

DINGS'

Precision Motion Specialist

5-PHASE STEPPER MOTOR BROCHURE

Jiangsu DINGS' Intelligent Control Technology Co., Ltd.



DINGS' 5-phase stepper motors deliver exceptional precision and low vibration, outperforming conventional 2-phase stepper motors with superior resolution and significantly reduced vibration and resonance. Featuring a 0.72° step angle, they enable smooth motion and highly accurate positioning, making them ideal for applications where precise movement is critical.

Furthermore, their stable low-speed performance and high torque characteristics make them well-suited for a wide range of applications, from precision equipment to industrial automation systems. These advantages ensure reliable operation across various demanding environments, supporting both performance and productivity.

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Part number construction

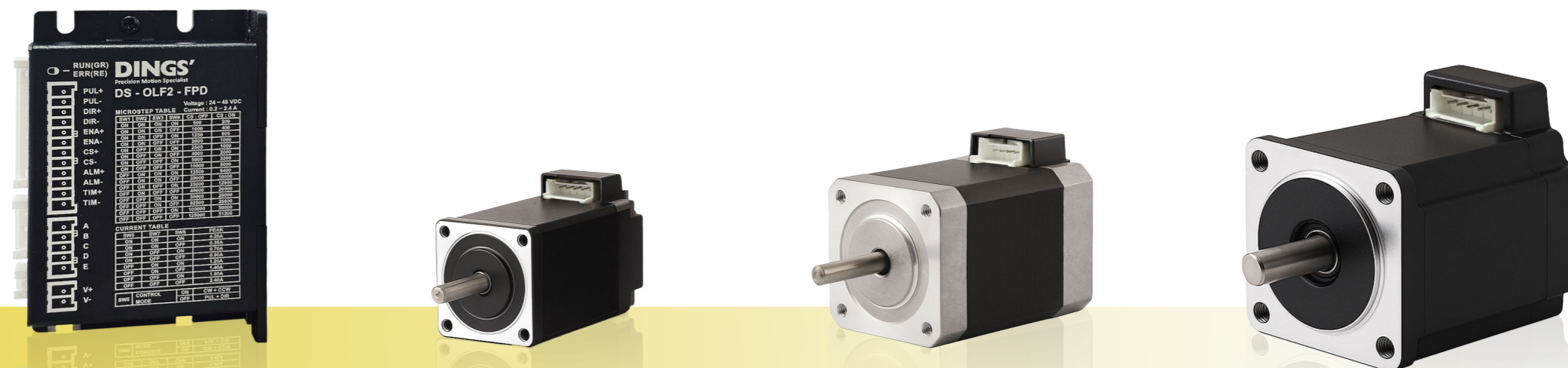
Size 11 · 28 mm

Size 17 · 42 mm

Size 24 · 60 mm

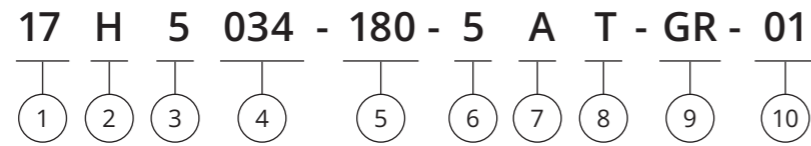
5-phase stepper motor driver

Accessories and options



5-phase Stepper Motor

Part Number Construction



① Motor Size

Motor Size (mm)	28	42	60
Motor Size (NEMA)	11	17	24

② Basic Structure

H = Normal
P = IP54
W = Enhanced

*For IP65, please contact DINGS' for more information

③ Motor Step Angle (°)

1 = 3°
2 = 1.8°
3 = 1.2°
4 = 0.9°
5 = 0.72°
6 = 0.36°

④ Motor Length (mm)

⑤ Rated Current

XXX = Rated current ×100 (A)

⑥ Wiring Number (3,4,5,6,8)

⑦ Shaft Configuration

A = Single shaft
B = Dual shaft

* Shaft dimension and D-Cut customization, please contact DINGS'

⑧ Wiring Method

L = Flying lead wire
T = Integrated connector
C = Cable

* If customer has special requirement for connector and cable, please inform DINGS'

⑨ Option

GR = Planetary gearbox ready
BR = Brake ready
ER = Encoder ready
PG = Planetary gearbox
Refers to the part number of gearbox with ratio
DG = DINGS' gearbox
FB = Power off brake, NB = Power on brake
EKX = Encoder [X = Encoder Resolution]

*DINGS' can customize shafts and covers to be ready to assemble Gearbox, Brake or Encoder by customers, according to customer's requirements by drawing.

*DINGS' has standard planetary gearbox options. Please see product details.

*Power-Off Brake is available for Motor size 28, 35, 42, 57 and 60mm

⑩ Customer Sequence Number

Example

Naming code 17H5034-180-5AT-GR-01

Description
Size 42 mm
Normal structure
Step angle 0.72°
Motor body length 34 mm
Rated current 1.8 A
5 wiring leads
Single shaft
Wiring method integrated connector
Planetary gearbox ready
Customization sequence code 01

Product Overview

Size	Part Number	Current (A _{RMS})	Resistance (Ω)	Inductance (mH)	Holding Torque (N·m)	Rotor Inertia (g·cm ²)	Motor Length (mm)	Weight (g)
28mm	11H5033	1.2	0.56	0.2	0.05	9	33	110
	11H5052	1.2	0.88	0.45	0.09	18	52	200
42mm	17H5034	1.8	0.34	0.35	0.22	35	34	240
	17H5041	1.8	0.45	0.55	0.3	54	41	300
	17H5049	1.8	0.5	0.7	0.37	77	49	360
	17H5061	1.8	0.65	1.1	0.5	110	61	500
60mm	24H5044	2.4	0.3	0.55	0.6	230	44	550

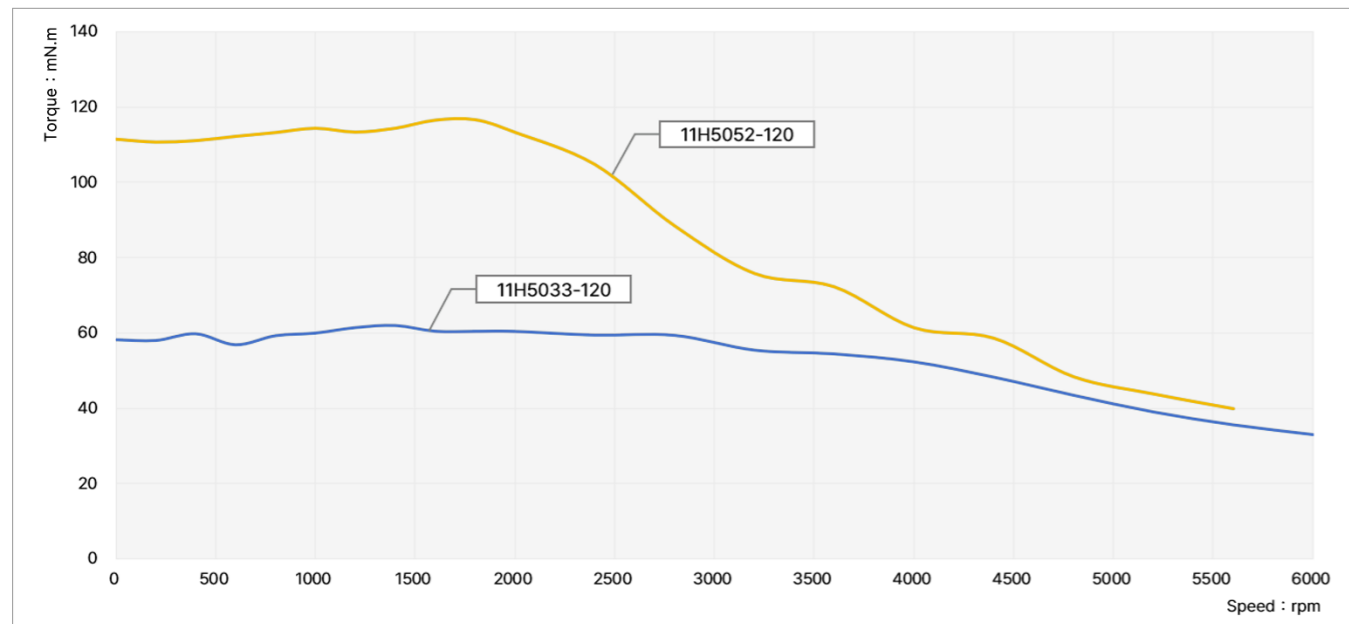
Size 11 (28mm) Series



Motor Characteristics

Model	Phase	Step angle (°)	Rated current (A)	Resistance (Ω)	Inductance (mH)	Holding torque (N.m)	Rotor inertia (g.cm ²)	Length (mm)	Weight (kg)
11H5033-120-5AT	5	0.72	1.2	0.56	0.2	0.05	9	33	0.11
11H5052-120-5AT	5	0.72	1.2	0.88	0.45	0.09	18	52	0.2
Permissible radial load (5mm distance from mounting surface)		Permissible radial load (10mm distance from mounting surface)		Permissible radial load (15mm distance from mounting surface)		Permissible radial load (20mm distance from mounting surface)			
50N		35N		25N		20N			

Torque Performance Curves



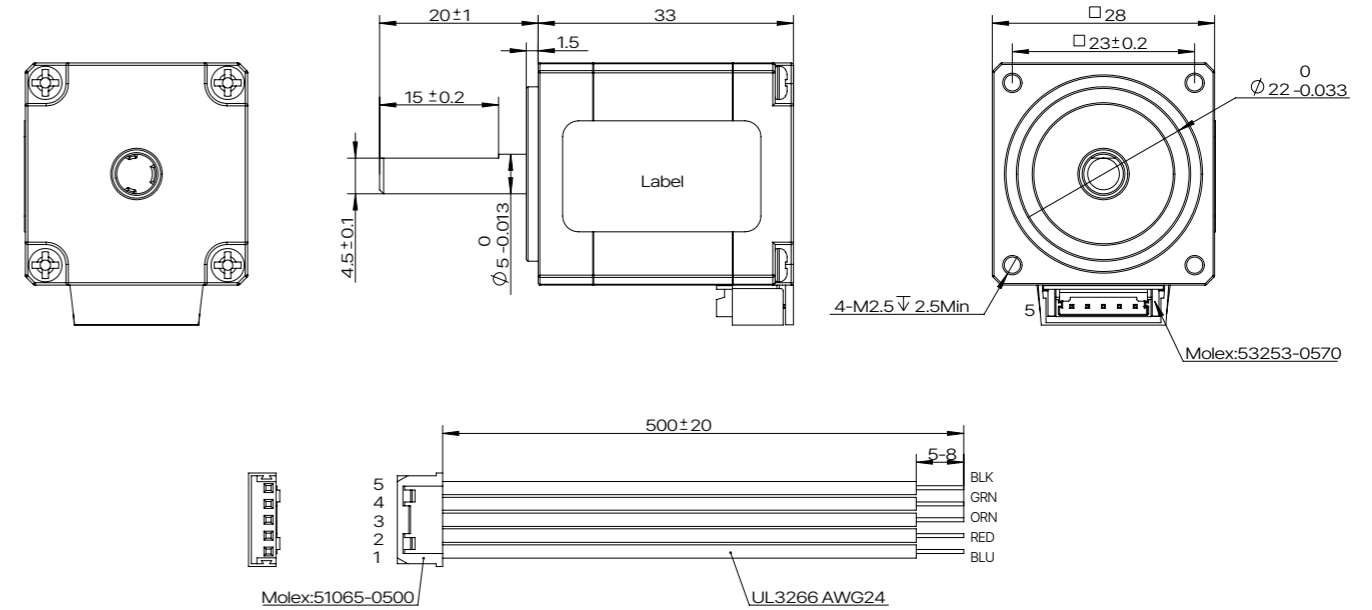
TEST CONDITION

Testing Voltage: 24Vdc, Driver Model: DS-OLF2-FPD, Rated Current 1.2A (rms)

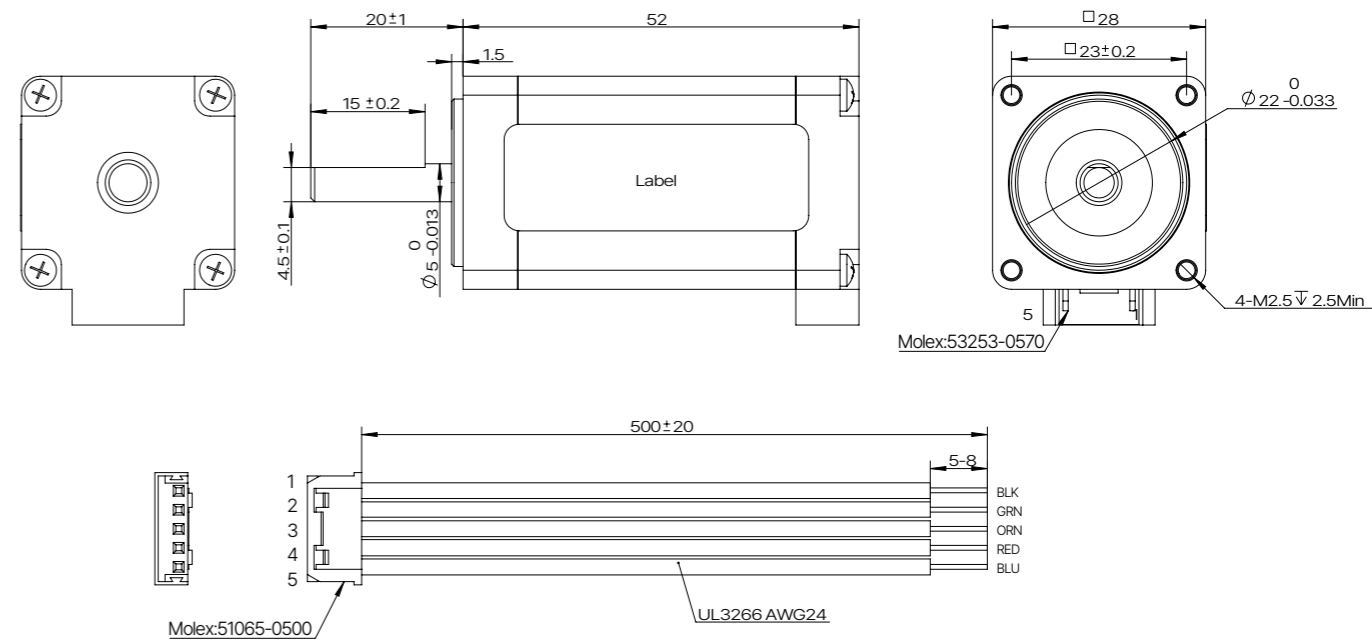
Size 11 (28mm) Series

Dimensional Drawings

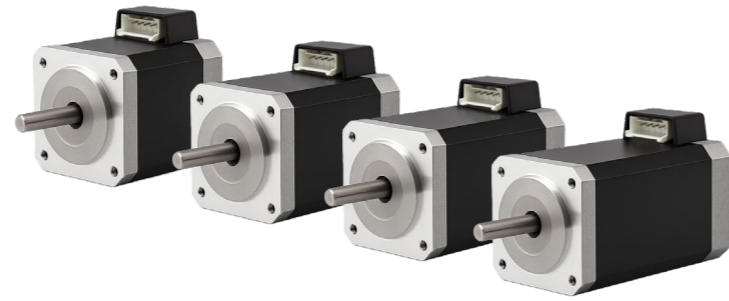
- 11H5033-120



- 11H5052-120



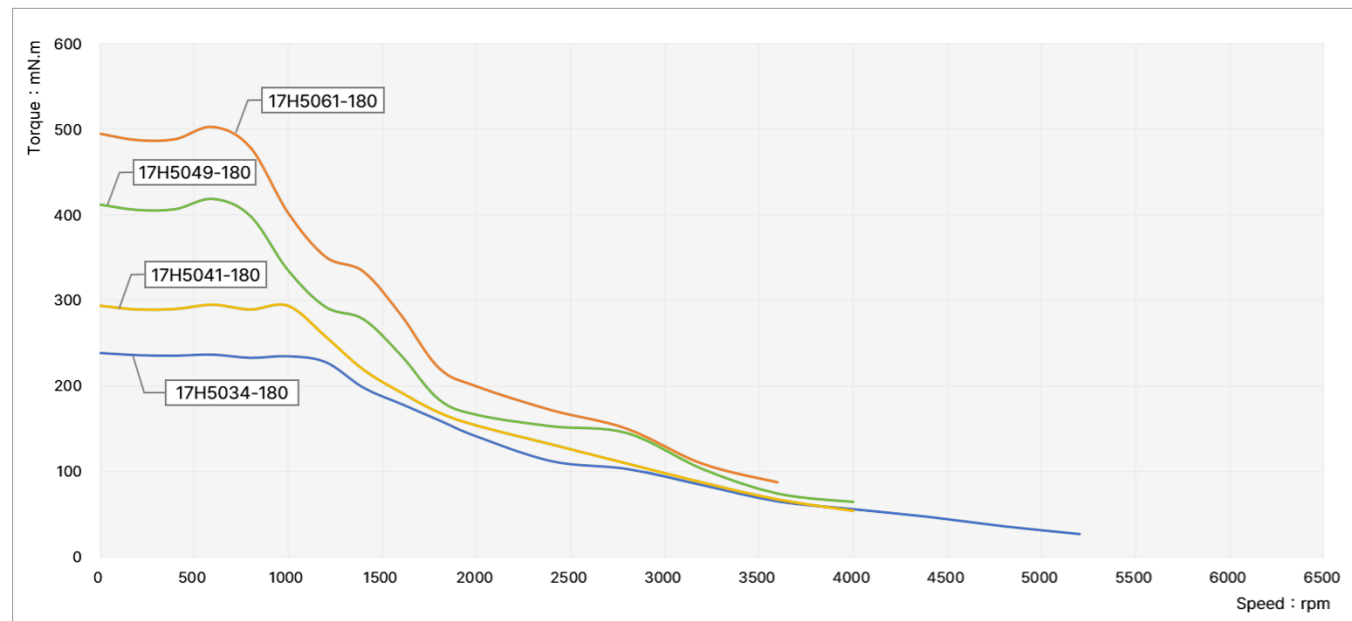
Size 17 (42mm) Series



Motor Characteristics

Model	Phase	Step angle (°)	Rated current (A)	Resistance (Ω)	Inductance (mH)	Holding torque (N.m)	Rotor inertia (g.cm ²)	Length (mm)	Weight (kg)
17H5034-180-5AT	5	0.72	1.8	0.34	0.35	0.22	35	34	0.24
17H5041-180-5AT	5	0.72	1.8	0.45	0.55	0.3	54	41	0.3
17H5049-180-5AT	5	0.72	1.8	0.5	0.7	0.37	77	49	0.36
17H5061-180-5AT	5	0.72	1.8	0.65	1.1	0.5	110	61	0.5
Permissible radial load (5mm distance from mounting surface)		Permissible radial load (10mm distance from mounting surface)		Permissible radial load (15mm distance from mounting surface)		Permissible radial load (20mm distance from mounting surface)			
50N		40N		25N		20N			

Torque Performance Curves



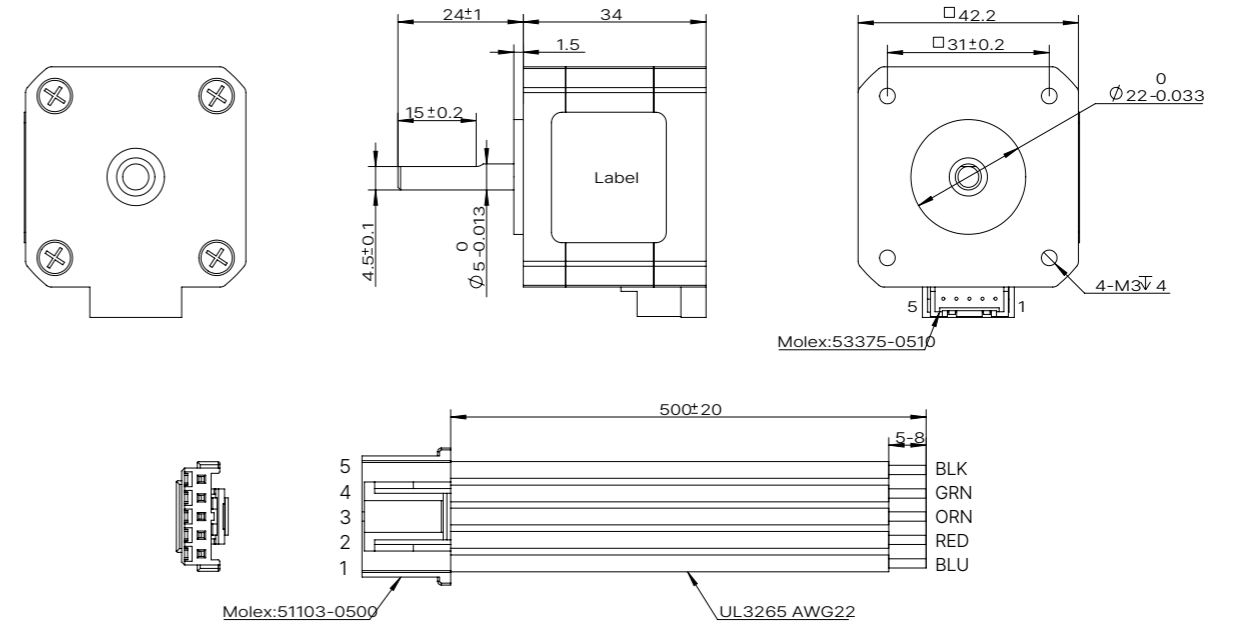
TEST CONDITION

Testing Voltage: 24Vdc, Driver Model: DS-OLF2-FPD, Rated Current 1.8A (rms)

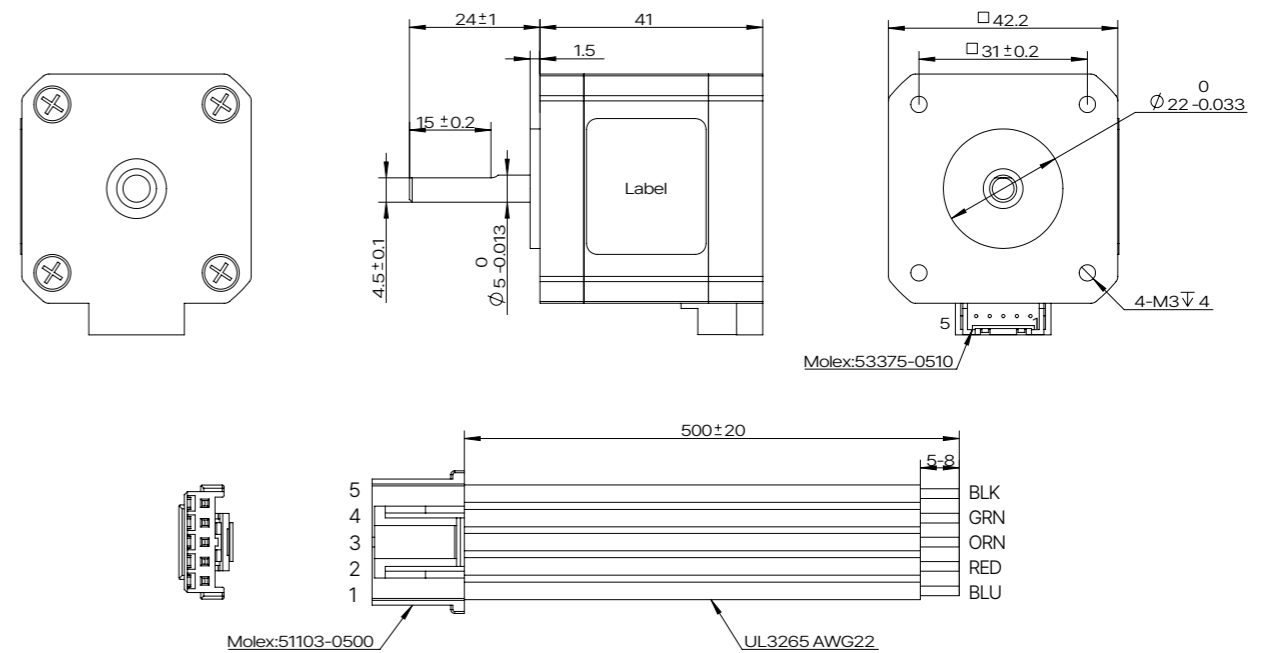
Size 17 (42mm) Series

Dimensional Drawings

- 17H5034-180



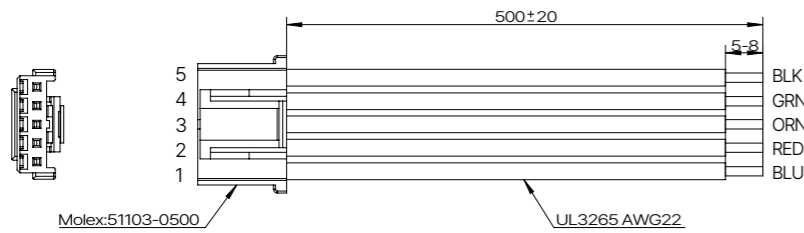
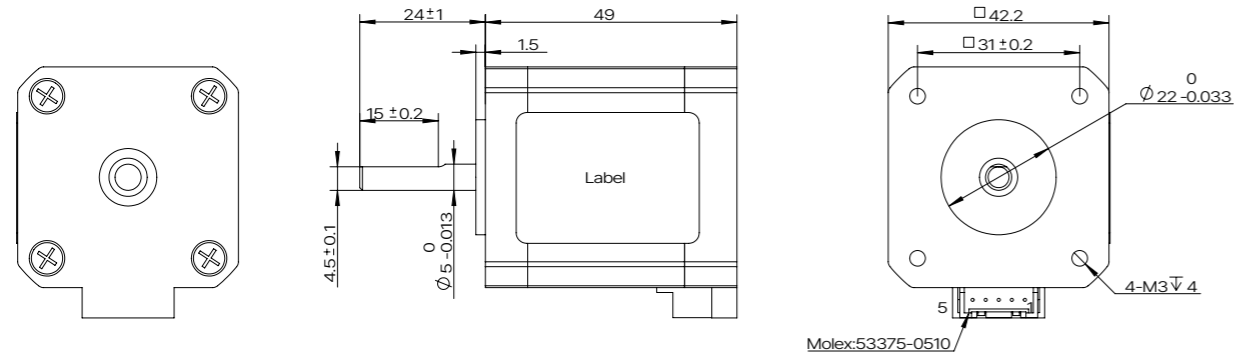
- 17H5041-180



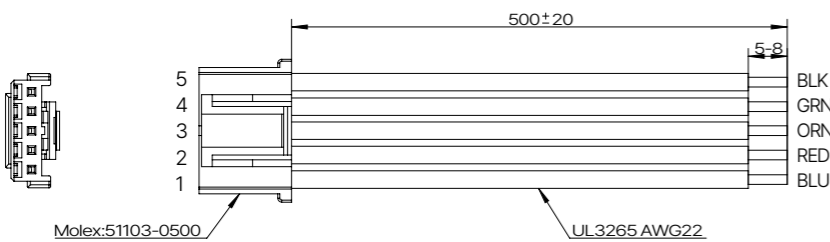
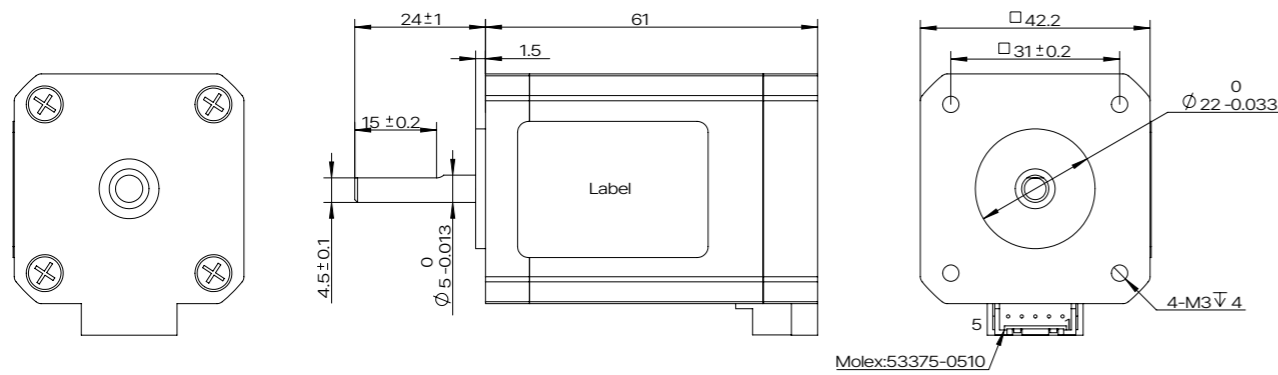
Size 17 (42mm) Series

Dimensional Drawings

17H5049-180



17H5061-180



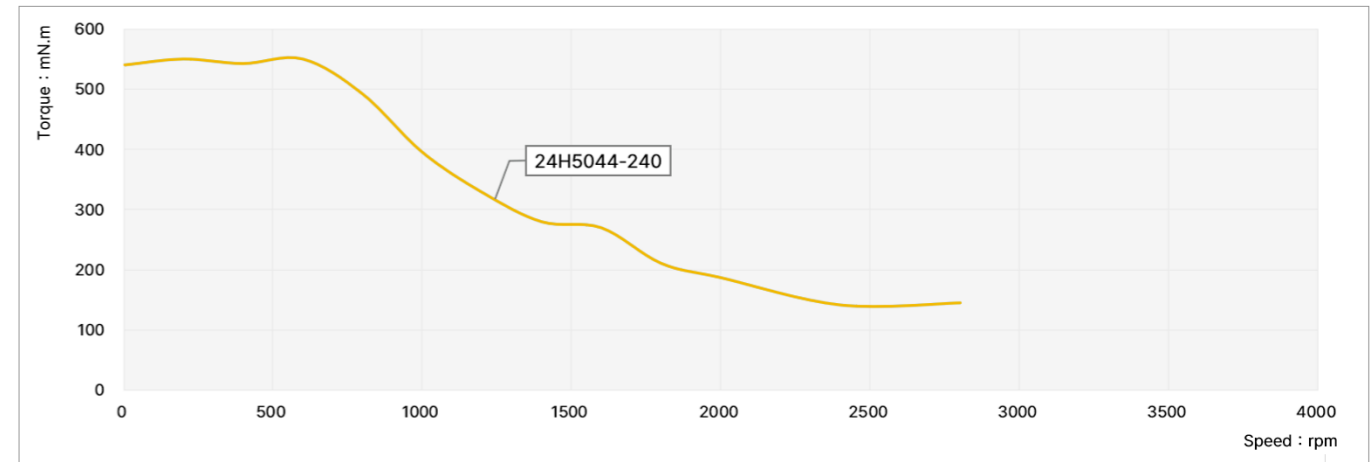
Size 24 (60mm) Series



Motor Characteristics

Model	Phase	Step angle (°)	Rated current (A)	Resistance (Ω)	Inductance (mH)	Holding torque (N.m)	Rotor inertia (g.cm ²)	Length (mm)	Weight (kg)
24H5044-240-5AL	5	0.72	2.4	0.3	0.55	0.6	230	44	0.55
Permissible radial load (5mm distance from mounting surface)		Permissible radial load (10mm distance from mounting surface)		Permissible radial load (15mm distance from mounting surface)		Permissible radial load (20mm distance from mounting surface)			
210N		170N		140N		120N			

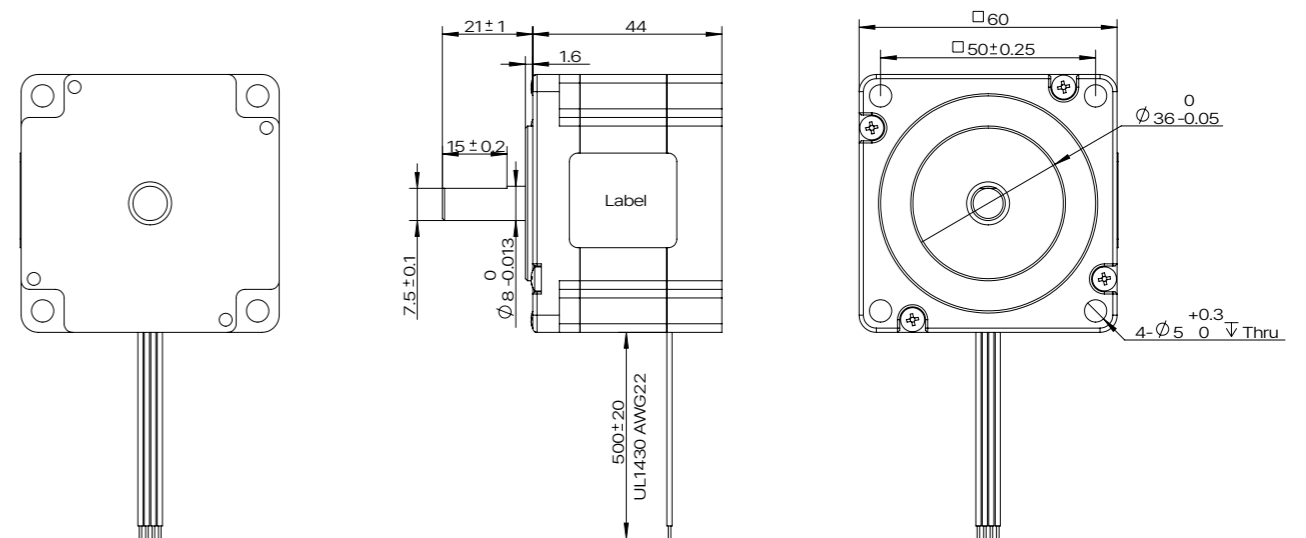
Torque Performance Curves



TEST CONDITION

Testing Voltage: 24Vdc, Driver Model: DS-OLF2-FPD, Rated Current 2.4A (rms)

Dimensional Drawings



5-phase Stepper Motor Driver

■ DS-OLF2-FPD Open-Loop Control - 5 Phase Pulse type

● Features

1. Input power : DC 24V - 36V
2. Output rated current: 0.2A - 2.4A (max.)
3. Compatible with 5-phase hybrid stepper motor
4. 4 inputs, 2 outputs
5. Supports 1 pulse, 2 pulse control
6. Microstepping drive (up to 125,000 pulses per revolution)

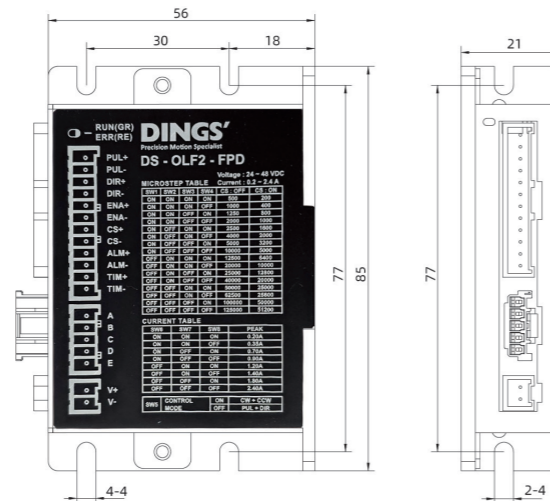


● Specification

Adapted motor	5-phase hybrid stepper motor, max supported current : 2.4A (max.)
Power supply	24 - 36VDC
Output current	0.2A - 2.4A / phase (max.)
Driving method	Full-bridge bipolar PWM drive
Control method	Pulse-direction control
Encoder support	No
Input signal	Pulse signal
	Enable signal
	Direction signal
	Select signal
Output signal	Alarm output
Size (excluding connector)	85 × 56 × 21 mm
Weight (excluding connector)	about 96g
Operating environment	Application
	Humidity
	Temperature
	Heat dissipation

● Installation (unit : mm)

1. Consider terminal size and cooling space during installation.
2. Recommended temperatures: under 60°C (driver), under 80°C (motor).
3. Install the driver vertically for natural cooling. Add a fan if needed to maintain stable operation.



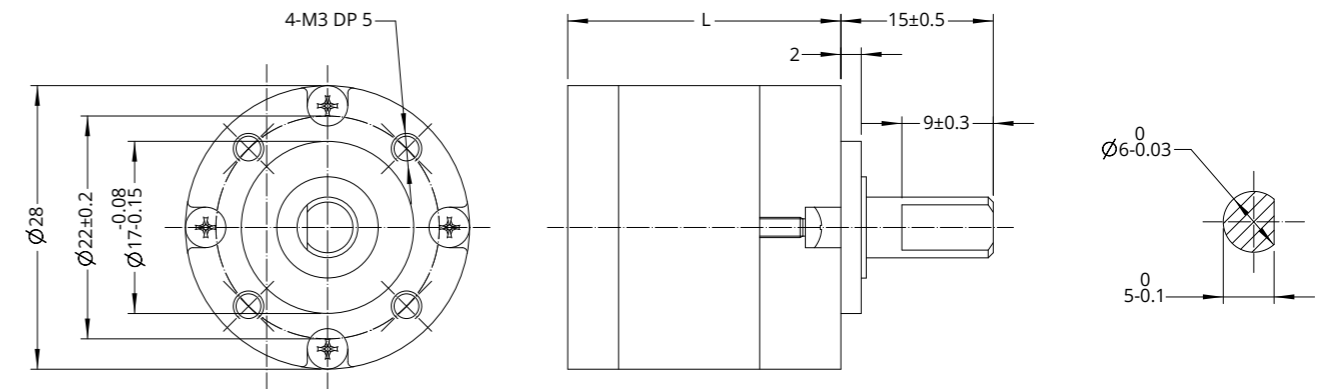
Accessories and Options

■ Planetary Gearbox

● Overview

Frame size	Ratio	Rated torque (N·m)	Limit torque (N·m)	Stages	Efficiency (%)	Length (mm)	Weight (g)	Corresponding motor
28 mm	3.3	0.5	1.5	1	90	21.2	87	28 mm
	4.6							
	11.2	1	3	2	81	26.9	91	
	15.5							
	21.5							
42 mm	37.7	2.5	7.5	3	73	32.7	100	42 mm
	72							
	3.7	1	3	1	90	30.6	260	
	5.2							
	13.7	2	6	2	81	41.9	350	
	19.2							
26.9								
60 mm	50.9	5	15	3	73	53.2	440	60 mm
	71.2							
	99.5	6	12	1	95	53	900	
	5							
	10							
60 mm	15	25	40	2	90	70	1200	
	20							
	25	6	12	1	95	53	900	
	10							

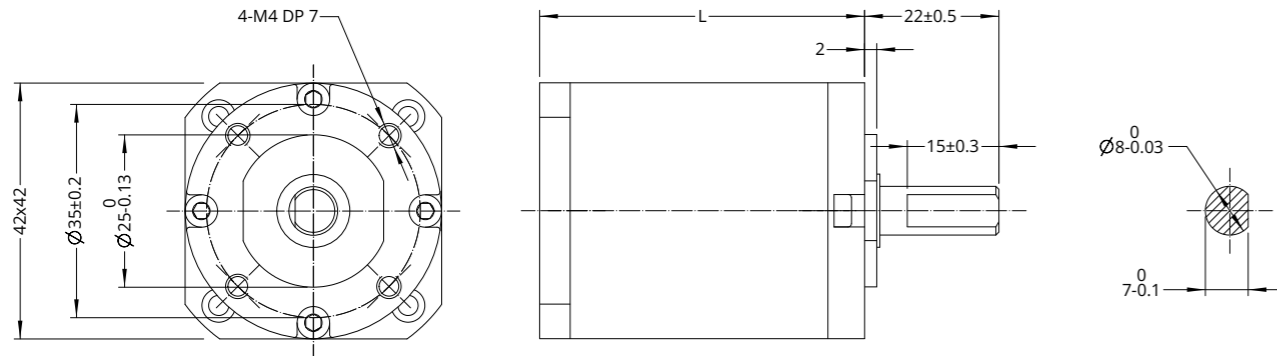
● 28mm Planetary Gearbox



Housing material				Metal		
No load backlash				1°		
Bearing				Ball bearing		
Ratio	Rated torque (N·m)	Limit torque (N·m)	Stages	Efficiency (%)	Length (mm)	Weight (g)
3.3	0.5	1.5	1	90	21.2	87
4.6						
11.2	1	3	2	81	26.9	91
15.5						
21.5						
37.7	2.5	7.5	3	73	32.7	100
72						

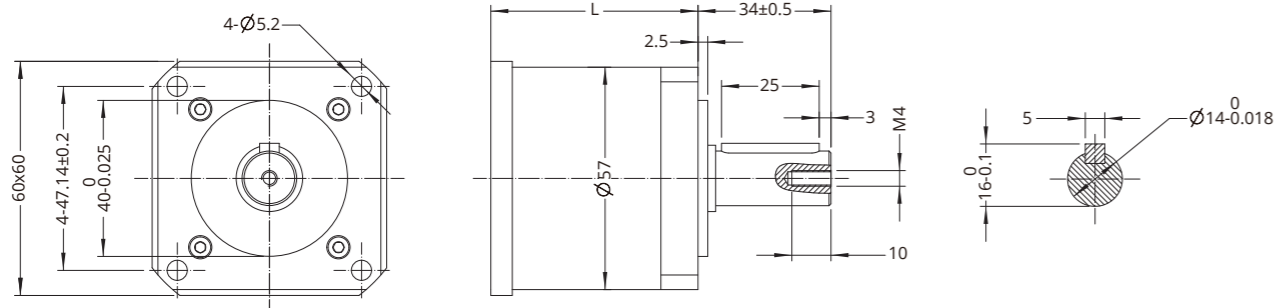
Accessories and Options

● 42mm Planetary Gearbox



Housing material			Metal			
No load backlash			1.2°			
Bearing			Ball bearing			
Ratio	Rated torque (N·m)	Limit torque (N·m)	Stages	Efficiency (%)	Length (mm)	Weight (g)
3.7 5.2	1	3	1	90	30.6	260
13.7 19.2 26.9	2	6	2	81	41.9	350
50.9 71.2 99.5	5	15	3	73	53.2	440

● 60mm Planetary Gearbox



Housing material			Metal			
No load backlash			First stage 15 arcmin, second stage 25 arcmin			
Bearing			Ball bearing			
Ratio	Rated torque (N·m)	Limit torque (N·m)	Stages	Efficiency (%)	Length (mm)	Weight (g)
5 10	6	12	1	95	53	900
15 20 25	25	40	2	90	70	1200

Accessories and Options

■ Encoder



EK 1 Encoder - single ended output

EK 1 Encoder - differential output

● EK 1 Encoder (Used for size 11, 17 motors) * No Index

Resolution (CPR)	100	108	120	125	128	200	250	256	300	360	400	500	1000	512	720	800
Single ended output	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Differential output	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P



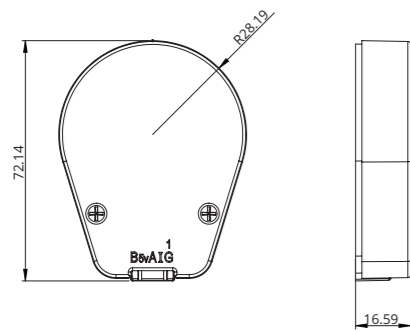
EK 2 Encoder - single ended output

EK 2 Encoder - differential output

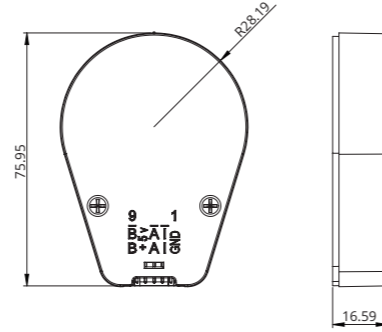
● EK 2 Encoder (Used for size 17, 24 motors)

Resolution (CPR)	50	100	192	200	250	256	360	400	500	720	900	1000	1250	2000	2500	4000	5000
Single ended output	0	1	2	3	4	5	6	7	8	9	10	11	12				
Differential output	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q

Accessories and Options



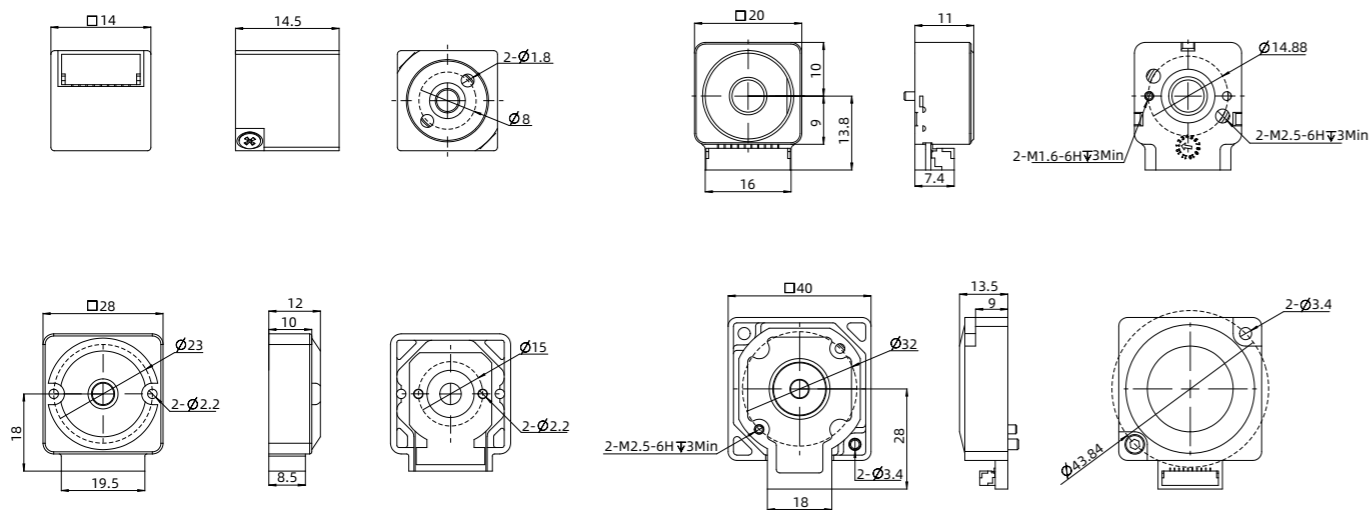
EK 3 Encoder - single ended output



EK 3 Encoder - differential output

● EK 3 Encoder (Used for size 24 motor)

Resolution (CPR)	64	100	200	500	1000	1800	2000	2500	3600	4000	5000	7200	8000	10000
Single ended output	0	1	2	3	4	5	6	7	8					
Differential output		A	B	C	D	E	F	G	H	I	J	K	L	M



● EK 7 Encoder (Used for size 11, 17, 24 motor)

Resolution (CPR)	-	-	-	1000	-	-	2000	-	-	-
Single ended output	0	1	2	3	4	5	6	7	8	9
Differential output	A	B	C	D	E	F	G	H	I	J

Accessories and Options

■ Power Off Brake



● Parameter

Series	11 (28mm)	17 (42mm)	24 (60mm)
Rated voltage	DC 24V±5%		
Resistance	143.7Ω±10%	145Ω±10%	141Ω±10%
Power	5.5W	5W	5W
Hold torque	>0.3N.M	>0.8N.M	>2N.m
Insulation	B		
Insulation resistance	>100MΩ (DC500V)		
Dielectric strength	AC 1000V for 1 sec		
Retraction time	50ms		
Release time	50ms		
Gyration gap	1°		
Emergency brake time	200		
Lifetime	2,000,000 times		
Noise level	<60 db		



ENG Web



Partners Web



YouTube



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