

Consistency and Reliability



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# Exmek®

## AUTOMATION TECHNOLOGY

Electric Motor

Integrated Motor

Brake

Gearbox

[www.exmek.com](http://www.exmek.com)

# 2024



## Exmek®

Wuxi Junhong Automation Technology Co.,Ltd.

Add: No.28-94, Hui Bei Road, Photoelectric New Materials Tech  
Industrial Park Wuxi, China

Tel: 86 510 83079076

Fax: 86 510 83079077

P.C.: 214045

Email: [Sales@exmek.com](mailto:Sales@exmek.com)

Web : [www.exmek.com](http://www.exmek.com)

Wuxi Junhong Automation Technology Co.,Ltd.



# About EXMEK

Exmek is a leading China based manufacturer and distributor of Brush and Brushless motors, Step motors, Capacitor motors and other motion control products and components. Since establishment, Exmek is committed to providing outstanding products and impeccable support to our global customers. Whether you need a standard, modified or complete custom product, Exmek can fully integrate motion solutions with your product to greatly enhance its features and provide you with a distinct competitive advantage.



## • What we provide...

- ★ DC brush motor
- ★ DC brushless motor
- ★ Stepping motor
- ★ AC Capacitor motor
- ★ Gear motor
- ★ Brake
- ★ Driver
- ★ Gearbox
- ★ Value-add sub assembly
- ...and more

Even though we offer a broad spectrum of general purpose standard motion products, we recognize the need for something special. Because of our flexible manufacturing and extensive design capabilities, we routinely work with our global customers to provide a customized solution to fit their specific application requirements.

Whether you need a complete customized motor with new castings, special machining and value added components or just a parts set, our global professional team is ready to help you with all of your application, logistics and sourcing needs.

## Customized Solutions™

Challenge us TODAY with your motion control applications!





# Product CATALOG

**Exmek** | Consistency & Reliability

## 03 DC Brushless Motor

04/05	ME042AS	06/07	ME042GS	08/09	ME042YS
10/11	ME043AS	12/13	EF045AS	14/15	ME057AH
16/17	MB057GA	18/19	MDB56GS	20/21	MB059AH
22/23	ME060AS	24/25	ME080AS	26/27	MB082GA
28/29	ME086AS	30/31	ME110AS	32	SLS

## 33 Brushless Servo Motor

34/35	SE040AS	36/37	SE060AS	38/39	SE080AS
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## 40 Gearmotor

40	50/67 Frame Cross-belt Sorter Servo Roller	41	80 Frame Servo Reducer for Mobile Robot	42	WD SERIES GEARMOTOR
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## 43 DC Brush Motor

44/45	MB030JS	46/47	MB040JS	48/49	MB042DK
50/51	MB054TP	52/53	MB057DG	54/55	MB063KG
56/57	MB080FG	58/59	MB100FG		

## 60 Stepper Motor

61	STEPPER MOTOR	62	MP020NA	63	MP028NB
64	MP039NA	65	MP042NB	66	MP042SB
67	MP057NB	68	MP057SB	69	MP060NB
70	MP086NA	71	MP086YG	72	MP110YG
73	MPF028NB	74	MPF068NB		

## 75 Brake

76	MSRA061	77	MPC023/034
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## 78 Integrated Motor

78/79/80	MDS040	81/82/83	MDS057	84/85/86	MDS060
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## 87 Gearbox

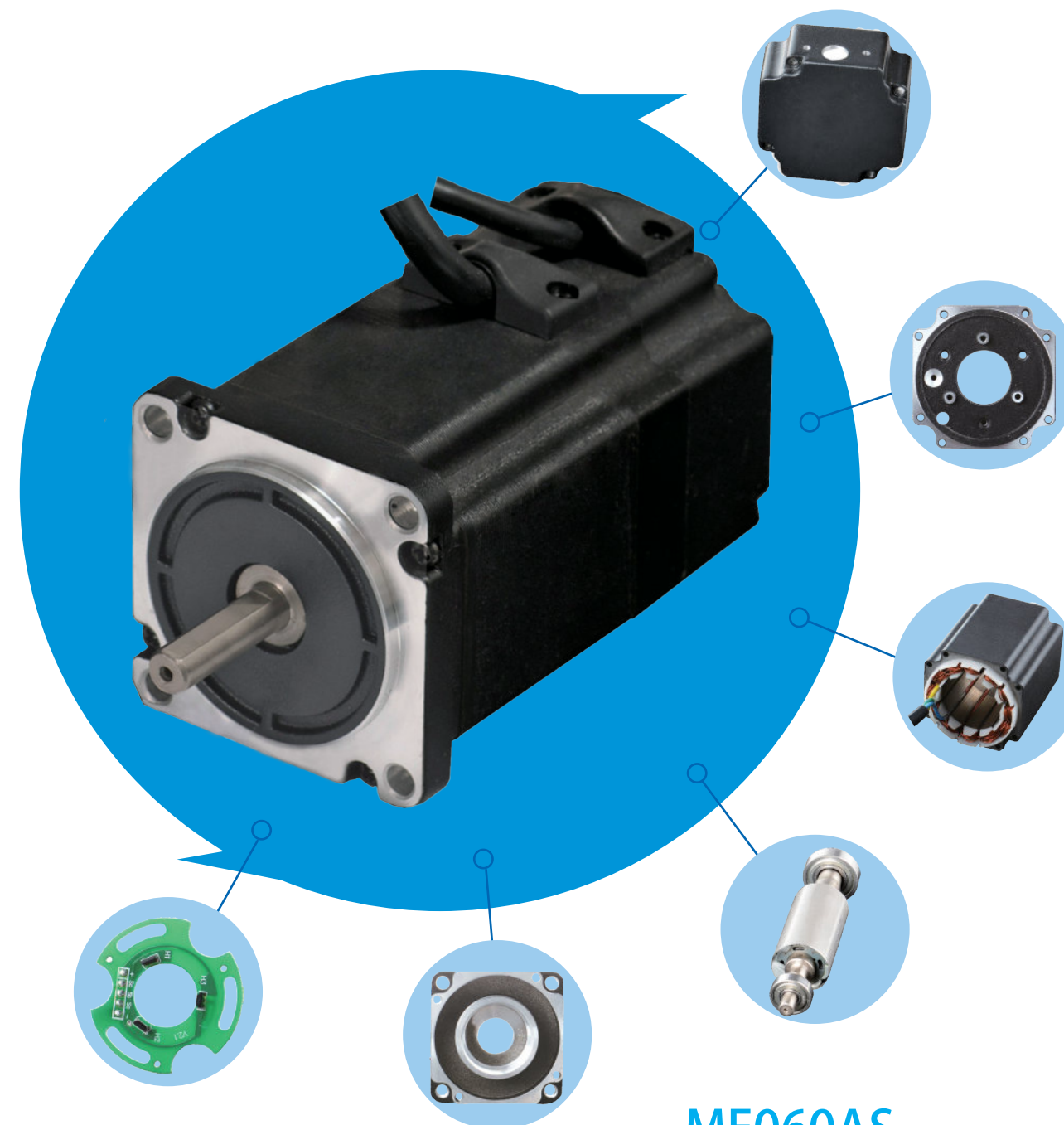
87	EL Planetary
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## 88 Encoder

88	EM040
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**Exmek**  
Consistency and Reliability

# DC BRUSHLESS MOTOR



**ME060AS**

We can customize it according to customer's requirements

# ME042AS

## DC Brushless Motor

● General information

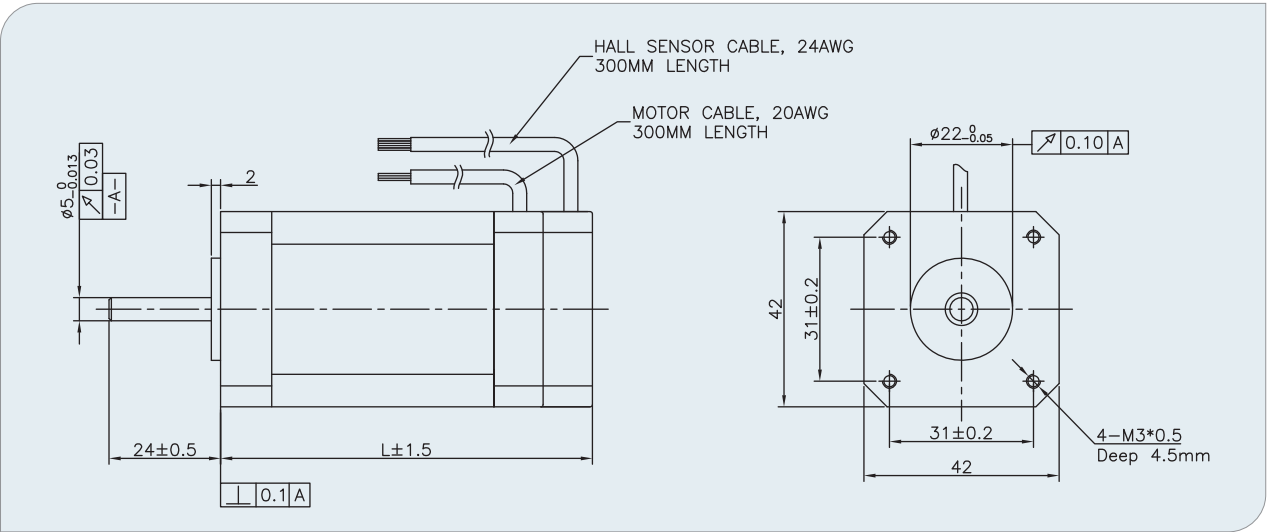
- NEMA 17 flange
- 8 poles with three phases
- 12 slots design for low cogging
- Insulation class B, higher insulation class on request
- Sintered Neo Magnet
- Integrated driver available

● Specifications

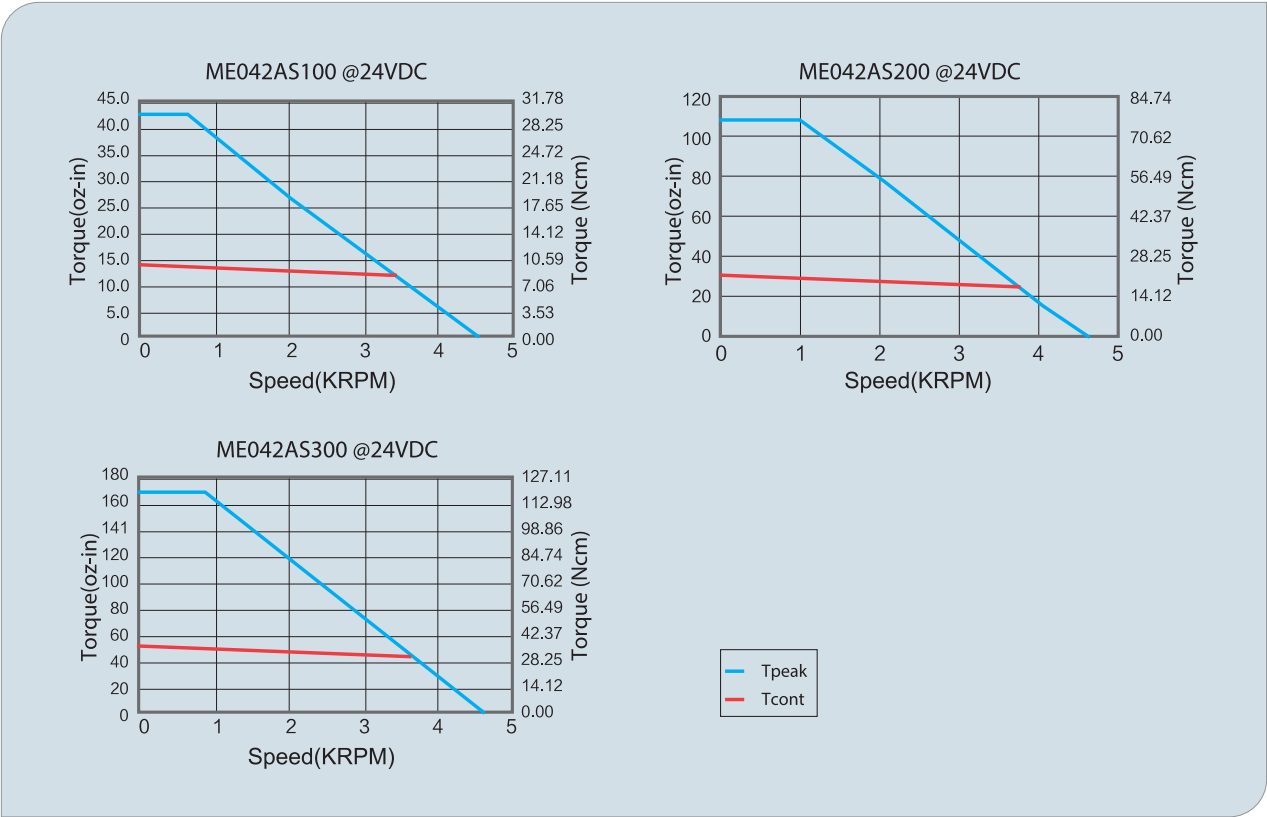
SPECIFICATION		Unit	ME042AS100	ME042AS200	ME042AS300
Supply Voltage (reference)	(Vs)	Vdc	24	24	24
Rated Continuous Torque	(Tcr)	Nm	0.10	0.20	0.33
Rated Speed at Cont. Torque	(Scr)	rpm	3000	3000	3000
Rated Continuous Stall Current	(Ics)	A	2.25	3.5	7.8
Rated Continuous Output Power	(Po,c)	W	31	63	107
Rated Peak Torque	(Tpr)	Nm	0.30	0.77	1.20
Rated Peak Current	(Ipr)	A	7.18	20.27	30.77
Torque Constant	(KT)	Nm/A	0.0513	0.0513	0.0513
Voltage Constant	(KE)	V/krpm	5.37	5.37	5.37
Terminal Resistance	(Rmt)	Ω	2.40	0.98	0.62
Inductance	(L)	mH	1.7	0.58	0.38
Insulation Class			B	B	B
Rotor Inertia	(Jr)	Kg.m²	2.90E-06	5.90E-06	8.90E-06
Motor Weight	(Wm)	Kg	0.36	0.55	0.65
Motor Length	(Lm)	mm	52	71	90



● Mechanical



● Characteristic diagram





# ME042GS

## DC Brushless Motor

● General information

- 8 poles with three phases
- 6 slots design for automatic winding
- Insulation class B, higher insulation class on request
- Bonded Neo Magnet
- Integrated driver available

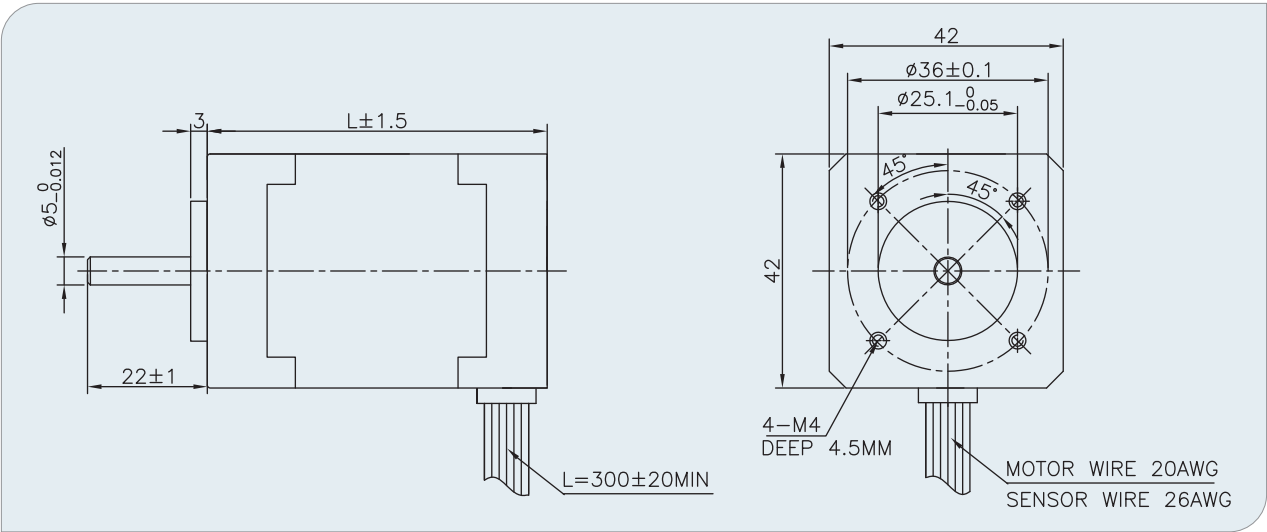
● Specifications

SPECIFICATION	Unit	ME042GS100	ME042GS200	ME042GS300	ME042GS400
Supply Voltage (reference)	(Vs) Vdc	24	24	24	24
Rated Continuous Torque	(Tcr) Nm	0.064	0.126	0.191	0.268
Rated Speed at Cont. Torque	(Scr) rpm	4000	4000	4000	4000
Rated Continuous Stall Current	(Ics) A	2.19	3.84	5.84	8.18
Rated Continuous Output Power	(Po,c) W	27	53	80	112
Rated Peak Torque	(Tpr) Nm	0.19	0.38	0.56	0.75
Rated Peak Current	(Ipr) A	5.75	11.2	16.6	22.02
Torque Constant	(KT) Nm/A	0.0359	0.0359	0.0359	0.0359
Voltage Constant	(KE) V/krpm	3.76	3.76	3.76	3.76
Terminal Resistance	(Rmt) Ω	1.80	0.72	0.55	0.28
Inductance	(L) mH	2.60	1.2	0.8	0.54
Insulation Class		B	B	B	B
Rotor Inertia	(Jr) Kg.m²	2.80E-06	4.8E-06	7.2E-06	9.6E-06
Motor Weight	(Wm) Kg	0.30	0.45	0.65	0.8
Motor Length	(Lm) mm	41	61	81	100

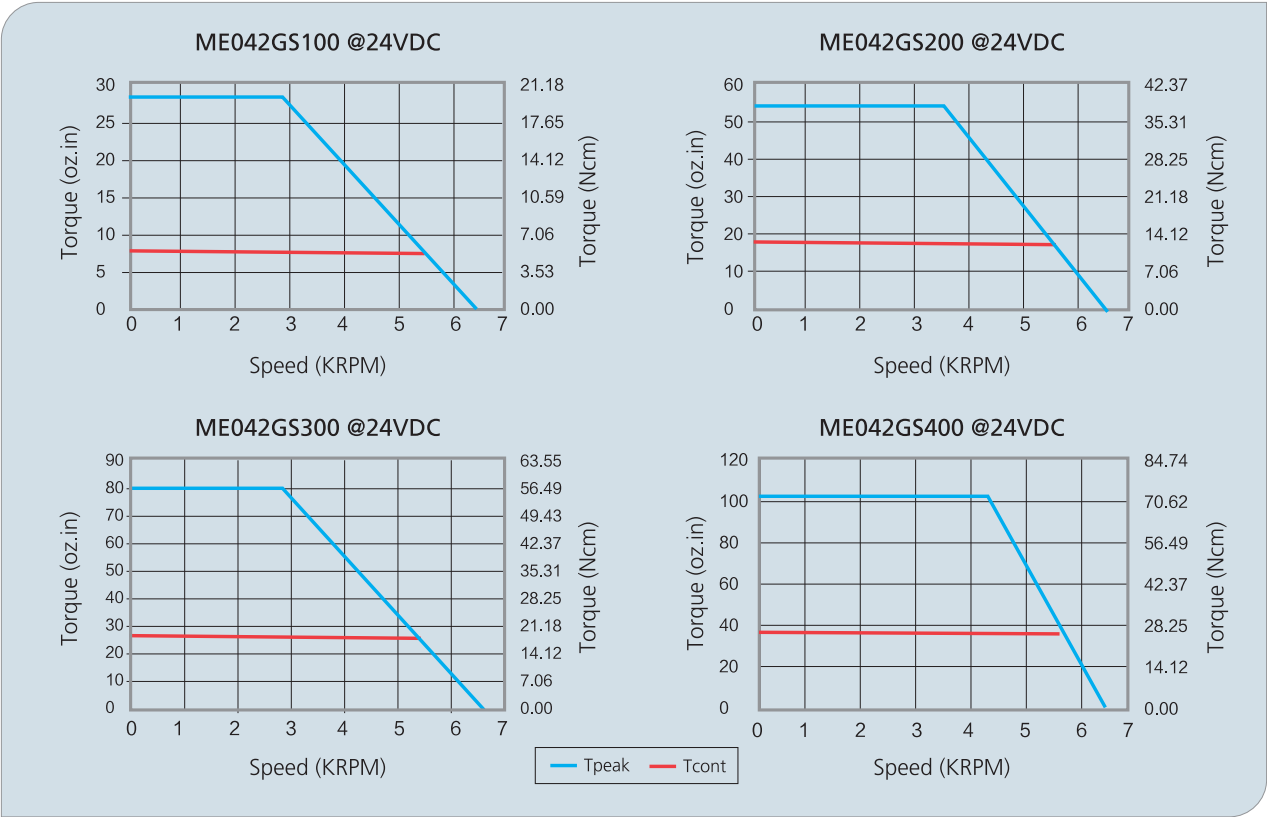


# ME042GS

● Mechanical



● Characteristic diagram



# ME042YS

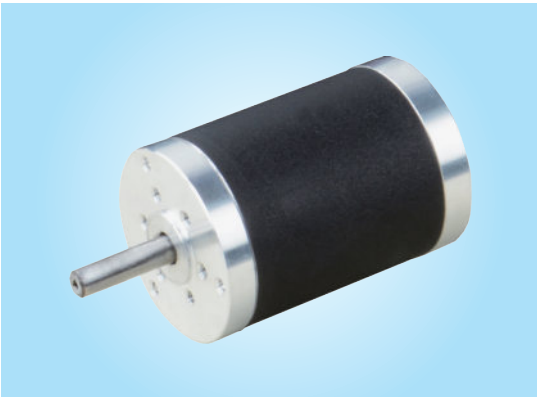
## DC Brushless Motor

General information

- 8 poles with three phases
- 6 slots design for automatic winding
- Insulation class B, higher insulation class on request
- Bonded Neo Magnet

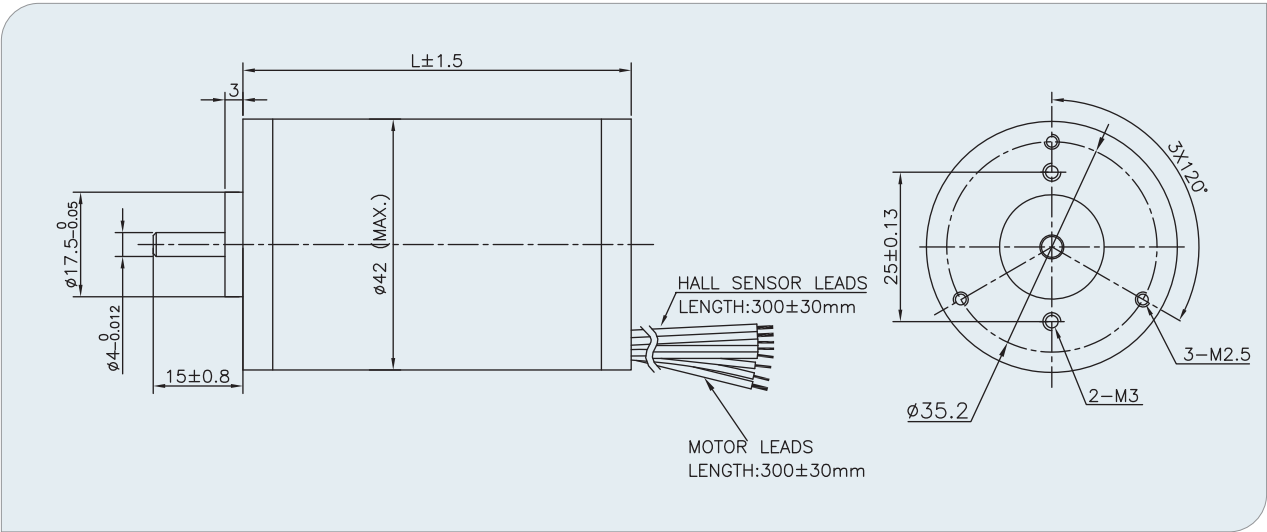
Specifications

SPECIFICATION	Unit	ME042YS100	ME042YS200
Supply Voltage (reference)	(Vs) Vdc	24	24
Rated Continuous Torque	(Tcr) Nm	0.077	0.169
Rated Speed at Cont. Torque	(Scr) rpm	4000	4000
Rated Continuous Stall Current	(Ics) A	2.91	5.23
Rated Continuous Output Power	(Po,c) W	32	71
Rated Peak Torque	(Tpr) Nm	0.24	0.45
Rated Peak Current	(Ipr) A	7.49	13.25
Torque Constant	(KT) Nm/A	0.0353	0.0353
Voltage Constant	(KE) V/krpm	3.70	3.80
Terminal Resistance	(Rmt) Ω	1.60	0.71
Inductance	(L) mH	1.94	0.86
Insulation Class		B	B
Rotor Inertia	(Jr) Kg.m²	4.8E-06	6.5E-06
Motor Weight	(Wm) Kg	0.40	0.6
Motor Length	(Lm) mm	60	85

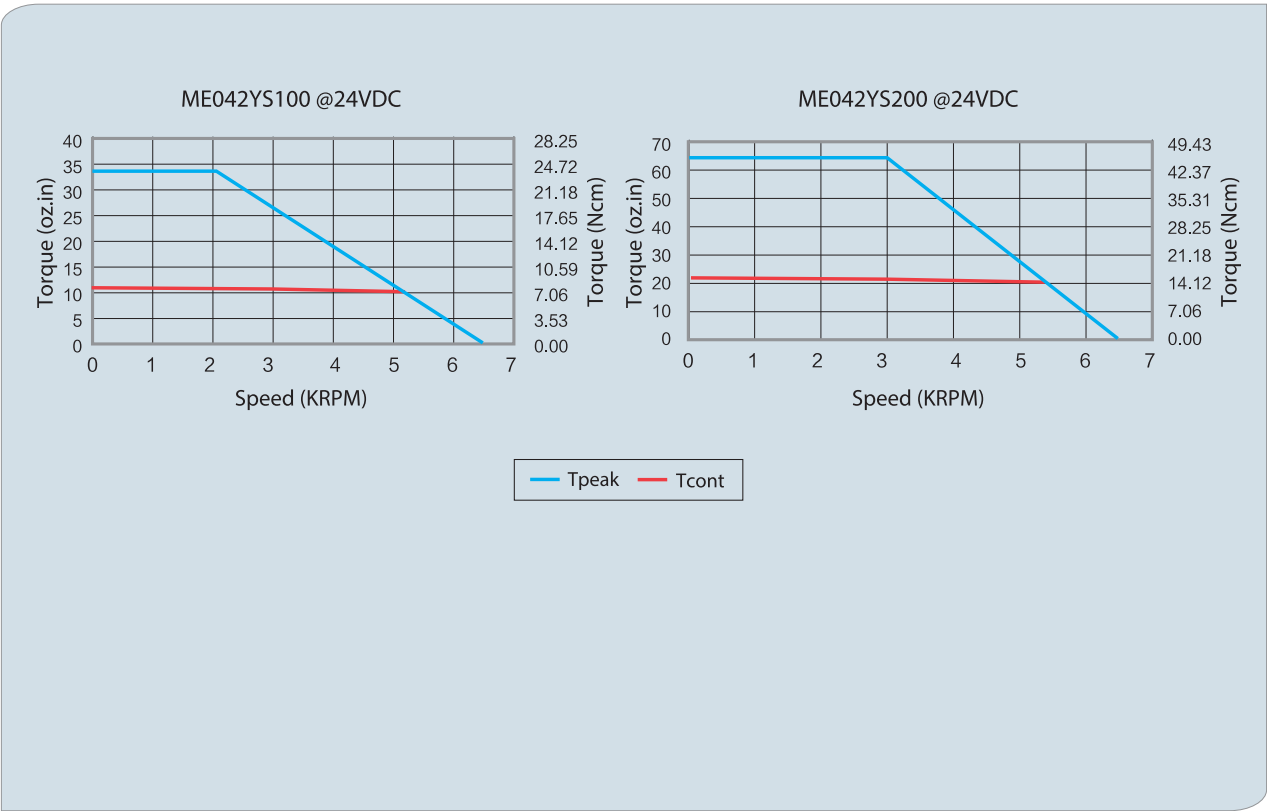


# ME042YS

Mechanical



Characteristic diagram





# ME043AS

## DC Brushless Motor

● General information

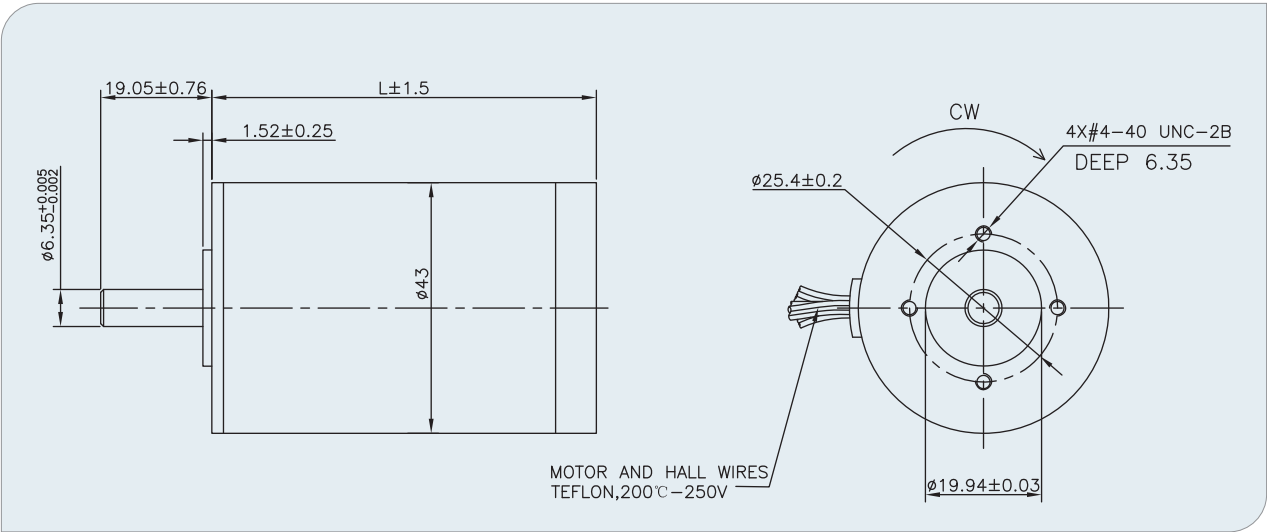
- 4 poles with three phases
- 120/60 degree hall effect
- Seal ball bearing
- Neodymium magnet
- Aluminum housing
- Insulation class B, higher insulation class on request
- IP 55 available

● Specifications

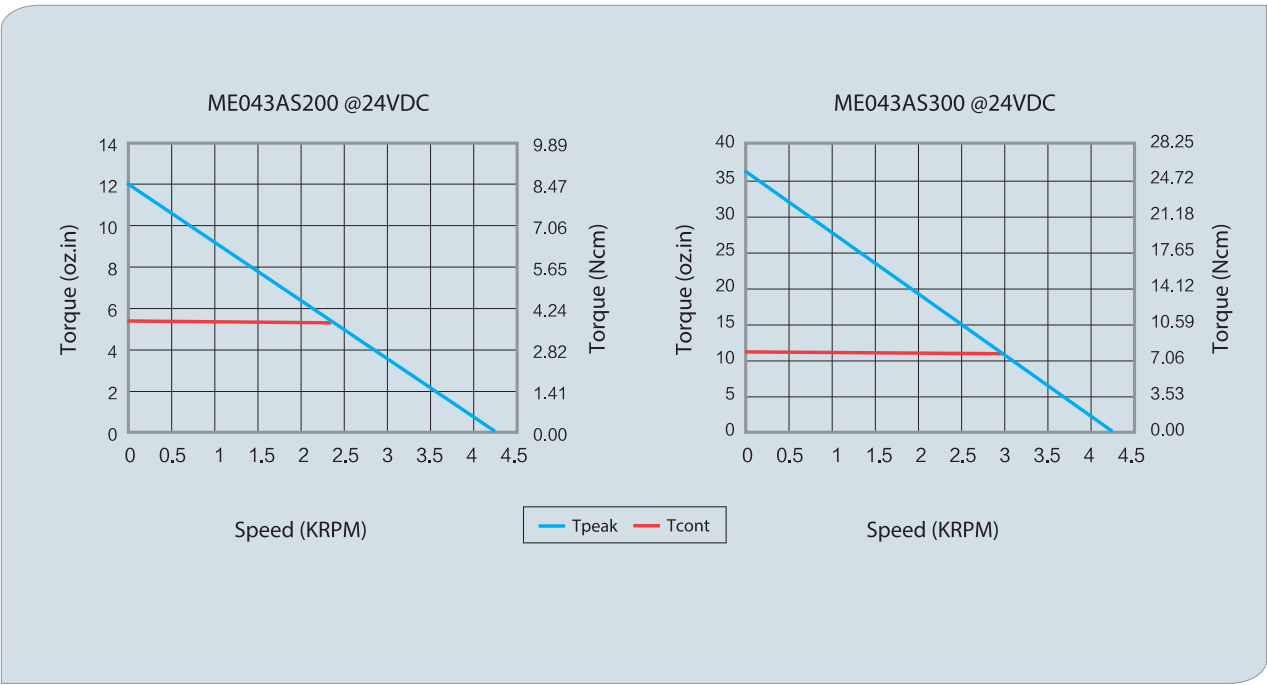
SPECIFICATION	Unit	ME043AS200	ME043AS300
Supply Voltage (reference)	(Vs) Vdc	24	24
Rated Continuous Torque	(Tcr) Nm	0.038	0.078
Rated Speed at Cont. Torque	(Scr) rpm	2400	3000
Rated Continuous Stall Current	(Ics) A	0.94	1.65
Rated Continuous Output Power	(Po,c) W	9	25
Rated Peak Torque	(Tpr) Nm	0.08	0.26
Rated Peak Current	(Ipr) A	1.93	7.21
Torque Constant	(KT) Nm/A	0.0523	0.0532
Voltage Constant	(KE) V/krpm	5.47	5.57
Terminal Resistance	(Rmt) Ω	9.74	3.34
Inductance	(L) mH	2.66	1.13
Insulation Class		B	B
Rotor Inertia	(Jr) Kg.m²	5.60E-08	1.13E-07
Motor Weight	(Wm) Kg	0.23	0.35
Motor Length	(Lm) mm	47.4	66.4



● Mechanical



● Characteristic diagram



# EF045AS

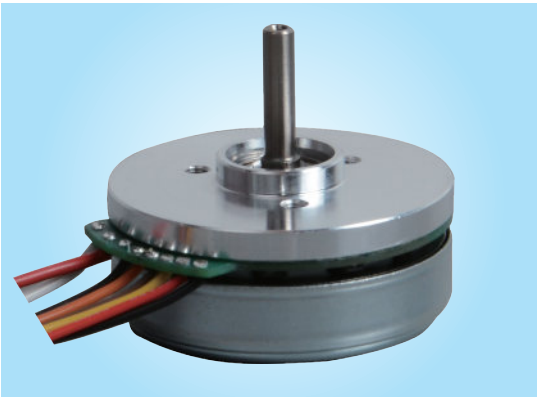
## DC Brushless Motor

● General information

- 16 poles with three phases external rotor
- Low torque ripple
- High inertia torque
- Compact design
- Insulation class B
- Application: Medical, Automation

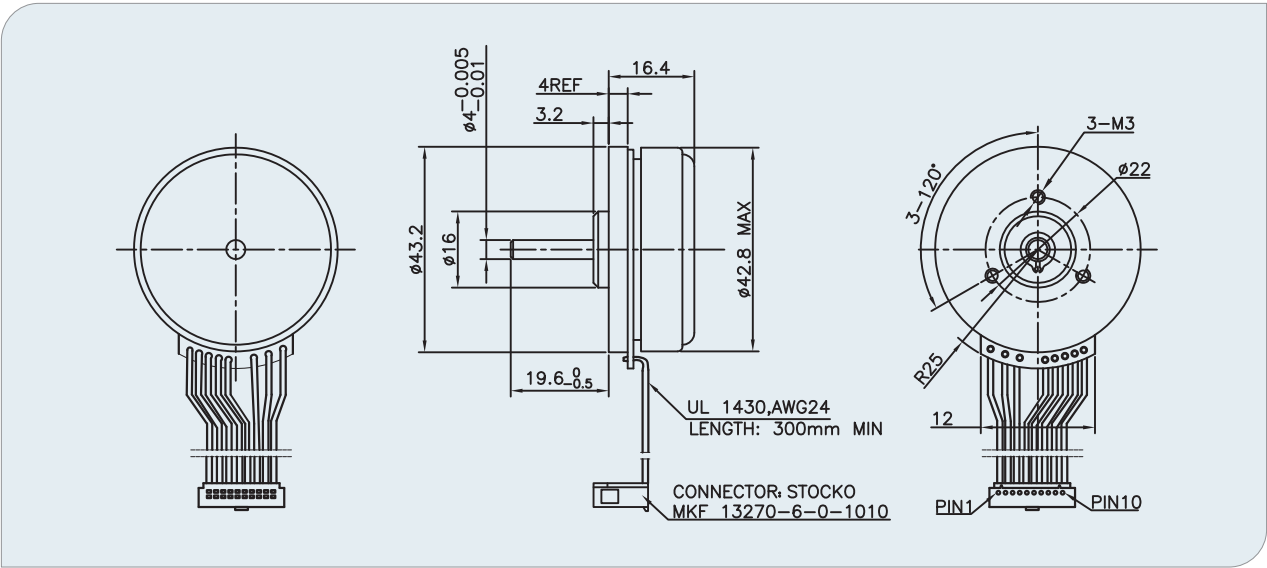
● Specifications

SPECIFICATION	Unit	EF045AS100	EF045AS200
Nominal voltage	V	12	24
No load speed	rpm	4500	6500
No load current (max.)	mA	300	300
Nominal speed	rpm	2940	5000
Nominal torque(max.continuous torque)	mNm	55.5	50
Nominal current(max.continuous current)	A	2.05	1.58
Nominal power	W	17	30
Stall torque	mNm	219	440
Stall current	A	10	4.8
Max.efficiency	%	72	72
Terminal resistance phase to phase	Ω	1.2	1.47
Terminal inductance phase to phase	mH	0.36	0.61
Torque constant	mNm/A	25.5	35.5
Rotor inertia	gcm <sup>2</sup>	99	99
Insulation class		B	B
Weight of motor	g	75	80

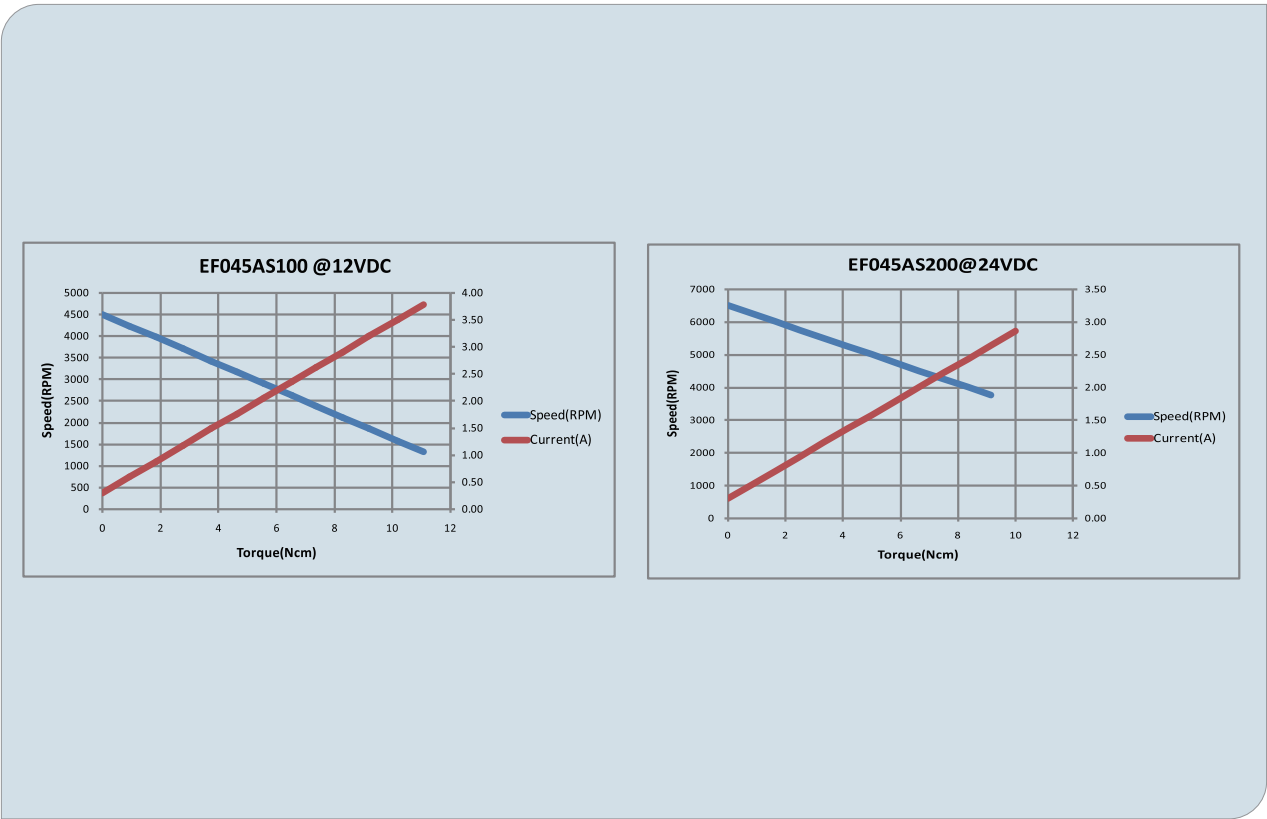


# EF045AS

● Mechanical



● Characteristic diagram





# ME057AH

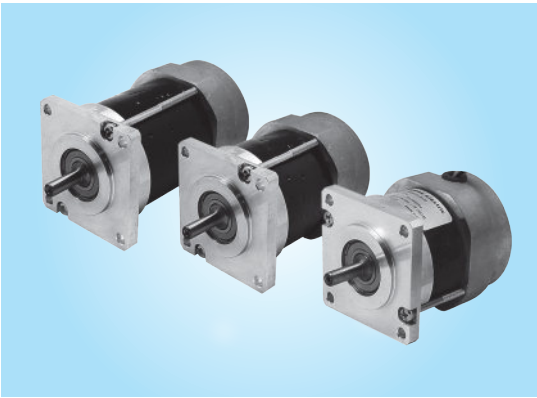
## DC Brushless Motor

● General information

- Shielded Ball Bearings
- NEMA 23 Flange Mounting
- Aluminum End Caps
- 8-Pole Rotor
- Hall Effect Feedback(120°elec)
- IP42 rated
- Low Cogging
- Encoder available

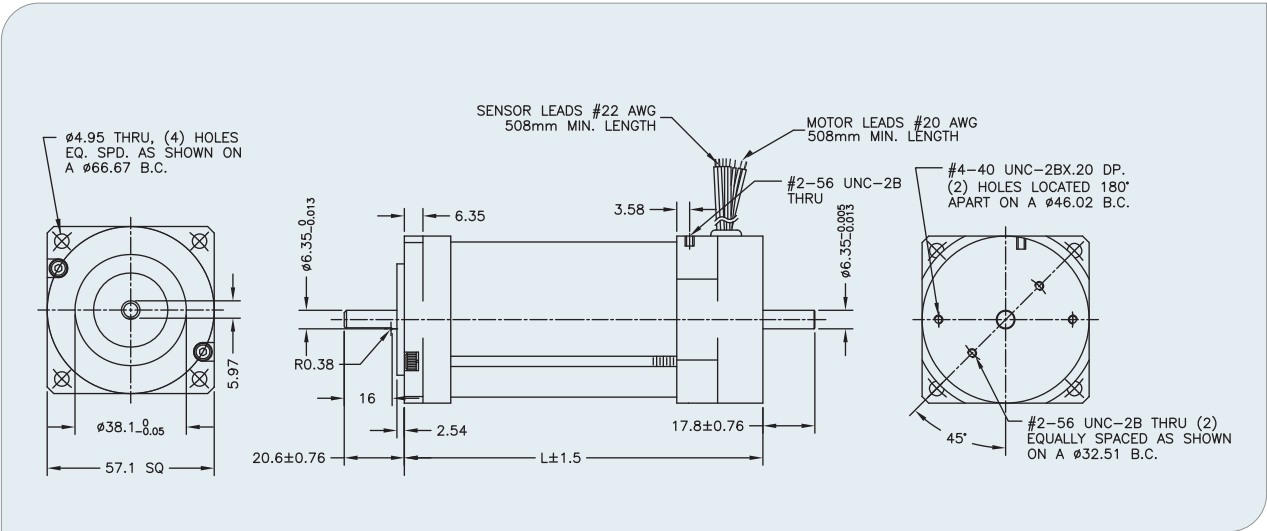
● Specifications

SPECIFICATION	Unit	ME057AH100	ME057AH200	ME057AH300
Supply Voltage (reference)	(Vs) Vdc	170	170	170
Rated Continuous Torque	(Tcr) Nm	0.31	0.57	0.70
Rated Speed at Cont. Torque	(Scr) rpm	6000	6000	6000
Rated Continuous Stall Current	(Ics) A	3.73	5.49	7.43
Rated Continuous Output Power	(Po,c) W	196	361	440
Rated Peak Torque	(Tpr) Nm	1.20	2.20	2.68
Rated Peak Current	(Ipr) A	11.92	17.53	23.74
Torque Constant	(KT) Nm/A	0.1070	0.1338	0.1204
Voltage Constant	(KE) V/krpm	11.20	14.00	12.6
Terminal Resistance	(Rmt) Ω	2.09	1.16	0.59
Inductance	(L) mH	1.60	1.07	0.54
Insulation Class		F	F	F
Rotor Inertia	(Jr) Kg.m²	1.34E-05	2.6E-05	3.95E-05
Motor Weight	(Wm) Kg	0.91	1.32	1.72
Motor Length	(Lm) mm	71.1	96.5	127.9

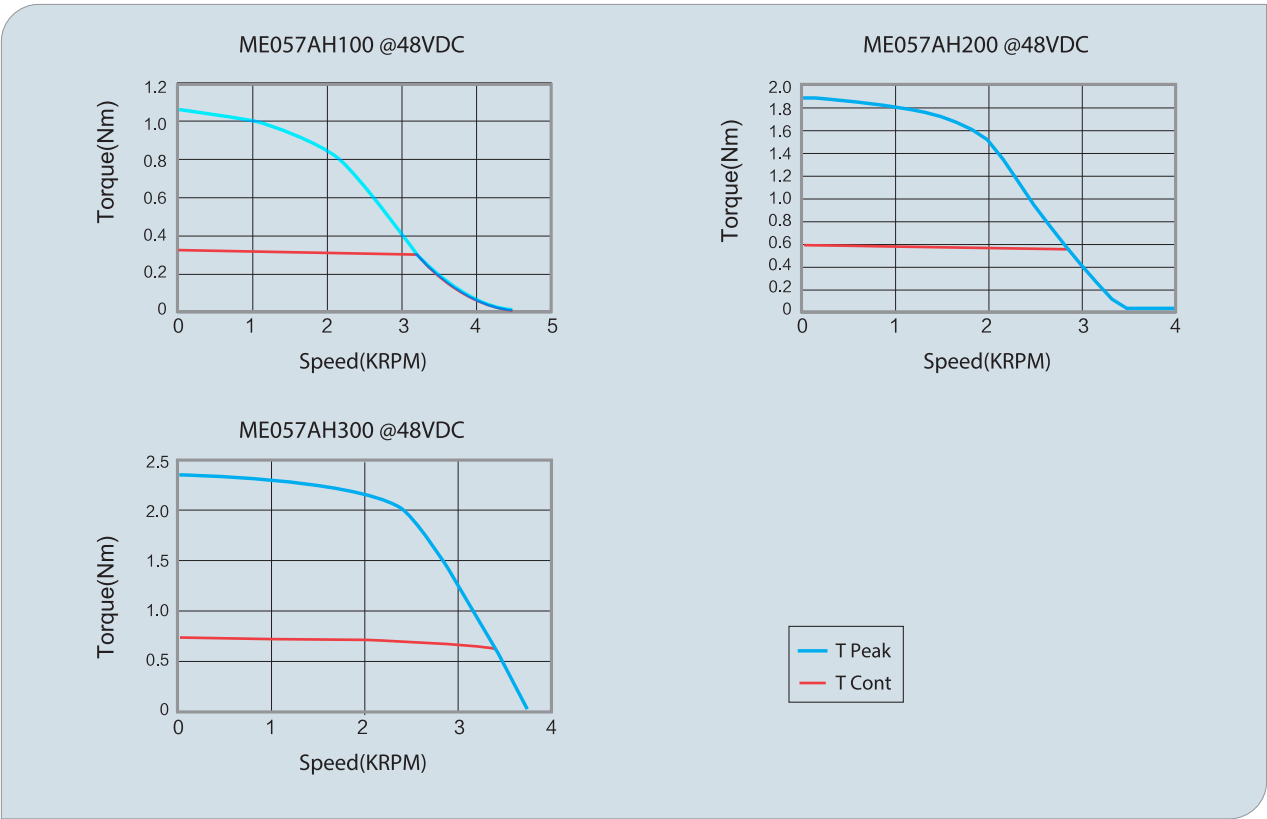


# ME057AH

● Mechanical



● Characteristic diagram



# MB057GA

## DC Brushless Motor

● General information

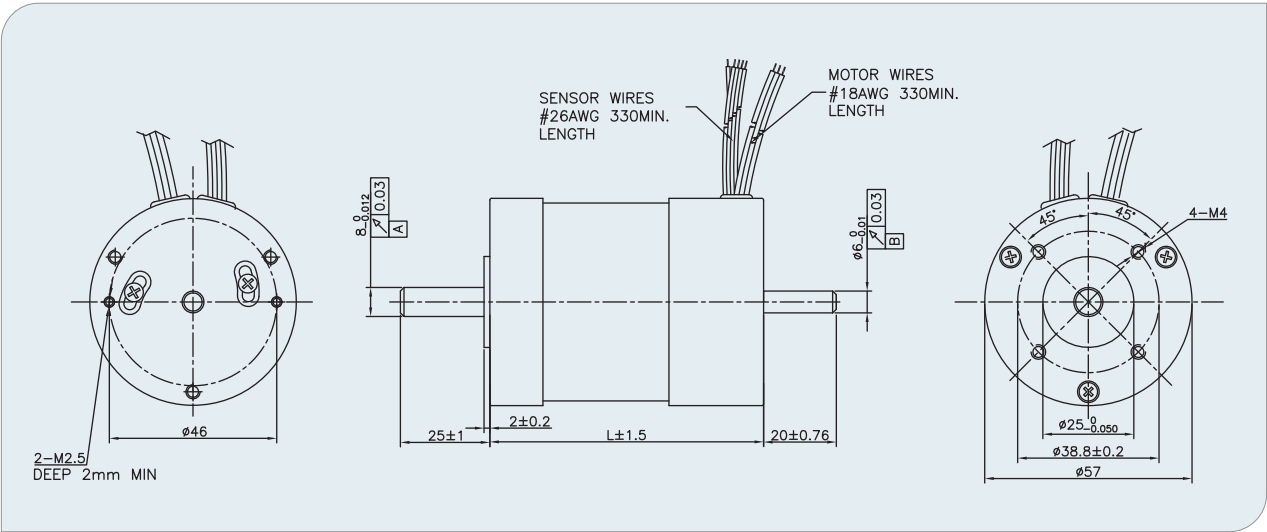
- 4 poles with three phases
- Hall effect commutation (120 degree), skew rotor for low cogging
- Insulation class B, higher insulation class on request
- Bonded Neo Magnet
- NEMA 23 flange available
- UL certified

● Specifications

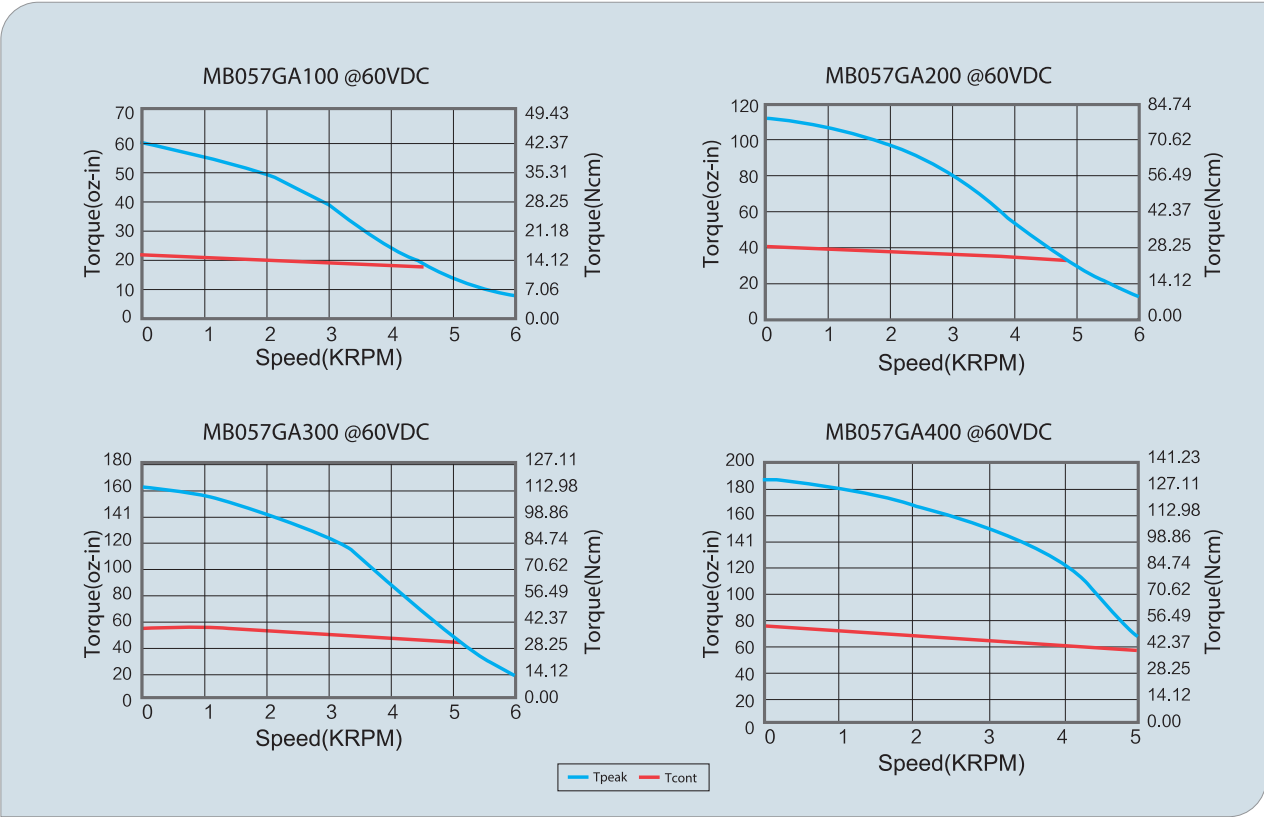
SPECIFICATION	Unit	MB057GA100	MB057GA200	MB057GA300	MB057GA400
Supply Voltage (reference)	(Vs) Vdc	60	60	60	60
Rated Continuous Torque	(Tcr) Nm	0.11	0.20	0.31	0.40
Rated Speed at Cont. Torque	(Scr) rpm	4750	5000	5000	5000
Rated Continuous Stall Current	(Ics) A	1.68	3.21	4.71	6.46
Rated Continuous Output Power	(Po,c) W	53	106	163	208
Rated Peak Torque	(Tpr) Nm	0.42	0.81	1.17	1.36
Rated Peak Current	(Ipr) A	5.05	9.62	14.13	17.61
Torque Constant	(KT) Nm/A	0.0840	0.0839	0.0826	0.0772
Voltage Constant	(KE) V/krpm	8.79	8.78	8.65	8.08
Terminal Resistance	(Rmt) Ω	4.47	1.79	0.83	0.49
Inductance	(L) mH	6.86	3.16	1.98	1.60
Insulation Class		B	B	B	B
Rotor Inertia	(Jr) Kg.m²	9.04E-06	1.69E-05	2.49E-05	3.28E-05
Motor Weight	(Wm) Kg	0.50	0.75	1.00	1.25
Motor Length	(Lm) mm	54	74	94	114



● Mechanical



● Characteristic diagram



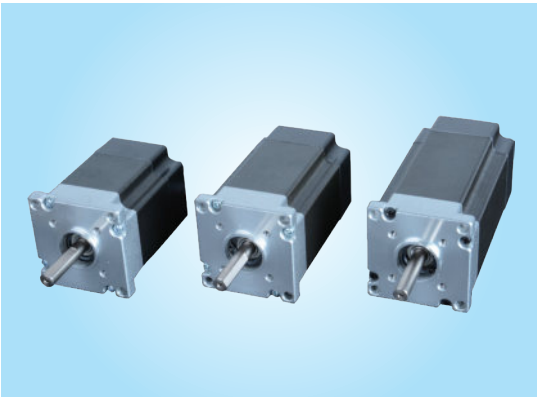


# MDB56GS

## DC Brushless Motor

● General information

- NEMA 23 frame size
- 8 poles with three phases
- Insulation class B, higher insulation class on request
- Bonded Neo Magnet
- Higher Output Torque with economical design

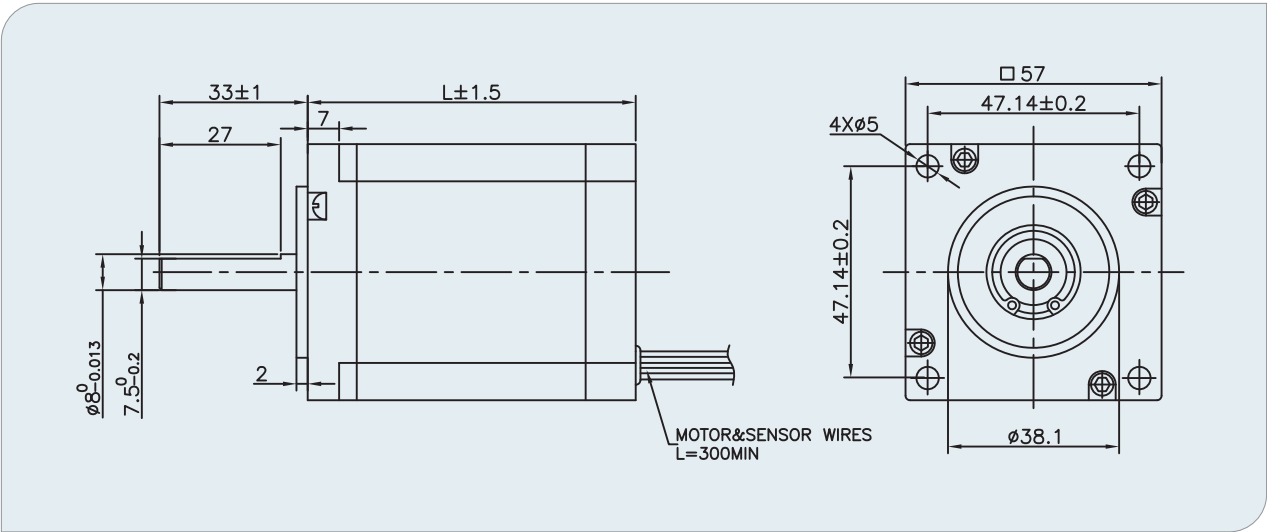


● Specifications

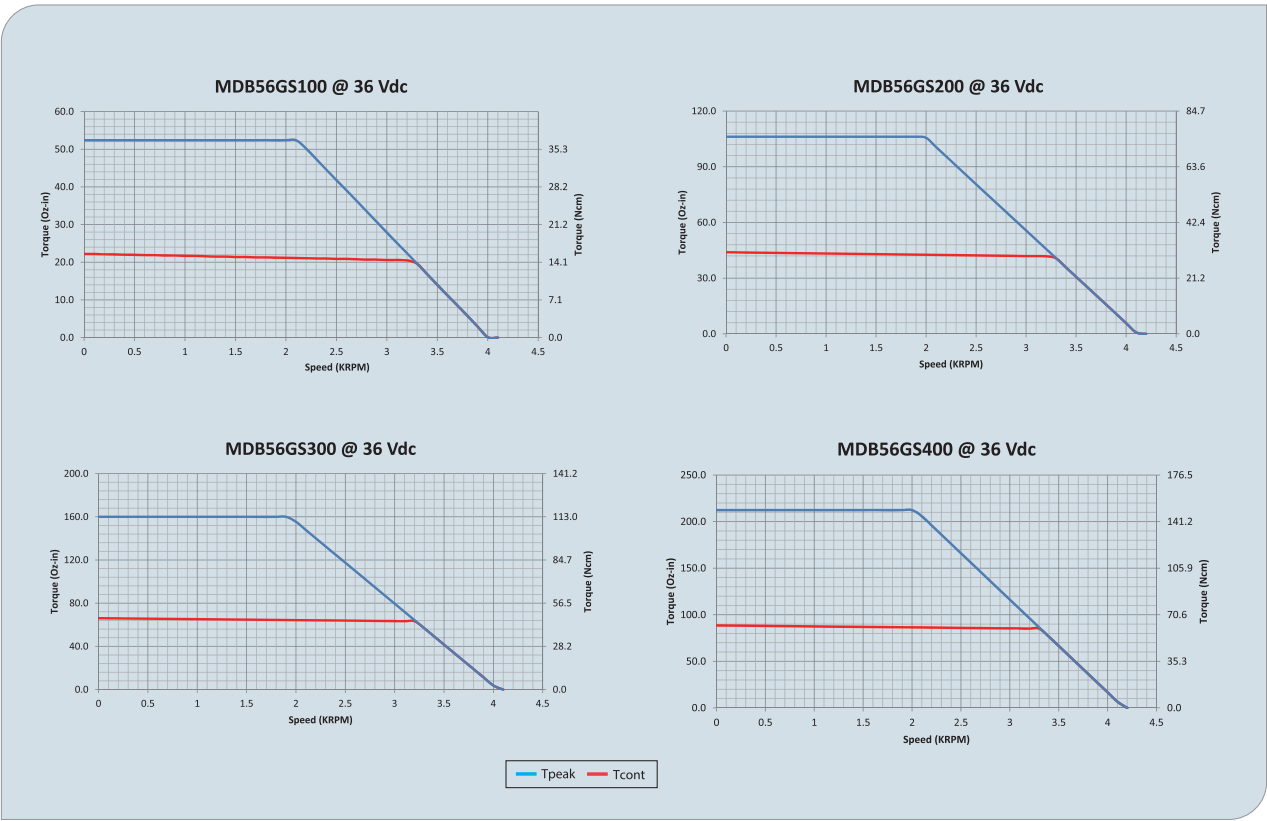
SPECIFICATION	Unit	MDB56GS100	MDB56GS200	MDB56GS300	MDB56GS400
Supply Voltage (reference)	(Vs) Vdc	36	36	36	36
Rated Continuous Torque	(Tcr) Nm	0.15	0.30	0.45	0.60
Rated Speed at Cont. Torque	(Scr) rpm	3000	3000	3000	3000
Rated Continuous Stall Current	(Ics) A	2.00	3.80	5.6	7.8
Rated Continuous Output Power	(Po,c) W	47	93	141	188
Rated Peak Torque	(Tpr) Nm	0.37	0.75	1.13	1.50
Rated Peak Current	(Ipr) A	4.50	9.00	13.5	18.5
Torque Constant	(KT) Nm/A	0.0833	0.0817	0.0834	0.0811
Voltage Constant	(KE) V/krpm	8.72	8.55	8.72	8.48
Terminal Resistance	(Rmt) Ω	2.25	1.2	0.82	0.59
Inductance	(L) mH	2.75	1.20	0.82	0.59
Insulation Class		B	B	B	B
Rotor Inertia	(Jr) Kg.m²	1.23E-05	2.14E-05	3.12E-05	4.03E-05
Motor Weight	(Wm) Kg	0.50	0.80	1.10	1.40
Motor Length	(Lm) mm	56	76	96	116

# MDB56GS

● Mechanical



● Characteristic diagram



# MB059AH

## DC Brushless Motor

● General information

- 6 poles with three phases
- 9 slots design for automatic winding
- Insulation class B, higher insulation class on request
- Sintered Neo Magnet
- High efficiency and one of most powerful with this frame

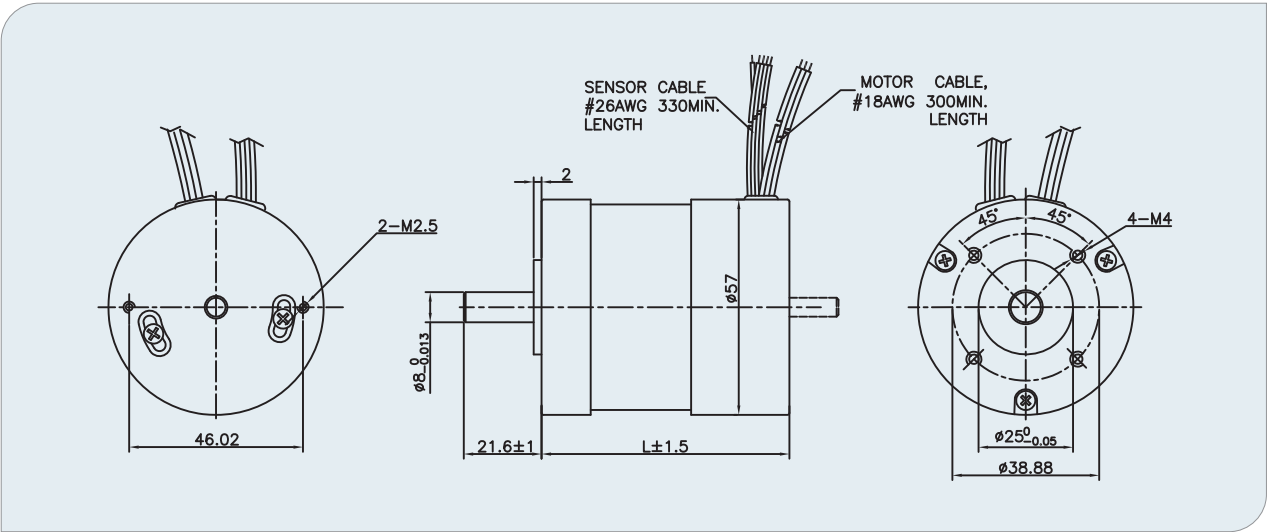
● Specifications

SPECIFICATION	Unit	MB059AH100	MB059AH200	MB059AH300	MB059AH400
Supply Voltage (reference)	(Vs) Vdc	24	24	24	24
Rated Continuous Torque	(Tcr) Nm	0.23	0.37	0.47	0.60
Rated Speed at Cont. Torque	(Scr) rpm	3500	3500	3500	3500
Rated Continuous Stall Current	(Ics) A	5.0	8.0	9.4	13.6
Rated Continuous Output Power	(Po,c) W	83	135	171	220
Rated Peak Torque	(Tpr) Nm	0.69	1.11	1.41	1.80
Rated Peak Current	(Ipr) A	15	24	28	40
Torque Constant	(KT) Nm/A	0.0478	0.0478	0.0513	0.0500
Voltage Constant	(KE) V/krpm	5.00	5.00	5.37	5.23
Terminal Resistance	(Rmt) Ω	0.57	0.24	0.22	0.14
Inductance	(L) mH	0.63	0.29	0.29	0.20
Insulation Class		B	B	B	B
Rotor Inertia	(Jr) Kg.m²	7.32E-06	1.05E-05	1.19E-05	1.73E-05
Motor Weight	(Wm) Kg	0.52	0.65	0.72	0.95
Motor Length	(Lm) mm	53.6	68.6	73.6	93.6

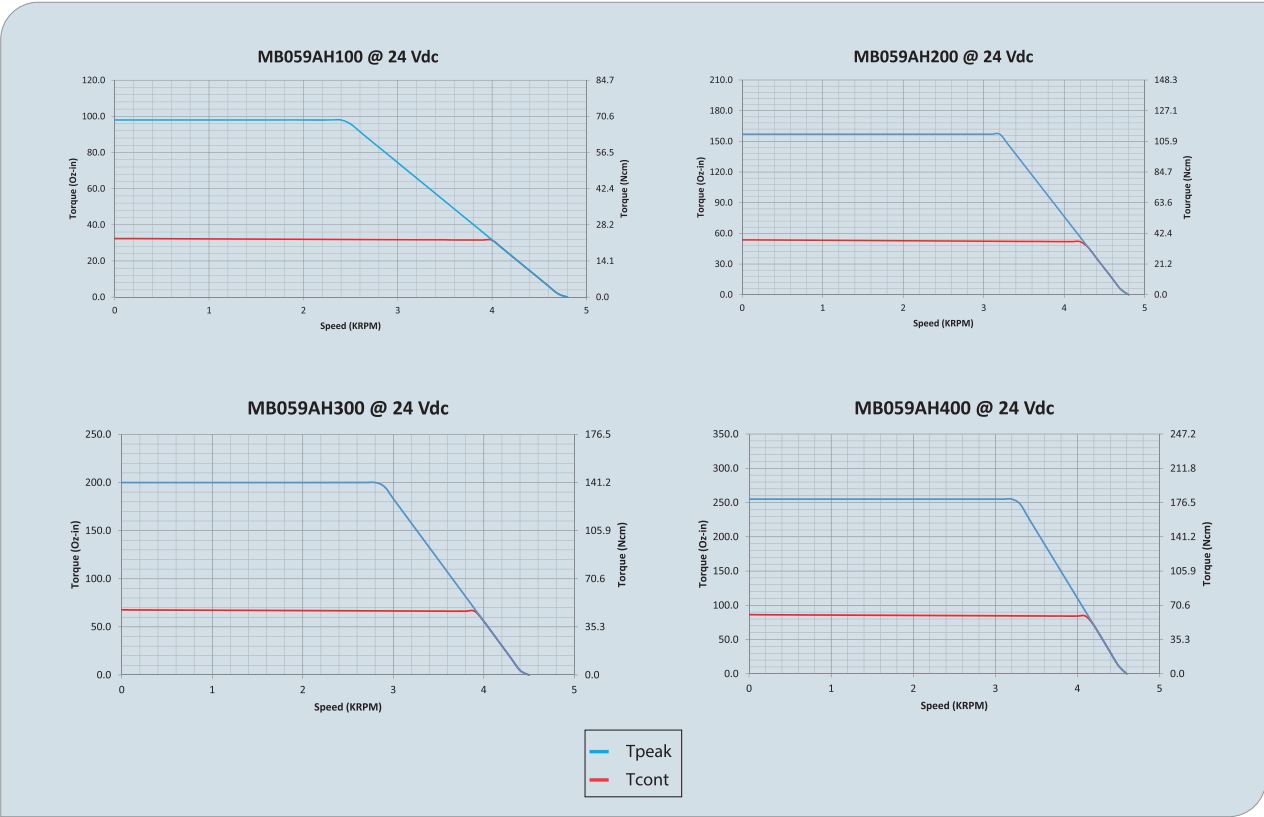


# MB059AH

● Mechanical



● Characteristic diagram





# ME060AS

## DC Brushless Motor

### General information

- 8 poles with three phases
- 12 slots design for low cogging
- Insulation class B, higher insulation class on request
- Mutiple Lines of encoder available
- Sintered Neo Magnet

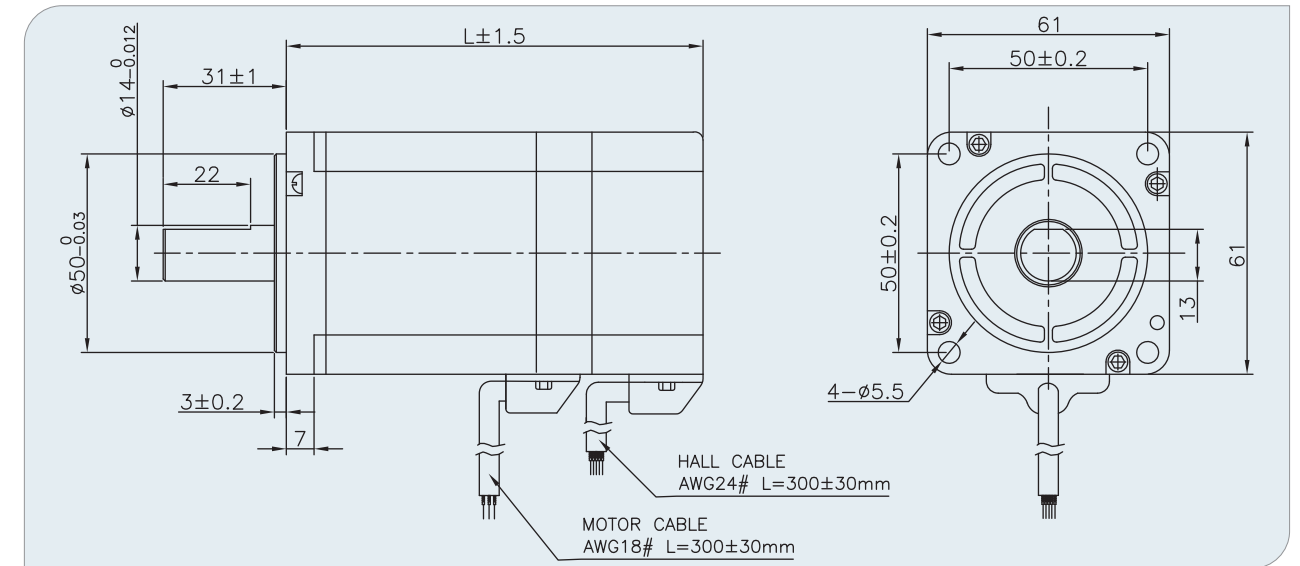
### Specifications

SPECIFICATION	Unit	ME060AS100	ME060AS200	ME060AS300
Supply Voltage (reference)	(Vs) Vdc	24	24	24
Rated Continuous Torque	(Tcr) Nm	0.25	0.50	0.75
Rated Speed at Cont. Torque	(Scr) rpm	3000	3000	3000
Rated Continuous Stall Current	(Ics) A	6.54	10.96	16.35
Rated Continuous Output Power	(Po,c) W	80	162	242
Rated Peak Torque	(Tpr) Nm	0.88	1.62	2.42
Rated Peak Current	(Ipr) A	17.95	32.02	47.8
Torque Constant	(KT) Nm/A	0.0539	0.0539	0.0539
Voltage Constant	(KE) V/krpm	5.64	5.64	5.64
Terminal Resistance	(Rmt) Ω	0.45	0.22	0.12
Inductance	(L) mH	0.55	0.29	0.14
Insulation Class		B	B	B
Rotor Inertia	(Jr) Kg.m <sup>2</sup>	4.50E-05	8.50E-05	1.70E-04
Motor Weight	(Wm) Kg	0.85	1.25	1.70
Motor Length	(Lm) mm	78	99	120

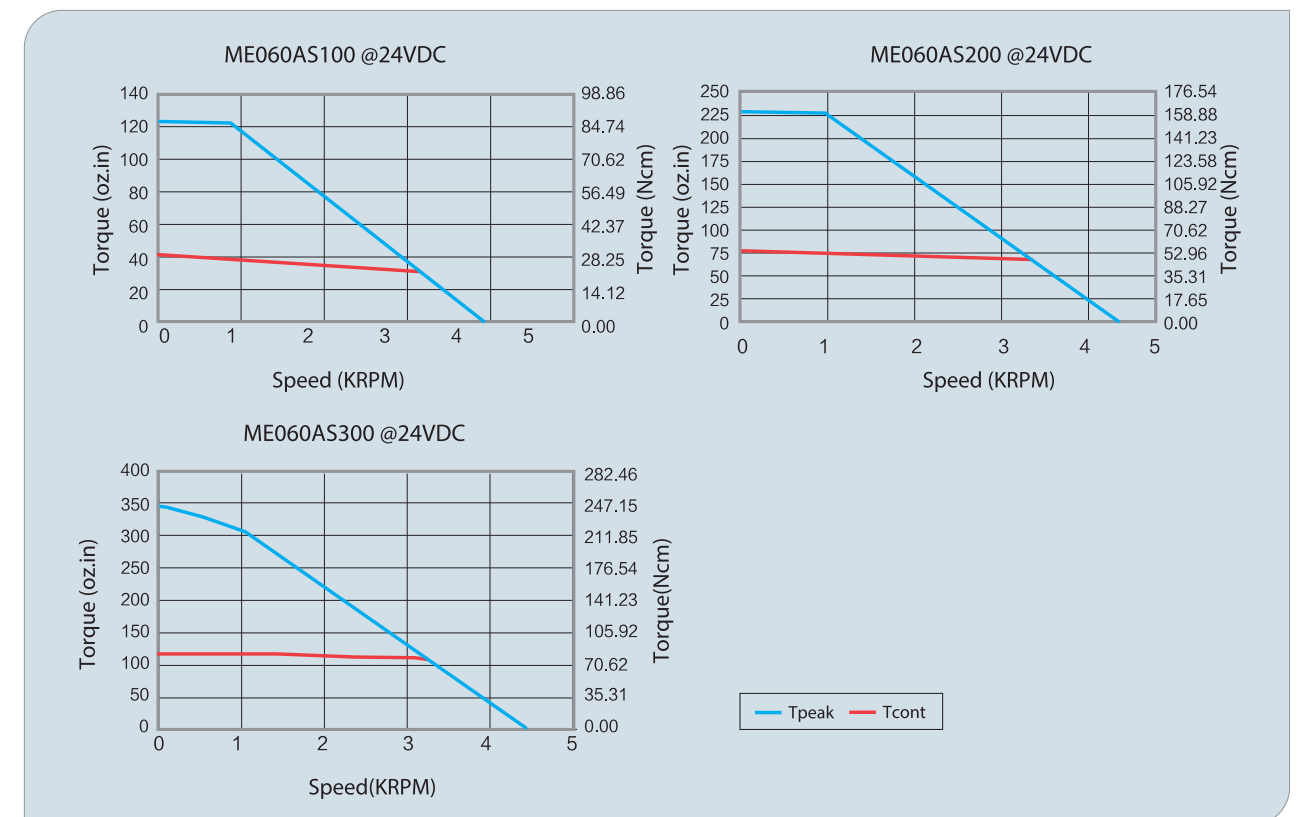


# ME060AS

### Mechanical



### Characteristic diagram



# ME080AS

## DC Brushless Motor

● General information

- 8 poles with three phases
- 15 slots distribution winding design for low cogging
- 6 slots for automatic winding
- Insulation class B, higher insulation on request
- Mutiple Lines of encoder available
- Sintered Neo Magnet
- Lower voltage available

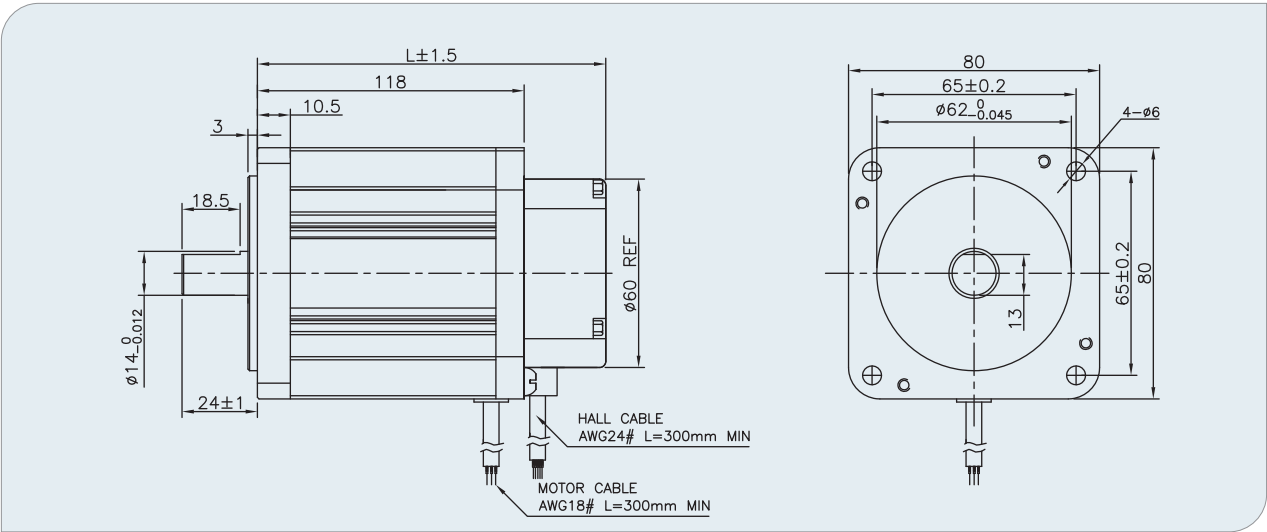
● Specifications

SPECIFICATION	Unit	ME080AS100	ME080AS200	ME080AS300
Supply Voltage (reference)	(Vs) Vdc	310	310	310
Rated Continuous Torque	(Tcr) Nm	1.00	1.51	2.08
Rated Speed at Cont. Torque	(Scr) rpm	3000	3000	3000
Rated Continuous Stall Current	(Ics) A	1.87	2.69	3.69
Rated Continuous Output Power	(Po,c) W	316	474	653
Rated Peak Torque	(Tpr) Nm	3.04	4.97	6.24
Rated Peak Current	(Ipr) A	4.73	7.63	9.6
Torque Constant	(KT) Nm/A	0.7033	0.7033	0.7033
Voltage Constant	(KE) V/krpm	73.61	73.61	73.61
Terminal Resistance	(Rmt) Ω	13.00	8.6	5.3
Inductance	(L) mH	65.00	43.00	37.00
Insulation Class		B	B	B
Rotor Inertia	(Jr) Kg.m²	6.00E-05	9.00E-05	1.20E-04
Motor Weight	(Wm) Kg	1.80	2.50	3.20
Motor Length	(Lm) mm	111	144	164

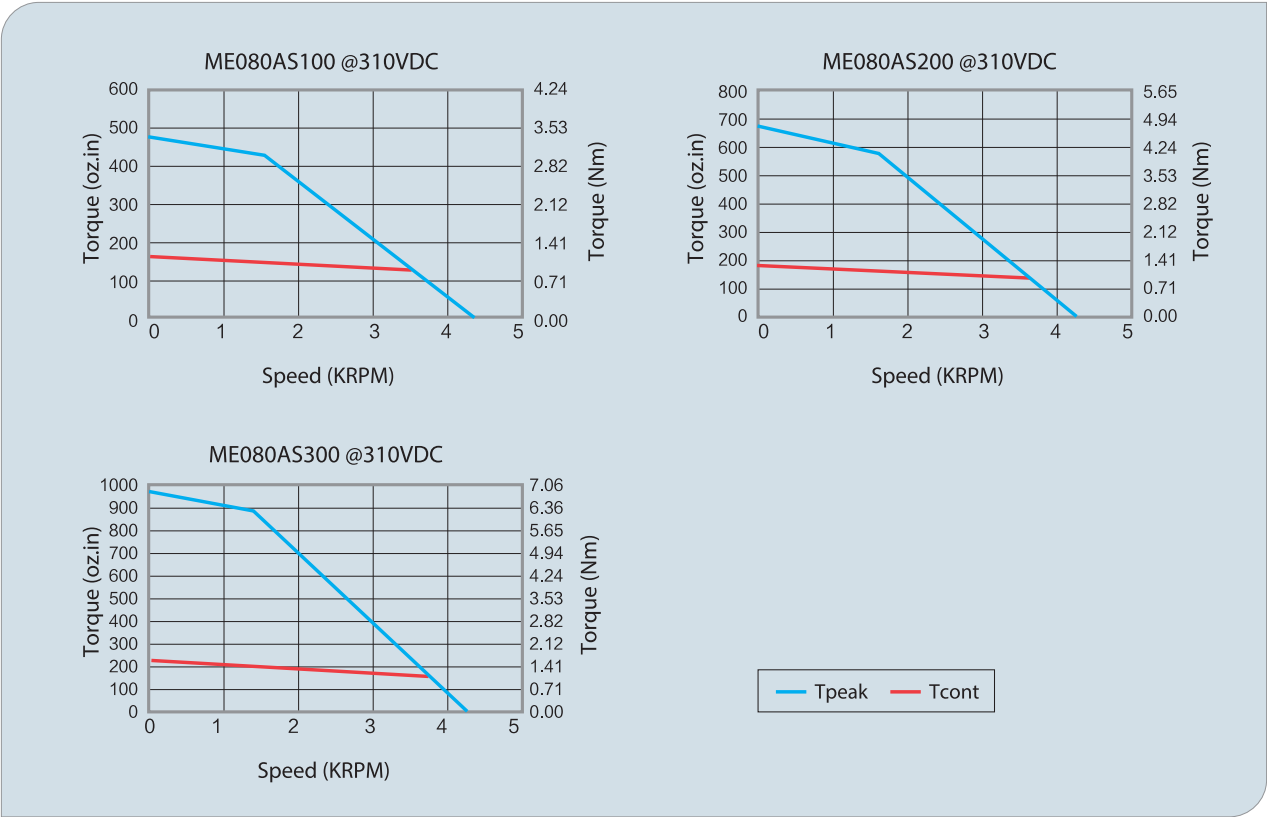


# ME080AS

● Mechanical



● Characteristic diagram



# MB082GA

## DC Brushless Motor

● General information

- NEMA 34 frame size
- 8 poles with three phases
- Integrated Hall Effect Commutation
- Insulation class F,
- Bonded Neo Magnet
- UL Certified Structure

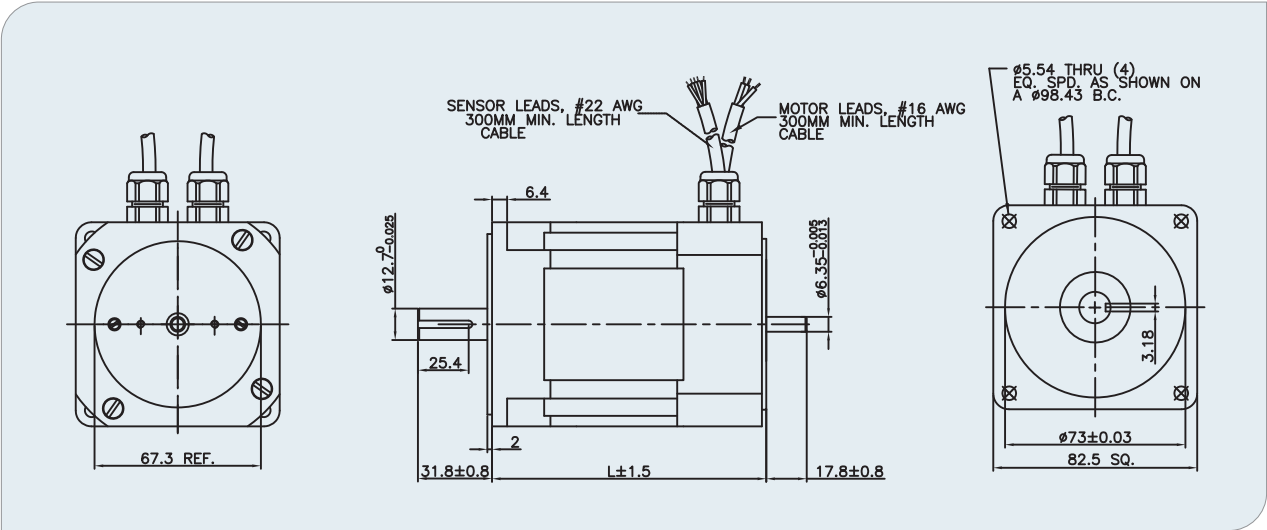
● Specifications

SPECIFICATION	Unit	MB082GA100	MB082GA200	MB082GA300	MB082GA400	MB082GA500	MB082GA600
Supply Voltage (reference)	(Vs) Vdc	170	170	170	170	170	170
Rated Continuous Torque	(Tcr) Nm	0.60	0.88	1.27	1.51	1.68	2.00
Rated Speed at Cont. Torque	(Scr) rpm	5000	6000	6000	5000	4500	4000
Rated Continuous Stall Current	(Ics) A	3.00	6.7	8.26	11.8	12.1	11.8
Rated Continuous Output Power	(Po,c) W	314	554	798	791	792	840
Rated Peak Torque	(Tpr) Nm	1.91	2.82	3.89	4.59	5.13	6.11
Rated Peak Current	(Ipr) A	9.10	19.8	24.7	35.5	36.3	35.3
Torque Constant	(KT) Nm/A	0.2280	0.1430	0.1576	0.1399	0.1586	0.1882
Voltage constant	(KE) V /krpm	23.90	15.00	16.50	14.64	16.6	19.7
Terminal Resistance	(Rmt) Ω	2.01	0.43	0.37	0.22	0.22	0.35
Inductance	(L) mH	8.46	1.89	1.70	1.06	1.08	1.38
Insulation Class		F	F	F	F	F	F
Rotor Inertia	(Jr) kg m²	6.78E-05	1.02E-04	1.24E-04	1.58E-04	2.03E-04	2.37E-04
Motor Weight	(Wm) Kg	1.50	2.00	2.50	3.04	3.54	4.08
Motor Length	(Lm) mm	78	90	102	115	128	141

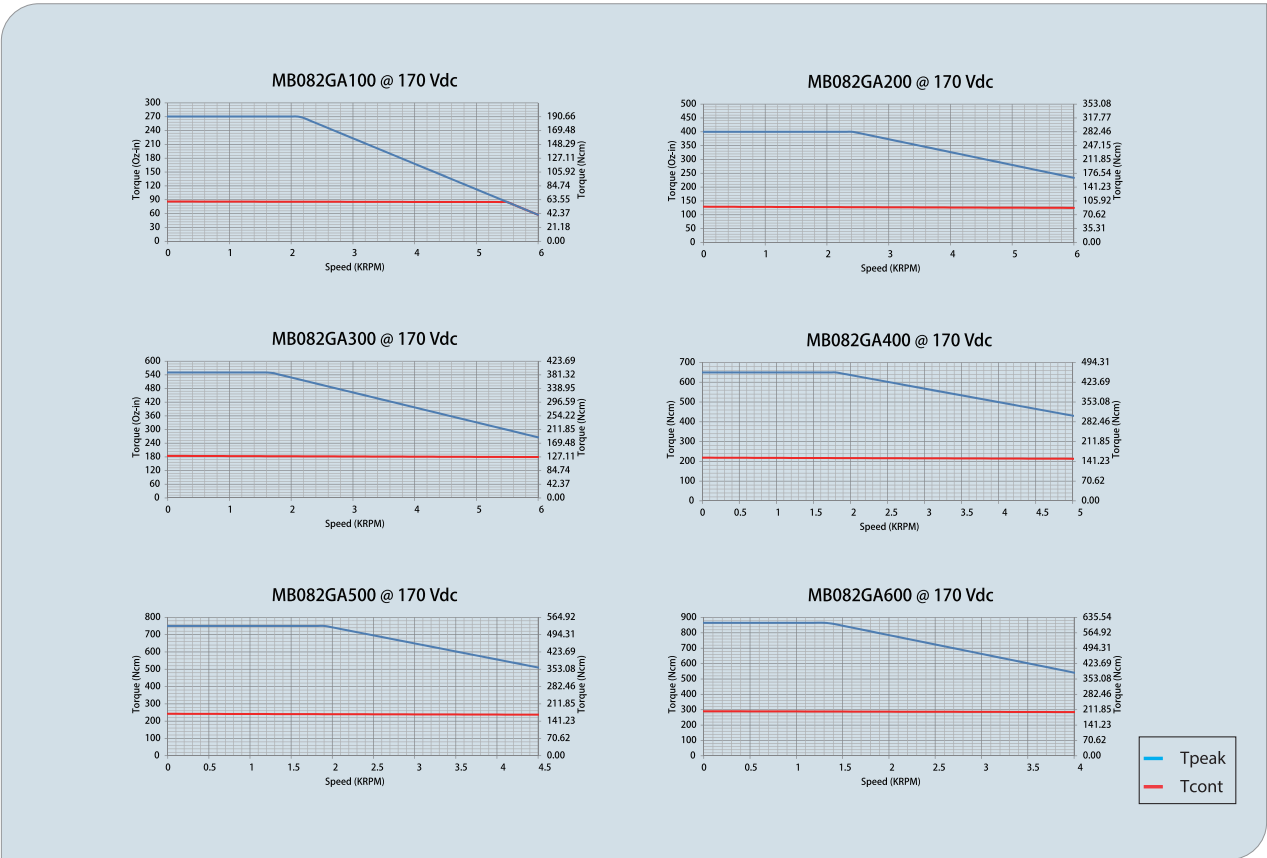


# MB082GA

● Mechanical



● Characteristic diagram





# ME086AS

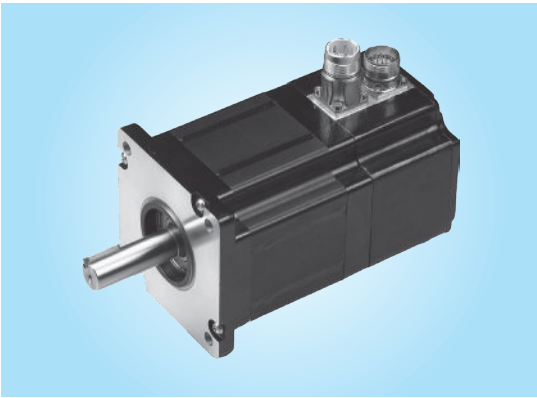
## DC Brushless Motor

● General information

- 8 poles with three phases
- Servo application
- Insulation class F
- Mutiple Lines of encoder available
- IP 65 class

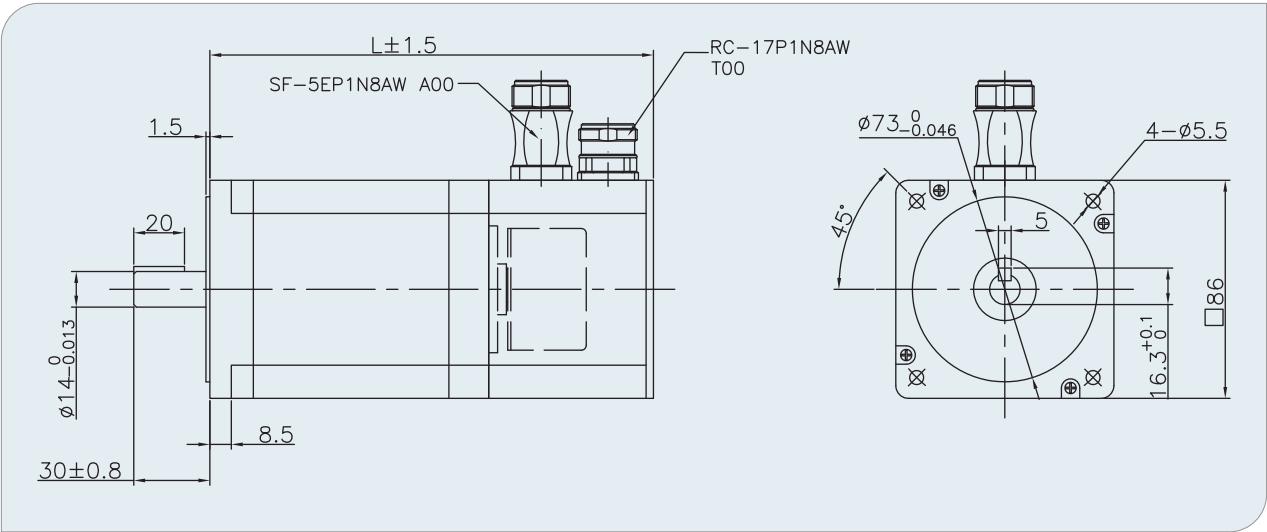
● Specifications

SPECIFICATION	Unit	ME086AS100	ME086AS200	ME086AS300
Supply Voltage (reference)	(Vs) Vdc	310	310	310
Rated Continuous Torque	(Tcr) Nm	0.70	1.41	2.11
Rated Speed at Cont. Torque	(Scr) rpm	3000	3000	3000
Rated Continuous Stall Current	(Ics) A	1.35	2.68	4.03
Rated Continuous Output Power	(Po,c) W	221	441	663
Rated Peak Torque	(Tpr) Nm	2.85	5.67	8.52
Rated Peak Current	(Ipr) A	4.34	8.64	13.00
Torque Constant	(KT) Nm/A	0.7059	0.7059	0.7059
Voltage Constant	(KE) V/krpm	73.88	73.88	73.88
Terminal Resistance	(Rmt) Ω	13.50	7.00	4.40
Inductance	(L) mH	42.00	20.00	14.50
Insulation Class		F	F	F
Rotor Inertia	(Jr) Kg.m²	8.00E-05	1.60E-04	2.40E-04
Motor Weight	(Wm) Kg	1.85	2.60	4.00
Motor Length	(Lm) mm	135	162	189

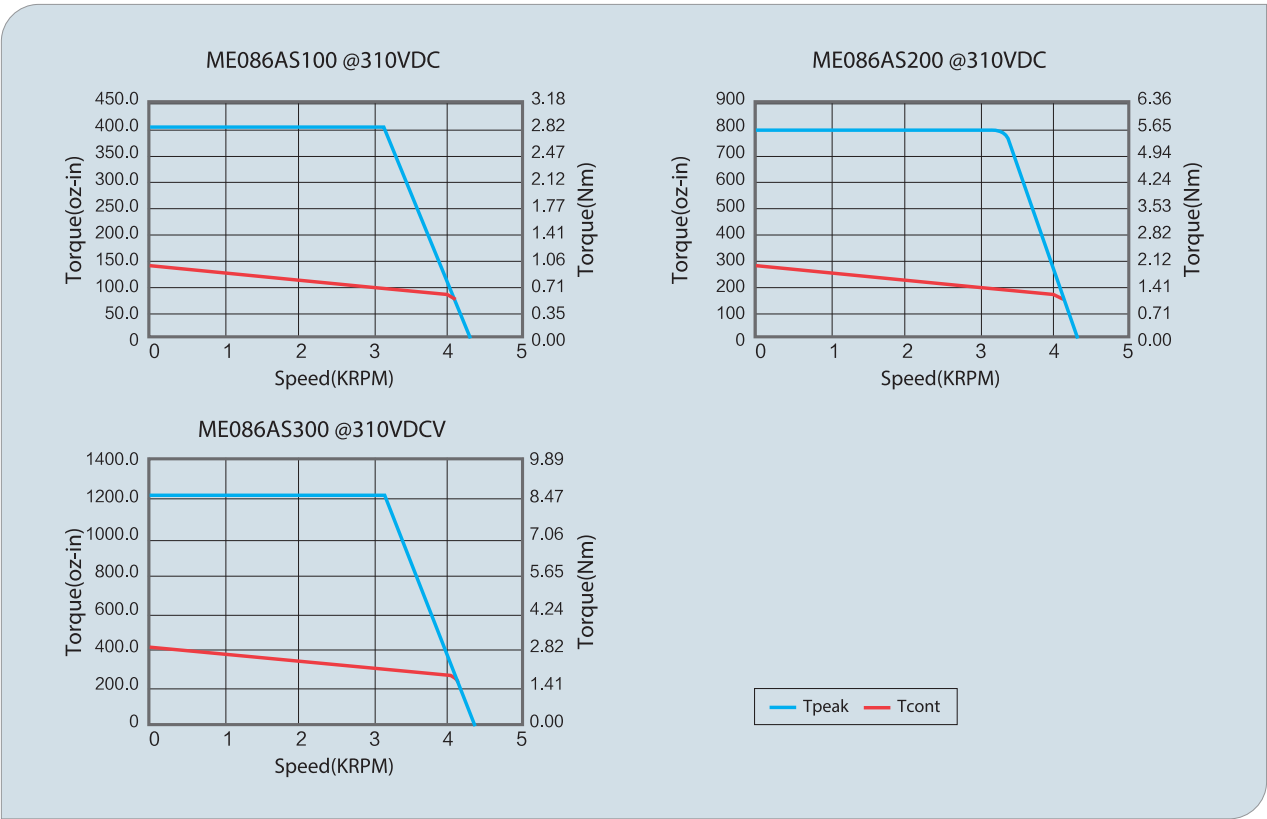


# ME086AS

● Mechanical



● Characteristic diagram



# ME110AS

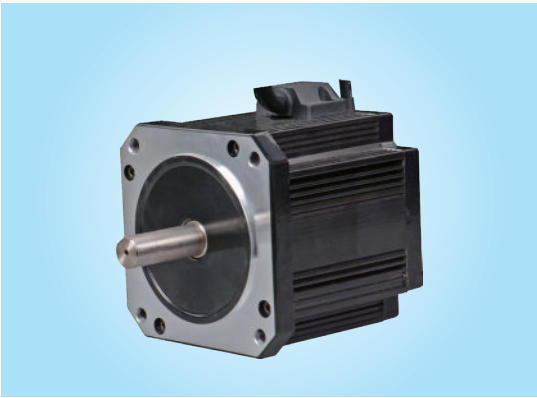
## DC Brushless Motor

● General information

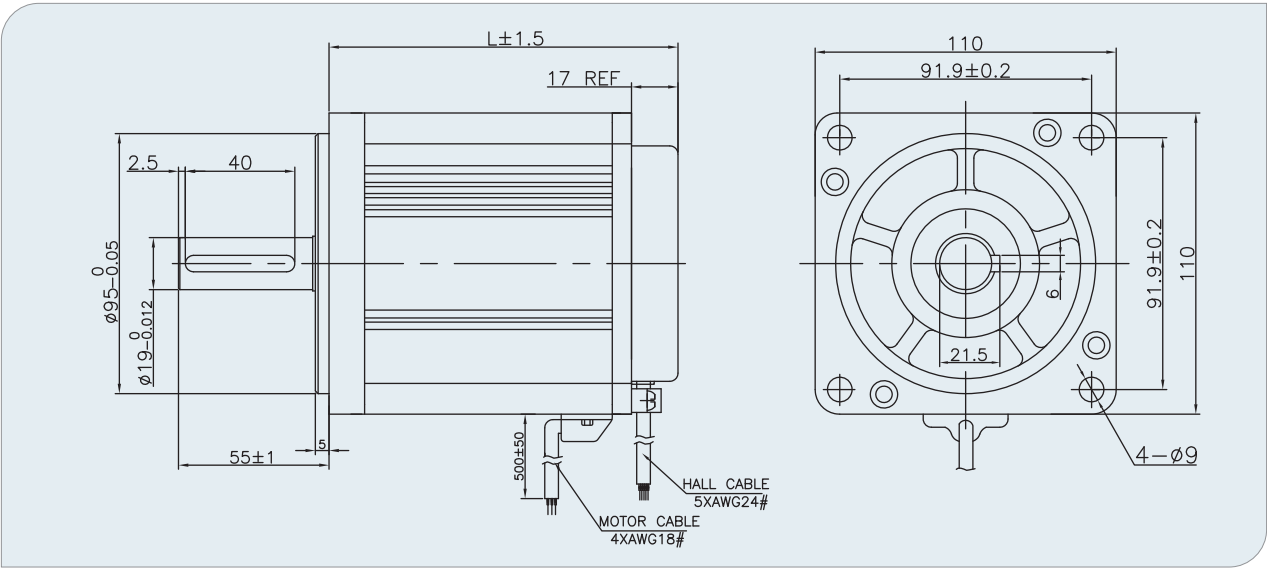
- 8 poles with three phases
- 18 slots design for low cogging
- Insulation class B, higher insulation class on request
- Encoder available
- Sintered Neo Magnet
- IP65 class available

● Specifications

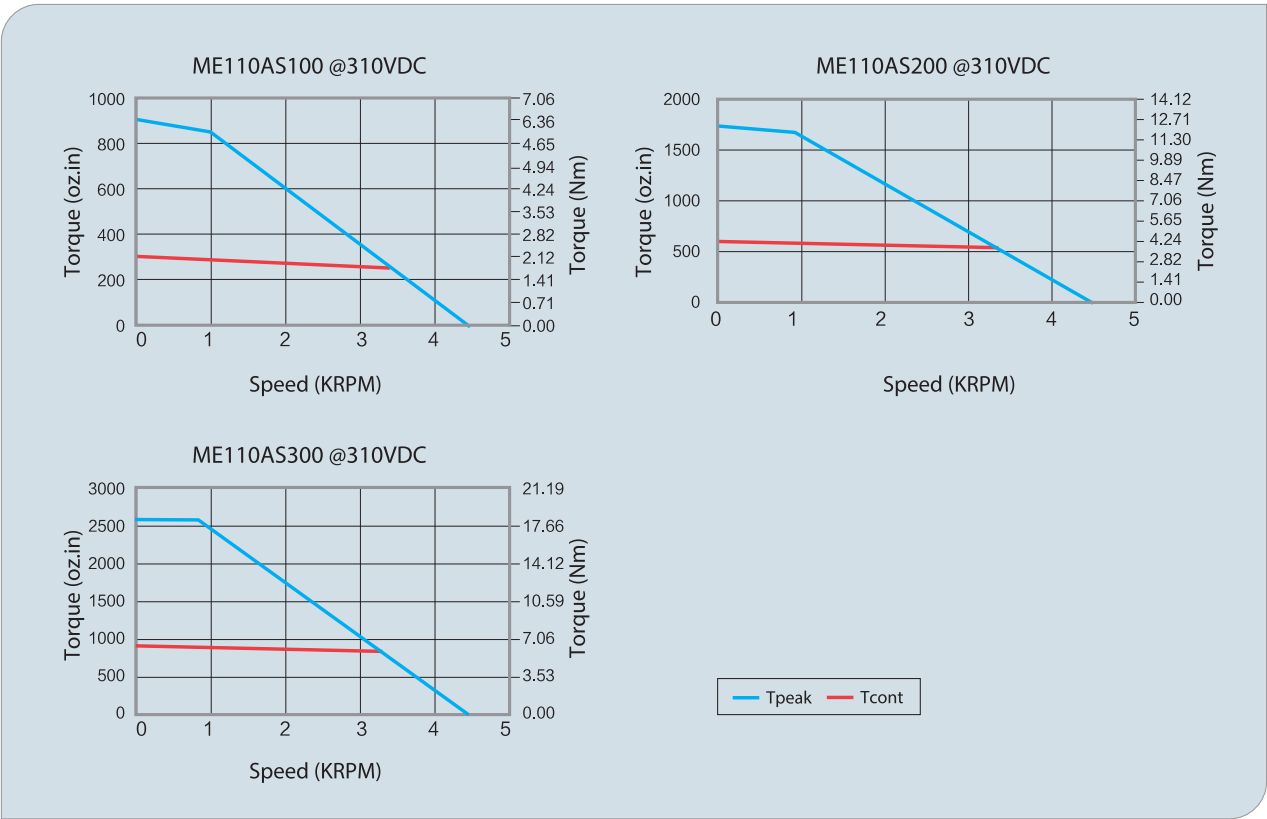
SPECIFICATION	Unit	ME110AS100	ME110AS200	ME110AS300
Supply Voltage (reference)	(Vs) Vdc	310	310	310
Rated Continuous Torque	(Tcr) Nm	2.06	4.04	6.06
Rated Speed at Cont. Torque	(Scr) rpm	3000	3000	3000
Rated Continuous Stall Current	(Ics) A	3.25	6.15	9.12
Rated Continuous Output Power	(Po,c) W	647	1267	1903
Rated Peak Torque	(Tpr) Nm	6.00	12.38	18.51
Rated Peak Current	(Ipr) A	8.99	18.41	27.43
Torque Constant	(KT) Nm/A	0.7059	0.7059	0.7059
Voltage Constant	(KE) V/krpm	73.88	73.88	73.88
Terminal Resistance	(Rmt) Ω	2.50	1.3	0.9
Inductance	(L) mH	10.00	5.00	3.50
Insulation Class		B	B	B
Rotor Inertia	(Jr) Kg.m²	3.50E-04	5.40E-04	7.60E-04
Motor Weight	(Wm) Kg	3.50	4.50	5.50
Motor Length	(Lm) mm	125	152	180



● Mechanical



● Characteristic diagram



# SLS

## DC Brushless Motor

● General information

- Slotless and brushless DC motor
- High Speed and high performance
- 0.2mm thickness silicon steel lamination
- 2 poles and 4 poles stator with 3 phases
- Driver available

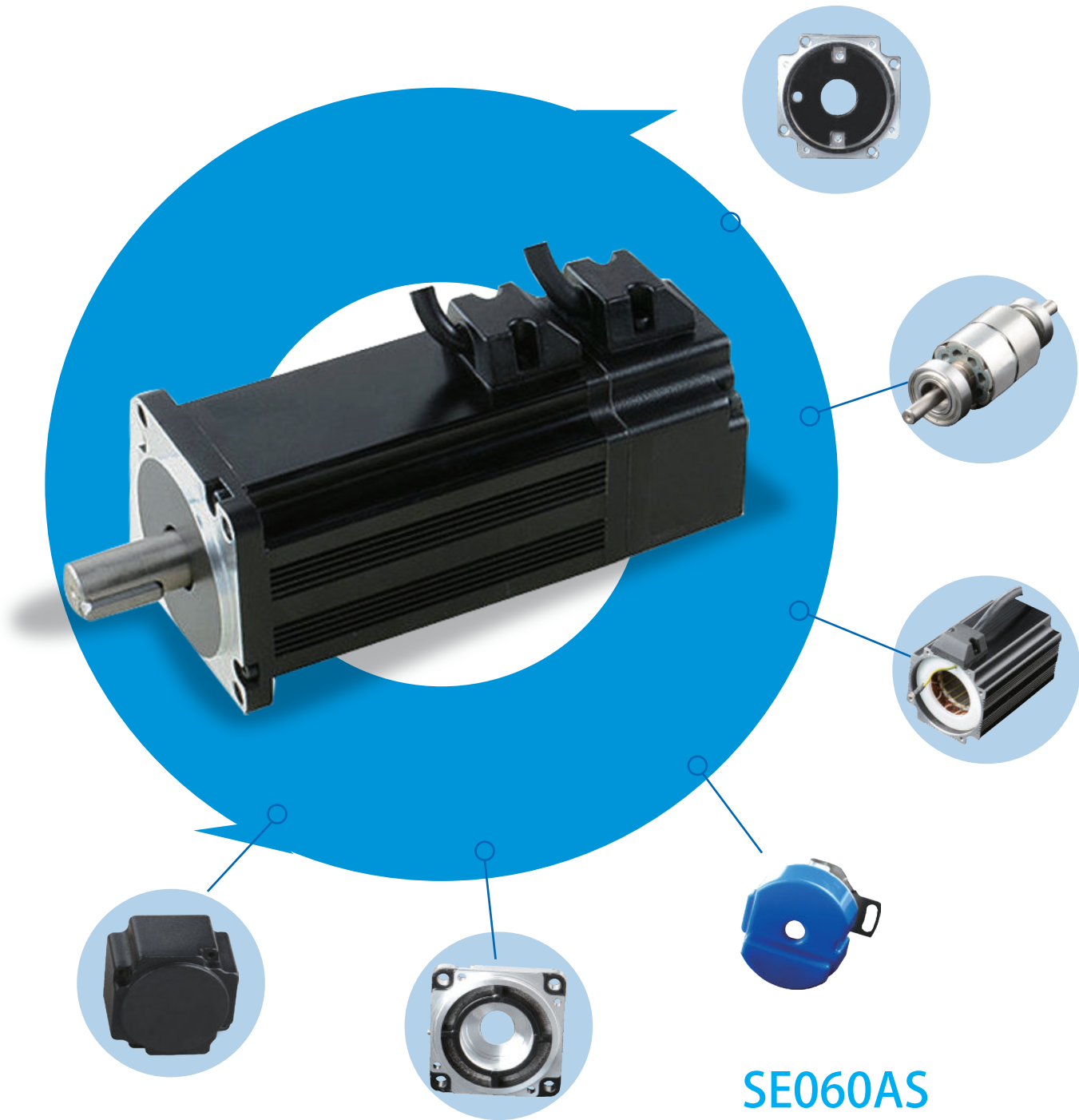
● Specifications

Specifications		SLS16AS100	SLS20AS100	SLS24AS100
Voltage	VDC	32	32	32
Rated Output Power	W	40	60	56
No-load Speed	RPM	56700	56000	10000
No-load Curent	A	0.1	0.12	0.20
Rated Speed	RPM	40000	40000	8000
Rated Torque	mNm	10	15	70
Stall Torque	mNm	30	45	210
Stall Current	A	12	13	32
Max. Efficiency		85%	90%	0.85
Phase Resistance	Ohms	2.6	2.35	1
Phase Inductance	mH	0.018	0.014	0.018
Speed Constant	RPM/V	1770	1750	313
Torque Constant	mNm/A	5.0	7.5	23
Rotor Intertia	g.cm²	1.6	3	10
Number Of Phases		3	3	3
Number Of Poles		2	2	4
Weight	g	37	50	140
Length	mm	42	47	59.5



# BRUSHLESS

## SERVO MOTOR



SE060AS

We can customize it according to customer's requirements



# SE040AS

## Brushless Servo Motor

● General information

- 10 Poles with 3 Phases
- compact design
- Low Cogging
- High Power Density
- High Efficiency
- Absolute and magnetic encoder optional
- Brake available

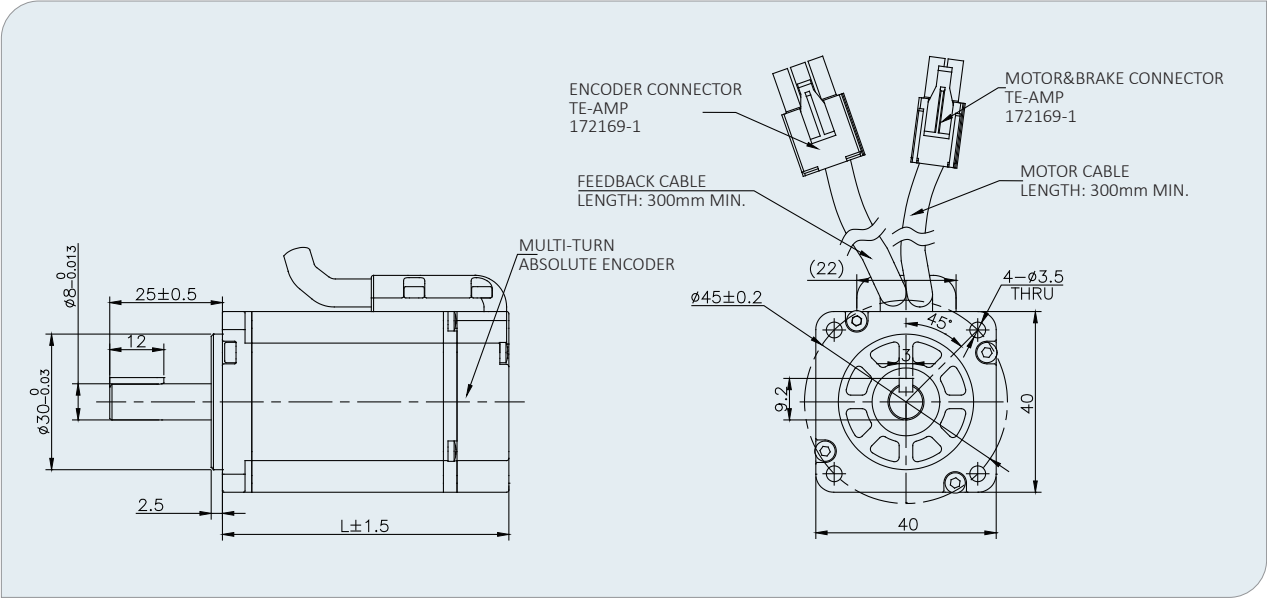
● Specifications

SPECIFICATION	Unit	SE040AS100	SE040AS200
Voltage	VDC	48	48
Rated Power	(Pw) W	50	100
Rated Speed	(Nn) RPM	3000	3000
Rated Torque	(Tn) Nm	0.16	0.32
Rated Current	(In) A	1.5	2.8
Peak Torque	(Tm) Nm	0.48	0.96
Peak Current	(Im) A	4.5	8.4
Resistance L-L	(RI) ohms	3.11	1.48
Inductance L-L	(HI) mH	4.01	1.85
Voltage Constant	(Ke) Vrms/Krpm	7.19	7.33
Torque Constant	(Kt) Nm/Arms	0.113	0.115
Rotor Inertia	(Jm) Kg.mm²	1.77	3.39
Poles		10	10
IP Class		54	54
Feedback Device (Multi-turn Absolute Encoder)	Bit	17	17
Length	mm	49.5	63.5
Weight	(Wm) Kg	0.4	0.6

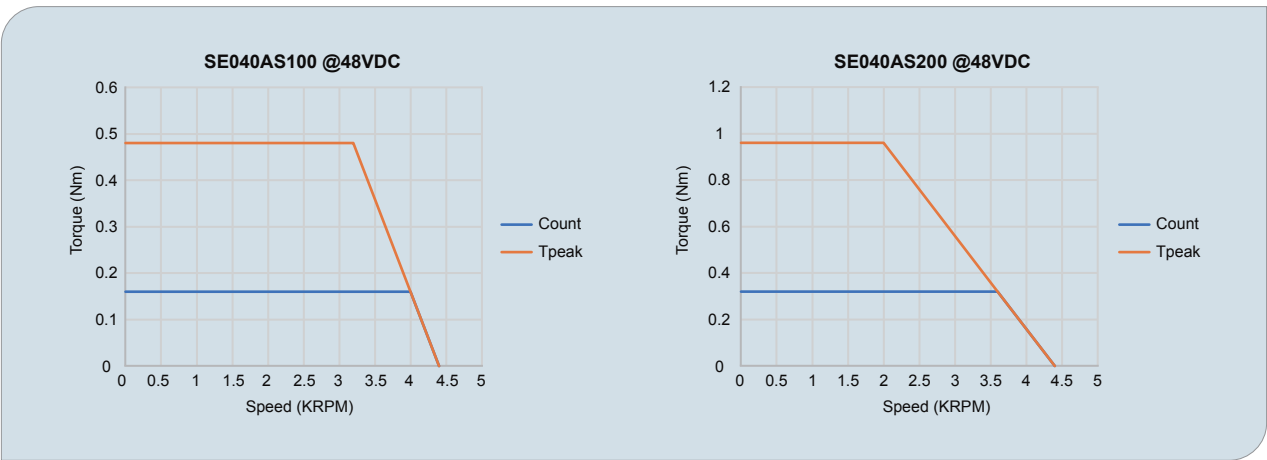


# SE040AS

● Mechanical



● Characteristic diagram



# SE060AS

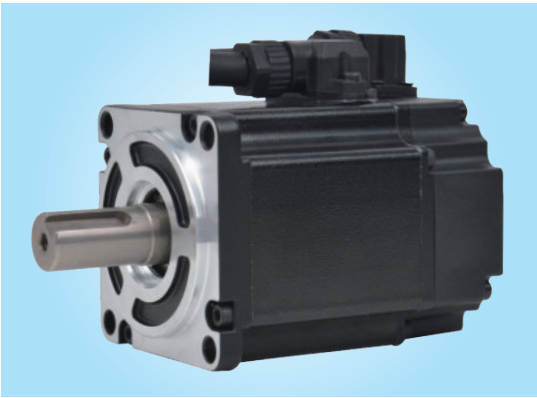
## Brushless Servo Motor

● General information

- 10 Poles with 3 Phases
- compact design
- Low Cogging
- High Power Density
- High Efficiency
- IP 65
- Absolute and magnetic encoder optional
- Brake available

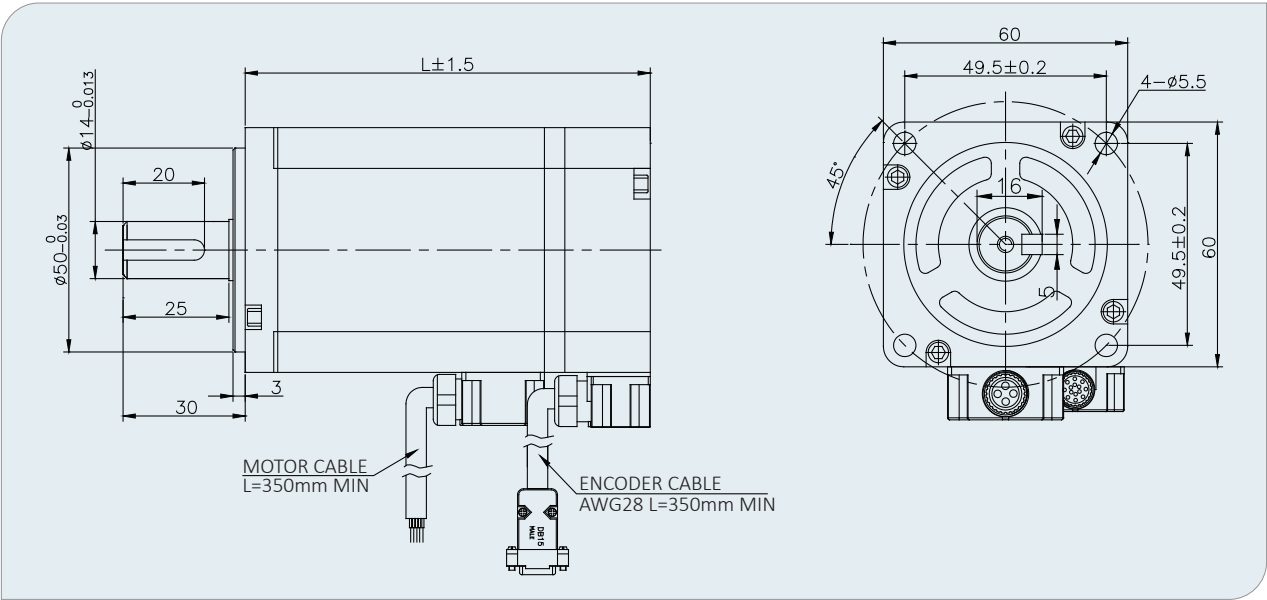
● Specifications

SPECIFICATION	Unit	SE060AS100	SE060AS200	SE060AS300
Volatge	VDC	48	48	48
Rated Power	(Pw) W	200	400	600
Rated Speed	(Nn) RPM	3000	3000	3000
Rated Torque	(Tn) Nm	0.64	1.27	1.9
Rated Current	(In) A	5.2	10.5	15
Peak Torque	(Tm) Nm	1.91	3.8	5.7
Peak Current	(Im) A	15.6	31.5	45
Resistance L-L	(RI) ohms	0.44	0.24	0.14
Inductance L-L	(HI) mH	0.85	0.56	0.30
Voltage Constant	(Ke) Vrms/Krpm	7.0	7.0	7.2
Torque Constant	(Kt) Nm/Arms	0.122	0.122	0.122
Rotor Inertia	(Jm) Kg.cm²	0.4	0.7	1.0
Poles		10	10	10
IP Class		65	65	65
Feedback Device (Muiti-turn Absolute Encoder)	PPR/Bit	2500/17	2500/17	2500/17
Length	mm	82	100	121.5
Weight	(Wm) Kg	0.9	1.2	1.45

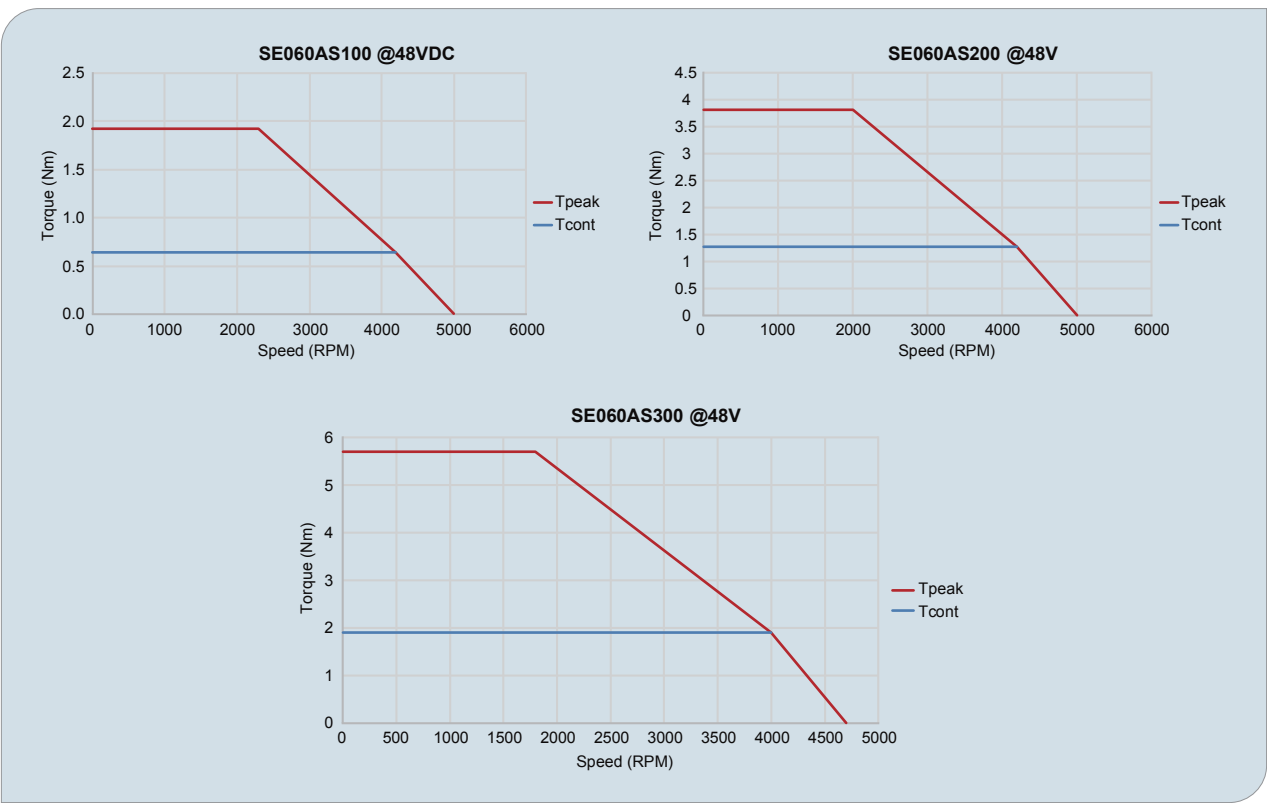


# SE060AS

● Mechanical



● Characteristic diagram



# SE080AS

## Brushless Servo Motor

● General information

- 10 Poles with 3 Phases
- compact design
- Low Cogging
- High Power Density
- High Efficiency
- IP 65
- Absolute and magnetic encoder optional
- Brake available

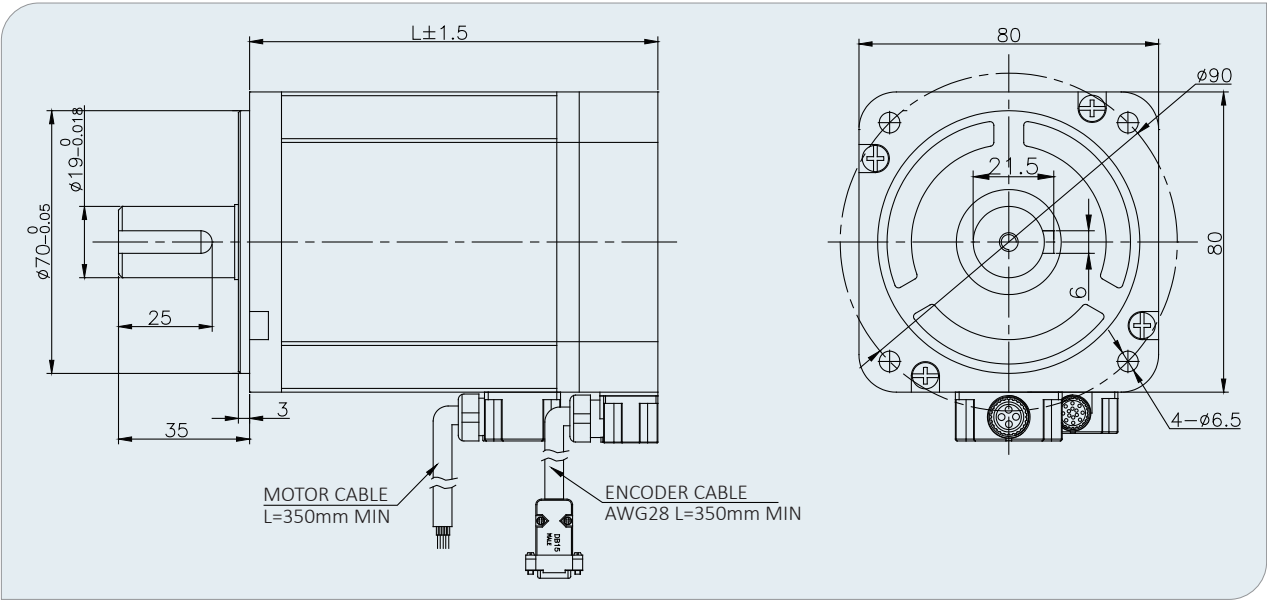
● Specifications

SPECIFICATION	Unit	SE080AS100	SE080AS200	SE080AS300
Volatge	VDC	48	48	48
Rated Power	(Pw) W	565	750	1000
Rated Speed	(Nn) RPM	3000	3000	3000
Rated Torque	(Tn) Nm	1.8	2.4	3.19
Rated Current	(In) A	15	20	25
Peak Torque	(Tm) Nm	5.4	7.2	9.57
Peak Current	(Im) A	45	60	75
Resistance L-L	(RI) ohms	0.13	0.095	0.07
Inductance L-L	(HI) mH	0.65	0.13	0.40
Voltage Constant	(Ke) Vrms/Krpm	7.5	7.5	7.5
Torque Constant	(Kt) Nm/Arms	0.123	0.123	0.123
Rotor Inertia	(Jm) Kg.cm²	1.25	1.6	1.9
Poles		10	10	10
IP Class		65	65	65
Feedback Device (Muiti-turn Absolute Encoder)	PPR/Bit	2500/17	2500/17	2500/17
Length	mm	105	110	118
Weight	(Wm) Kg	2.0	2.35	2.7

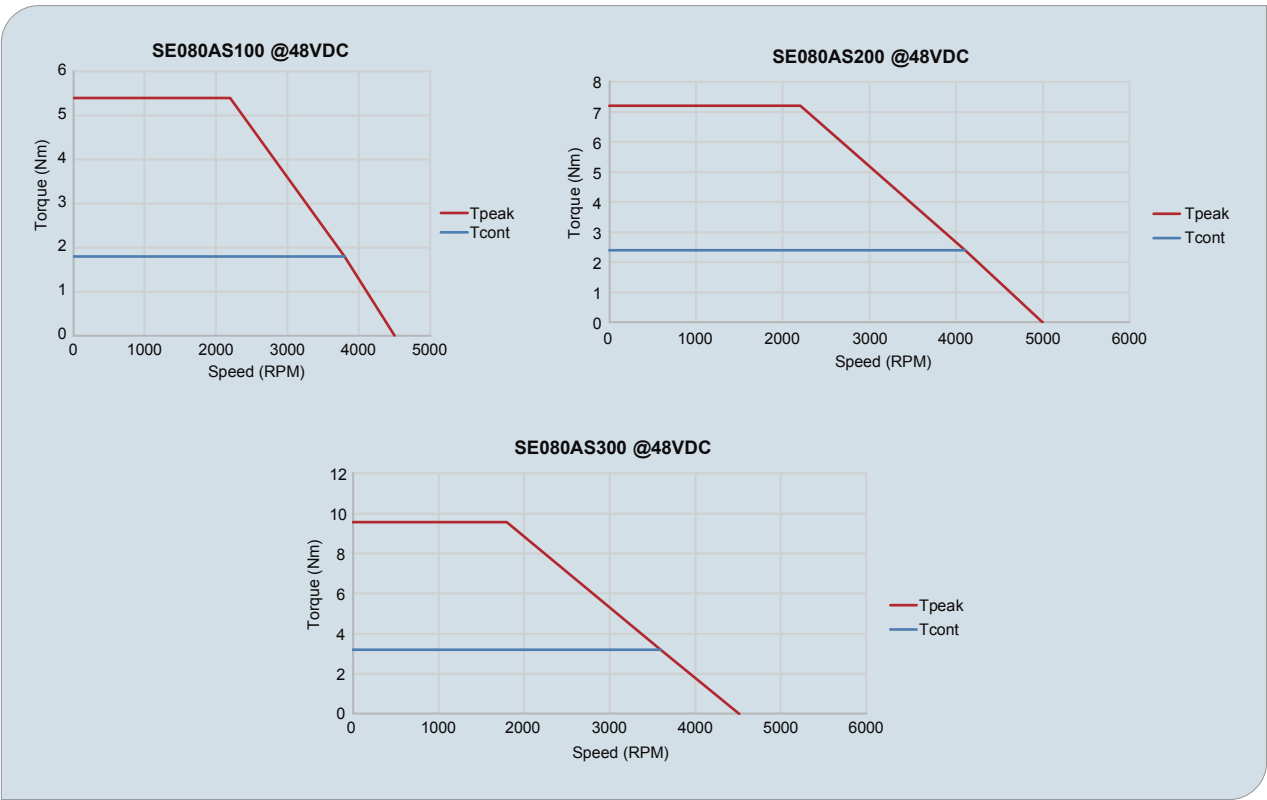


# SE080AS

● Mechanical



● Characteristic diagram





## 50/67 Frame Cross-belt Sorter Servo Roller

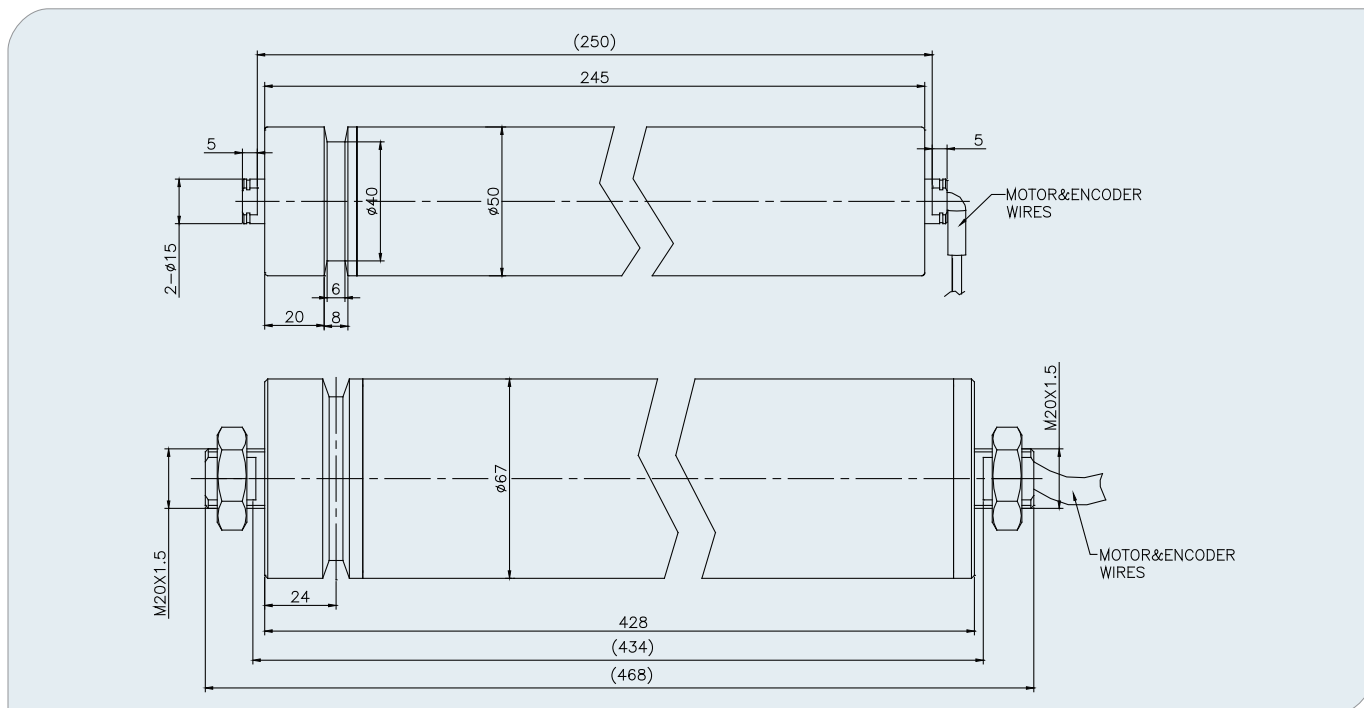
## General Information

- ▶ External rotor
- ▶ Direct drive
- ▶ Quick response
- ▶ Servo control
- ▶ Inductive encoder
- ▶ Wide speed range
- ▶ Roller length to be customized

- *Specification*

Model	Voltage (V)	Rated Power (W)	Max.Torque (Nm)	Speed Range (RPM)	Linear Speed Range (m/s)	Max. Current (A)	Encoder Res. (PPR)	Max. Sorting Weight (Kg)	Work Duty
RE050VS100	48	150	4.5	300-800	0.8-2.1	10	2500	10	S2
RE067VS100	48	400	15	300-800	1-2.8	25	2500	30	S2

- *Mechanical*



## 80 Frame Servo Reducer for Mobile Robot

- *General Information*

- All-in-one compact design
- High efficiency, low noise and high reliable gearbox
- Brake available
- Drive solution for mobile robot (AGV/Forklift)

- *Specification*

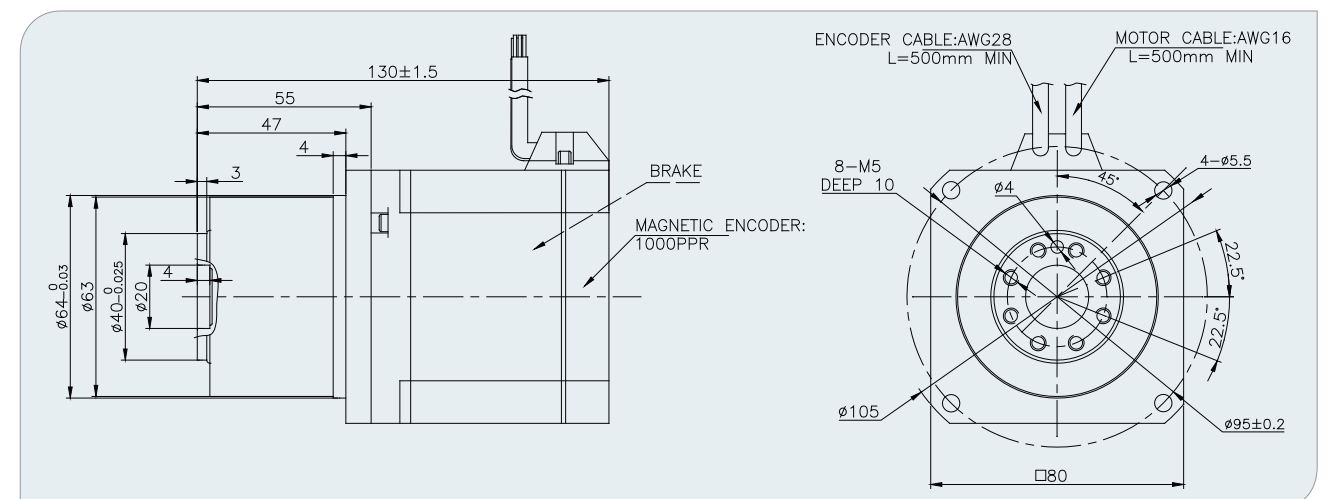
Model	Voltage (V)	Rated Power (W)	No Load	Rated Torque (Nm)	Rated Load		Resistance(L-L) (Ω)
			Speed(rpm)		Speed(rpm)	Current(A)	
SE080AS100-PLF016	48	400	234	18	187.5	10	0.14
	Inductance(L-L) (mH)		Ke (Vrms/krpm)	Kt (Nm/A)	Encoder Res. (PPR)		No. of Pole
	0.55		7.87	0.124	1000*		10

\* 2500 lines Max.

Gearbox Specification							
Gear ratio	Continuous Torque (Nm)	Peak Torque (Nm)	Efficiency	Radial Load (Max.)	Axial Load (Max.)	Backlash (arcmin)	Operating Temperature
16 : 1	18	50	0.90	580	650	≤ 5	-10 ~ +40℃

Brake Specification				
Voltage (V)	Power (W)	Static Torque (Nm)	Resistance (Ω)	Release Voltage (V)
24	13.5	4.0 Min.	42.7	>1.2

- *Mechanical*

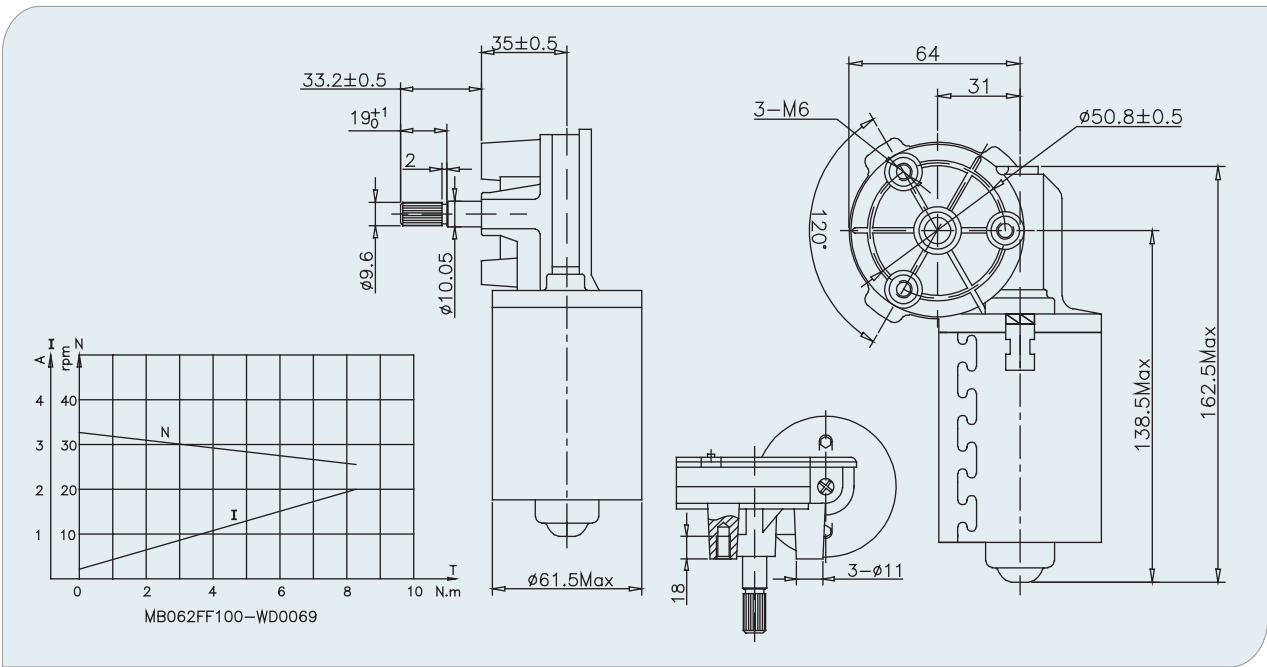


# WD SERIES GEARMOTOR

● General information

- Aluminum Diecasting Gearbox
- Rolled Steel Housing Construction
- Built-in EMC Components
- Hall Sensor Feedback Available
- Various Output Shaft Extension

● Mechanical



● Specifications

Part No.	No Load Speed	Rated				Peak Torque
		Voltage	Speed	Current	Torque	
	(RPM)	(A)	(RPM)	(A)	(N.m)	(N.m)
MB062FF100-WD0069	33	24	28	2.5	6	10
MB062FF105-WD0069	62	12	52	12	3	10
MB062FF100-WD0055	77	24	70	3.5	4	14



# DC BRUSH MOTOR



## MB040JS

We can customize it according to customer's requirements

# MB030JS

## DC Brush Motor

- *General information*

- ▶ Ball Bearings
- ▶ 7-Slot Armature
- ▶ Copper-Graphite Brushes
- ▶ 2-Pole Stator
- ▶ Heavy-Gage Steel Housing
- ▶ Diamond-Turned Commutator
- ▶ Ceramic Magnets
- ▶ Silicon Steel Laminations
- ▶ Encoders, Gearboxes and brakes available

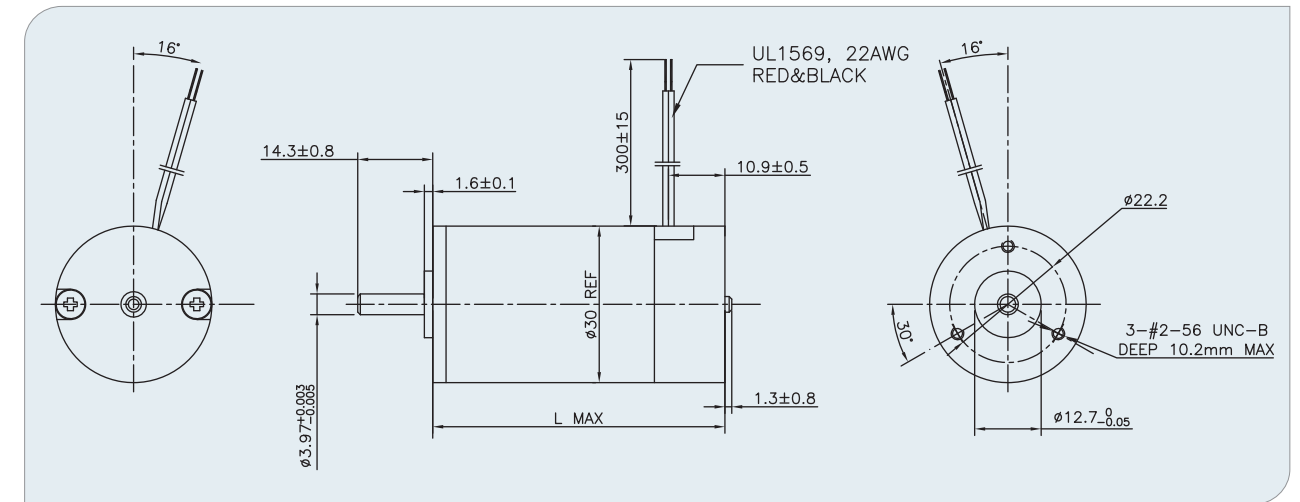
- *Specifications*

Specification		MB030JS100	MB030JS200	MB030JS300
Voltage	(VDC)	24	24	24
No Load Speed	(RPM)	7700	8150	9960
No Load Current	(A)	0.12	0.13	0.18
Rated Speed	(RPM)	5180	5970	8070
Rated Torque	(Ncm)	1.13	1.41	1.84
Rated Current	(A)	0.58	0.74	1.14
Rated Power	(W)	6.1	8.8	15.5
Peak Torque	(Ncm)	5.11	7.34	11.7
Peak Current	(A)	1.98	2.91	5.54
Terminal Resistance	(OHMS)	12.1	8.24	4.33
Inductance	(mH)	6.27	4.57	2.34
Voltage Constant	(V/KRPM)	2.87	2.76	2.29
Rotor Inertia	(Kg.cm <sup>2</sup> )	0.00989	0.012	0.0162
Insulation Class		F	F	F
L	(mm)	52.58	55.75	62.1
Weight	(Kg)	0.13	0.15	0.17

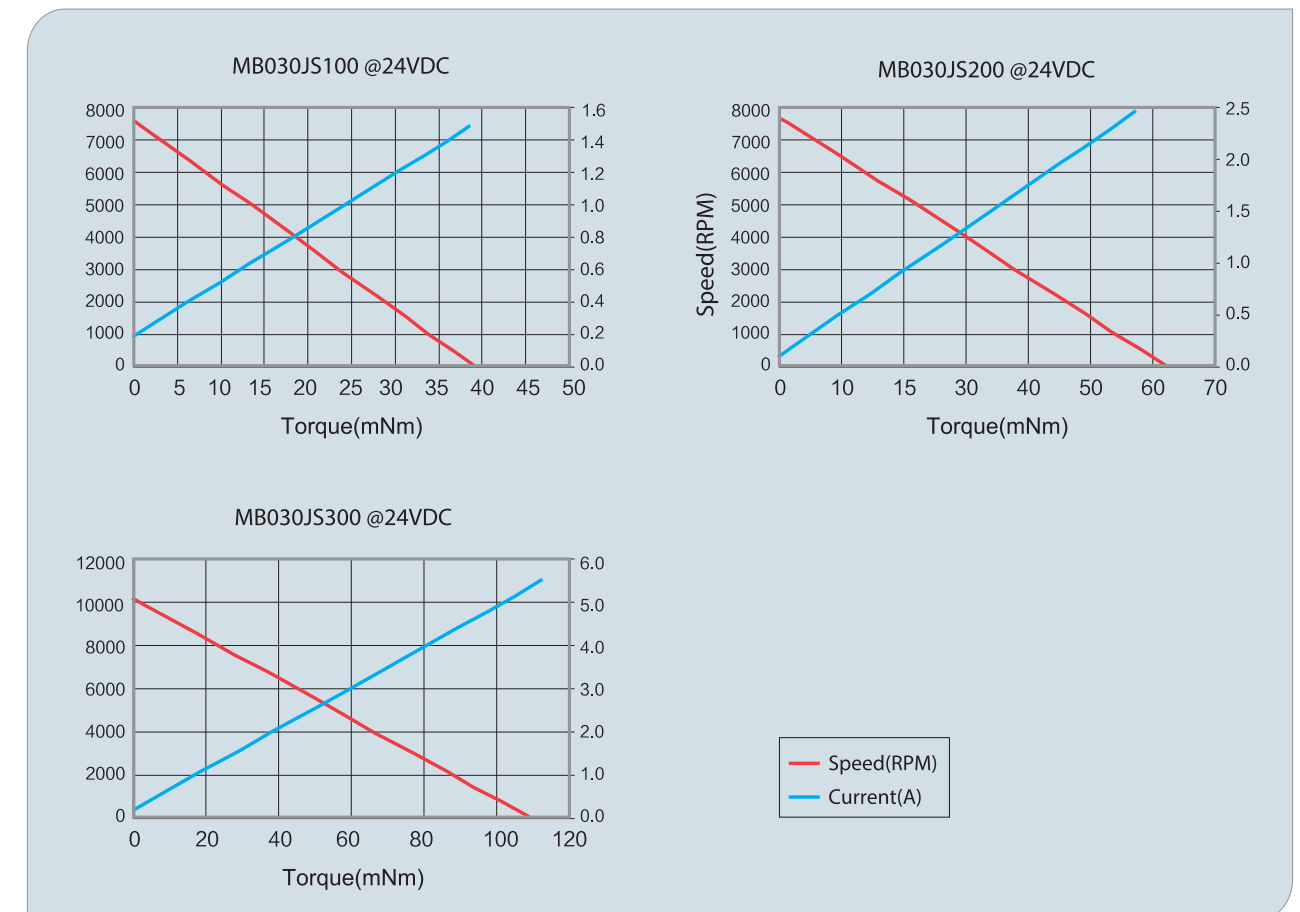


## MB030JS

- *Mechanical*



- *Characteristic diagram*





# MB040JS

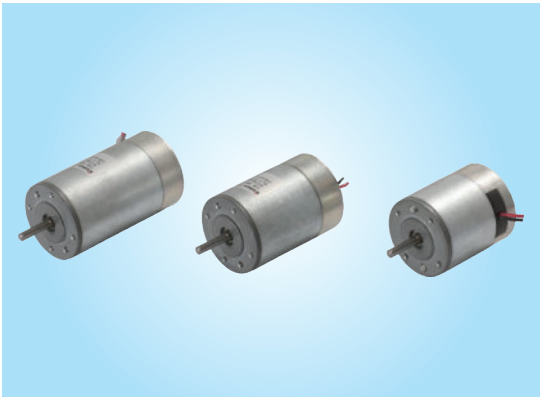
## DC Brush Motor

● General information

- Ball bearing/sintered Bronze bearing available
- Ceramic Magnet
- 7-slot Armature
- Copper-Graphite Brush
- Encoder Planetary gearbox available

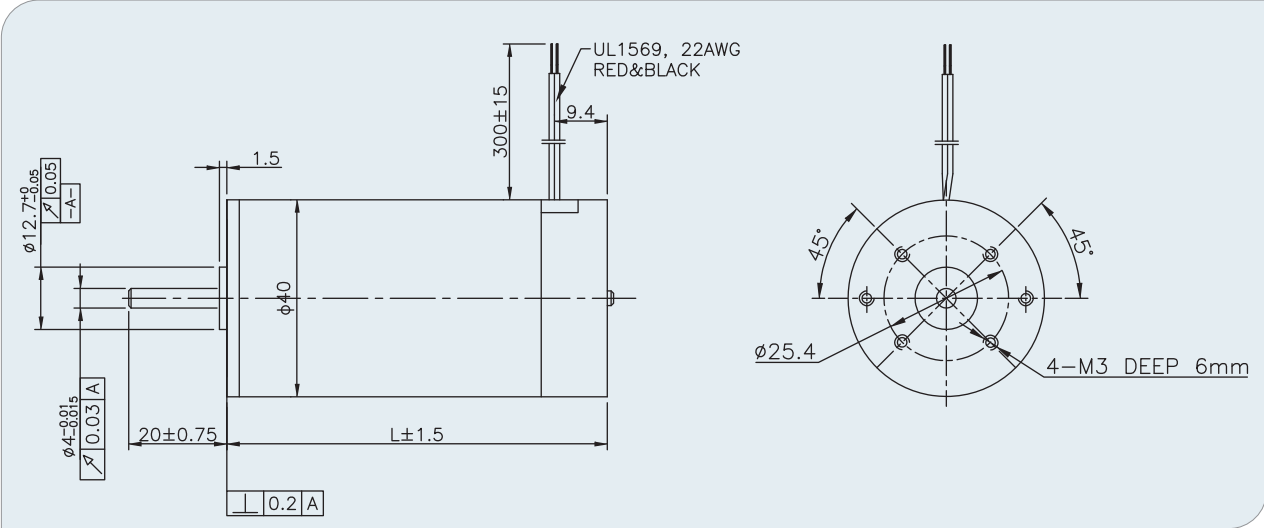
● Specifications

SPECIFICATION		MB040JS100	MB040JS200	MB040JS300	MB040JS400	MB040JS500	MB040JS600
Rated Voltage	(VDC)	24	24	24	24	24	24
No Load Speed	(RPM)	6870	5880	6100	6320	4920	5230
No Load Current	(A)	0.16	0.15	0.18	0.19	0.16	0.18
Nominal Speed	(RPM)	5770	5410	5200	6000	4400	4850
Nominal Torque	(NCM)	1.7	3.3	4.3	4.9	6.7	8.1
Nominal Current	(A)	0.88	1.35	1.35	2.08	2.14	2.77
Nominal Power	(W)	10.3	18.7	23.4	30.8	30.9	41.1
Peak Torque	(NCM)	9.6	22.2	29	34.7	43.6	54.2
Peak Current	(A)	3.25	6.09	8.1	10.1	9.64	13
Ke	(V/KRPM)	3.25	3.9	3.82	3.65	4.8	4.44
Rotor Inertia	(Kg.m <sup>2</sup> x10 <sup>-6</sup> )	1.9	3.2	4.2	5.6	7.1	8.5
Resistance	(OHMS)	7.38	3.94	2.98	2.37	2.49	1.85
Insulation Class		B	B	B	B	B	B
Weight	(Kg)	0.16	0.19	0.25	0.34	0.39	0.44
L	(mm)	48	57	62	70	78.8	86

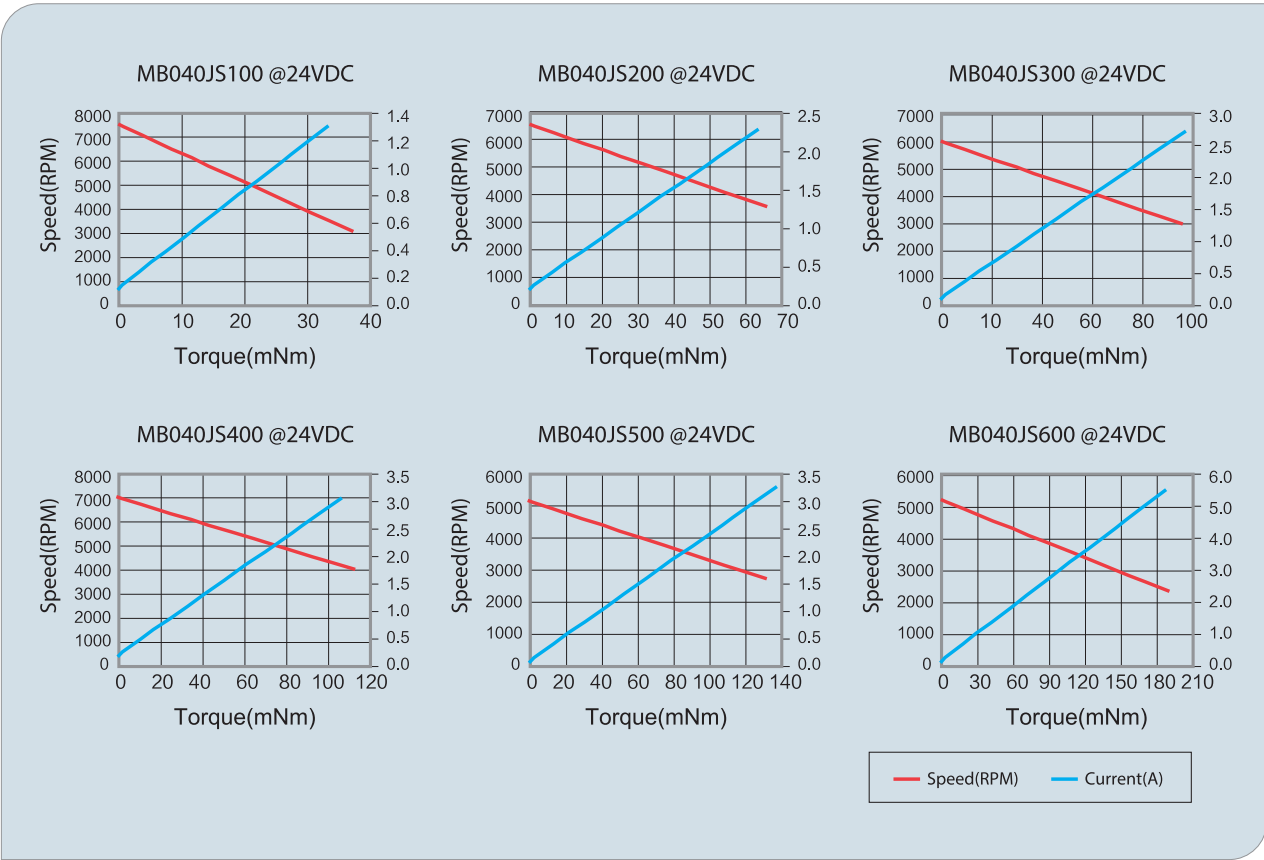


# MB040JS

● Mechanical



● Characteristic diagram



# MB042DK

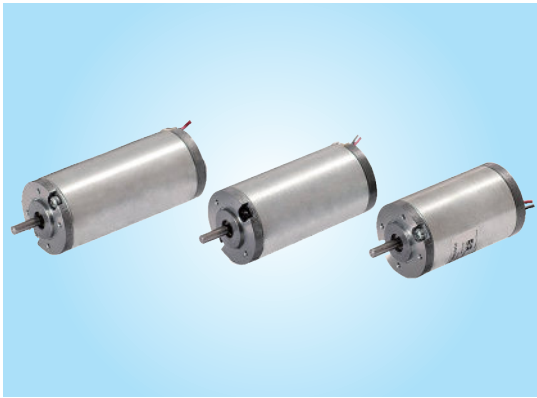
## DC Brush Motor

General information

- Mounting holes to DIN standard
- Graphit-copper brushes
- Encoder Brake and Planetary gearbox available
- Ball bearings

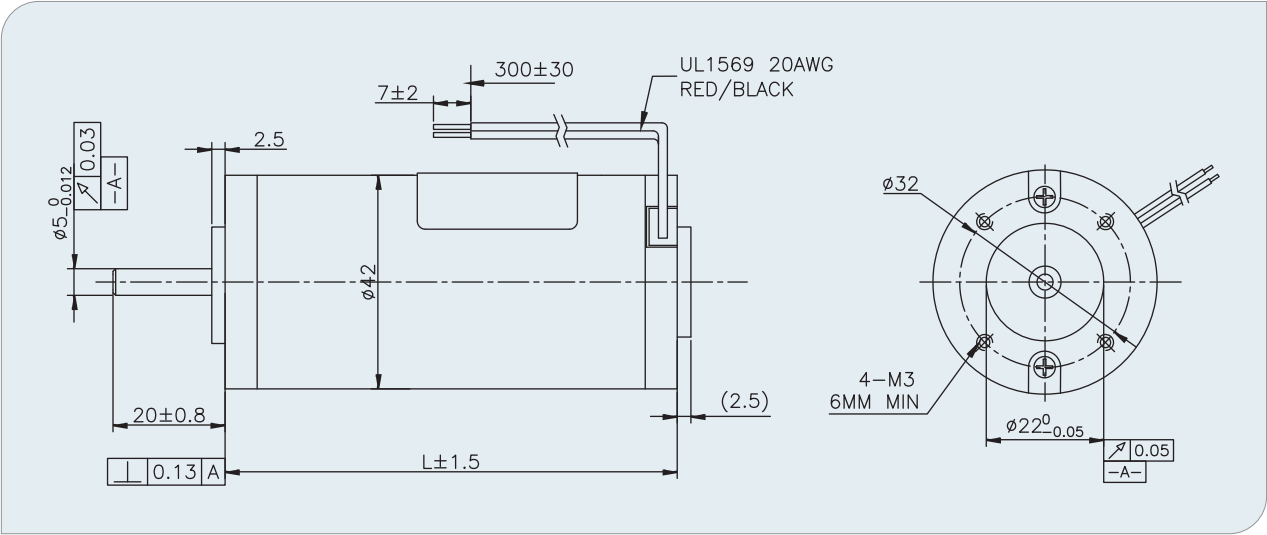
Specifications

SPECIFICATION		MB042DK100	MB042DK200	MB042DK300
Voltage	(VDC)	24	24	24
No Load Speed	(RPM)	4250	4000	3750
No Load Current	(A)	0.2	0.2	0.15
Nominal Speed	(RPM)	3400	3000	3000
Nominal Torque	(Ncm)	4	7.5	9
Nominal Current	(A)	1	1.6	1.75
Nominal Power	(W)	14.3	24	28.3
Peak Torque	(Ncm)	15	30	37
Peak Current	(A)	3.5	6	7.5
Ke	(V/KRPM)	5.34	5.8	6.03
Rotor Inertia	(Kg.cm²)	0.06	0.095	0.13
Resistance	(OHMS)	5.31	4.15	3.72
Insulation Class		B	B	B
Weight	(Kg)	0.48	0.6	0.64
L	(mm)	75	85	95

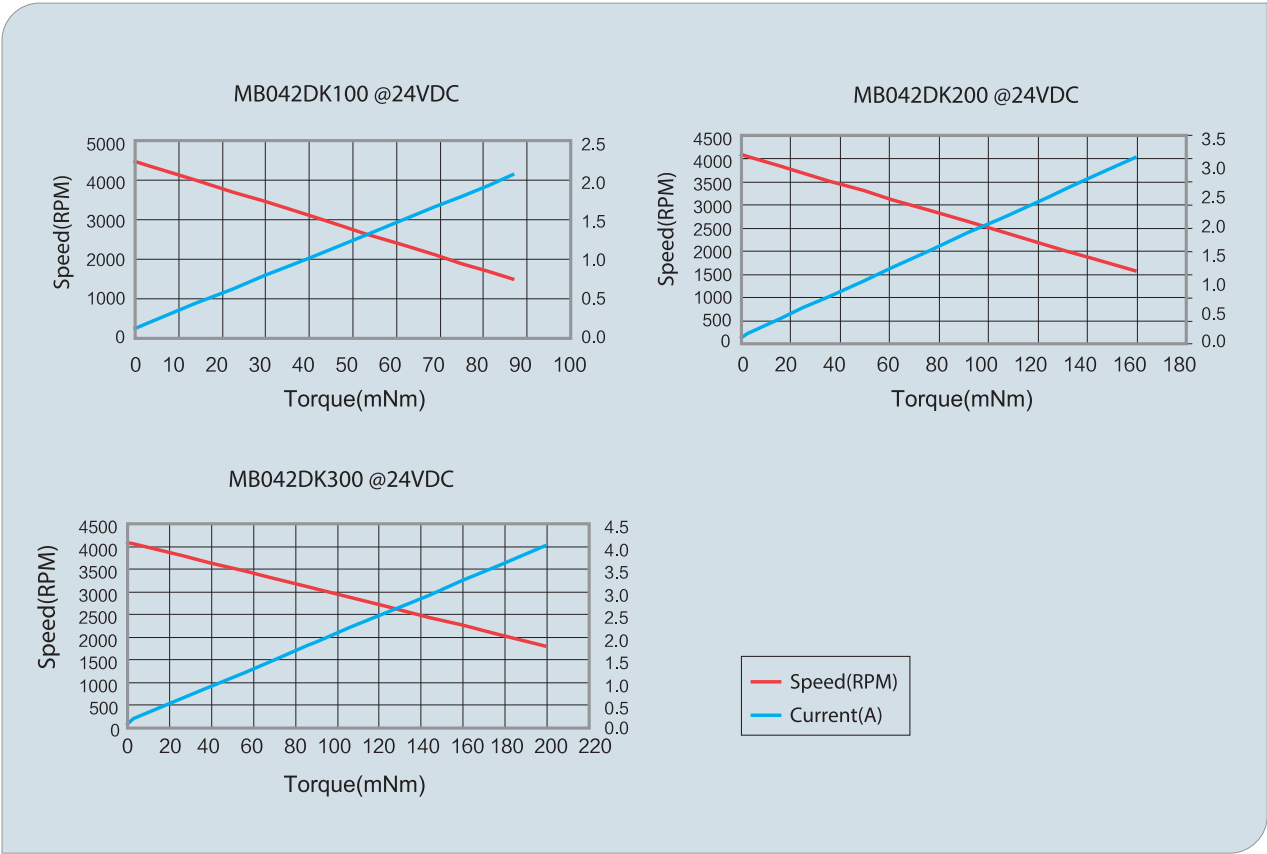


# MB042DK

Mechanical



Characteristic diagram



# MB054TP

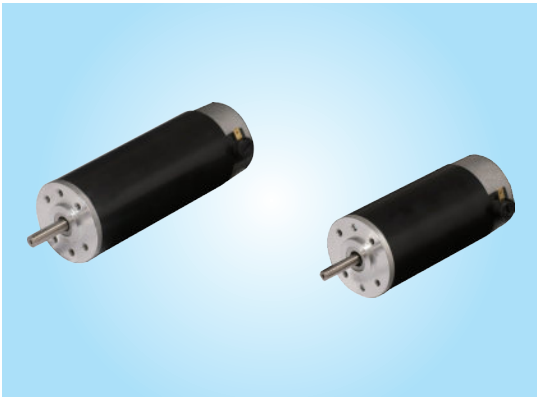
## DC Brush Motor

General information

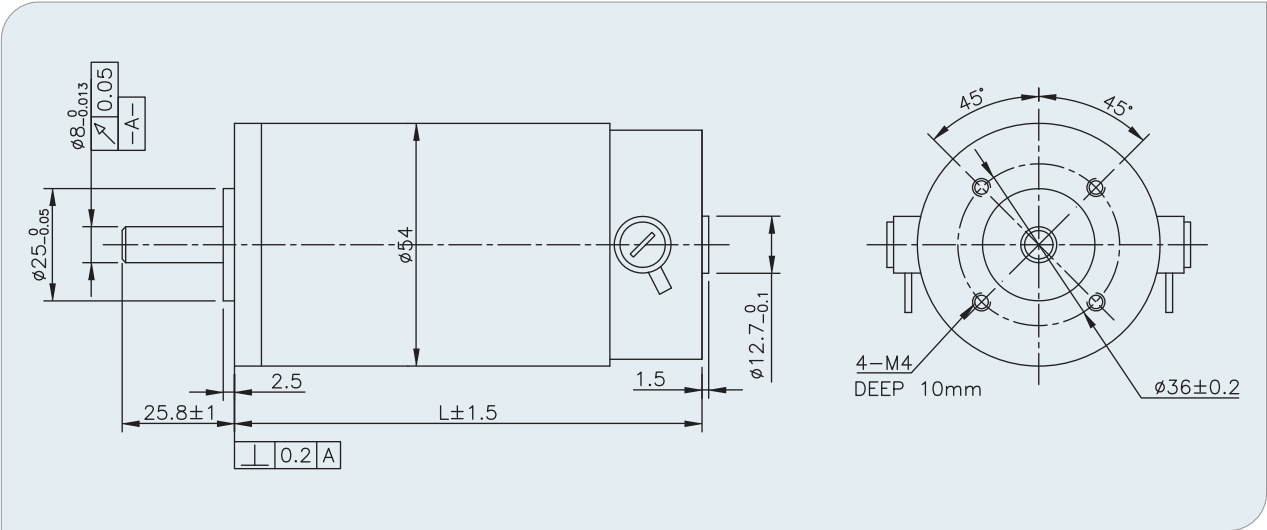
- Ball bearing
- Ceramic magnet
- 11 slot Armature
- Copper-Graphnite Brushes
- Encoder. Planetary gearbox available

Specifications

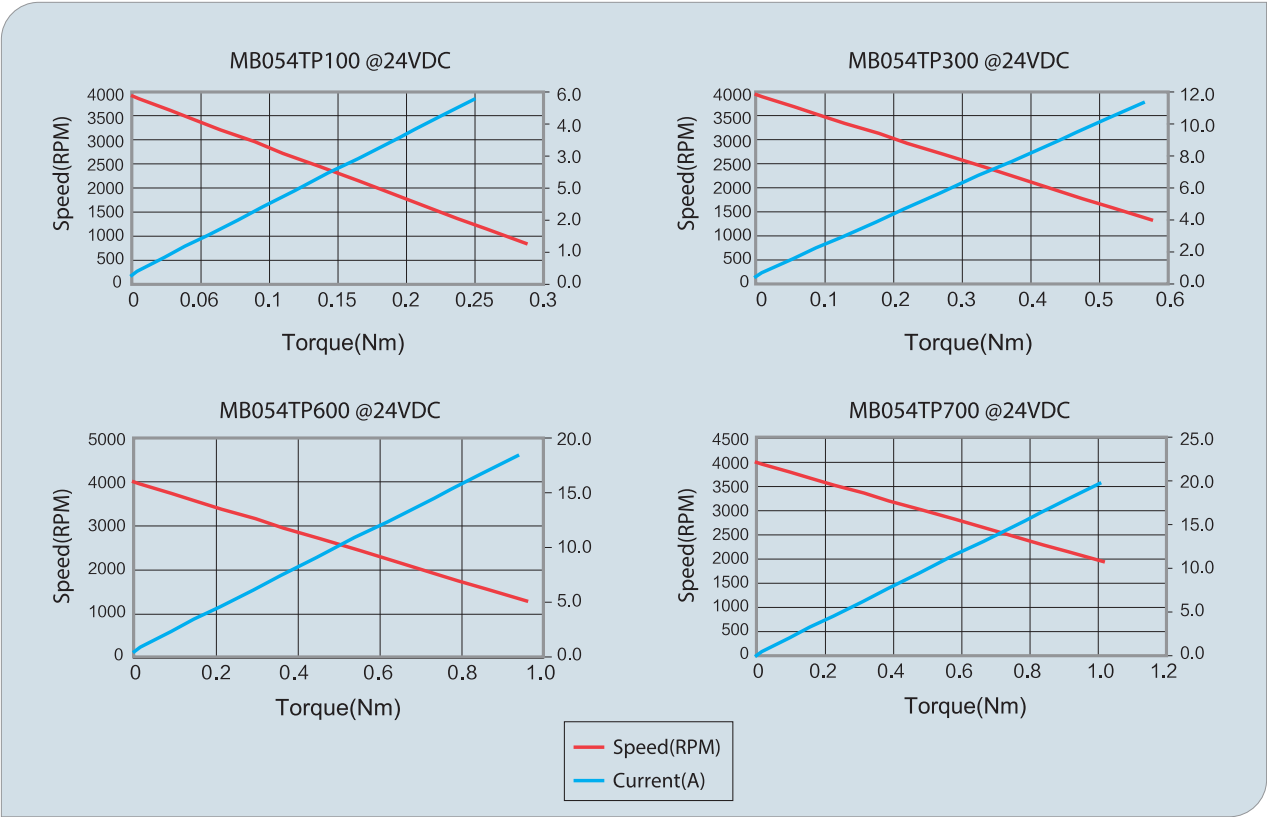
SPECIFICATION		MB054TP100	MB054TP300	MB054TP600	MB054TP700
Voltage	(V)	24	24	24	24
No Load Speed	(RPM)	4000	4000	4000	4000
No Load Current	(A)	0.32	0.34	0.3	0.15
Nominal Torque	(Nm)	0.07	0.15	0.26	0.36
Nominal Speed	(RPM)	3200	3300	3300	3300
Nominal Power	(W)	23.5	51.8	90	124.4
Nominal Current	(A)	1.65	3.2	5.3	7.2
Peak Torque	(Nm)	0.35	0.76	1.4	1.8
Peak Current	(A)	7	14.9	27.3	35.6
Rotor Inertia	(Kg.mm²)	115	215	370	480
Ke	(V/KRPM)	5.77	5.77	5.77	5.77
Resistance	(OHMS)	3.45	1.65	0.88	0.68
Insulation Class		B	B	B	B
Weight	(Kg)	0.6	0.9	1.3	1.6
L	(mm)	75	94	126	145



Mechanical



Characteristic diagram



# MB057DG

## DC Brush Motor

- *General information*

- ▶ High performance motors with exceptional efficiency
- ▶ Compact size through optimized torque to inertia ratio
- ▶ Developed for high dynamic applications
- ▶ Best price performance ratio by cost improved design
- ▶ Various options to meet your specific needs

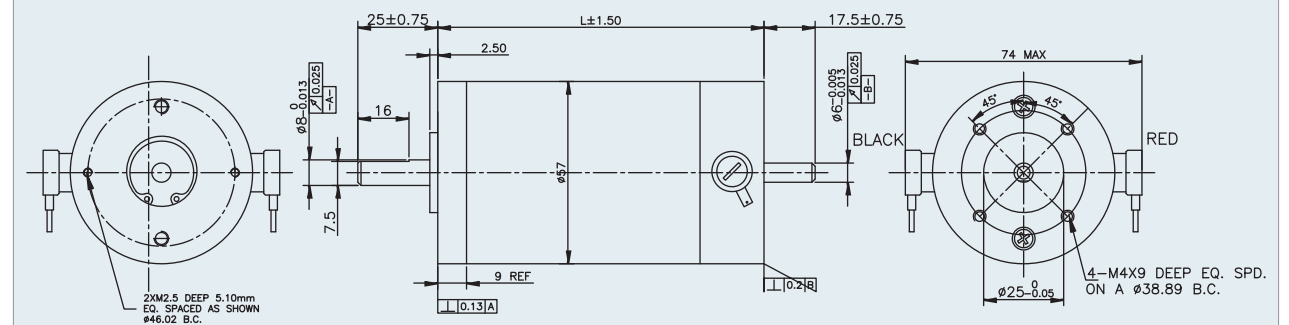


- *Specifications*

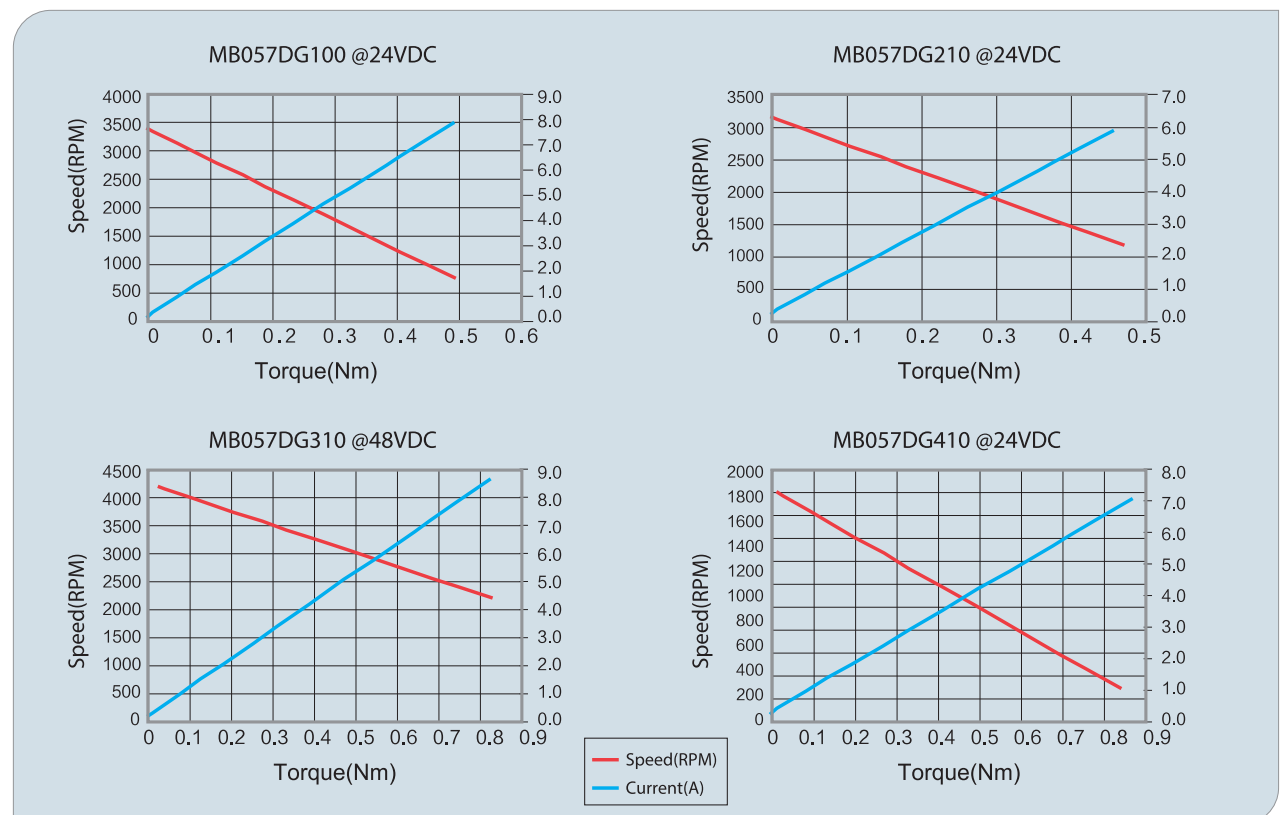
Specification		MB057DG100	MB057DG210	MB057DG310	MB057DG410	MB057DG430
Continuous Stall Torque	(Nm)	0.10	0.20	0.35	0.40	0.40
Peak Stall Torque	(Nm)	0.50	1.05	1.50	1.44	1.44
Continuous Stall Current	(A)	0.6	3	3.3	3.3	4.7
Maximum Pulse Current	(A)	2.5	14.7	14.2	11.9	16.7
Maximum Terminal Voltage	(V)	60	60	60	60	60
Maximum Speed	(RPM)	3000	6000	5200	4700	6000
Mechanical Data						
Rotor Moment Of Inertia	(Kg.m <sup>2</sup> )	1.3E-05	2.7E-05	4.3E-05	5.3E-05	5.3E-05
Mechanical Time Constant	(MS)	10.4	8.4	8.2	8	8
Motor Mass	(gram)	700	1000	1400	1600	1600
Thermal Data						
Thermal Resistance (Armature To Ambient)	(C/W)	10	5	4.2	4	4
Winding Specifications						
Torque Constant(KT)	(Nm/A)	0.19	0.071	0.105	0.121	0.86
Voltage Constant(Back EMF)	(V/KRPM)	20	7.41	11	12.7	9
Terminal Resistance	(OHMS)	32	1.55	2	2.2	1.5
Armature Inductance	(mH)	50	3.39	5.2	6.4	2.4
Electrical Time Constant	(mS)	1.6	2.1	2.6	2.9	1.6
L	(mm)	84	102	127	140	140

## MB057DG

- *Mechanical*



- *Characteristic diagram*



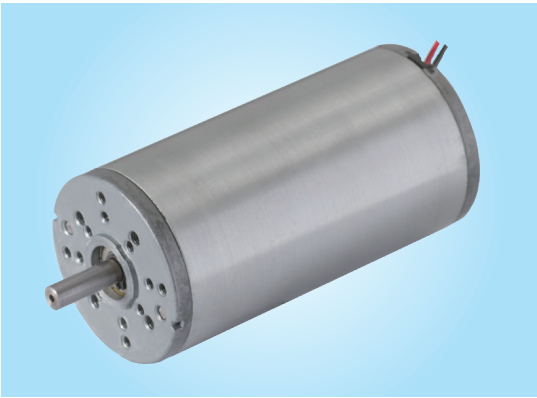


# MB063KG

## DC Brush Motor

● General information

- Ceramic Magnets
- 7-slot Armature
- Copper-graphite Brushes
- Encoder Brake and Planetary gearbox available

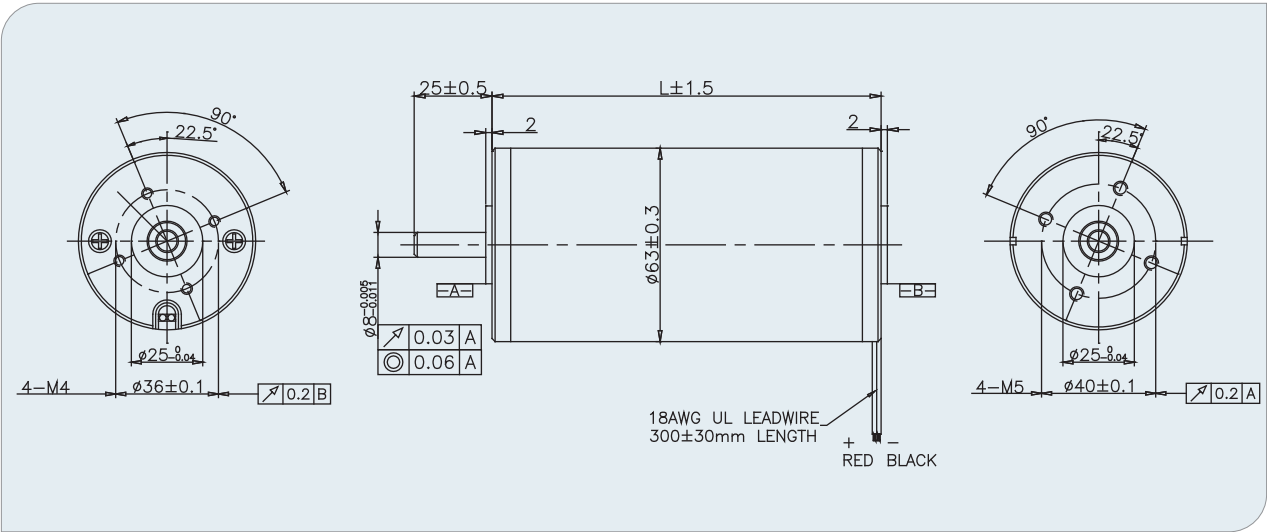


● Specifications

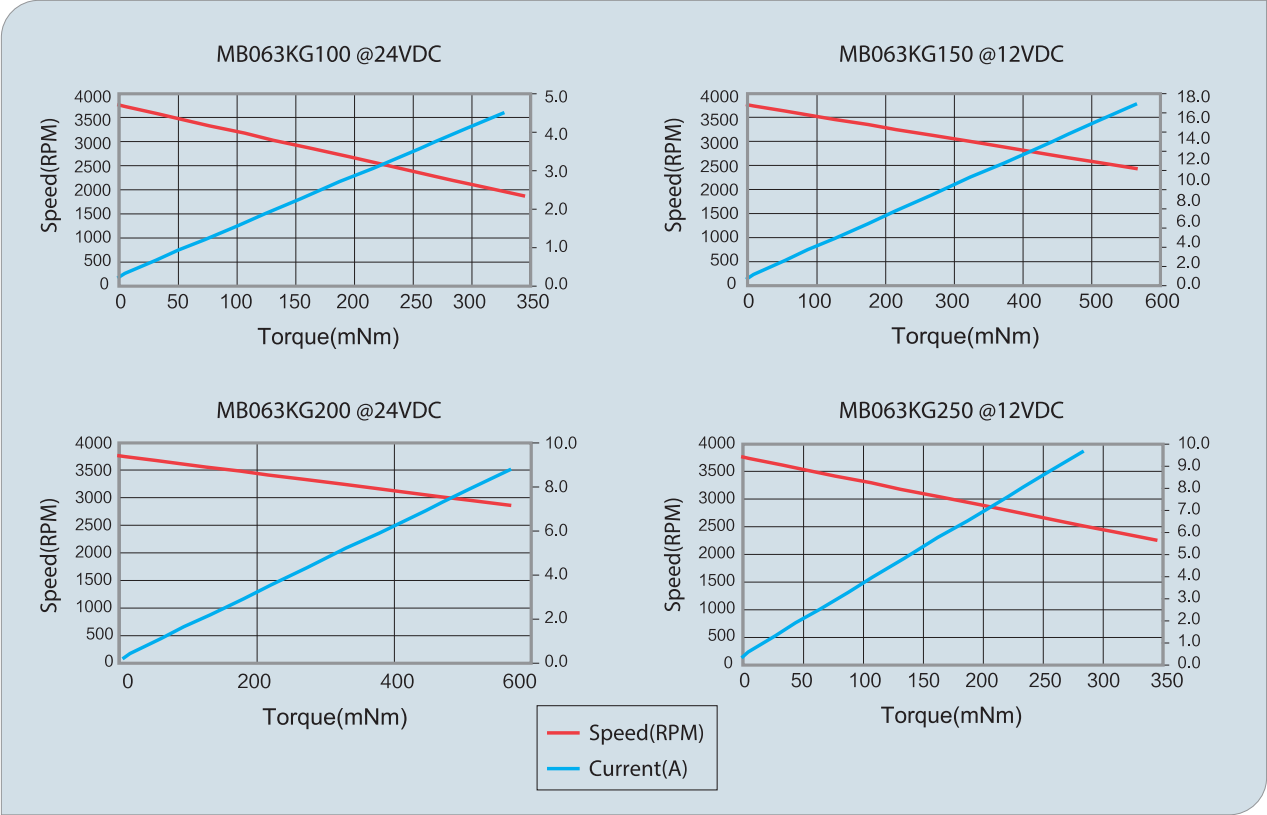
SPECIFICATION		MB063KG100	MB063KG150	MB063KG200	MB063KG250
Rated Voltage	(VDC)	24	12	24	12
No Load Speed	(RPM)	3600	3600	3650	3500
No Load Current	(A)	0.36	0.6	0.4	0.8
Nominal Speed	(RPM)	3300	3100	3350	3000
Nominal Torque	(Ncm)	14	13.7	27	24
Nominal Current	(A)	2.7	5.2	4.9	8.7
Nominal Power	(W)	50	50	100	100
Peak Torque	(Ncm)	108	82	211	202
Peak Current	(A)	18	27	40	64
Rotor Intertia	(g.cm <sup>2</sup> )	400	400	750	750
Insulation Class		B	B	B	B
Weight	(Kg)	1.2	1.2	1.7	1.7
L	(mm)	95	95	125	125

# MB063KG

● Mechanical



● Characteristic diagram





# MB100FG

## DC Brush Motor

General information

- IEC34-1 Standard Flange
- Magnet material: Hard Ferrite
- Number of Poles: 4
- Insulation class B, higher insulation on request
- Suitable for low voltage battery-operated application

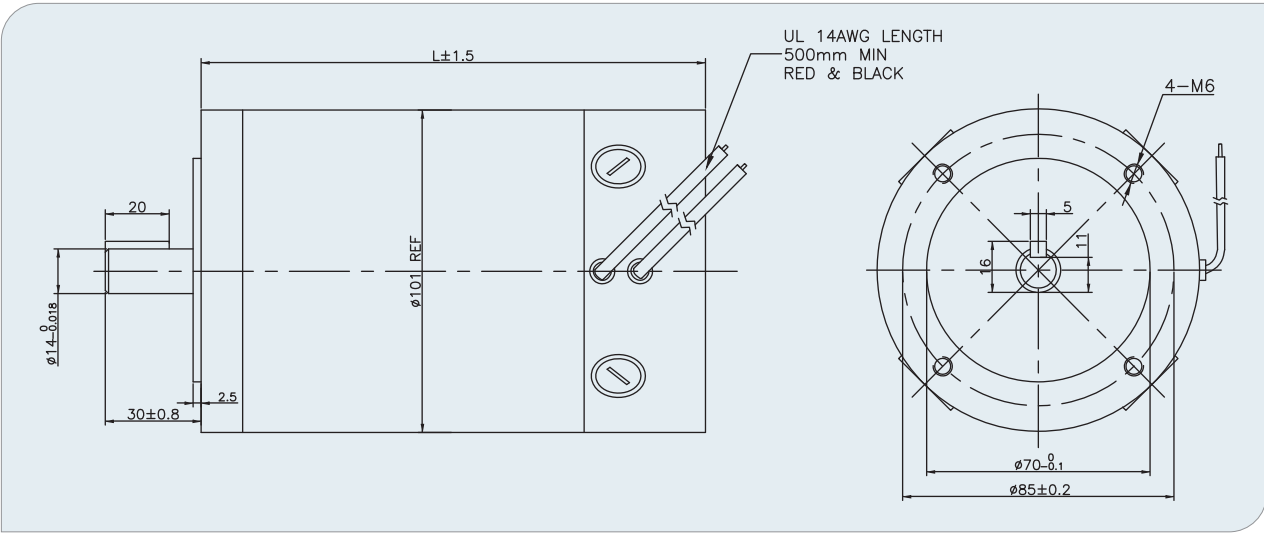
Specifications

SPECIFICATION		MB100FG100	MB100FG200	MB100FG300
Voltage	(V)	48	48	48
No Load Speed	(RPM)	3600	3600	3600
Rated Torque	(Nm)	0.9	1.6	2.1
Rated Speed	(RPM)	3100	3100	3100
Rated Current	(A)	8.5	15	19
Stall Torque	(Nm)	8	20	28
Rotor Inertia	(Kg.cm²)	7	14	18
Ke	(V/KRPM)	12	12	12
Torque Constant	(Nm/A)	0.115	0.115	0.115
Resistance	(OHMS)	0.6	0.23	0.17
Weight	(Kg)	3.8	4.3	5
L	(mm)	125	158	178

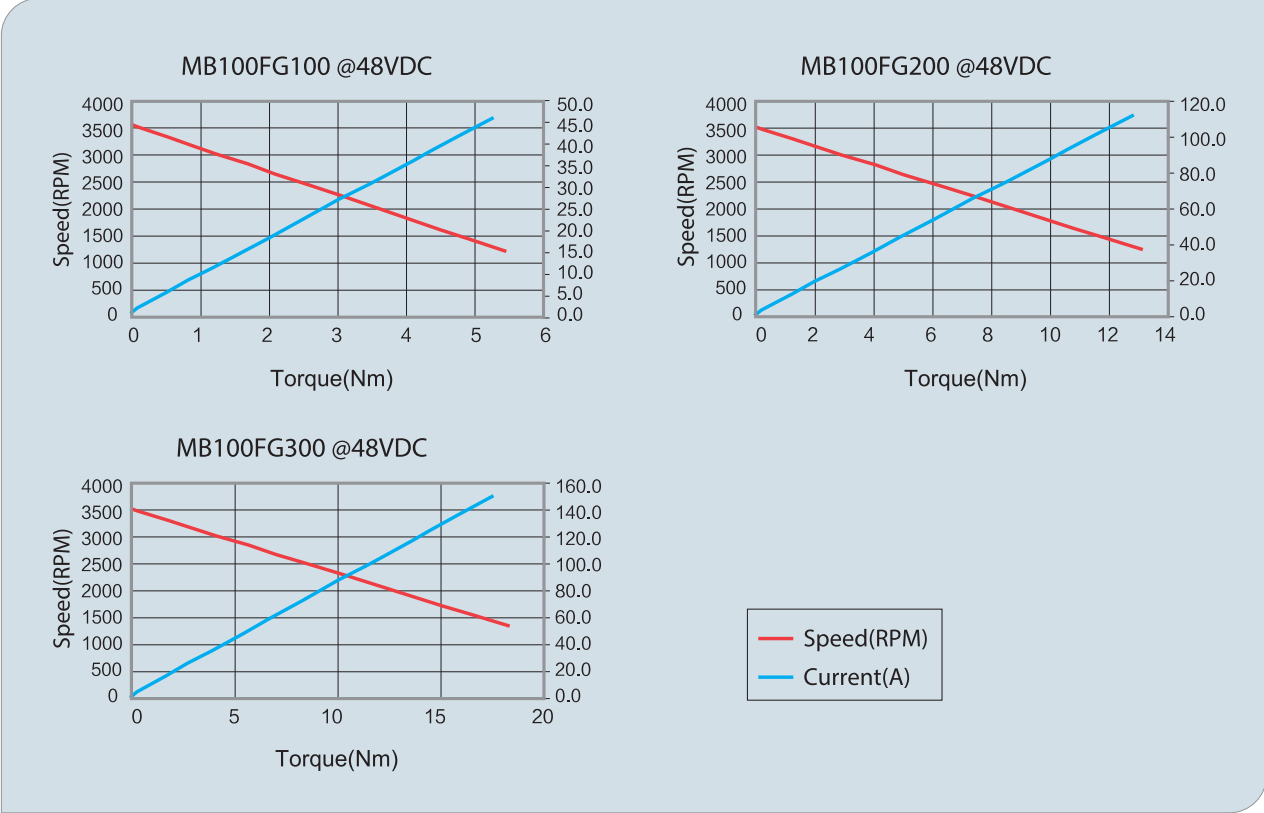


# MB100FG

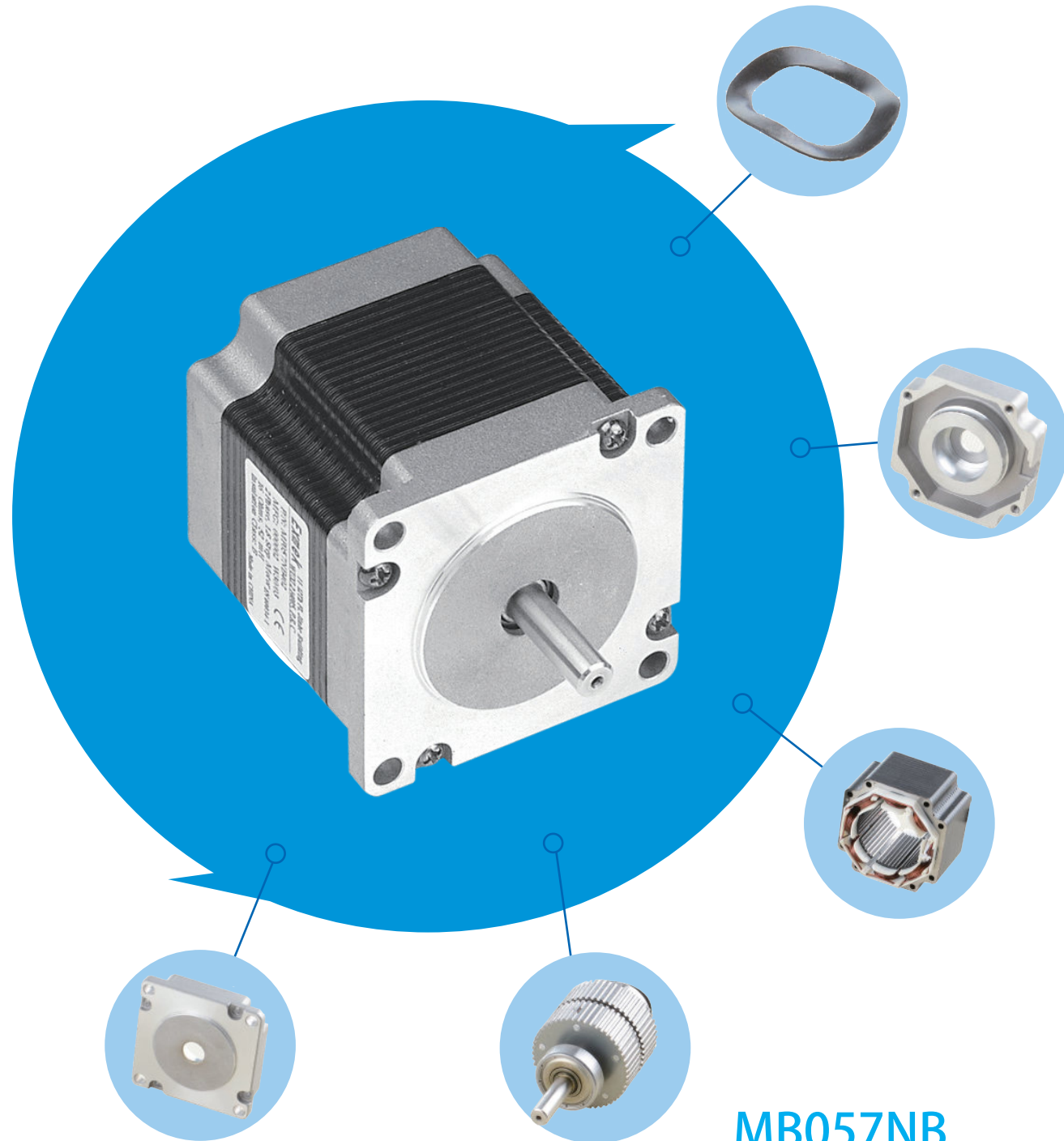
Mechanical



Characteristic diagram



# STEPPER MOTOR



## MB057NB

We can customize it according to customer's requirements

# STEPPER MOTOR

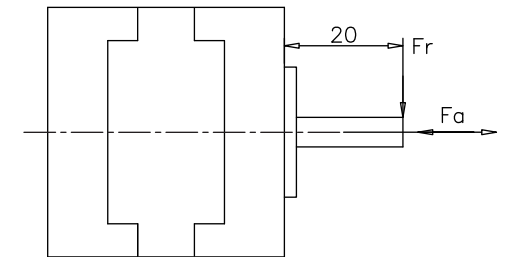
## General Information

### Basic Parameters

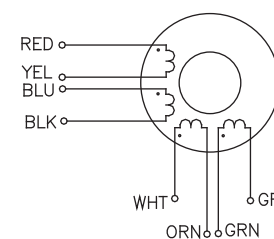
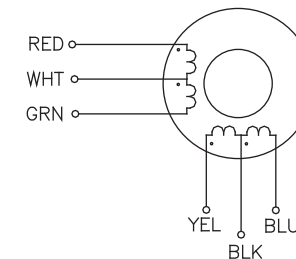
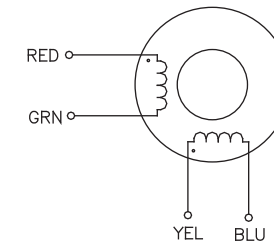
- Step Angle Accuracy:  $\pm 5\%$
- Ambient Temperature:  $-20^{\circ}\text{C} \sim +50^{\circ}\text{C}$
- Insulation Resistance:  $100\text{M } \Omega \text{ Min.}$
- Dielectric Strength:  $500\text{VAC}, 1\text{S}, 2\text{mA}$
- Insulation Class: B
- Frequency-Torque curve on request

### Max. Axial Force And Radial Force

Item	Fr(N)	Fa(N)
Distance from the flange (mm)	20	
MP020 Shaft $\phi 5\text{mm}$	8	4
MP039;MP042 Shaft $\phi 5\text{mm}$	20	7
MP057 Shaft $\phi 6.35\text{mm}$	52	10
MP057 Shaft $\phi 8\text{mm}$	63	14
MP086 Shaft $\phi 9.5\text{mm}$	100	25
NP086 Shaft $\phi 14\text{mm}$	200	25
MP110 Shaft $\phi 19.05\text{mm}$	240	80



### Mode Of Connection



4 LEAD WIRING DIAGRAM				
LEAD WIRE COLOR	RED	GRN	YELLOW	BLUE
BIPOLAR DRIVE	A	A/	B	B/

6 LEAD WIRING DIAGRAM						
LEAD WIRE COLOR	RED	WHITE	GREEN	YELLOW	BLACK	BLUE
BIPOLAR DRIVE	PARRALLEL CONNECTION					
	A	A/	N/C	B	B/	N/C
	SERIES CONNECTION					
UNIPOLAR DRIVE	A	N/C	A/	B	N/C	B/
	A	COM	B	C	COM	D

8 LEAD WIRING DIAGRAM							
LEAD WIRE COLOR	RED	BLUE	YELLOW	BLACK	WHITE	GREEN	ORANGE
BIPOLAR DRIVE	PARRALLEL CONNECTION						
	A	A/	B	B/			
	SERIES CONNECTION						
UNIPOLAR DRIVE	A	A/	B	B/			
	A	COM	B	C	COM	D	

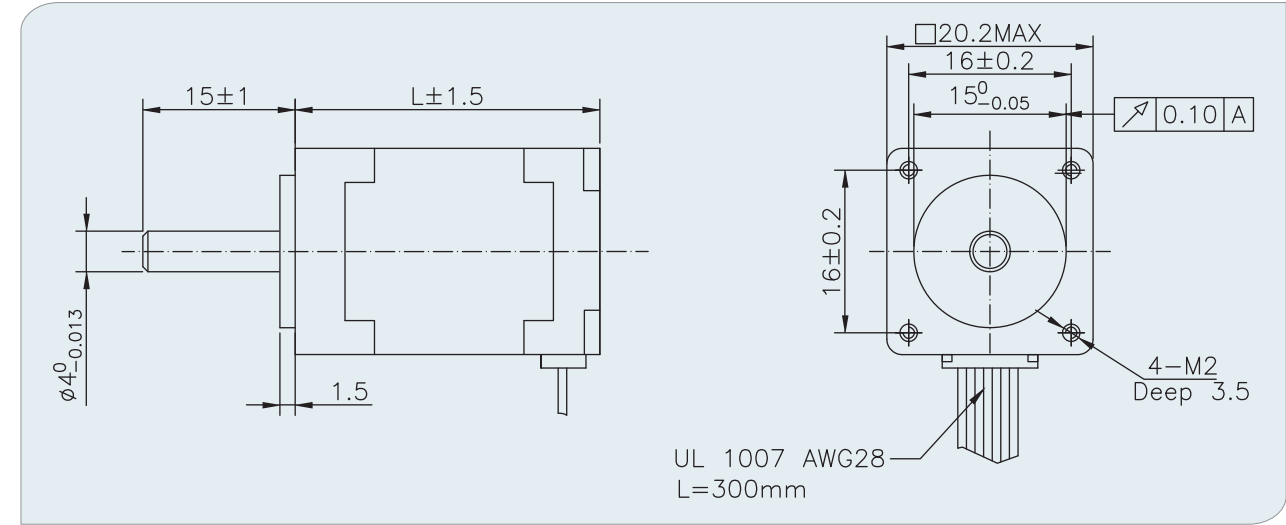


# MP020NA Stepper Motor

- 20mm, 1.8Degree Hybrid Stepper Motor



Mechanical



Specifications

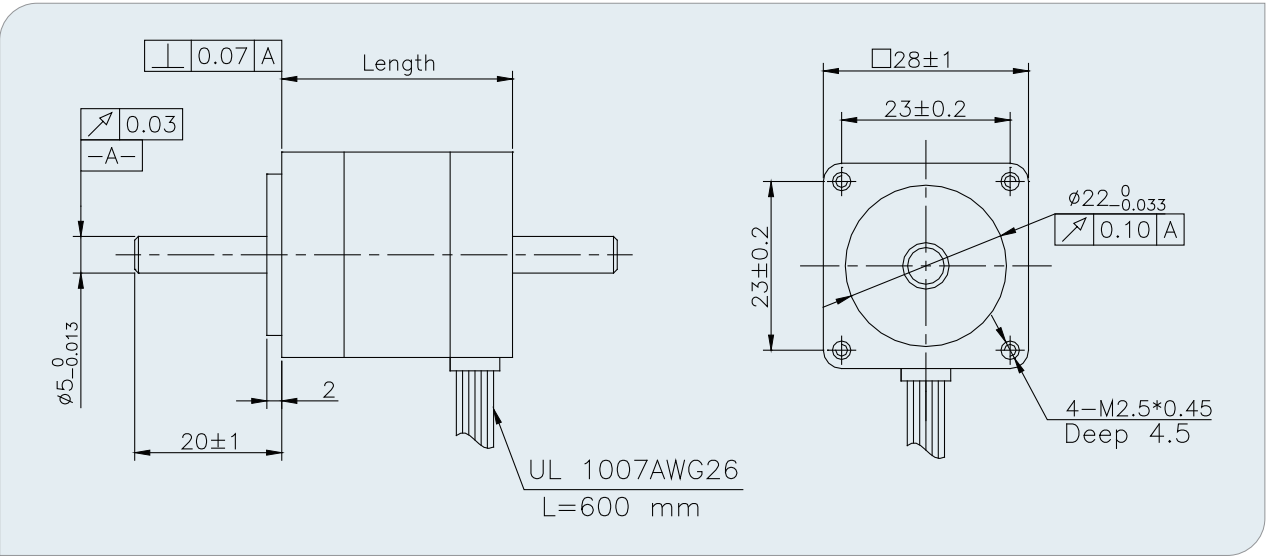
Part No.		MP020NA101	MP020NA300
Phase current	(A)	0.6	0.6
Phase Resistance	(Ohms)	6.5	6.5
Phase Inductance	(mH)	1.7	0.8
Holding Torque	(Ncm)	1.8	2
Detent Torque	(Ncm)	0.2	0.2
No.of Wires		4	6
Rotor Inertia	(g.cm <sup>2</sup> )	2.5	2.9
Length	(mm)	30	33
Weight	(g)	60	60



# MP028NB Stepper Motor

- 28mm, 1.8Degree Hybrid Stepper Motor

Mechanical



Specifications

Part No.	Phase Current (A)	Phase Resistance (OHMS)	Phase Inductance (mH)	Holding Torque (Ncm)	Detent Torque (Ncm)	No. of Wires	Rotor Inertia (g.cm <sup>2</sup> )	Length (mm)	Weight (g)
MP028NB101	0.67	5.6	4.2	6	0.8	4	9.5	31.5	100
MP028NB102	0.47	2.8	1	4	0.8	6	9.5	31.5	100
MP028NB103	1.3	1.4	1.1	6.5	0.8	4	9.5	31.5	100
MP028NB201	0.67	6.8	4.9	9.5	1.2	4	12	44.5	180
MP028NB202	1	3.4	1.2	7.5	1.2	6	12	44.5	180
MP028NB301	0.67	9.2	5.7	12	1.5	4	18	50.5	210
MP028NB302	0.96	4.6	1.8	9	1.5	6	18	50.5	210
MP028NB303	1	4.3	2	9.5	1.5	6	18	50.5	210

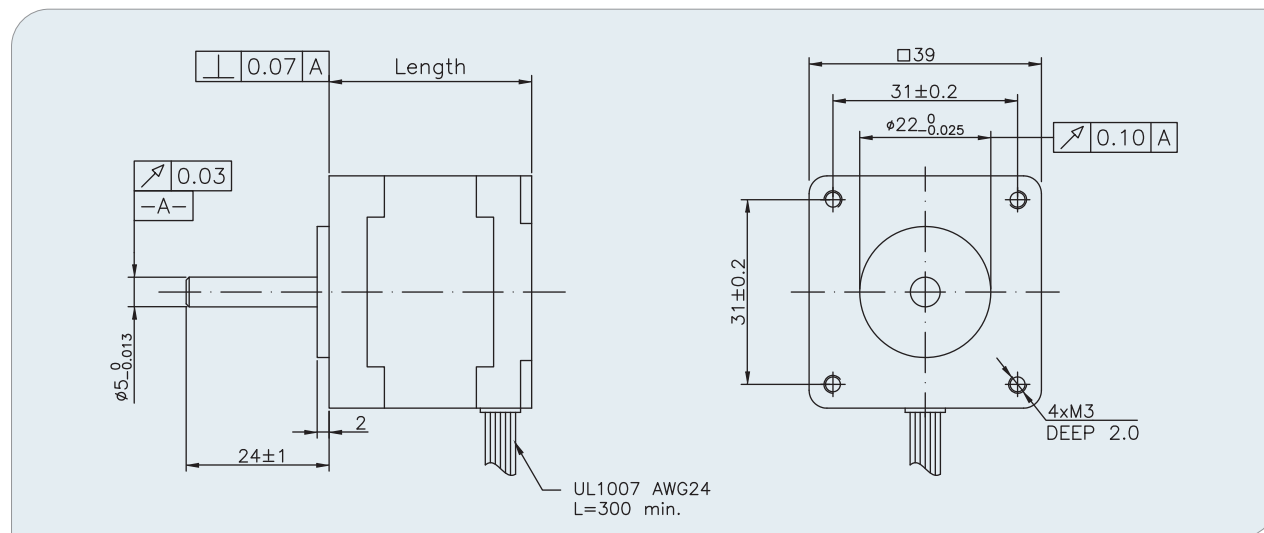
# MP039NA

## Stepper Motor

- 39mm, 1.8Degree Hybrid Stepper Motor



- *Mechanical*



- *Specifications*

Part No.	Phase Current	Phase Resistance	Phase Inductance	Holding Torque	Detent Torque	No.of Wires	Rotor Inertia	Length	Weight
	(A)	(OHMS)	(mH)	(Ncm)	(Ncm)		(g.cm <sup>2</sup> )	(mm)	(g)
MP039NA101	0.4	6.6	7.5	6.5	1.2	4	11	20	120
MP039NA103	0.28	13	7.5	4.6	0.8	6	11	20	120
MP039NA106	0.6	7	6.4	8.3	1.2	4	11	20	120
MP039NA201	0.4	30	32	20.6	1.8	4	20	34	180
MP039NA203	0.3	40	20	12.7	1.8	6	20	34	180
MP039NA204	0.6	15	16	21.6	1.8	6	20	34	180
MP039NA302	0.5	24	45	28.4	2.16	4	28	38	200
MP039NA303	0.8	7.5	6	19.6	2.16	6	28	38	200
MP039NA401	0.8	40	100	27.4	2.5	4	40	44	250
MP039NA501	0.8	20	35	30	2.5	4	60	53	320

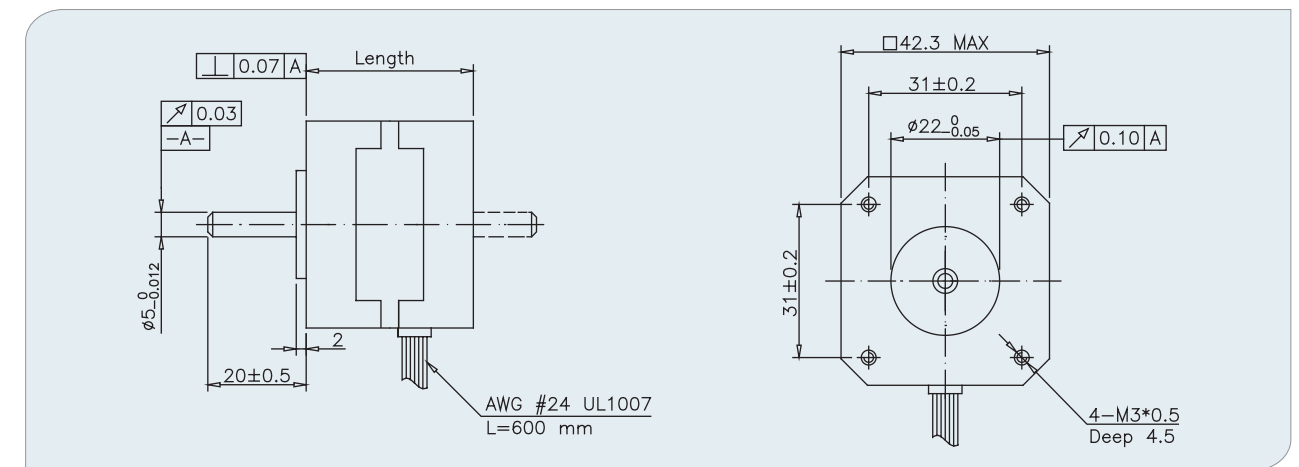
# MP042NB

## Stepper Motor

- 42mm, 1.8Degree Enhanced Hybrid Stepper Motor



- *Mechanical*



- *Specifications*

Part No.	Phase Current	Phase Resistance	Phase Inductance	Holding Torque	Detent Torque	No.of Wires	Rotor Inertia	Length	Weight
	(A)	(OHMS)	(mH)	(Ncm)	(Ncm)		(g.cm <sup>2</sup> )	(mm)	(g)
MP042NB001	0.4	24	3.6	17	2	4	20	24	150
MP042NB002	0.6	6.6	8.5	12	1.42	4	20	24	150
MP042NB111	0.6	12	15	25.5	1.96	4	34	34	200
MP042NB123	0.4	30	40	24.5	1.96	4	34	34	200
MP042NB136	0.28	44	38	16.7	1.96	6	34	34	200
MP042NB140	1	3.6	3.0	19.6	1.96	6	34	34	200
MP042NB302	1.2	3	3	26.5	2.16	6	54	40	240
MP042NB316	3.5	0.65	1.2	50	2.74	4	54	40	240
MP042NB335	1.7	1.5	3.2	44	2.2	4	54	40	240
MP042NB355	0.9	5	11.5	39.3	2.94	4	54	40	350
MP042NB519	1	4.6	4	33.3	2.74	6	68	48	340
MP042NB522	0.5	22	33	50	2.74	4	68	48	340
MP042NB523	1.5	3.15	6.15	49	2.74	4	68	48	340
MP042NB530	3	0.63	1.03	50	2.2	4	68	48	340
MP042NB531	2.5	1.25	1.8	48	2.8	4	68	48	340
MP042NB603	0.86	4.94	11.45	70	3.5	4	82	60	480
MP042NB606	1.2	12	35	75	6	4	82	60	480
MP042NB607	1.2	6	15.6	80	3.5	4	82	60	480

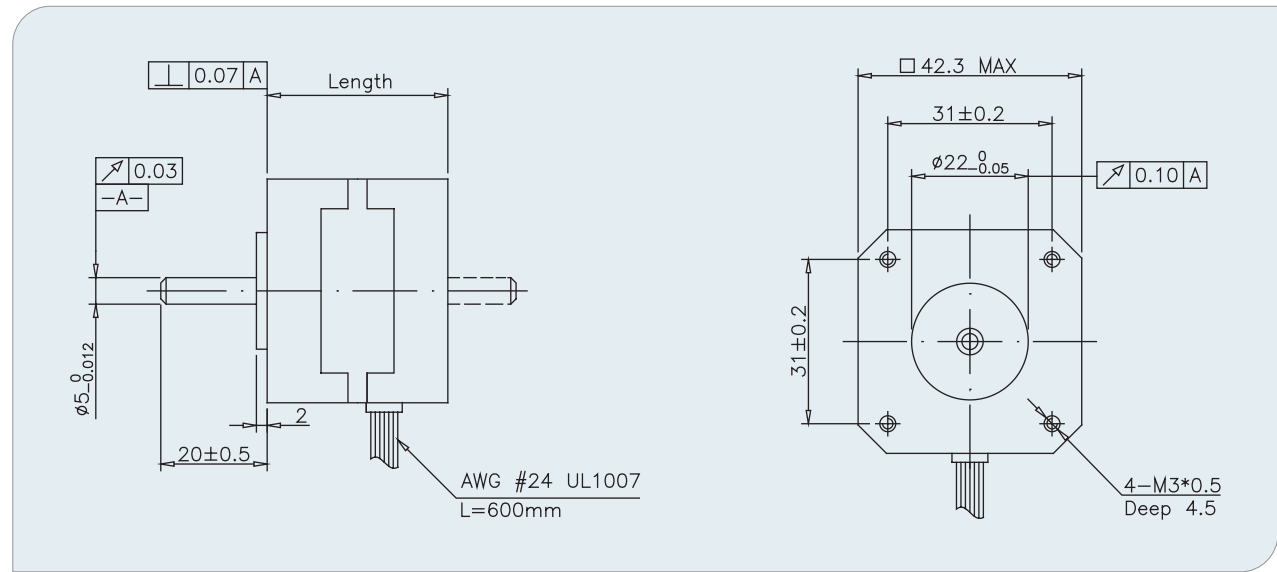
# MP042SB

## Stepper Motor

- 42mm, 0.9Degree Enhanced Hybrid Stepper Motor



Mechanical



Specifications

Part No.	Phase Current (A)	Phase Resistance (OHMS)	Phase Inductance (mH)	Holding Torque (Ncm)	Detent Torque (Ncm)	No.of Wires	Rotor Inertia (g.cm <sup>2</sup> )	Length (mm)	Weight (g)
MP042SB001	1	8.7	16.5	14.5	1.5	4	20	22	150
MP042SB004	1	9.2	21	16.5	1.5	4	20	22	150
MP042SB104	1.2	2.1	4.9	20.6	1.96	4	34	34	220
MP042SB105	0.5	20	35	18.6	2.16	4	34	34	220
MP042SB110	0.67	8.4	16	21.2	1.5	6	34	34	220
MP042SB301	1.2	3.0	4.0	29.4	2.45	6	54	40	280
MP042SB302	0.8	7.5	8.6	25.5	2.45	6	54	40	280
MP042SB303	0.4	30	36	25.5	2.45	6	54	40	280
MP042SB304	1.68	1.5	4.0	35.3	2.45	4	54	40	280
MP042SB501	1.2	3.3	4.5	31.4	2.74	6	68	48	350
MP042SB502	0.8	7.5	6.3	31.4	2.74	6	68	48	350
MP042SB503	0.4	30	31	31.4	2.74	6	68	48	350
MP042SB504	1.68	1.54	3.5	41.2	2.74	4	68	48	350
MP042SB509	1	5	8	49	2.74	4	68	48	350

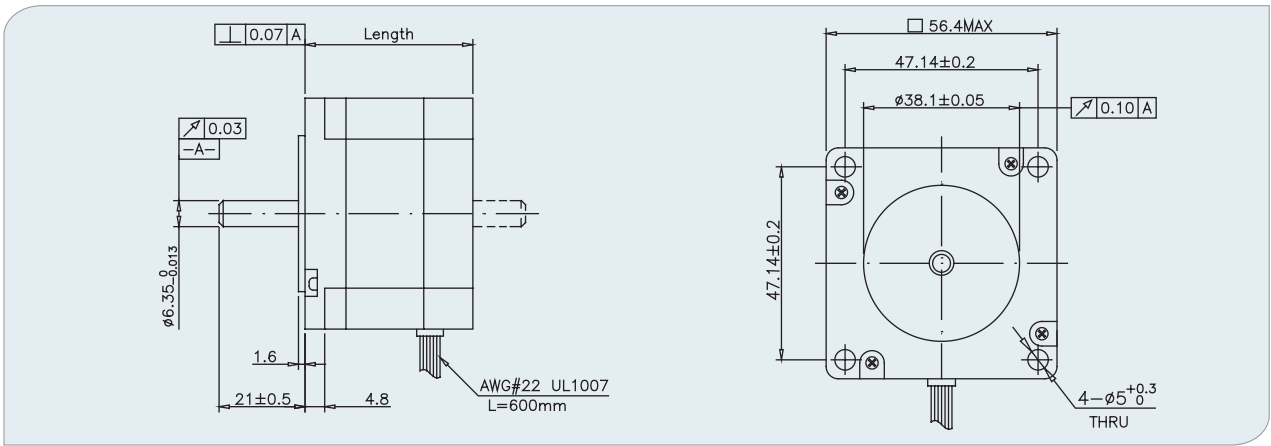


# MP057NB

## Stepper Motor

- 57mm, 1.8Degree Enhanced Hybrid Stepper Motor

Mechanical



Specifications

Part No.	Phase Current (A)	Phase Resistance (OHMS)	Phase Inductance (mH)	Holding Torque (Ncm)	Detent Torque (Ncm)	No.of Wires	Rotor Inertia (g.cm <sup>2</sup> )	Length (mm)	Weight (g)
MP057NB010	1.3	3	5	41	2.6	4	135	41	420
MP057NB020	1.3	2.7	5.6	50	4	4	135	41	420
MP057NB024	2	1.2	3.2	55	4	4	135	41	420
MP057NB201	1	6.6	9	70.6	5.88	6	275	50	550
MP057NB204	1	5.5	16.5	83.3	5.88	4	275	50	550
MP057NB208	2	1.8	5.2	80	4	4	275	50	550
MP057NB222	2.8	0.83	2.2	100	3.6	4	275	50	650
MP057NB303	2	1.8	2.5	88.2	8.33	6	300	56	600
MP057NB316	4.2	0.35	0.66	110	6.3	6	300	56	700
MP057NB331	1.4	3.6	10.8	117	3.92	4	300	56	700
MP057NB417	2.1	2	6.5	161	6.8	4	480	78	1000
MP057NB420	1.4	4.5	14.4	175	6.8	4	480	78	1000
MP057NB423	2.5	1.5	4.4	150	7	4	480	78	1000
MP057NB431	5	0.25	0.95	140	7.85	4	480	78	1100
MP057NB490	4.2	0.5	2.2	170	6.8	4	480	78	1100
MP057NB504	2	3.8	10	248	12	4	800	115	1500
MP057NB505	2.7	2	5.5	220	12	4	800	115	1500
MP057NB513	2	7	32	300	12	4	800	115	1500
MP057NB522	6	0.5	2	280	12	4	800	115	1600

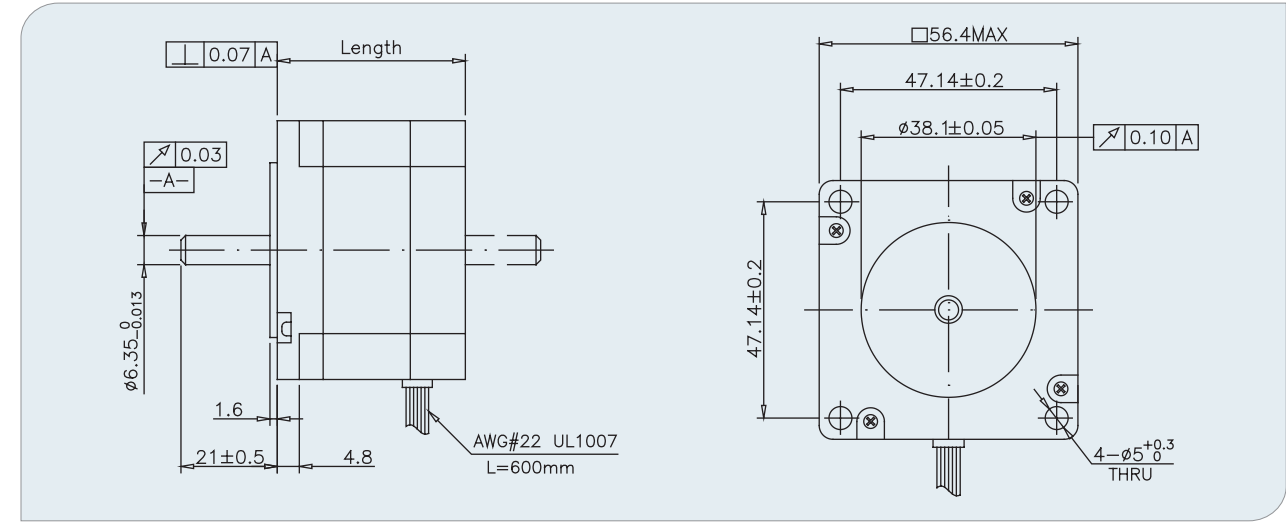
# MP057SB

## Stepper Motor

- 57mm, 0.9Degree Enhanced Hybrid Stepper Motor



Mechanical



Specifications

Specifications	Phase Current (A)	Phase Resistance (OHMS)	Phase Inductance (mH)	Holding Torque (Ncm)	Detent Torque (Ncm)	No.of Wires	Rotor Inertia (g.cm <sup>2</sup> )	Length (mm)	Weight (g)
MP057SB101	1	5.7	7	19.6	3.92	6	135	41	420
MP057SB102	2	1.4	2	19.6	3.92	6	135	41	420
MP057SB103	3	0.73	0.86	24.5	3.92	6	135	41	420
MP057SB104	2.8	0.8	1.9	29.4	3.92	4	135	41	420
MP057SB201	1	7.4	17	78.4	5.8	6	300	56	600
MP057SB202	2	1.8	5.2	88.2	5.8	6	300	56	600
MP057SB203	3	0.75	1.1	88.2	5.8	6	300	56	600
MP057SB204	2.8	0.9	3.3	98	5.8	4	300	56	600
MP057SB206	2.2	1.5	7.6	120	6.3	4	300	56	600
MP057SB301	1	8.6	14	127.4	10	6	480	78	1000
MP057SB302	2	2.3	6.7	137.2	10	6	480	78	1000
MP057SB303	2.8	1.13	6.1	147	10	4	480	78	1000
MP057SB501	2	6	32	250	12	4	800	115	1300

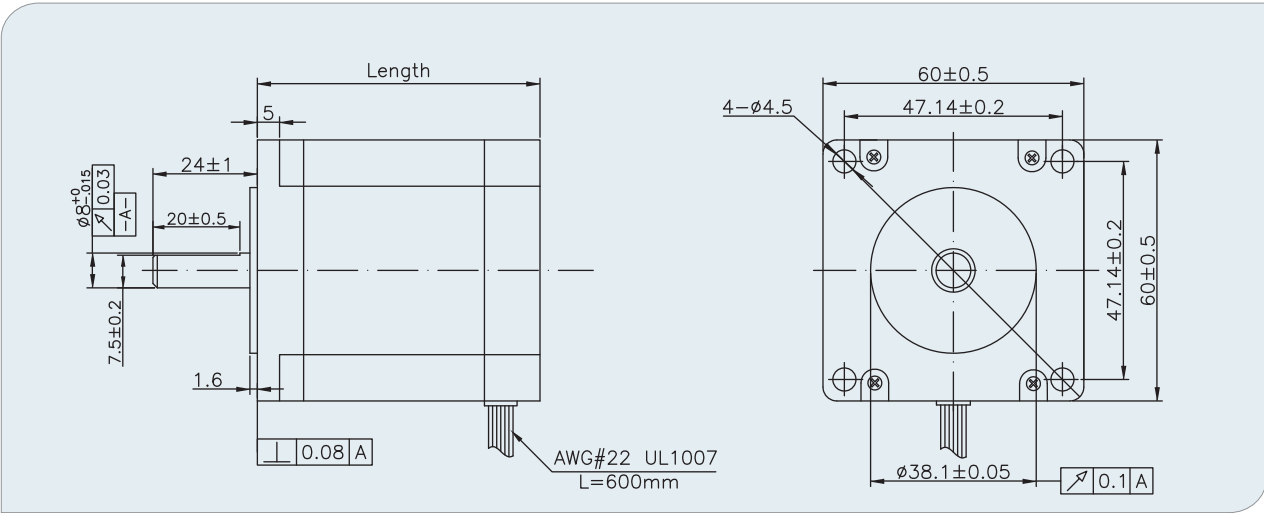


# MP060NB

## Stepper Motor

- 60mm, 1.8Degree Enhanced Hybrid Stepper Motor

Mechanical



Specifications

Part No.	Connection	Phase Current (A)	Phase Resistance (OHMS)	Phase Inductance (mH)	Holding Torque (Ncm)	Detent Torque (Ncm)	No.of Wires	Rotor Inertia (g.cm <sup>2</sup> )	Length (mm)	Weight (Kg)
MP060NB100	Parallel	2.8	0.75	2	110	6	8	275	45	0.6
	Series	1.4	3	8	110	6	8	275	45	0.6
	Unipolar	2	1.5	2	78	6	8	275	45	0.6
MP060NB200	Parallel	2.8	0.9	3.6	165	9	8	300	56	0.77
	Series	1.4	3.6	14.4	165	9	8	300	56	0.77
	Unipolar	2	1.8	3.6	117	9	8	300	56	0.77
MP060NB300	Parallel	2.8	1.2	4.6	210	12	8	570	65	1
	Series	1.4	4.8	18.4	210	12	8	570	65	1
	Unipolar	2	2.4	4.6	150	12	8	570	65	1
MP060NB400	Parallel	2.8	1.2	5.6	270	15	8	579	77	1.2
	Series	1.4	4.8	22.4	270	15	8	579	77	1.2
	Unipolar	2	2.4	5.6	190	15	8	579	77	1.2
MP060NB500	Parallel	2.8	1.5	6.8	310	17	8	840	86	1.4
	Series	1.4	6	27.2	310	17	8	840	86	1.4
	Unipolar	2	3	6.8	220	17	8	840	86	1.4

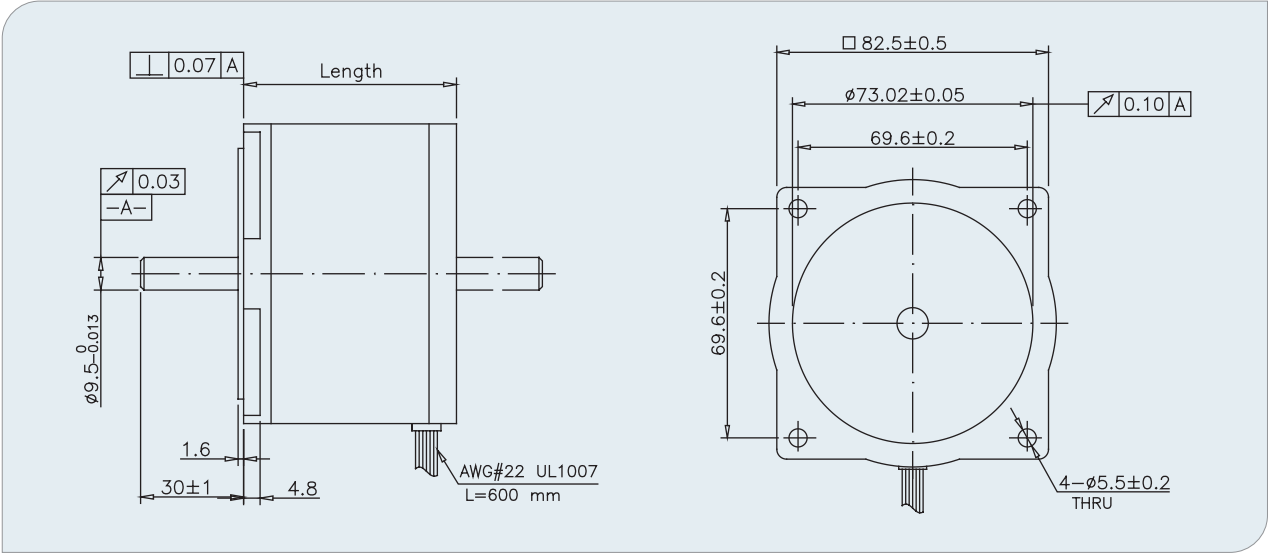


# MP086NA Stepper Motor

- 86mm, 1.8Degree Enhanced Hybrid Stepper Motor



Mechanical



Specifications

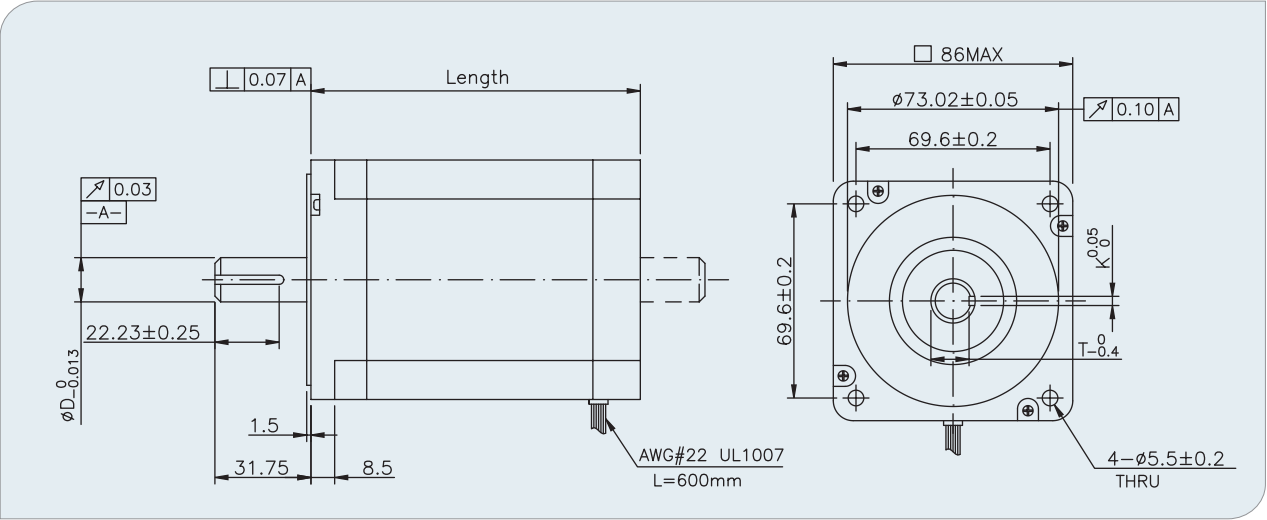
Part No.	Phase Current	Phase Resistance	Phase Inductance	Holding Torque	Detent Torque	No.of Wires	Rotor Inertia	Length	Weight
	(A)	(OHMS)	(mH)	(Ncm)	(Ncm)		(Kg.cm <sup>2</sup> )	(mm)	(Kg)
MP086NA101	1.7	1.7	7.3	137.2	7.84	8	0.64	62	1.6
MP086NA102	1.25	4	16	137.2	7.84	8	0.64	62	1.6
MP086NA103	3.6	0.45	1.7	137.2	7.84	8	0.64	62	1.6
MP086NA104	4.5	0.31	1.1	137.2	7.84	8	0.64	62	1.6
MP086NA201	4	0.75	3.8	274.4	14.7	8	1.3	94	2.6
MP086NA202	4.6	0.55	2.5	274.4	14.7	8	1.3	94	2.6
MP086NA203	2.5	1.7	7.8	274.4	14.7	8	1.3	94	2.6
MP086NA204	2	2.7	11	274.4	14.7	8	1.3	94	2.6
MP086NA301	7	0.29	2	392	24.5	8	1.9	127	3.6
MP086NA302	4	1	5	392	24.5	8	1.9	127	3.6



# MP086YG Stepper Motor

- 86mm, 1.8Degree Enhanced Hybrid Stepper Motor

Mechanical



Specifications

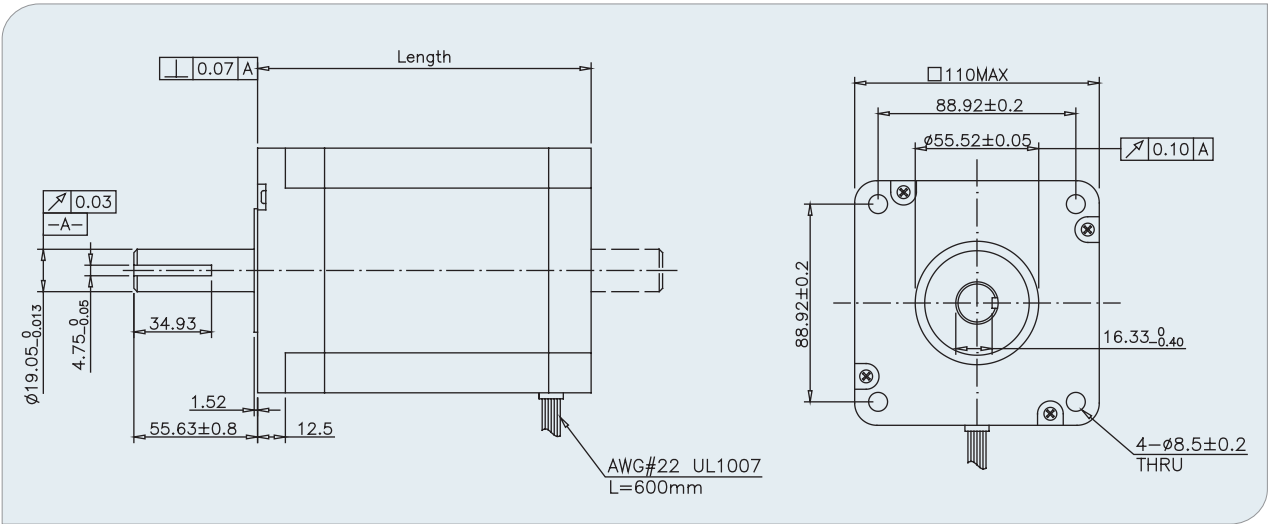
Part No.	Connection	Phase Current	Phase Resistance	Phase Inductance	Holding Torque	Detent Torque	No.of Wires	Rotor Inertia	Length	Weight	D	K	T
		(A)	(OHMS)	(mH)	(Nm)	(Nm)		(kg.cm <sup>2</sup> )	(mm)	(Kg)	(mm)	(mm)	(mm)
MP086YG100	Parallel	6.1	0.25	2.1	2.8	0.2	8	0.66	67	1.6	12.7	3.175	10.92
	Series	3	1	8.4	2.8	0.2	8	0.66	67	1.6	12.7	3.175	10.92
	Unipolar	4.3	0.5	2.1	2.3	0.2	8	0.66	67	1.6	12.7	3.175	10.92
MP086YG200	Parallel	8.6	0.18	1.4	4.59	0.23	8	1.4	79.5	2.27	12.7	3.175	10.92
	Series	4.3	0.72	5.8	4.59	0.23	8	1.4	79.5	2.27	12.7	3.175	10.92
	Unipolar	6.1	0.36	1.4	3.25	0.23	8	1.4	79.5	2.27	12.7	3.175	10.92
MP086YG300	Parallel	10	0.18	1.8	8.58	0.25	8	2.7	118	3.81	12.7	3.175	10.92
	Series	5	0.7	7	8.58	0.25	8	2.7	118	3.81	12.7	3.175	10.92
	Unipolar	7.1	0.35	1.8	6.07	0.25	8	2.7	118	3.81	12.7	3.175	10.92
MP086YG400	Parallel	9.9	0.22	2.3	12.1	0.38	8	4	156.5	5.39	15.87	4.763	13.13
	Series	5	0.87	9	12.1	0.38	8	4	156.5	5.39	15.87	4.763	13.13
	Unipolar	7	0.44	2.3	8.58	0.38	8	4	156.5	5.39	15.87	4.763	13.13

# MP110YG Stepper Motor

- 110mm, 1.8Degree Enhanced Hybrid Stepper Motor



● Mechanical



● Specifications

Part No.	Connection	Phase Current (A)	Phase Resistance (OHMS)	Phase Inductance (mH)	Holding Torque (Nm)	Detent Torque (Nm)	No.of Wires	Rotor Inertia (Kg.cm <sup>2</sup> )	Length (mm)	Weight (Kg)
MP110YG100	Parallel	10.7	0.16	2.8	11.68	0.3	8	5.5	99	4.96
	Series	5.3	0.63	11.1	11.68	0.3	8	5.5	99	4.96
	Unipolar	7.5	0.31	2.8	8.26	0.3	8	5.5	99	4.96
MP110YG200	Parallel	15.8	0.1	2.1	22.09	0.59	8	10.9	150	8.34
	Series	7.9	0.41	8.4	22.09	0.59	8	10.9	150	8.34
	Unipolar	11.2	0.21	2.1	15.63	0.59	8	10.9	150	8.34
MP110YG300	Parallel	15.4	0.14	3.2	30.81	0.75	8	16.2	201	11.64
	Series	7.7	0.55	13	30.81	0.75	8	16.2	201	11.64
	Unipolar	10.9	0.28	3.2	21.81	0.75	8	16.2	201	11.64

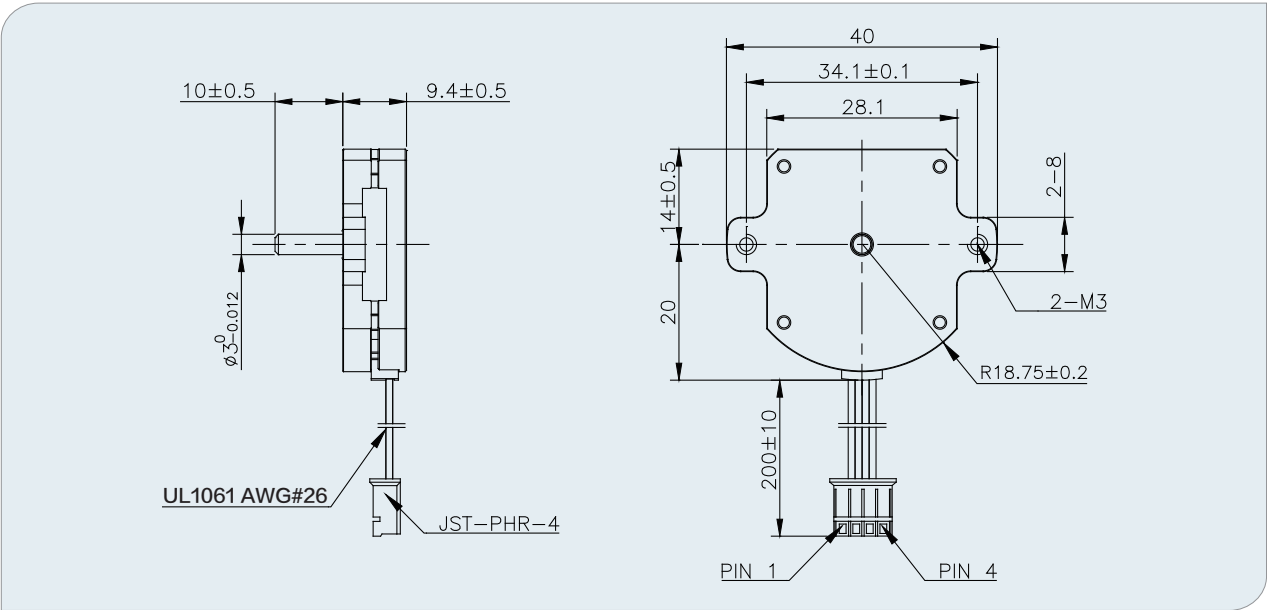


# MPF028NB Flat Hybrid Stepper

● General information

- Step Angle: 1.8±5%°
- IP Code: IP 30
- Performance customization available

● Dimensions(Unit:mm)



● Specifications

Model	Unit	MPF028NB001
Nominal Voltage	Vdc	1.85
Current	A	0.5
Resistance	Ohms	3.7
Inductance	mH	0.88
Holding Torque	Nm	9.8*10 <sup>-3</sup>
Rotor Inertia	Kg.m <sup>2</sup>	1.7*10 <sup>-7</sup>
Weight	Kg	0.028

# MPF068NB

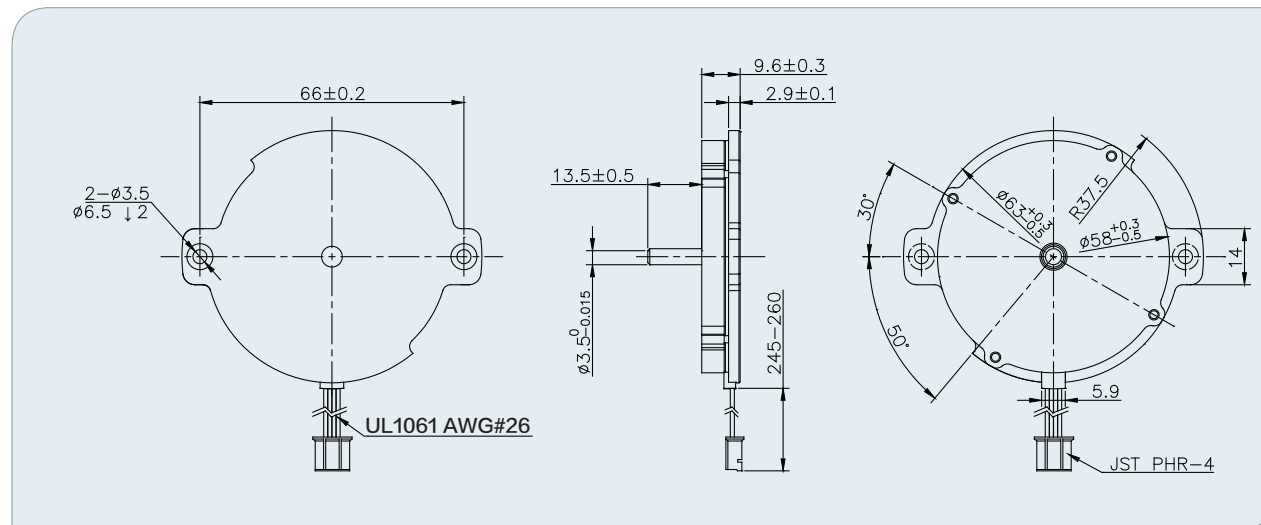
## Flat Hybrid Stepper

- *General information*

- ▶ Step Angle:  $1.8 \pm 5\%$ °
- ▶ Ambient Temperature: -24°C - +60°C
- ▶ Performance customization available



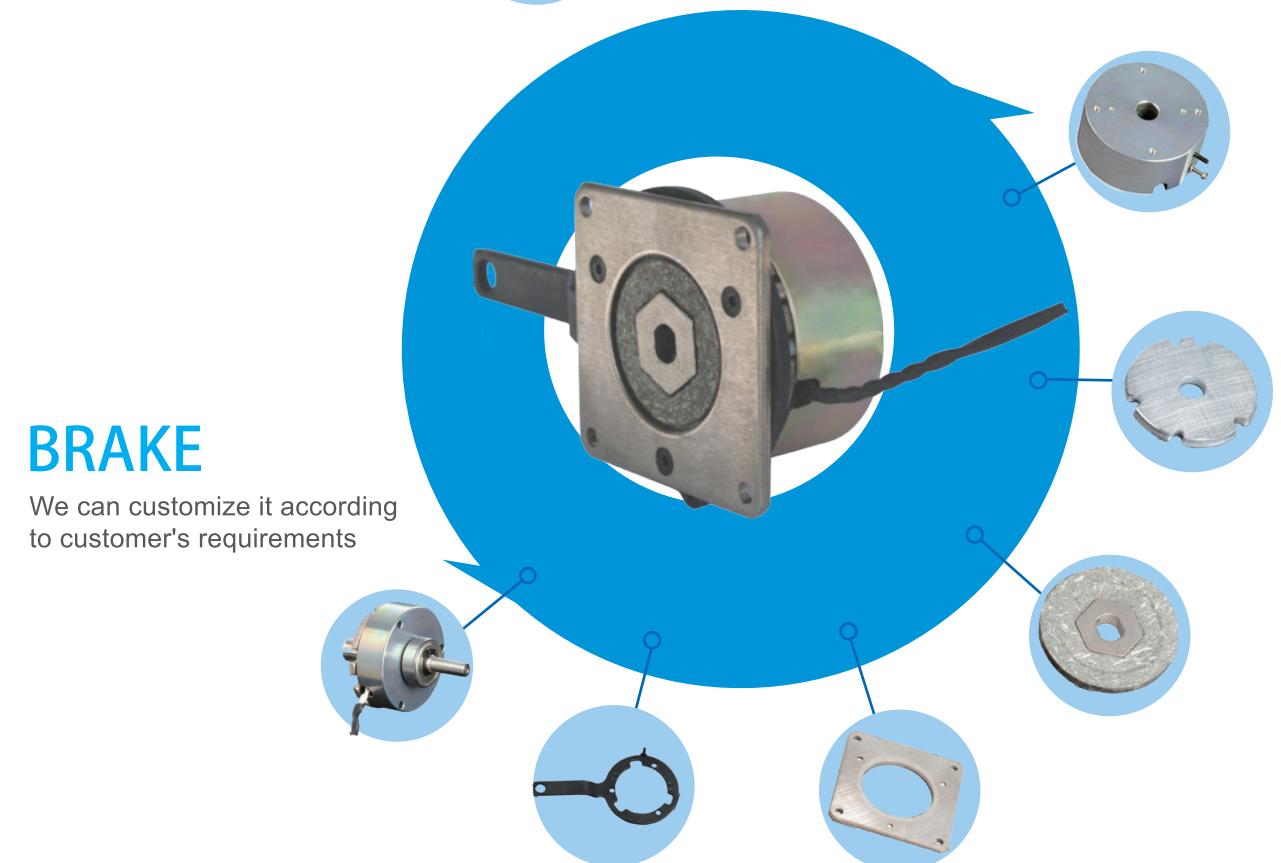
- *Dimensions(Unit:mm)*



- *Specification*

	Unit	MPF068NB001
Nominal Voltage	Vdc	3.8
Current	A	1
Resistance	Ohms	3.8
Inductance	mH	2
Holding Torque	Nm	0.064
Detent Torque	Nm	0.005
Rotor Inertia	Kg.m <sup>2</sup>	1.6*10 <sup>-6</sup>
Weight	Kg	0.095

## THE BRAKE



# BRAKE

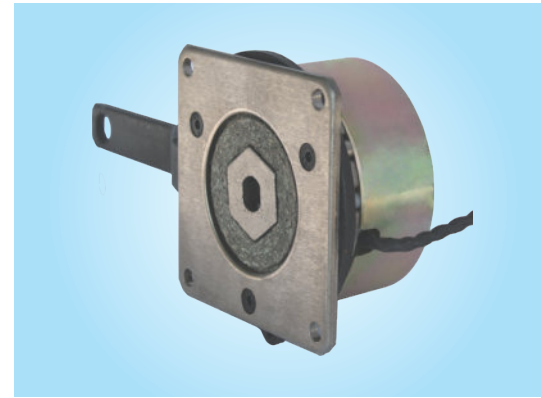
We can customize it according to customer's requirements

# MSRA061

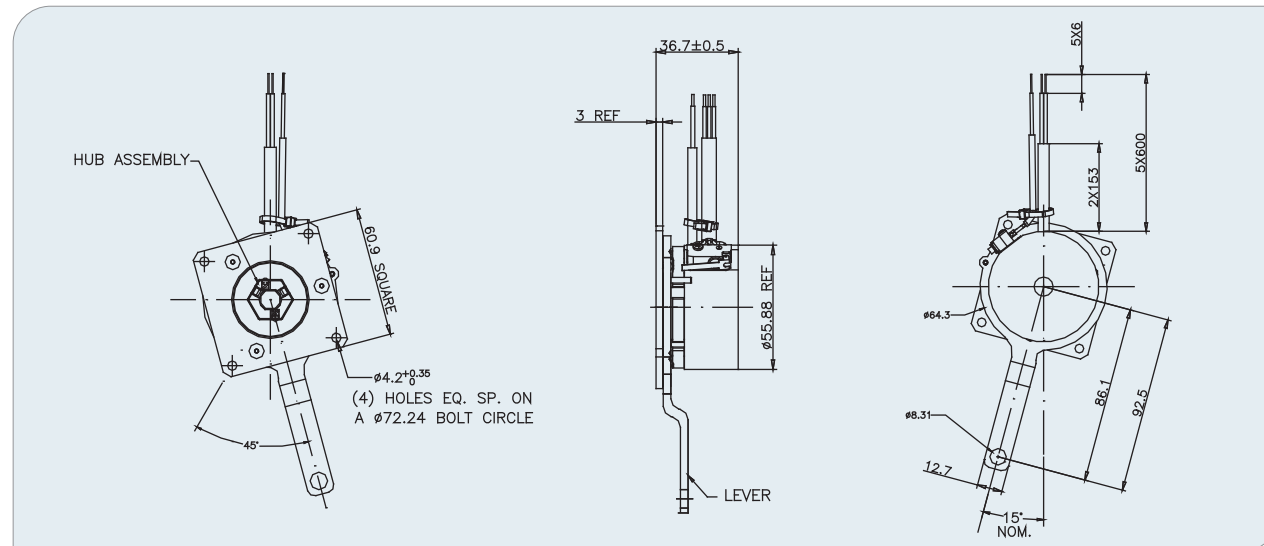
## Brake

- *General information*

- ▶ Insulation Class B
- ▶ Long life
- ▶ Zinc plating housing
- ▶ Special application on request



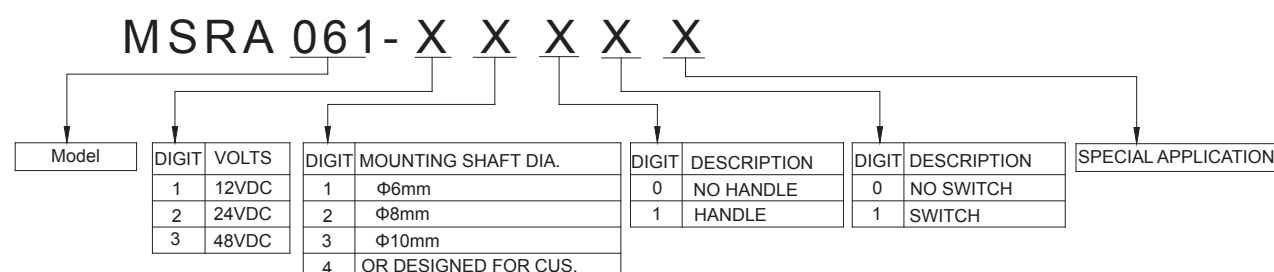
- *Mechanical*



- *Specifications*

Voltage	Resistance	Current	Static Torque	Inertia	Weight
(VDC)	(OHMS)	(A)	(Nm)	(g.cm <sup>2</sup> )	(g)
12	16.7	0.72	2.26	0.053	450
24	65	0.37	2.26	0.053	450
48	250	0.19	3.95	0.053	700

- *Implication For Name*



MPC023/034

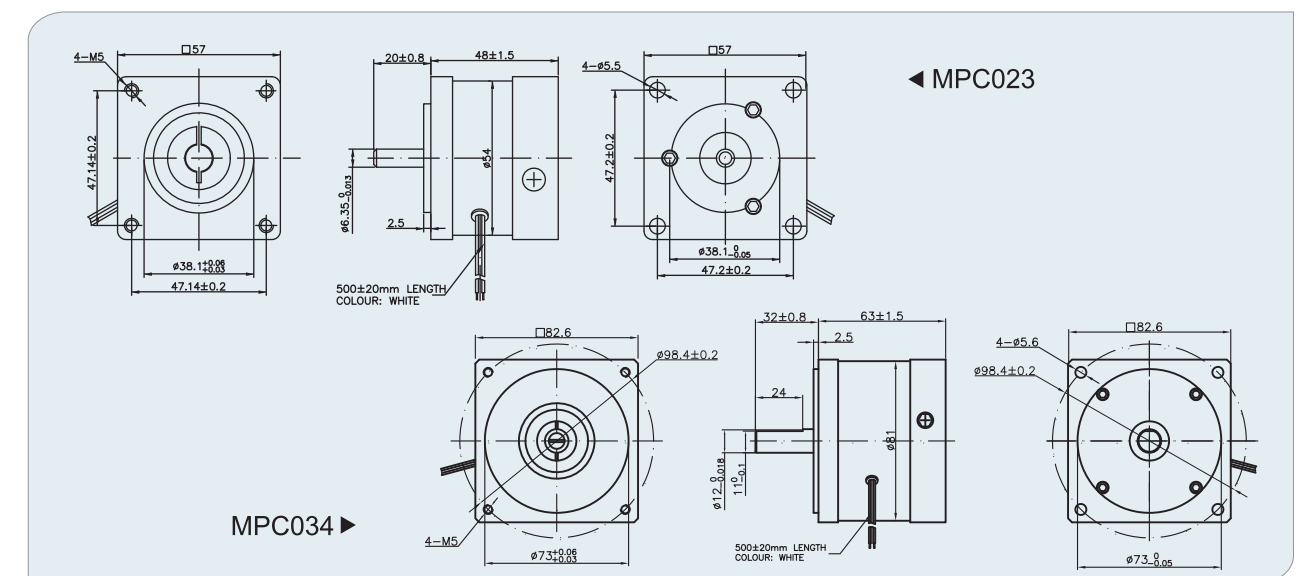
Brake

- *General information*

- Insulation Class B
- Electrophoresis Plating Treatment
- NEMA 23/34 Mounting Configuration
- Special application on request



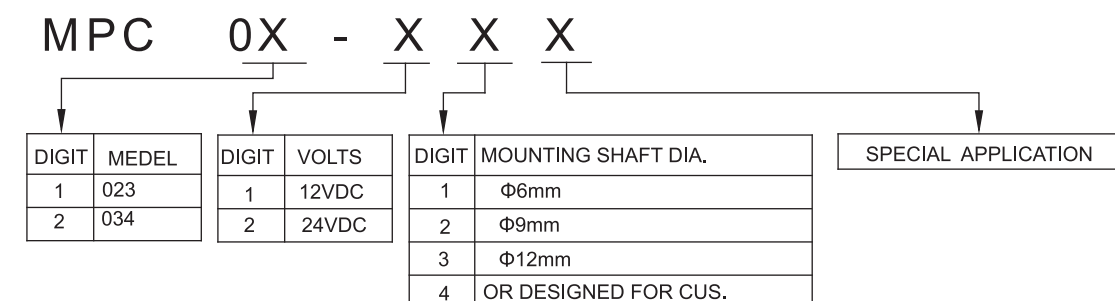
- *Mechanical*



- *Specifications*

Model	Voltage	Resistance	Current	Static Torque	Power	Start Voltage	Weight	Length
	(VDC)	(OHMS)	(A)	(Nm)	(W)	(VDC)	(g)	(mm)
MPC023-	24	92	0.26	0.5	6.2	15	400	48
MPC034-	24	58	0.41	1.68	9.8	15	500	63

- *Implication For Name*





# MDS040 Smart Motor

● Description

MDS40 motor integrates permanent magnet synchronous motor, encoder, servo driver, programmable controller, digital I/O servo system, which makes the driver and motor more perfect, eliminates the matching process between the driver module and the motor, and can respond quickly. The control cabinet design without pulse reduces the cost of use. At the same time, the product supports position, speed, torque and other motion control modes. This integrated intelligent servo motor can be widely used in AGV, cooperative robot, medical, textile, 3C manufacturing, industrial automation and other fields.



● General Information

- CAN Interface with CANopen Protocol and Step/Direction Control Interface
- DC18-55V Input Voltage (VIN) Range
- 50W Continuous Output Power
- 0.1° Position Resolution
- Motor and load parameter identification and loop parameter automatic adjustment
- Six I/ OS with selected functions and polarity
- Users can optimize the design through the MotionLAB software
- The controller allows smooth transitions between different modes of operation
- Two independent notch filters for elastic load optimization
- Low noise and vibration
- Driver module temperature detection
- Perfect protection function

# MDS040 Smart Motor

● Specifications

	Unit	Value
Rated input voltage	VDC	24
Input Voltage range	V	18-55
Rated power	W	50
Rated speed	rpm	3000
Rated current	A	2.8
Continuous output torque	Nm	0.16
Peak output torque	Nm	0.48
Rotor inertia	Kg.mm²	1.8
Pole pairs		5
Insulation class		F

● Interface

CAN Baud rate	dps	1M
Max. digital output load current	mA	100
Max. digital output voltage	V	36
Digital input logic high voltage	V	15-28
D11+, D12+ impulse frequency	KHz	<500
D11+, D12+ Min.impulse width	us	1
D13+, D14+ impulse frequency	KHz	<10
D13+, D14+ Min. impulse width	us	20

● Operation conditions

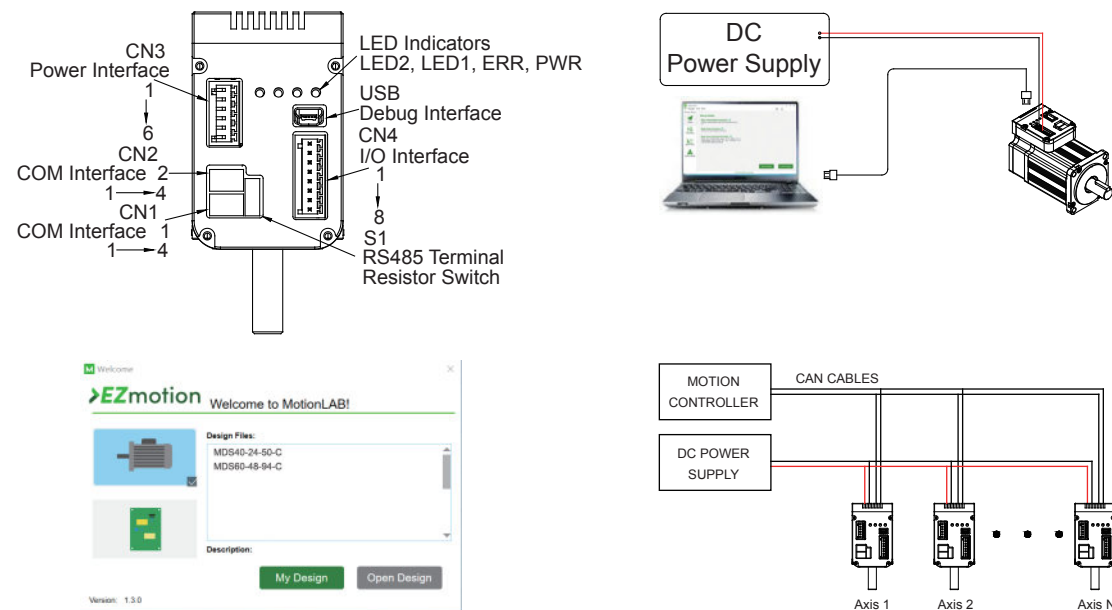
Input voltage	V	24
Max, impulse frequency	KHz	500
Operation temperature	°C	0 ~ +70
Storage temperature	°C	-20 ~ +55

● Assembly Information

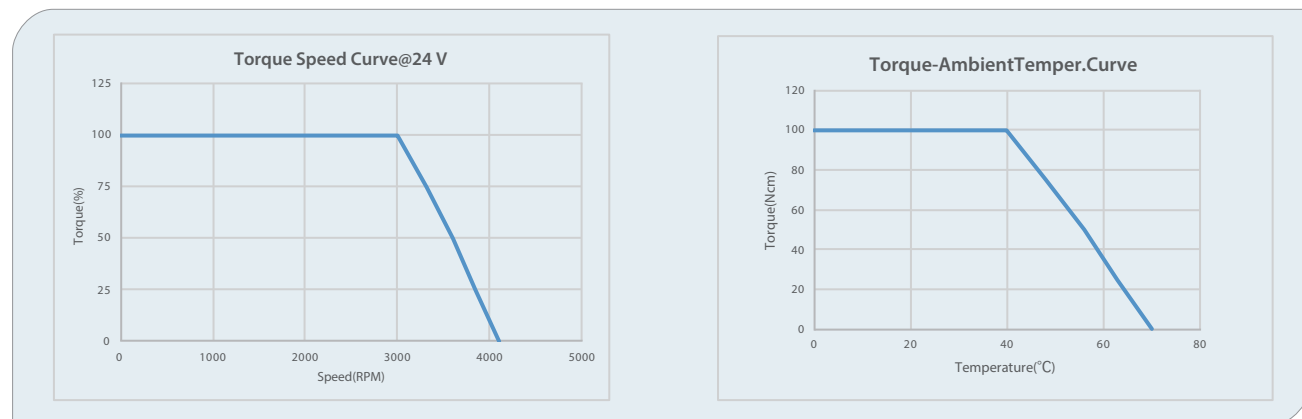
Type	Frame Size (mm)	Output Power (W)	Rated Voltage (V)	Control Mode	Control Interface
MDS40-24-50-C	40	50	24	PP,PV,PT,HM.CSP,CSV,CST	CANopen, step/direction

# MDS040 Smart Motor

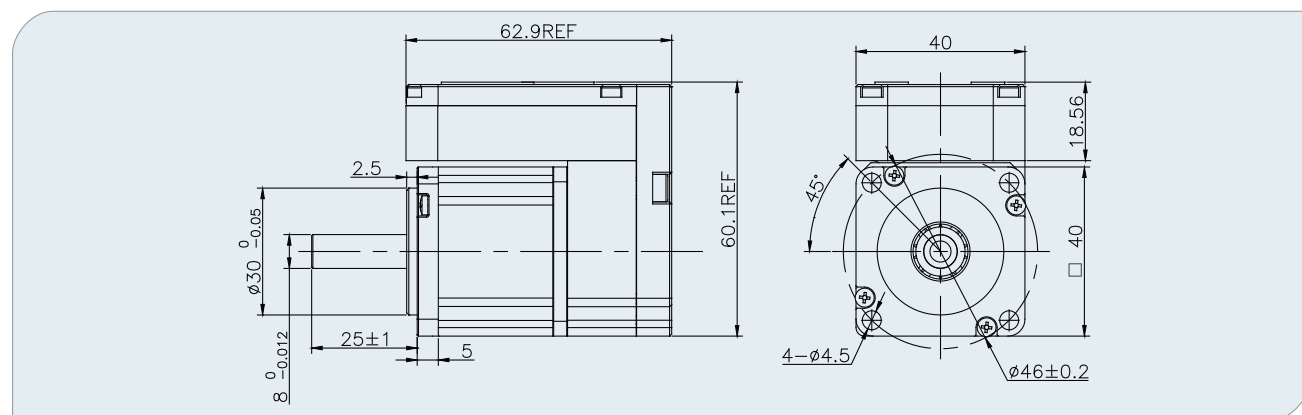
## Typical application



## Characteristic diagram



## Mechanical



# MDS057 Smart Motor

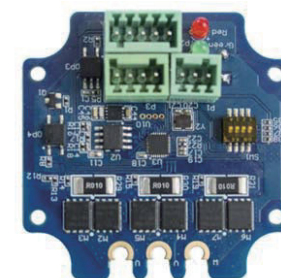
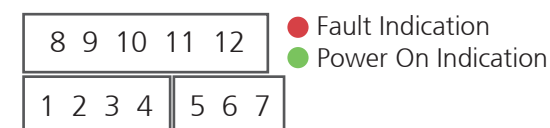
## Description

The smart motor solutions is for servo applications. This integrates a 57mm (NEMA 23) with a smart control module including speed mode, position mode, and torque mode. The controller provides RS485 and PULSE/DIR interface. Easy-to-use GUI software allows users to optimize the design flexibly online through the RS485 control interface. The smart motor is widely applied in AGV, Material handling, Robot and so on.

## General Information

- DC18-70V Input Voltage Range
- 94-188W Continuous Power Output
- 0.3° Position Resolution
- RS485 Interface and PULSE/DIR Interface
- Position, speed and torque control
- Operating Temperature: 0°C - 70°C
- Selectable position, speed, and torque mode

## PIN Configuration



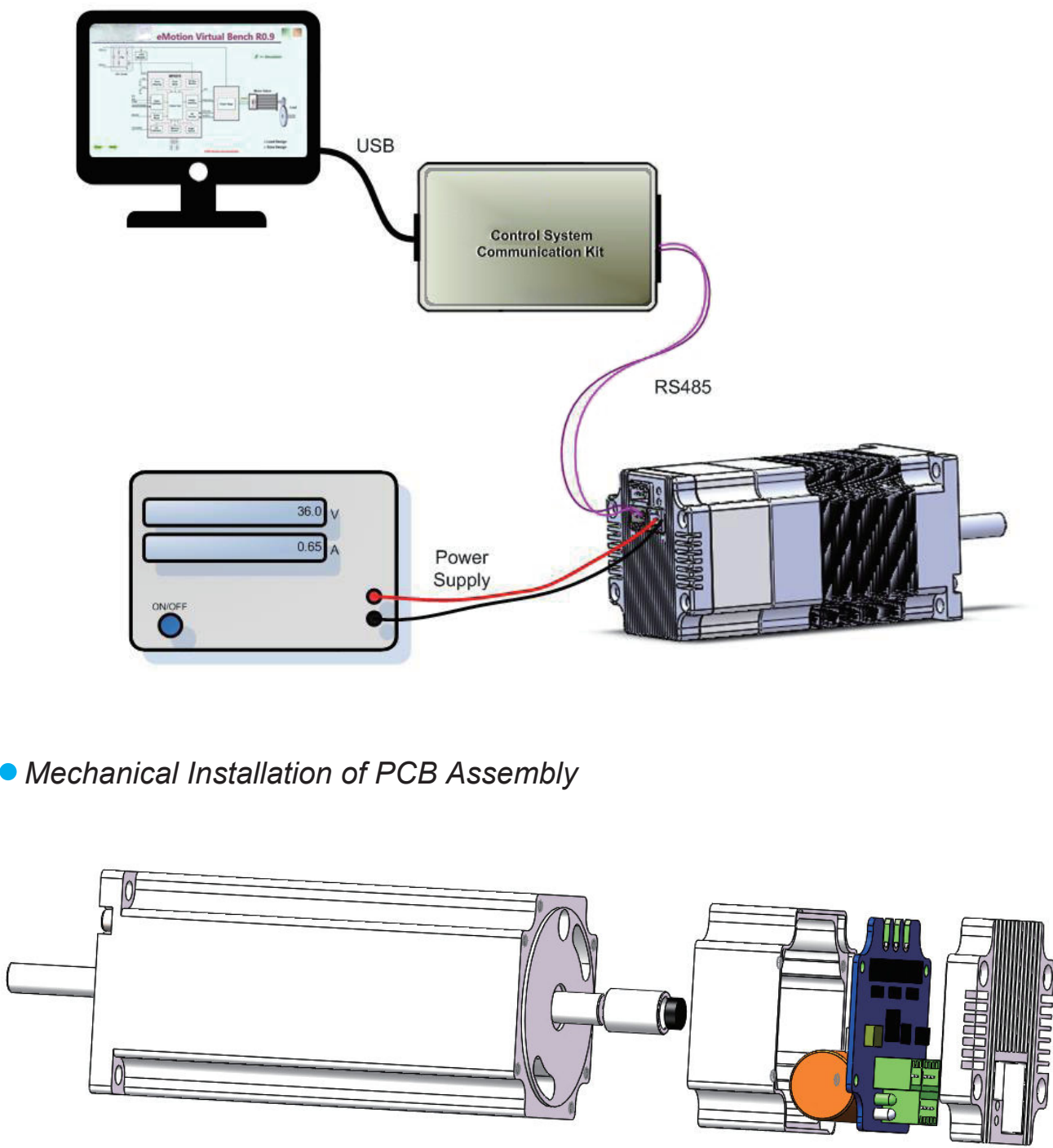
## Operation Conditions

Input voltage ..... 18V to 70V  
 Control interface voltage ..... 0V to 5.5V  
 Max pulse frequency ..... 500kHz  
 RS485 A/B voltage ..... 0V to 5.5V  
 RS485 common mode voltage ..... ±15V  
 Operation temperature..... 0°C to 70°C  
 Storage temperature ..... -40°C to +125°C

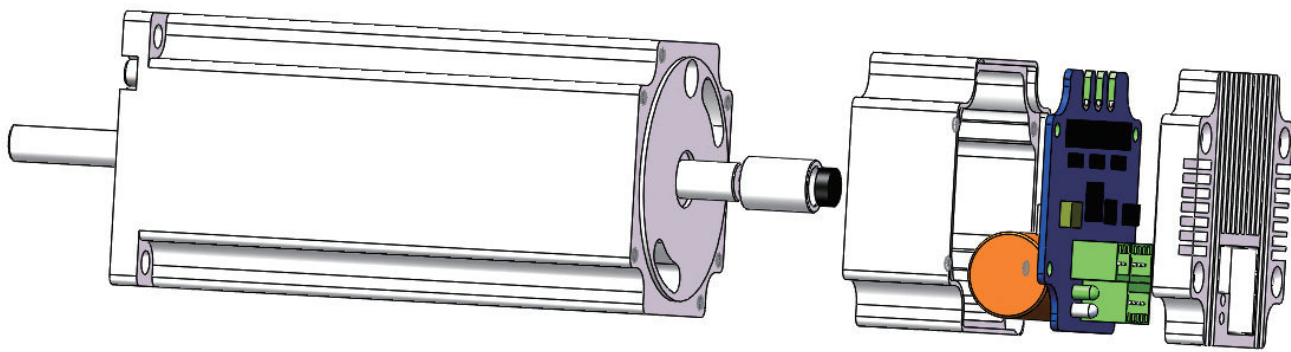
PIN	Designation	Description
RS485 Interface		
1	EXT_5V	5V Input For Firmware Programming
2	B	RS485 Node B
3	AGND	RS485 Ground
4	A	RS485 Node A
Power Interface		
5	GND	Power Ground
6	R-	Shunt Resistor Return Node
7	VIN	Input Power Supply
Control Interface		
8	COM-	Common Return
9	EN+	Enable Input
10	PEND+	Position End Output
11	PUL+	Pulse Input
12	DIR+	Direction Input

# MDS057 Smart Motor

● Hardware connections for programming



● Mechanical Installation of PCB Assembly

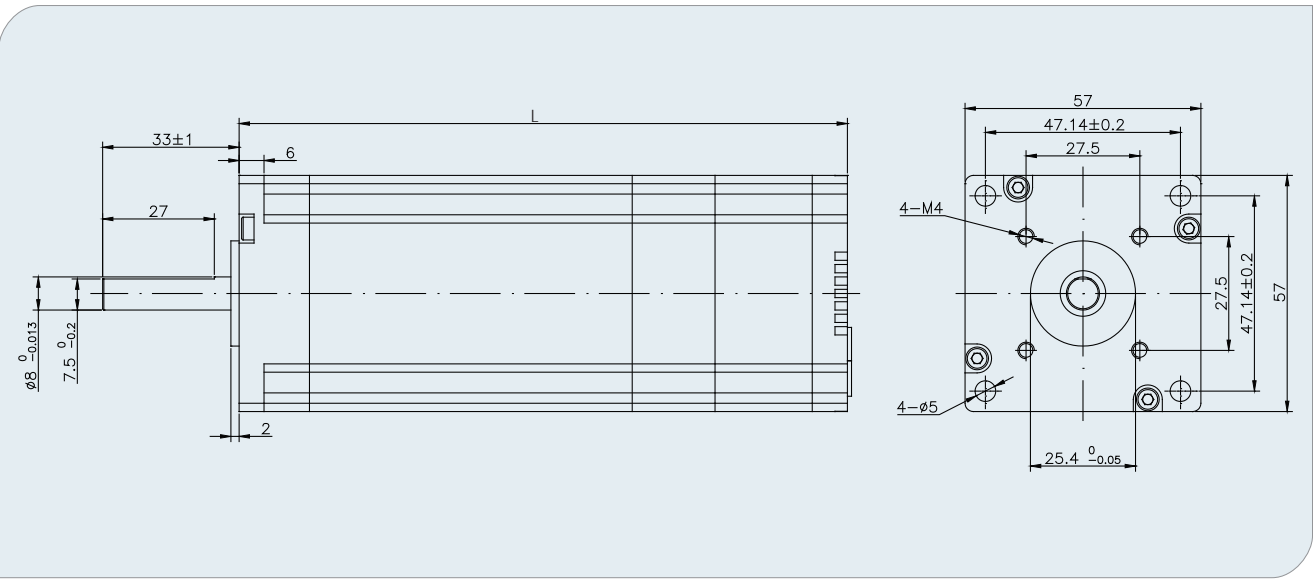


# MDS057 Smart Motor

● Specifications

	Unit	MDS057-01	MDS057-02	MDS057-03	MDS057-04
Voltage	VDC	36	36	36	36
Rated Speed	RPM	3000	3000	3000	3000
Rated ContinuousTorque	Nm	0.15	0.3	0.45	0.6
Rated Current	A	2	3.8	5.6	7.8
Norminal Power	W	47	94	141	188
Length	mm	88	108	128	148

● Mechanical

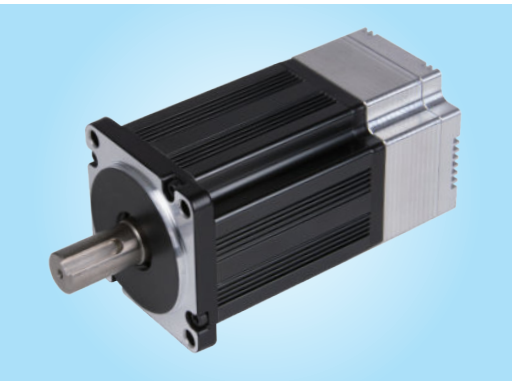




# MDS060 Smart Motor

● Description

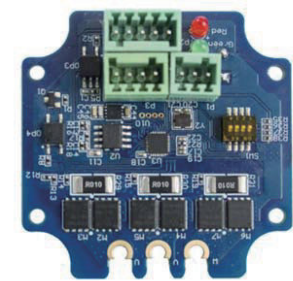
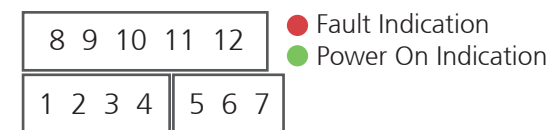
The smart motor solutions is for servo applications. This integrates a 60mm with a smart control module including speed mode, position mode, and torque mode. The controller provides RS485 and PULSE/DIR interface. Easy-to-use GUI software allows users to optimize the design flexibly online through the RS485 control interface. The smart motor is widely applied in AGV, Material handling, Robot and so on.



● General Information

- DC18-70V Input Voltage Range
- 100-400W Continuous Power Output
- 0.3° Position Resolution
- RS485 Interface and PULSE/DIR Interface
- Position, speed and torque control
- Operating Temperature: 0℃ - 70℃
- Selectable position, speed, and torque mode

● PIN Configuration



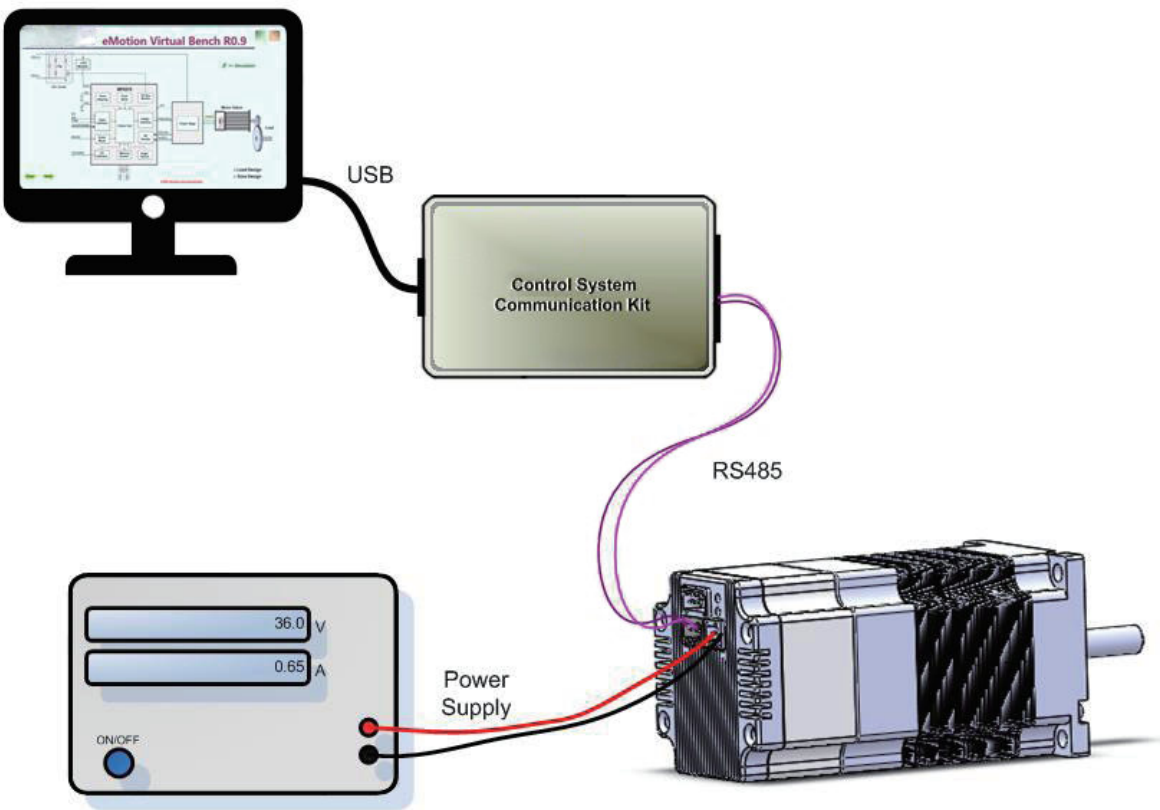
Operation Conditions

Input voltage ..... 18V to 70V  
Control interface voltage ..... 0V to 5.5V  
Max pulse frequency ..... 500kHz  
RS485 A/B voltage ..... 0V to 5.5V  
RS485 common mode voltage ..... ±15V  
Operation temperature..... 0℃ to 70℃  
Storage temperature ..... -40℃ to +125℃

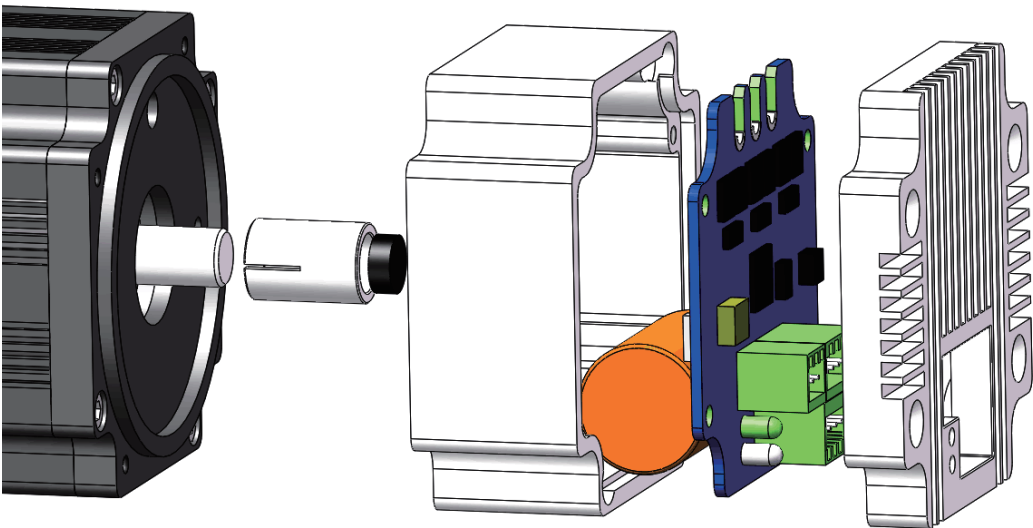
PIN	Designation	Description
RS485 Interface		
1	EXT_5V	5V Input For Firmware Programming
2	B	RS485 Node B
3	AGND	RS485 Ground
4	A	RS485 Node A
Power Interface		
5	GND	Power Ground
6	R-	Shunt Resistor Return Node
7	VIN	Input Power Supply
Control Interface		
8	COM-	Common Return
9	EN+	Enable Input
10	PEND+	Position End Output
11	PUL+	Pulse Input
12	DIR+	Direction Input

# MDS060 Smart Motor

● Hardware connections for programming



● Mechanical Installation of PCB Assembly



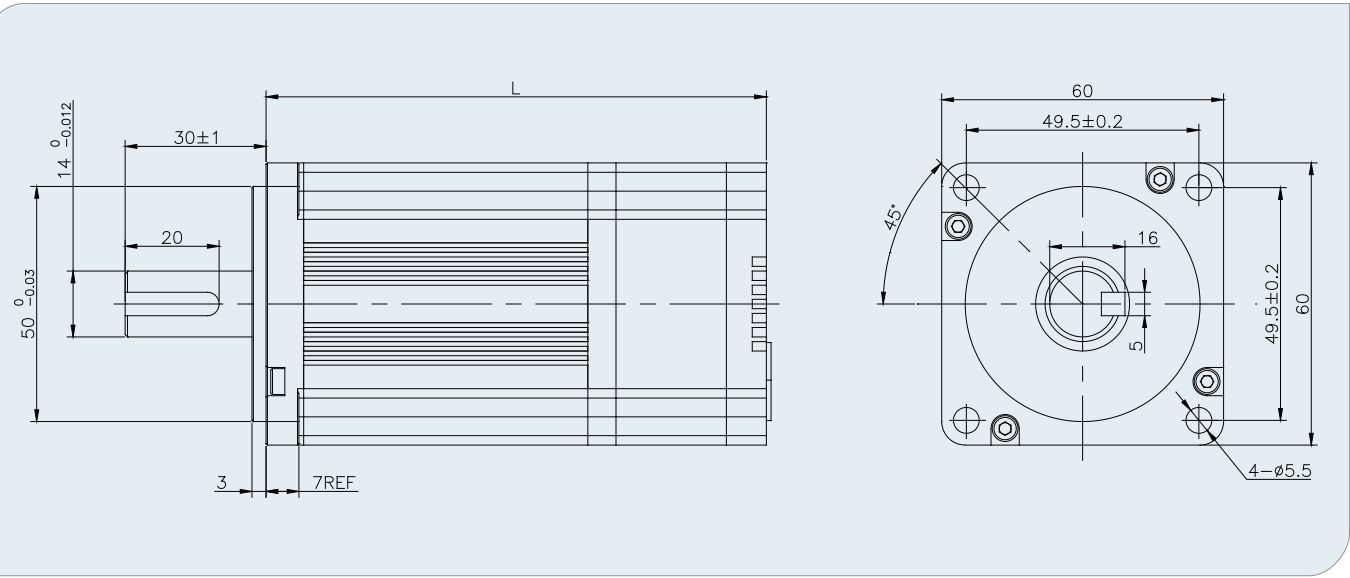


# MDS060 Smart Motor

● Specifications

	Unit	MDS060-01	MDS060-02	MDS060-03
Voltage	VDC	36	36	48
Rated Speed	RPM	3000	3000	3000
Rated ContinuousTorque	Nm	0.32	0.64	1.27
Rated Current	A	3.7	7.4	11
Norminal Power	W	100	200	400
Length	mm	96.5	106.5	133.5

● Mechanical



# EL Planetray Gearbox -Metal gear

● Specifications

EL32 Planetary Gearbox-Metal gear																		
Reduction Ratio	4	5.2	6.25	8	16	25	32	50	64	100	128	156	200	256	312.5	400	512	
Efficiency	0.92			0.85						0.78								
Number of Stages	1			2						3								
Continuous Torque (Nm)	0.8			2.4						4.7								
Gearbox Weight (Kg)	0.2			0.25						0.3								
Axial load/Radial load (N)	30 / 100			30 / 100						30 / 100								
Gearbox Length (mm)	45.1			56.1						67.1								

EL42 Planetary Gearbox-Metal gear																	
Reduction Ratio	4	5	7	9	16	20	25	49	63	100	128	156	200	256	312.5	400	512
Efficiency	0.92				0.85				0.78								
Number of Stages	1				2				3								
Continuous Torque (Nm)	3.2				7.6				16								
Gearbox Weight (Kg)	0.35				0.45				0.55								
Axial load/Radial load (N)	110 / 300				110 / 300				110 / 300								
Gearbox Length (mm)	48.6				62.6				76.6								

EL52 Planetary Gearbox-Metal gear																				
Reduction Ratio	4	5	7	9	16	20	25	49	63	71	91.12	126.5	162	225	288	400	512			
Efficiency	0.92				0.85				0.78											
Number of Stages	1				2				3											
Continuous Torque (Nm)	5				15				31.25											
Gearbox Weight (Kg)	0.75				0.95				1.15											
Axial load/Radial load (N)	150 / 450				150 / 450				150 / 450											
Gearbox Length (mm)	58.9				72.9				88.9											

EL62 Planetary Gearbox-Metal gear																	
Reduction Ratio	4	5	7	9	16	20	25	49	63	100	128	156	200	256	312.5	400	512
Efficiency	0.92				0.85				0.78								
Number of Stages	1				2				3								
Continuous Torque (Nm)	10				31.25				62.5								
Gearbox Weight (Kg)	0.85				1.25				1.65								
Axial load/Radial load (N)	170 / 550				170 / 550				170 / 550								
Gearbox Length (mm)	49.5				69.5				87.5								

# EM40 Series Magnetic Encoder

## General Information

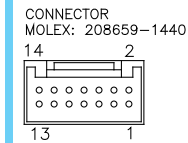
- UVW Output Resolution 1~16 Pole-Pairs per Revolution User Programmable
- Incremental ABZ Resolution 1~4096 Pulses per Revolution User Programmable
- Independent Output Interface: ABZ, A-B-Z-, UVW, PWM and SPI
- Maximum Rotation Speed 25000 RPM
- Output Propagation Delay <2 us      18 bit Core Resolution
- 40~125 °C Industry Operating Temperature Range

## Specification

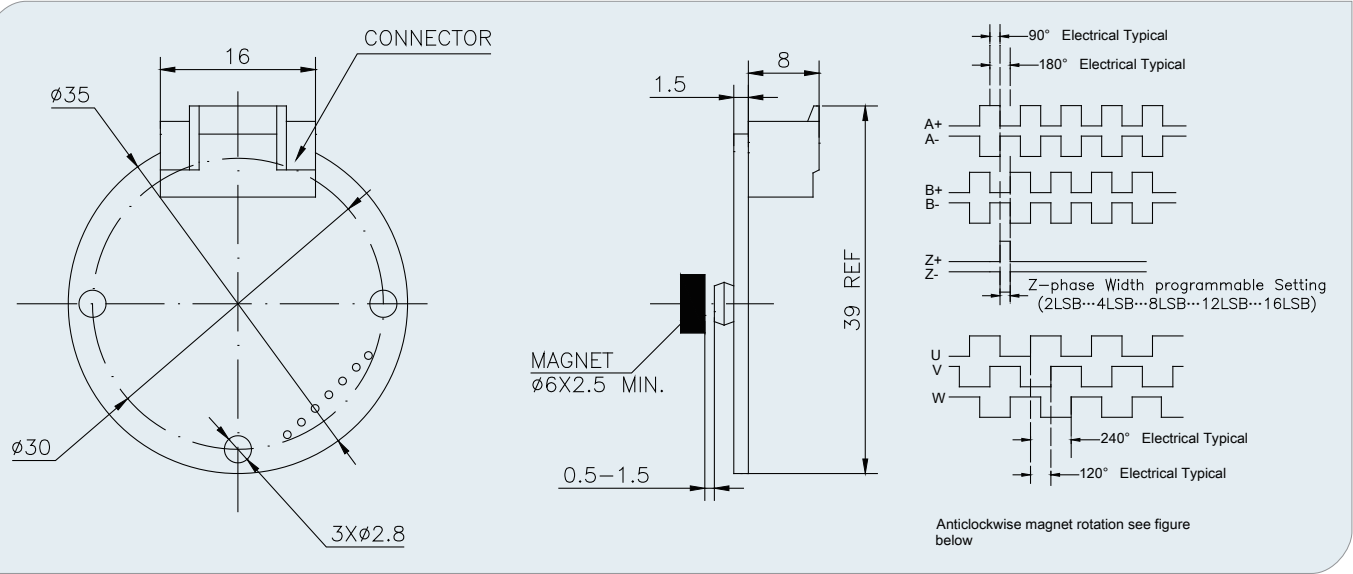
Characteristic	Description	Notes
Encoder Output Type	Incremental (ABZ UVW) Absolute (PWM)	
Output Signal	A+, B+, Z+ and A-, B-, Z- differential outputs, and U, V, W signal	pulse signal
Resolution	1-4096 PPR	
Poles No.	1-16 pairs	
Supply Current	10A	
Voltage Supply VDD	3.3V-5V	
Power-Up Time	16 ms	VDD Ramp<10us
Propagation Delay	1 s	
PWM Frequency	971.1/485.6 Hz	



Signal	Pin	Pin	Signal
PWM	1	2	Z-
ERROR	3	4	Z+
W	5	6	B-
V	7	8	B+
U	9	10	A-
GND	11	12	A+
GND	13	14	5V



## Mechanical & Characteristic diagram



## Torque Conversions

to convert from A to B simply multiply by the entry in the tab

A \ B	oz-in	lb-in	lb-ft	g-cm	kg-cm	kg-m	N-cm	N-m
oz-in	1	$6.25 \times 10^{-2}$	$5.208 \times 10^{-3}$	72.007	$7.2 \times 10^{-2}$	$7.2 \times 10^{-4}$	0.7061	$7.061 \times 10^{-3}$
lb-in	16	1	$8.333 \times 10^{-2}$	1152	1.152	$1.152 \times 10^{-2}$	11.2	0.112
lb-ft	192	12	1	13820	13.825	0.138	135.5	1.355
gm-cm	$1.388 \times 10^{-2}$	$8.679 \times 10^{-4}$	$7.233 \times 10^{-5}$	1	$10^{-3}$	$10^{-5}$	$9.806 \times 10^{-3}$	$9.806 \times 10^{-5}$
Kg-cm	13.877	0.8679	$7.233 \times 10^{-2}$	1000	1	$10^{-2}$	9.806	$9.806 \times 10^{-2}$
Kg-m	$1.388 \times 10^3$	86.796	7.233	$10^5$	100	1	$9.806 \times 10^2$	9.806
N-cm	1.41612	$8.85 \times 10^{-2}$	$7.37 \times 10^{-3}$	$1.019 \times 10^2$	0.10197	$1.01 \times 10^{-3}$	1	$10^{-2}$
N-m	141.612	8.85	0.737	$1.019 \times 10^4$	10.197	0.101	100	1

Specifications and dimensions given in leaflet represent the status of engineering at the time of printing. Any modifications or other engineering improvements may take place without prior notice

