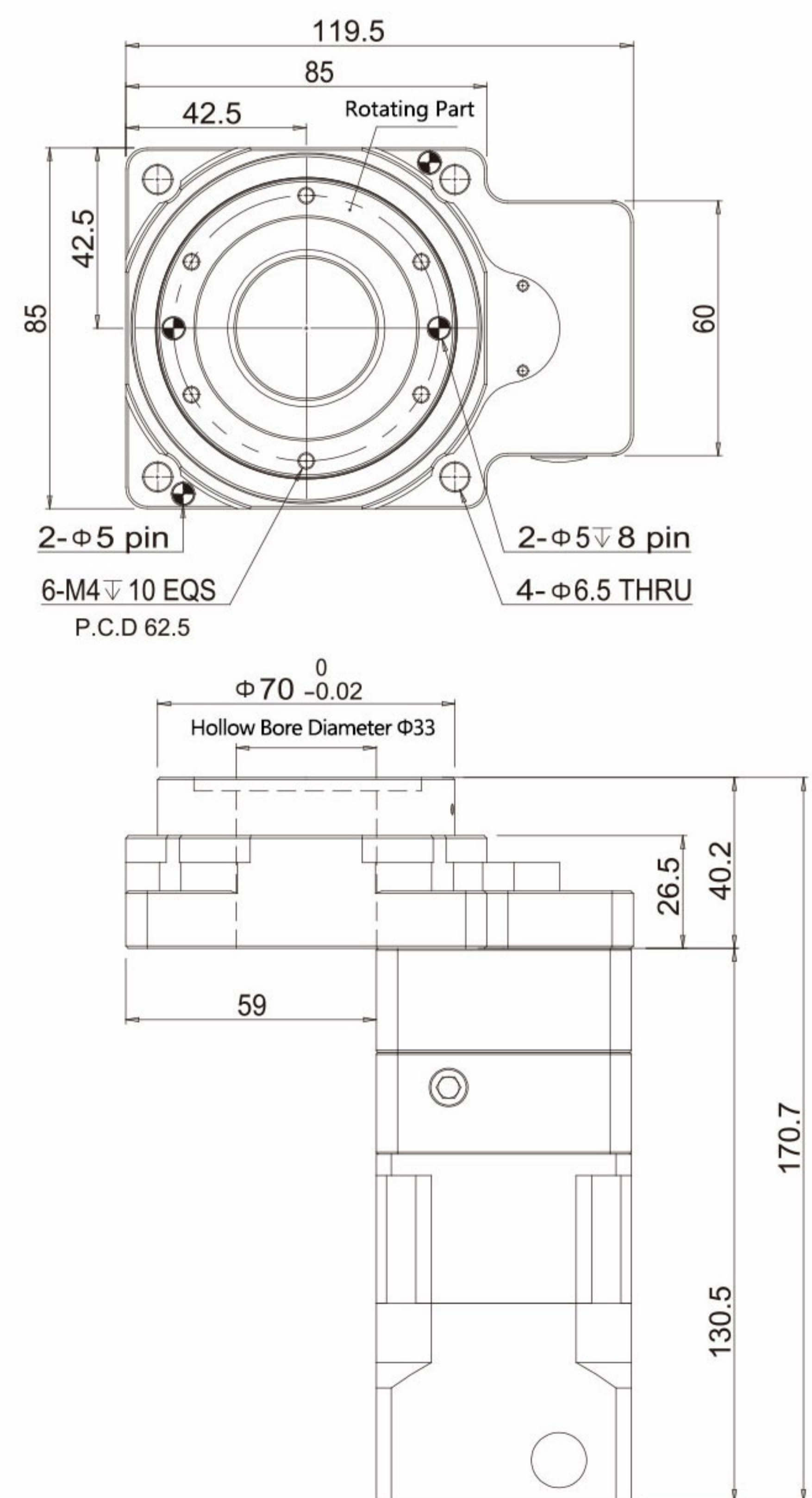
# DF Series Hollow Rotary Platform

DF60-K-15/20/25/30/35/50-N



Product Model	Unit	DF60-K-30-N
Motor Type	w	50/100
Rotary Table Bearing		Crossed Roller Bearing
Permissible Torque	N.m	5.5
Permissible Speed	rpm	200 (Table Surface)
Reduction Ratio		15/20/25/30/35/50
Rotational Inertia	kg.m <sup>2</sup>	4500 $\times$ 10 <sup>-7</sup>
Permissible Radial Load	n	300
Permissible Moment Load	N.m	9
Positioning Accuracy	min	$\leq$ 1.5
Repeat Positioning Accuracy	sec	$\pm$ 5
Rotary Table Parallelism	mm	$\pm$ 0.005
Rotary Table Concentricity	mm	$\pm$ 0.01
Protection Rating	IP	40
Precision Life	h	20000
Weight	kg	1.15

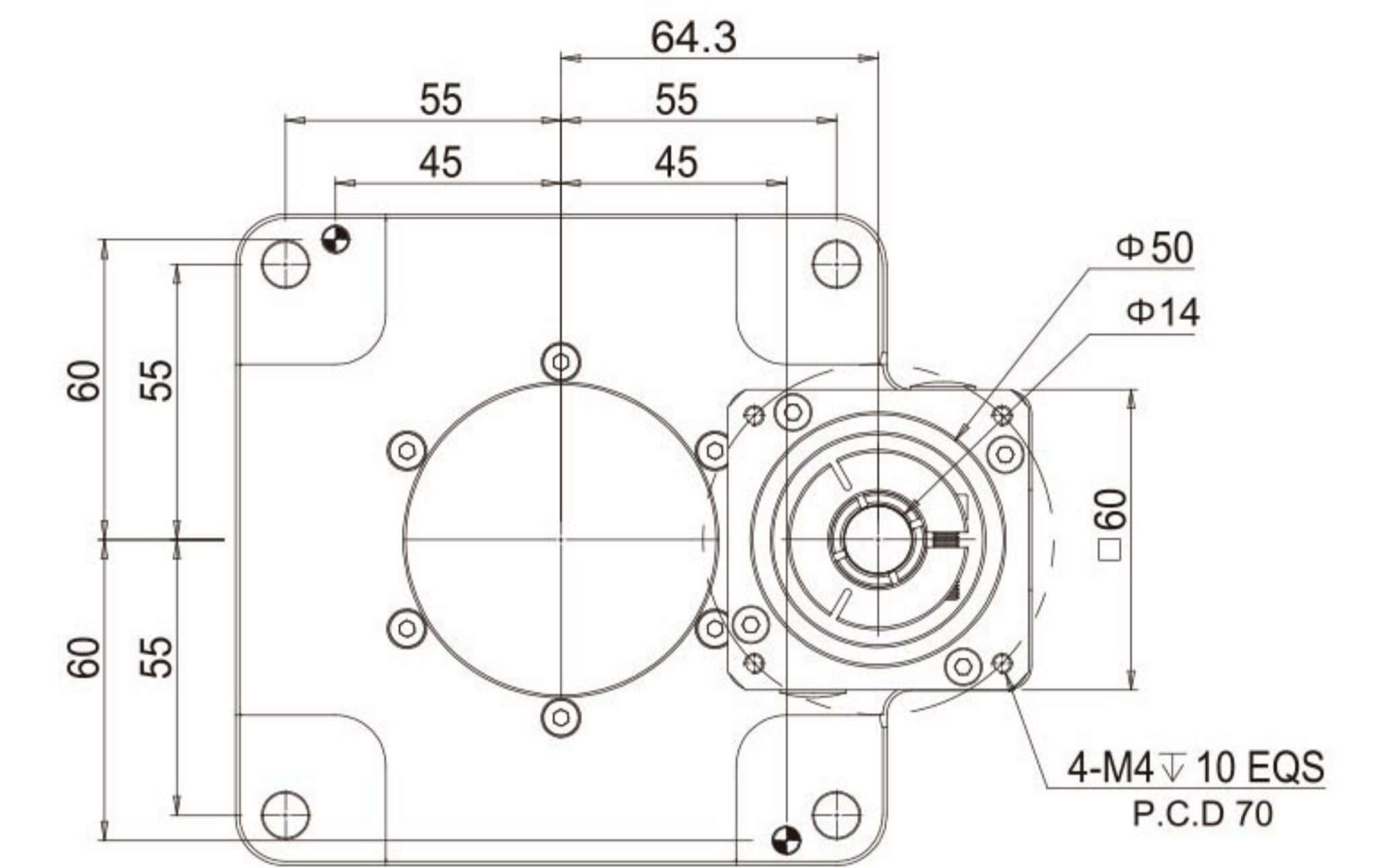
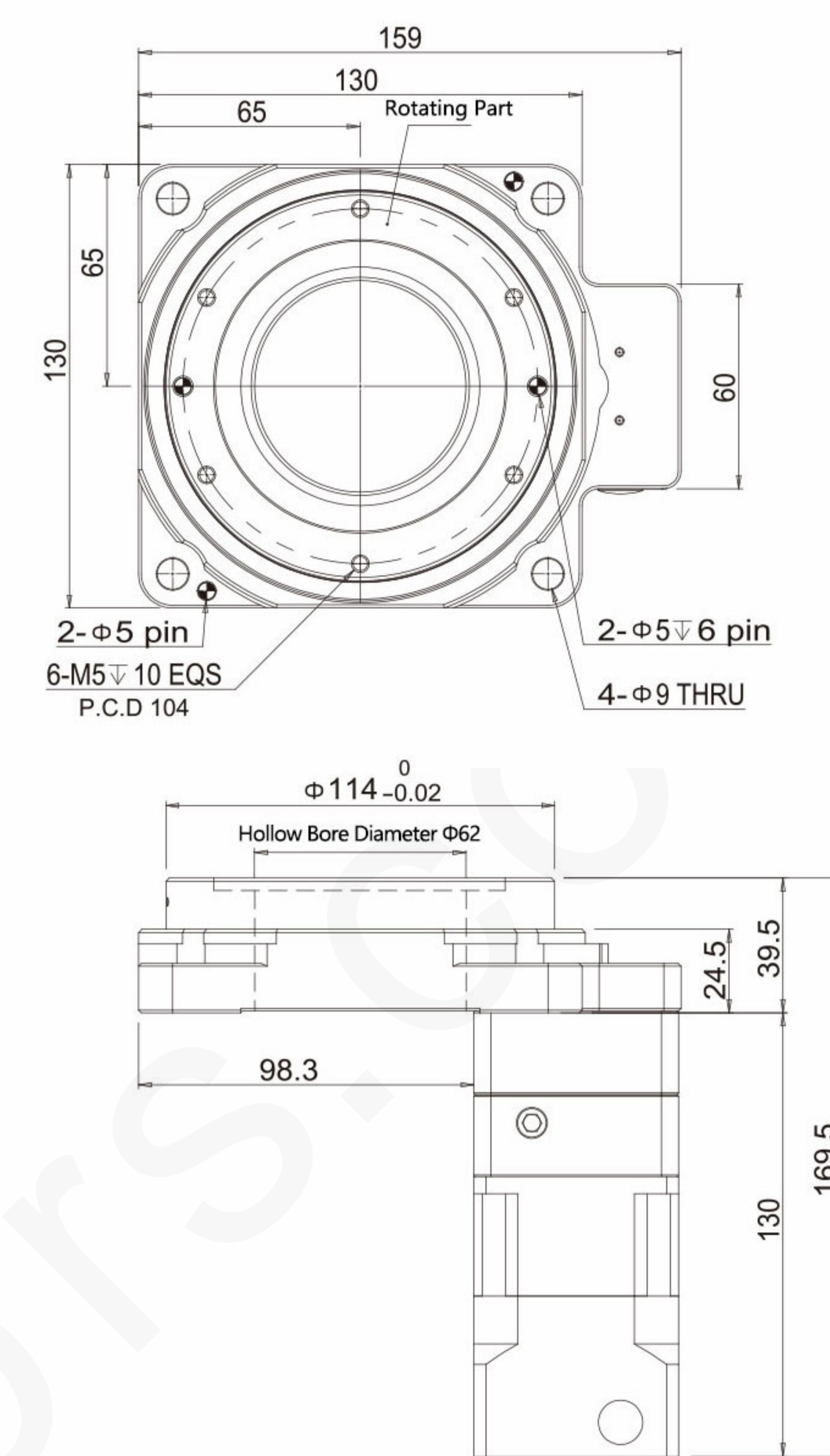
DF85-K-15/20/25/30/35/50-N



Product Model	Unit	DF85-K-30-N
Motor Type	w	200/400
Rotary Table Bearing		Crossed Roller Bearing
Permissible Torque	N.m	10
Permissible Speed	rpm	200 (Table Surface)
Reduction Ratio		15/20/25/30/35/50
Rotational Inertia	kg.m <sup>2</sup>	13500 $\times$ 10 <sup>-7</sup>
Permissible Radial Load	n	800
Permissible Moment Load	N.m	15
Positioning Accuracy	min	$\leq$ 1.5
Repeat Positioning Accuracy	sec	$\pm$ 5
Rotary Table Parallelism	mm	$\pm$ 0.005
Rotary Table Concentricity	mm	$\pm$ 0.01
Protection Rating	IP	40
Precision Life	h	20000
Weight	kg	2.7

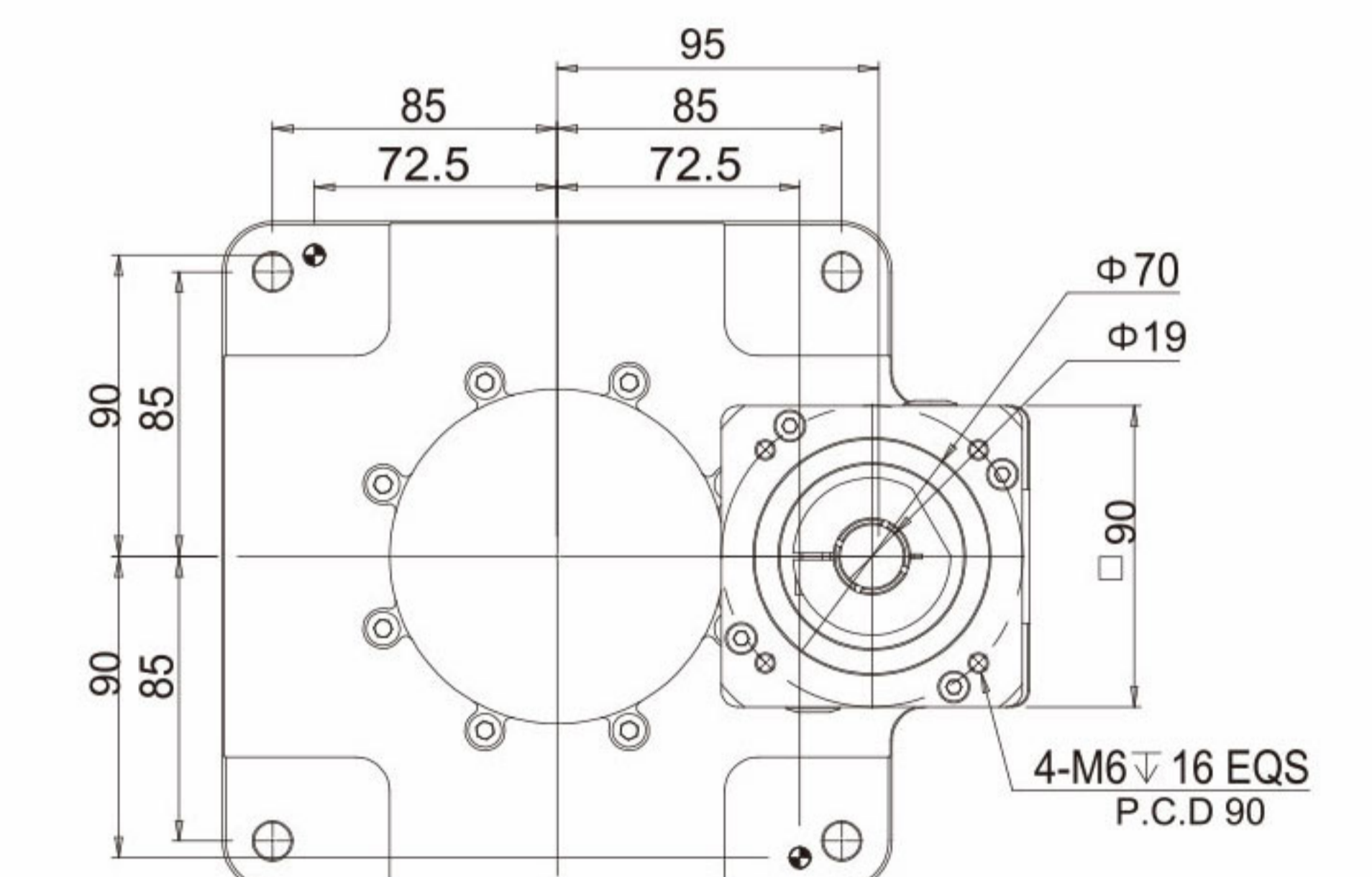
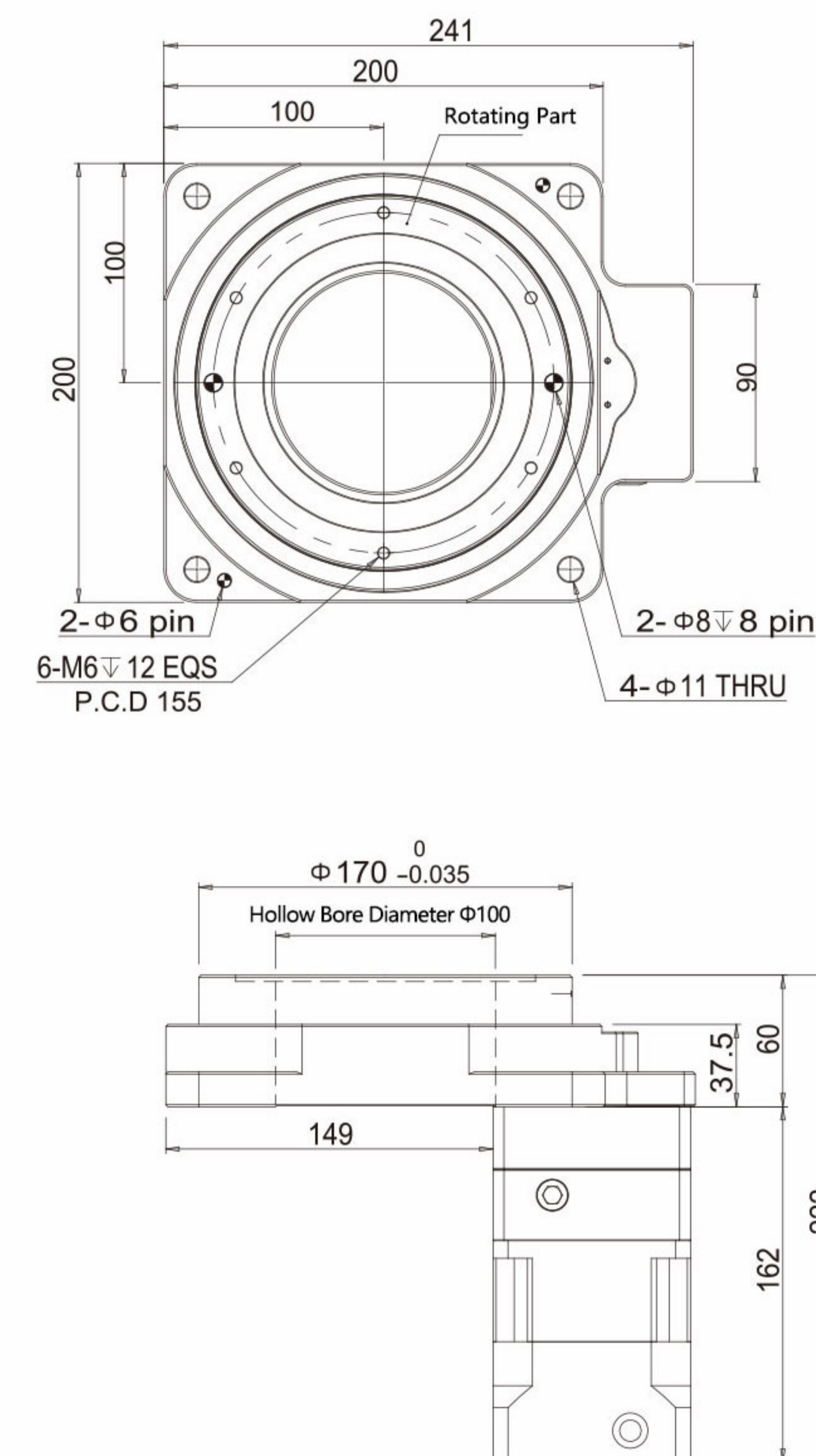
# DF Series Hollow Rotary Platform

DF130-K-30/40/50/60/70/100-N



Product Model	Unit	DF130-K-30-N
Motor Type	w	200/400
Rotary Table Bearing		Crossed Roller Bearing
Permissible Torque	N.m	35
Permissible Speed	rpm	200 (Table Surface)
Reduction Ratio		30/40/50/60/70/100
Rotational Inertia	kg.m <sup>2</sup>	85565 $\times$ 10 <sup>-7</sup>
Permissible Radial Load	n	2500
Permissible Moment Load	N.m	55
Positioning Accuracy	min	$\leq$ 1.5
Repeat Positioning Accuracy	sec	$\pm$ 5
Rotary Table Parallelism	mm	$\pm$ 0.005
Rotary Table Concentricity	mm	$\pm$ 0.01
Protection Rating	IP	40
Precision Life	h	20000
Weight	kg	3.8

DF200-K-30/40/50/60/70/100-N



Product Model	Unit	DF200-K-30-N
Motor Type	w	750
Rotary Table Bearing		Crossed Roller Bearing
Permissible Torque	N.m	75
Permissible Speed	rpm	200 (Table Surface)
Reduction Ratio		30/40/50/60/70/100
Rotational Inertia	kg.m <sup>2</sup>	412300 $\times$ 10 <sup>-7</sup>
Permissible Radial Load	n	4500
Permissible Moment Load	N.m	140
Positioning Accuracy	min	$\leq$ 1.5
Repeat Positioning Accuracy	sec	$\pm$ 5
Rotary Table Parallelism	mm	$\pm$ 0.005
Rotary Table Concentricity	mm	$\pm$ 0.01
Protection Rating	IP	40
Precision Life	h	20000
Weight	kg	11.5

- The above drawing dimensions are for reference only. Actual technical parameters and dimensions will be provided based on data supplied by the customer.
- Origin sensor set: DF series equipped with OMRON EE-SX674.

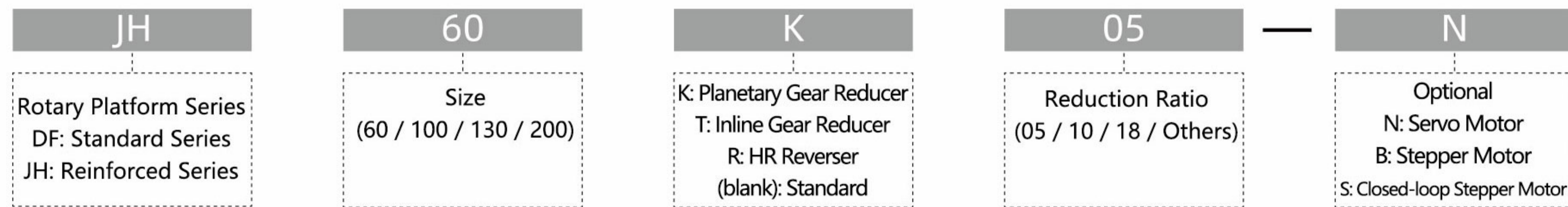
# JH Series Hollow Rotary Platform



The image is for reference only, please refer to the actual product!

- IP65 Protection: Waterproof rating suitable for relatively humid environments.
- High Rigidity and High Torque: Alloy steel exterior and large module gear root design, ideal for rotary applications with heavy loads.
- High Precision: Gears meet JIS 0 grade requirements (gear tooth profile deviation  $\leq 0.002\text{mm}$ ), with ultra-low backlash.
- High Transmission Efficiency: Gear design follows a helical worm guide, achieving a transmission efficiency of up to 96% through sliding motion.
- Ultra-low Noise: Operating noise at 1500 rpm is less than 50 dB.
- Long Service Life: Made with high hardness, high-density gear materials, ensuring excellent precision and longevity.

## Model Example



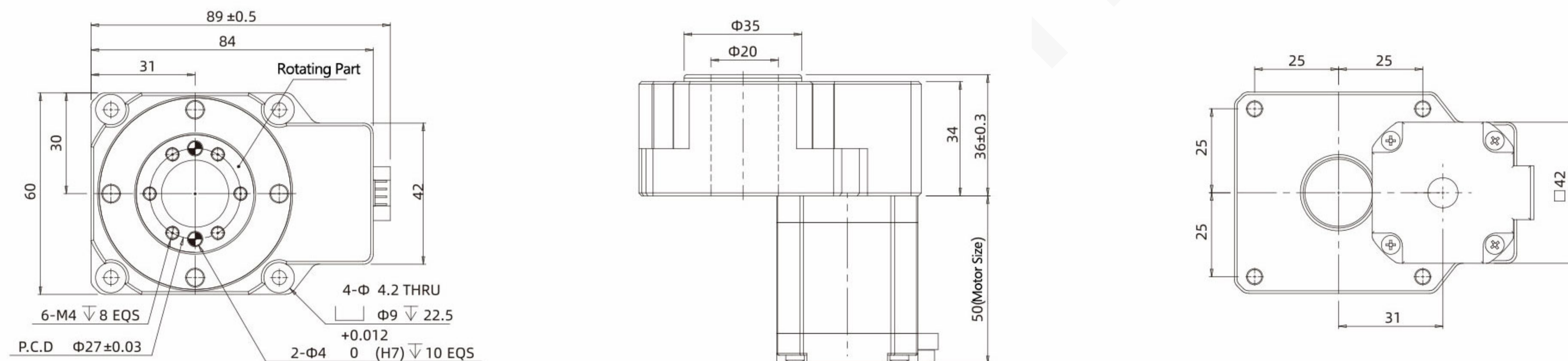
## Technical Specifications

Product Model	Unit	JH 60	JH100	JH130	JH200
Reduction Ratio		5	8	10	10
Matching Servo Motor	W	100	400	400	750
Bearing Structure		Deep Groove Ball+Thrust Ball Bearing	Cylindrical Roller Bearing	Cylindrical Roller Bearing	Cylindrical Roller Bearing
Permissible Torque	N.M	5	48	50	90
Rotational Inertia	kg.m <sup>2</sup>	4500×10 <sup>-7</sup>	68540×10 <sup>-7</sup>	110725×10 <sup>-7</sup>	876410×10 <sup>-7</sup>
Permissible Output Speed (Table Surface)	r/min	200	200	200	200
Permissible Inertia Load Torque	N.M	9	76	85	145
Permissible Axial Load	N	200	900	1800	3700
Repeatability Positioning Accuracy	arc-sec	±5	±5	±5	±5
Positioning Accuracy	arc-min	±0.5	±0.5	±0.5	±0.5
Rotary Platform Surface Deviation (Flatness Runout)	mm	±0.01	±0.01	±0.01	±0.01
Rotary Platform Concentricity	mm	±0.01	±0.01	±0.01	±0.01
Rotary Platform Parallelism	mm	±0.02	±0.015	±0.015	±0.015
Precision Life	h	25000	25000	25000	25000
Protection Level		IP40	IP40	IP40	IP40
Weight	kg	0.74/0.92	2.76	4.56	12

● Note: The above technical parameters are for reference only. Actual technical parameters and dimensions will be provided based on customer data.

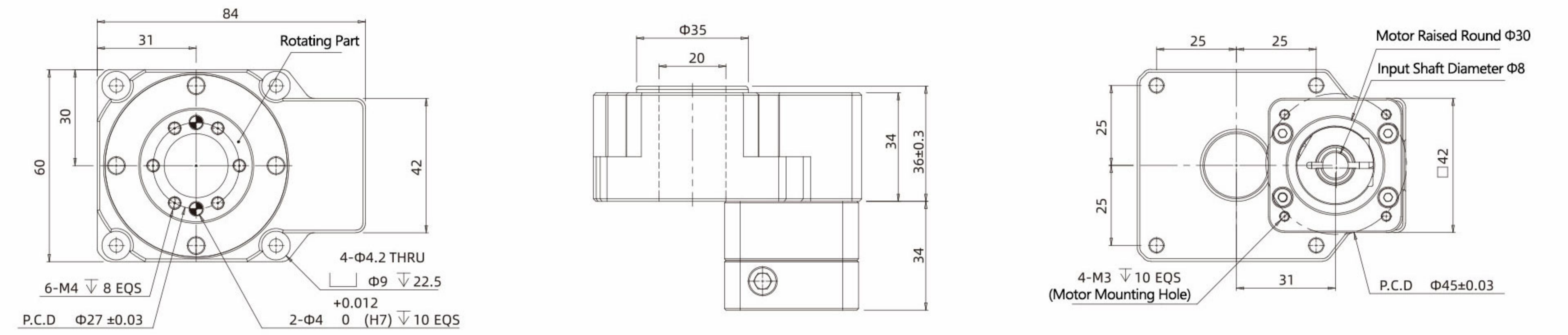
## Outline Dimension Drawing

JH60-05-B

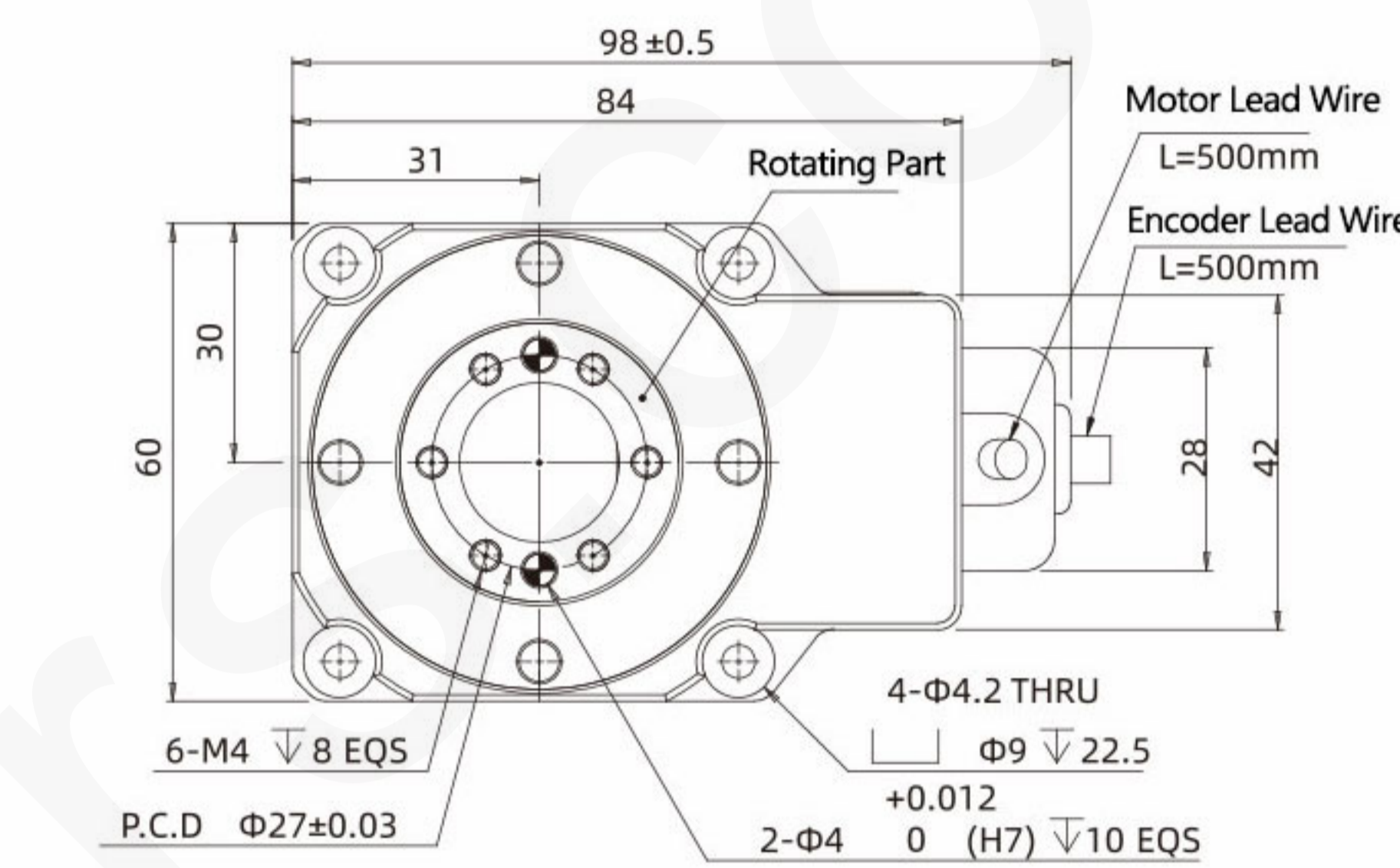


# JH Series Hollow Rotary Platform

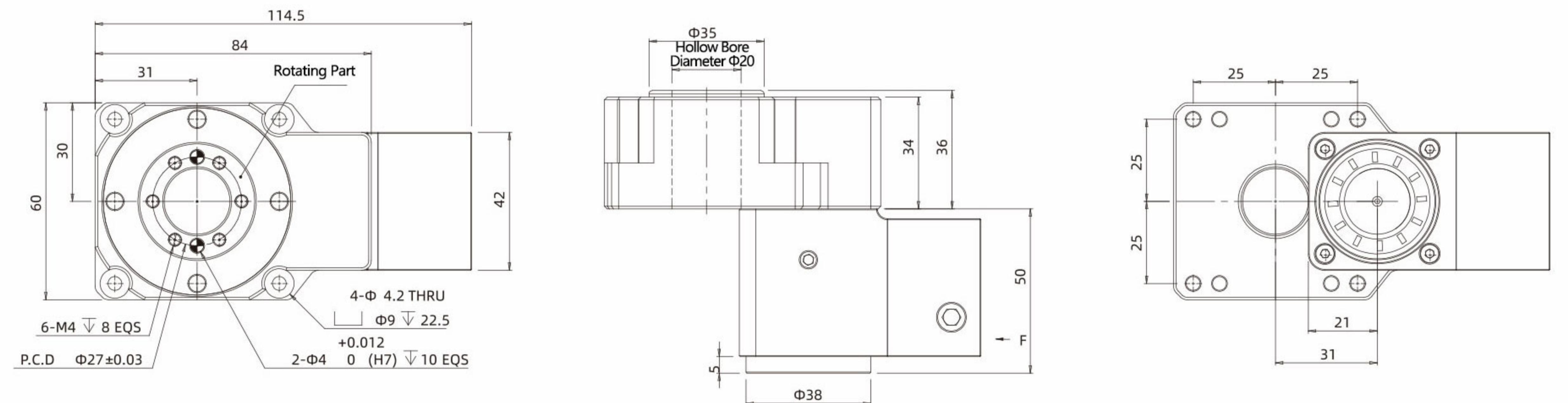
JH60-05-N



JH60-05-S



JH60-R-15-N

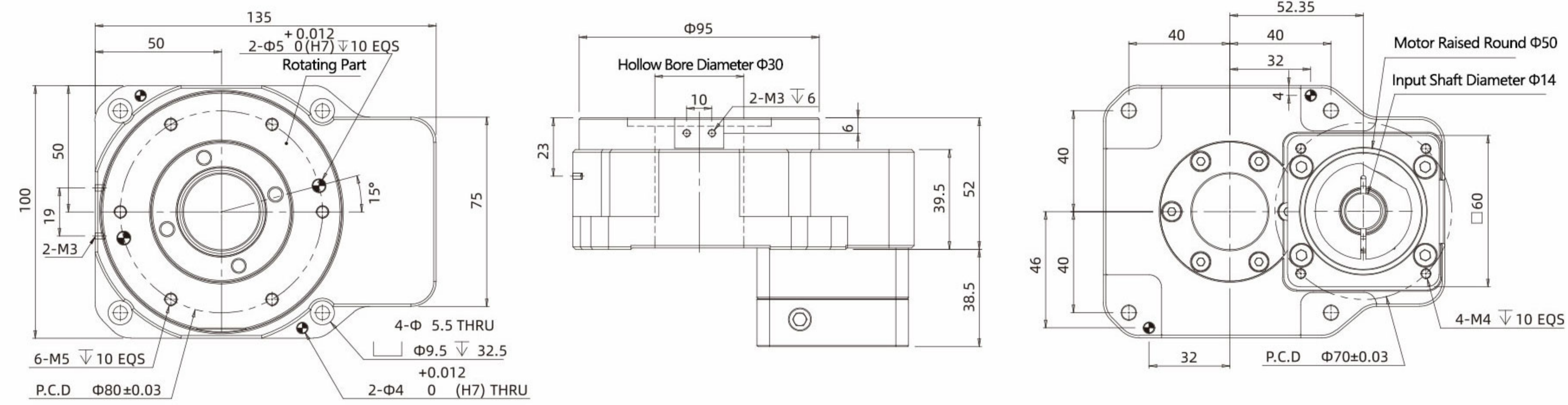


- The above drawing dimensions are for reference only. Actual technical parameters and dimensions will be provided based on data supplied by the customer.
- Origin sensor set: JH series equipped with OMRON EE-SX672.

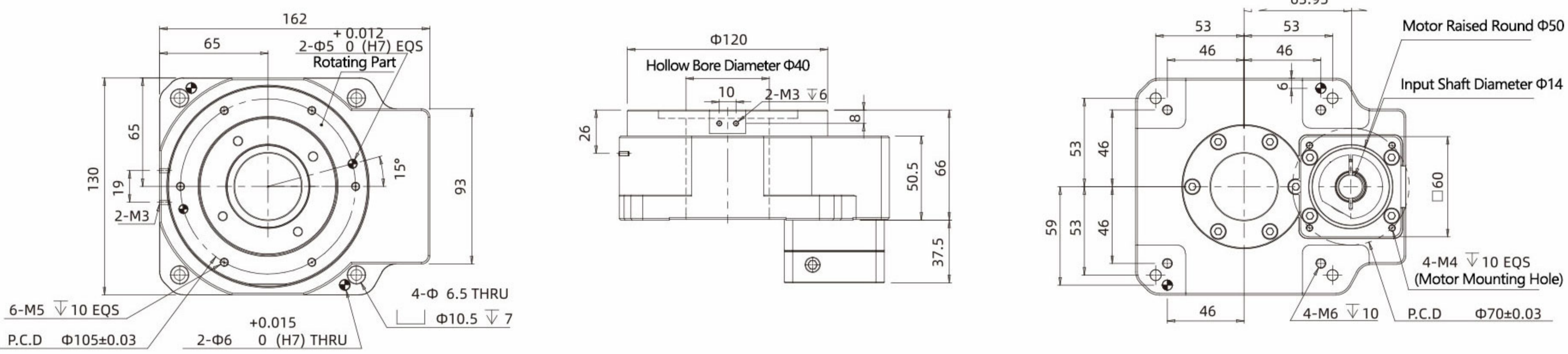
# JH Series Hollow Rotary Platform

# 5Z Series Miniature Rotary Shaft

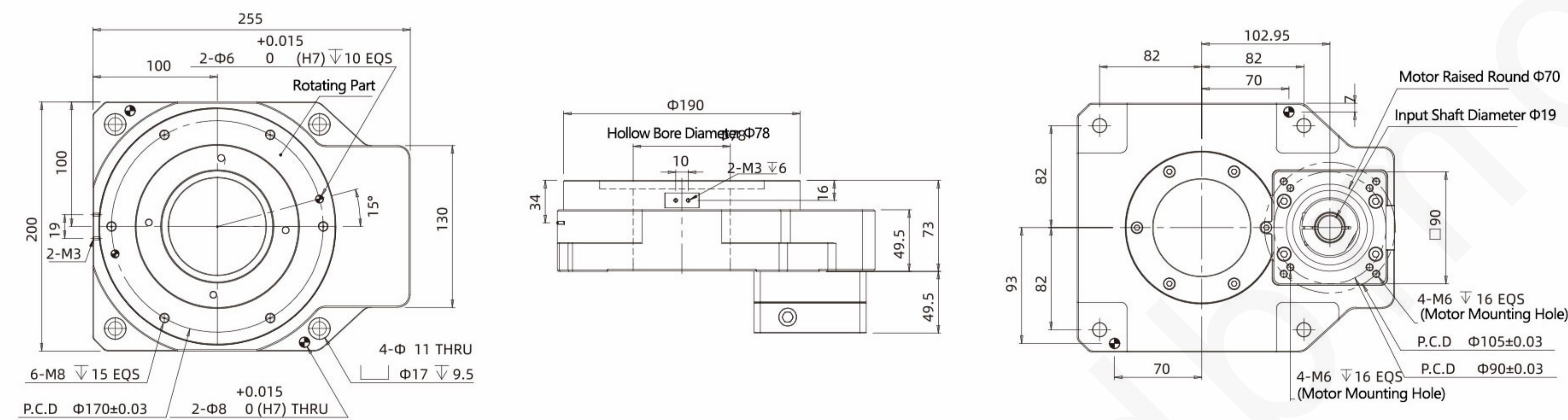
JH100-08-N



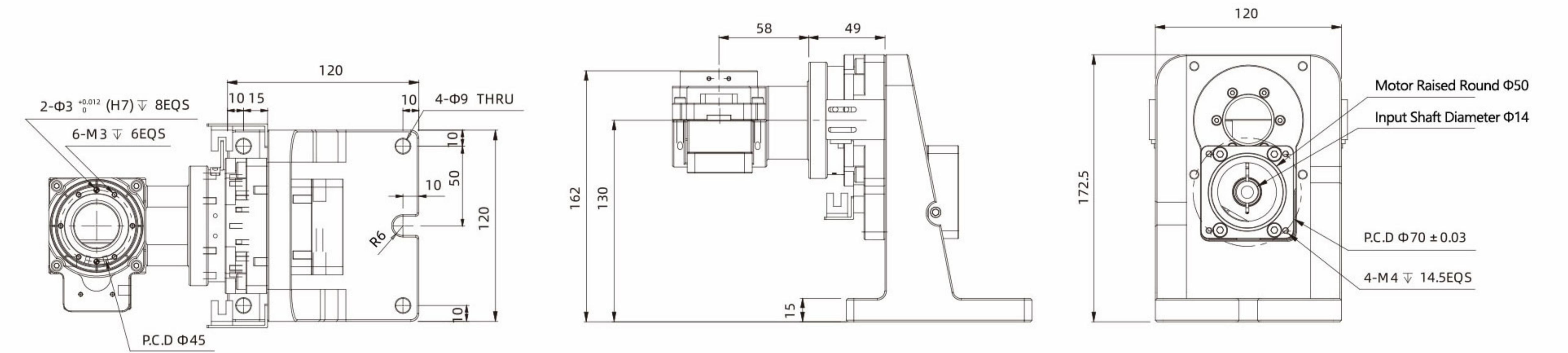
JH130-10-N



JH200-10-N



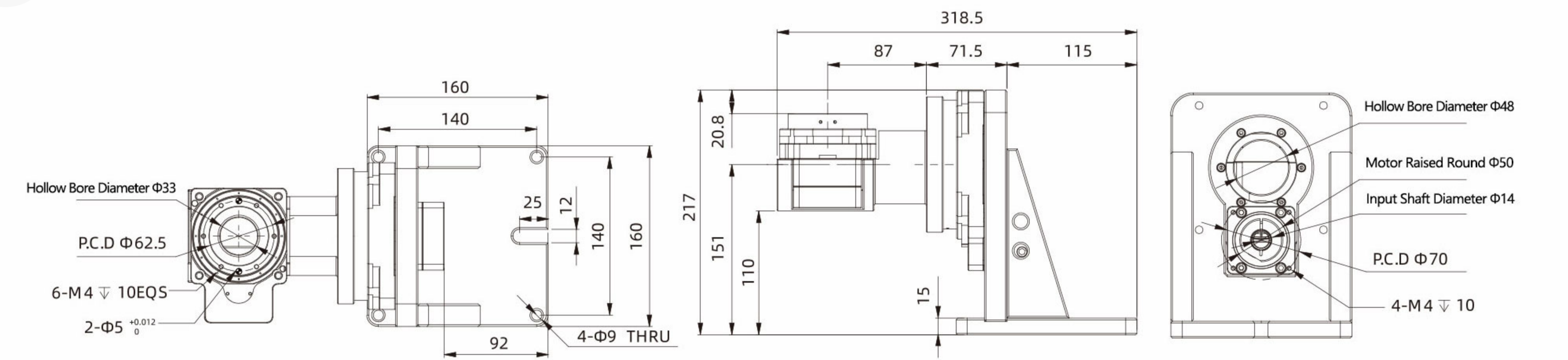
5Z86-N



Parameter	Fourth Axis (DF85)
Worktable Rotation Speed	0~200rpm/min
Worktable Motion Angle Range	±60°
Allowed Peak Torque at Start/Stop	50Nm
Rated Torque	15Nm
Maximum Load Weight	<10k g
Center Height	130mm
Output Flange End Face Runout	≤ 0.01mm
Output Flange Radial Runout	≤ 0.01mm
Perpendicularity of Output Flange to Machine Mounting Surface	≤ 0.015mm
Repeat Positioning Accuracy	± 0.003°

Parameter	Fifth Axis (DF60)
Worktable Rotation Speed	0~200rpm/min
Worktable Motion Angle Range	360°
Allowed Peak Torque at Start/Stop	30Nm
Rated Torque	8Nm
Maximum Load Weight	<4k g
Output Flange End Face Runout	≤ 0.01mm
Output Flange Radial Runout	≤ 0.01mm
Parallelism of Output Flange to Machine Mounting Surface	≤ 0.015mm
Repeat Positioning Accuracy	± 0.003°

5Z13085-N



Parameter	Fourth Axis (DF130)
Worktable Rotation Speed	0~100rpm/min
Worktable Motion Angle Range	±75°
Allowed Peak Torque at Start/Stop	60Nm
Rated Torque	30Nm
Maximum Load Weight	<15k g
Center Height	151mm
Output Flange End Face Runout	≤ 0.015mm
Output Flange Radial Runout	≤ 0.015mm
Perpendicularity of Output Flange to Machine Mounting Surface	≤ 0.015mm
Repeat Positioning Accuracy	± 0.003°

Parameter	Fifth Axis (DF85)
Worktable Rotation Speed	0~200rpm/min
Worktable Motion Angle Range	360°
Allowed Peak Torque at Start/Stop	35Nm
Rated Torque	15Nm
Maximum Load Weight	<8k g
Output Flange End Face Runout	≤ 0.015mm
Output Flange Radial Runout	≤ 0.015mm
Parallelism of Output Flange to Machine Mounting Surface	≤ 0.015mm
Repeat Positioning Accuracy	± 0.003°

- The above drawing dimensions are for reference only. Actual technical parameters and dimensions will be provided based on data supplied by the customer.
- Origin sensor set: JH series equipped with OMRON EE-SX672.

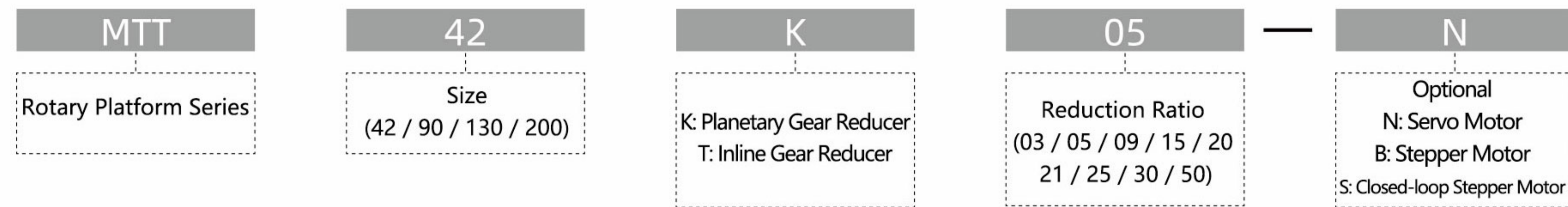
# MTT Series Right-Angle Hollow Rotary Platform



The image is for reference only; please refer to the actual product!

- IP65 Protection: Waterproof rating suitable for relatively humid environments.
- High Rigidity and High Torque: Alloy steel exterior and large module gear root design, ideal for rotary applications with heavy loads.
- High Precision: Gears meet JIS 0 grade requirements (gear tooth profile deviation  $\leq 0.002\text{mm}$ ), with ultra-low backlash.
- High Transmission Efficiency: Gear design follows a helical worm guide, achieving a transmission efficiency of up to 96% through sliding motion.
- Ultra-low Noise: Operating noise at 1500 rpm is less than 50 dB.
- Long Service Life: Made with high hardness, high-density gear materials, ensuring excellent precision and longevity.

## Model Example



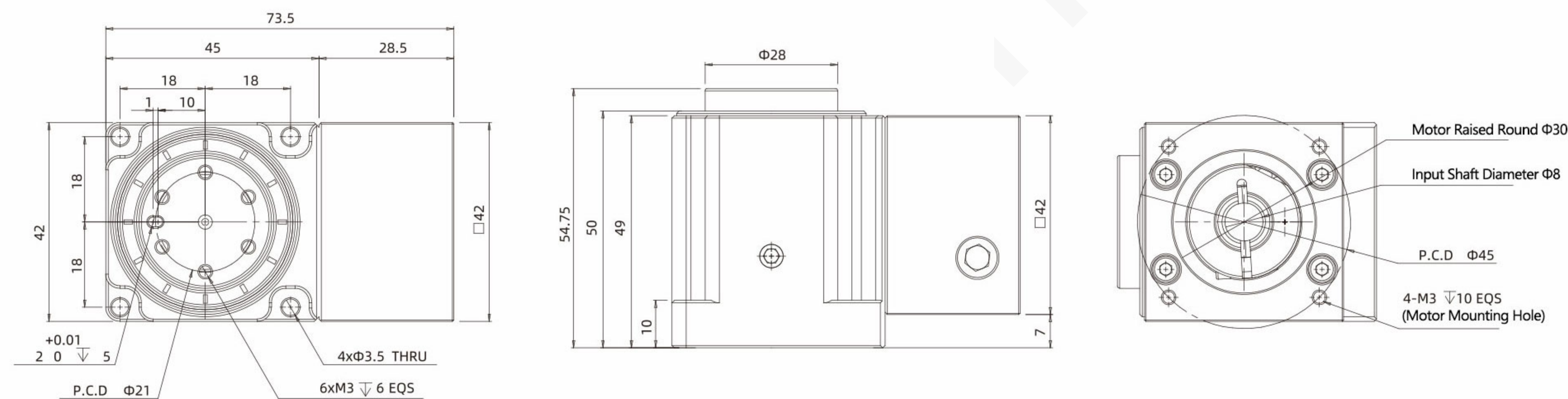
## Technical Specifications

Product Model	Unit	MTT42	MTT90	MTT130	MTT200
Reduction Ratio		3	3	3	5
Matching Servo Motor	W	100	100	400	750
Bearing Structure		Deep Groove Ball Bearing	Deep Groove Ball Bearing	Deep Groove Ball Bearing	Deep Groove Ball Bearing
Permissible Torque	N.M	14	35	60	100
Rotational Inertia	kg.m <sup>2</sup>	3610×10 <sup>-7</sup>	68540×10 <sup>-7</sup>	110725×10 <sup>-7</sup>	876410×10 <sup>-7</sup>
Permissible Output Speed (Table Surface)	r/min	2500	2500	2500	2500
Permissible Inertia Load Torque	N.M	20	76	90	160
Permissible Axial Load	N	250	1000	2000	4000
Repeatability Positioning Accuracy	arc-sec	±5	±5	±5	±5
Positioning Accuracy	arc-min	±0.5	±0.5	±0.5	±0.5
Rotary Platform Surface Deviation (Flatness Runout)	mm	±0.01	±0.01	±0.01	±0.01
Rotary Platform Concentricity	mm	±0.01	±0.01	±0.01	±0.01
Rotary Platform Parallelism	mm	±0.02	±0.015	±0.015	±0.015
Precision Life	h	25000	25000	25000	25000
Protection Level		IP 40	IP 40	IP 40	IP 40
Weight	kg	1.2	3.3	6.5	18

• The above technical parameters are for reference only. The actual technical parameters and dimensions will be provided based on the data supplied by the customer.

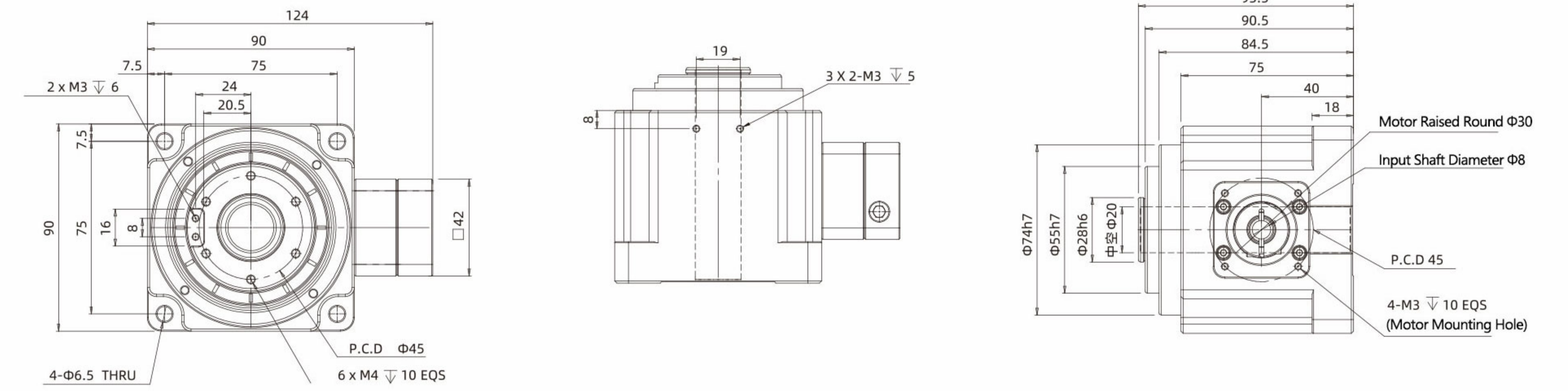
## Outline Dimension Drawing

MTT42-03-N

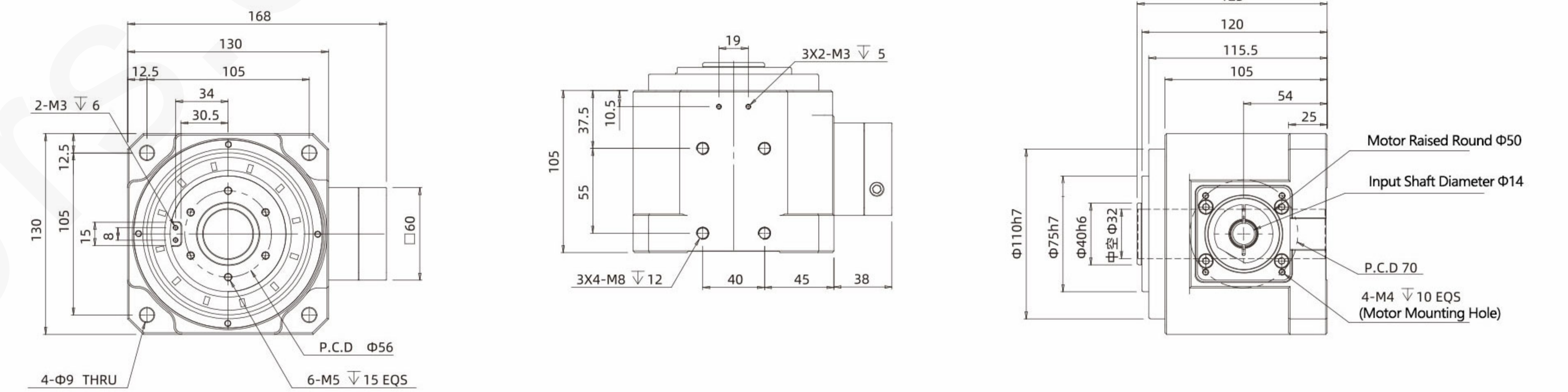


# MTT Series Right-Angle Hollow Rotary Platform

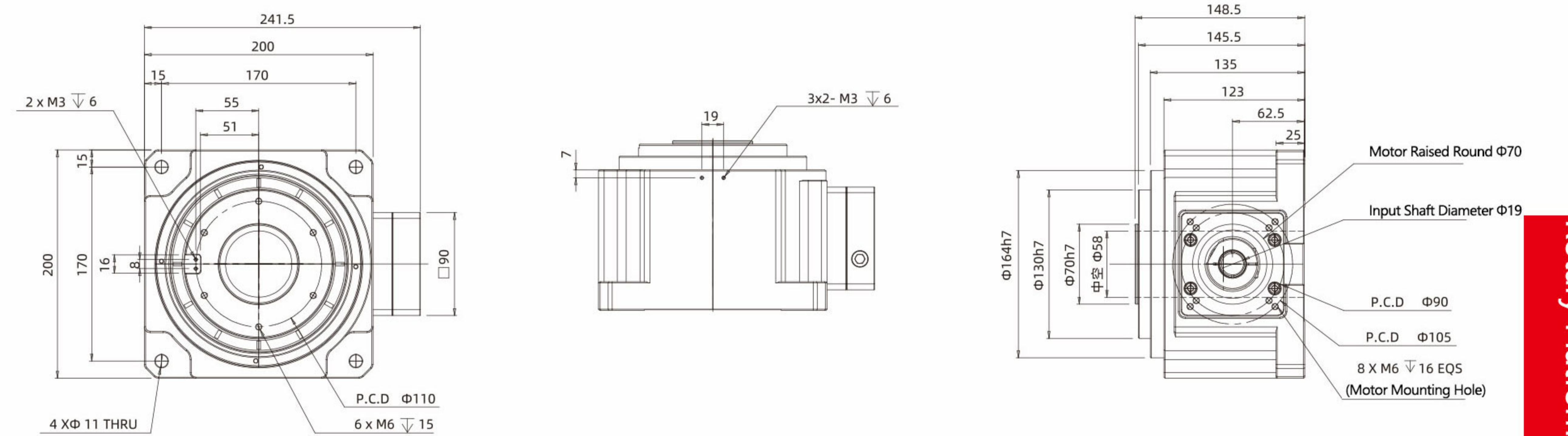
MTT90-03-N



MTT130-03-N



MTT200-05-N



• The above drawing dimensions are for reference only. Actual technical parameters and dimensions will be provided based on data supplied by the customer.

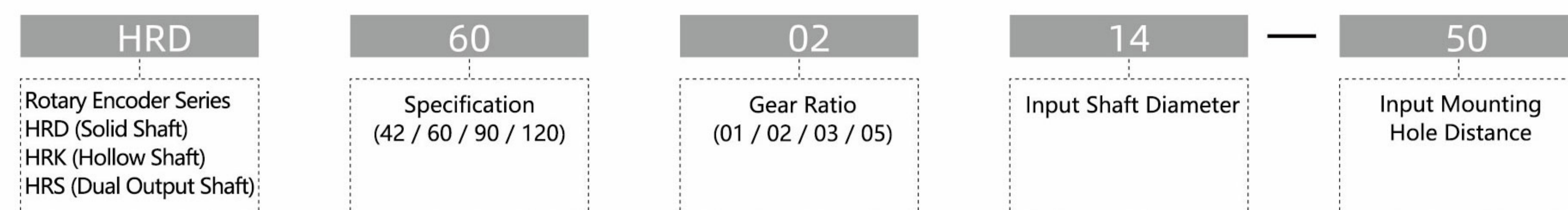
# HR Series Rotary Indexer



- IP65 Protection: Waterproof rating suitable for relatively humid environments.
- High Rigidity and High Torque: Alloy steel exterior and large module gear root design, ideal for rotary applications with heavy loads.
- High Precision: Gears meet JIS 0 grade requirements (gear tooth profile deviation  $\leq 0.002\text{mm}$ ), with ultra-low backlash.
- High Transmission Efficiency: Gear design follows a helical worm guide, achieving a transmission efficiency of up to 96% through sliding motion.
- Ultra-low Noise: Operating noise at 1500 rpm is less than 50 dB.
- Long Service Life: Made with high hardness, high-density gear materials, ensuring excellent precision and longevity.

图片仅供参考, 请以实物为准!

## Model Example



## Technical Specifications

Product Model	Unit	HR□042	HR□060	HR□090	HR□120
Ratio		1:1/1:2/1:3/1:5	1:1/1:2/1:3/1:5	1:1/1:2/1:3/1:5	1:1/1:2/1:3/1:5
Rated Output Torque	Nm	14	22	45	95
Maximum Output Torque	Nm	42	65	130	200
Rated Speed	rpm	1500	1500	1500	1500
Maximum Speed	rpm	2000	2000	2000	2000
Backlash	arcmin	8	8	8	8
Permissible Radial Force	N	300	500	900	1800
Permissible Axial Force	N	150	200	480	1100
Moment of Inertia	Kg.cm <sup>2</sup>	0.025	0.07	0.07	0.12
Efficiency	%	95%	95%	95%	95%
Service Life	h	$\geq 20000$	$\geq 20000$	$\geq 20000$	$\geq 20000$
Operating Temperature	°C	-15°C ~ 90°C	-15°C ~ 90°C	-15°C ~ 90°C	-15°C ~ 90°C
Noise Level	Db	$\leq 65$	$\leq 65$	$\leq 66$	$\leq 66$
Lubrication	Lub	Synthetic Lubricating Oil	Synthetic Lubricating Oil	Synthetic Lubricating Oil	Synthetic Lubricating Oil
Protection Level	PC	IP65	IP65	IP65	IP65
Installation Direction	MP	Any direction	Any direction	Any direction	Any direction
Weight	kg	0.7	1.3	4	8.5

● The above technical parameters are for reference only. The actual technical parameters and dimensions will be provided based on the data supplied by the customer.



HRD (Solid Shaft)



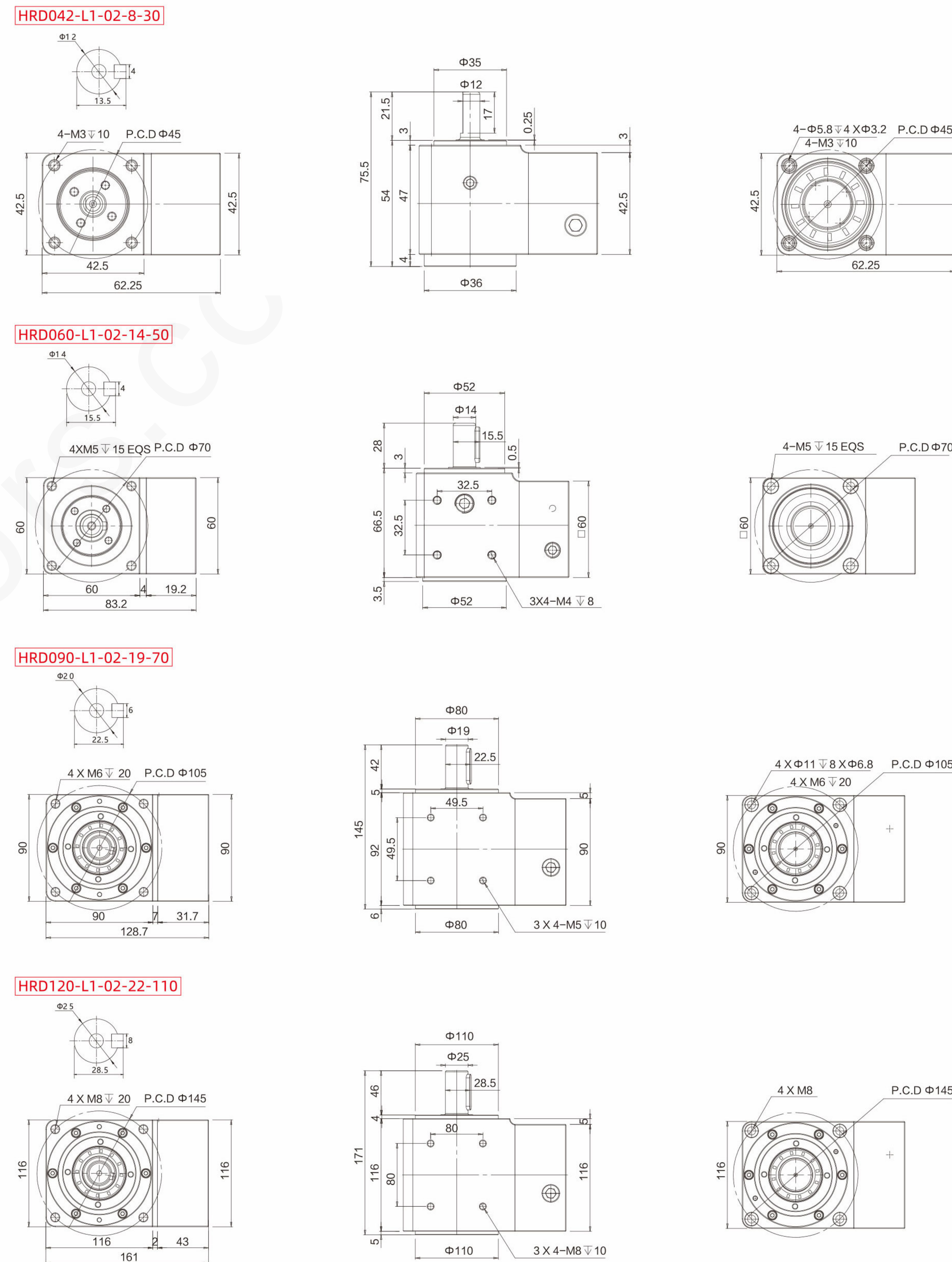
HRK (Hollow Shaft)



HRS (Dual Output Shaft)

# HR Series Rotary Indexer

## Outline Dimension Drawing



Rotary Platform

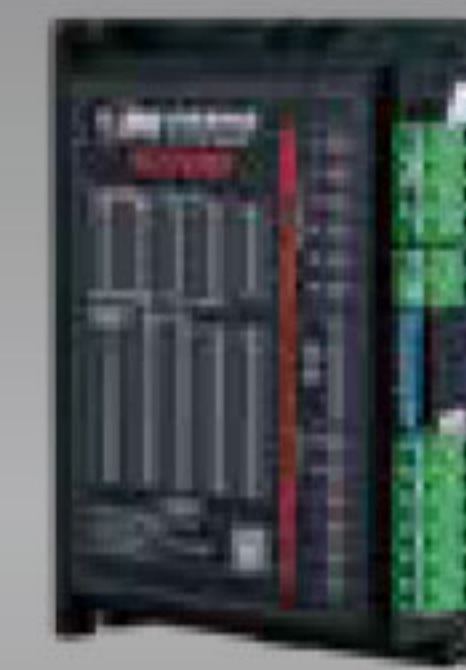
Rotary Platform

# Motor Driver

General Bus Type



Intelligent Type



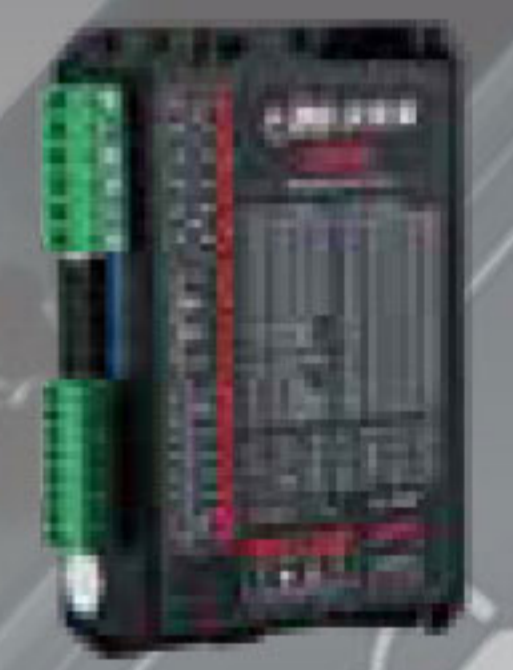
CSH-2285R



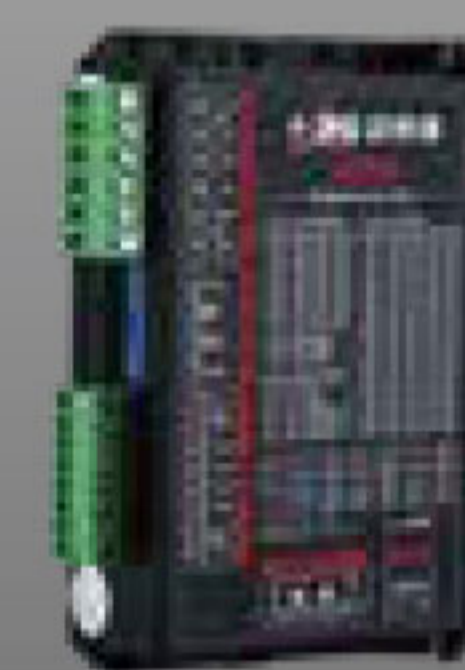
S-2822H



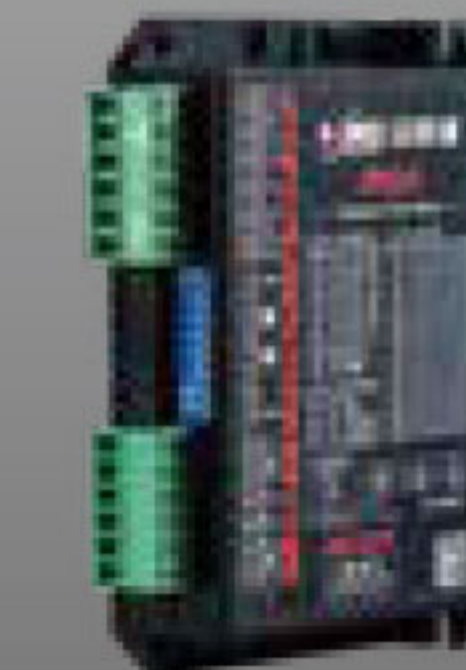
S-266D



S-245D



S-224D



SSA Series



SSD Series



DBH-4850H



The actual product size is subject to the physical item

# S-224D Two-Phase Stepper Motor Driver Pulse Type



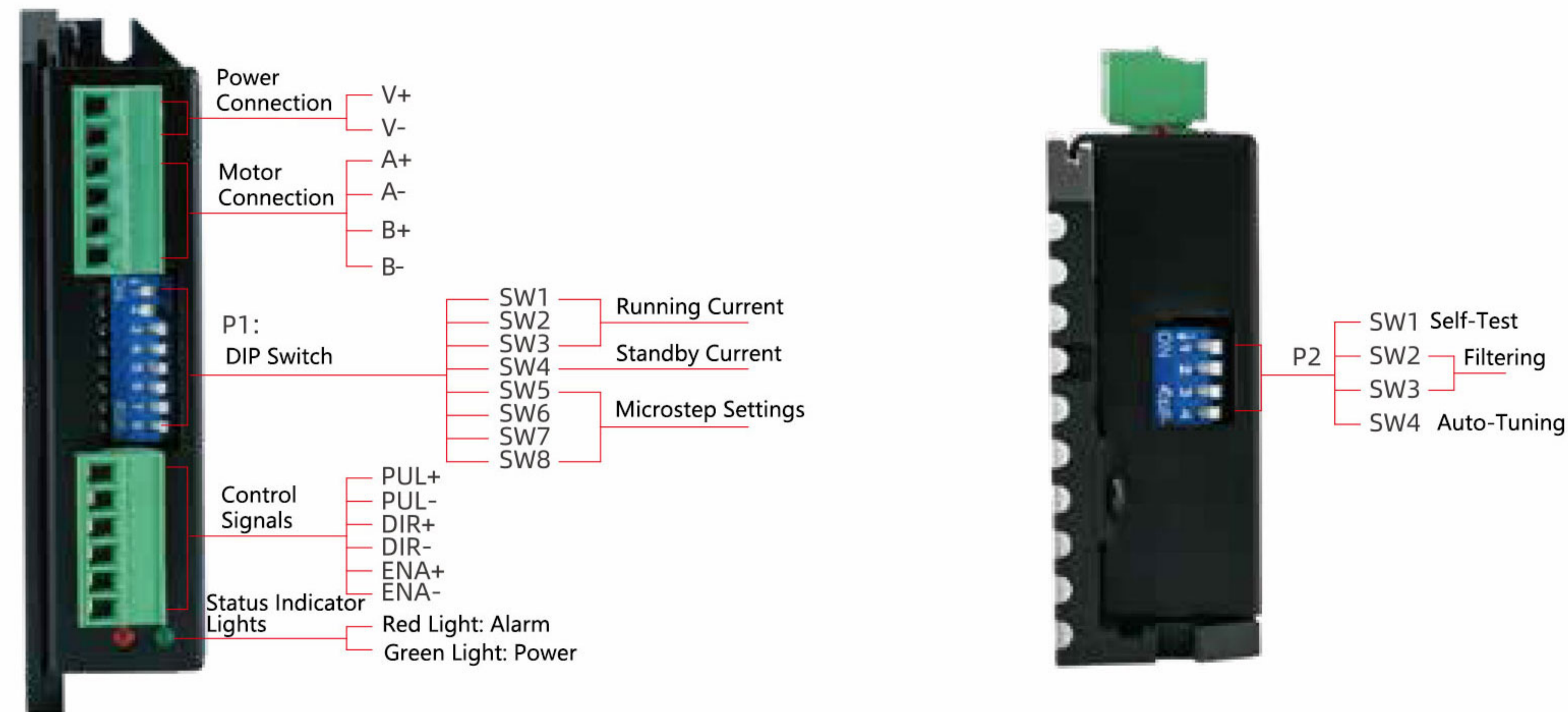
The image is for reference only; please refer to the actual product!

## S Series Pulse Type

Two-Phase Hybrid | Pulse Control | DSP Digital Type | DC Input

- RS232 debugging software facilitates user settings, modifications, and customization of driver parameters.
- DIP switch sets driver filter settings, perfectly adapting to various motion scenarios.
- Pulse, direction, and enable interface signal levels compatible with 5-24V.
- Single/double pulse control mode selectable by user.
- Alarm signal output level can be set independently.
- Compact size, fast delivery.

## Wiring Instructions

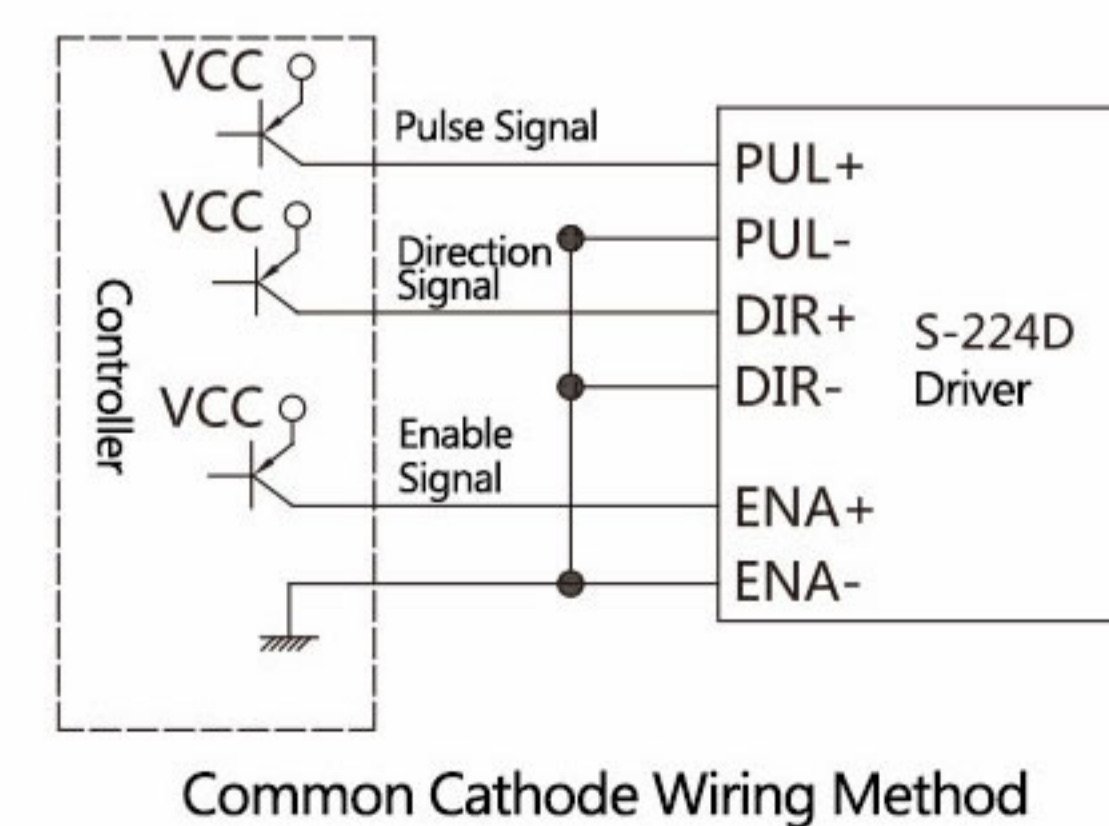
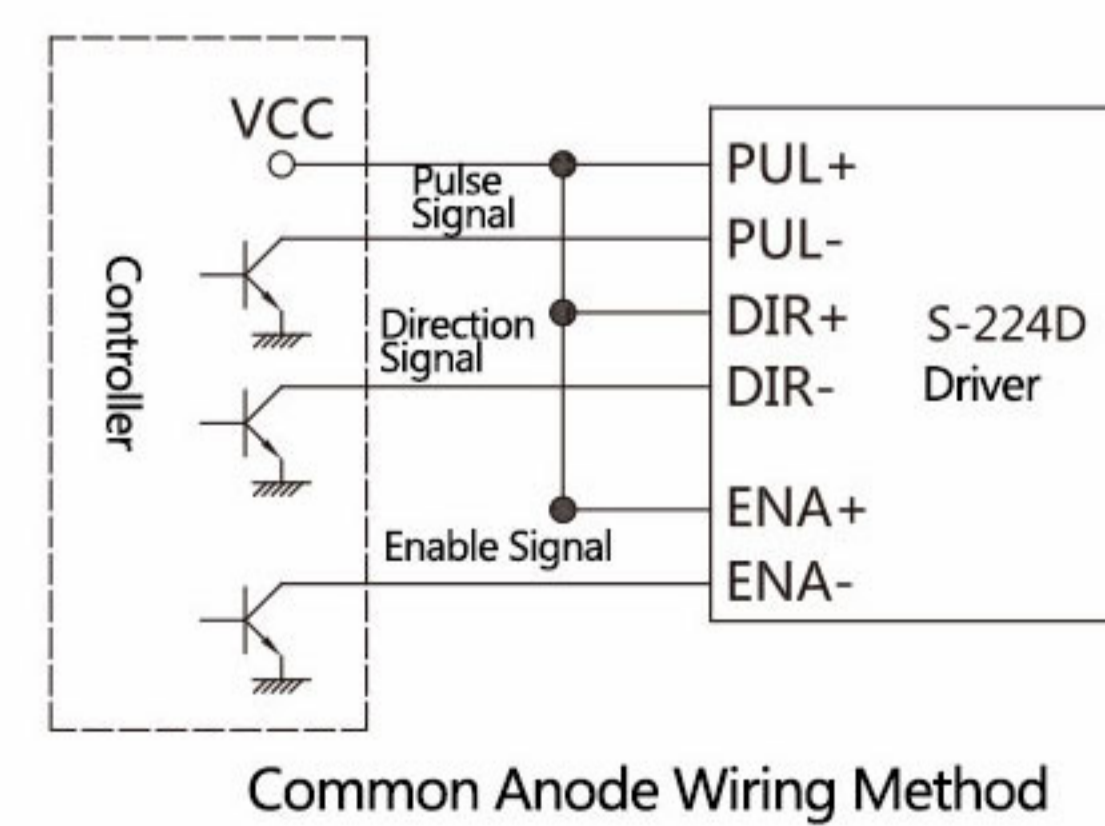
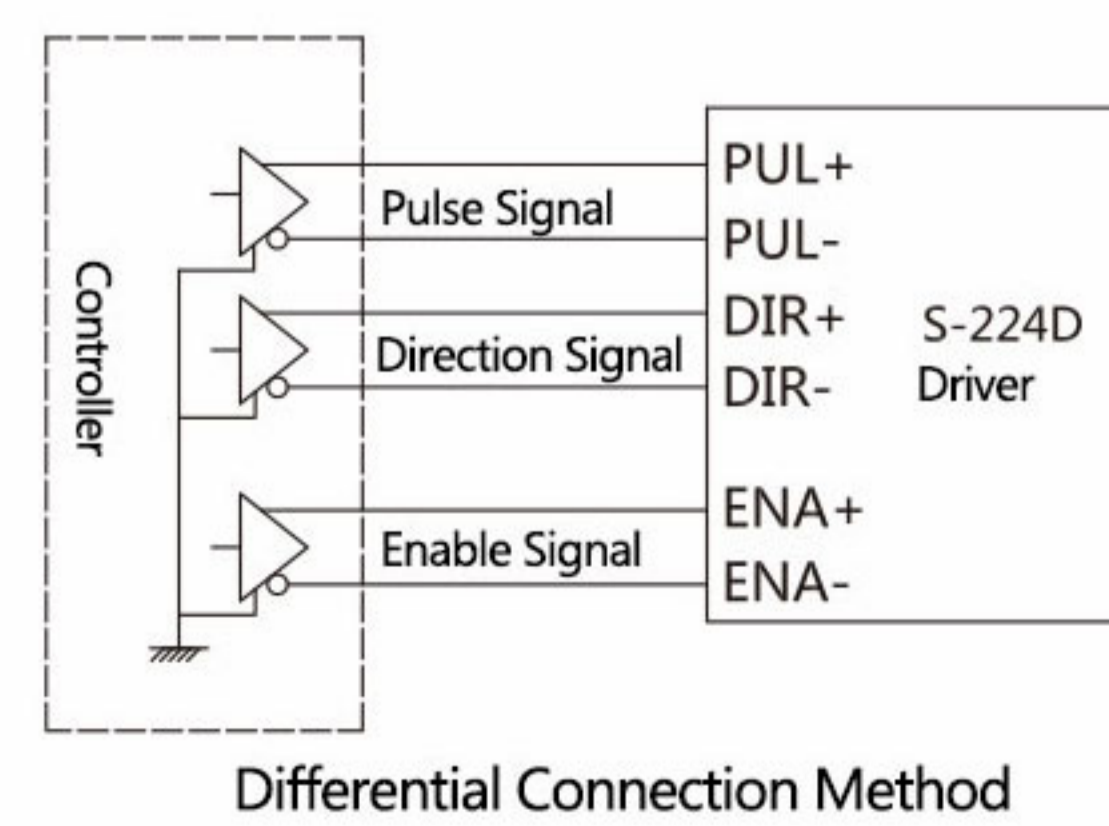


### Motor and Power Input Terminal

Terminal No.	Symbol	Name	Description
1	V+	DC Power Input	+12VDC~ +48VDC
2	V-	Power Ground	0V
3	A+	Phase A Motor Coil +	Interchanging the connections of the same phase coil can change the motor's running direction. For example, swap the connections of A+ and A-.
4	A-	Phase A Motor Coil -	
5	B+	Phase B Motor Coil +	
6	B-	Phase B Motor Coil -	

### Control Signal Terminal

Pin No.	Signal	Function	Description
1	PUL+	Pulse Positive Input	Supports 4.5V~24V DC signals
2	PUL-	Pulse Negative Input	
3	DIR+	Direction Positive Input	
4	DIR-	Direction Negative Input	
5	ENA+	Enable Positive Input	
6	ENA-	Enable Negative Input	



# S-224D Two-Phase Stepper Motor Driver Pulse Type

## Setup Instructions

### Work Current Setting (P1: SW1~SW3)

Using the three DIP switches SW1 to SW3 on P1, a total of 8 current levels can be set. Please refer to the table below:

Output Peak Current (A)	SW1	SW2	SW3
0.3	ON	ON	ON
0.5	OFF	ON	ON
0.7	ON	OFF	ON
1.0	OFF	OFF	ON
1.3	ON	ON	OFF
1.6	OFF	ON	OFF
1.9	ON	OFF	OFF
2.2	OFF	OFF	OFF

⚠ Warning: The peak current setting of the driver must be less than the rated current of the matched motor; otherwise, it may cause the motor temperature to rise excessively and affect the motor's service life.

### Standby Current Setting (P1: SW4)

The switch P1: SW4 sets the standby current of the driver. After the motor stops for 1 second, the driver automatically reduces the current supplied to the motor, outputting the standby current.

DIP Switch	Definition	ON	OFF
Standby Current		50% of working current	90% of working current

⚠ Note: In general applications, SW4 should be set to ON to reduce the heat generated by the motor and driver, thereby improving reliability.

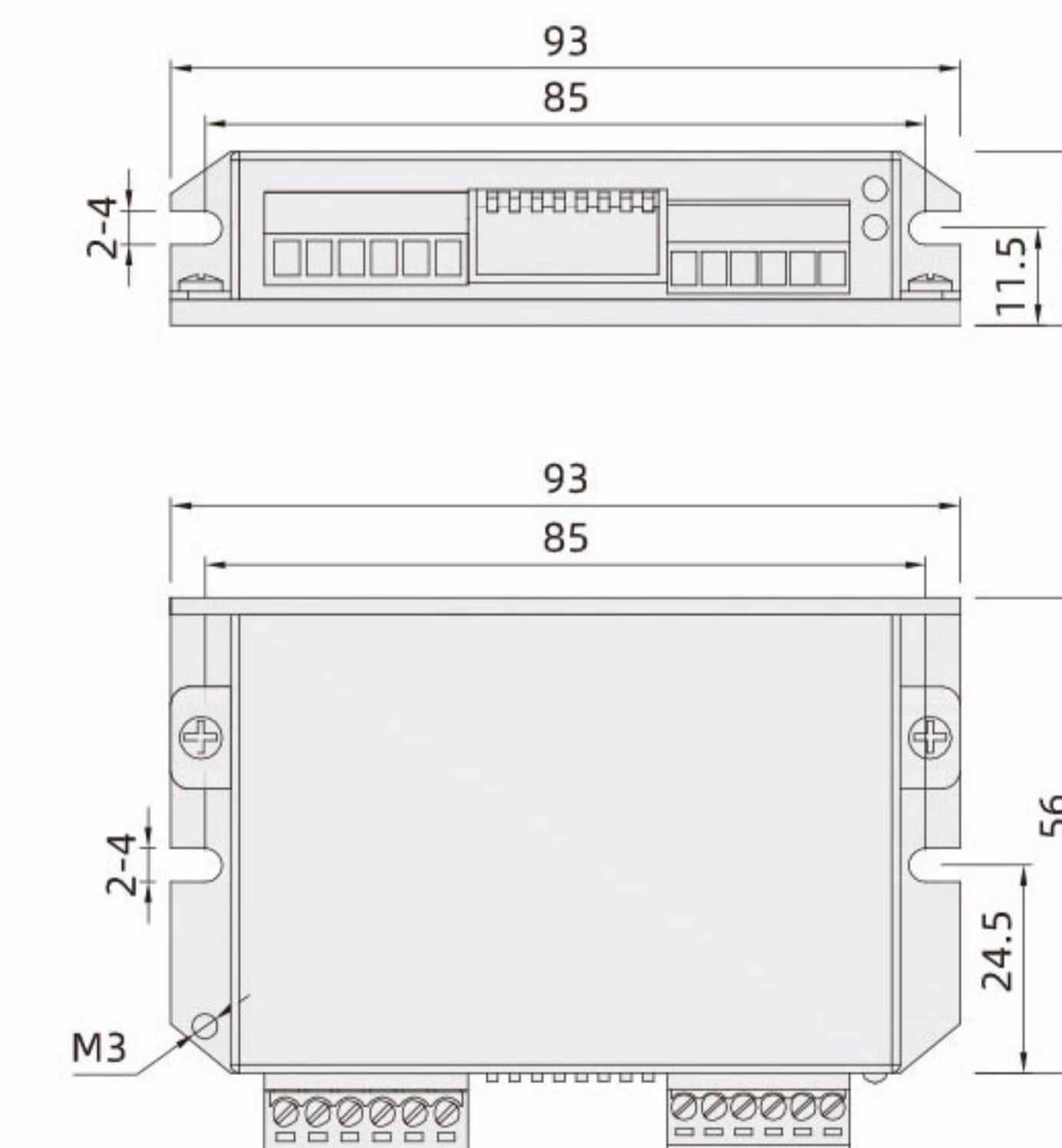
### Microstepping Setting (P1: SW5~SW8)

Using the four DIP switches SW5 to SW8 on P1, a total of 16 microstepping modes can be set. Please refer to the table below:

Pulses/Revolution	SW5	SW6	SW7	SW8
200	ON	ON	ON	ON
400	OFF	ON	ON	ON
800	ON	OFF	ON	ON
1600	OFF	OFF	ON	ON
3200	ON	ON	OFF	ON
6400	OFF	ON	OFF	ON
12800	ON	OFF	OFF	ON
25600	OFF	OFF	OFF	ON
1000	ON	ON	ON	OFF
2000	OFF	ON	ON	OFF
4000	ON	OFF	ON	OFF
5000	OFF	OFF	ON	OFF
8000	ON	ON	OFF	OFF
10000	OFF	ON	OFF	OFF
20000	ON	OFF	OFF	OFF
25000	OFF	OFF	OFF	OFF

⚠ Note: Microstepping can increase the resolution per step, but its main purpose is not to improve motor accuracy, rather to enhance motor performance.

## Installation Dimension Diagram and Status Indicators



The green LED is the power indicator. When the driver is powered on, this LED flashes; when the driver is powered off, this LED is off.

The red LED is the fault indicator. When a fault occurs, this indicator light flashes in a periodic cycle; when the fault is cleared by the user, the red LED remains steadily on. The number of red LED flashes represents different fault information. The specific relationships are shown in the table below:

No.	LED Flash Pattern	Fault Description	Solution
1	● Green steady on	Driver not enabled	Provide enable signal to driver
2	●● Green flashing	Driver operating normally	
3	●●●●● 3red 2green	Internal voltage error	Increase power supply capacity
4	●●●●● 4red 1green	Driver power input overvoltage	Reduce power supply voltage
5	●●●●● 5red 1green	Driver overcurrent	Check for short circuit or phase error
6	●●●●● 4red 2green	Driver power input undervoltage	Increase power supply voltage
7	●●●●● 6red 1green	Motor coil open circuit	Properly connect motor wires

### ⚠ Precautions:

- Only technical personnel are allowed to install, test, or maintain this product.
- Do not plug or unplug the driver and motor terminals while powered.
- To prevent interference to the driver, it is recommended to use shielded cables for control signals, and ensure the shielding layer is connected to ground.
- When wiring, do not tin the wire ends with solder in advance (this may cause improper connections).

# S-245D Two-Phase Stepper Motor Driver Pulse Type



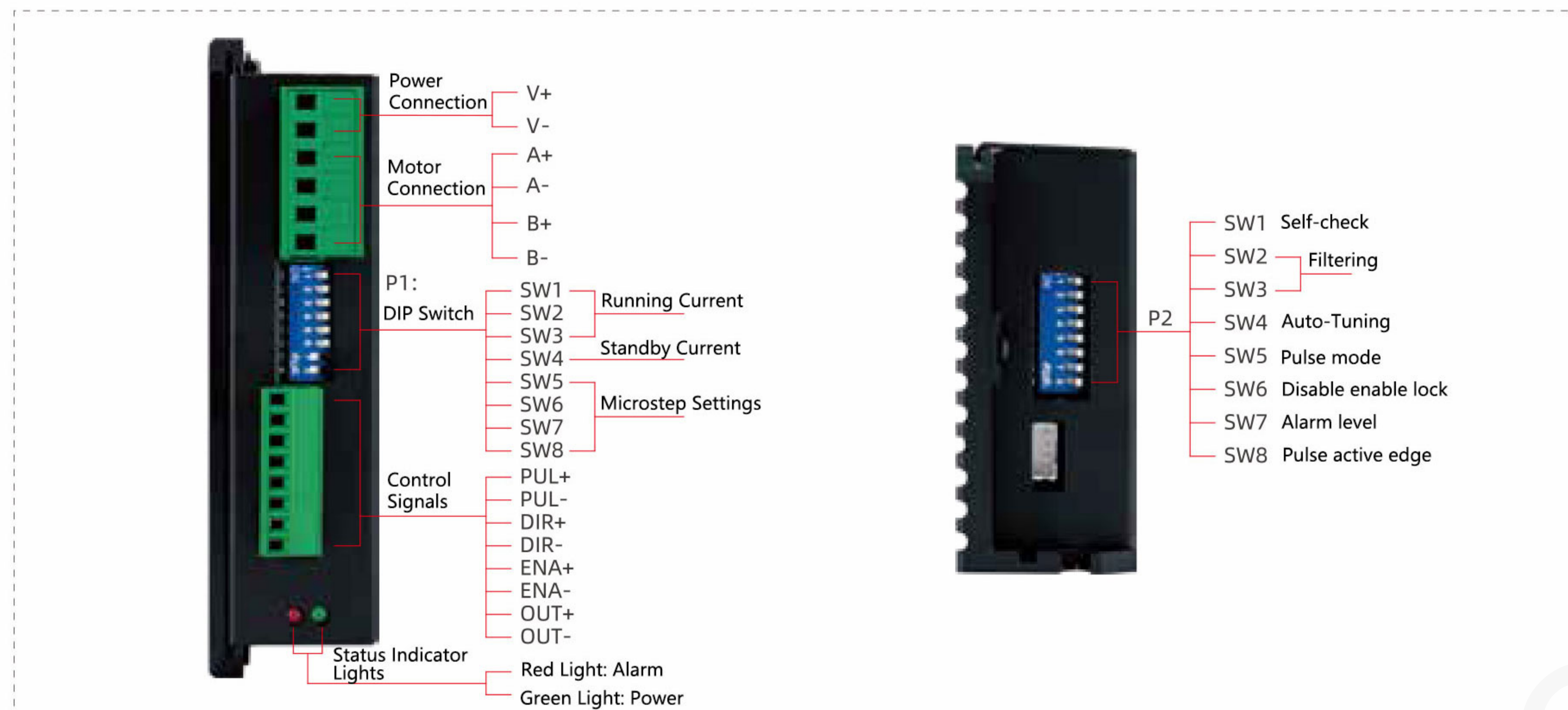
S Series Pulse Type

Two-Phase Hybrid Pulse Control DSP Digital Type DC Input

- The driver filter settings can be configured via DIP switches, perfectly adapting to various motion scenarios.
- RS232 debugging software facilitates user settings, modifications, and customization of driver parameters.
- Pulse, direction, and enable interface signals are compatible with 5-24V logic levels.
- Single/double pulse control modes can be selected via DIP switches.
- Alarm output logic state can be configured via DIP switches.
- Compact size and fast response.

The image is for reference only; please refer to the actual product!

## Wiring Instructions

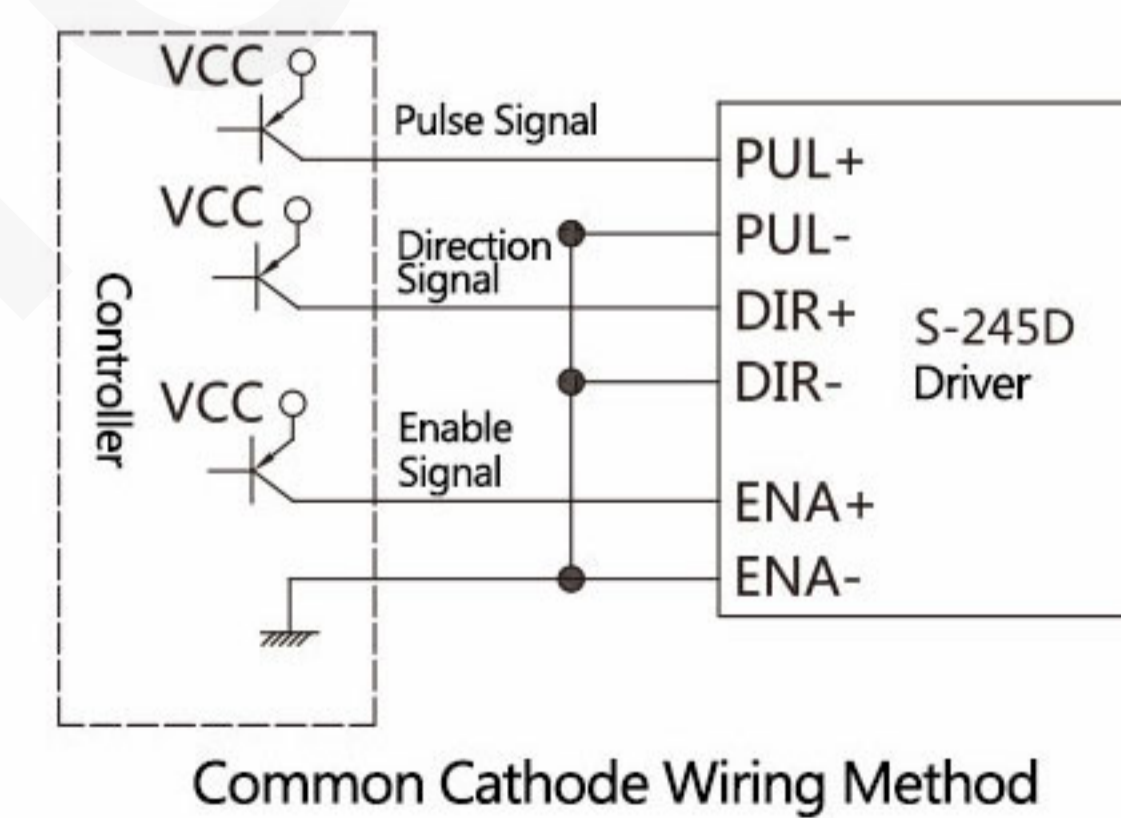
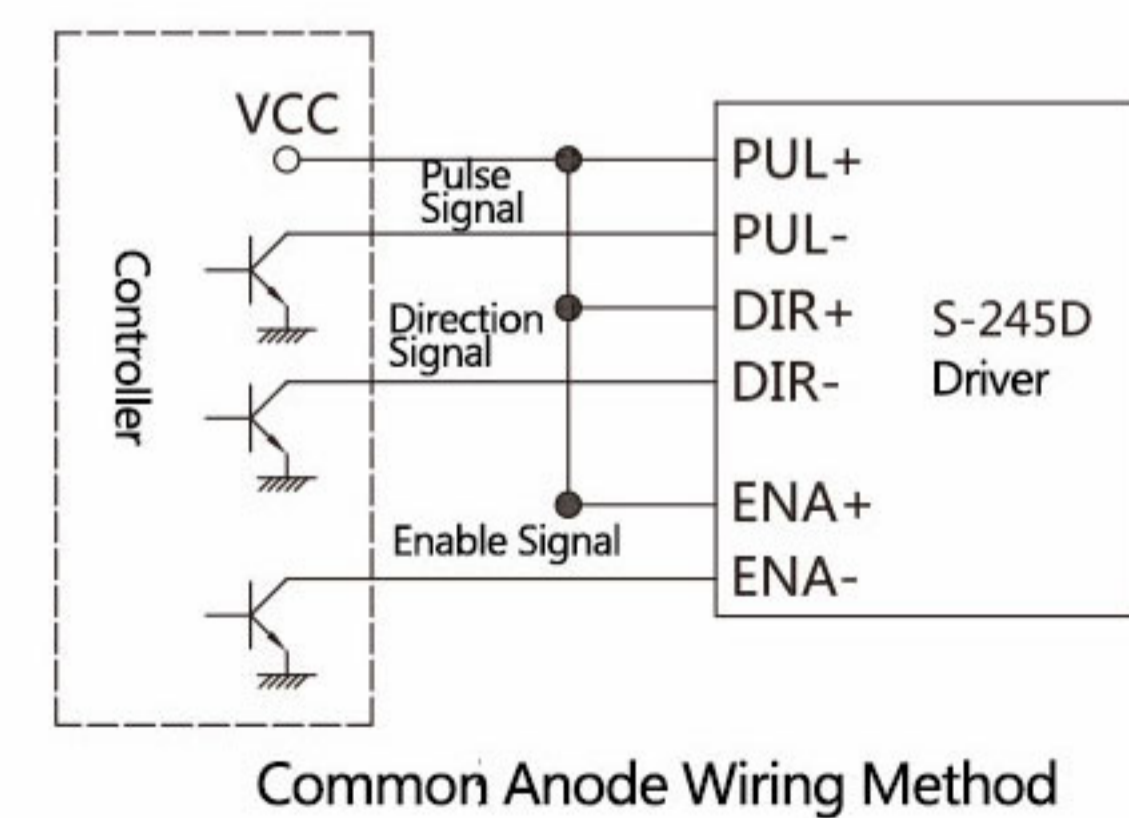
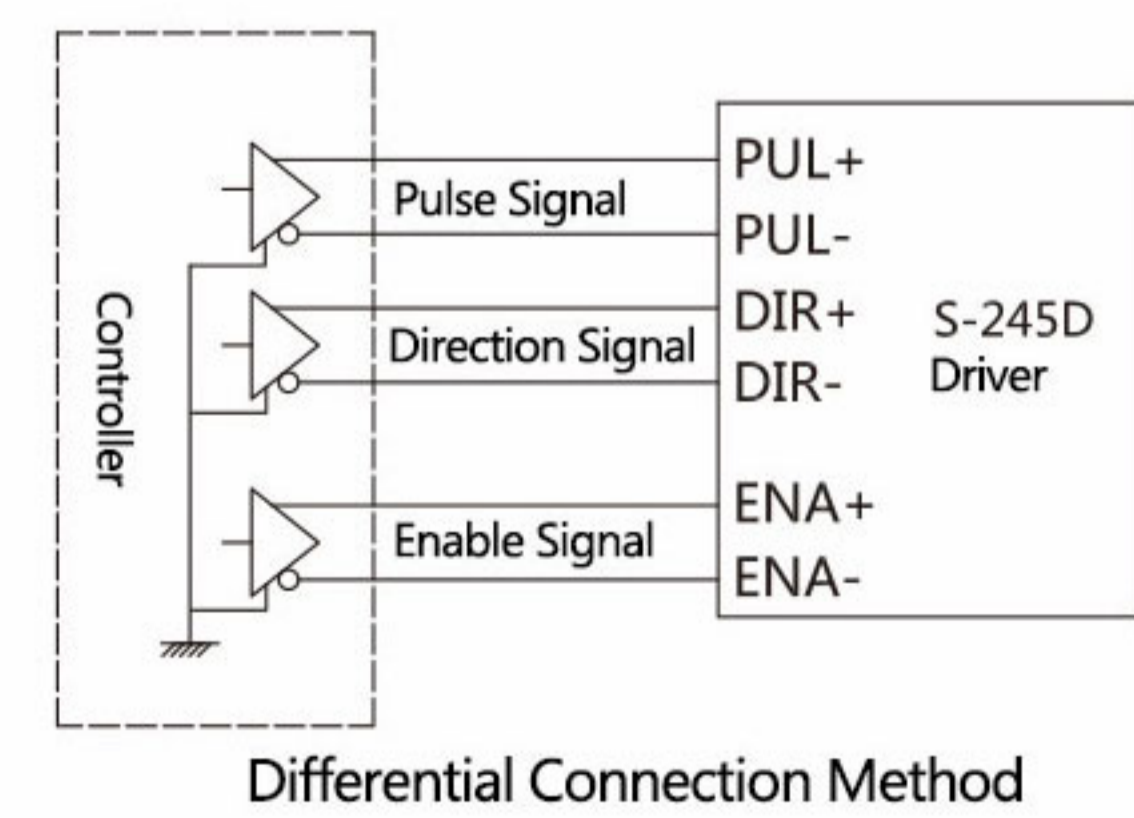


### Motor and Power Input Terminal

Terminal No.	Symbol	Name	Description
1	V+	DC Power Input	+24VDC~+50VDC
2	V-	Power Ground	0V
3	A+	Phase A Motor Coil +	Interchanging the connections of the same phase coil can change the motor's running direction. For example, swap the connections of A+ and A-.
4	A-	Phase A Motor Coil -	
5	B+	Phase B Motor Coil +	
6	B-	Phase B Motor Coil -	

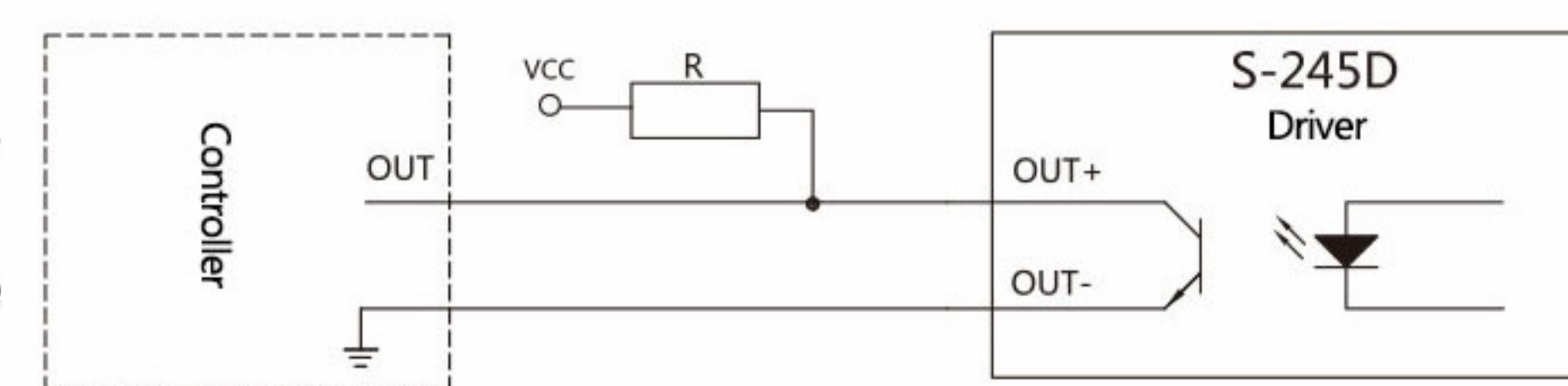
### Control Signal Terminal

Pin No.	Signal	Function	Description
1	PUL+	Pulse Positive Input	Supports 4.5V~24V DC signals
2	PUL-	Pulse Negative Input	
3	DIR+	Direction Positive Input	
4	DIR-	Direction Negative Input	
5	ENA+	Enable Positive Input	OC output, by default outputs low level on fault (30VDC/100mA max)
6	ENA-	Enable Negative Input	
7	OUT+	Fault positive output	
8	OUT-	Fault negative output	



### Control Signal Output Interface Circuit Diagram

- The OUT port is an optocoupler isolated OC output, with a maximum voltage rating of 30VDC, and a maximum saturation current of 100mA.
- By default, when the driver alarms, the optocoupler conducts and outputs a low level. This setting can be changed via DIP switch P2: SW7.



# S-245D Two-Phase Stepper Motor Driver Pulse Type

## Setup Instructions

### Internal Function Settings (P2: SW1~SW8)

Function	SW1	SW4	SW5	SW6	SW7	SW8
Status	Self-check Mode	Self-tuning Function	Pulse Mode	Disable Enable Lock	Alarm Level	Pulse Active Edge
ON	Self-check Running	No Self-tuning	Double Pulse	No Lock	High Level	Rising Edge
OFF	No Self-check	Parameter Self-tuning	Single Pulse	Lock	Low Level	Falling Edge

Filter Type	SW2	SW3
Microstepping	ON	ON
25ms Filter	OFF	ON
12ms Filter	ON	OFF
6ms Filter	OFF	OFF

### Work Current Setting (P1: SW1~SW3)

Using the three DIP switches SW1 to SW3 on P1, a total of 8 current levels can be set. Please refer to the table below:

Output Peak Current (A)	SW1	SW2	SW3
1.0	ON	ON	ON
1.5	OFF	ON	ON
1.8	ON	OFF	ON
2.2	OFF	OFF	ON
3.0	ON	ON	OFF
3.5	OFF	ON	OFF
4.0	ON	OFF	OFF
4.5	OFF	OFF	OFF

**Warning:** The peak current setting of the driver must be less than the rated current of the matched motor; otherwise, it may cause the motor temperature to rise excessively and affect the motor's service life.

### Standby Current Setting (P1: SW4)

The switch P1: SW4 sets the standby current of the driver. After the motor stops for 1 second, the driver automatically reduces the current supplied to the motor, outputting the standby current.

DIP Switch	Definition	ON	OFF
SW4	Standby Current	50% of working current	90% of working current

**Note:** In general applications, SW4 should be set to ON to reduce the heat generated by the motor and driver, thereby improving reliability.

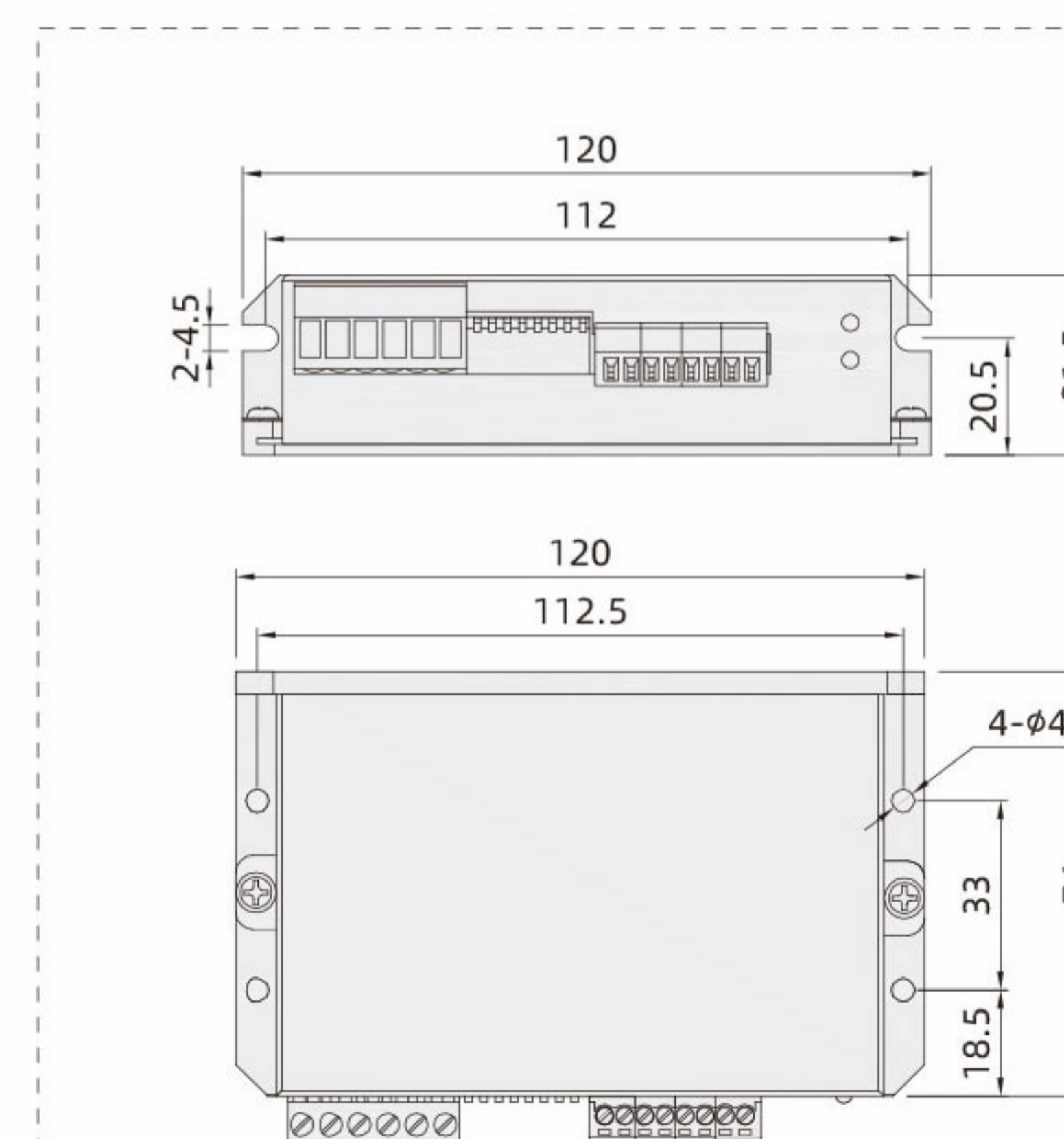
### Microstepping Setting (P1: SW5~SW8)

Using the four DIP switches SW5 to SW8 on P1, a total of 16 microstepping modes can be set. Please refer to the table below:

Pulses/Revolution	SW5	SW6	SW7	SW8
200	ON	ON	ON	ON
400	OFF	ON	ON	ON
800	ON	OFF	ON	ON
1600	OFF	OFF	ON	ON
3200	ON	ON	OFF	ON
6400	OFF	ON	OFF	ON
12800	ON	OFF	OFF	ON
25600	OFF	OFF	OFF	ON
1000	ON	ON	ON	OFF
2000	OFF	ON	ON	OFF
4000	ON	OFF	ON	OFF
5000	OFF	OFF	ON	OFF
8000	ON	ON	OFF	OFF
10000	OFF	ON	OFF	OFF
20000	ON	OFF	OFF	OFF
25000	OFF	OFF	OFF	OFF

**Note:** Microstepping can increase the resolution per step, but its main purpose is not to improve motor accuracy, rather to enhance motor performance.

## Installation Dimension Diagram and Status Indicators



The green LED is the power indicator. When the driver is powered on, this LED flashes; when the driver is powered off, this LED is off.

The red LED is the fault indicator. When a fault occurs, this indicator light flashes in a periodic cycle; when the fault is cleared by the user, the red LED remains steadily on. The number of red LED flashes represents different fault information. The specific relationships are shown in the table below:

No.	LED Flash Pattern	Fault Description	Solution
1	Green steady on	Driver not enabled	Provide enable signal to driver
2	Green flashing	Driver operating normally	
3	3red 2green	Internal voltage error	Increase power supply capacity
4	4red 1green	Driver power input overvoltage	Reduce power supply voltage
5	5red 1green	Driver overcurrent	Check for short circuit or phase error
6	4red 2green	Driver power input undervoltage	Increase power supply voltage
7	6red 1green	Motor coil open circuit	Properly connect motor wires

### Precautions:

- Only technical personnel are allowed to install, test, or maintain this product.
- Do not plug or unplug the driver and motor terminals while powered.
- To prevent interference to the driver, it is recommended to use shielded cables for control signals, and ensure the shielding layer is connected to ground.
- When wiring, do not tin the wire ends with solder in advance (this may cause improper connections).

# S-266D Two-Phase Stepper Motor Driver Pulse Type



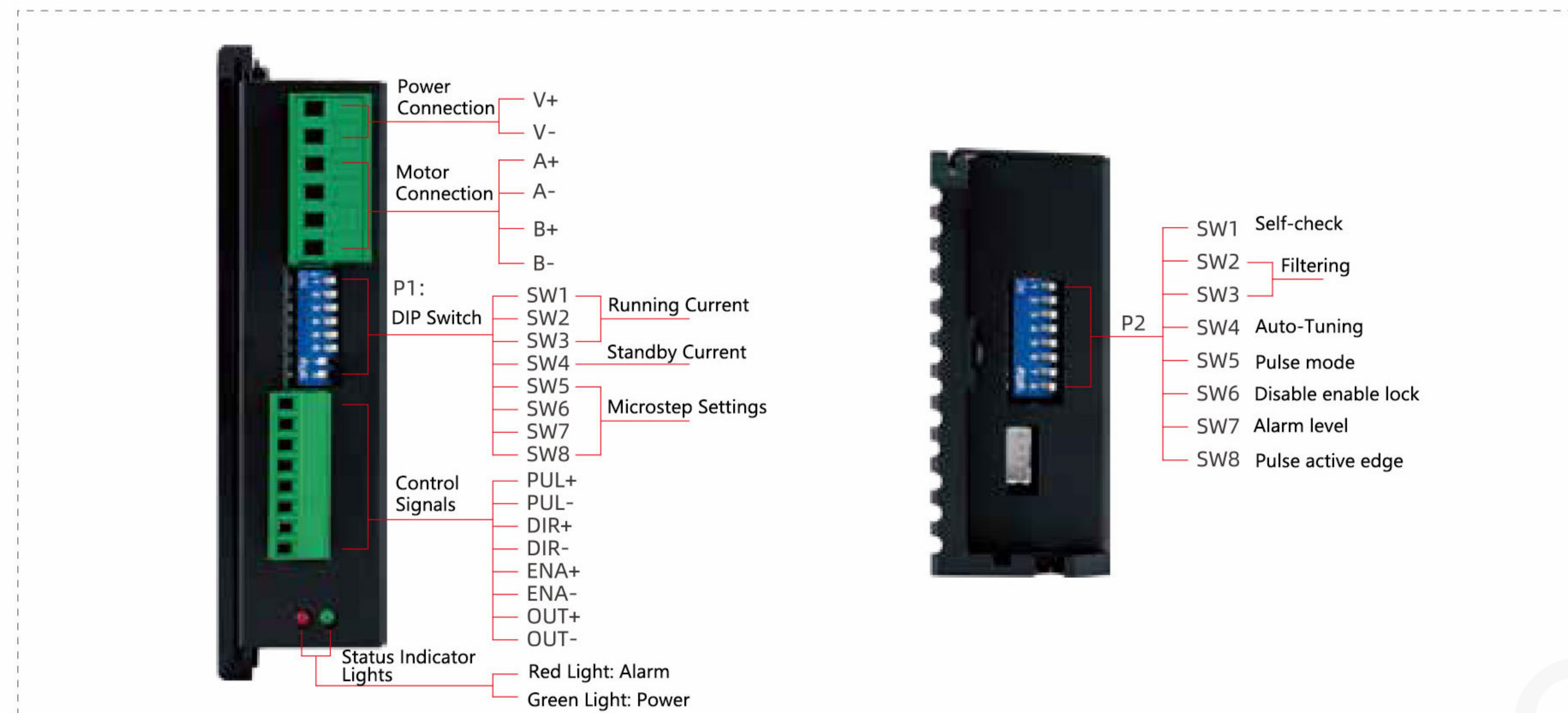
S Series Pulse Type

Two-Phase Hybrid | Pulse Control | DSP Digital Type | DC Input

- The driver filter settings can be configured via DIP switches, perfectly adapting to various motion scenarios.
- RS232 debugging software facilitates user settings, modifications, and customization of driver parameters.
- Pulse, direction, and enable interface signals are compatible with 5-24V logic levels.
- Single/double pulse control modes can be selected via DIP switches.
- Alarm output logic state can be configured via DIP switches.
- Compact size and fast response.

The image is for reference only; please refer to the actual product

## Wiring Instructions

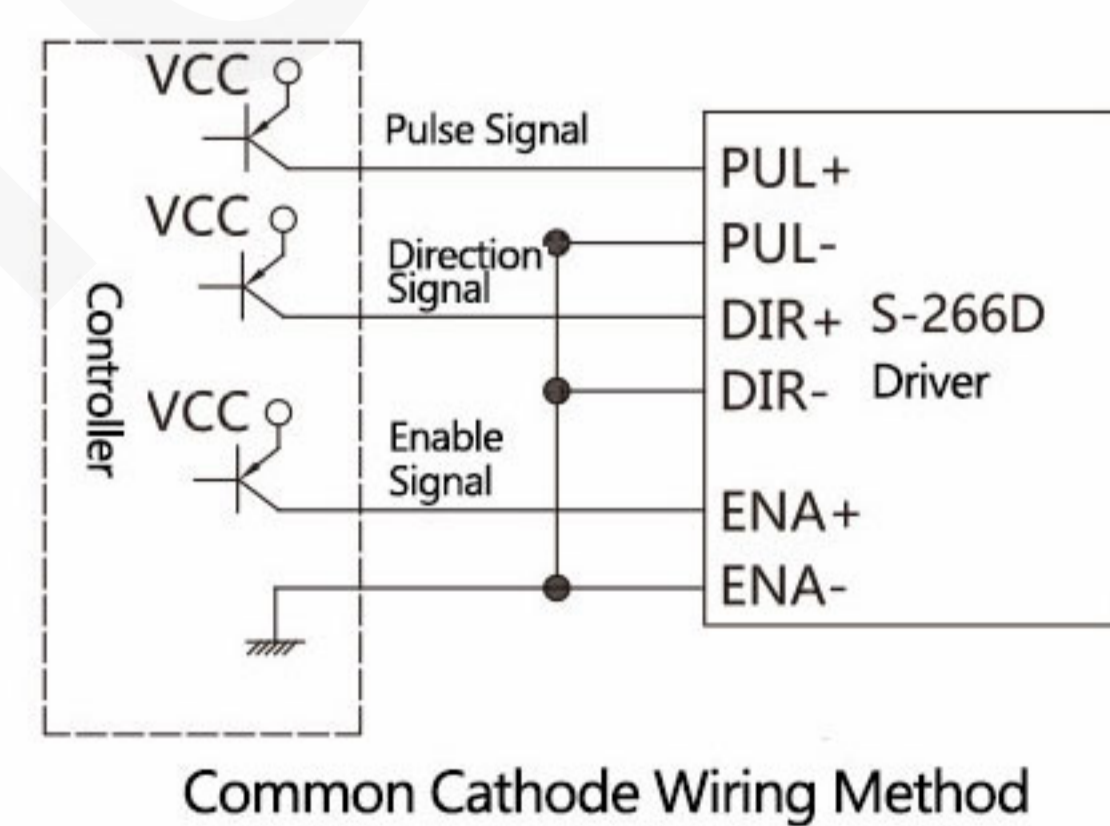
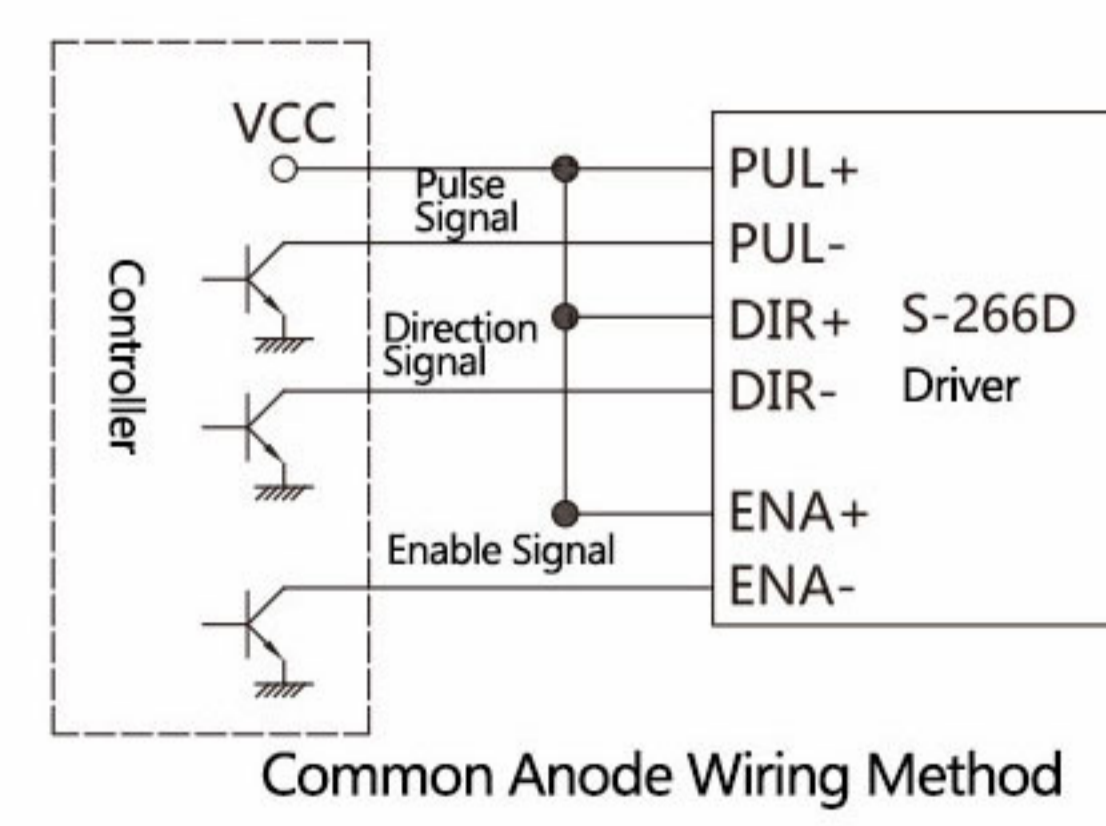
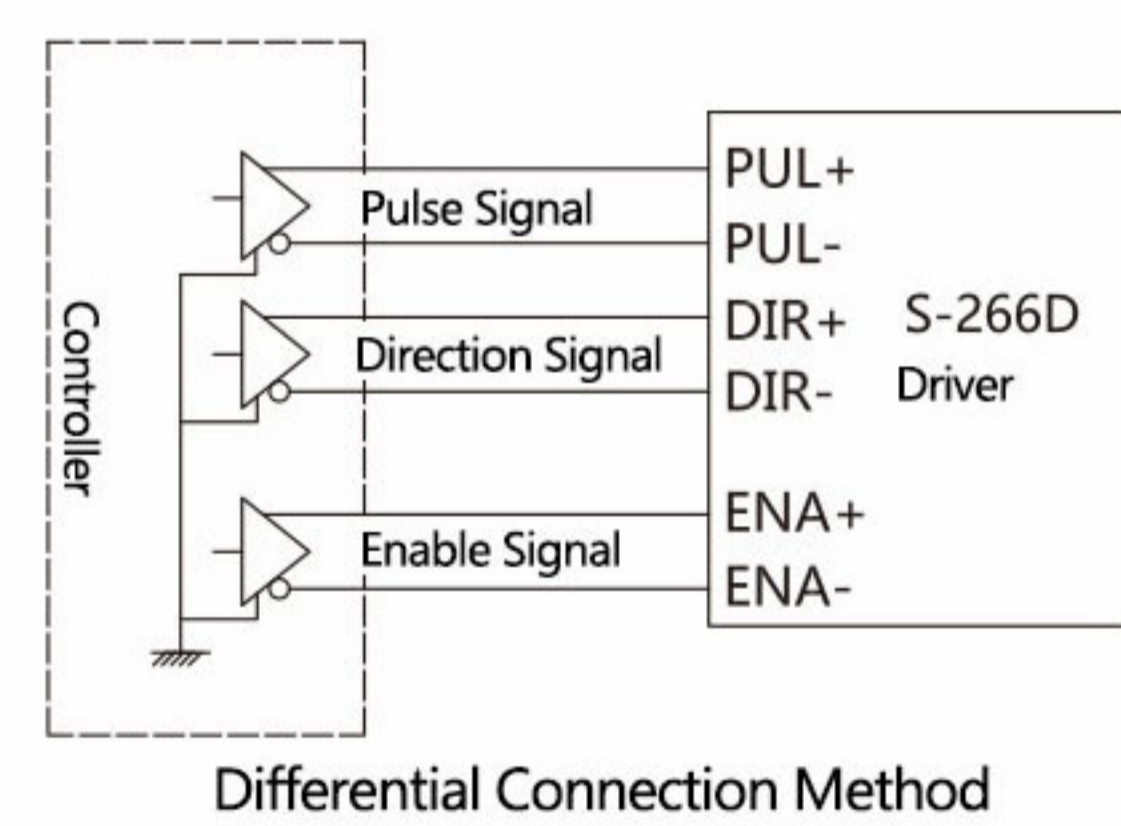


### Motor and Power Input Terminal

Terminal No.	Symbol	Name	Description
1	V+	DC Power Input	+24VDC~ +60VDC
2	V-	Power Ground	0V
3	A+	Phase A Motor Coil +	Interchanging the connections of the same phase coil can change the motor's running direction. For example, swap the connections of A+ and A-.
4	A-	Phase A Motor Coil -	
5	B+	Phase B Motor Coil +	
6	B-	Phase B Motor Coil -	

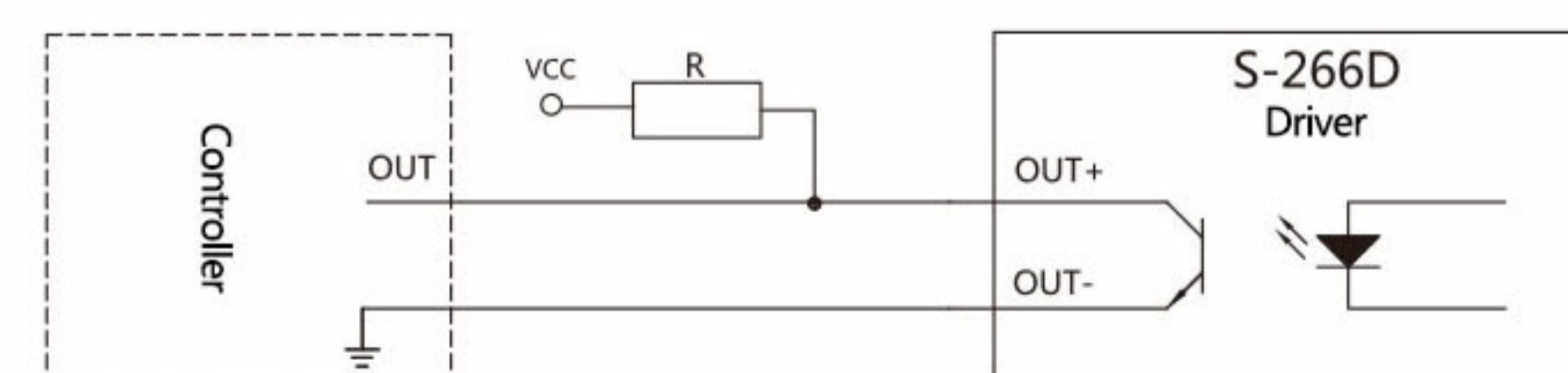
### Control Signal Terminal

Pin No.	Signal	Function	Description
1	PUL+	Pulse Positive Input	Supports 4.5V~24V DC signals
2	PUL-	Pulse Negative Input	
3	DIR+	Direction Positive Input	
4	DIR-	Direction Negative Input	
5	ENA+	Enable Positive Input	
6	ENA-	Enable Negative Input	
7	OUT+	Fault positive output	OC output, by default outputs low level on fault (24VDC/100mA max)
8	OUT-	Fault negative output	



### Control Signal Output Interface Circuit Diagram

- The OUT port is an optocoupler isolated OC output, with a maximum voltage rating of 30VDC, and a maximum saturation current of 100mA.
- By default, when the driver alarms, the optocoupler conducts and outputs a low level. This setting can be changed via DIP switch P2: SW7.



# S-266D Two-Phase Stepper Motor Driver Pulse Type

## Setup Instructions

### Internal Function Settings (P2: SW1~SW8)

Function	SW1	SW4	SW5	SW6	SW7	SW8	Filter Type	SW2	SW3
Status	Self-check Mode	Self-tuning Function	Pulse Mode	Disable Enable Lock	Alarm Level	Pulse Active Edge	Microstepping	ON	ON
ON	Self-check Running	No Self-tuning	Double Pulse	No Lock	High Level	Rising Edge	25ms Filter	OFF	ON
OFF	No Self-check	Parameter Self-tuning	Single Pulse	Lock	Low Level	Falling Edge	12ms Filter	ON	OFF
							6ms Filter	OFF	OFF

### Work Current Setting (P1: SW1~SW3)

Using the three DIP switches SW1 to SW3 on P1, a total of 8 current levels can be set. Please refer to the table below:

Output Peak Current (A)	SW1	SW2	SW3
1.8	ON	ON	ON
2.4	OFF	ON	ON
3.0	ON	OFF	ON
3.6	OFF	OFF	ON
4.2	ON	ON	OFF
4.8	OFF	ON	OFF
5.4	ON	OFF	OFF
6.0	OFF	OFF	OFF

**Warning:** The peak current setting of the driver must be less than the rated current of the matched motor; otherwise, it may cause the motor temperature to rise excessively and affect the motor's service life.

### Standby Current Setting (P1: SW4)

The switch P1: SW4 sets the standby current of the driver. After the motor stops for 1 second, the driver automatically reduces the current supplied to the motor, outputting the standby current.

DIP Switch	Definition	ON	OFF
SW4	Standby Current	50% of working current	90% of working current

**Note:** In general applications, SW4 should be set to ON to reduce the heat generated by the motor and driver, thereby improving reliability.

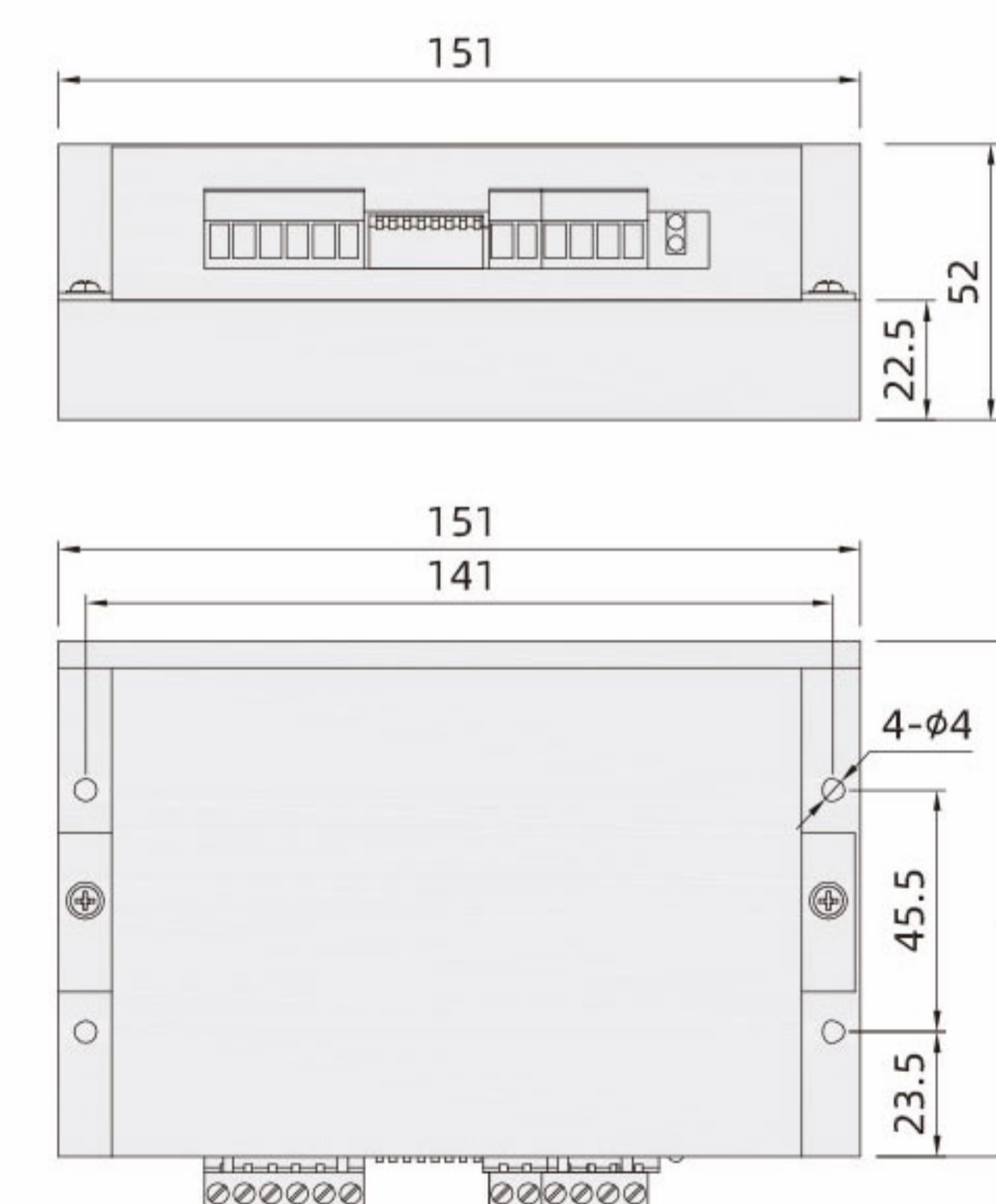
### Microstepping Setting (P1: SW5~SW8)

Using the four DIP switches SW5 to SW8 on P1, a total of 16 microstepping modes can be set. Please refer to the table below:

Pulses/Revolution	SW5	SW6	SW7	SW8
200	ON	ON	ON	ON
400	OFF	ON	ON	ON
800	ON	OFF	ON	ON
1600	OFF	OFF	ON	ON
3200	ON	ON	OFF	ON
6400	OFF	ON	OFF	ON
12800	ON	OFF	OFF	ON
25600	OFF	OFF	OFF	ON
1000	ON	ON	ON	OFF
2000	OFF	ON	ON	OFF
4000	ON	OFF	ON	OFF
5000	OFF	OFF	ON	OFF
8000	ON	ON	OFF	OFF
10000	OFF	ON	OFF	OFF
20000	ON	OFF	OFF	OFF
25000	OFF	OFF	OFF	OFF

**Note:** Microstepping can increase the resolution per step, but its main purpose is not to improve motor accuracy, rather to enhance motor performance.

## Installation Dimension Diagram and Status Indicators



The green LED is the power indicator. When the driver is powered on, this LED flashes; when the driver is powered off, this LED is off.

The red LED is the fault indicator. When a fault occurs, this indicator light flashes in a periodic cycle; when the fault is cleared by the user, the red LED remains steadily on. The number of red LED flashes represents different fault information. The specific relationships are shown in the table below:

No.	LED Flash Pattern	Fault Description	Solution
1	Green steady on	Driver not enabled	Provide enable signal to driver
2	Green flashing	Driver operating normally	
3	3red 2green	Internal voltage error	Increase power supply capacity
4	4red 1green	Driver power input overvoltage	Reduce power supply voltage
5	5red 1green	Driver overcurrent	Check for short circuit or phase error
6	4red 2green	Driver power input undervoltage	Increase power supply voltage
7	6red 1green	Motor coil open circuit	Properly connect motor wires

### Precautions:

- Only technical personnel are allowed to install, test, or maintain this product.
- Do not plug or unplug the driver and motor terminals while powered.
- To prevent interference to the driver, it is recommended to use shielded cables for control signals, and ensure the shielding layer is connected to ground.
- When wiring, do not tin the wire ends with solder in advance (this may cause improper connections).



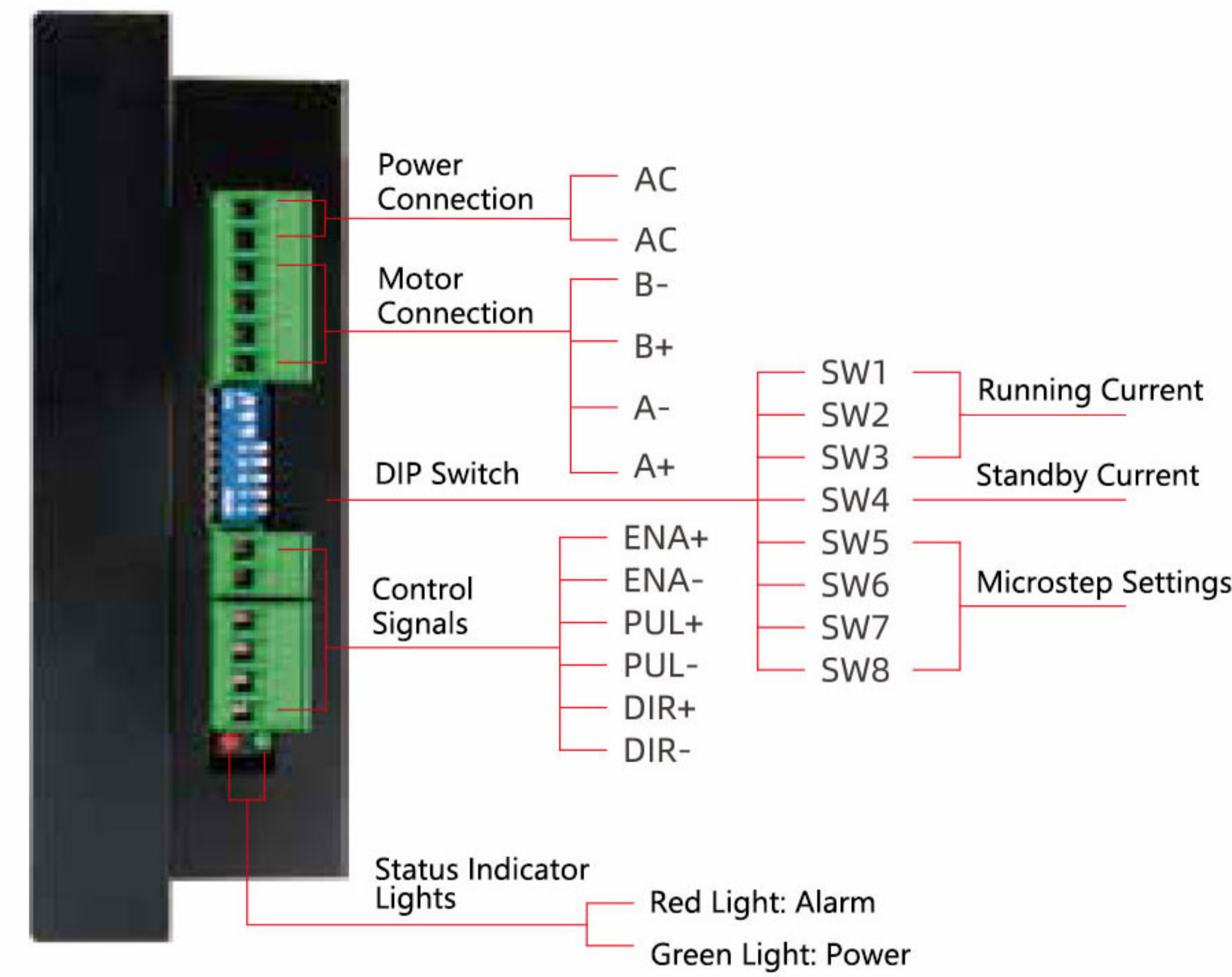
**S Series Pulse Type**

Two-Phase Hybrid Pulse Control DSP Digital Type DC Input

- Uses a brand-new 32-bit dedicated motor main control chip, with a mature and reliable solution.
- RS232 debugging software facilitates user settings, modifications, and customization of driver parameters.
- Pulse, direction, and enable interface signal voltage levels are compatible with 5-24V.
- Single/double pulse control modes can be selected via upper computer.
- The motor's initial running direction can be set independently.

The image is for reference only; please refer to the actual product!

## Wiring Instructions

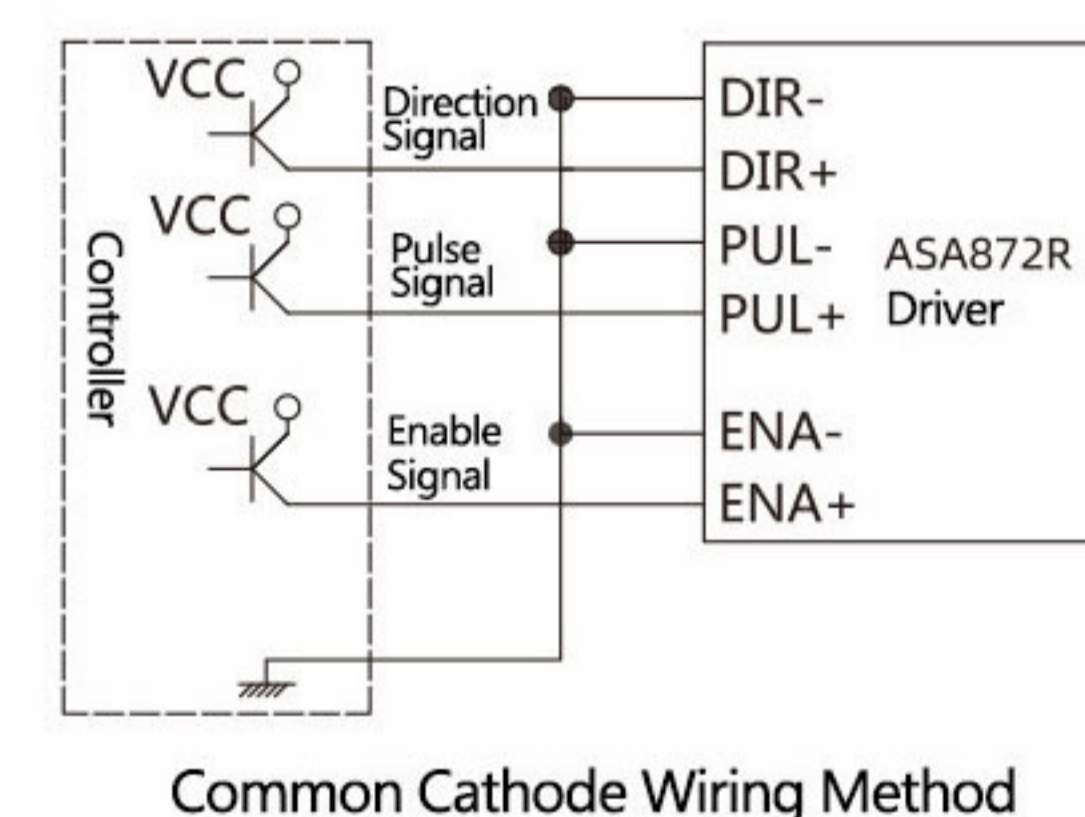
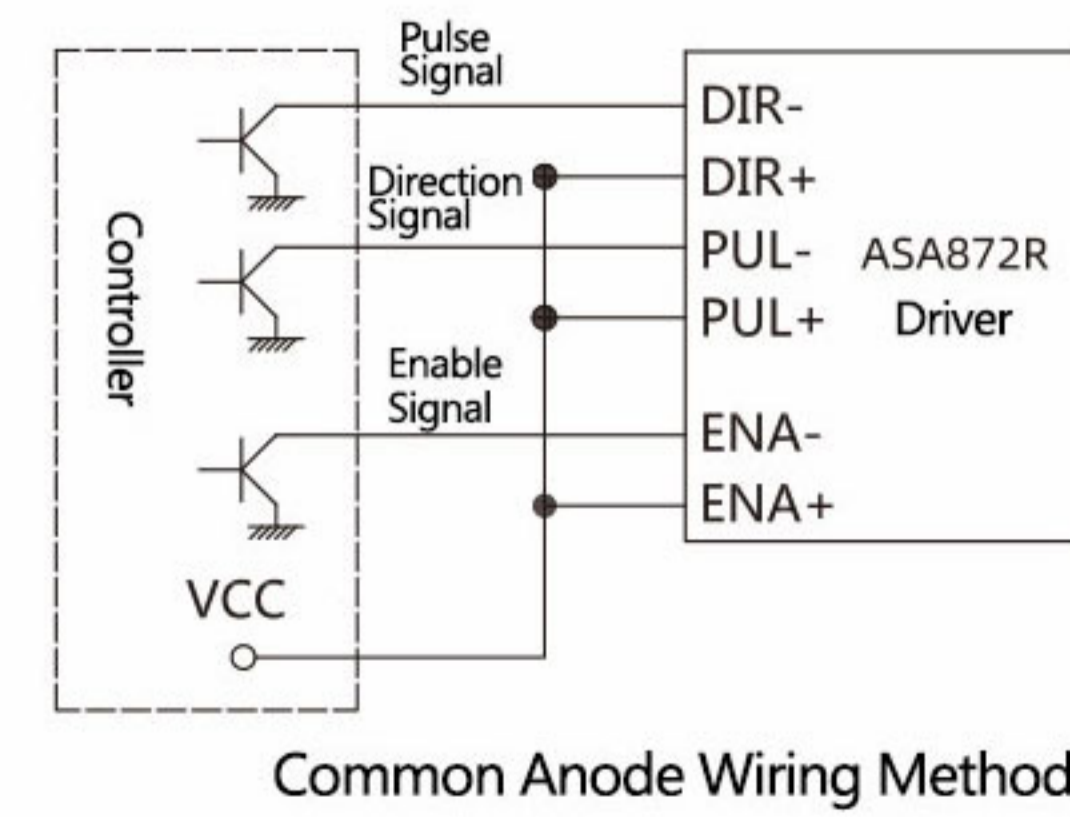
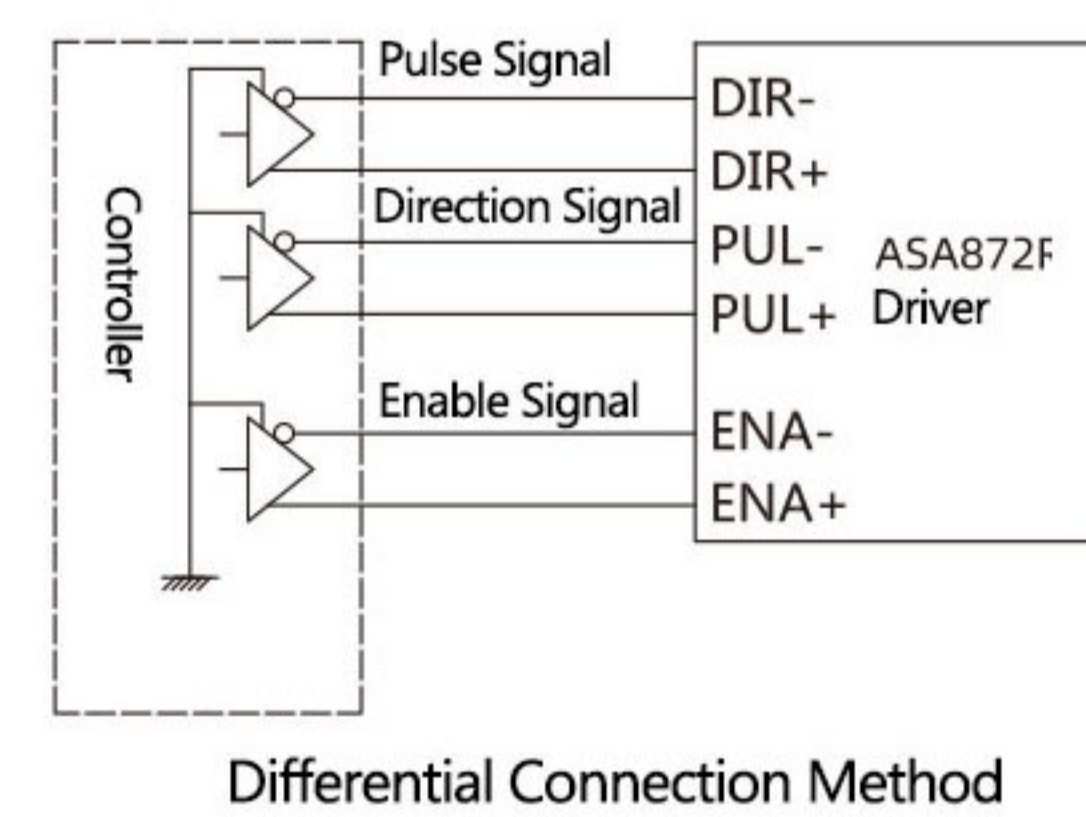


### Motor and Power Input Terminal

Terminal No.	Symbol	Name	Description
1	AC	Power Input	AC 20~80VAC, DC 24~110VDC
2	AC	Power Input	AC 20~80VAC, DC 24~110VDC
3	B-	Phase B Motor Coil -	Interchanging the connections of the same phase coil can change the motor's running direction. For example, swap the connections of A+ and A-.
4	B+	Phase B Motor Coil +	
5	A-	Phase A Motor Coil -	
6	A+	Phase A Motor Coil +	

### Control Signal Connections

Pin No.	Signal	Function	Description
1	ENA+	Enable Input Positive	Compatible with DC 5~24V
2	ENA-	Enable Input Negative	Default is floating (enabled)
3	PUL+	Pulse Input Positive	Compatible with 4.5~28V DC level signals
4	PUL-	Pulse Input Negative	
5	DIR+	Direction Input Positive	
6	DIR-	Direction Input Negative	



## Setup Instructions

### Work Current Setting (SW1~SW3)

Using the three-position DIP switches SW1 to SW3, a total of 8 current levels can be set. Refer to the table below:

Output Peak Current (A)	输出均值电流 (A)	SW1	SW2	SW3
2.40	2.00	ON	ON	ON
3.08	2.57	OFF	ON	ON
3.77	3.14	ON	OFF	ON
4.45	3.71	OFF	OFF	ON
5.14	4.28	ON	ON	OFF
5.83	4.86	OFF	ON	OFF
6.52	5.43	ON	OFF	OFF
7.20	6.00	OFF	OFF	OFF

⚠ Warning: The peak current setting of the driver must be less than the rated current of the matched motor; otherwise, it may cause the motor temperature to rise excessively and affect the motor's service life.

### Standby Current Setting (P1: SW4)

The switch P1: SW4 sets the standby current of the driver. After the motor stops for 1 second, the driver automatically reduces the current supplied to the motor, outputting the standby current.

DIP Switch	Definition	ON	OFF
SW4	Standby Current	90% of working current	50% of working current

⚠ Note: In general applications, SW4 should be set to ON to reduce the heat generated by the motor and driver, thereby improving reliability.

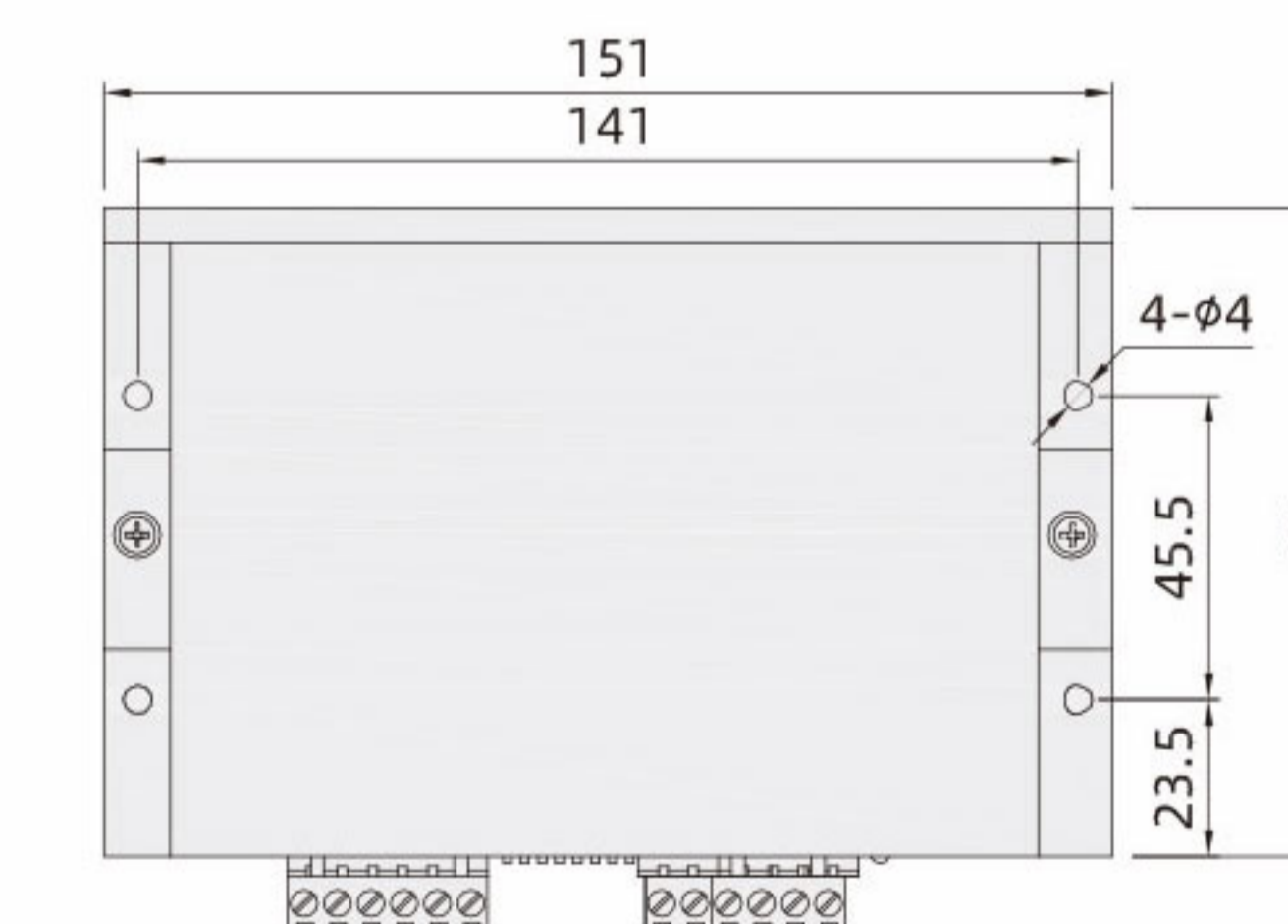
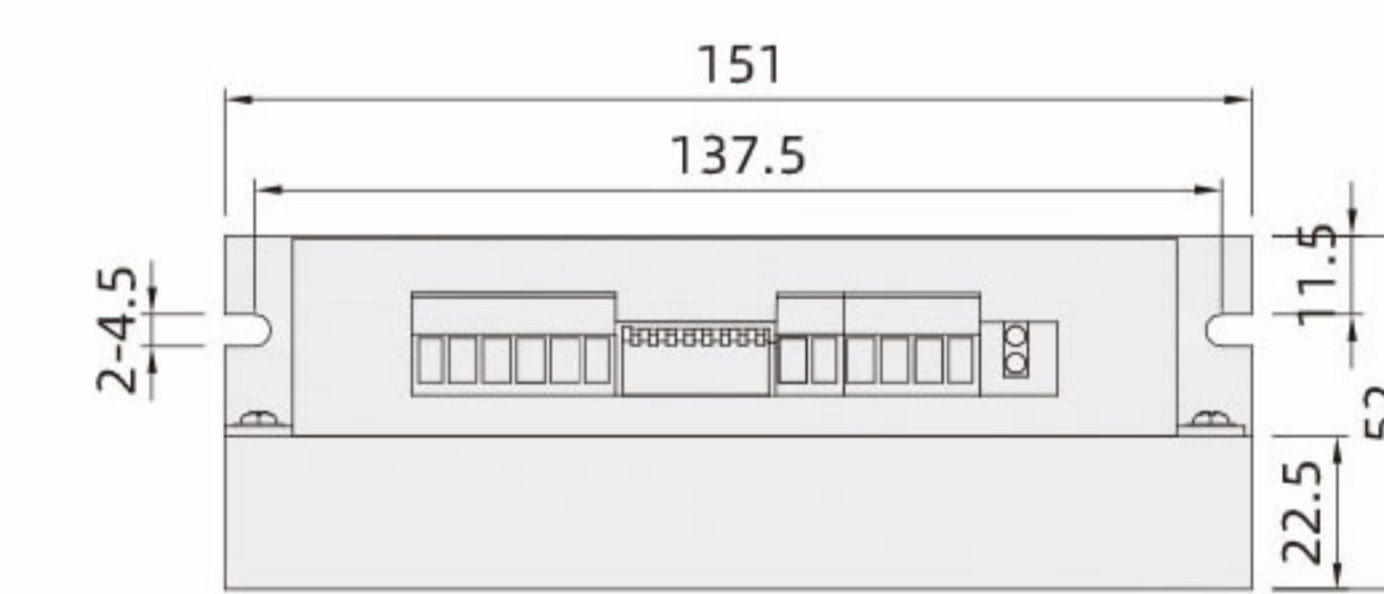
### Microstepping Setting (SW5~SW8)

Using the four DIP switches SW5 to SW8 on P1, a total of 16 microstepping modes can be set. Please refer to the table below:

Pulses/Revolution	SW5	SW6	SW7	SW8
400	ON	ON	ON	ON
800	OFF	ON	ON	ON
1600	ON	OFF	ON	ON
3200	OFF	OFF	ON	ON
6400	ON	ON	OFF	ON
12800	OFF	ON	OFF	ON
25600	ON	OFF	OFF	ON
51200	OFF	OFF	OFF	ON
1000	ON	ON	ON	OFF
2000	OFF	ON	ON	OFF
4000	ON	OFF	ON	OFF
5000	OFF	OFF	ON	OFF
8000	ON	ON	OFF	OFF
10000	OFF	ON	OFF	OFF
20000	ON	OFF	OFF	OFF
40000	OFF	OFF	OFF	OFF

⚠ Note: Microstepping can increase the resolution per step, but its main purpose is not to improve motor accuracy, rather to enhance motor performance.

## Installation Dimension Diagram and Status Indicators



The green LED is the power indicator. When the driver is powered on, this LED remains on continuously; when the driver is powered off, the LED is off.

The red LED is the fault indicator. When a fault occurs, this LED flashes in a 3-second repeating cycle. When the fault is cleared by the user, the red LED turns off. The number of flashes within 3 seconds represents different fault information. The specific meanings are shown in the table below:

No.	LED Flash Pattern	Fault Description	Solution
1	● Green steady on	Driver operating normally	
2	● Red flashes once	Driver overcurrent	Check for short circuit or phase error
3	●● Red flashes twice	Driver power input overvoltage	Reduce power supply voltage
4	●●● Red flashes thrice	Driver power input undervoltage	Increase power supply voltage

### ⚠ Precautions:

- Only technical personnel are allowed to install, test, or maintain this product.
- Do not plug or unplug the driver and motor terminals while powered.
- To prevent interference to the driver, it is recommended to use shielded cables for control signals, and ensure the shielding layer is connected to ground.
- When wiring, do not tin the wire ends with solder in advance (this may cause improper connections).

# S-2822H Two-Phase Stepper Motor Driver Pulse Type

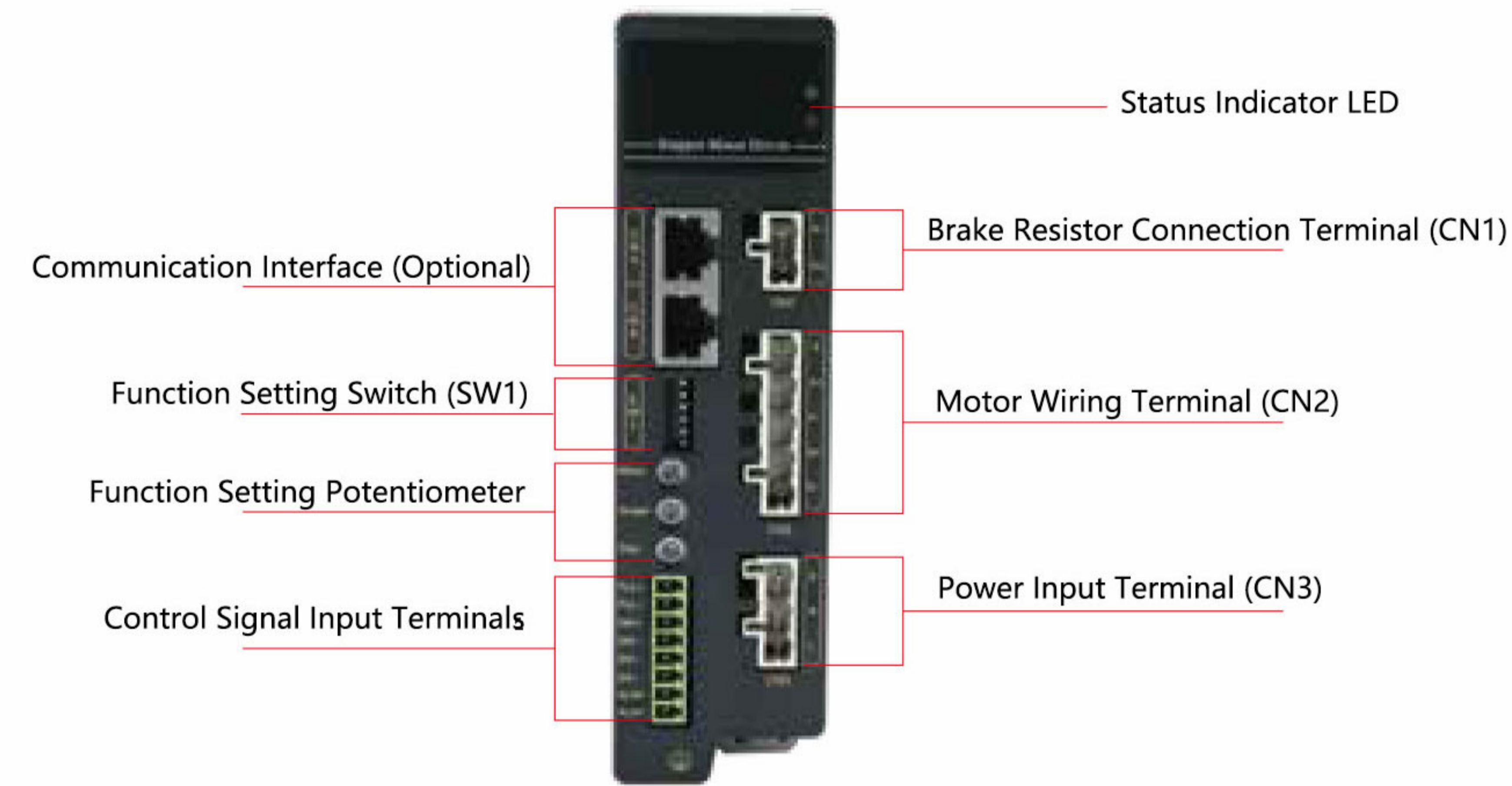


Two-Phase Hybrid | Pulse Control | DSP Digital Type | DC Input

- Adopts a brand-new 32-bit motor control dedicated DSP chip with a mature solution and stable performance.
- Optical isolation differential signal input, with a maximum pulse response frequency up to 200KHz.
- Uses common-mode oscillation suppression technology, automatically calculates resonance points, and suppresses medium/low-frequency vibrations.
- Equipped with pulse, direction, and enable signal inputs of 5V and 24V interfaces.
- Single/double pulse control modes can be selected via DIP switches.

The image is for reference only; please refer to the actual product!

## Wiring Instructions



### Brake Resistor Connection Terminal (CN1)

CN1	Content	Description
R-	Brake Resistor -	Under heavy load conditions, regenerative energy may be generated during braking due to inertia, which could potentially damage the driver. To protect the driver, please connect a brake resistor.
R+	Brake Resistor +	

### Motor Wiring Terminal (CN2)

CN2	Content
E	FG
A+	Motor Phase A+
A-	Motor Phase A-
B+	Motor Phase B+
B-	Motor Phase B-

### Power Input Terminal (CN3)

CN3	Description
E	EG
N	AC220~265V
L	Power Input

### Control Signal Input Terminals

Terminal	Description
PUL+	Pulse Input + / CW Pulse Input +
PUL-	Pulse Input - / CW Pulse Input -
DIR+	Direction Signal Input + / CCW Direction Signal Input +
DIR-	Direction Signal Input - / CCW Direction Signal Input -
ENA+	Enable Signal Input +
ENA-	Enable Signal Input -
ALM+	Alarm Output +
ALM-	Alarm Output -

### Function Setting Potentiometer

Name	Description
Motor	Motor parameter setting
Amper	Current setting
Step	Microstep setting

# S-2822H Two-Phase Stepper Motor Driver Pulse Type

### Function Setting Switch (SW1)

Terminal	Description	
P1	Communication address setting (optional). If this function is needed, please contact the sales personnel.	
P2		
P3		
P4	Self-check	Self-check ON: ON Self-check OFF: OFF
P5	Single or double pulse input selection	Pulse + Direction: OFF Double pulse: ON
P6	Automatic half current	Automatic half current ON: OFF Automatic half current OFF: ON

The driver signal input is an optical coupler input. Pulse power supply range is DC 5-24V. Pulse and direction signals are effective up to a maximum frequency of 200 KHz, and pulses are effective on rising edges.

### Operating Current Setting Potentiometer

Code	0	1	2	3	4	5	6	7
Current	0.5A	1.0A	1.5A	2.0A	2.5A	3.0A	3.5A	4.0A
Code	8	9	A	B	C	D	E	F
Current	4.5A	5.0A	5.5A	6.0A	6.5A	7.0A	7.5A	8.0A

Note: Increasing microsteps can improve the resolution per step, but its main effect is not to increase motor accuracy, rather to improve motor performance.

### Operating Current Setting Potentiometer

Code	0	1	2	3	4	5	6	7
Current	0.5A	1.0A	1.5A	2.0A	2.5A	3.0A	3.5A	4.0A
Code	8	9	A	B	C	D	E	F
Current	4.5A	5.0A	5.5A	6.0A	6.5A	7.0A	7.5A	8.0A

Note: The peak current setting of the driver must be less than the rated current of the matched motor; otherwise, it may cause the motor temperature to rise excessively and affect the motor's service life.

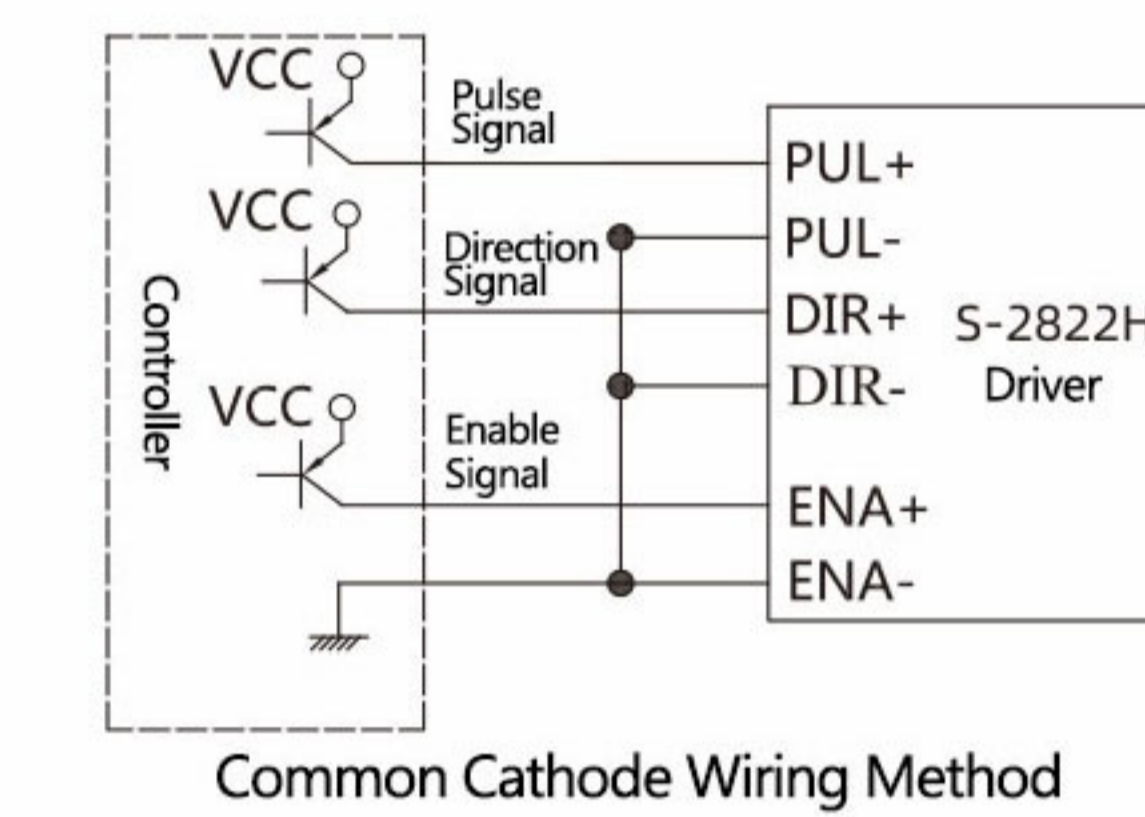
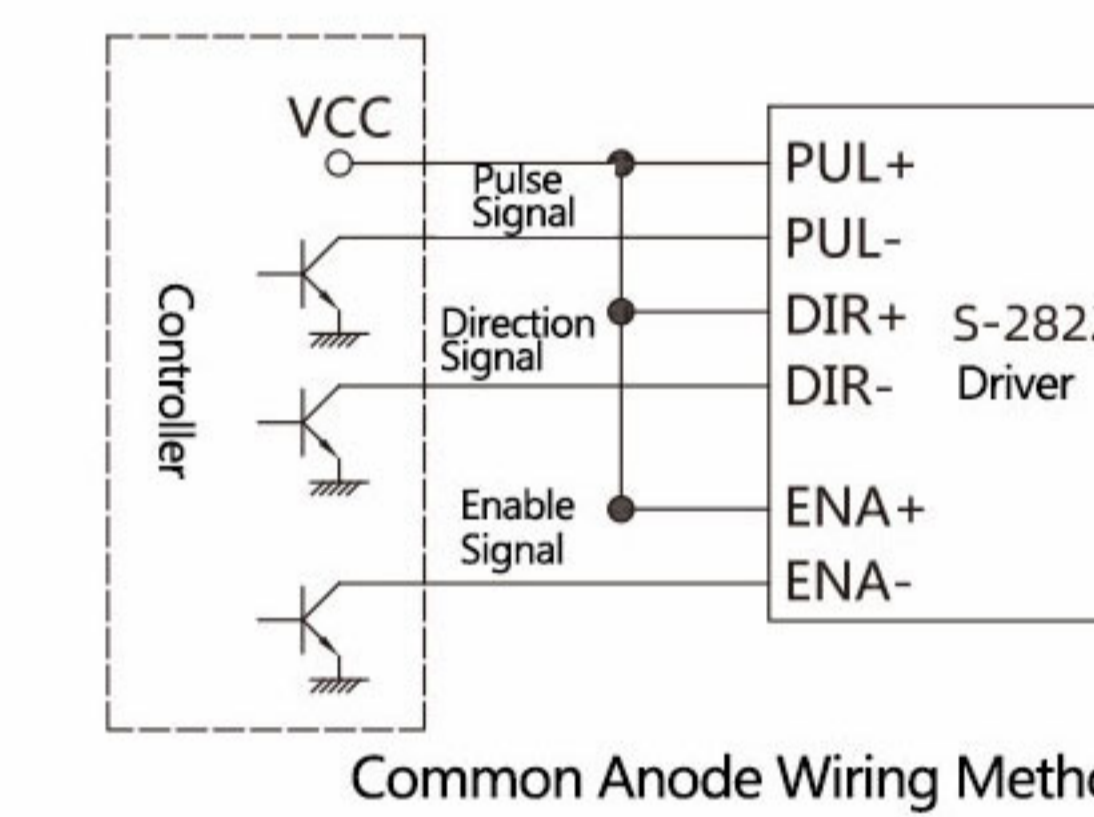
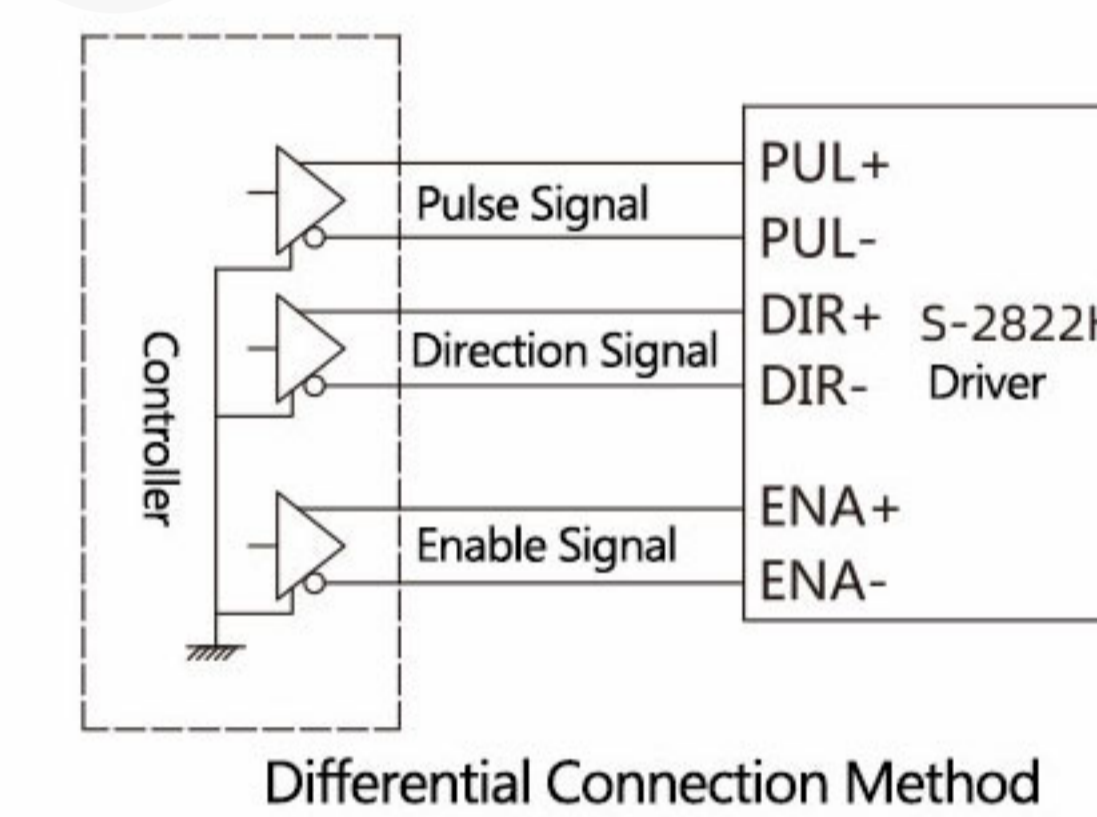
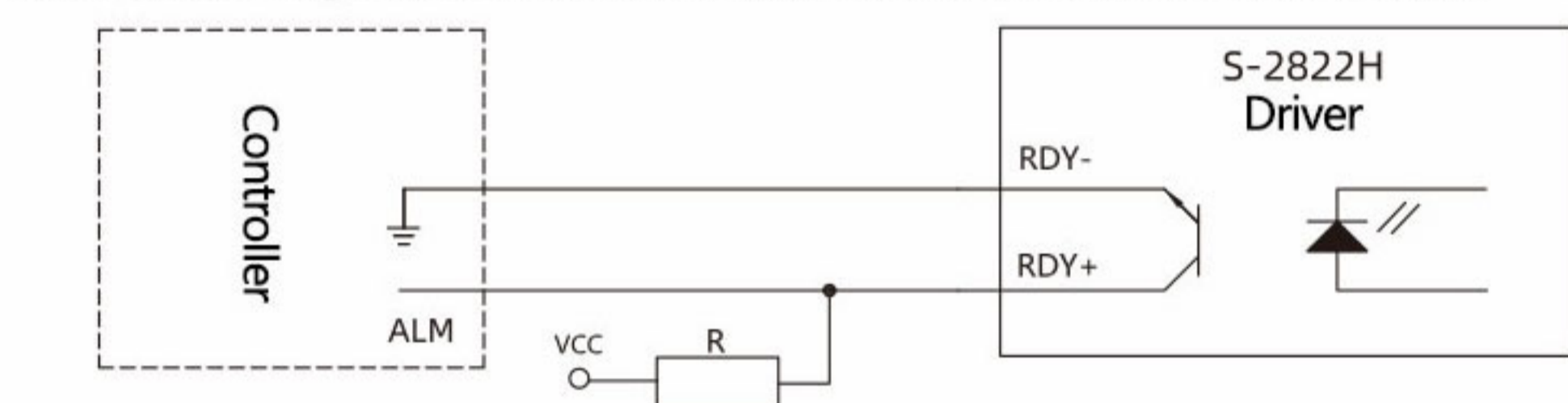
### Motor Matching Potentiometer

Motor parameters are set through the Motor potentiometer. By matching motors of various sizes, better motor performance can be achieved, resulting in faster response speed, lower noise, and reduced vibration.

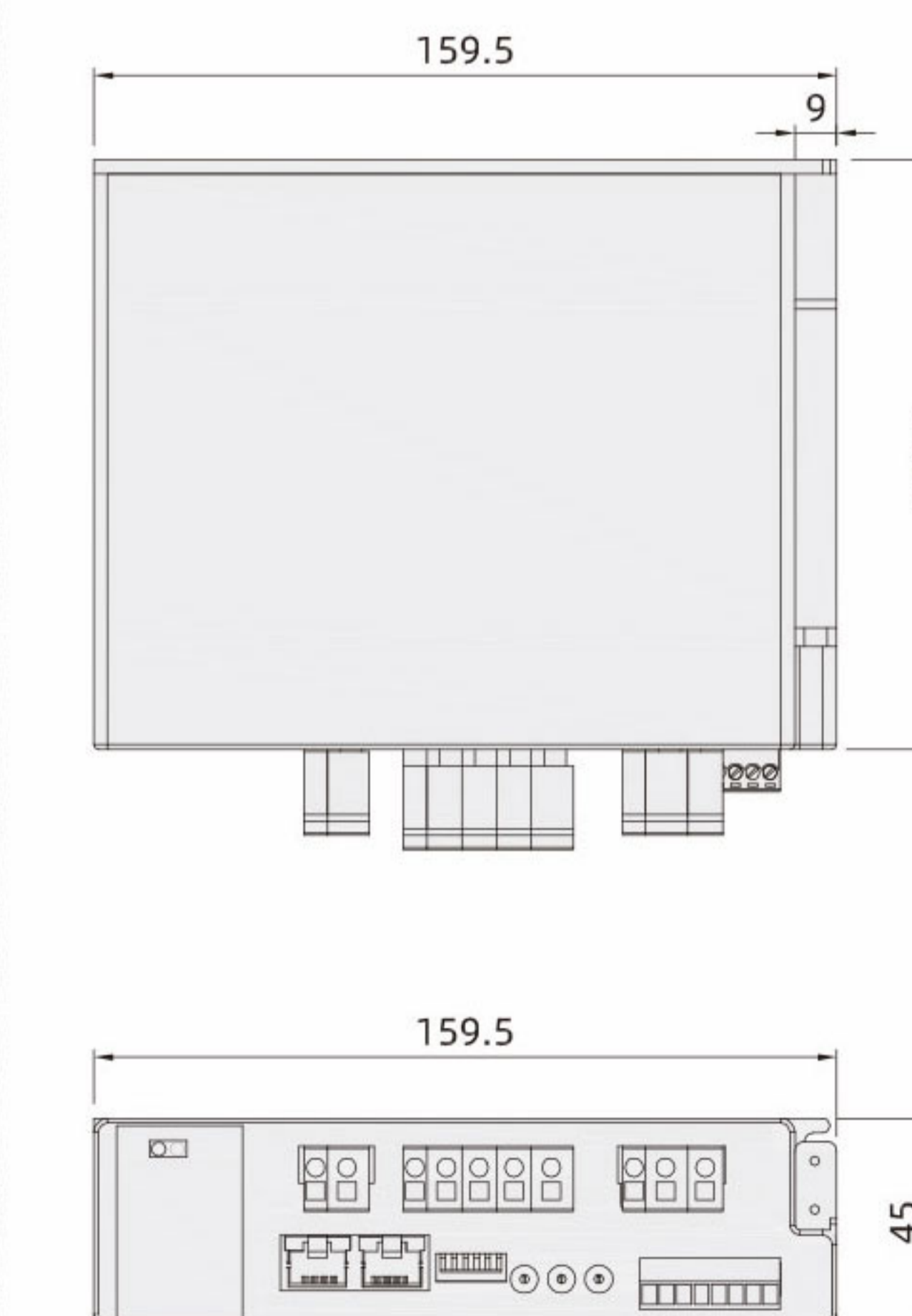
Code	0	1	2	3	4	5	6	7
Motor Size (mm)	57	57	60	60	86	86	86	86
Code	8	9	A	B	C	D	E	F
Motor Size (mm)	110	110	110	110	130	130	130	130

### Control Signal Output Interface Circuit Diagram

The RDY port is an optocoupler isolated OC (open collector) output, with a maximum withstand voltage of 30VDC and a maximum saturation current of 100mA.



## Installation Dimension Diagram and Status Indicators



When the alarm protection function is activated, please be sure to eliminate the cause of the alarm protection to ensure safety before restarting the driver to clear the alarm protection.

LED	Operating Status / Alarm Description
Green light flashing	Normal
Green light flashes 2 times, red light flashes 2 times alternately	Overcurrent protection
Green light flashes 2 times, red light flashes 3 times alternately	Open circuit protection
Green light flashes 2 times, red light flashes 4 times alternately	Overvoltage protection
Green light flashes 2 times, red light flashes 5 times alternately	Undervoltage protection
Green light flashes 1 time, red light flashes 3 times alternately	Internal power supply undervoltage protection
Green light flashes 1 time, red light flashes 2 times alternately	Overheat protection
Red light flashing	Enable status

### Precautions:

- Only technical personnel are allowed to install, test, or maintain this product.
- Do not plug or unplug the driver and motor terminals while powered.
- To prevent interference to the driver, it is recommended to use shielded cables for control signals, and ensure the shielding layer is connected to ground.
- When wiring, do not tin the wire ends with solder in advance (this may cause improper connections).

# CSH-2242R Three-Phase Stepper Motor Driver Pulse Type



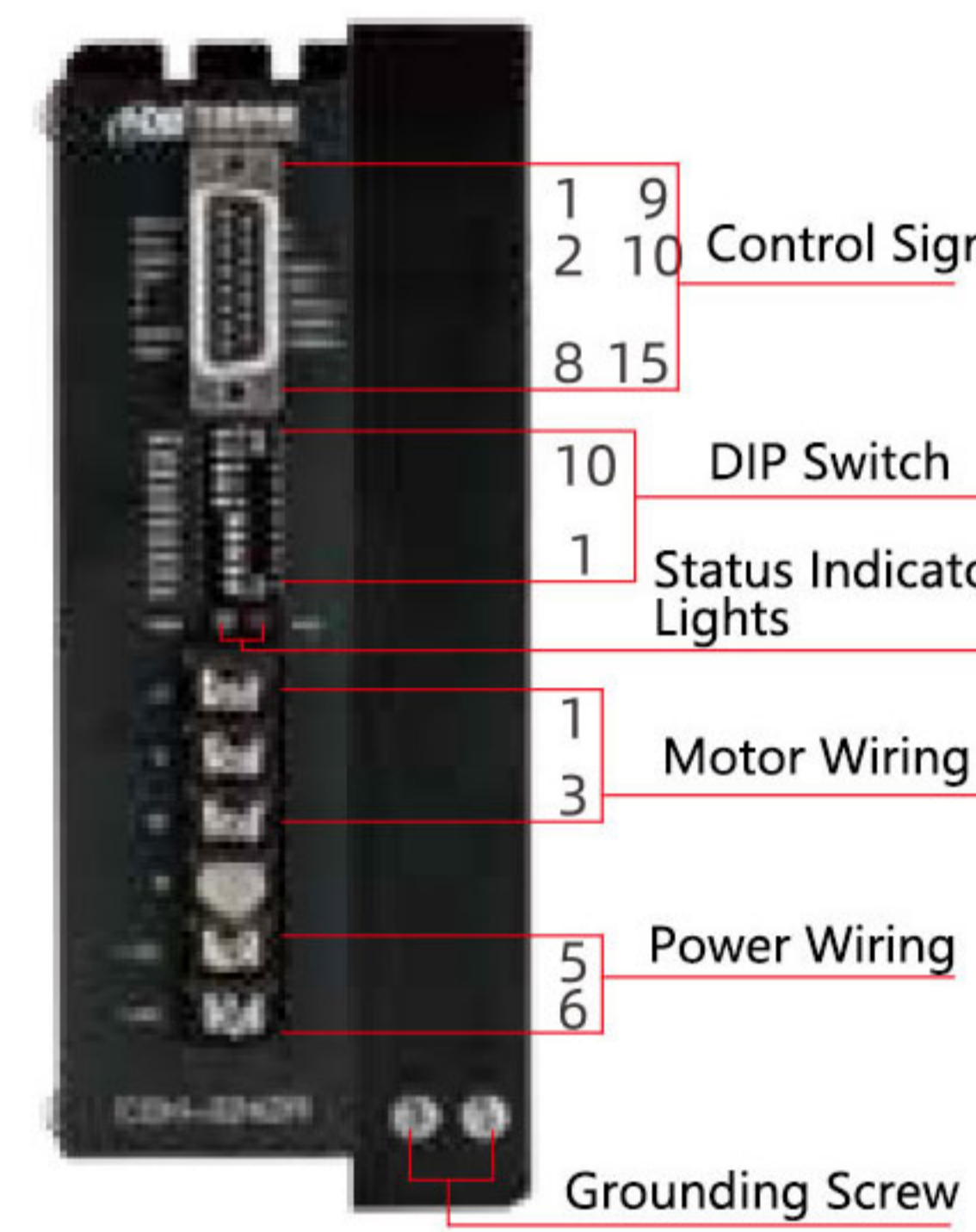
The image is for reference only; please refer to the actual product!

High-Voltage Series Pulse Type

Three-Phase Hybrid Pulse Control DSP Digital Type DC Input

- Using a brand-new 32-bit DSP chip dedicated to motor control, the solution is mature and performance is stable.
- Optocoupler isolated differential signal input, with a maximum pulse response frequency of up to 200KHz.
- Adopts resonance suppression technology, automatically calculates resonance points, and suppresses medium/low frequency vibrations.
- Equipped with pulse, direction, and enable signals of 5V and 24V interfaces.
- Single/double pulse control modes can be selected via DIP switch.

## Wiring Instructions



### Motor and Power Input Terminals

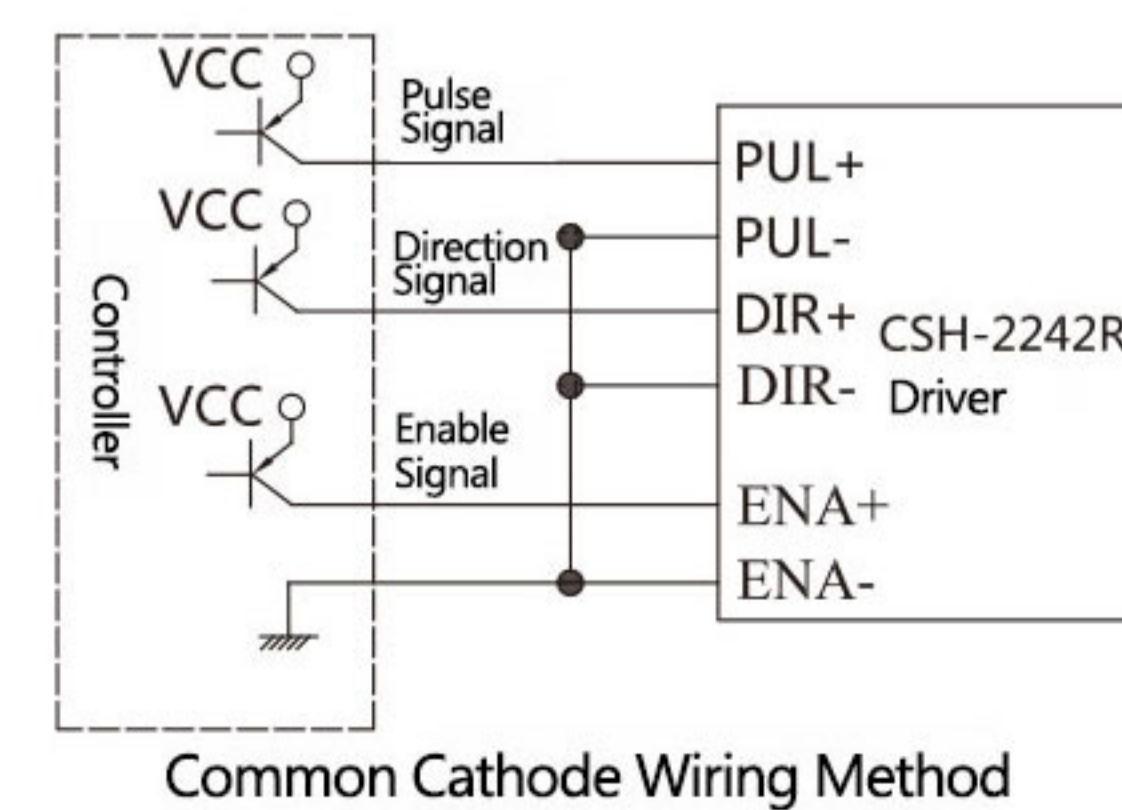
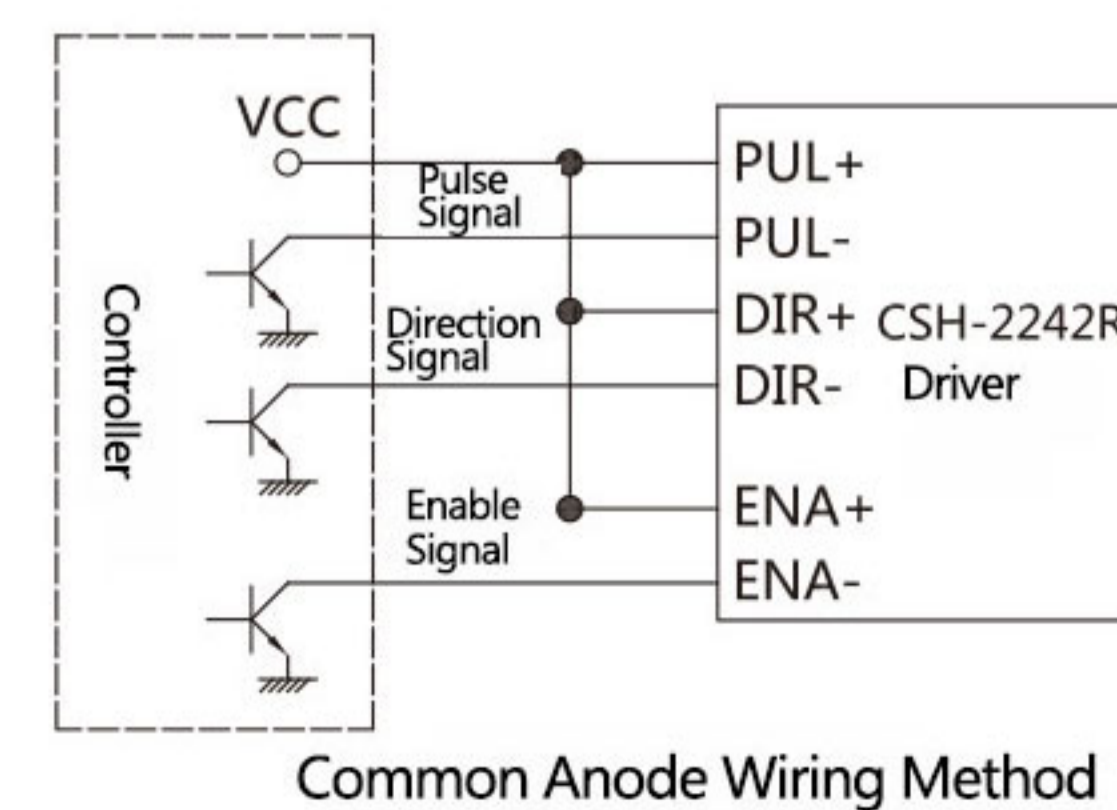
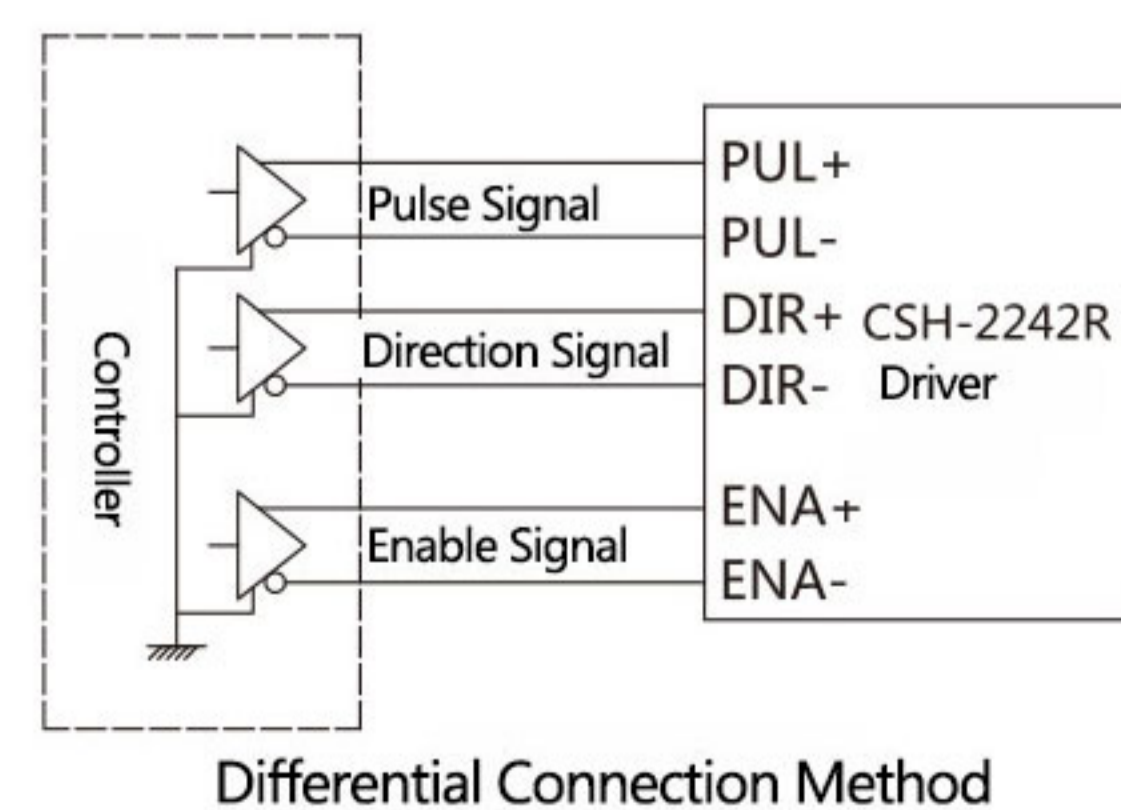
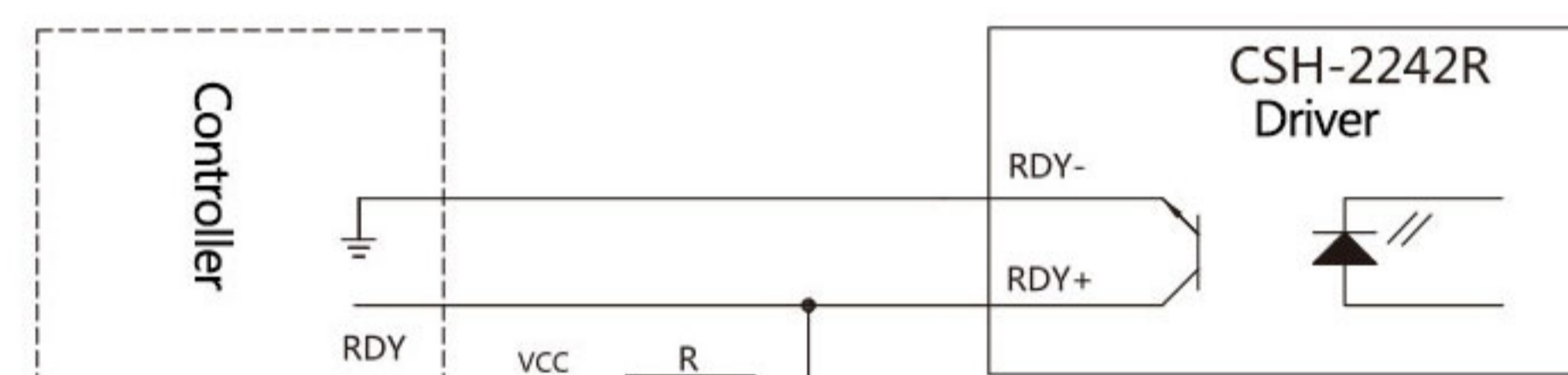
Terminal No.	Symbol	Name	Description
1	U	U-phase motor winding	Motor U/V/W winding, N is floating or connected to driver casing
2	V	V-phase motor winding	
3	W	W-phase motor winding	
4	N	Ground, floating or connected to driver casing	
5	~AC	AC power input	110~245VAC
6	~AC	AC power input	110~245VAC

### Control Signal Connections

Pin No.	Signal	Function	Description
1	5PUL +	5V Pulse Positive Input	DC 5V
2	PUL -	Pulse Negative Input	Compatible with DC 5~24V
3	5DIR +	5V Direction Positive Input	DC 5V
4	DIR -	Direction Negative Input	Compatible with DC 5~24V
7	5ENA +	5V Enable Positive Input	DC 5V
8	ENA -	Enable Negative Input	Leave open if not used
11	RDY +	Ready Signal Positive Output	Compatible with DC 5~24V
12	RDY -	Ready Signal Negative Output	Leave open if not used
13	24PUL +	24V Pulse Positive Input	DC 24V
14	24DIR +	24V Direction Positive Input	DC 24V
15	24ENA +	24V Enable Positive Input	DC 24V
5/6/9/10	N	Not connected	Not connected

### Control Signal Output Interface Circuit Diagram

The RDY port is an optocoupler isolated OC output, with a maximum withstand voltage of 30VDC and a maximum saturation current of 100mA.



# CSH-2242R Three-Phase Stepper Motor Driver Pulse Type

## Setup Instructions

### Operating Current Settings (P1: SW1~SW4)

Using P1: SW1~SW4 four-position DIP switches, a total of 16 current levels can be set. Refer to the table below:

Peak Current (A)	SW1	SW2	SW3	SW4
1.2	OFF	OFF	OFF	OFF
1.4	OFF	OFF	OFF	ON
1.6	OFF	OFF	ON	OFF
1.8	OFF	OFF	ON	ON
2.0	OFF	ON	OFF	OFF
2.2	OFF	ON	OFF	ON
2.4	OFF	ON	ON	OFF
2.6	OFF	ON	ON	ON
2.8	ON	OFF	OFF	OFF
3.0	ON	OFF	OFF	ON
3.2	ON	OFF	ON	OFF
3.4	ON	OFF	ON	ON
3.6	ON	ON	OFF	OFF
3.8	ON	ON	OFF	ON
4.0	ON	ON	ON	OFF
4.2	ON	ON	ON	ON

### Microstepping Settings (P1: SW5~SW8)

Using P1: SW5~SW8 four-position DIP switches, a total of 16 microstepping modes can be set. Refer to the table below:

Pulses/Revolution	SW5	SW6	SW7	SW8
400	ON	ON	ON	ON
500	ON	ON	ON	OFF
600	ON	ON	OFF	ON
800	ON	ON	OFF	OFF
1000	ON	OFF	ON	ON
1200	ON	OFF	ON	OFF
2000	ON	OFF	OFF	ON
3000	ON	OFF	OFF	OFF
4000	OFF	ON	ON	ON
5000	OFF	ON	ON	OFF
6000	OFF	ON	OFF	ON
10000	OFF	ON	OFF	OFF
12000	OFF	OFF	ON	ON
20000	OFF	OFF	ON	OFF
30000	OFF	OFF	OFF	ON
60000	OFF	OFF	OFF	OFF

Note: The peak current setting of the driver must be less than the rated current of the matched motor, otherwise it may cause the motor temperature to rise excessively and affect the motor's service life.

Note: Microstepping can increase the resolution per step, but its main effect is not to improve motor accuracy, rather to improve motor performance.

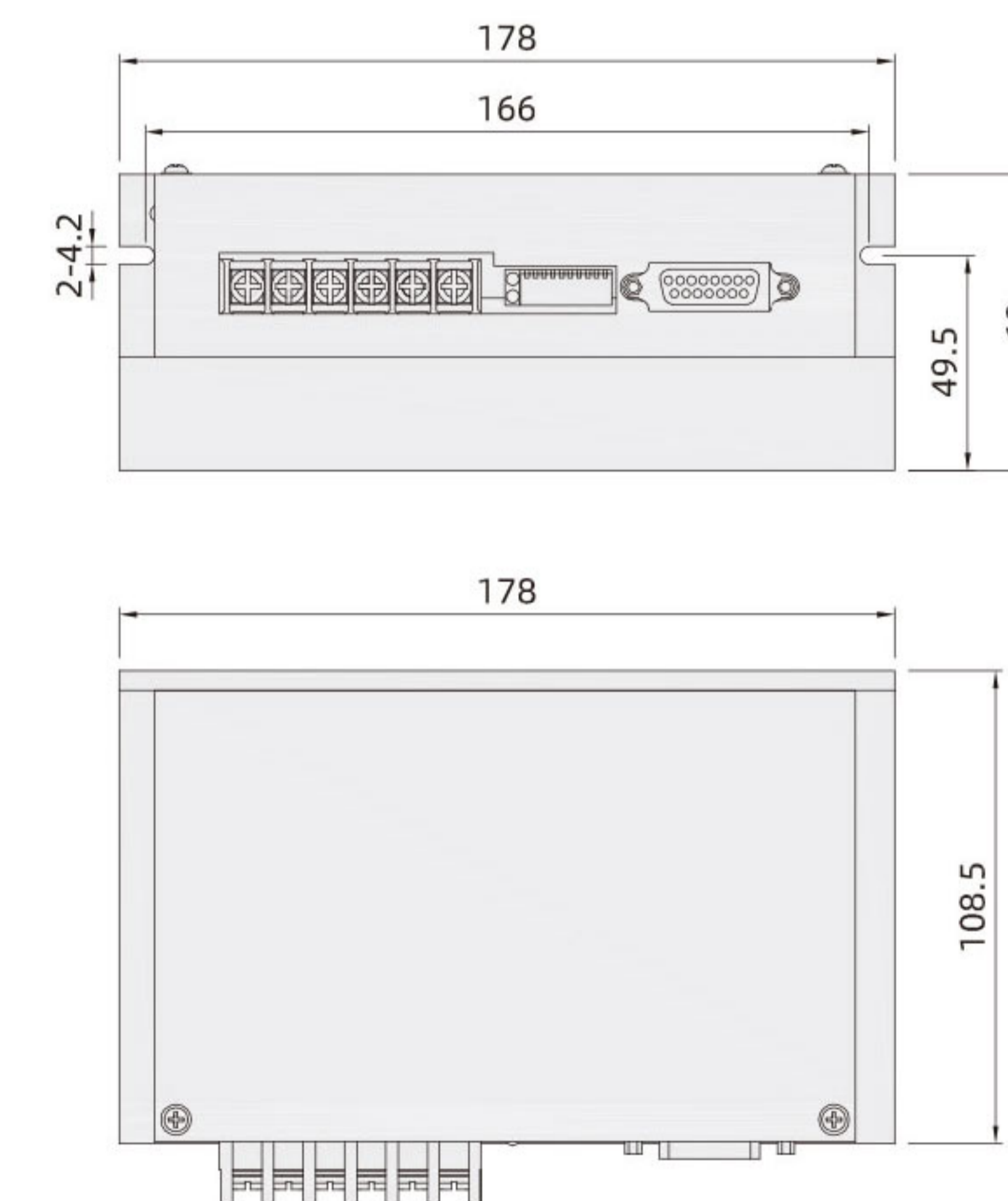
### Input Pulse Mode Setting (SW9)

When switch SW9 is set to "ON", dual pulse (CW/CCW) signal input is supported; When switch SW9 is set to "OFF", single pulse (PUL/DIR) signal input is supported.

### Self-Test Setting (SW10)

If the motor rotation lacks corresponding upper-level control signals, you can try to use the built-in self-test function of the controller. When switch SW10 is set to "ON", after powering on, the motor will automatically run at 30 RPM. At any time, setting SW10 to "OFF" will disable this function.

## Installation Dimensions Diagram and Status Indicators



**PWR:** Power indicator light. Indicates that the driver's power supply is normal. If the driver's power supply is abnormal, this light may blink or not light up.  
**ALM:** Red light, driver ready indicator (or fault indicator). When the driver is powered on, the self-test program will light the ALM light for about 0.5 seconds, indicating the ALM light is normal. During normal operation, this light will not be on.

No.	LED Flash Pattern	Fault Description	Solution
1	Green light steady	Driver working normally	
2	Red light steady	Overcurrent, overvoltage, undervoltage warning	Check for short circuit/wrong phase; check power supply voltage

### Precautions:

- Only technical personnel are allowed to install, test, or maintain this product.
- Do not plug or unplug the driver and motor terminals while powered.
- To prevent interference to the driver, it is recommended to use shielded cables for control signals, and ensure the shielding layer is connected to ground.
- When wiring, do not in the wire ends with solder in advance (this may cause improper connections).

# CSH-2272R Three-Phase Stepper Motor Driver Pulse Type

High-Voltage Series Pulse Type

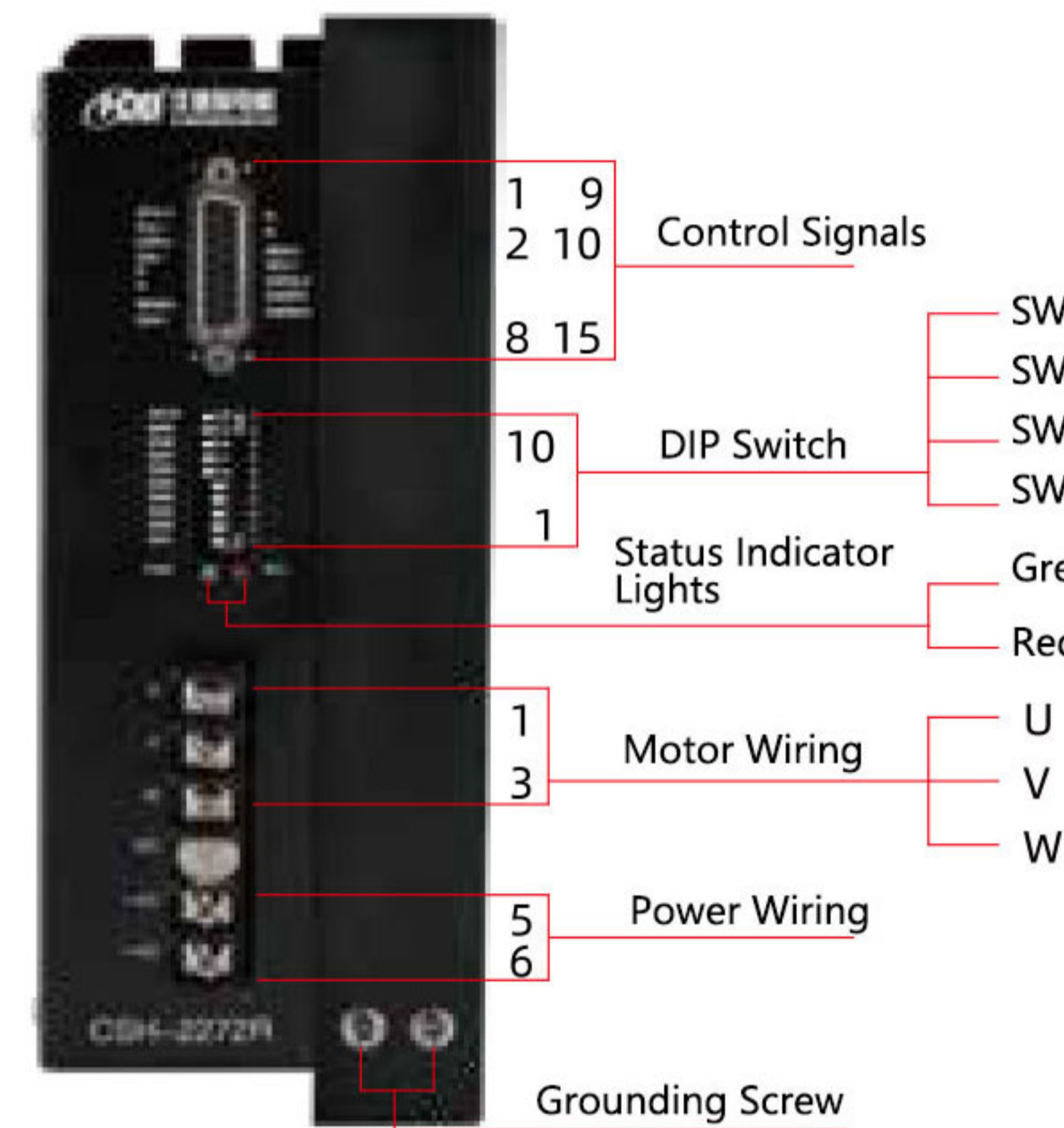
Three-Phase Hybrid Pulse Control DSP Digital Type DC Input



The image is for reference only; please refer to the actual product!

- Using a brand-new 32-bit DSP chip dedicated to motor control, the solution is mature and performance is stable.
- Optocoupler isolated differential signal input, with a maximum pulse response frequency of up to 200KHz.
- Adopts resonance suppression technology, automatically calculates resonance points, and suppresses medium/low frequency vibrations.
- Equipped with pulse, direction, and enable signals of 5V and 24V interfaces.
- Single/double pulse control modes can be selected via DIP switch.

## Wiring Instructions



### Motor and Power Input Terminals

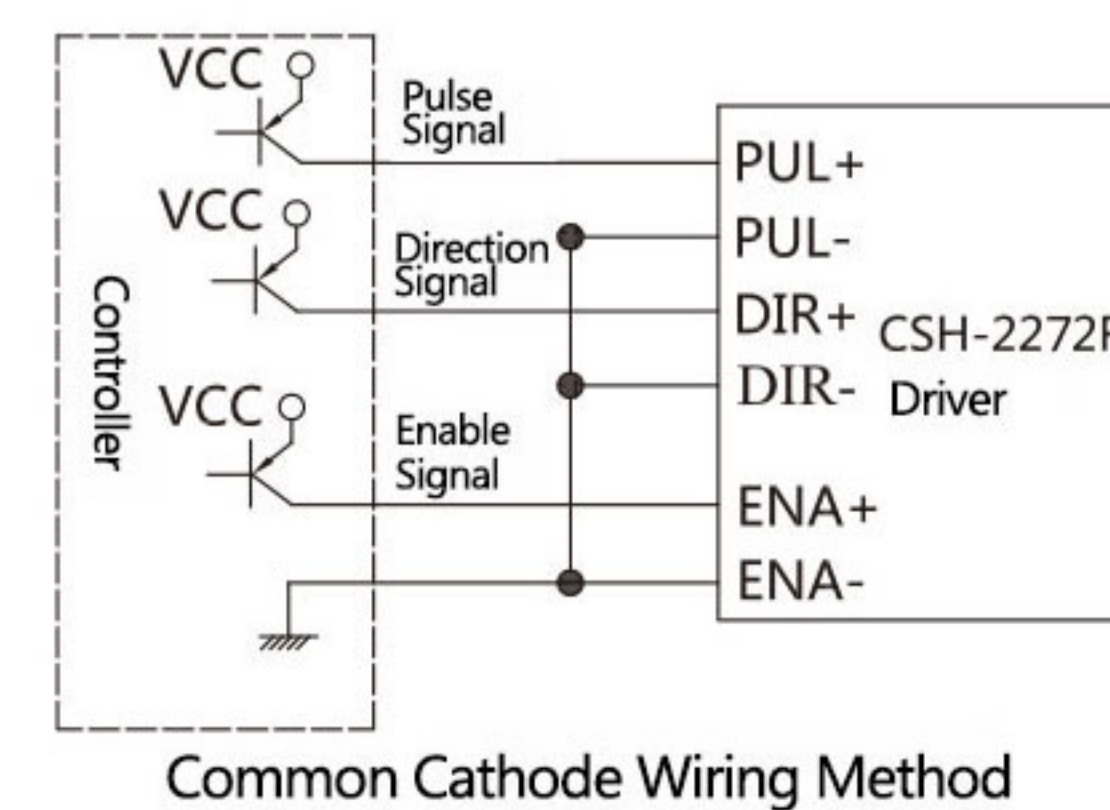
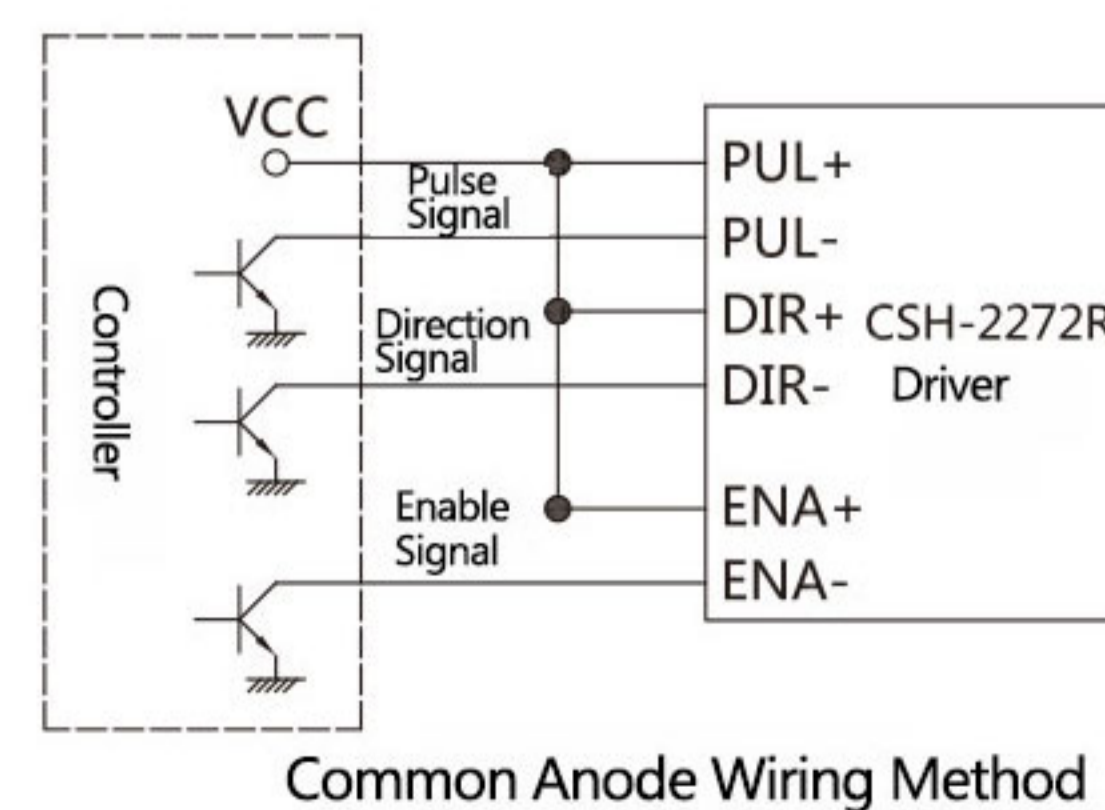
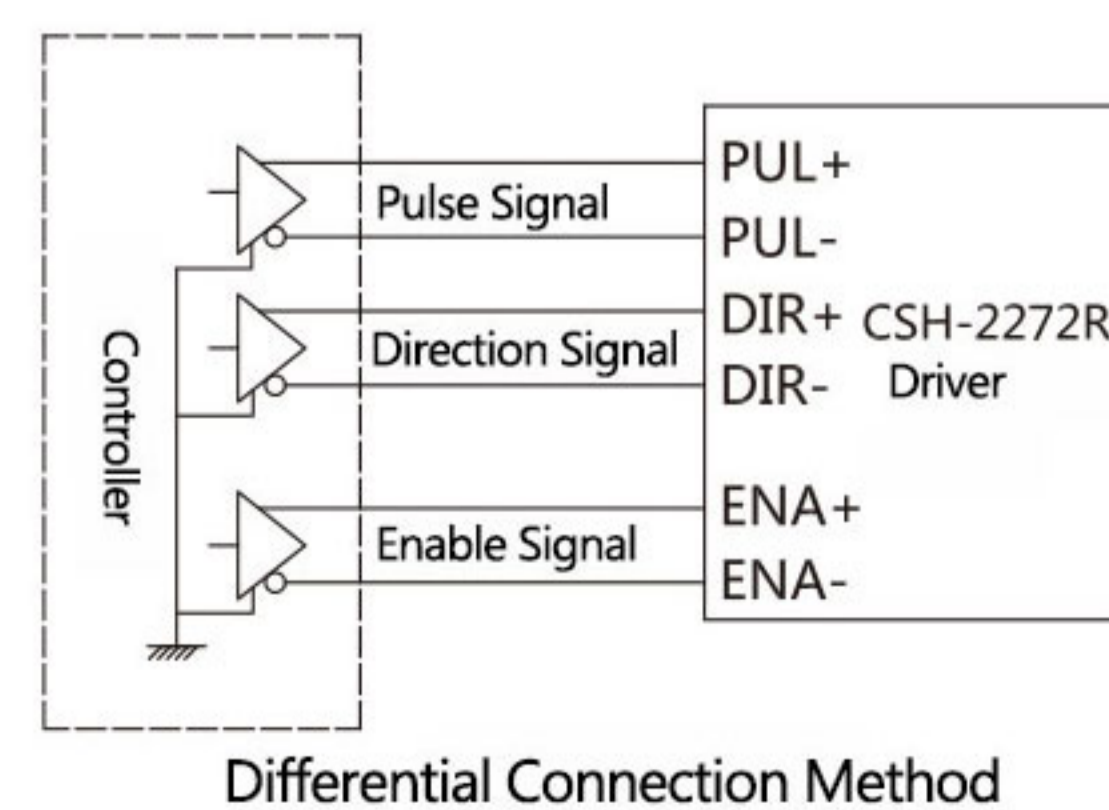
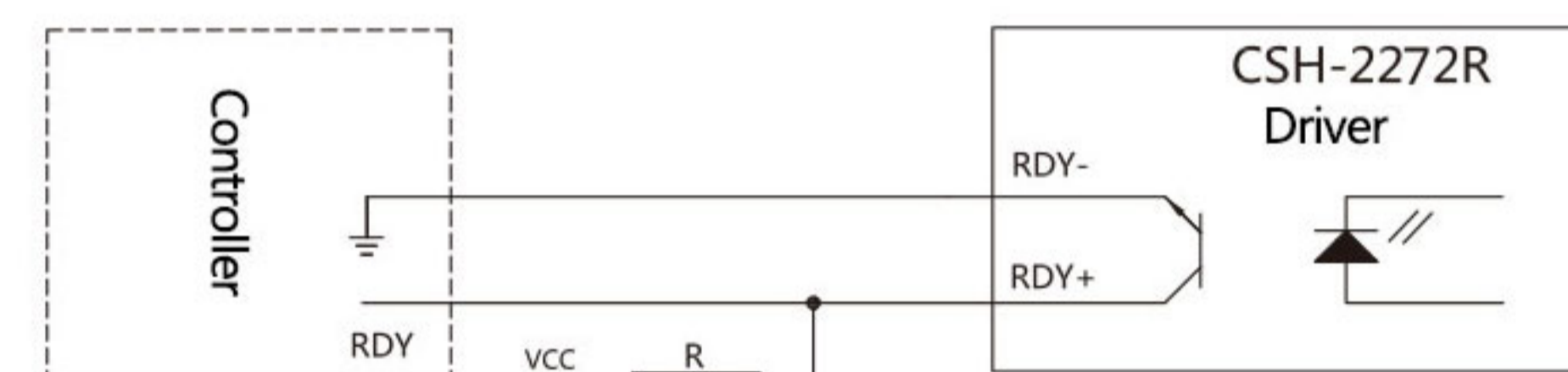
Terminal No.	Symbol	Name	Description
1	U	U-phase motor winding	Motor U/V/W winding, N is floating or connected to driver casing
2	V	V-phase motor winding	
3	W	W-phase motor winding	
4	N	Ground, floating or connected to driver casing	
5	~AC	AC power input	110~245VAC
6	~AC	AC power input	110~245VAC

### Control Signal Connections

Pin No.	Signal	Function	Description
1	5PUL +	5V Pulse Positive Input	DC 5V
2	PUL -	Pulse Negative Input	Compatible with DC 5~24V
3	5DIR +	5V Direction Positive Input	DC 5V
4	DIR -	Direction Negative Input	Compatible with DC 5~24V
7	5ENA +	5V Enable Positive Input	DC 5V
8	ENA -	Enable Negative Input	Leave open if not used
11	RDY +	Ready Signal Positive Output	Compatible with DC 5~24V
12	RDY -	Ready Signal Negative Output	Leave open if not used
13	24PUL +	24V Pulse Positive Input	DC 24V
14	24DIR +	24V Direction Positive Input	DC 24V
15	24ENA +	24V Enable Positive Input	DC 24V
5/6/9/10	N	Not connected	Not connected

### Control Signal Output Interface Circuit Diagram

The RDY port is an optocoupler isolated OC output, with a maximum withstand voltage of 30VDC and a maximum saturation current of 100mA.



# CSH-2272R Three-Phase Stepper Motor Driver Pulse Type

## Setup Instructions

### Operating Current Settings (P1: SW1~SW4)

Using P1: SW1~SW4 four-position DIP switches, a total of 8 current levels can be set. Refer to the table below:

Peak Current (A)	SW1	SW2	SW3	SW4
1.2	OFF	OFF	OFF	OFF
1.5	OFF	OFF	OFF	ON
2.0	OFF	OFF	ON	OFF
2.3	OFF	OFF	ON	ON
2.5	OFF	ON	OFF	OFF
3.0	OFF	ON	OFF	ON
3.2	OFF	ON	ON	OFF
3.6	OFF	ON	ON	ON
4.0	ON	OFF	OFF	OFF
4.5	ON	OFF	OFF	ON
5.0	ON	OFF	ON	OFF
5.3	ON	OFF	ON	ON
5.8	ON	ON	OFF	OFF
6.2	ON	ON	OFF	ON
6.5	ON	ON	ON	OFF
7.2	ON	ON	ON	ON

Note: The peak current setting of the driver must be less than the rated current of the matched motor, otherwise it may cause the motor temperature to rise excessively and affect the motor's service life.

### Microstepping Settings (P1: SW5~SW8)

Using P1: SW5~SW8 four-position DIP switches, a total of 16 microstepping modes can be set. Refer to the table below:

Pulses/Revolution	SW5	SW6	SW7	SW8
400	ON	ON	ON	ON
500	ON	ON	ON	OFF
600	ON	ON	OFF	ON
800	ON	ON	OFF	OFF
1000	ON	OFF	ON	ON
1200	ON	OFF	ON	OFF
2000	ON	OFF	OFF	ON
3000	ON	OFF	OFF	OFF
4000	OFF	ON	ON	ON
5000	OFF	ON	ON	OFF
6000	OFF	ON	OFF	ON
10000	OFF	ON	OFF	OFF
12000	OFF	OFF	ON	ON
20000	OFF	OFF	ON	OFF
30000	OFF	OFF	OFF	ON
60000	OFF	OFF	OFF	OFF

Note: Microstepping can increase the resolution per step, but its main effect is not to improve motor accuracy, rather to improve motor performance.

### Input Pulse Mode Setting (SW9)

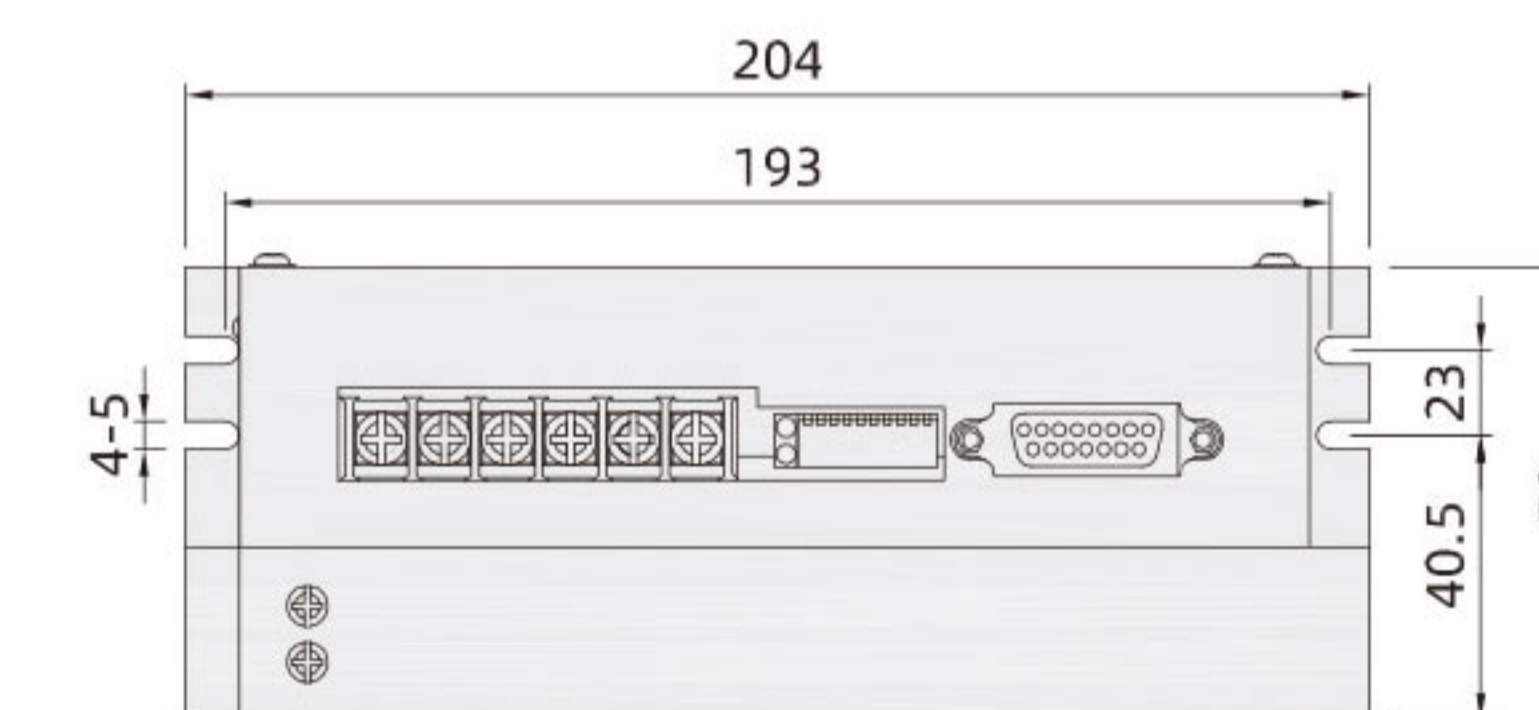
When switch SW9 is set to "ON", dual pulse (CW/CCW) signal input is supported; When switch SW9 is set to "OFF", single pulse (PUL/DIR) signal input is supported.

### Self-Test Setting (SW10)

If the motor rotation lacks corresponding upper-level control signals, you can try to use the built-in self-test function of the controller.

When switch SW10 is set to "ON", after powering on, the motor will automatically run at 30 RPM. At any time, setting SW10 to "OFF" will disable this function.

## Installation Dimensions Diagram and Status Indicators



**PWR:** Power indicator light. Indicates that the driver's power supply is normal. If the driver's power supply is abnormal, this light may blink or not light up.

**ALM:** Red light, driver ready indicator (or fault indicator). When the driver is powered on, the self-test program will light the ALM light for about 0.5 seconds, indicating the ALM light is normal. During normal operation, this light will not be on.

No.	LED Flash Pattern	Fault Description	Solution
1	Green light steady	Driver working normally	
2	Red light steady	Overcurrent, overvoltage, undervoltage warning	Check for short circuit/wrong phase; check power supply voltage

### Precautions:

- Only technical personnel are allowed to install, test, or maintain this product.
- Do not plug or unplug the driver and motor terminals while powered.
- To prevent interference to the driver, it is recommended to use shielded cables for control signals, and ensure the shielding layer is connected to ground.
- When wiring, do not in the wire ends with solder in advance (this may cause improper connections).

# CSH-2285R Three-Phase Stepper Motor Driver Pulse Type

# CSH-2285R Three-Phase Stepper Motor Driver Pulse Type



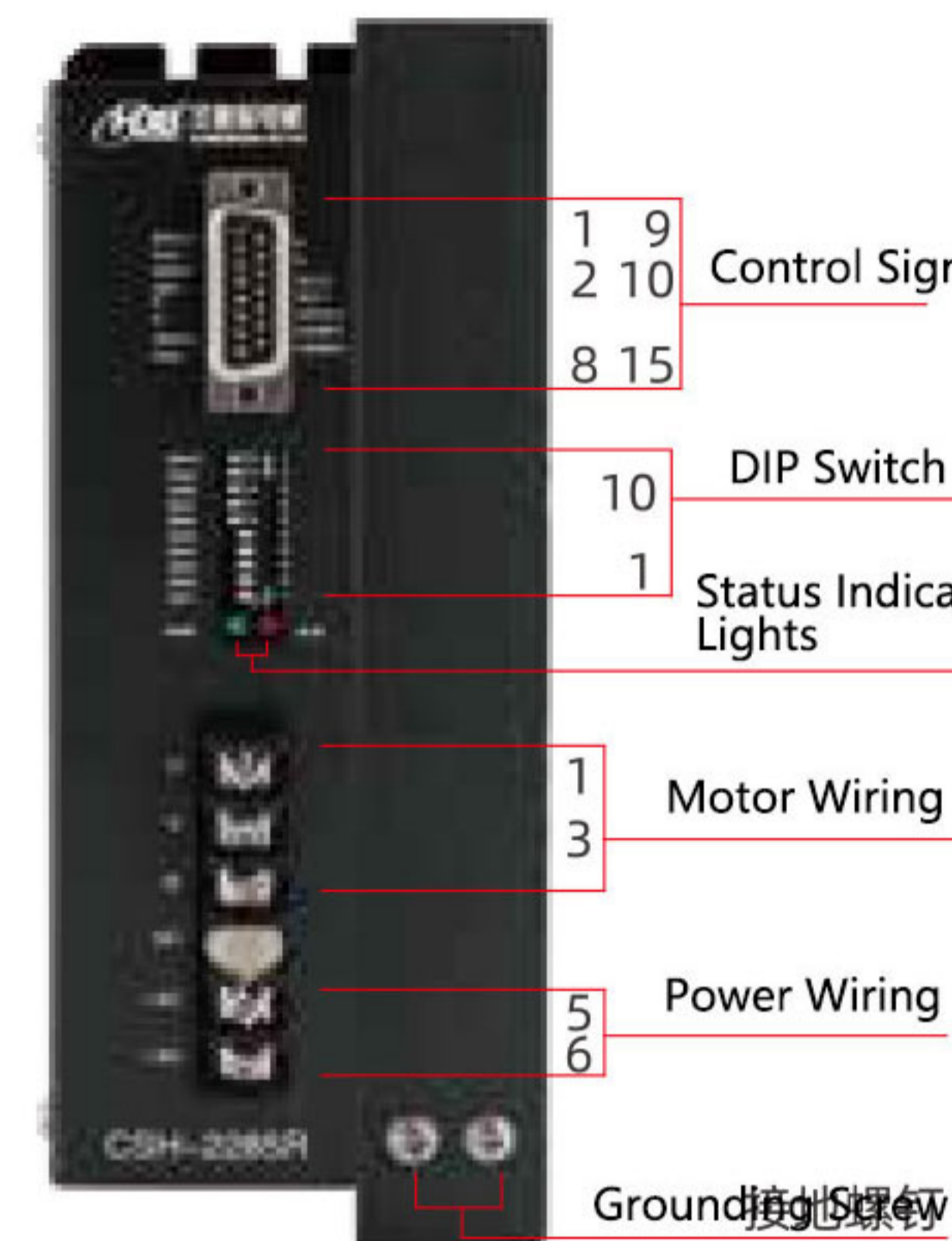
High-Voltage Series Pulse Type

Three-Phase Hybrid | Pulse Control | DSP Digital Type | DC Input

- Using a brand-new 32-bit DSP chip dedicated to motor control, the solution is mature and performance is stable.
- Optocoupler isolated differential signal input, with a maximum pulse response frequency of up to 200KHz.
- Adopts resonance suppression technology, automatically calculates resonance points, and suppresses medium/low frequency vibrations.
- Equipped with pulse, direction, and enable signals of 5V and 24V interfaces.
- Single/double pulse control modes can be selected via DIP switch.

The image is for reference only; please refer to the actual product!

## Wiring Instructions



### Motor and Power Input Terminals

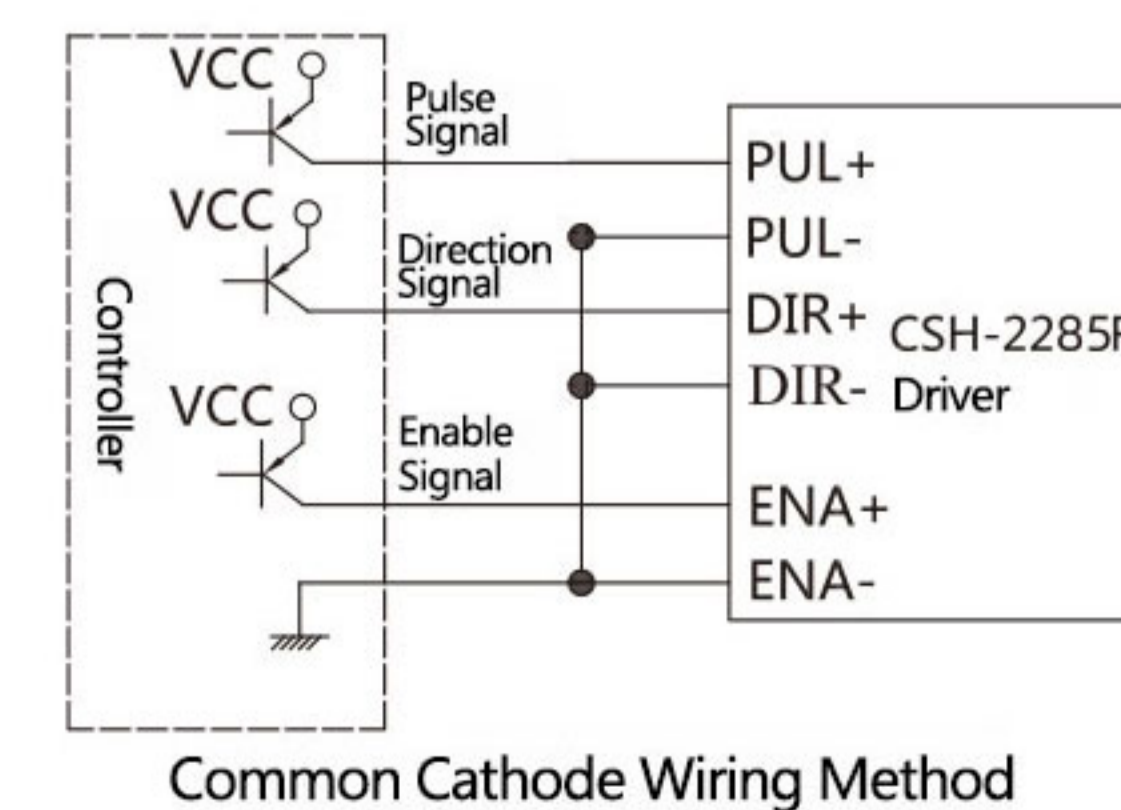
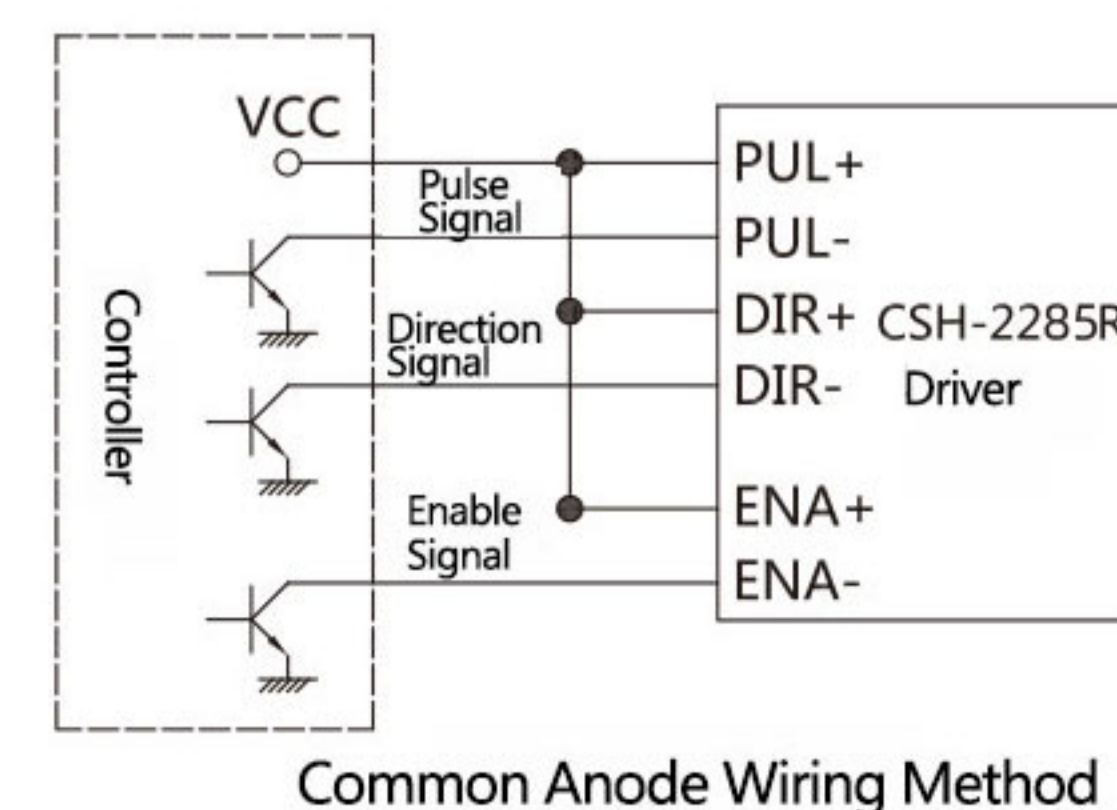
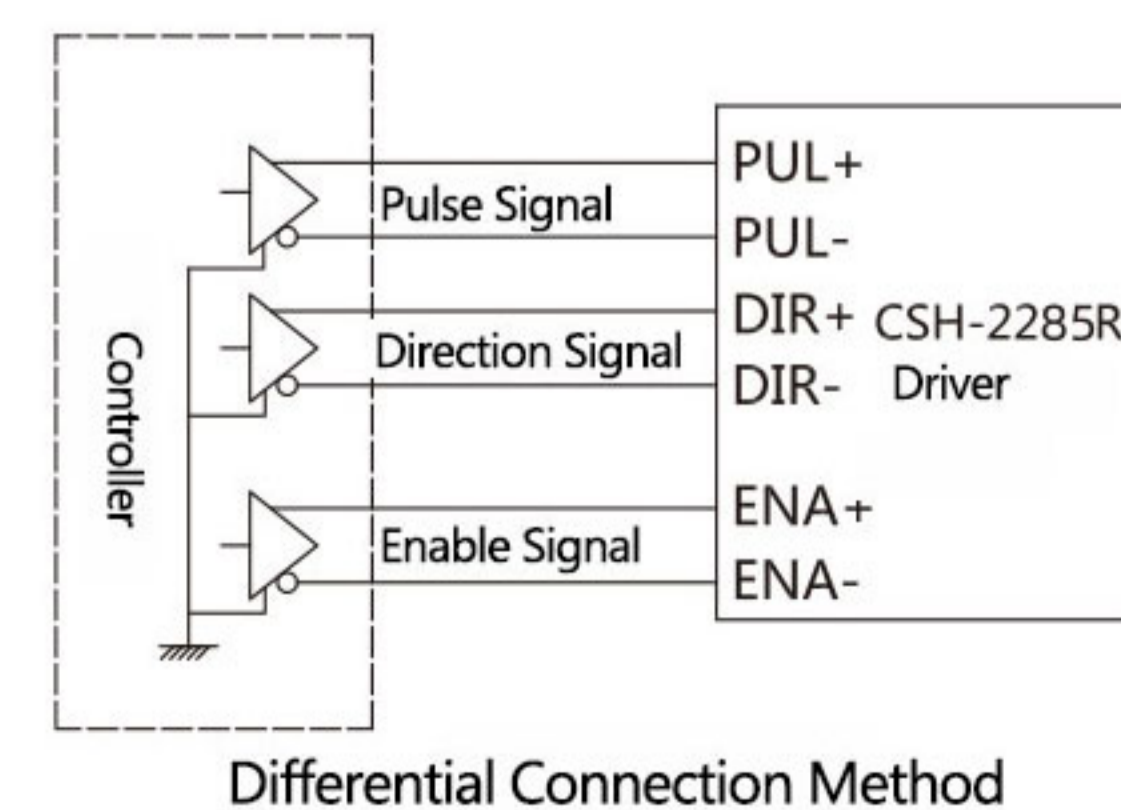
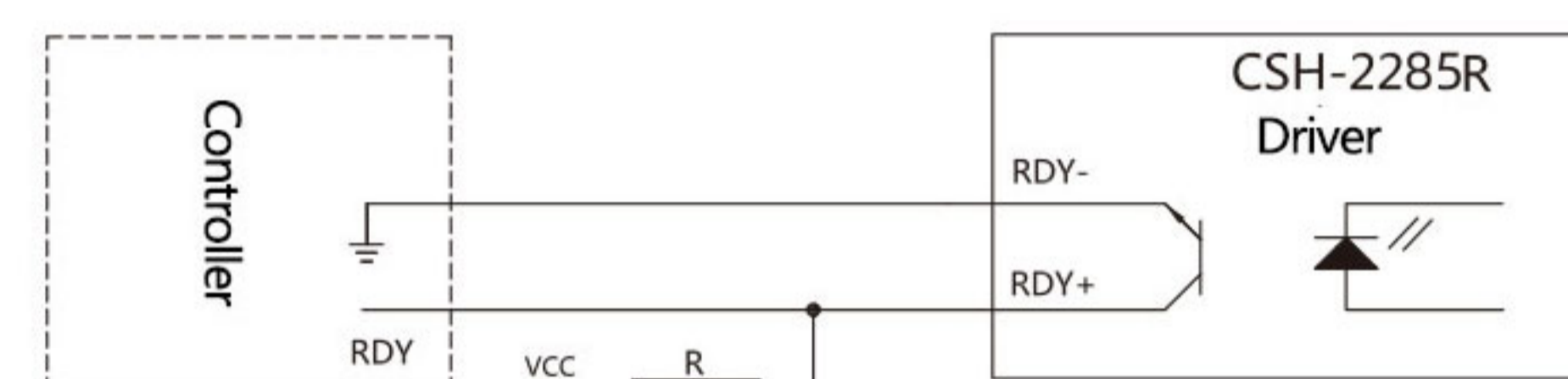
Terminal No.	Symbol	Name	Description
1	U	U-phase motor winding	Motor U/V/W winding, N is floating or connected to driver casing
2	V	V-phase motor winding	
3	W	W-phase motor winding	
4	N	Ground, floating or connected to driver casing	
5	~AC	AC power input	110~245VAC
6	~AC	AC power input	110~245VAC

### Control Signal Connections

Pin No.	Signal	Function	Description
1	5PUL +	5V Pulse Positive Input	DC 5V
2	PUL -	Pulse Negative Input	Compatible with DC 5~24V
3	5DIR +	5V Direction Positive Input	DC 5V
4	DIR -	Direction Negative Input	Compatible with DC 5~24V
7	5ENA +	5V Enable Positive Input	DC 5V
8	ENA -	Enable Negative Input	Leave open if not used
11	RDY +	Ready Signal Positive Output	Compatible with DC 5~24V
12	RDY -	Ready Signal Negative Output	Leave open if not used
13	24PUL +	24V Pulse Positive Input	DC 24V
14	24DIR +	24V Direction Positive Input	DC 24V
15	24ENA +	24V Enable Positive Input	DC 24V
5/6/9/10	N	Not connected	Not connected

### Control Signal Output Interface Circuit Diagram

The RDY port is an optocoupler isolated OC output, with a maximum withstand voltage of 30VDC and a maximum saturation current of 100mA.



## Setup Instructions

### Operating Current Settings (P1: SW1~SW4)

Using P1: SW1~SW4 four-position DIP switches, a total of 8 current levels can be set. Refer to the table below:

Peak Current (A)	SW1	SW2	SW3	SW4
1.2	OFF	OFF	OFF	OFF
1.5	OFF	OFF	OFF	ON
2.0	OFF	OFF	ON	OFF
2.3	OFF	OFF	ON	ON
2.5	OFF	ON	OFF	OFF
3.0	OFF	ON	OFF	ON
3.2	OFF	ON	ON	OFF
3.6	OFF	ON	ON	ON
4.0	ON	OFF	OFF	OFF
4.5	ON	OFF	OFF	ON
5.0	ON	OFF	ON	OFF
5.3	ON	OFF	ON	ON
5.8	ON	ON	OFF	OFF
6.2	ON	ON	OFF	ON
7.5	ON	ON	ON	OFF
8.5	ON	ON	ON	ON

### Microstepping Settings (P1: SW5~SW8)

Using P1: SW5~SW8 four-position DIP switches, a total of 16 microstepping modes can be set. Refer to the table below:

Pulses/Revolution	SW5	SW6	SW7	SW8
400	ON	ON	ON	ON
500	ON	ON	ON	OFF
600	ON	ON	OFF	ON
800	ON	ON	OFF	OFF
1000	ON	OFF	ON	ON
1200	ON	OFF	ON	OFF
2000	ON	OFF	OFF	ON
3000	ON	OFF	OFF	OFF
4000	OFF	ON	ON	ON
5000	OFF	ON	ON	OFF
6000	OFF	ON	OFF	ON
10000	OFF	ON	OFF	OFF
12000	OFF	OFF	ON	ON
20000	OFF	OFF	ON	OFF
30000	OFF	OFF	OFF	ON
60000	OFF	OFF	OFF	OFF

Note: The peak current setting of the driver must be less than the rated current of the matched motor, otherwise it may cause the motor temperature to rise excessively and affect the motor's service life.

Note: Microstepping can increase the resolution per step, but its main effect is not to improve motor accuracy, rather to improve motor performance.

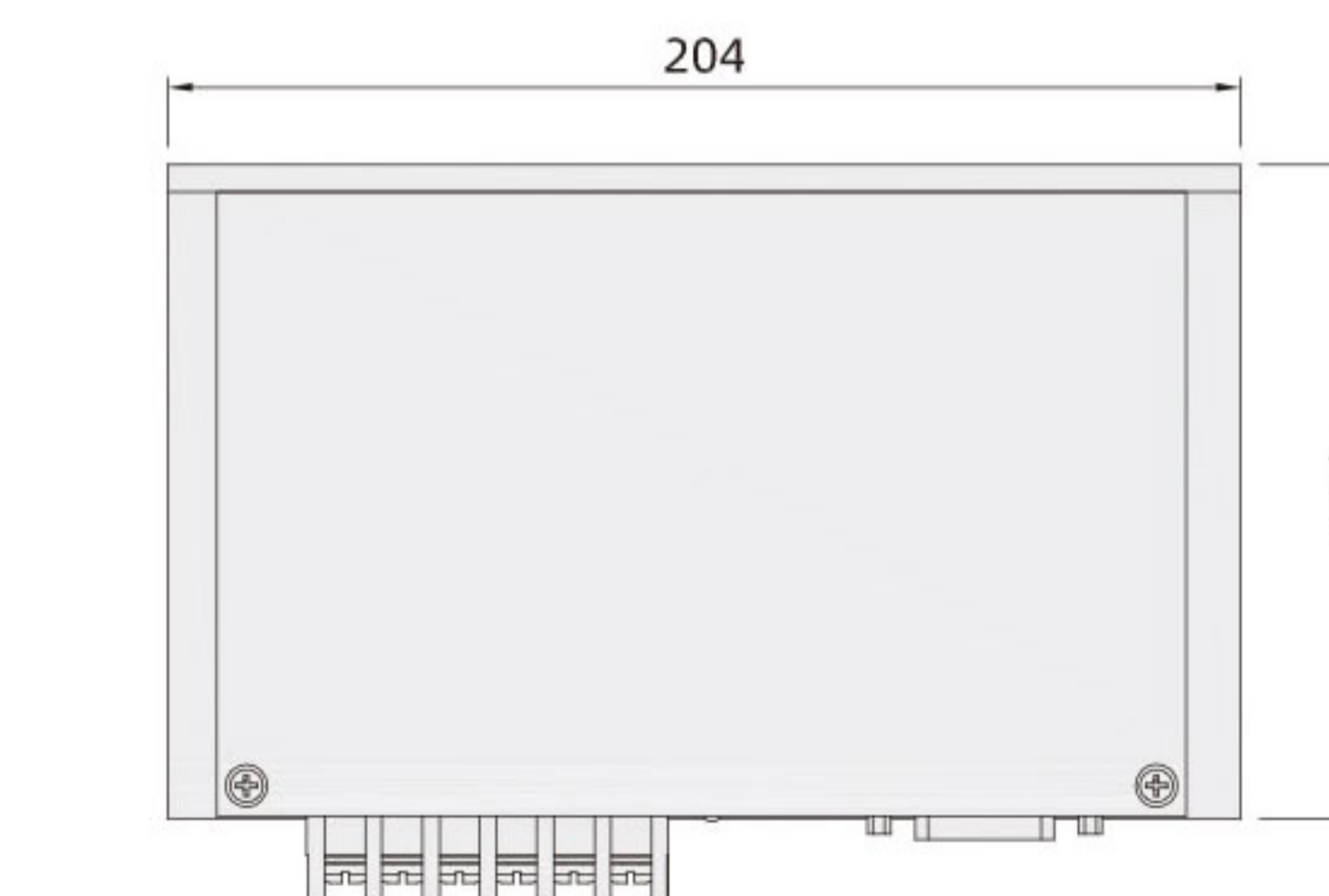
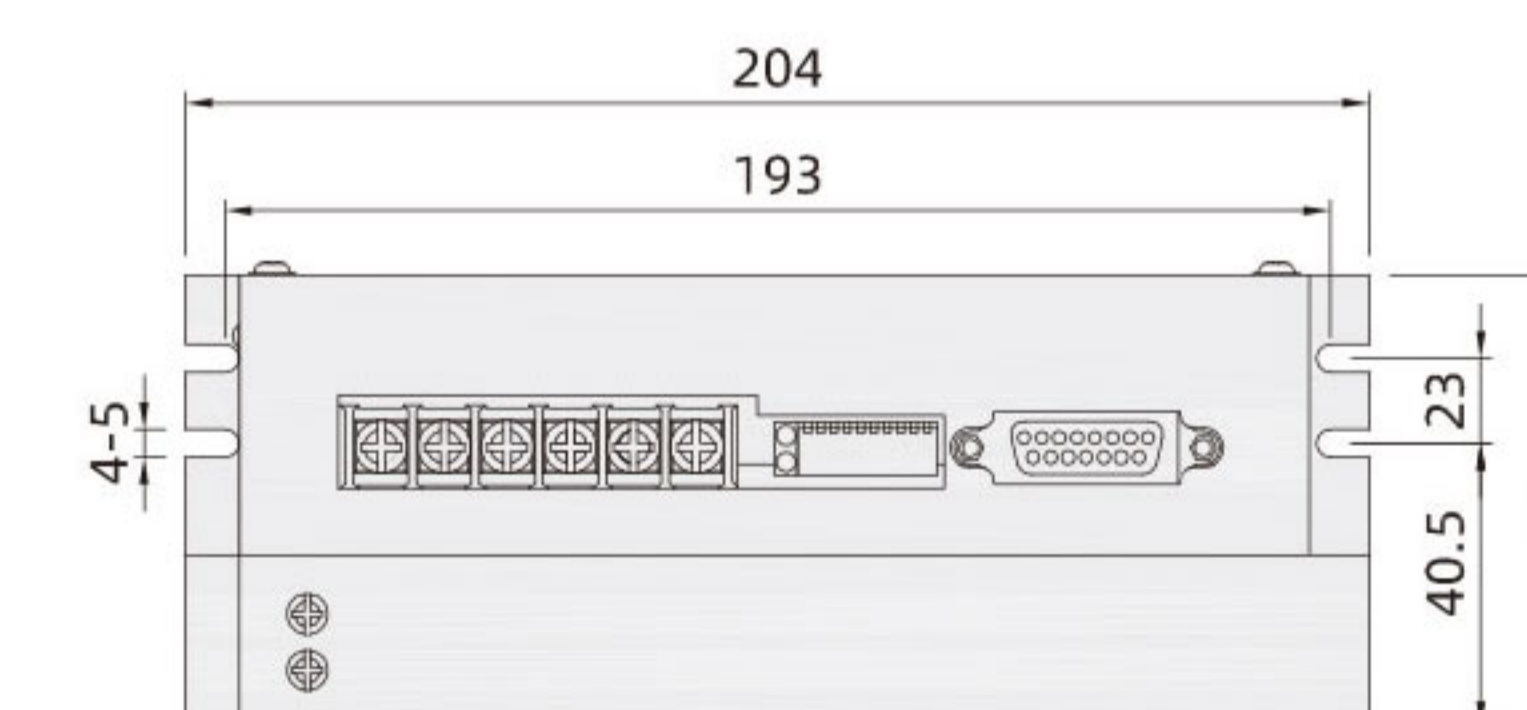
### Input Pulse Mode Setting (SW9)

When switch SW9 is set to "ON", dual pulse (CW/CCW) signal input is supported; When switch SW9 is set to "OFF", single pulse (PUL/DIR) signal input is supported.

### Self-Test Setting (SW10)

If the motor rotation lacks corresponding upper-level control signals, you can try to use the built-in self-test function of the controller. When switch SW10 is set to "ON", after powering on, the motor will automatically run at 30 RPM. At any time, setting SW10 to "OFF" will disable this function.

## Installation Dimensions Diagram and Status Indicators



**PWR:** Power indicator light. Indicates that the driver's power supply is normal. If the driver's power supply is abnormal, this light may blink or not light up.  
**ALM:** Red light, driver ready indicator (or fault indicator). When the driver is powered on, the self-test program will light the ALM light for about 0.5 seconds, indicating the ALM light is normal. During normal operation, this light will not be on.

No.	LED Flash Pattern	Fault Description	Solution
1	Green light steady	Driver working normally	
2	Red light steady	Overcurrent, overvoltage, undervoltage warning	Check for short circuit/wrong phase; check power supply voltage

### Precautions:

- Only technical personnel are allowed to install, test, or maintain this product.
- Do not plug or unplug the driver and motor terminals while powered.
- To prevent interference to the driver, it is recommended to use shielded cables for control signals, and ensure the shielding layer is connected to ground.
- When wiring, do not in the wire ends with solder in advance (this may cause improper connections).



The image is for reference only; please refer to the actual product!

- High torque, high precision
- Low vibration, low heat generation
- No missed steps, stable performance
- Signal voltage level: 3.3V~24V
- Low power consumption, smooth start and stop, uniform speed
- Overvoltage, undervoltage, overheat, and overcurrent protection
- S-type acceleration and deceleration pulse sequence; the motor can be started and stopped by a simple switch input

### IO Series

HDBMOTOR IO series switch-type stepper drivers provide an internal S-type acceleration and deceleration pulse sequence. Only a simple switch is needed to trigger motor start/stop and direction control. Compared to speed-regulated motors, IO type switch stepper drivers feature low power consumption, smooth start/stop, and uniform speed. They automatically reduce current from 0% to 90% at any set percentage. Software allows self-test and automatic configuration to check system status.

Model	Supply Voltage	Supply Current	Matched Motor
ASD522R-IO	50V	2.2A	Suitable motors: 4-wire, 6-wire, 8-wire motors ≤ 42mm size
ASD556R-IO	50V	5.6A	Suitable motors: 4-wire, 6-wire, 8-wire motors 57mm, 60mm, 86mm sizes

Control Mode	Speed Setting	Signal Level	Protection Functions
IN1 controls start/stop IN2 controls direction	DIP switches SW5~SW8 set 16 speed levels	Compatible with 3.3~24V DC	Overvoltage, undervoltage, overcurrent

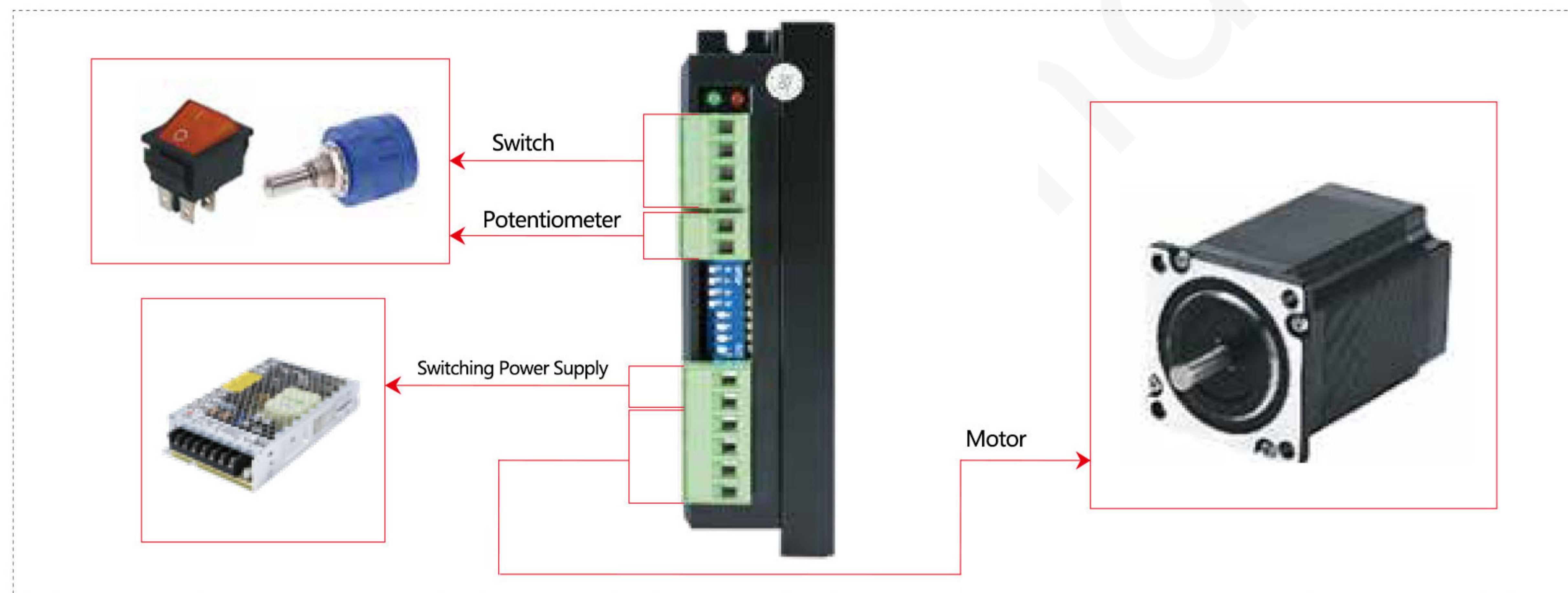
### AI Series

HDBMOTOR AI Series analog stepper drivers provide an internal S-type acceleration and deceleration pulse sequence. Only a simple switch is needed to trigger motor start/stop and direction control. The motor speed is controlled using a potentiometer, allowing continuous adjustment of motor speed. Compared to speed-regulated motors, AI type switch stepper drivers feature low power consumption, smooth start/stop, and uniform speed.

Model	Supply Voltage	Supply Current	Matched Motor
ASD522R-AI	50V	2.2A	Suitable motors: 4-wire, 6-wire, 8-wire motors ≤ 42mm size
ASD556R-AI	50V	5.6A	Suitable motors: 4-wire, 6-wire, 8-wire motors 57mm, 60mm, 86mm sizes

Control Mode	Speed Range	Signal Level	Protection Functions	Analog Input Resolution	Potentiometer Specifications
<ul style="list-style-type: none"> <li>• IN1 controls start/stop</li> <li>• IN2 controls direction</li> <li>• ENA external potentiometer controls speed</li> </ul>	1~1500RPM	Compatible with 3.3~24V DC	Overvoltage, undervoltage, overcurrent	12-bit A/D conversion	10~100K

### Wiring Instructions



The image is for reference only; please refer to the actual product!

- Supports real-time multi-axis bus control by the host
- Communication frequency: 100 MHz
- Supports CoE (compliant with CiA402 standard)
- Supports PP, PV, CSP, and HM modes
- Dual Ethernet communication interfaces (RJ45 connectors)
- 5-channel optocoupler signal inputs, including 2 high-speed optical isolation channels
- 3-channel optocoupler isolated OC output
- Supports broken wire protection
- Localized diagnosis and error handling
- Resonance suppression
- Smooth torque in low-speed range
- Self-check and automatic setup

### Selection Guide

The EtherCAT bus driver is a third-generation digital stepper driver developed for bus communication. It is compatible with EtherCAT bus controllers from multiple manufacturers such as Beckhoff, Omron, and ABB. It features a built-in CoE protocol and is especially suitable for applications below 1500 RPM, offering cost reductions of over 60% compared to traditional servo systems. Compared to traditional stepper drivers, the EtherCAT bus driver is particularly well-suited for long-distance and multi-axis linkage applications, significantly reducing wiring and enhancing the reliability of driver operation.

#### Open-Loop EtherCAT Selection Guide

Driver Type	Driver Model	Supply Voltage	Max Current	Suitable Motor Size	Compatible Master Station
Open-Loop EtherCAT	ES42	50VDC	2.2A	Motors 42mm and below	Beckhoff, Omron, ABB, etc.
	ES57	50VDC	4.0A	Motors 57mm and below	
	ES86	60VDC	6.0A	Motors 57mm, 86mm and below	

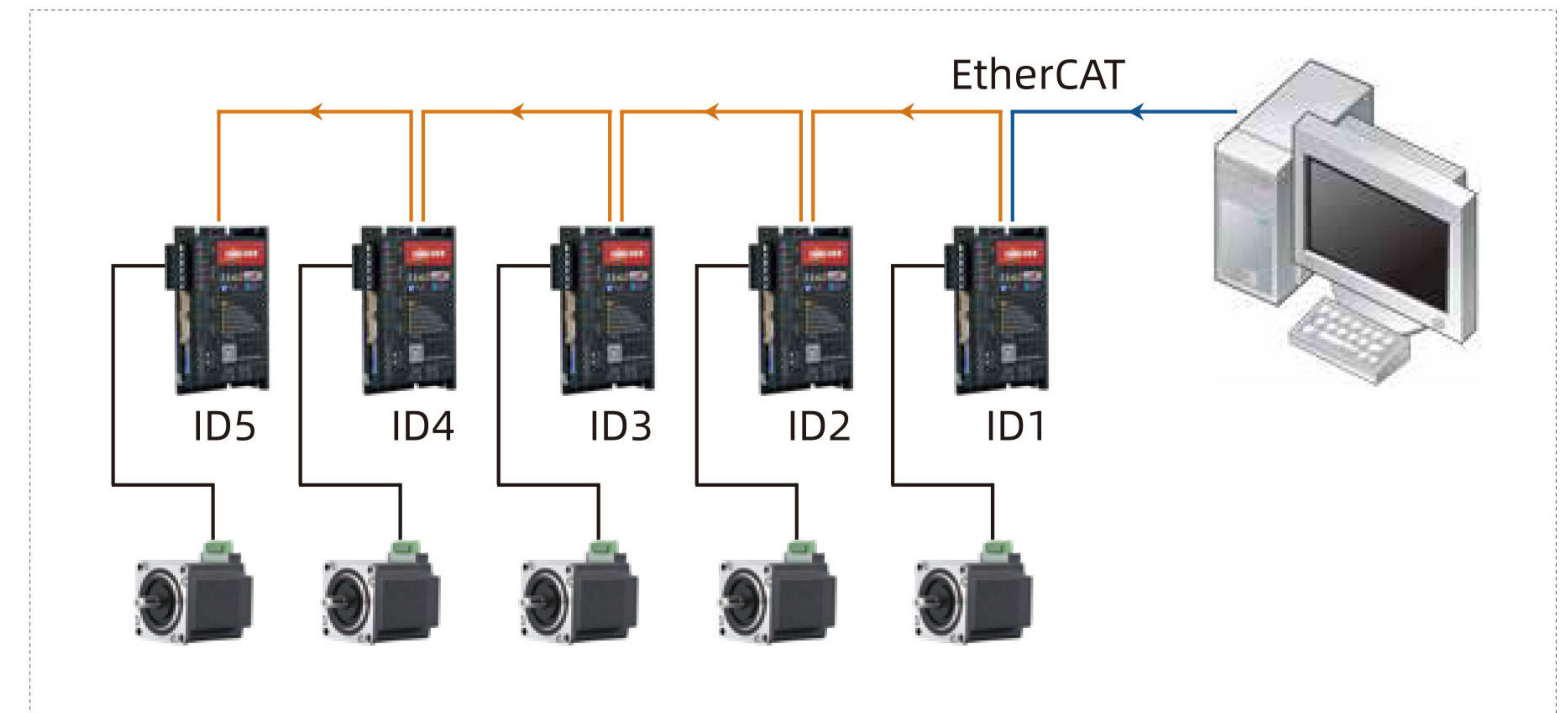
#### Closed-Loop 1000-Line EtherCAT Selection Guide

Driver Type	Driver Model	Supply Voltage	Max Current	Encoder Type	Compatible Master Station
Open-Loop EtherCAT	EI42L	50VDC	2.2A	1000-line incremental	Beckhoff, Omron, ABB, etc.
	EI57L	50VDC	4.0A		
	EI86L	60VDC	6.0A		

#### Closed-Loop 2500-Line EtherCAT Selection Guide

Driver Type	Driver Model	Supply Voltage	Max Current	Encoder Type	Compatible Master Station
Open-Loop EtherCAT	EI42H	50VDC	2.2A	2500-line incremental	Beckhoff, Omron, ABB, etc.
	EI57H	50VDC	4.0A		
	EI86H	60VDC	6.0A		

### Wiring Instructions



# RS-485 Series Stepper Motor Driver

## Bus Type



- RS485 communication
- 1 channel 0-5V analog input
- 4 channels optocoupler isolated OC output
- 5 channels isolated signal input, including 2 high-speed optocoupler isolation channels
- Communication frequency up to 1MHz (factory default 9600Hz)
- Supports up to 32 devices

The image is for reference only; please refer to the actual product!

### Selection Guide

MODBUS communication protocol is an industrial fieldbus communication protocol. The MODBUS application protocol corresponds to the application layer data transmission protocol at layer 7 of the OSI (Open System Interconnection) model. It defines a frame structure for device controllers to identify and use, independent of the physical layer, and can be carried over various types of networks. Hanborough's Modbus products mainly use the Modbus/RTU protocol based on serial bus.

#### Open-Loop RS-485 Selection Guide

Driver Type	Driver Model	Supply Voltage	Max Current	Suitable Motor Size	Communication Protocol
Open-Loop RS-485	RS42	50VDC	2.2A	Motors 42mm and below	Modbus/RTU Protocol
	RS57	50VDC	4.0A	Motors 57mm and below	
	RS86	60VDC	6.0A	Motors 57mm, 86mm and below	

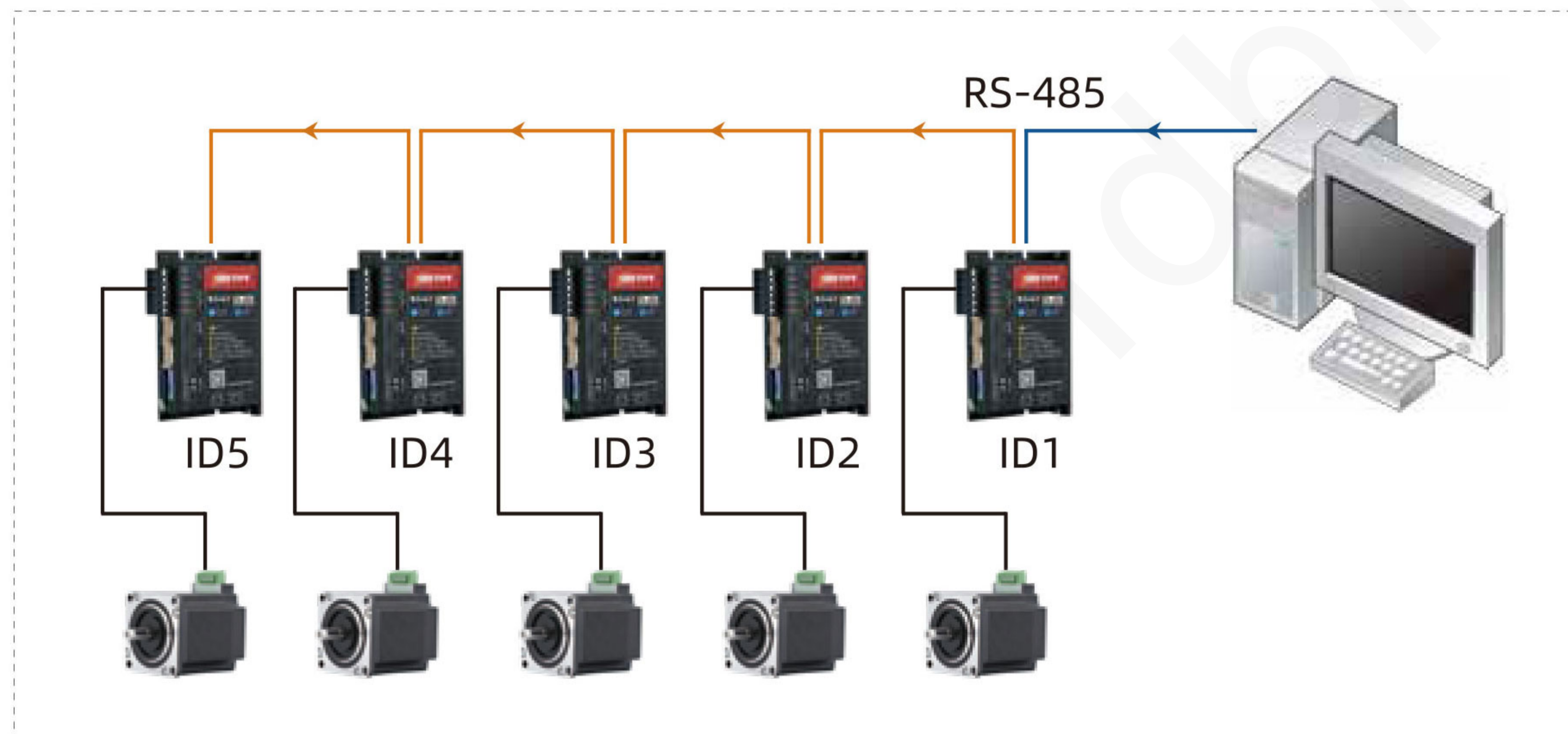
#### Closed-Loop 1000-Line RS-485 Selection Guide

Driver Type	Driver Model	Supply Voltage	Max Current	Encoder Type	Communication Protocol
Open-Loop RS-485	RI42L	50VDC	2.2A	1000-line incremental	Modbus/RTU Protocol
	RI57L	50VDC	4.0A		
	RI86L	60VDC	6.0A		

#### Closed-Loop 2500-Line RS-485 Selection Guide

Driver Type	Driver Model	Supply Voltage	Max Current	Encoder Type	Communication Protocol
Open-Loop RS-485	RI42H	50VDC	2.2A	2500-line incremental	Modbus/RTU Protocol
	RI57H	50VDC	4.0A		
	RI86H	60VDC	6.0A		

### Wiring Instructions



电机驱动器

# CANopen Series Stepper Motor Driver

## Bus Type



- High-efficiency communication speed
- 1 channel 0-5V analog input
- 4 channels optocoupler isolated OC output
- 5 channels optocoupler isolated signal input, including 2 channels of high-speed optocoupler isolation
- Communication frequency up to 1MHz (factory default 9600Hz)
- Supports up to 127 devices
- Communication error handling
- International standards

The image is for reference only; please refer to the actual product!

### Selection Guide

CANopen is a high-level communication protocol built on the Controller Area Network (CAN), including communication protocols and device protocols commonly used in embedded systems, and is also a widely used fieldbus in industrial control. CANopen implements the OSI model from the network layer upwards (including the network layer). The CANopen standard includes addressing schemes, several small communication protocols, and application layers defined by device protocols. CANopen supports network management, device monitoring, and communication between nodes, including a simple transport layer that handles segmented transmission and reassembly of data. Typically, the data link and physical layers are implemented using CAN.

The basic CANopen device and communication protocols are defined in CAN in Automation (CiA) 301. Device-specific protocols are extensions based on CiA 301. For example, CiA 401 for I/O modules and CiA 402 for motion control modules.

#### Open-Loop CANopen Selection Guide

Driver Type	Driver Model	Supply Voltage	Max Current	Suitable Motor Size	Communication Protocol
Open-Loop CANopen	TS42	50VDC	2.2A	Motors 42mm and below	CANopen
	TS57	50VDC	4.0A	Motors 57mm and below	
	TS86	60VDC	6.0A	Motors 57mm, 86mm and below	

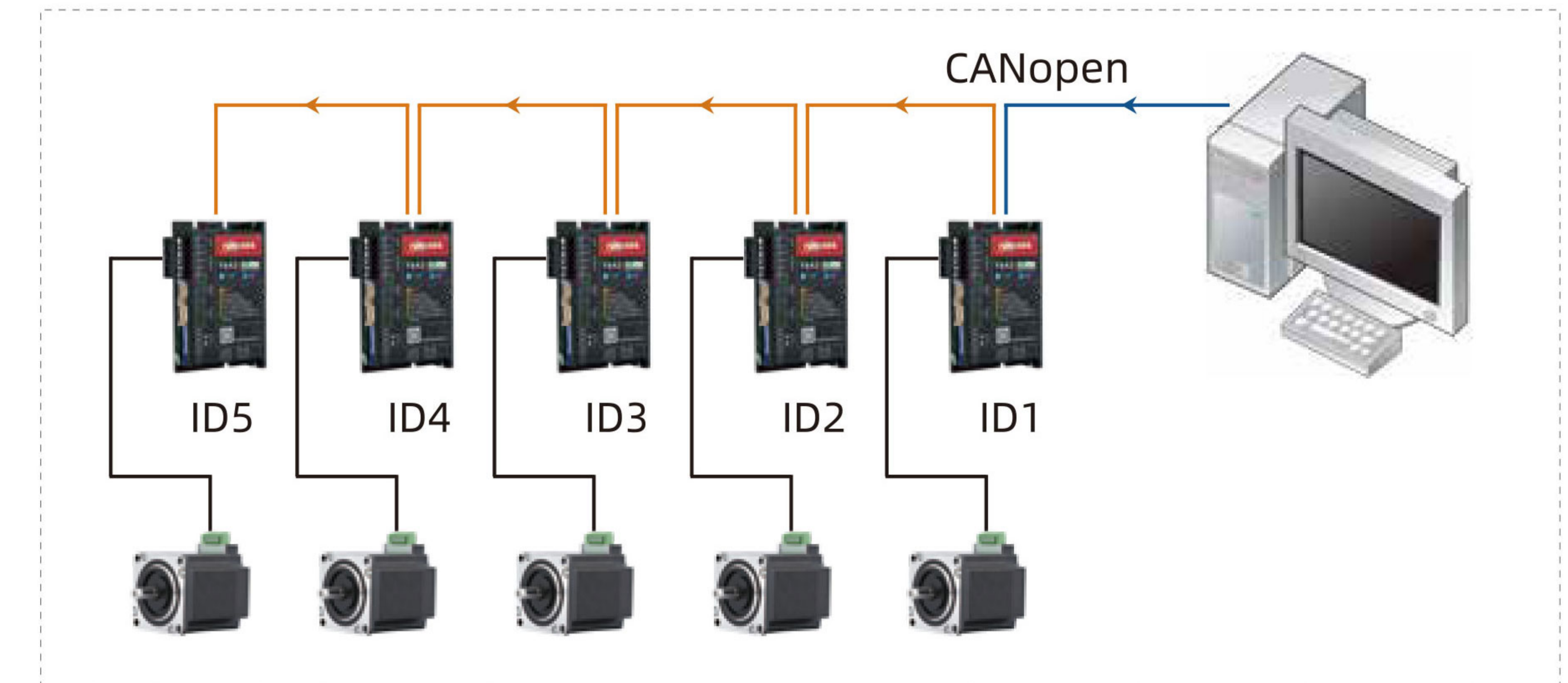
#### Closed-Loop 1000-Line CANopen Selection Guide

Driver Type	Driver Model	Supply Voltage	Max Current	Encoder Type	Communication Protocol
Closed-Loop CANopen	TI42L	50VDC	2.2A	1000-line incremental	CANopen
	TI57L	50VDC	4.0A		
	TI86L	60VDC	6.0A		

#### Closed-Loop 2500-Line CANopen Selection Guide

Driver Type	Driver Model	Supply Voltage	Max Current	Encoder Type	Communication Protocol
Closed-Loop CANopen	TI42H	50VDC	2.2A	2500-line incremental	CANopen
	TI57H	50VDC	4.0A		
	TI86H	60VDC	6.0A		

### Wiring Instructions



Motor Driver



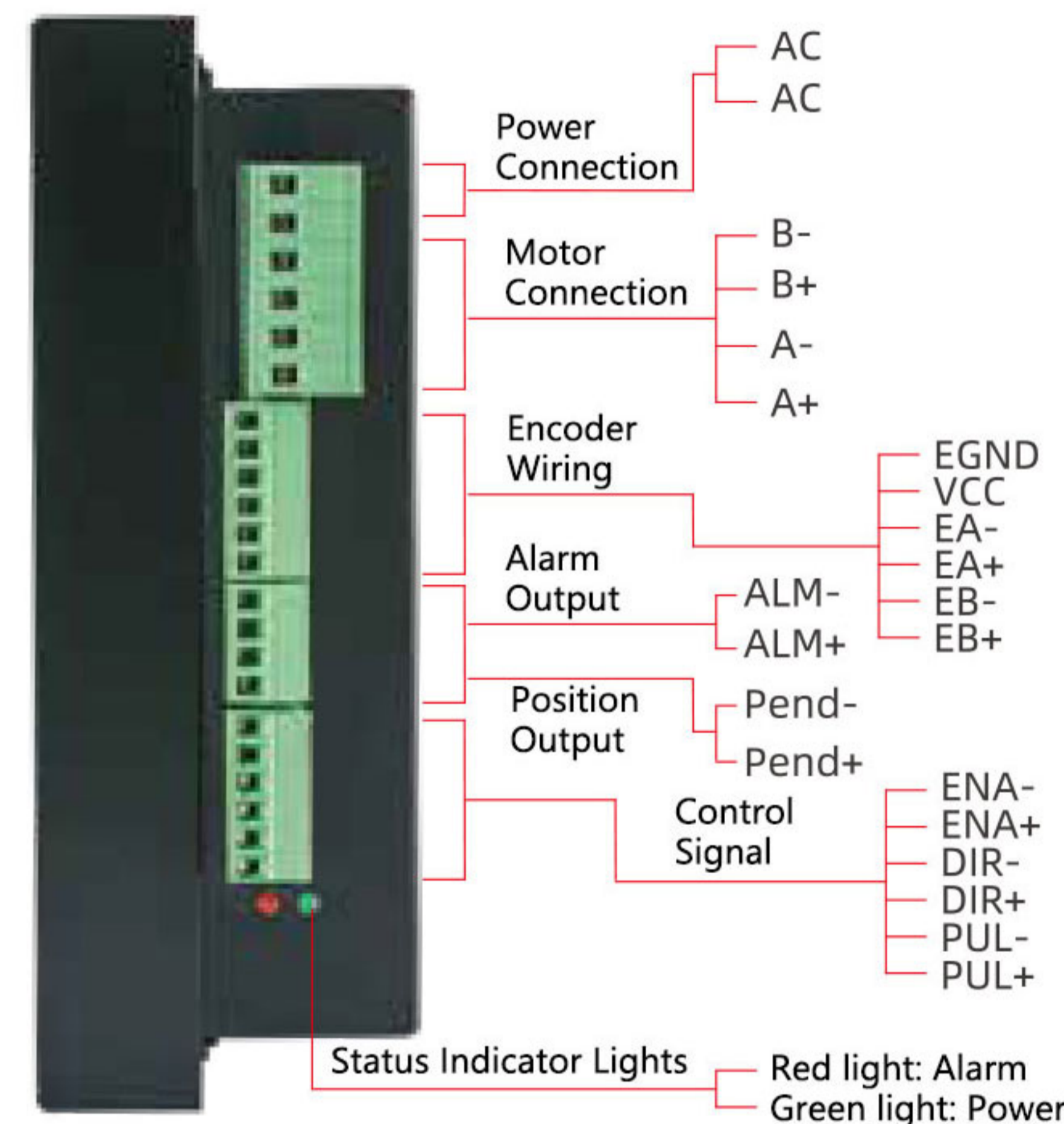
- Using a brand-new 32-bit DSP chip dedicated to motor control
- Voltage range: AC 24 V ~ 80 V
- 16 levels of subdivision in total, with arbitrary subdivision (200-51200) configurable via host computer
- Signal input compatible with 5-24V, no external series resistor required
- Maximum pulse response frequency up to 500 KHz
- Reduced torque decay, speed can reach up to 3000 rpm
- Built-in position and alarm output for convenient monitoring and control

The image is for reference only; please refer to the actual product!

## Selection Guide

Model	Operating Voltage (VAC)	Peak Current (A)	Suitable Motor (mm)	Signal Voltage (V)	Control Signal	Encoder Lines	Encoder Type
SSA60H	80	5.0	60	5~24	Single-ended/Differential	2500	A/B Dual Channel Supports Optical and Magnetic Encoders
SSA86H	80	8.0	86	5~24	Single-ended/Differential	2500	A/B Dual Channel Supports Optical and Magnetic Encoders

### Wiring and Terminal Description



### Power and Motor Terminals

Pin Number	Signal	Function
1	AC	Power input terminal, input voltage 24~80VAC or 24~110VDC
2	AC	
3	B-	Motor winding B-
4	B+	Motor winding B+
5	A-	Motor winding A-
6	A+	Motor winding A+

### Encoder Interface

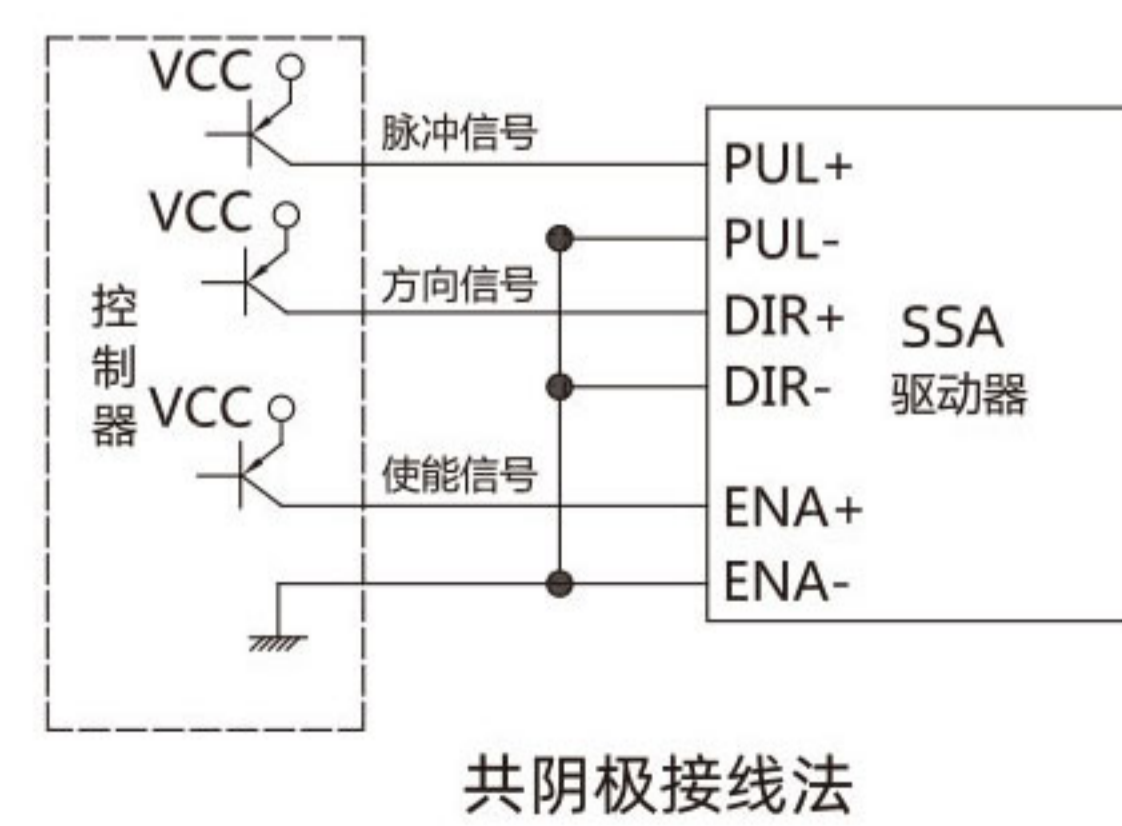
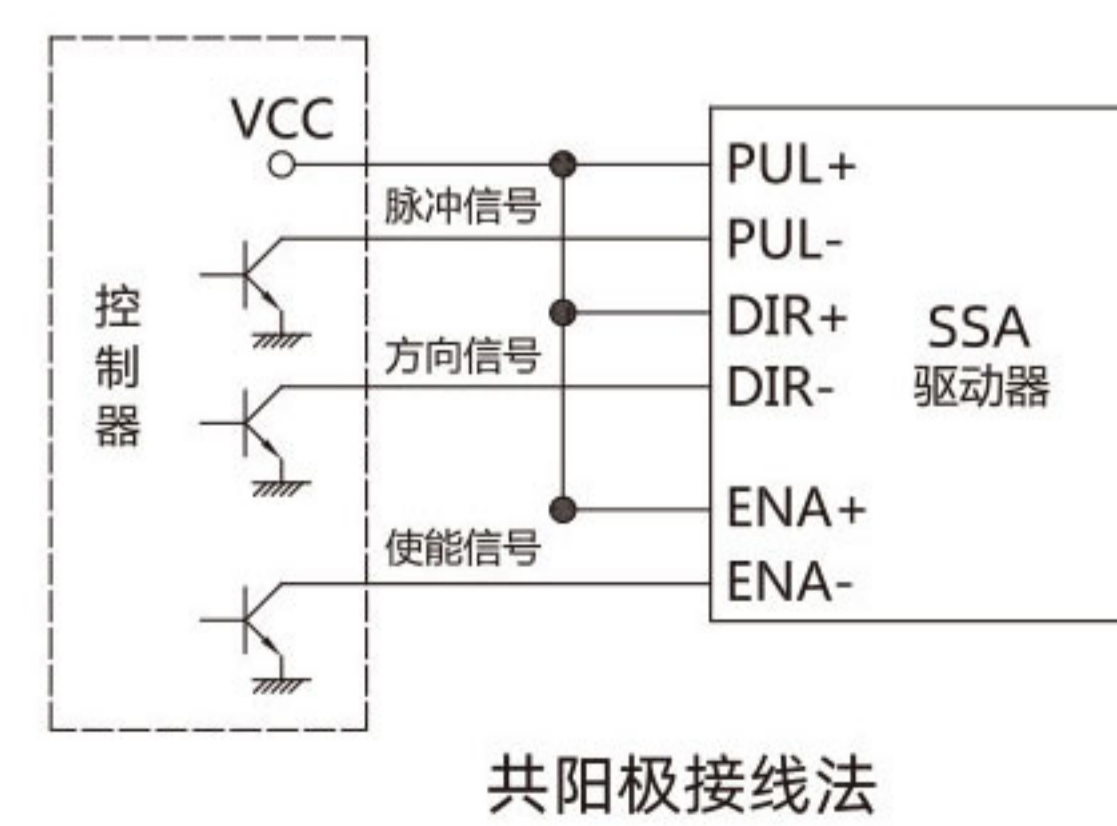
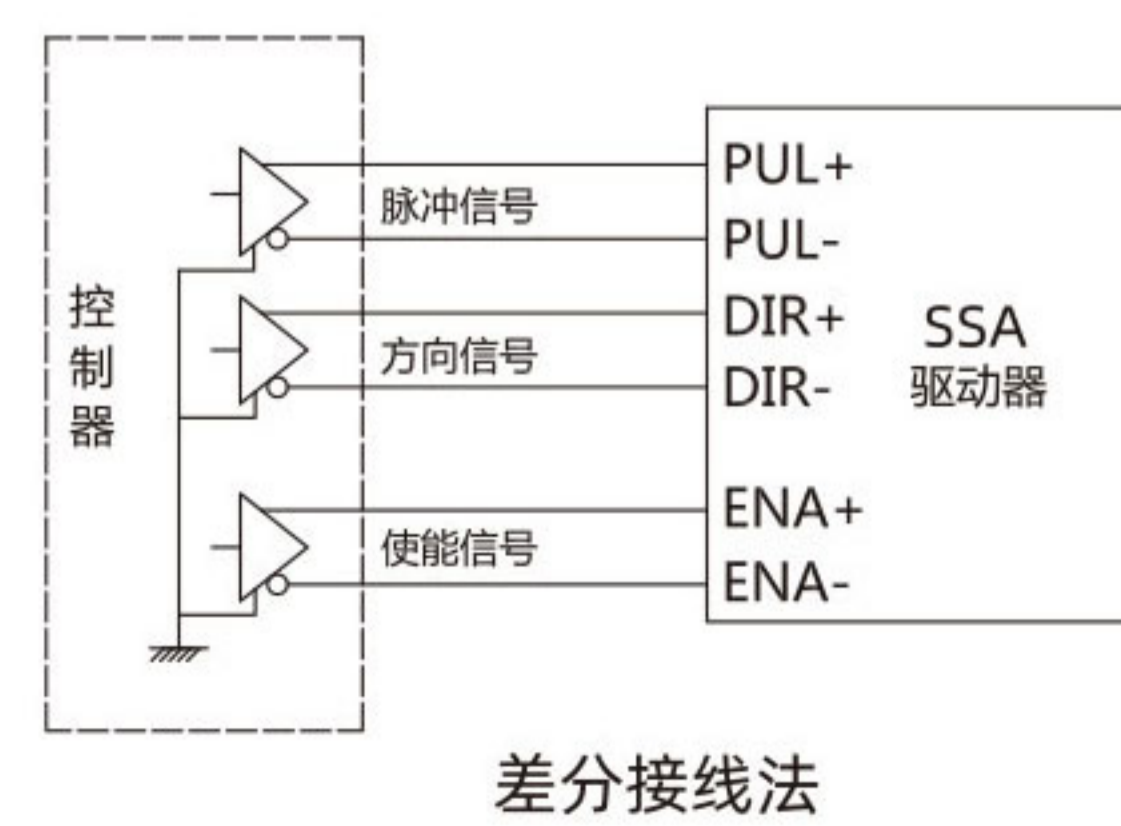
Pin Number	Signal	Function
1	EGND	Driver GND output, powers the encoder
2	VCC	Driver +5V output, powers the encoder
3	EA-	Encoder signal A- input
4	EA+	Encoder signal A+ input
5	EB-	Encoder signal B- input
6	EB+	Encoder signal B+ input

### Control Signal Connection

Pin Number	Signal	Function	Description
1	ENA-	Enable Input Negative	Compatible with 4.5V~24V DC signal
2	ENA+	Enable Input Positive	
3	DIR-	Direction Input Negative	
4	DIR+	Direction Input Positive	
5	PUL-	Pulse Input Negative	
6	PUL+	Pulse Input Positive	

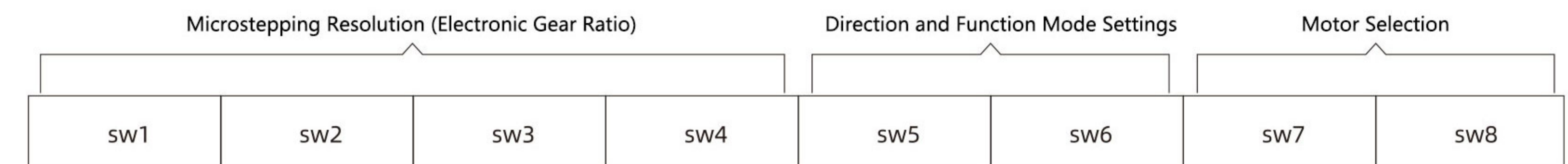
### 输出信号接口

端子号	信号	名称	说明
1	ALM-	报警输出负	集电极开路输出, 最大上拉电平 24V, 最大输出电流 100mA
2	ALM+	报警输出正	
3	Pend-	到位输出负	
4	Pend+	到位输出正	



## Setting Instructions

The digital integrated low-voltage servo driver uses an 8-position DIP switch to set microstepping resolution (electronic gear ratio), initial motor rotation direction, self-test, and function mode selection. The detailed description is as follows:



### Microstepping Setting (P1: SW1~SW4)

Using P1: SW1 to SW4 four-position DIP switches, a total of 16 microstepping modes can be set. Refer to the table below:

Pulses/Revolution	SW1	SW2	SW3	SW4
自设定	ON	ON	ON	ON
800	OFF	ON	ON	ON
1600	ON	OFF	ON	ON
3200	OFF	OFF	ON	ON
6400	ON	ON	OFF	ON
12800	OFF	ON	OFF	ON
25600	ON	OFF	OFF	ON
500	OFF	OFF	OFF	ON
1000	ON	ON	ON	OFF
2000	OFF	ON	ON	OFF
4000	ON	OFF	ON	OFF
5000	OFF	OFF	ON	OFF
8000	ON	ON	OFF	OFF
10000	OFF	ON	OFF	OFF
3600	ON	OFF	OFF	OFF
7200	OFF	OFF	OFF	OFF

⚠ Note: Microstepping can increase the resolution per step, but its main effect is not to improve motor accuracy, rather to improve motor performance.

### Initial Direction Setting (sw5)

When DIP switch SW5 is ON, the motor rotates clockwise (CW). When OFF, the motor rotates counterclockwise (CCW).

### Function Mode Selection (SW6)

SW6	Control Mode	Applicable Scenario
OFF	Field Oriented Control (FOC)	Suitable for general continuous operation with short stroke
OFF	Fast Start/Stop Mode (Lead)	Suitable for short stroke, high-frequency start/stop, and direction change positioning applications

⚠ Note: If neither of the above control modes is suitable, please contact our application engineers.

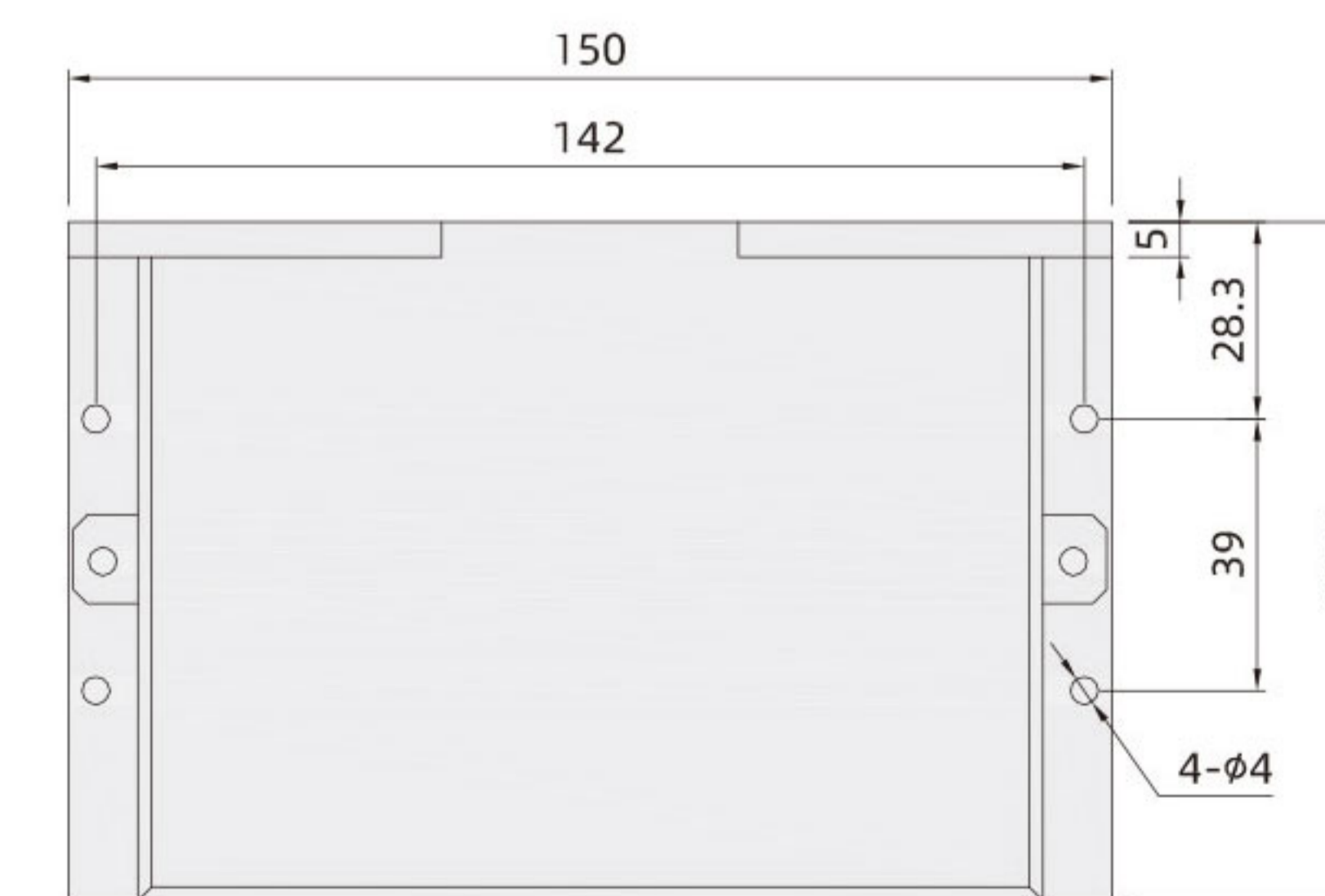
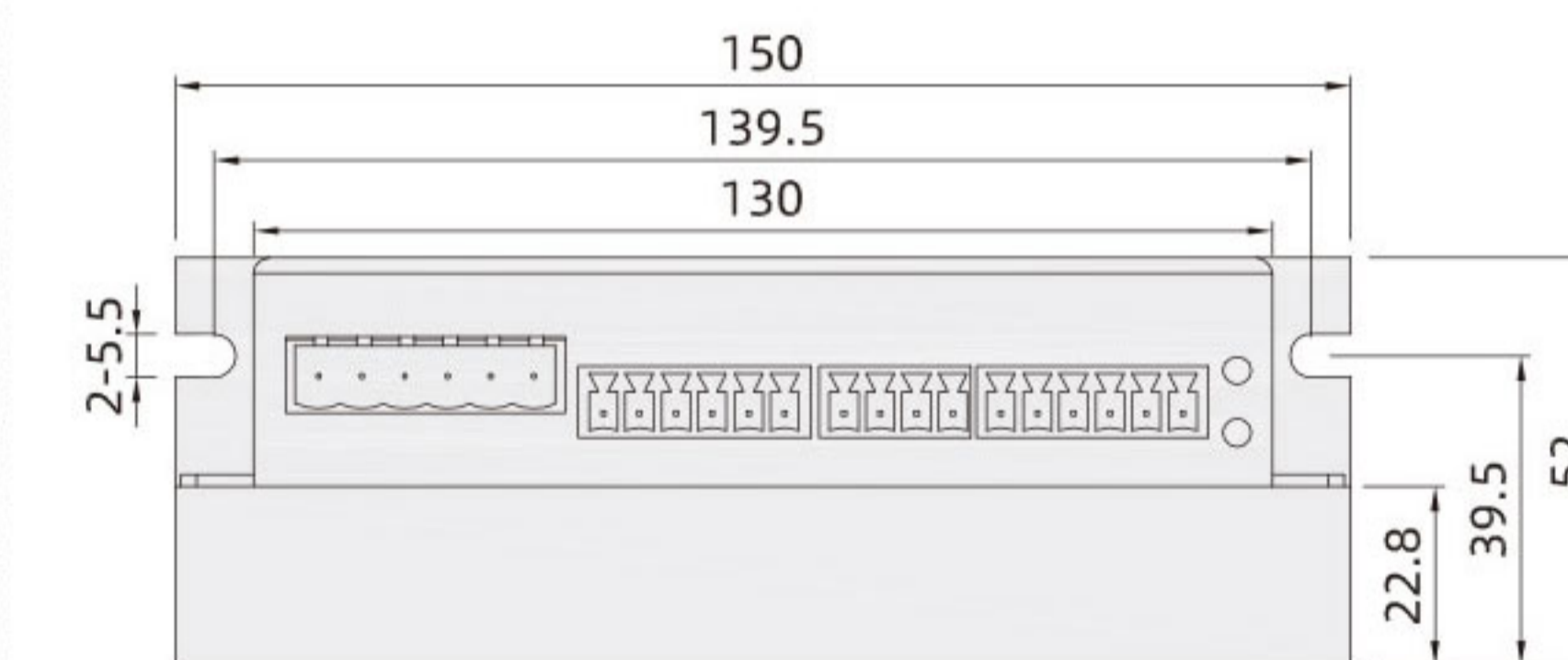
### Motor Selection (SW7 ~ SW8)

The SSA driver is factory-default matched with the following hybrid servo motors:

Motor	SW7	SW8
φ60 3.0N.m	ON	ON
φ86 4.5N.m	OFF	ON
φ86 8.5N.m	ON	OFF
φ86 12N.m	OFF	OFF

⚠ Note: Hybrid servo motors from other manufacturers are also compatible. Other motor frames, such as 28 frame, 35 frame, etc., can be matched with hybrid servo motors (default assumed to be 86 frame motors), but please contact us for confirmation!

## Installation Dimensions Diagram and Status Indicators



The green LED is the power indicator light. When the driver is powered on, this LED stays on; when the driver is powered off, this LED turns off.

The red LED is the fault indicator light. When a fault occurs, this indicator flashes in a 3-second cycle; when the fault is cleared by the user, the red LED stays on steadily. The number of red LED flashes within 3 seconds represents different fault information. Details are shown in the table below:

No.	LED Flash Pattern	Fault Description	Solution
1	Green light steady on	Driver operating normally	—
2	Red light flashes once	Driver overcurrent	Check for short circuit or phase error
3	Red light flashes twice	Driver input power overvoltage	Lower the power supply voltage
4	Red light flashes thrice	Driver input power undervoltage	Increase power supply capacity
5	Red light flashes seven times	Encoder tracking error fault	Check motor wiring

### Precautions:

- Only technical personnel are allowed to install, test, or maintain this product.
- Do not plug or unplug the driver and motor terminals while powered.
- To prevent interference to the driver, it is recommended to use shielded cables for control signals, and ensure the shielding layer is connected to ground.
- When wiring, do not in the wire ends with solder in advance (this may cause improper connections).



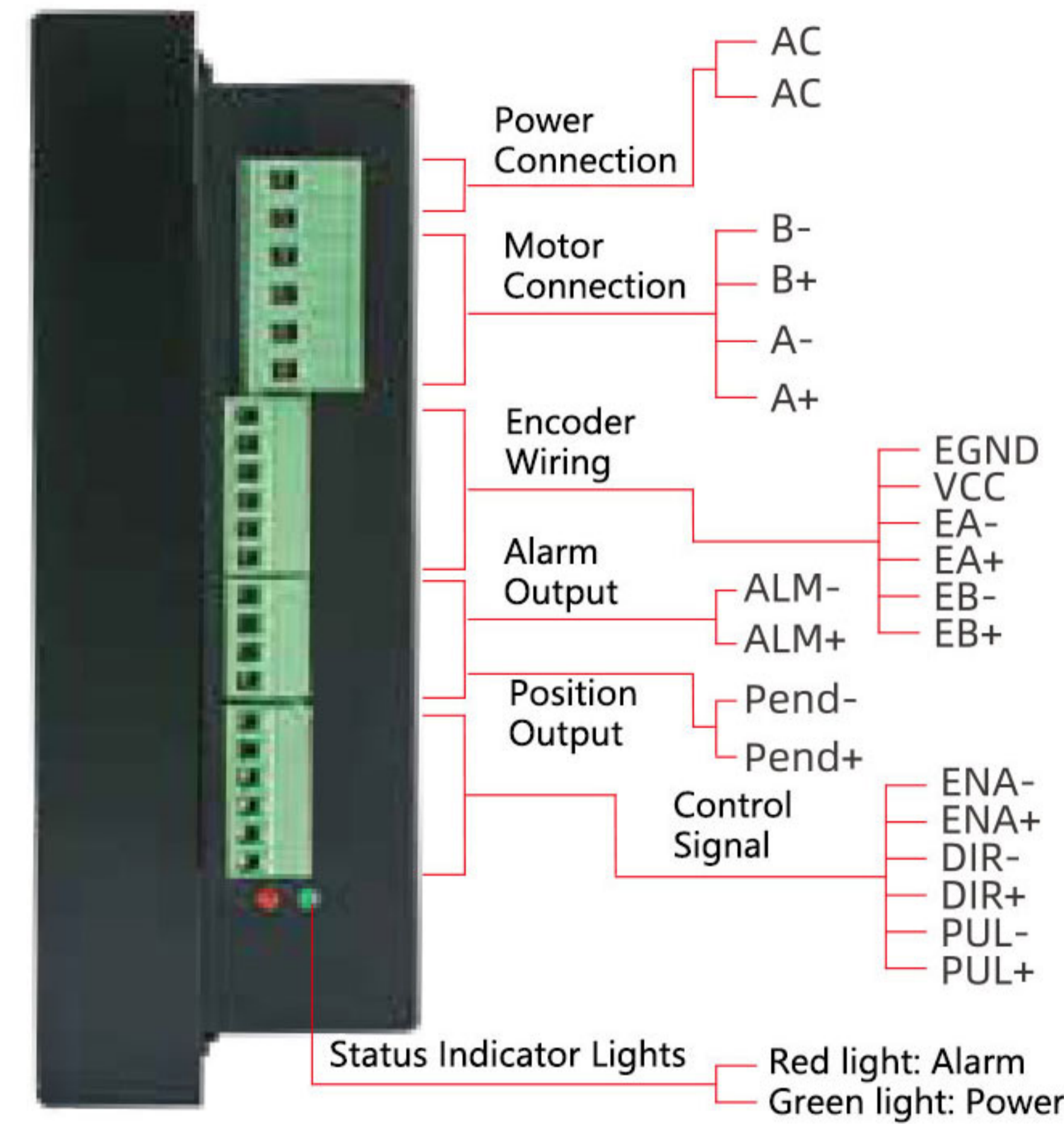
- Using a brand-new 32-bit DSP chip dedicated to motor control
- Voltage range: AC 24 V ~ 80 V
- 16 levels of subdivision in total, with arbitrary subdivision (200-51200) configurable via host computer
- Signal input compatible with 5-24V, no external series resistor required
- Maximum pulse response frequency up to 500 KHz
- Reduced torque decay, speed can reach up to 3000 rpm
- Built-in position and alarm output for convenient monitoring and control

The image is for reference only; please refer to the actual product!

## Selection Guide

Model	Operating Voltage (VAC)	Peak Current (A)	Suitable Motor (mm)	Signal Voltage (V)	Control Signal	Encoder Lines	Encoder Type
CLA60L	80	5.0	60	5~24	Single-ended/Differential	1000	A/B Dual Channel Supports Optical and Magnetic Encoders
CLA86L	80	8.0	86	5~24	Single-ended/Differential	1000	A/B Dual Channel Supports Optical and Magnetic Encoders

### Wiring and Terminal Description



### Power and Motor Terminals

Pin Number	Signal	Function
1	AC	Power input terminal, input voltage 24~80VAC or 24~110VDC
2	AC	
3	B-	Motor winding B-
4	B+	Motor winding B+
5	A-	Motor winding A-
6	A+	Motor winding A+

### Encoder Interface

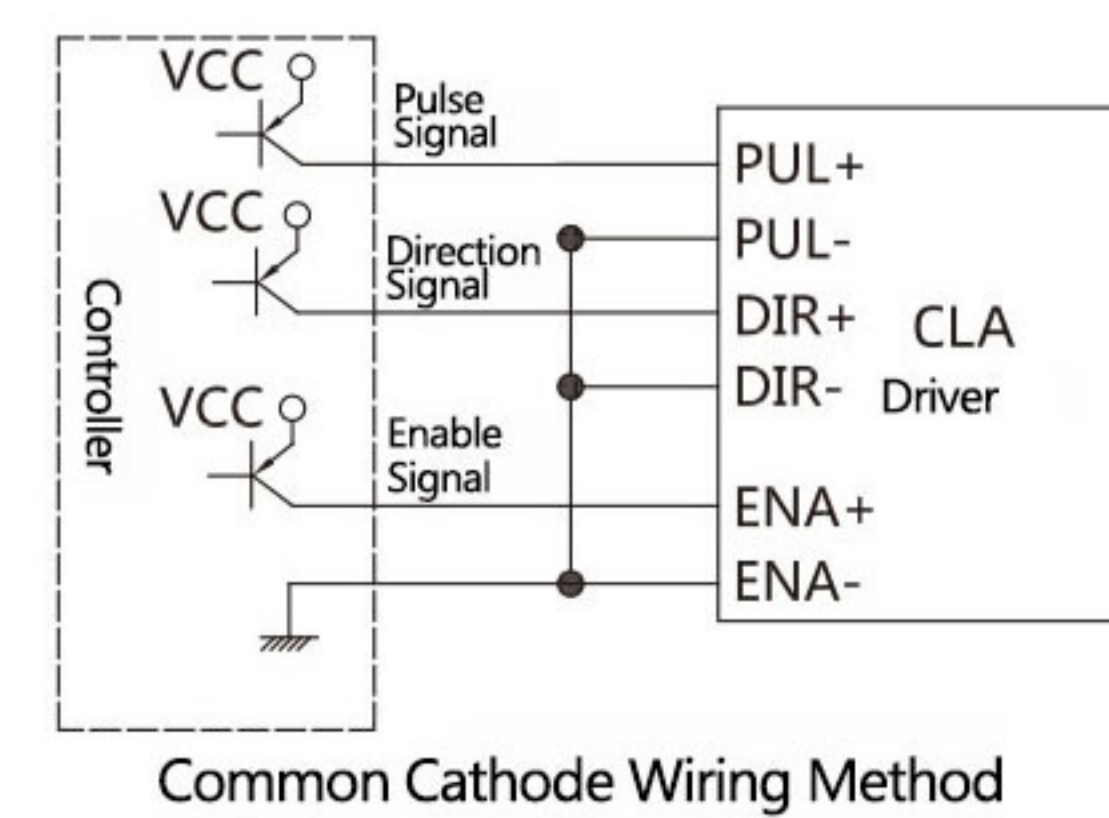
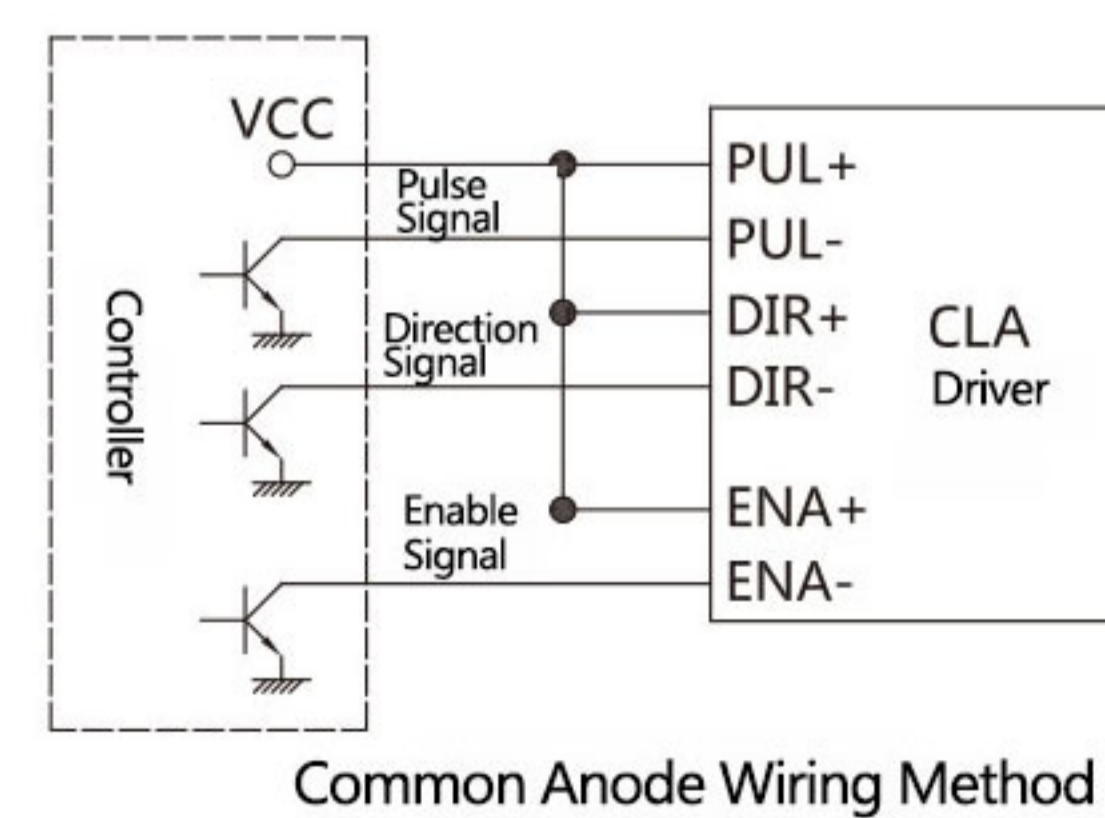
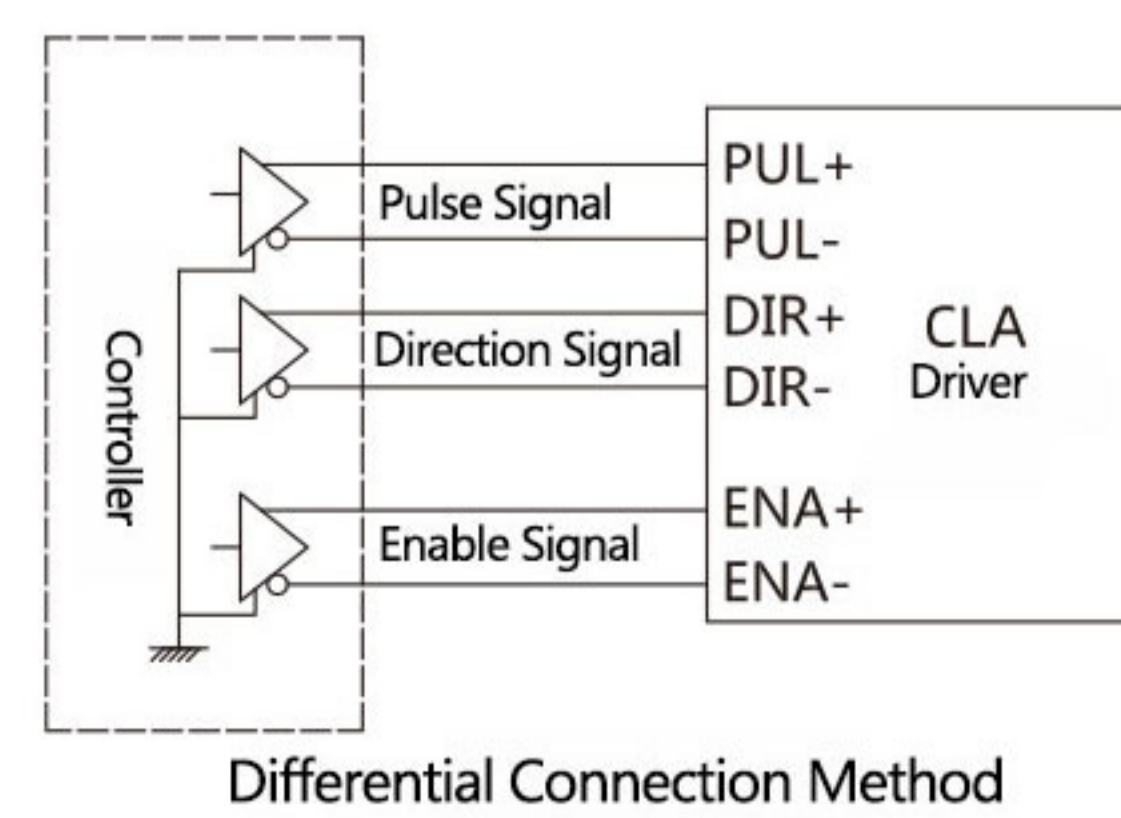
Pin Number	Signal	Function
1	EGND	Driver GND output, powers the encoder
2	VCC	Driver +5V output, powers the encoder
3	EA-	Encoder signal A- input
4	EA+	Encoder signal A+ input
5	EB-	Encoder signal B- input
6	EB+	Encoder signal B+ input

### Output Signal Interface

Terminal Number	Signal	Name	Description
1	ALM-	Alarm Output Negative	Open collector output, maximum pull-up voltage 24V, maximum output current 100mA
2	ALM+	Alarm Output Positive	
3	Pend-	Position Output Negative	
4	Pend+	Position Output Positive	

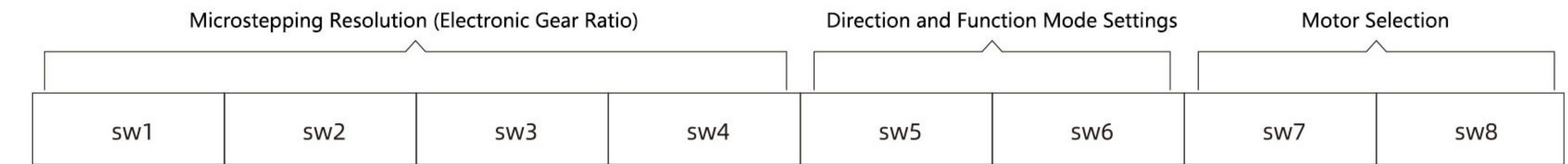
### Control Signal Connection

Pin Number	Signal	Function	Description
1	ENA-	Enable Input Negative	Compatible with 4.5V~24V DC signal
2	ENA+	Enable Input Positive	
3	DIR-	Direction Input Negative	
4	DIR+	Direction Input Positive	
5	PUL-	Pulse Input Negative	
6	PUL+	Pulse Input Positive	



## Setting Instructions

The digital integrated low-voltage servo driver uses an 8-position DIP switch to set microstepping resolution (electronic gear ratio), initial motor rotation direction, self-test, and function mode selection. The detailed description is as follows:



### Microstepping Setting (P1: SW1~SW4)

Using P1: SW1 to SW4 four-position DIP switches, a total of 16 microstepping modes can be set. Refer to the table below:

Pulses/Revolution	SW1	SW2	SW3	SW4
自设定	ON	ON	ON	ON
800	OFF	ON	ON	ON
1600	ON	OFF	ON	ON
3200	OFF	OFF	ON	ON
6400	ON	ON	OFF	ON
12800	OFF	ON	OFF	ON
25600	ON	OFF	OFF	ON
500	OFF	OFF	OFF	ON
1000	ON	ON	ON	OFF
2000	OFF	ON	ON	OFF
4000	ON	OFF	ON	OFF
5000	OFF	OFF	ON	OFF
8000	ON	ON	OFF	OFF
10000	OFF	ON	OFF	OFF
3600	ON	OFF	OFF	OFF
7200	OFF	OFF	OFF	OFF

▲ Note: Microstepping can increase the resolution per step, but its main effect is not to improve motor accuracy, rather to improve motor performance.

### Initial Direction Setting (sw5)

When DIP switch SW5 is ON, the motor rotates clockwise (CW). When OFF, the motor rotates counterclockwise (CCW).

### Function Mode Selection (SW6)

SW6	Control Mode	Applicable Scenario
OFF	Field Oriented Control (FOC)	Suitable for general continuous operation with short stroke
OFF	Fast Start/Stop Mode (Lead)	Suitable for short stroke, high-frequency start/stop, and direction change positioning applications

▲ Note: If neither of the above control modes is suitable, please contact our application engineers.

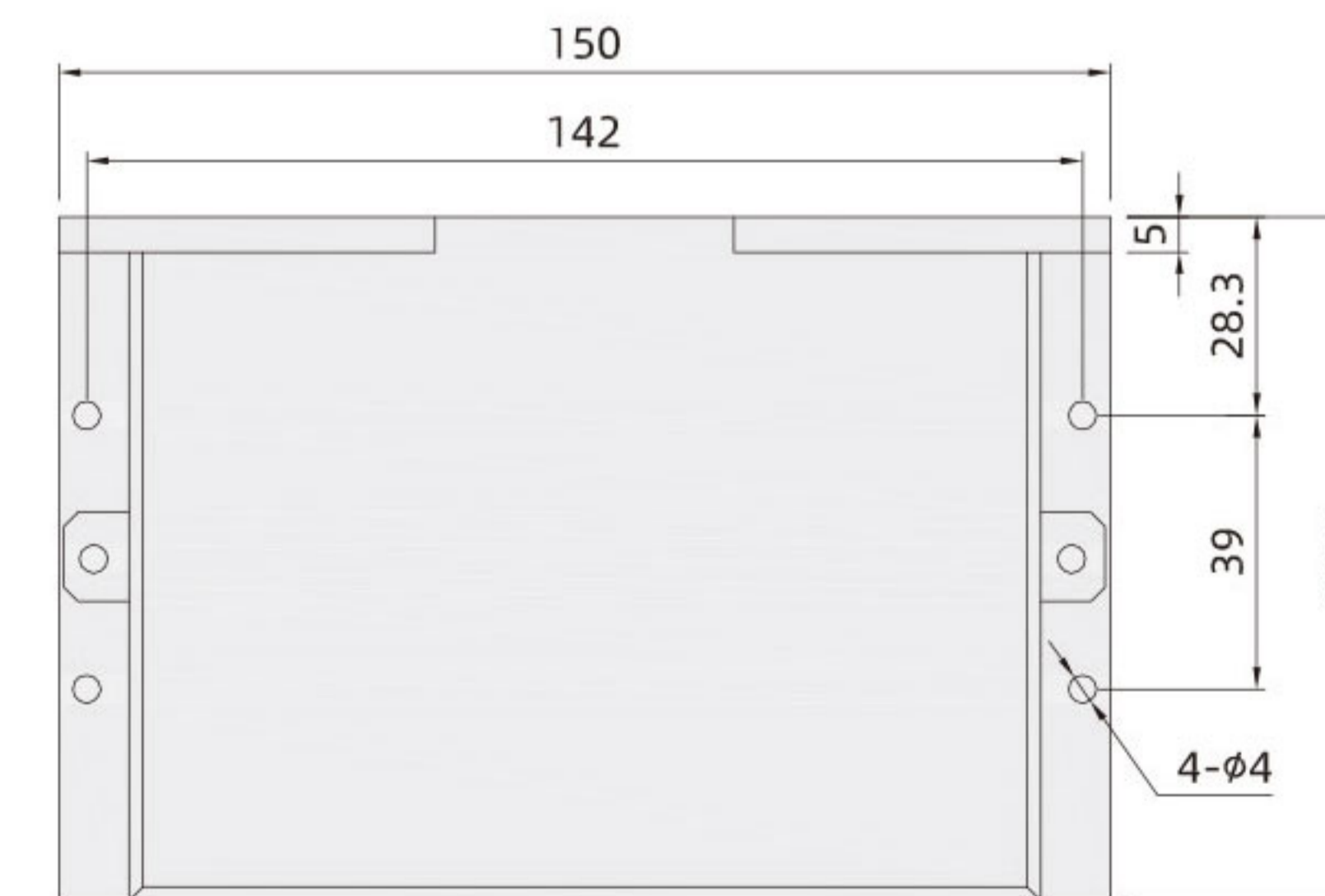
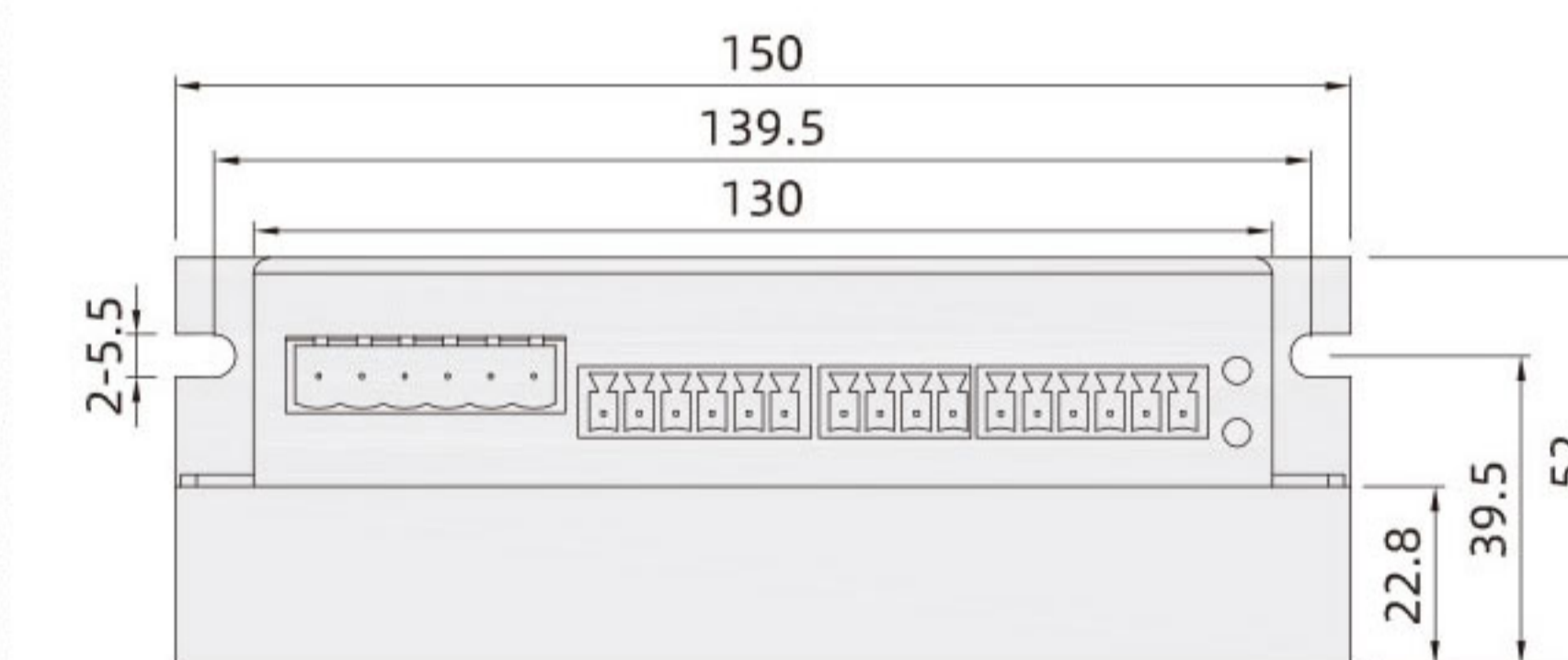
### Motor Selection (SW7 ~ SW8)

The SSA driver is factory-default matched with the following hybrid servo motors:

Motor	SW7	SW8
φ60 3.0N.m	ON	ON
φ86 4.5N.m	OFF	ON
φ86 8.5N.m	ON	OFF
φ86 12N.m	OFF	OFF

▲ Note: Hybrid servo motors from other manufacturers are also compatible. Other motor frames, such as 28 frame, 35 frame, etc., can be matched with hybrid servo motors (default assumed to be 86 frame motors), but please contact us for confirmation!

## Installation Dimensions Diagram and Status Indicators



The green LED is the power indicator light. When the driver is powered on, this LED stays on; when the driver is powered off, this LED turns off. The red LED is the fault indicator light. When a fault occurs, this indicator flashes in a 3-second cycle; when the fault is cleared by the user, the red LED stays on steadily. The number of red LED flashes within 3 seconds represents different fault information. Details are shown in the table below:

No.	LED Flash Pattern	Fault Description	Solution
1	Green light steady on	Driver operating normally	—
2	Red light flashes once	Driver overcurrent	Check for short circuit or phase error
3	Red light flashes twice	Driver input power overvoltage	Lower the power supply voltage
4	Red light flashes thrice	Driver input power undervoltage	Increase power supply capacity
5	Red light flashes seven times	Encoder tracking error fault	Check motor wiring

### Precautions:

- Only technical personnel are allowed to install, test, or maintain this product.
- Do not plug or unplug the driver and motor terminals while powered.
- To prevent interference to the driver, it is recommended to use shielded cables for control signals, and ensure the shielding layer is connected to ground.
- When wiring, do not in the wire ends with solder in advance (this may cause improper connections).



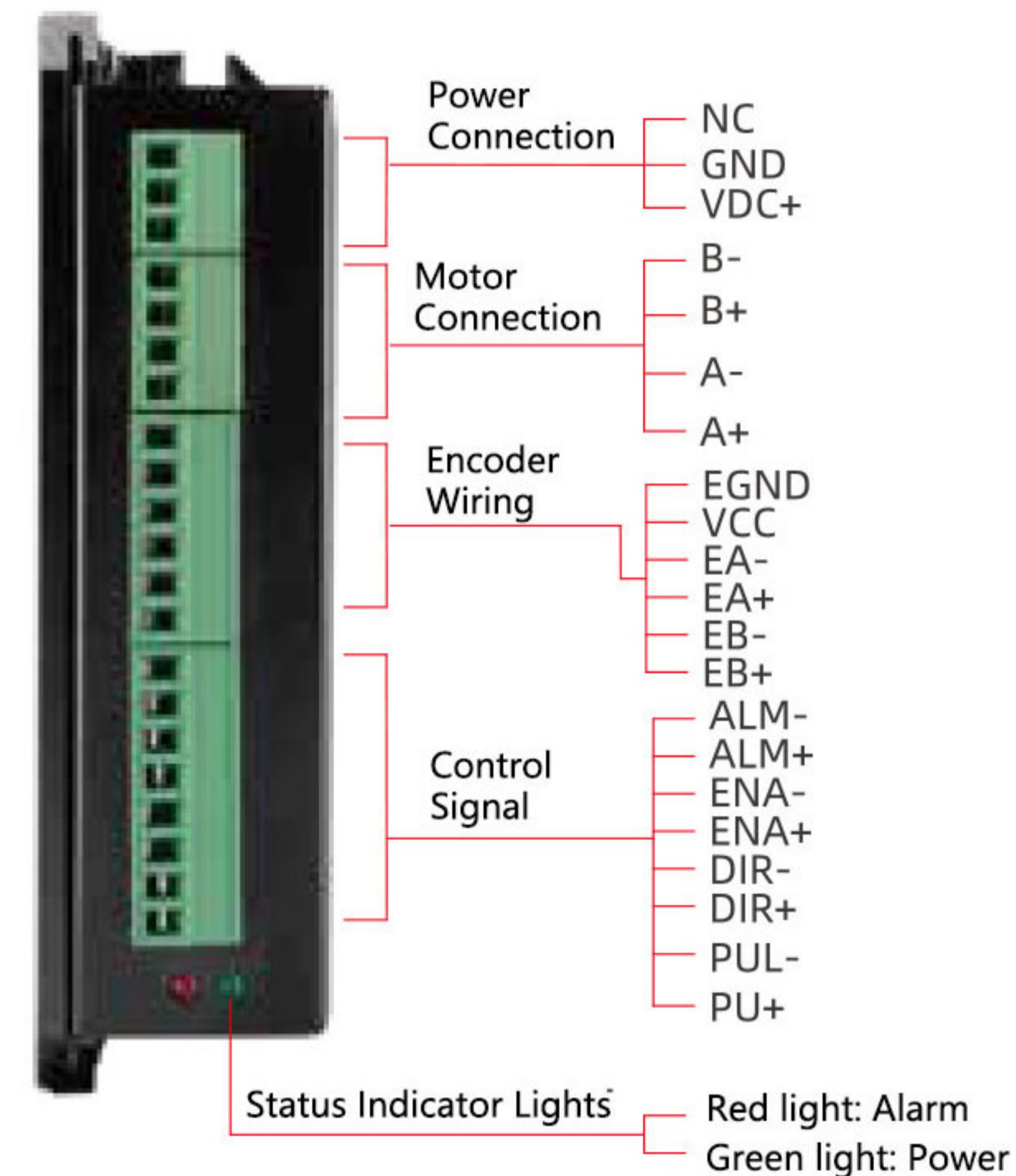
- Uses a brand-new 32-bit DSP chip dedicated to motor control
- Voltage range: 24 to 80 VDC
- 16 levels of microstepping, configurable to any value between 200 and 51200 via host computer
- Signal input compatible with 5-24V, no external pull-up resistor required
- Maximum pulse response frequency up to 200 KHz
- Low torque ripple, speed up to 2000 rpm
- Built-in position and alarm output for convenient monitoring and control

The image is for reference only; please refer to the actual product!

## Selection Guide

Model	Operating Voltage (VAC)	Peak Current (A)	Suitable Motor (mm)	Signal Voltage (V)	Control Signal	Encoder Lines	Encoder Type
SSD42L	24~80	2.5	20/28/35/42	5~24 compatible	Single-ended/Differential	2500	A/B Dual Channel Supports Optical and Magnetic Encoders
SSD57L	24~80	5.0	57	5~24 compatible	Single-ended/Differential	2500	
SSD60L	24~80	6.0	60	5~24 compatible	Single-ended/Differential	2500	
SSD86L	24~80	7.0	86	5~24 compatible	Single-ended/Differential	2500	

### Wiring and Terminal Description



### Power Terminals

Pin Number	Signal	Function
1	NC	No signal connected
2	GND	Power input negative terminal
3	VDC+	Power input positive terminal, input voltage 24~80 VDC

### Encoder Interface

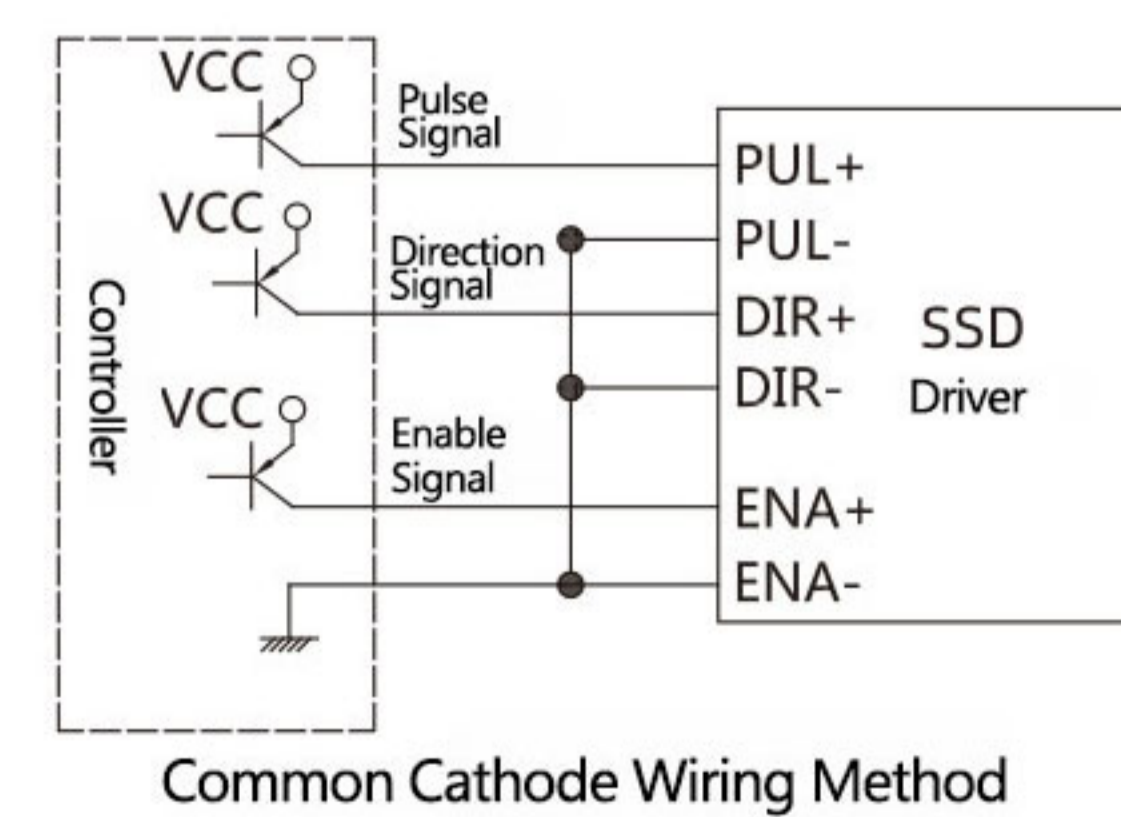
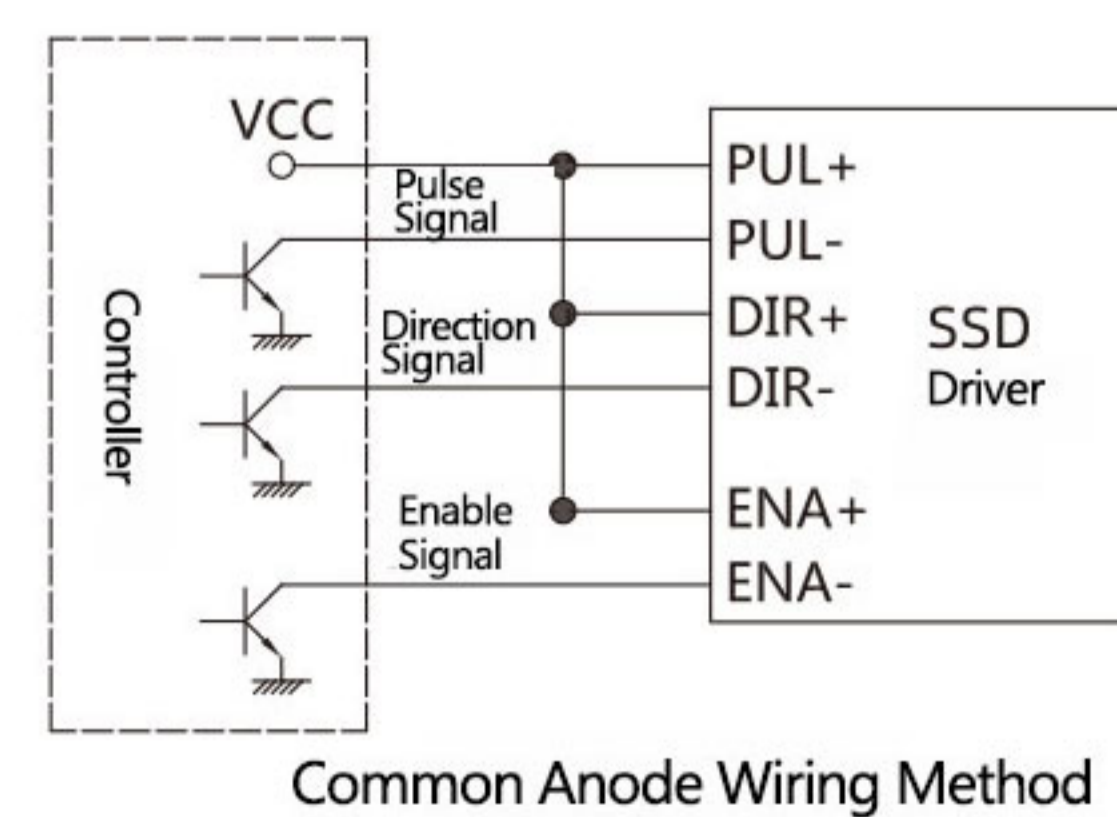
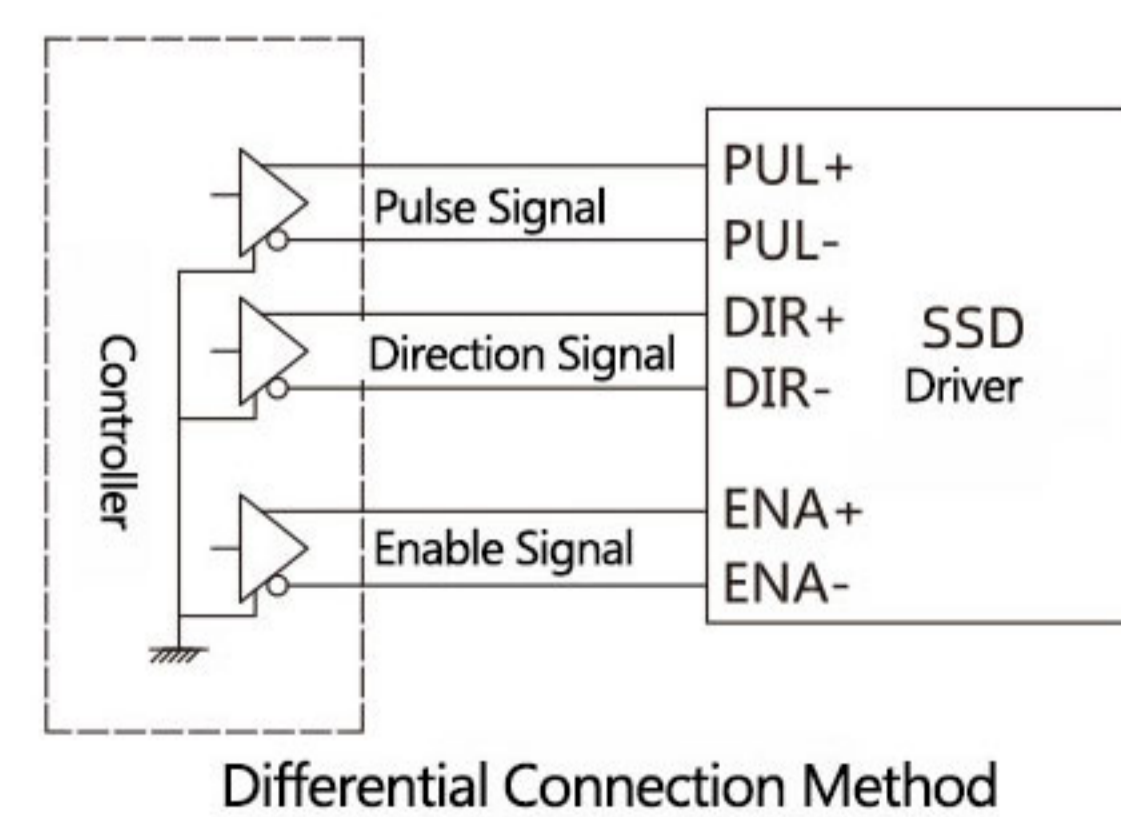
Pin Number	Signal	Function
1	B-	Motor winding B-
2	B+	Motor winding B+
3	A-	Motor winding A-
4	A+	Motor winding A+

### Control Signal Connection

Pin Number	Signal	Function	Description
1	ALM-	Fault output negative terminal	OC output, defaults to low level when fault occurs (30VDC/100mA max).
2	ALM+	Fault output positive terminal	
3	ENA-	Enable input negative terminal	Compatible with 4.5V~24V DC signal
4	ENA+	Enable input positive terminal	
5	DIR-	Direction input negative terminal	
6	DIR+	Direction input positive terminal	
7	PUL-	Pulse input negative terminal	
8	PUL+	Pulse input positive terminal	

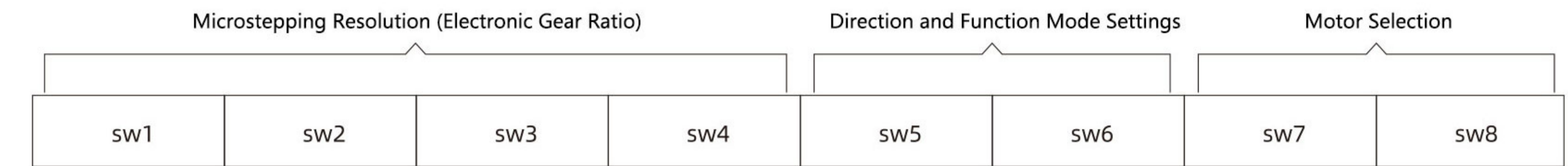
### Encoder Interface

Pin Number	Signal	Function
1	EGND	Driver GND output, provides power to encoder
2	VCC	Driver +5V output, provides power to encoder
3	EA-	Encoder signal A- input
4	EA+	Encoder signal A+ input
5	EB-	Encoder signal B- input
6	EB+	Encoder signal B+ input



## Setting Instructions

The digital integrated low-voltage servo driver uses an 8-position DIP switch to set microstepping resolution (electronic gear ratio), initial motor rotation direction, self-test, and function mode selection. The detailed description is as follows:



### Microstepping Setting (P1: SW1~SW4)

Using P1: SW1 to SW4 four-position DIP switches, a total of 16 microstepping modes can be set. Refer to the table below:

Pulses/Revolution	SW1	SW2	SW3	SW4
Self-Setting	ON	ON	ON	ON
800	OFF	ON	ON	ON
1600	ON	OFF	ON	ON
3200	OFF	OFF	ON	ON
6400	ON	ON	OFF	ON
12800	OFF	ON	OFF	ON
25600	ON	OFF	OFF	ON
500	OFF	OFF	OFF	ON
1000	ON	ON	ON	OFF
2000	OFF	ON	ON	OFF
4000	ON	OFF	ON	OFF
5000	OFF	OFF	ON	OFF
8000	ON	ON	OFF	OFF
10000	OFF	ON	OFF	OFF
3600	ON	OFF	OFF	OFF
7200	OFF	OFF	OFF	OFF

Note: Microstepping can increase the resolution per step, but its main effect is not to improve motor accuracy, rather to improve motor performance.

### Initial Direction Setting (sw5)

When DIP switch SW5 is ON, the motor rotates clockwise (CW). When OFF, the motor rotates counterclockwise (CCW).

### Function Mode Selection (SW6)

SW6	Control Mode	Applicable Scenario
OFF	Field Oriented Control (FOC)	Suitable for general continuous operation with short stroke
OFF	Fast Start/Stop Mode (Lead)	Suitable for short stroke, high-frequency start/stop, and direction change positioning applications

Note: If neither of the above control modes is suitable, please contact our application engineers.

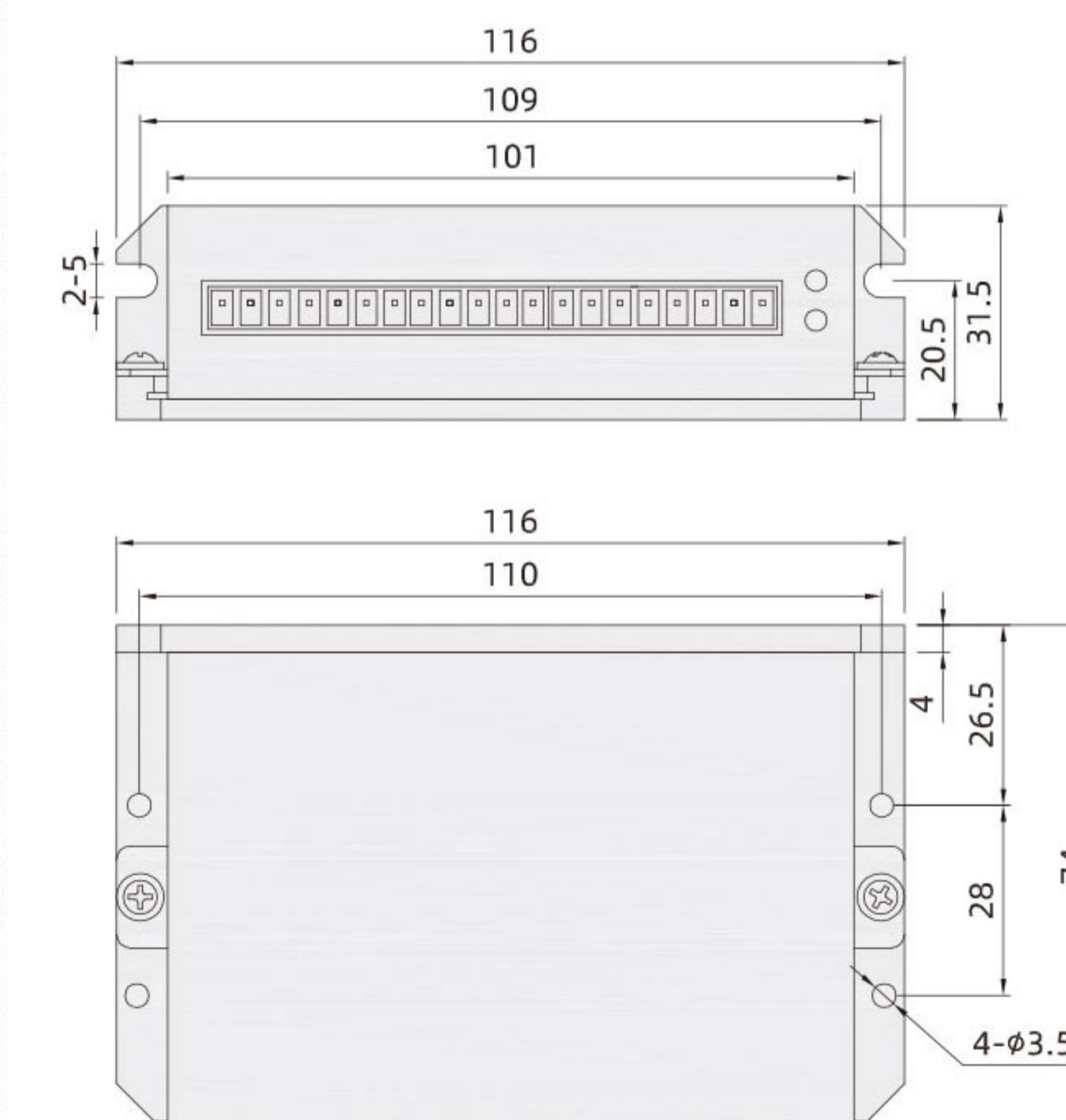
### Motor Selection (SW7 ~ SW8)

The CLD driver is factory-default matched with the following hybrid servo motors:

Motor	SW7	SW8
φ42	ON	ON
φ57	OFF	ON
φ60	ON	OFF
Other	OFF	OFF

Note: The factory default is an 86mm frame motor. Other specifications of hybrid servo motors can also be matched. For example, 28mm, 42mm frame hybrid servo motors. Please confirm with our sales staff before purchasing!

## Installation Dimensions Diagram and Status Indicators



The green LED is the power indicator light. When the driver is powered on, this LED stays on; when the driver is powered off, this LED turns off. The red LED is the fault indicator light. When a fault occurs, this indicator flashes in a 3-second cycle; when the fault is cleared by the user, the red LED stays on steadily. The number of red LED flashes within 3 seconds represents different fault information. Details are shown in the table below:

No.	LED Flash Pattern	Fault Description	Solution
1	Green light steady on	Driver operating normally	—
2	Red light flashes once	Driver overcurrent	Check for short circuit or phase error
3	Red light flashes twice	Driver input power overvoltage	Lower the power supply voltage
4	Red light flashes thrice	Driver input power undervoltage	Increase power supply capacity
5	Red light flashes seven times	Encoder tracking error fault	Check motor wiring

### Precautions:

- Only technical personnel are allowed to install, test, or maintain this product.
- Do not plug or unplug the driver and motor terminals while powered.
- To prevent interference to the driver, it is recommended to use shielded cables for control signals, and ensure the shielding layer is connected to ground.
- When wiring, do not in the wire ends with solder in advance (this may cause improper connections).



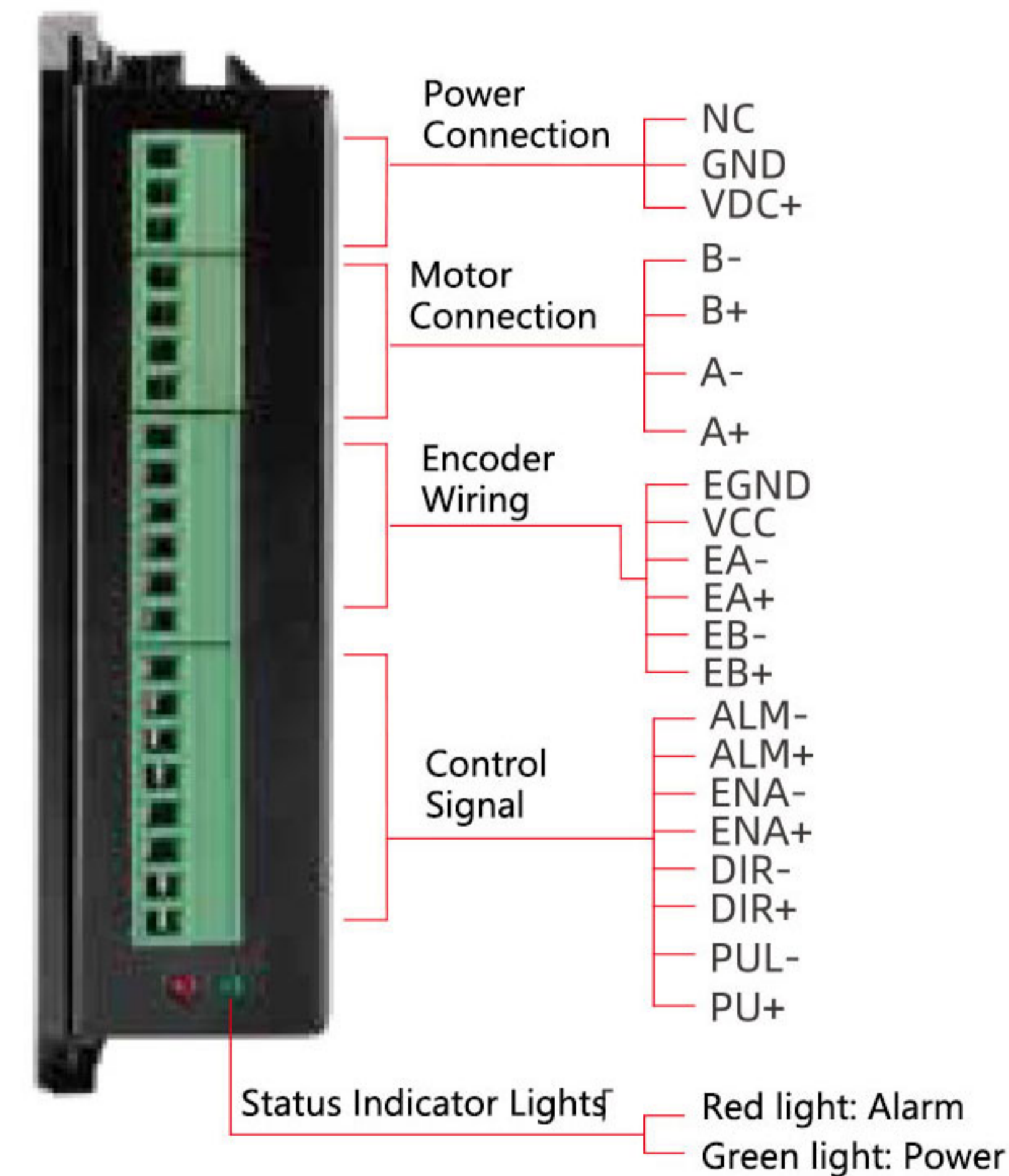
- Uses a brand-new 32-bit DSP chip dedicated to motor control
- Voltage range: 24 to 80 VDC
- 16 levels of microstepping, configurable to any value between 200 and 51200 via host computer
- Signal input compatible with 5-24V, no external pull-up resistor required
- Maximum pulse response frequency up to 200 KHz
- Low torque ripple, speed up to 2000 rpm
- Built-in position and alarm output for convenient monitoring and control

The image is for reference only; please refer to the actual product!

## Selection Guide

Model	Operating Voltage (VAC)	Peak Current (A)	Suitable Motor (mm)	Signal Voltage (V)	Control Signal	Encoder Lines	Encoder Type
CLD42L	24~80	2.5	20/28/35/42	5~24 compatible	Single-ended/Differential	1000	A/B Dual Channel Supports Optical and Magnetic Encoders
CLD57L	24~80	5.0	57	5~24 compatible	Single-ended/Differential	1000	
CLD60L	24~80	6.0	60	5~24 compatible	Single-ended/Differential	1000	
CLD86L	24~80	7.0	86	5~24 compatible	Single-ended/Differential	1000	

### Wiring and Terminal Description



### Power Terminals

Pin Number	Signal	Function
1	NC	No signal connected
2	GND	Power input negative terminal
3	VDC+	Power input positive terminal, input voltage 24~80 VDC

### Encoder Interface

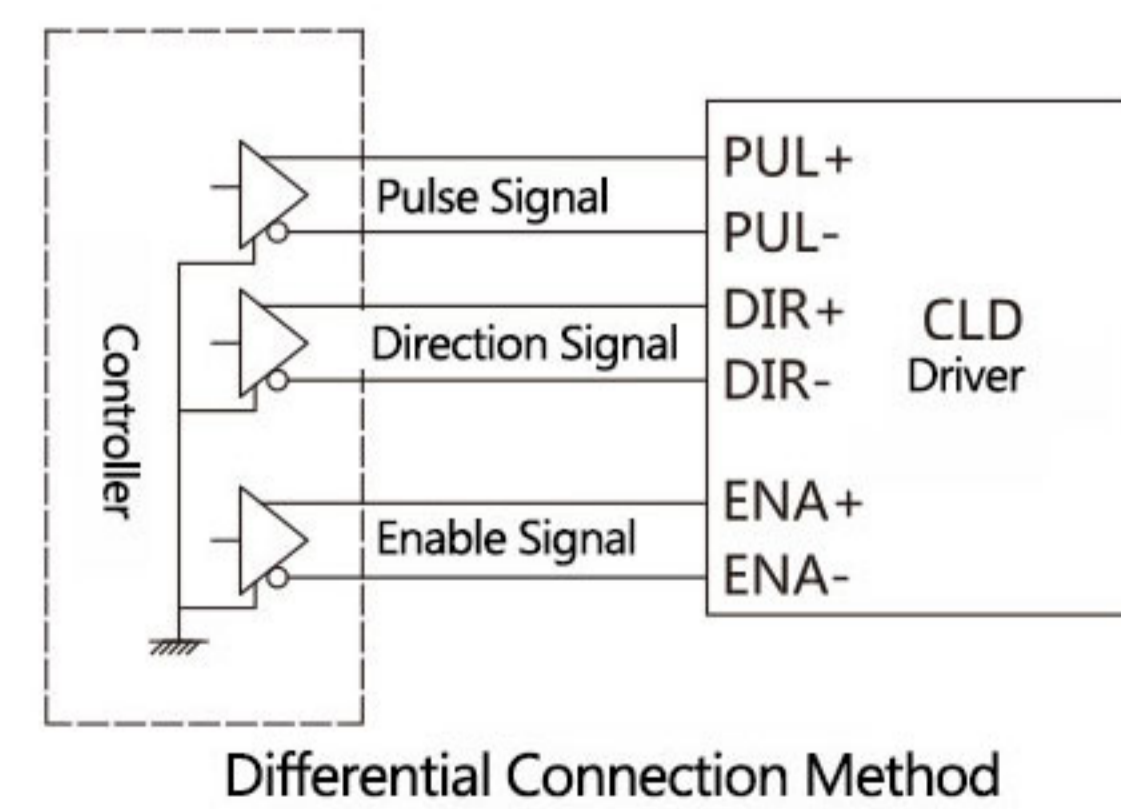
Pin Number	Signal	Function
1	B-	Motor winding B-
2	B+	Motor winding B+
3	A-	Motor winding A-
4	A+	Motor winding A+

### Control Signal Connection

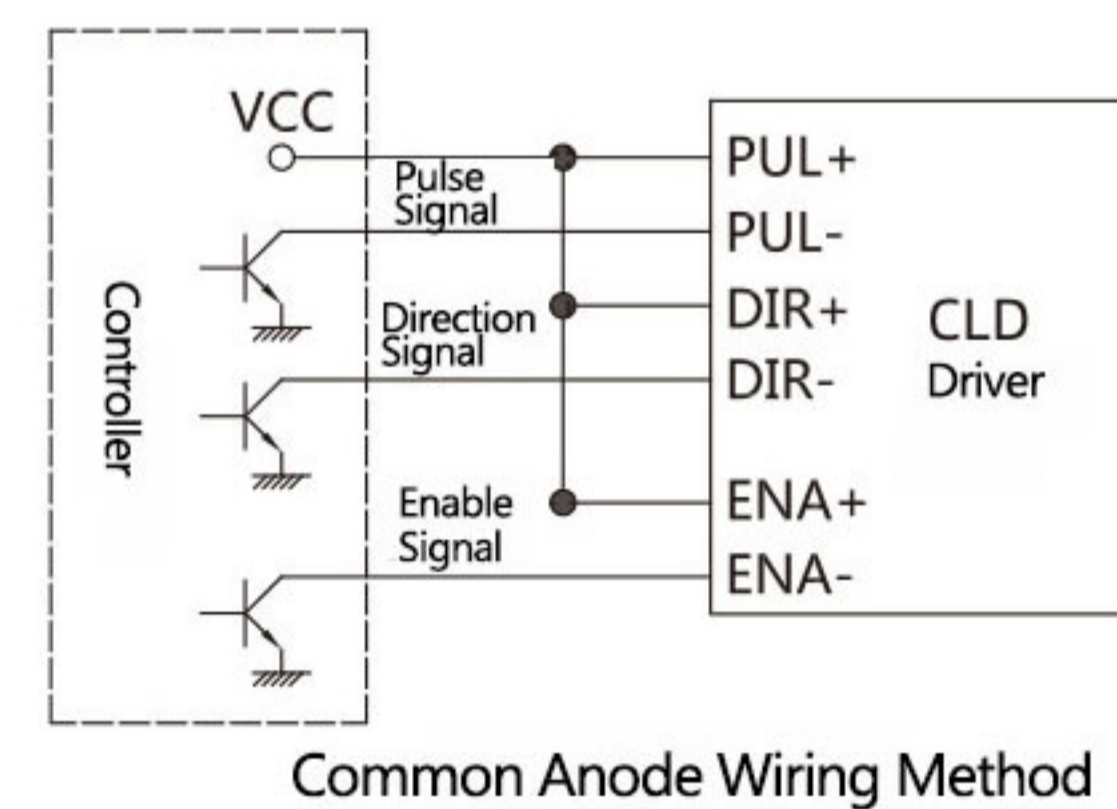
Pin Number	Signal	Function	Description
1	ALM-	Fault output negative terminal	OC output, defaults to low level when fault occurs (30VDC/100mA max).
2	ALM+	Fault output positive terminal	
3	ENA-	Enable input negative terminal	Compatible with 4.5V~24V DC signal
4	ENA+	Enable input positive terminal	
5	DIR-	Direction input negative terminal	
6	DIR+	Direction input positive terminal	
7	PUL-	Pulse input negative terminal	
8	PUL+	Pulse input positive terminal	

### Encoder Interface

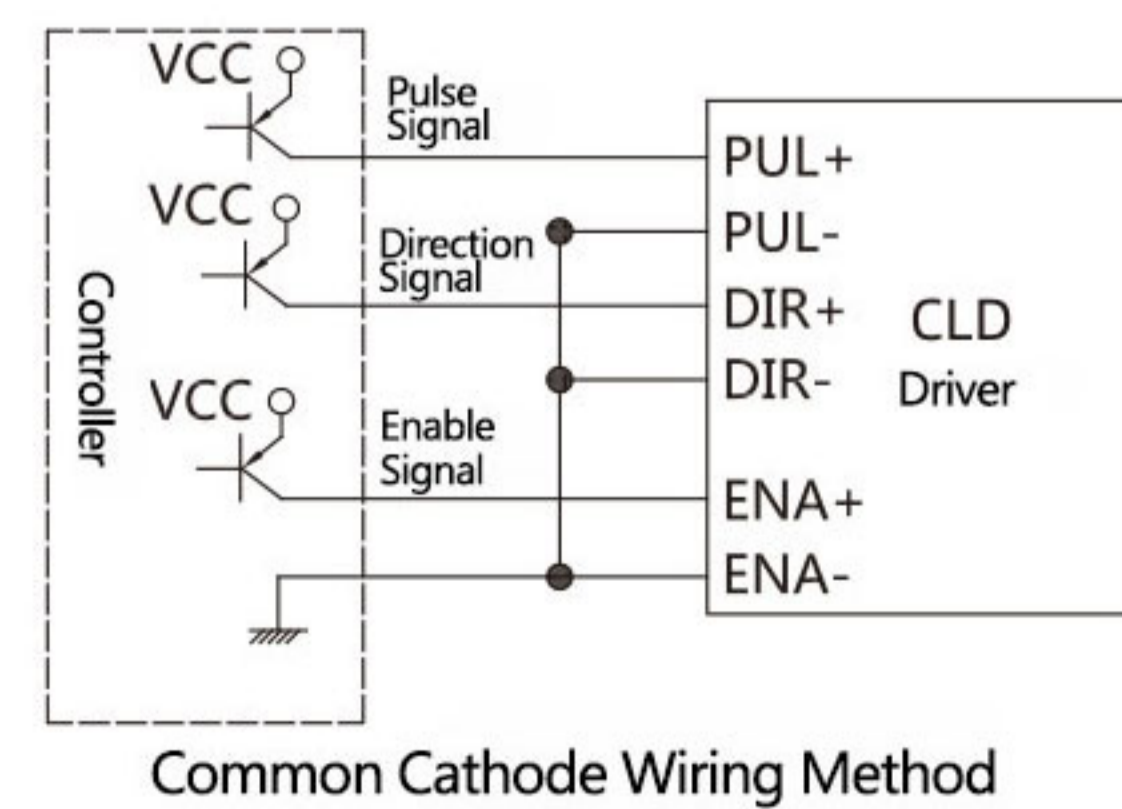
Pin Number	Signal	Function
1	EGND	Driver GND output, provides power to encoder
2	VCC	Driver +5V output, provides power to encoder
3	EA-	Encoder signal A- input
4	EA+	Encoder signal A+ input
5	EB-	Encoder signal B- input
6	EB+	Encoder signal B+ input



Differential Connection Method



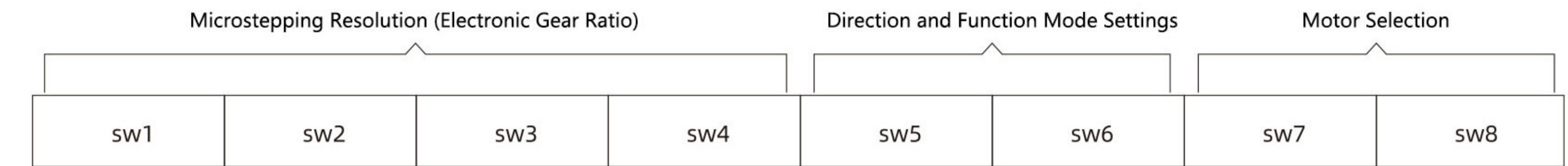
Common Anode Wiring Method



Common Cathode Wiring Method

## Setting Instructions

The digital integrated low-voltage servo driver uses an 8-position DIP switch to set microstepping resolution (electronic gear ratio), initial motor rotation direction, self-test, and function mode selection. The detailed description is as follows:



### Microstepping Setting (P1: SW1~SW4)

Using P1: SW1 to SW4 four-position DIP switches, a total of 16 microstepping modes can be set. Refer to the table below:

Pulses/Revolution	SW1	SW2	SW3	SW4
Self-Setting	ON	ON	ON	ON
800	OFF	ON	ON	ON
1600	ON	OFF	ON	ON
3200	OFF	OFF	ON	ON
6400	ON	ON	OFF	ON
12800	OFF	ON	OFF	ON
25600	ON	OFF	OFF	ON
500	OFF	OFF	OFF	ON
1000	ON	ON	ON	OFF
2000	OFF	ON	ON	OFF
4000	ON	OFF	ON	OFF
5000	OFF	OFF	ON	OFF
8000	ON	ON	OFF	OFF
10000	OFF	ON	OFF	OFF
3600	ON	OFF	OFF	OFF
7200	OFF	OFF	OFF	OFF

Note: Microstepping can increase the resolution per step, but its main effect is not to improve motor accuracy, rather to improve motor performance.

### Initial Direction Setting (sw5)

When DIP switch SW5 is ON, the motor rotates clockwise (CW). When OFF, the motor rotates counterclockwise (CCW).

### Function Mode Selection (SW6)

SW6	Control Mode	Applicable Scenario
OFF	Field Oriented Control (FOC)	Suitable for general continuous operation with short stroke
OFF	Fast Start/Stop Mode (Lead)	Suitable for short stroke, high-frequency start/stop, and direction change positioning applications

Note: If neither of the above control modes is suitable, please contact our application engineers.

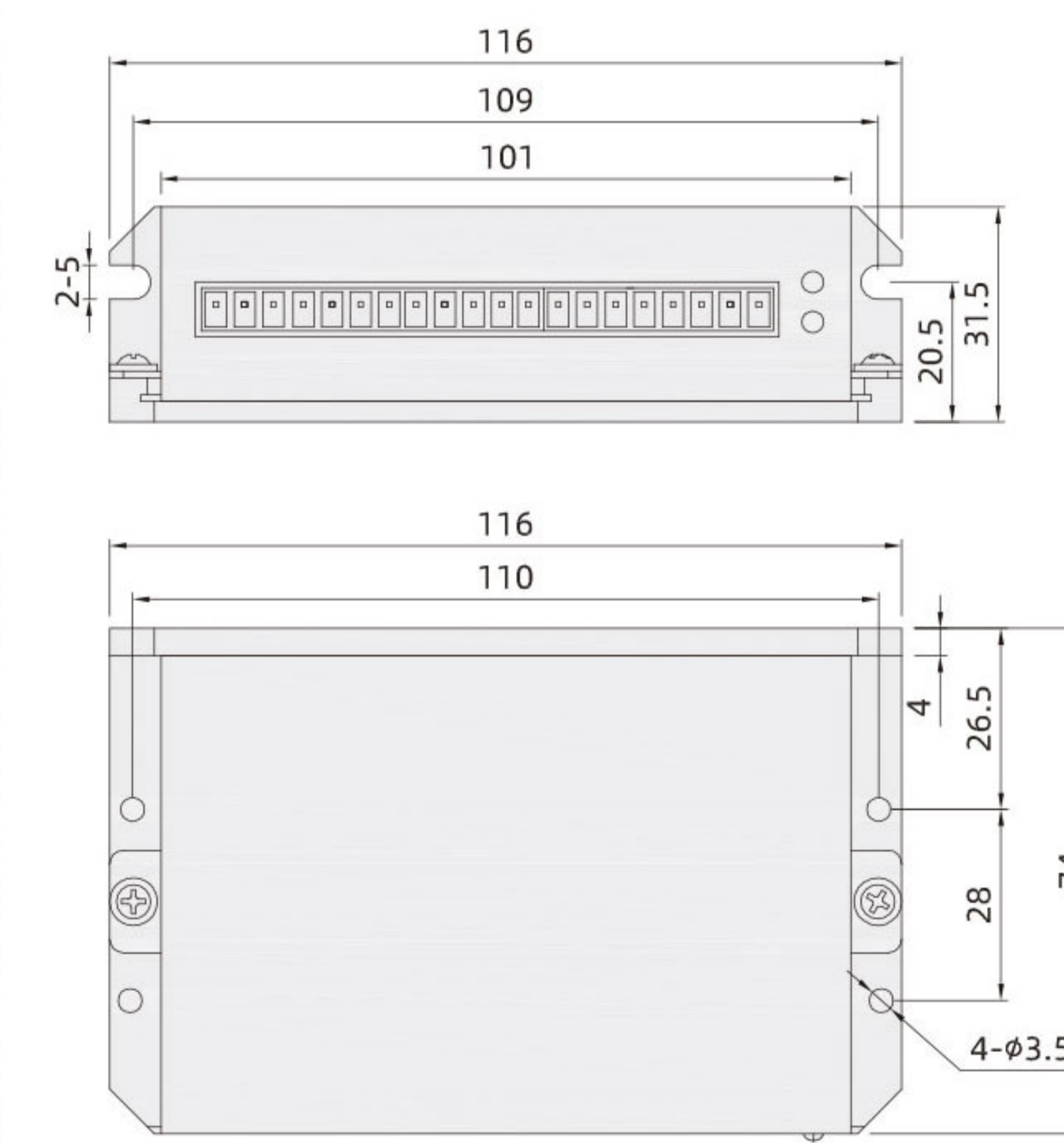
### Motor Selection (SW7 ~ SW8)

The CLD driver is factory-default matched with the following hybrid servo motors:

Motor	SW7	SW8
φ42	ON	ON
φ57	OFF	ON
φ60	ON	OFF
Other	OFF	OFF

Note: The factory default is an 86mm frame motor. Other specifications of hybrid servo motors can also be matched. For example, 28mm, 42mm frame hybrid servo motors. Please confirm with our sales staff before purchasing!

## Installation Dimensions Diagram and Status Indicators



The green LED is the power indicator light. When the driver is powered on, this LED stays on; when the driver is powered off, this LED turns off. The red LED is the fault indicator light. When a fault occurs, this indicator flashes in a 3-second cycle; when the fault is cleared by the user, the red LED stays on steadily. The number of red LED flashes within 3 seconds represents different fault information. Details are shown in the table below:

No.	LED Flash Pattern	Fault Description	Solution
1	Green light steady on	Driver operating normally	—
2	Red light flashes once	Driver overcurrent	Check for short circuit or phase error
3	Red light flashes twice	Driver input power overvoltage	Lower the power supply voltage
4	Red light flashes thrice	Driver input power undervoltage	Increase power supply capacity
5	Red light flashes seven times	Encoder tracking error fault	Check motor wiring

### Precautions:

- Only technical personnel are allowed to install, test, or maintain this product.
- Do not plug or unplug the driver and motor terminals while powered.
- To prevent interference to the driver, it is recommended to use shielded cables for control signals, and ensure the shielding layer is connected to ground.
- When wiring, do not in the wire ends with solder in advance (this may cause improper connections).

# R Series Brushless Motor Driver



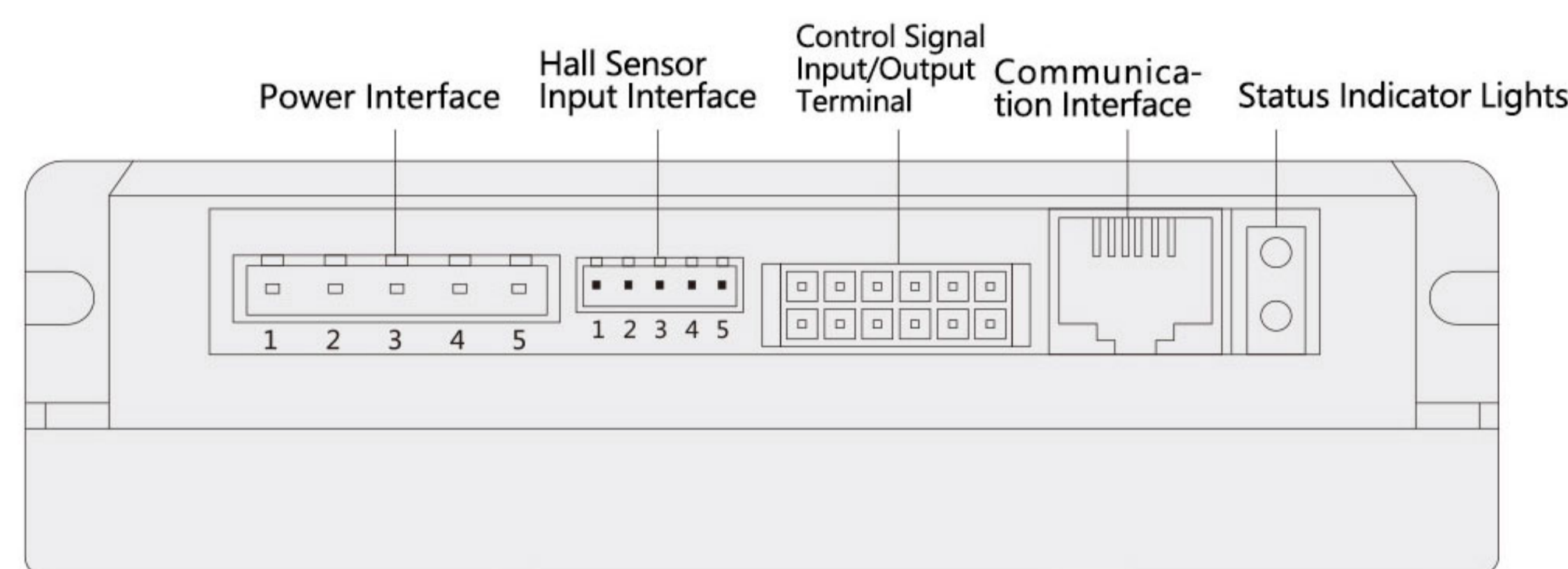
The image is for reference only; please refer to the actual product!

- Speed PID closed-loop control with large torque at low speeds.
- Acceleration and deceleration times can be set via software to achieve smooth and flexible operation.
- Multiple speed control methods are configurable through software.
- Speed range: 0-10000 RPM, with a maximum speed limit.
- The driver has low self-loss, high efficiency, low temperature rise, compact size, and is easy to install.
- Various comprehensive protection functions are provided.

## Model Specifications

Item	Model	
	DBL-2420	DBL-4820
Rated Voltage VDC	22-36	27-56
Continuous Current A	10	10
Rated Power W	200	450
Speed Control Method	0-5V Analog Input, 0-100% PWM Input, Multi-speed Setting Internally	
Speed Range RPM	0 - 30000	
Dimensions mm	120×76×33	

## Product Overview



P3: Control Signal Input/Output Pin List		
Pin Number	Pin Name	Description
1	GND	Signal Ground
2	ALM	Alarm output (open drain), current limited within 20mA
3	X3	Multi-speed input 1
4	PG	Hall signal fault or output (open drain), current limited within 20mA
5	X2	Multi-speed input 2
6	5V	5V power output, output current should be less than 20mA (internally linear power supply, excessive current may cause overheating)
7	X1	Multi-speed input 3
8	SV	Analog signal input
9	FR	Direction control signal
10	GND	Signal Ground
11	EN	Enable signal, active low
12	BK	Brake signal, high level for braking, normally connected to GND

## Control Terminal Function Description

**SV Analog/PWM Input Terminal:** The SV terminal is used for analog input or PWM input. When the input setting in the BLDC\_2 software is set to "Analog Input" or "PWM Input" mode, the quantity input at this terminal acts as the speed setpoint.

**FR Forward/Reverse Direction Control Terminal:** The FR terminal is used to control the rotation direction of the motor. When the FR terminal switches different logic levels, it sets the acceleration/deceleration time accordingly: first decelerating to 0, then switching direction, and then accelerating from 0 to the set value. If the motor is driving a load with large inertia, the acceleration and deceleration time should be appropriately increased; otherwise, there may be overcurrent or overvoltage during direction switching.

**EN Motor Enable Terminal:** The EN pin controls the start and stop of the motor by connecting or disconnecting to GND. Only when the EN pin is connected to GND are other operations permitted. If disconnected, the motor is in a free state and other operations are prohibited. When a fault occurs in the motor, the EN pin can be disconnected first and then reconnected to clear the fault.

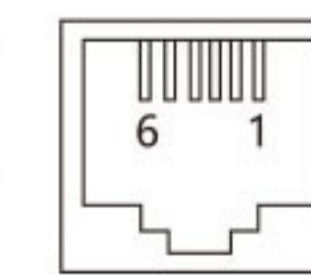
## Product Overview

The R series brushless DC motor driver is a new generation digital intelligent brushless motor driver developed by Handebao Company based on advanced DSP controller chips combined with unique control circuits. The fully digital design allows for flexible and diverse input control methods, extremely high speed regulation ratio, low noise, and comprehensive hardware and software protection functions. The driver can connect to a computer via RS-232 serial communication interface to achieve PID parameter adjustment, protection parameters, motor parameters, acceleration and deceleration time settings, and other parameters. It also supports monitoring of IO input status, analog input, alarm status, and bus voltage.

P1: Power Terminal Pin List		
Pin Number	Pin Name	Description
1	U	Motor Phase Wire U
2	V	Motor Phase Wire V
3	W	Motor Phase Wire W
4	VDC	Power Input Positive
5	GND	Power Input Negative

P2: Hall Sensor Input Interface		
Pin Number	Pin Name	Description
1	5V	Power supply output for Hall sensor
2	GND	Ground for motor Hall circuit signal
3	HA	Motor U-phase Hall sensor input
4	HB	Motor V-phase Hall sensor input
5	HC	Motor W-phase Hall sensor input

P4: Communication Interface		
Pin Number	Pin Name	Description
1	NC	Not connected (empty)
2	TXD	MCU data transmit
3	VCC	5V power supply
4	RXD	MCU data receive
5	GND	Ground
6	NC	Not connected (empty)



# R Series Brushless Motor Driver

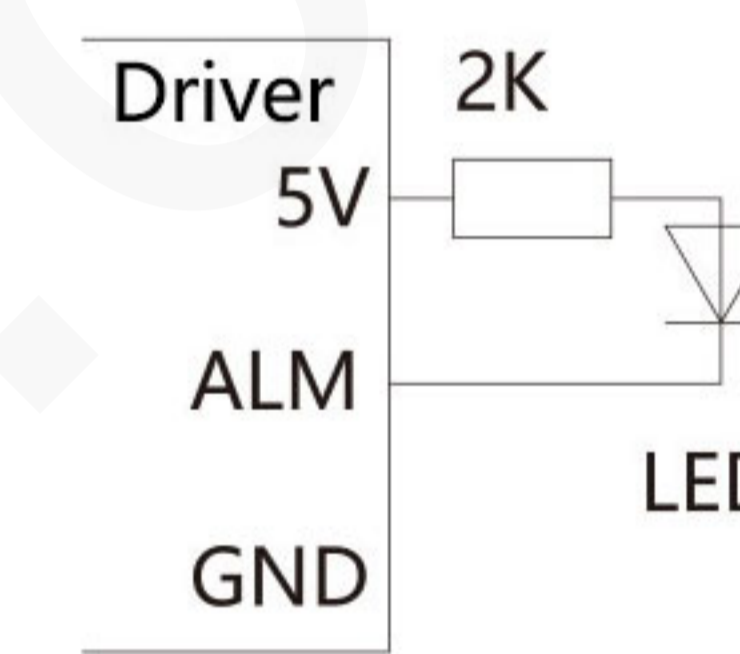
**BK Brake Control Terminal:** When the BK pin is connected to the GND pin, the driver will short-circuit the three-phase lines, and the motor enters a braking state. When the BK pin is disconnected from the GND pin, the motor is in a free state. If the motor is running at high speed or driving a load with large inertia, braking can cause electrical and mechanical shocks, resulting in damage. Except for emergency braking for safety, such braking actions should be avoided. To minimize the braking time, try to reduce the speed to a safer range before braking.

**X1, X2, X3 Multi-speed Control Terminals:** In the configuration software, multi-speed input mode can be set with two types of multi-speed modes, Mode 1 and Mode 2. Mode 1 is encoding mode, and Mode 2 is positional selection mode.

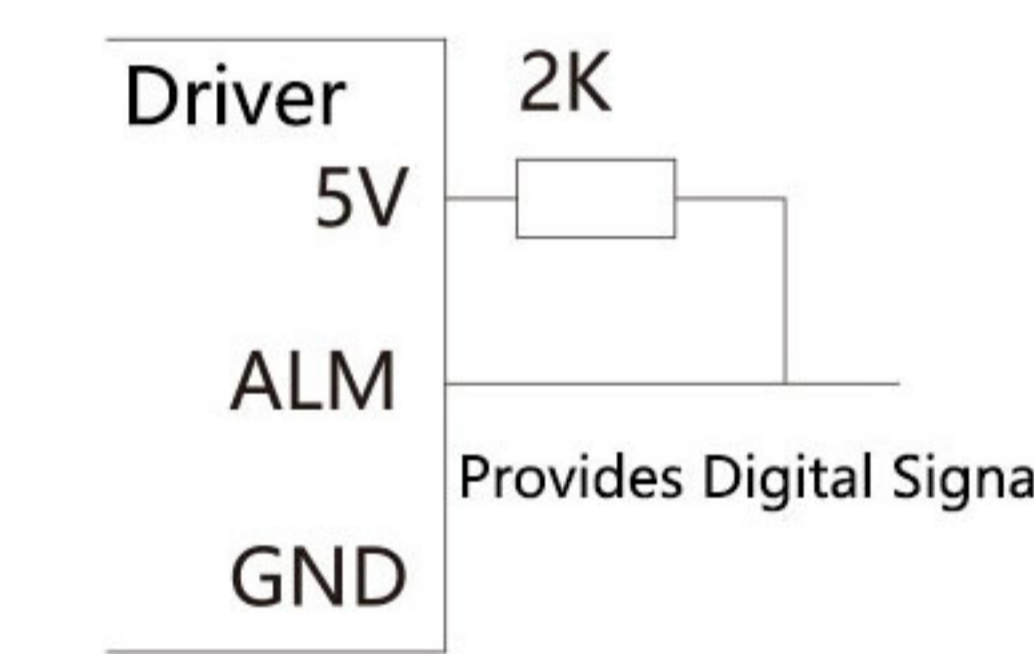
X1--GND	X2--GND	X3--GND	Speed Level	Value
Closed	Closed	Closed	0	Configurable
Closed	Closed	Open	1	Configurable
Closed	Open	Closed	2	Configurable
Closed	Open	Open	3	Configurable
Open	Closed	Open	4	Configurable
Open	Closed	Open	5	Configurable
Open	Open	Closed	6	Configurable
Open	Open	Open	7	Configurable

**Multi-speed 1:** The open or closed states of X1, X2, and X3 connected to GND can be combined into 8 different settings corresponding to 8 different speed levels to achieve different rotational speeds. The speed transitions are carried out according to the acceleration and deceleration times set for each speed.

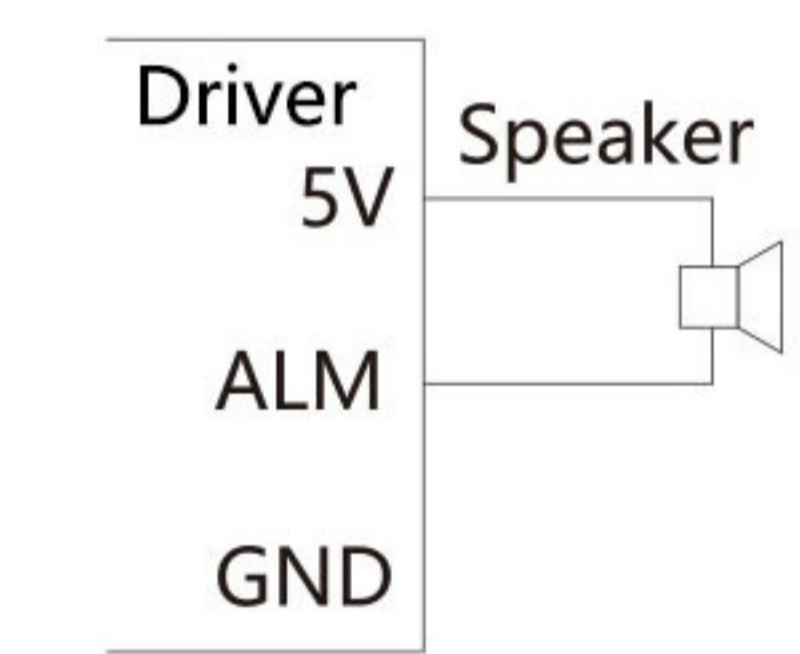
**ALM Alarm Output Terminal:** The ALM signal output is an open-collector transistor output. When the driver experiences abnormalities such as short circuit, overcurrent, Hall signal error, overvoltage, undervoltage, etc., the ALM output is at a low level. Its sink current should be less than 50mA. The alarm output circuit types are as follows:



(1) LED Indicator Light Output



(2) Digital Signal Output



(3) Buzzer Output

## PG Hall Signal Output Terminal:

The PG signal is used to provide the motor speed pulse signal. The PG signal is an open-collector output. During testing, a pull-up resistor of 2K-10K ohms should be connected between 5V and PG. Within one electrical cycle, the motor will output 3 pulses on the PG signal terminal.

Mechanical cycle = Electrical cycle \* Number of pole pairs

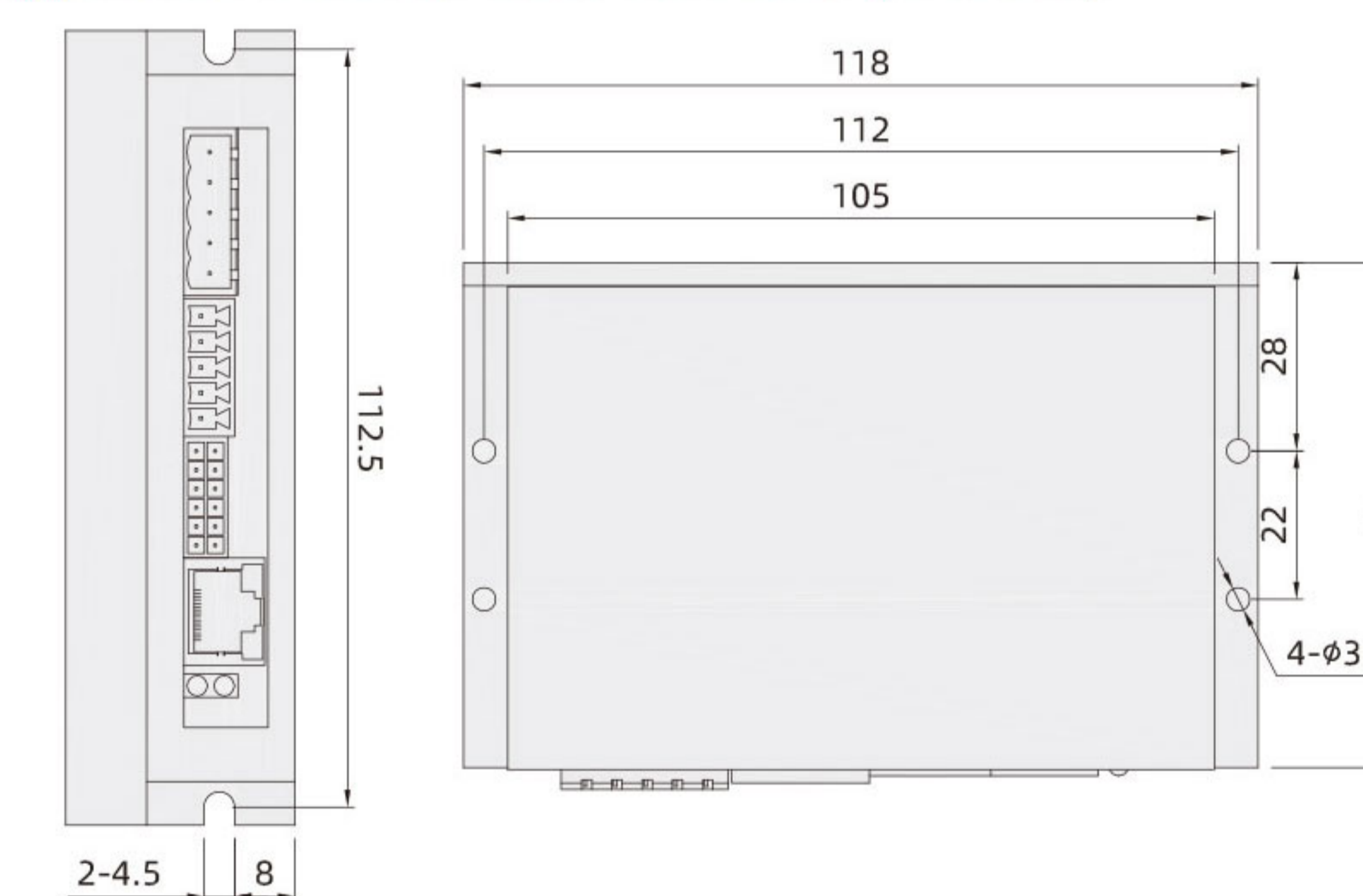
For a two-pole motor, one mechanical rotation generates 6 pulses; for a four-pole motor, it generates 12 pulses.

The relationship between the frequency output at the PG terminal and the motor speed is as follows:

Motor speed (RPM) = 20 × PG signal frequency / Number of motor pole pairs

**PWR/ALM Indicator Light:** The driver has two LED indicator lights, red and green. The red LED indicates ALM error types, and the green LED indicates power status. Under normal power conditions, the green LED stays on continuously. If the green LED is off, please check whether the power supply is normal.

## Appearance and Installation Dimensions (Unit: mm)



## Fault Diagnosis and Troubleshooting

**PWR/ALM Indicator Light**  
The driver has two LED indicator lights, red and green. The red LED indicates ALM error types, and the green LED indicates power status. Under normal power conditions, the green LED stays on continuously. If the green LED is off, please check whether the power supply is normal. The red indicator light can indicate different statuses through different flashing patterns. The meanings are as follows:

LED Light Status	Indication
● Steady on	External or software disabled
● Flash once every second	Short circuit protection
●● Flash twice every second	Hall sensor abnormality
●●● Flash three times every second	Hall sensor phase abnormality
●●●● Flash four times every second	Overcurrent
●●●●● Flash five times every second	Bus voltage too low
●●●●●● Flash six times every second	Bus voltage too high

## Precautions

1. Before use, carefully read the contents of this instruction manual and follow the requirements for setting and wiring. In case of an alarm during use, stop the machine for inspection; only resume operation after troubleshooting.
2. When installing the driver, it should be mounted on a heat-conductive base plate or frame with at least 20mm of surrounding space for heat dissipation. At the same time, the driver casing should be connected to the electrical system protective earth (PE). If the ambient temperature is relatively high and frequent casing temperature alarms occur, enhanced cooling measures should be taken.
3. It is strictly prohibited to open the casing or touch any components and connectors on the baseboard during operation.
4. After power-off, wait for 1 minute before inspecting the baseboard or replacing the fuse.
5. It is strictly forbidden to operate the driver without the casing during operation.
6. Brushless motor drivers and brushless motors require good and reliable grounding; otherwise, the motor speed may become unstable.
7. If the driver is accidentally damaged during operation, the company is only responsible for repair and replacement within the warranty scope. The company does not assume liability for motor loss of control, personal injury, or property damage caused by accidental damage to the driver.

# H Series High-Power DC Brushless Motor Driver



The image is for reference only; please refer to the actual product!

- Parameters can be set to accommodate different motor parameters and operating modes.
- Speed range: 0-10,000 RPM, with maximum speed limit.
- Uses dual closed-loop speed control to achieve high torque at low speeds.
- The speed pulse output allows users to accurately display the motor speed.
- Equipped with speed command input and a potentiometer for peak current attenuation ratio adjustment.
- Features functions such as forward/reverse rotation, braking, and speed control.
- Includes speed pulse output, fault diagnosis alarm output, and temperature rise protection functions.

## Model Specifications

The H series driver is a parameter-configurable high-current driver with built-in speed and current PID closed-loop controllers. The speed command can be a voltage of 0-5V or a PWM pulse ranging from 0-100%. It can also be customized with an internal F/V module to achieve a 0-3KHz pulse frequency speed command. Parameters such as the number of motor poles, maximum speed, acceleration time, loop filtering, and peak current can be set via the built-in potentiometer and DIP switches, offering greater adaptability. Both speed and current loops are selectable. The driver includes over-temperature and short-circuit protection functions. Voltage ratings are available in 12V, 24V, 36V, and 48V, and peak current ratings are 50A and 100A. The operating ambient temperature ranges are -15°C to +45°C and -40°C to +65°C (the latter indicated with a "T"). The driver has protection when the casing temperature reaches +80°C.

## Product Overview

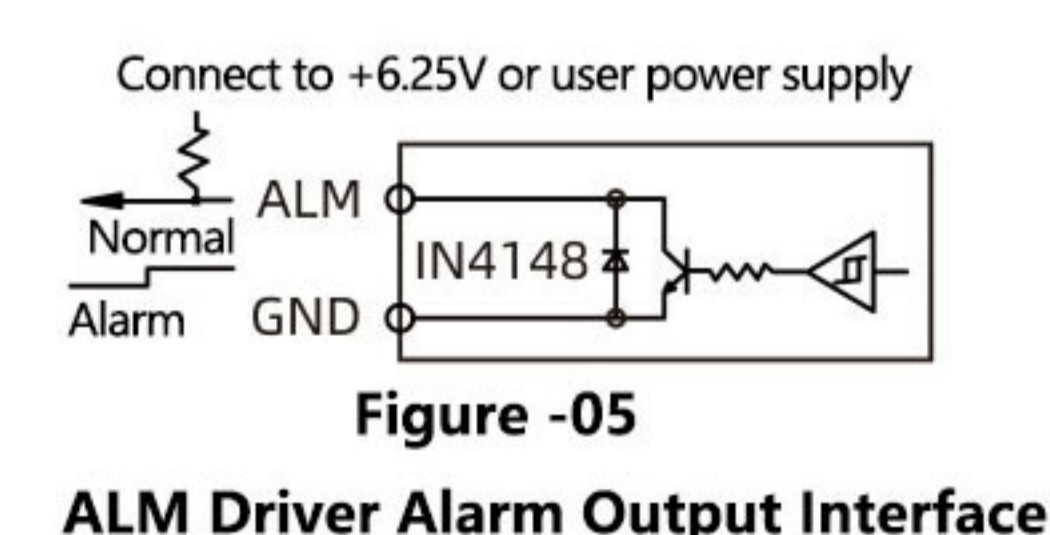
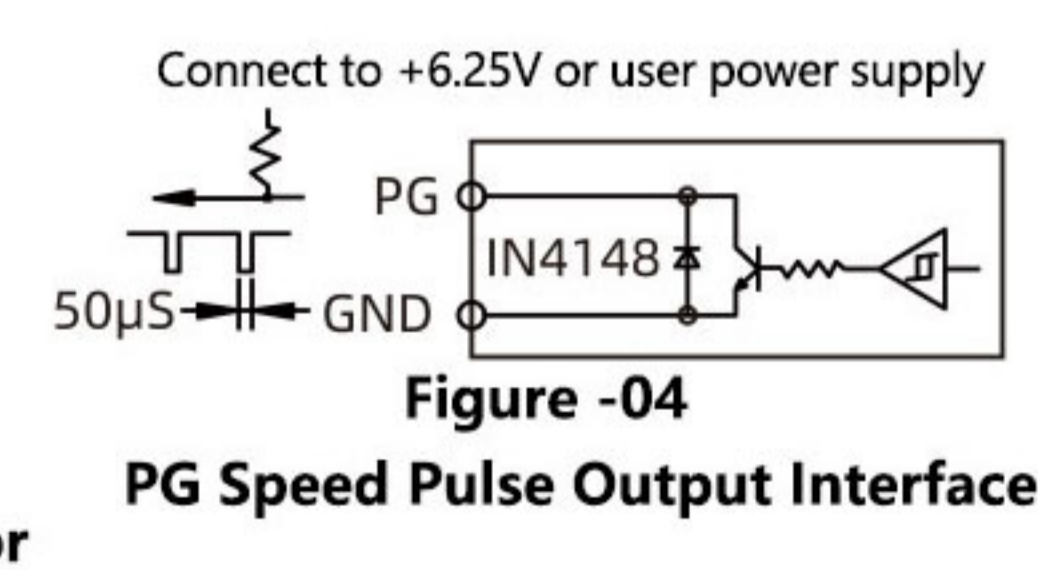
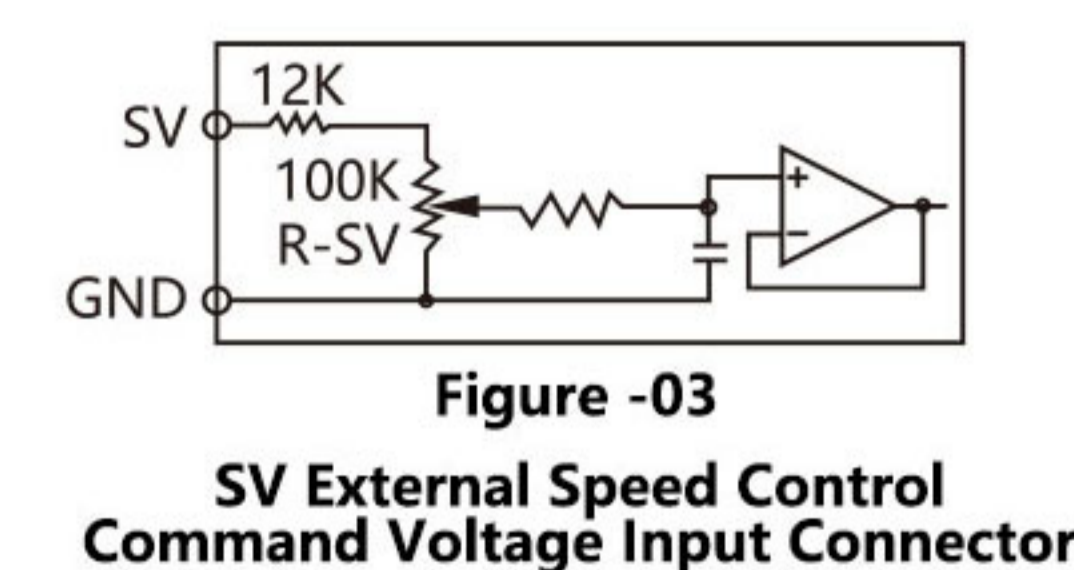
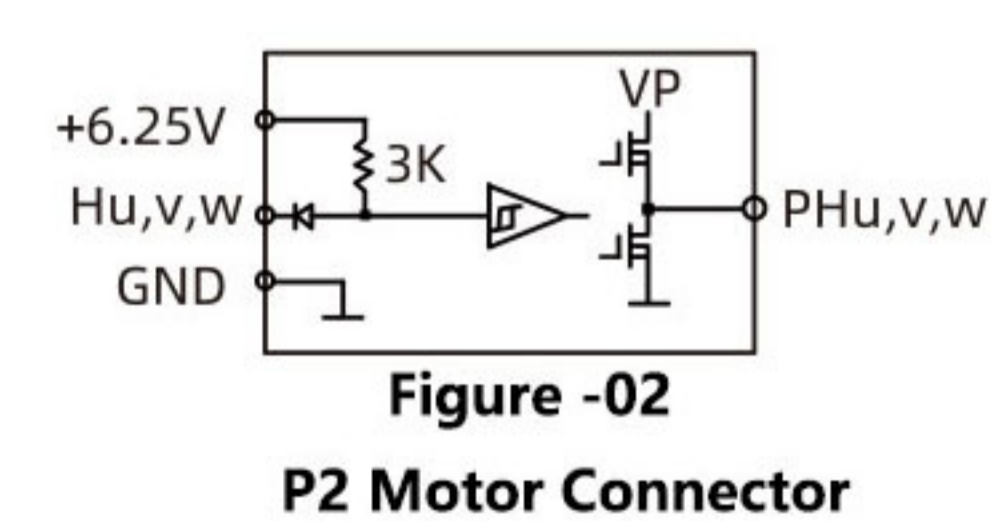
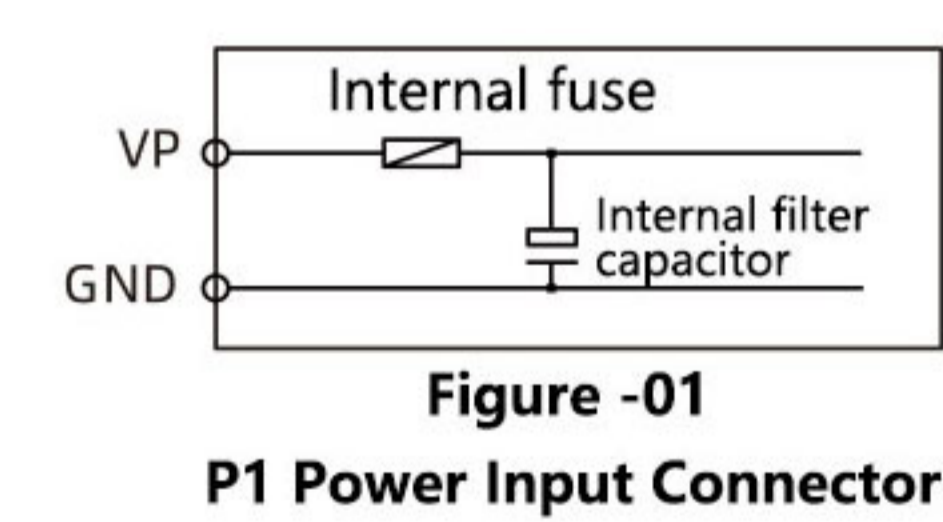
Item	Model								
	DBL-____H								
	1250	12100	2450	24100	3650	36100	4850	48100	
Rated Voltage (VDC)	12		24		36			48	
Continuous Current (A)	25	50	25	50	25	50	25	50	
Rated Power (W)	250	500	500	1000	800	1600	1100	2200	
Rated Speed Regulation Accuracy	±3%								
Hall Sensor Configuration	3-phase 120° electrical angle configuration, 6.25VDC power supply								
Under-voltage/Over-voltage Protection (VDC)	5/18		17/32		27/45		37/55		
Dimensions (mm)	83×162×50	97×178×60	83×162×50	97×178×60	83×162×50	97×178×60	83×162×50	97×178×60	

## Function Description

P1: Power Input Connector (see Figure -01)		
DC	VP	DC power input positive
	GND	DC power input negative

P2: Motor Connector (see Figure -02)		
MOTOR	U	Motor U phase winding output
	V	Motor V phase winding output
	W	Motor W phase winding output
	GND	Motor Hall circuit signal ground
	Hu	Motor U phase Hall sensor input
	Hv	Motor V phase Hall sensor input
	Hw	Motor W phase Hall sensor input
	+6.25V	Hall sensor power supply voltage output, max 10mA



P3: Control Signal Interface	
GND	Control signal ground
F/R	Forward/reverse control, compatible with TTL and CMOS levels. When disconnected or at high level, it is forward; when grounded or at low level, it is reverse. Switching rotation direction should be done when the motor is stopped or at low speed to avoid impact.
ENA	Driver enable control, compatible with TTL and CMOS levels. When grounded or at low level, the driver is enabled and can operate; when disconnected or at high level, the driver is disabled and in a free state. At the same time, the driver's alarm status is reset to zero to achieve online alarm reset.
BK	Motor brake control, compatible with TTL and CMOS levels. Uses short-circuit energy consumption braking; when grounded or at low level, the motor brakes. The motor speed during braking must be lower than the safe braking speed; otherwise, the driver may suffer overcurrent impact damage.
SV	External speed command voltage input. In open-loop speed control, the range is +1 to +5V; in closed-loop speed control, the range is 0 to +5V (maximum +6.5V). 0V corresponds to zero motor speed, +5V corresponds to the driver's maximum speed. The voltage linearly corresponds to the motor speed, enabling linear speed control.
PG	Speed pulse output. This terminal is an open-collector (OC) output (30V/10mA max). To receive the signal, a pull-up resistor of 3kΩ to 10kΩ should be connected between the terminal and the power supply. The output frequency is proportional to the motor speed, with fixed pulse width (50µs) negative pulses. The number of pulses per motor revolution is 3*N, where N is the number of poles of the motor.
ALM	Driver alarm output. This terminal is an OC output (30V/10mA max). To receive the signal, a pull-up resistor of 3kΩ to 10kΩ should be connected between the terminal and the power supply. When an alarm occurs, this terminal is connected to GND (low level), and the driver stops working and remains in the alarm state.
+6.25V	Power output for control signals (10mA max), convenient for users to configure control signals.

# H Series High-Power DC Brushless Motor Driver

## LED Status Indicators

**SC: Circuit Short Circuit Alarm Indicator Light:**When a short circuit occurs during circuit operation, this light is on; under normal operating conditions, this light is off.

**P/A: Power / Alarm Indicator Light:**When the controller is powered on, this light is steady on, indicating normal power supply. When the controller is in an alarm state, this light flashes.

The conditions for triggering the alarm are as follows:

- (1) Hall signal is incorrect.
- (2) Under-voltage or over-voltage lasting more than 1 to 3 seconds.
- (3) Short circuit or over-temperature of the casing (80°C).
- (4) Continuous overload exceeding 5 to 6 seconds.
- (5) The alarm state can be cleared by power cycling once or by performing a reset once, restoring normal status.

**SHAFT: Motor Shaft Status Indicator Light:**When the motor shaft is rotating, this light is on; when the motor shaft is stopped, this light is off. Do not touch the motor shaft before this light is off to ensure safety.

## Driver DIP Switch Settings

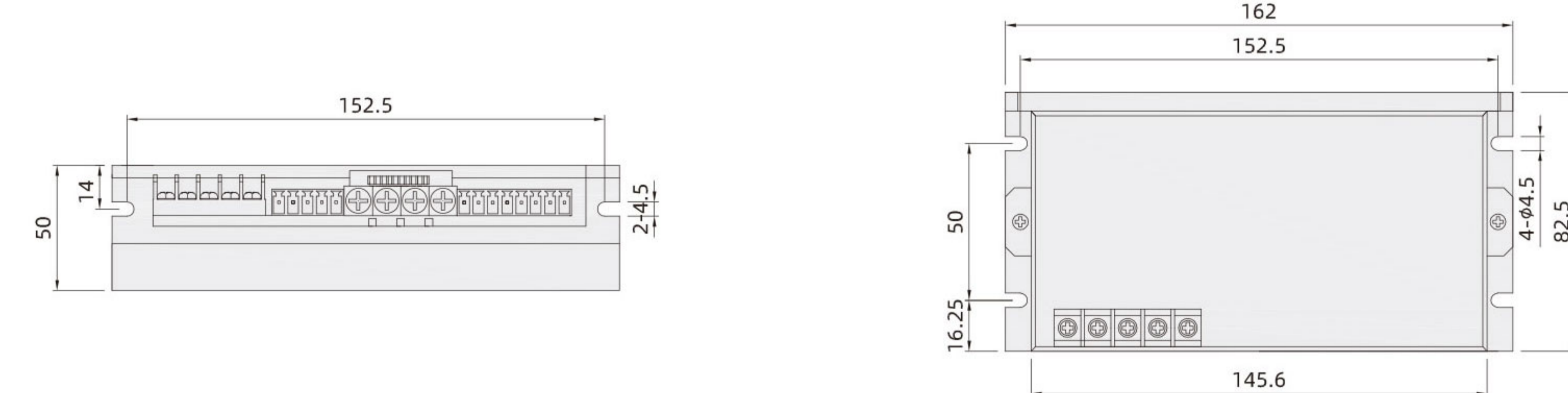
DIP Switch	Setting	Status	Function
SW1	Set Hall Angle	ON	120°
		OFF	60°
SW2	Set Open Loop / Closed Loop	ON	Open Loop Setting
		OFF	Closed Loop Setting
SW3/SW4	Set Current Loop / Speed Loop	ON/OFF	Current Loop
		OFF/ON	Speed Loop
SW5	Set Filter Time	ON	Increase Filter Time
		OFF	Decrease Filter Time
SW6	Set Speed Command Voltage Rise Time	ON	Rise Time 1~10 seconds 0.5
		OFF	Rise Time 0.1~1 second ~1s

Potentiometer Adjustment Settings	
R-SV	Speed command voltage attenuation ratio setting
R-LG	Loop gain setting
R-PC	Peak current ratio setting
R-RT	Speed command voltage rise time setting

Adjustment Range Settings				
SW7	SW8	SW9	SW10	Maximum Speed (rpm)
ON	ON	OFF	OFF	5336/N
ON	ON	ON	OFF	5648/N
OFF	ON	OFF	OFF	7112/N
OFF	ON	ON	OFF	7528/N
ON	OFF	OFF	OFF	10664/N
ON	OFF	ON	OFF	11296/N
ON	ON	OFF	ON	19200/N
OFF	OFF	OFF	OFF	21336/N
OFF	OFF	ON	OFF	22592/N
ON	ON	ON	ON	24000/N
OFF	ON	OFF	ON	25600/N
OFF	ON	ON	ON	32000/N
ON	OFF	OFF	ON	38400/N
ON	OFF	ON	ON	48000/N
OFF	OFF	OFF	ON	76800/N
OFF	OFF	ON	ON	96000/N

Note: N represents the number of poles of the motor.

## Appearance and Installation Dimensions (Unit: mm)



## Precautions

- Before use, carefully read the contents of this manual and follow the requirements for setup and wiring. If an alarm occurs during use, stop the machine to inspect and troubleshoot before continuing operation.
- When installing this driver, it should be mounted on a heat-conductive base or frame as much as possible, leaving at least 20mm of ventilation space around it. At the same time, the driver casing should be connected to the electrical system protective earth (PE). If the ambient temperature is relatively high and frequent casing temperature alarms occur, enhanced heat dissipation measures should be taken.
- To prevent interference, the motor's Hall signal wires and coil wires should not be twisted together. When the motor wiring is long (>500mm), the motor leads should use shielded cables; Hall signals and coil wires should be shielded separately (refer to the typical wiring diagram).
- If overload alarms frequently occur during startup, the acceleration time should be appropriately increased.
- If the braking function is used, the safe braking speed must be calculated to ensure that the motor speed during braking remains below that speed.
- To avoid switching at high speeds, it is best to stop the motor before switching.
- Since this controller operates in two-quadrant mode, it is not suitable for applications with rapid speed changes or strict servo control requirements.
- The driver's peak current and maximum speed parameters must be set correctly to ensure the motor operates properly in closed loop.

# DS Series Digital Display Brushless Motor Driver



The image is for reference only; please refer to the actual product!

- DSP chip with multiple control modes.
- Energy-saving, high efficiency, fast response.
- Compatible with both sensor and sensorless motors.
- Digital display, adjustable PID parameters.
- Equipped with protection functions including overcurrent, overheating, overspeed, overvoltage, and undervoltage.
- Simple operation and strong versatility.

## Model Specifications

Item	Model	DBH-400DS	DBH-750DS	DBH-1500DS
Rated Voltage (VDC)		110-260VAC	110-260VAC	110-260VAC
Continuous Current (A)		3	5	10
Rated Power (W)		400	750	1500
Dimensions (mm)		165x67x102	165x67x102	190x80x130

## Model Specifications

Power Interface J1		
HALL	L1	AC 220VAC
	L2	AC 220VAC
	PE	AC Ground
	B1	External discharge resistor (reserved)
	B2	External discharge resistor (reserved)

Motor Interface J2		
WINDINGS	MA	Brushless motor winding phase A (U)
	MB	Brushless motor winding phase B (V)
	MC	Brushless motor winding phase C (W)
	PE	AC Ground

Indicator Lights	
POWER (Power Indicator Light)	On indicates normal power; off indicates power abnormality
FAULT (Fault Indicator Light)	On indicates a fault; off indicates no fault

## Functions and Usage

### Speed Regulation Method

For external speed input: connect the two fixed terminals of an external potentiometer separately to the driver's GND and +5V terminals, and connect the adjustable terminal to the SV terminal. This allows speed adjustment using an external potentiometer (5K~100K). Alternatively, speed can be controlled by other control units (such as PLCs, single-chip microcontrollers, etc.) by inputting an analog voltage signal to the SV terminal (relative to GND). The SV terminal accepts a DC voltage range of 0V to +5V, corresponding to motor speeds from 0 to rated speed.

Digital signal speed regulation can also be used: applying a PWM signal with amplitude 5V and frequency 1KHz~2KHz between SV and GND can regulate the speed by adjusting the PWM duty cycle. The motor speed is linearly modulated by the PWM duty cycle. The R-SV potentiometer can be adjusted to scale the SV signal value from 0 to 1.0. Typically, the R-SV is set to 1.0, and the SV input digital signal is not attenuated.

### Motor Run/Stop Control (ENA)

The ENA control terminal controls motor operation by connecting or disconnecting it relative to GND. When this terminal is connected to GND, the motor runs; when disconnected, the motor stops. Using the run/stop control terminal to stop the motor causes the motor to coast to a stop naturally, with deceleration dependent on load inertia.

### Motor Forward/Reverse Control (F/R)

The F/R control terminal controls the motor rotation direction by connecting or disconnecting it relative to GND. When F/R is disconnected from GND, the motor runs clockwise (facing the motor shaft). When connected to GND, the motor runs counterclockwise. To avoid damage to the driver when changing rotation direction, the motor should be stopped first before reversing direction, preventing direction changes during operation.

### Brake Control (BK)

The BK control terminal controls motor braking by connecting or disconnecting it relative to GND. When BK is connected to GND, the motor brakes; when disconnected, the motor runs normally. The braking stop is faster than natural stop. The specific stopping time depends on the load inertia of the user's system. Since braking causes electrical and mechanical stress, if there is no special requirement, natural stopping is recommended.

### Motor Speed Signal Output (PG)

This terminal outputs speed pulse signals proportional to the motor rotation speed with a fixed pulse width of 50μs negative pulses. The actual motor speed is calculated as  $20 \times f / N$ , where N is the number of poles of the motor and f is the output pulse frequency. For example, a 2-pole 4-pole motor outputs pulses at 200Hz. The motor speed is then  $20 \times 200 / 2 = 2000$  rpm.

The DS series brushless motor driver is a low-power driver independently developed by the HanDeBao Motor team to support the modernization of industrial automation control. It mainly uses internationally advanced dedicated brushless DC motor driver chips, featuring high integration, compact size, comprehensive protection, clear and simple wiring, and high reliability. This driver is suitable for driving small to medium-sized brushless DC motors with rated power below 1500W. The driver adopts a new PWM technology, enabling the brushless motor to operate at high speed with low vibration, low noise, good stability, and high reliability. Additionally, it supports both sensor and sensorless driving modes, making it adaptable to different application requirements.

Control Interface J3		
CONTROL	NC	Not defined
	NC	Not defined
	+5V	Common terminal
	ALM	Alarm output terminal
	PG	Speed signal output terminal
	SV	Analog signal input terminal
	BK	Control signal brake terminal (corresponding to COM)
	EN	Start/stop terminal (corresponding to COM)
	F/R	Forward/reverse control terminal (corresponding to COM)
	COM	+5V power output terminal

Hall Sensor Signal Terminal J4		
HALL	GND	Hall sensor power ground
	HA	Hall sensor phase A
	HB	Hall sensor phase B
	HC	Hall sensor phase C
	+5V	Hall sensor power input terminal

# DS Series Digital Display Brushless Motor Driver

## Alarm Output (ALM)

The driver provides an alarm output. During normal operation, this terminal is at a high level. When an alarm occurs, the terminal outputs a low level, and the driver stops operation automatically and enters the alarm state.

## Driver Fault (ERR\*)

When the driver detects overvoltage or overcurrent internally, it enters a protection state. The driver will automatically stop working, the motor stops, and the green light on the driver flashes. To reset, simply power cycle the enable terminal (i.e., disconnect ENA from GND) or power off and on. The alarm will be cleared only after this reset. If this fault occurs, please check the power wiring.

**Note:** The GND mentioned above refers to the COM common terminal of control interface J3. Do not connect it with other GND terminals.

## Display and Keypad Operation (Key positions are shown in the figure below)

"R/S" : Start/Stop (return key)

"+" : Increase parameter value by 1 when setting parameters

"-" : Decrease parameter value by 1 when setting parameters

"← | ENTER" : Confirm key (exit system parameters)

## Detailed Driver Parameter Settings

Function Code	Name	Setting Range	Unit	Factory Setting	Modifiable
P000	Control Method Setting	00: External terminal control mode 01: Panel control mode		External terminal control mode	
P001	Number of Poles Setting	1~99	Poles	2	○
P002	Rated Speed Setting	1~9999 (valid in external terminal mode)	RPM	3000	○
P003	Maximum Current Setting	0~255 (18 corresponds to 7A bus current) (25 corresponds to 12A bus current)	A	-	○
P004	Panel Operating Speed	0~Rated speed (valid only in panel mode)	RPM	3000	○
P005	Startup Time Setting	0~255	0.1s	2.0	○
P006	Braking Force Setting	0~950	Decimal	900	○
P007	Open/Closed Loop Control	00: Open loop 01: Closed loop		01 Closed loop	○
P008	Sensored / Sensorless Control	00: Sensorless 01: Sensored		01 Sensored	
P009	Display Mode Setting	00: Show real-time speed 01: Show real-time current (DC)		00	
P010	Sensorless Startup Initial Speed	0~FFH (hexadecimal)	Hex	04	Not modifiable
P011	Sensorless Startup Torque	0~FFH (hexadecimal)	Hex	10	Not modifiable
P012	Current Adjustment Parameter	0~FFH (hexadecimal)	Hex	255	Not modifiable
P013	Control Mode	0~FH (hexadecimal)	Hex	10	Not modifiable
P014	Station Address	1~250H (hexadecimal)	Hex	1	Not modifiable
P015	Temperature Alarm Point	0~FFH (hexadecimal)	Hex	6C	Not modifiable

## Operating Modes

The driver has two operating modes, which can be set via the panel. One is the panel operating mode, and the other is the external terminal operating mode. The motor operates according to the set mode, and the digital display shows the motor's rotational speed. In panel mode, press the R/S key to start or stop the motor. Press and hold the "+" or "-" keys to increase or decrease the motor speed. Press the "← | ENTER" key to confirm the motor speed setting. The motor runs at the set speed.

## Protection Mode

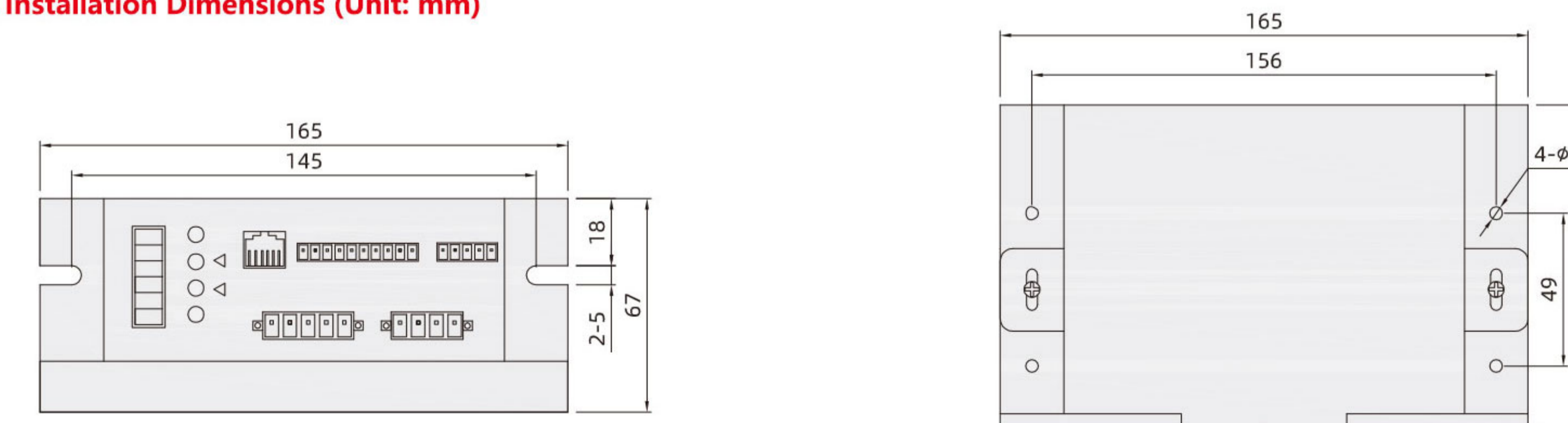
When an abnormality occurs during motor operation, the digital display shows "Errx".

- (1) Err1 indicates motor stall.
- (2) Err2 indicates overcurrent.
- (3) Err3 indicates a Hall sensor fault.
- (4) Err4 indicates input undervoltage.
- (5) Err5 indicates input overvoltage.
- (6) Err6 indicates peak current protection.

Note: After modifying parameters P007 and P008, the driver must be power-cycled to enter the parameter setting control mode. AC current == real-time DC current / power factor Q.

In standby mode, press and hold the "ENTER" key for 5~10 seconds; the digital display will show "---", indicating the system parameters have been reset.

## Outline and Installation Dimensions (Unit: mm)



## Precautions

1. Before use, carefully read the contents of this manual and follow the requirements for setup and wiring. If an alarm occurs during use, stop the machine for inspection. Only resume operation after troubleshooting.
2. When installing the driver, it should be mounted on a heat-conductive base plate or frame with at least 20mm of surrounding space for heat dissipation. The driver casing must be connected to the electrical system protective ground (PE). If the ambient temperature is relatively high and frequent casing temperature alarms occur, enhanced cooling measures should be taken.
3. During operation, it is strictly forbidden to open the outer casing or touch any components or connectors on the base plate.
4. After power off, wait for 1 minute before inspecting the base plate or replacing the fuse.
5. During operation, it is strictly forbidden for the driver to run with the outer casing removed.
6. Brushless motor drivers and brushless motors must have a good and reliable grounding connection; otherwise, the brushless motor speed may be unstable.
7. If the driver is accidentally damaged during operation, the company is only responsible for repair and replacement within the warranty scope. The company does not assume any liability for motor loss of control, personal injury, or property damage caused by accidental damage to the driver.

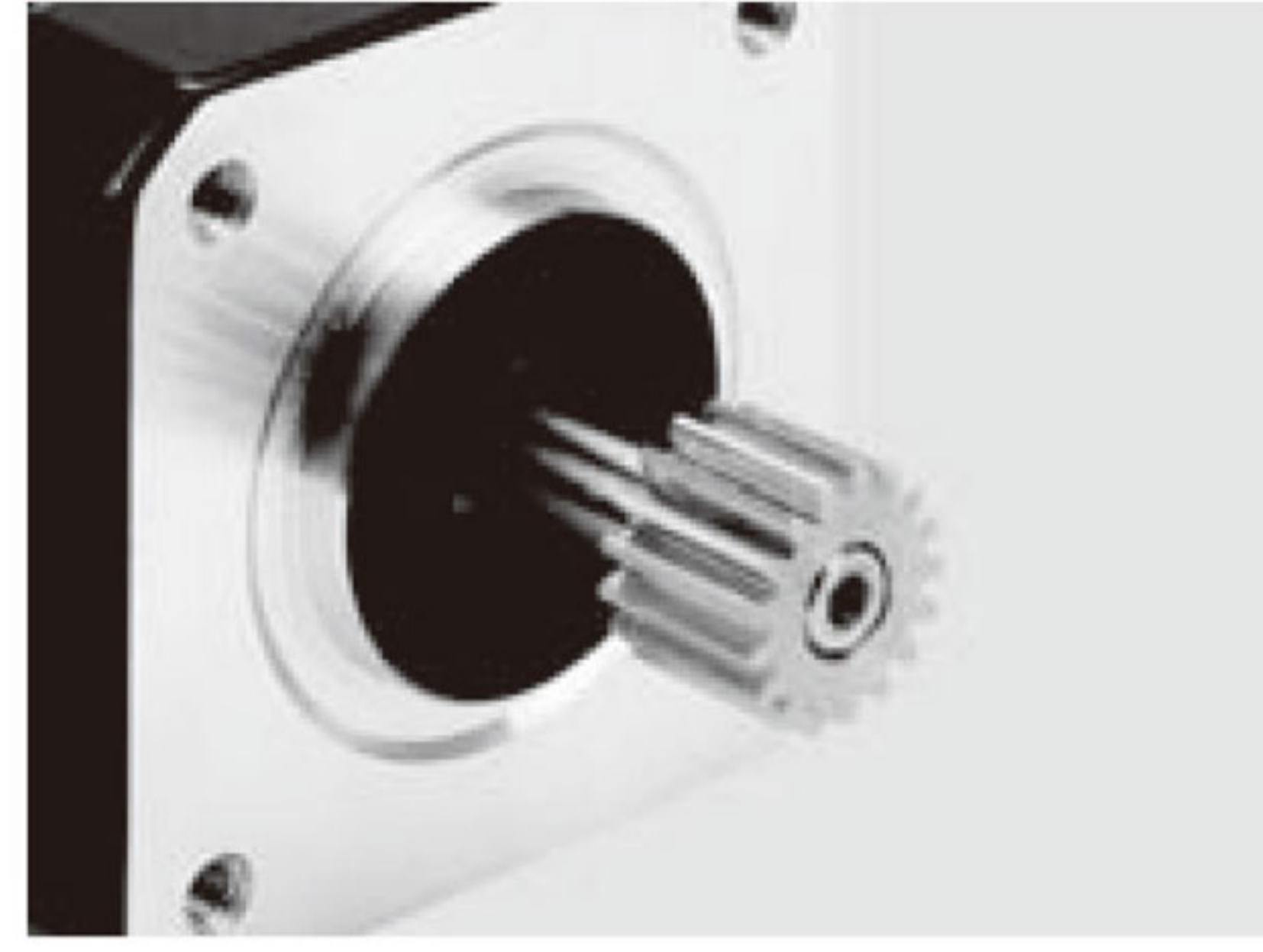
## Configuration and Options

In addition to the standard motors listed above, we also provide customized motor services for OEM customers.

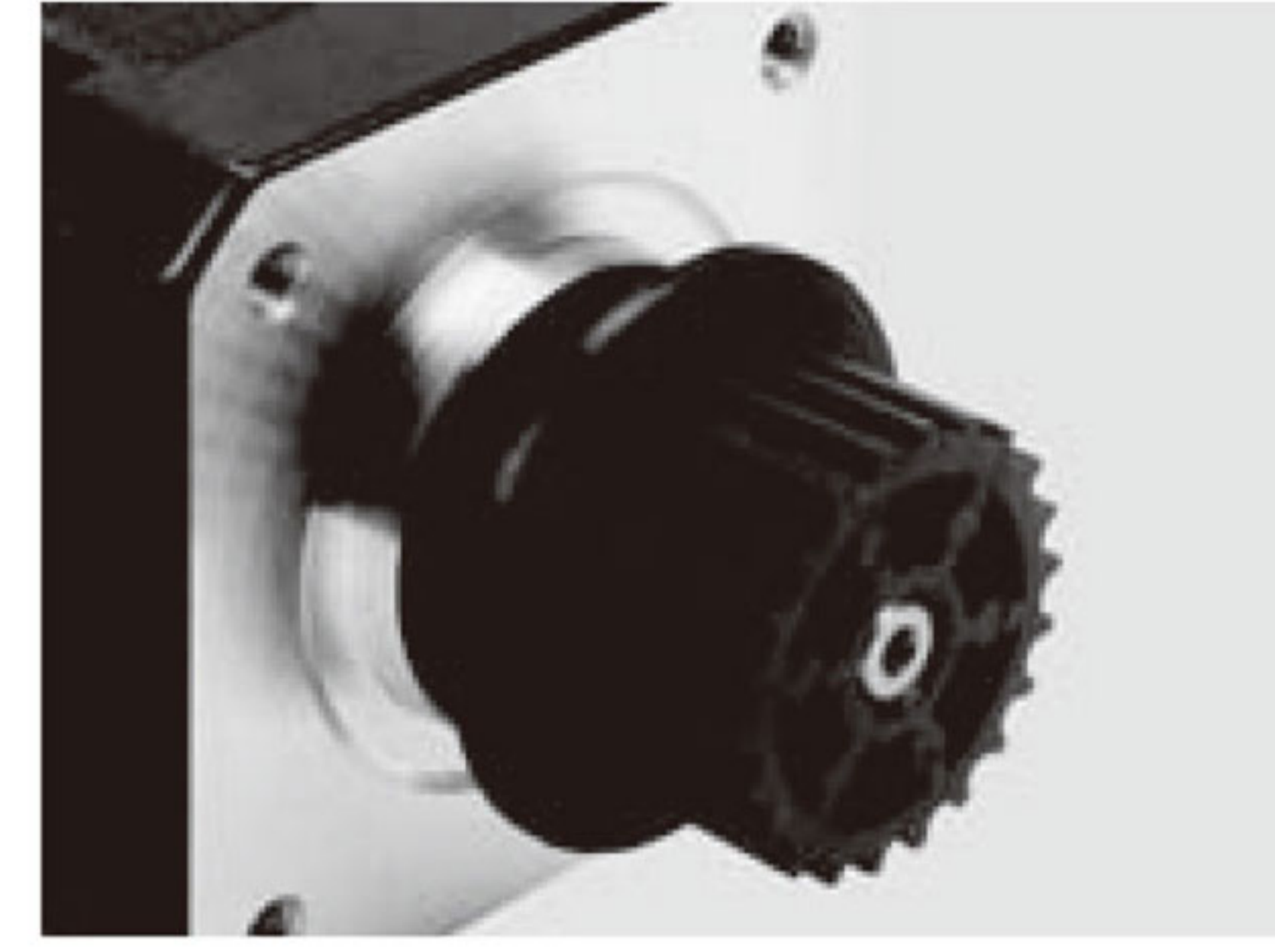
### Shaft options



Through hole



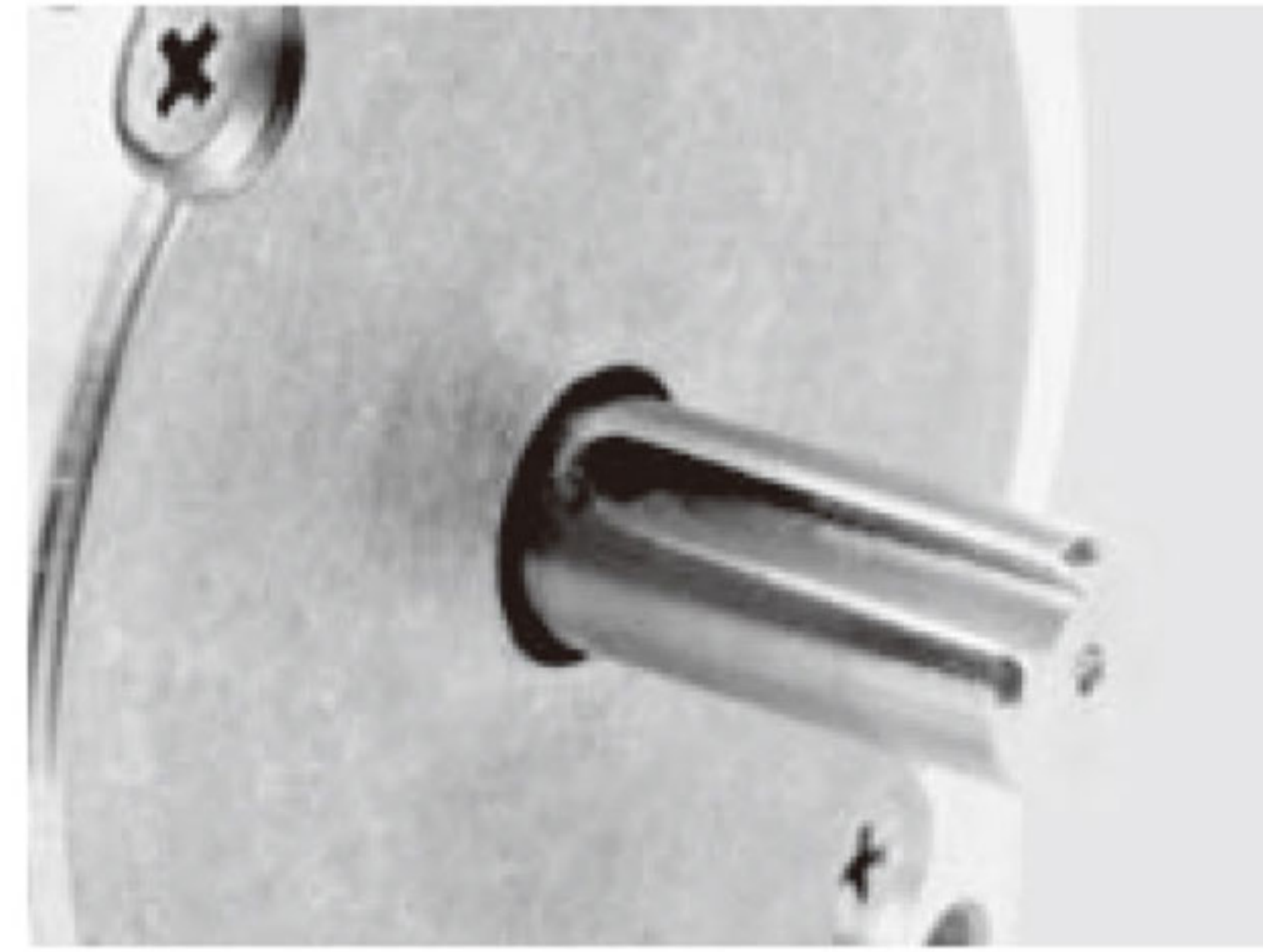
Gear



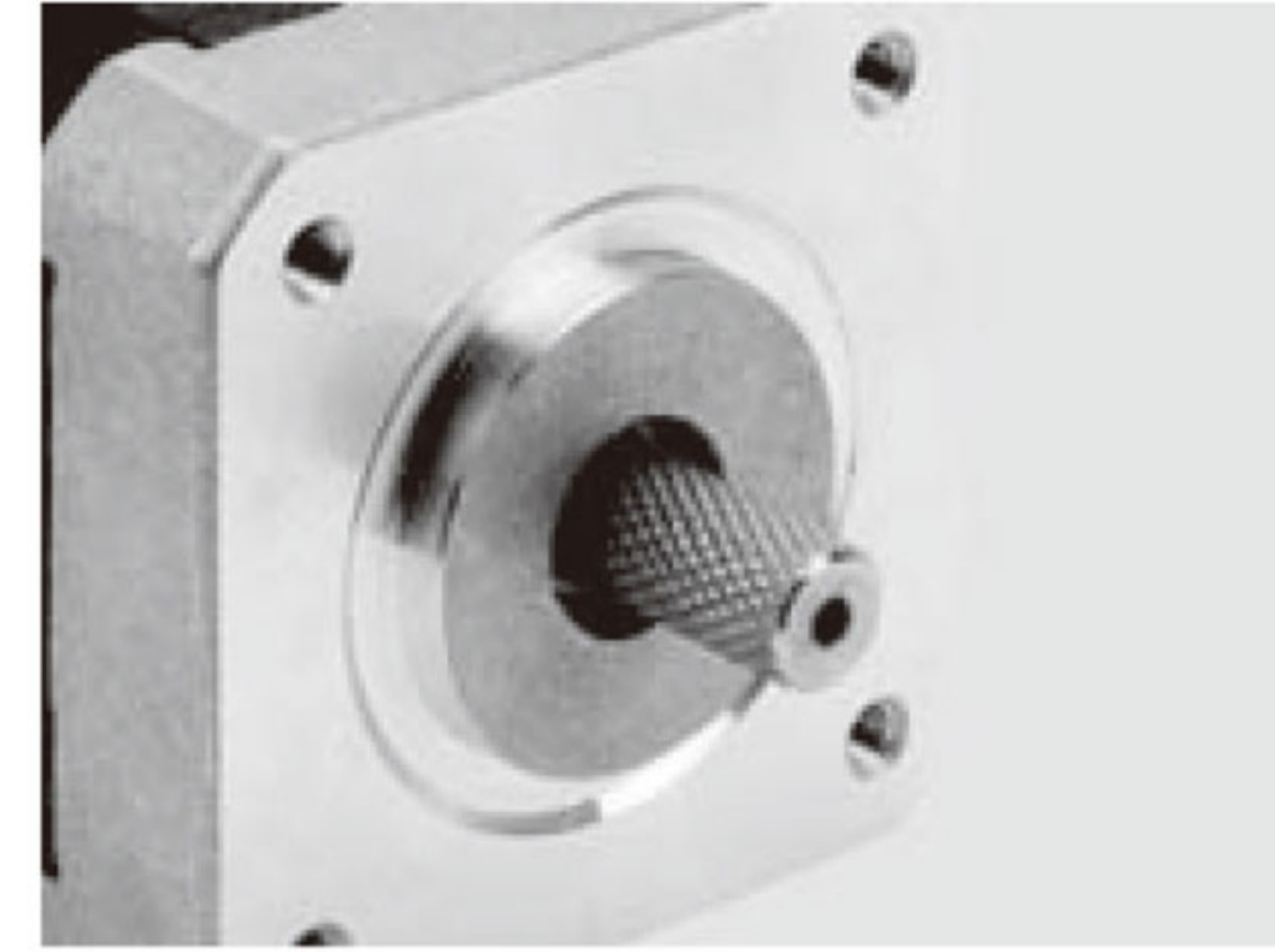
Belt pulley



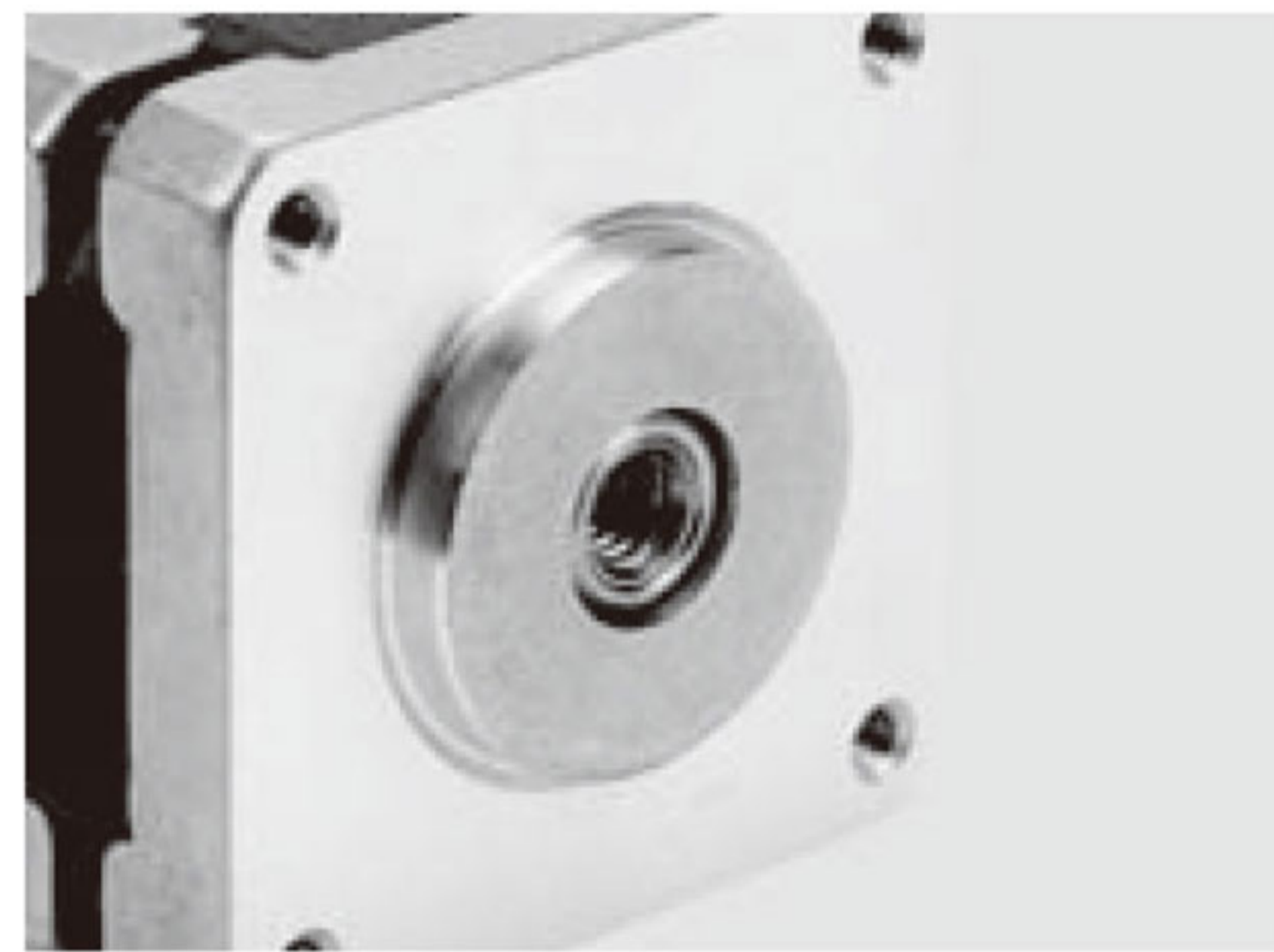
Flat vertical



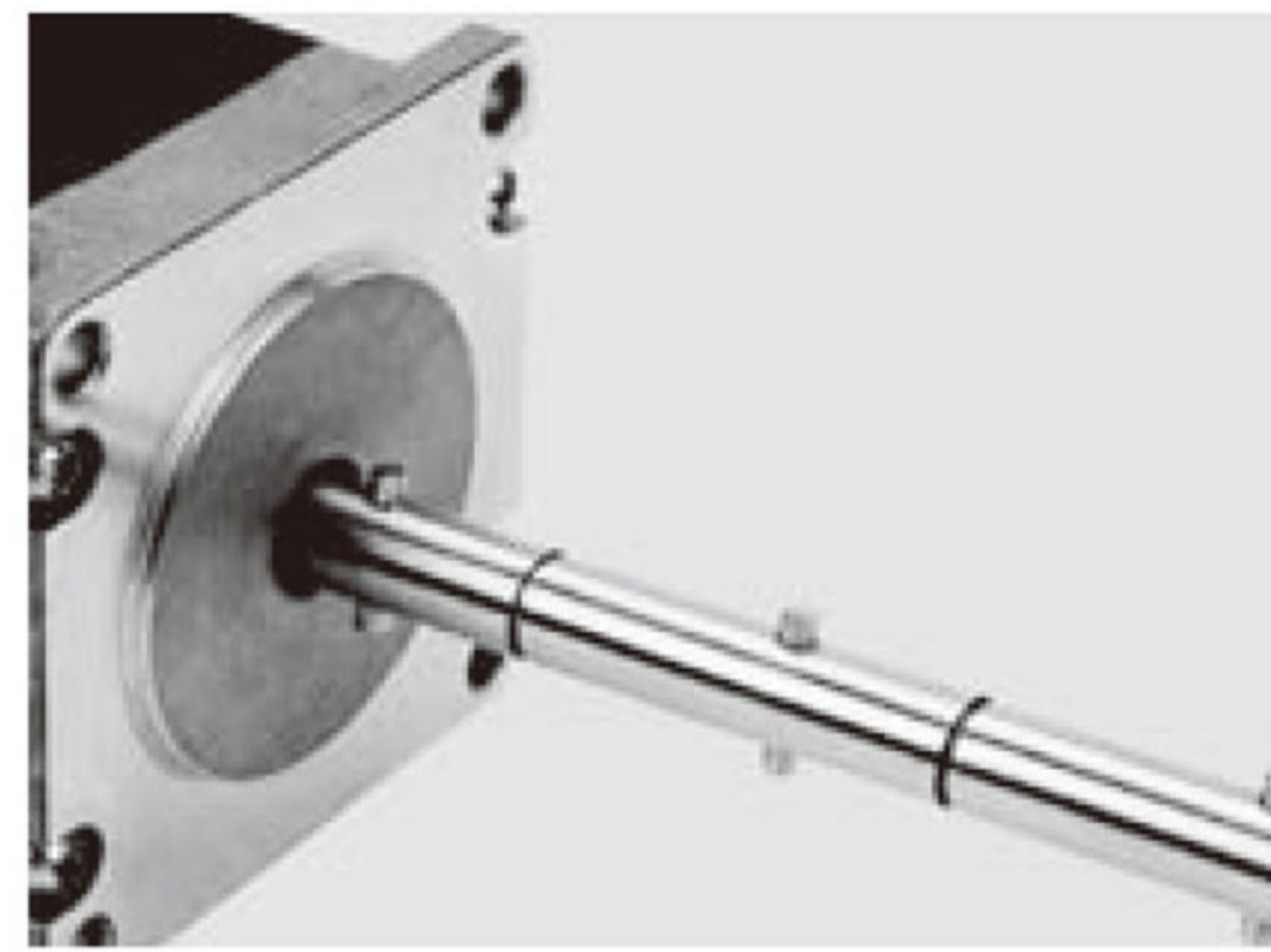
Keyway



Knurled



Internal threaded shaft



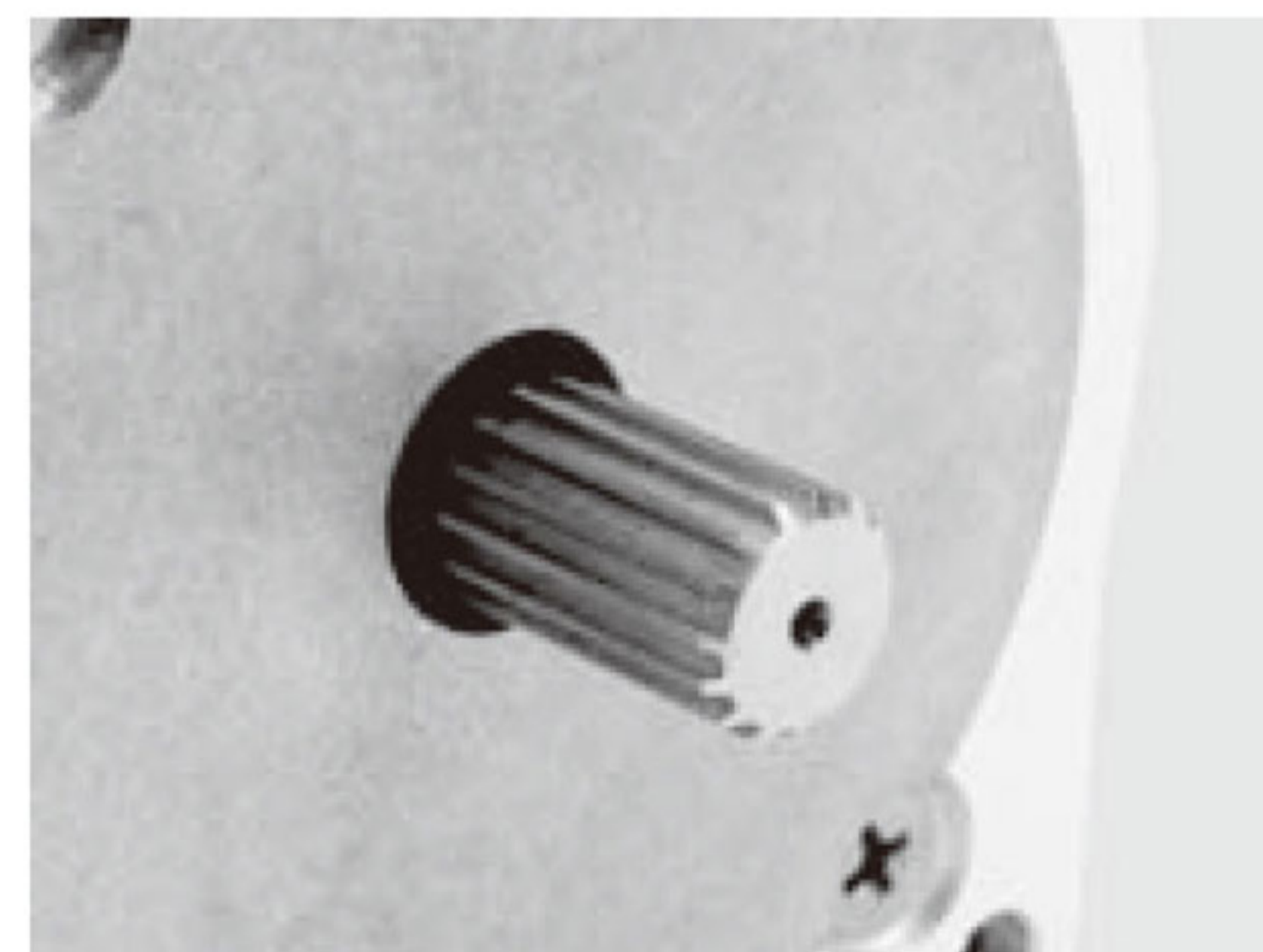
Pin hole



Screw rod



Single flat

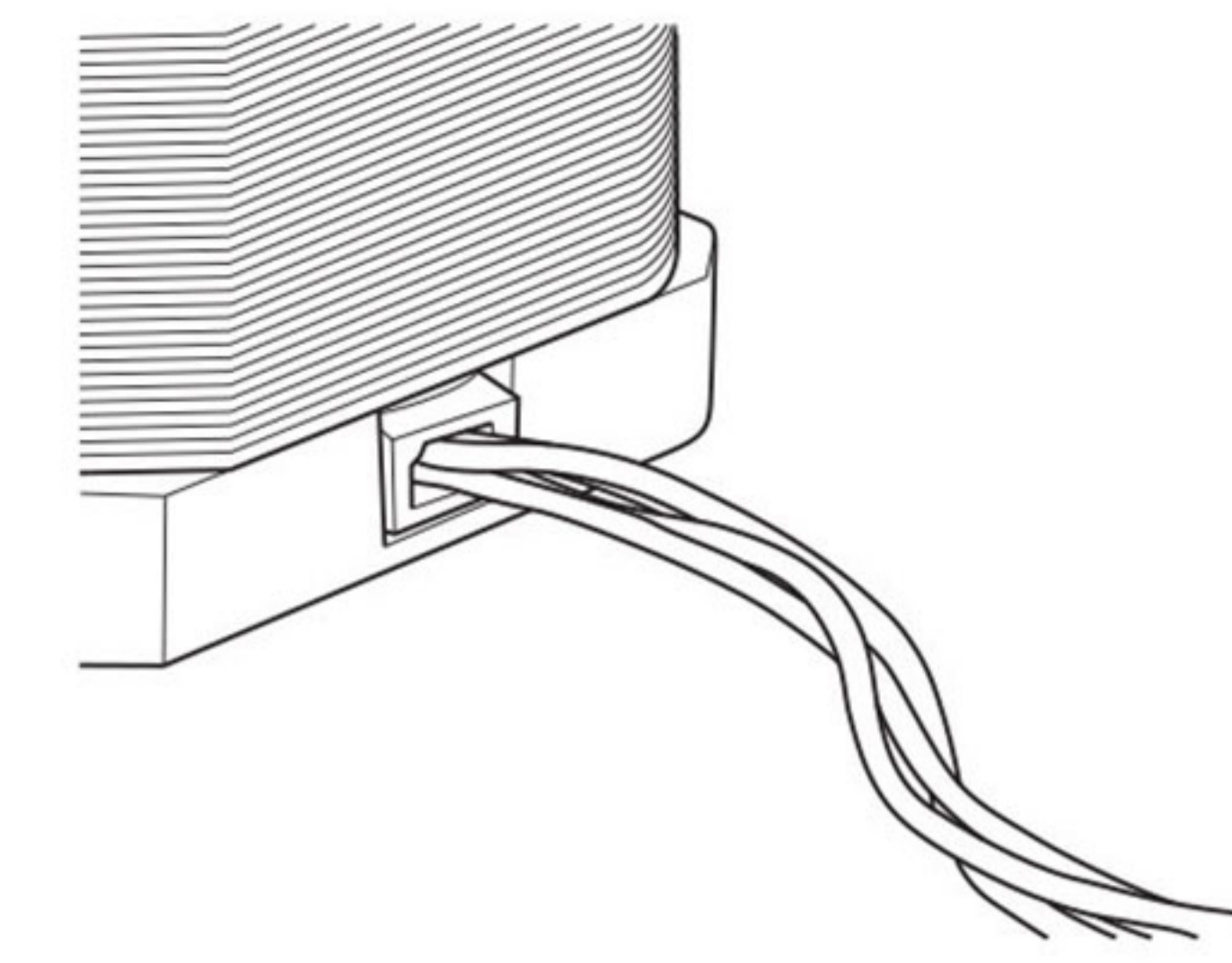


Knurled gear

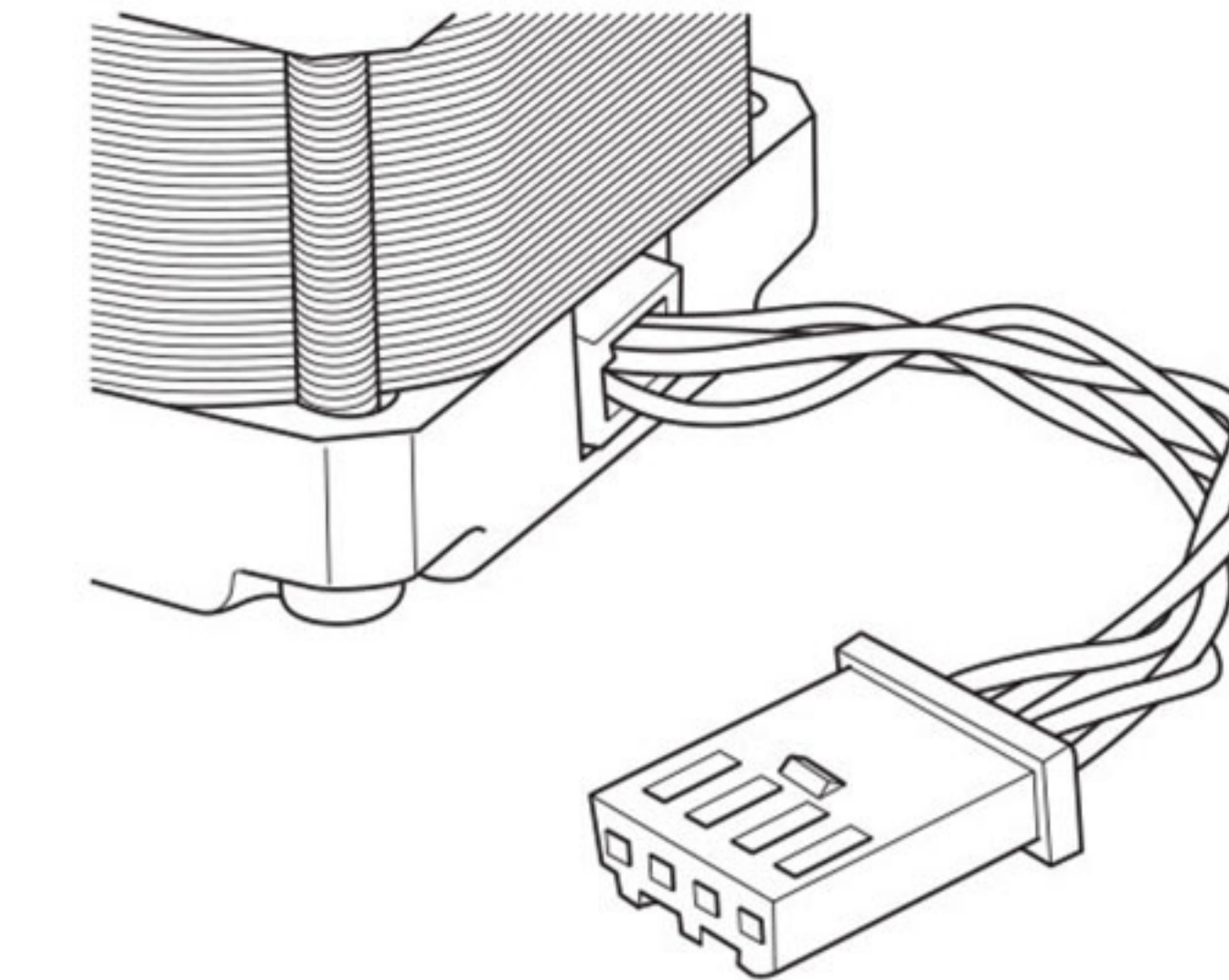


Hollow shaft

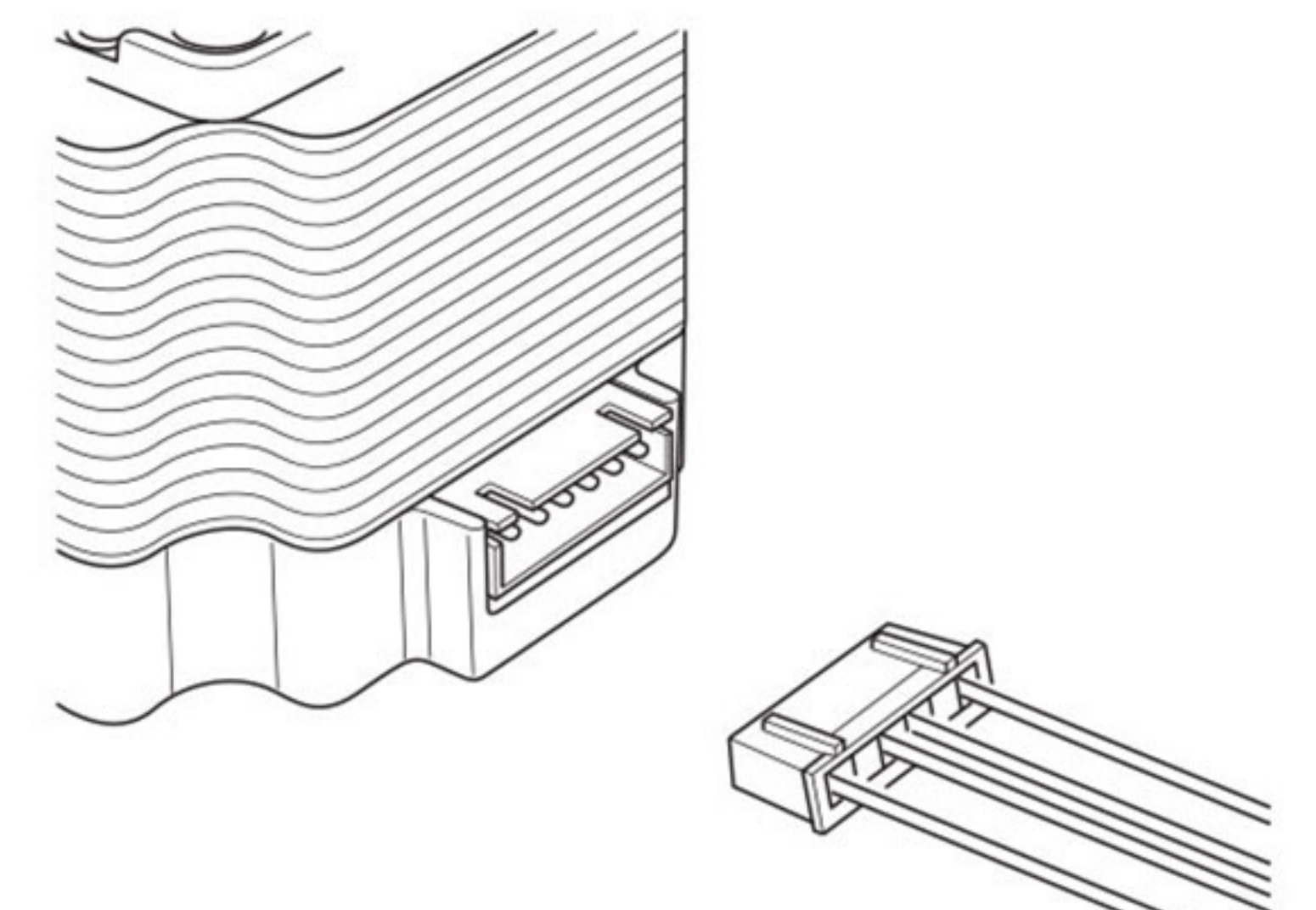
### Cable Outlet Options



Wire leads



Wire leads with connector



Connector with wiring harness

### Encoder Options



### Gearbox Options



### Brake Options



### Integrated Drive Options



# Motor Questionnaire Survey

**Please help us improve  
the quality of our service**



Dear User,

We sincerely hope to hear your opinions  
about HDBMOTOR.

What do you think is good?

What needs improvement?

Please send us your feedback to help us im-  
prove further.

**Email: [sales@hdbmotors.com](mailto:sales@hdbmotors.com)**

## Your Information

Company:

Department:

Name:

Phone:

Fax:

Email:

## Your Technical Requirements

Content	Item Specification	Specific Requirements					
Specifications	Outer Dimension (mm)	$\Phi$ 20 <input type="checkbox"/>	$\Phi$ 28 <input type="checkbox"/>	$\Phi$ 35 <input type="checkbox"/>	$\Phi$ 42 <input type="checkbox"/>	$\Phi$ 56 <input type="checkbox"/>	$\Phi$ 57 <input type="checkbox"/>
		$\Phi$ 60 <input type="checkbox"/>	$\Phi$ 86 <input type="checkbox"/>	$\Phi$ 130 <input type="checkbox"/>	$\Phi$ 130 <input type="checkbox"/>	$\Phi$ 150 <input type="checkbox"/>	
	Motor Length	mm (maximum)					
	Step Angle (Full Step)	1.8°/step <input type="checkbox"/>	0.9°/step <input type="checkbox"/>	1.2°/step <input type="checkbox"/>	0.6°/step <input type="checkbox"/>		
	Coil Type	Single Pole <input type="checkbox"/>			Double Pole <input type="checkbox"/>		
	Drive Type	Chopper (Constant Current Drive)			Constant Voltage Drive		
	Input Voltage (Drive Electric)	DC		V			
	Rated Current	A					
	Operating Speed	pps/rpm					
	Holding Torque	N.m					
	Pull-out Torque	N.m					
Excitation Mode	Full Step / Half Step / Micro Step (Subdivision)						
Other Requirements							
Usage Conditions	Operating Temperature	~ °C					
	Operating Humidity	~ % Relative Humidity					
	Remarks						

Sketch