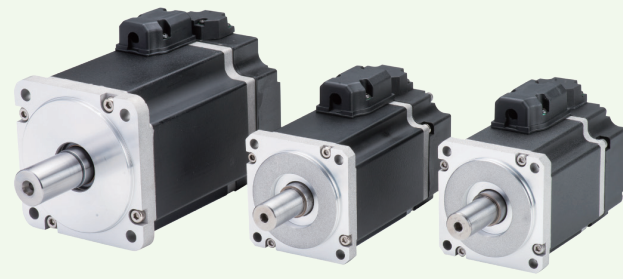


## EM1 Servo Motor Features

- Speeds up to 6000 RPM based on model
- Encoder resolution 23 Bit
- High servo control bandwidth allows for precise angular motor positioning
- Quick and easy installation interface
- Rated output 50W-2KW, IP65, optional brake and key

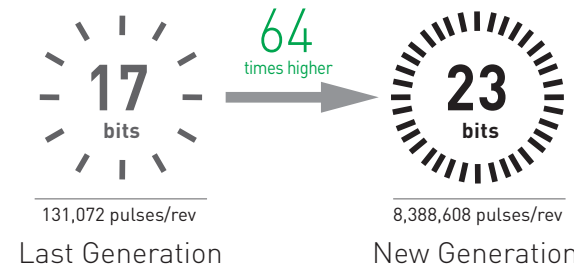


Optimize motor performance with E1 series drives.

### Application

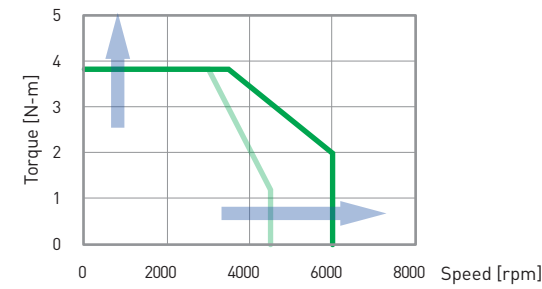
Semiconductor, Automated Optical Inspection, Bio-sequencing, Lab automation, Laser/Plasma cutting, Additive manufacturing, 3D printint, CNC parts feed/orientation, PCB assembly

### 1 Improved Processing Accuracy

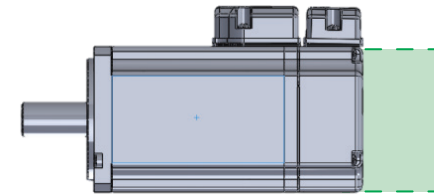


### 2 High Speed

6000 RPM. Max. torque improves by 310-350%.



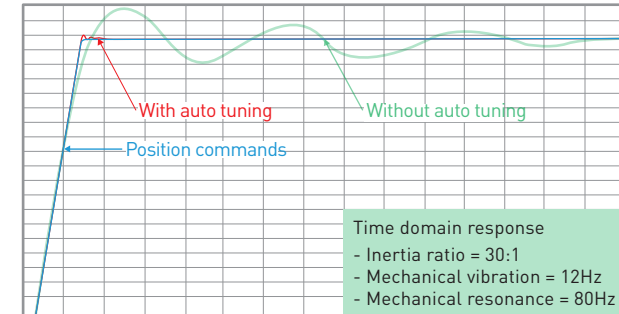
### 3 Compact Size



10% shorter than previous length. (Shown without brake.)

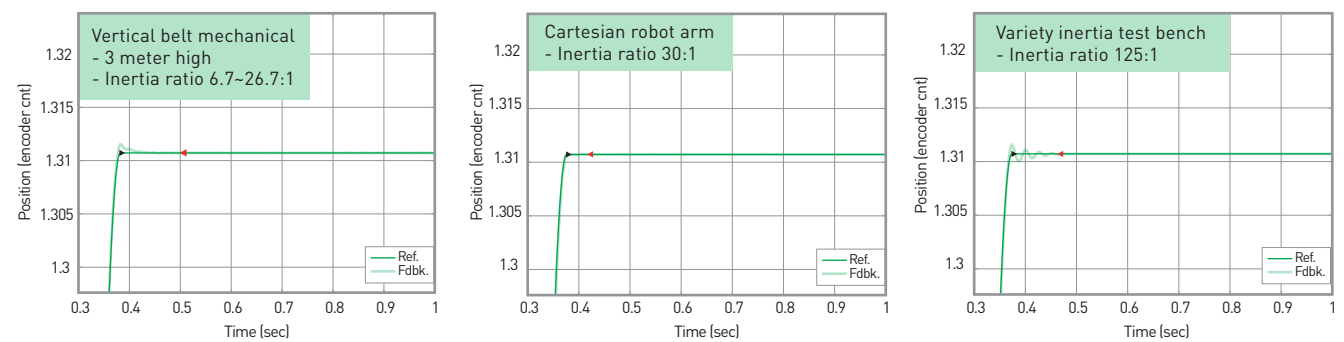
### 4 Advanced Auto-Tuning

Automatic loop gains tuning and filters optimize machine performance by suppressing vibration and resonance.



### 5 Tuneless Function

Good performance and stable movement with inertia ratio up to 250:1. Adaptive gain tuning in accordance with load changes.



## E1 Motor Model Description

EM1-C-M-05-2-B-E-0-A

Rated Speed/Maximum Speed<sup>\*1</sup>

A : 2000 / 3000(rpm)  
C : 3000 / 6000(rpm)  
D : 2000 / 5000(rpm)

Inertia

M : Medium inertia

Output Power<sup>\*1</sup>

05 : 50W  
10 : 100W  
20 : 200W  
40 : 400W  
75 : 750W  
1K : 1000W  
1A : 1200W<sup>\*2</sup>  
2K : 2000W<sup>\*2</sup>

Drive Input Voltage

2 : 220Vac

Motor Shaft

A : Round shaft / without oil seal  
B : Round shaft / with oil seal  
C : With key and center tap / without oil seal  
D : With key and center tap / with oil seal

Reserved

0 : standard

Encoder Type

E : 23bit(Incremental)  
F : 23bit(absolute)

Holding Break Options

0 : Without holding brake  
B : With holding brake

\*1: Refer to the motor specification parameter table for the relationship between motor speed and power.  
\*2: 2KW drive supported

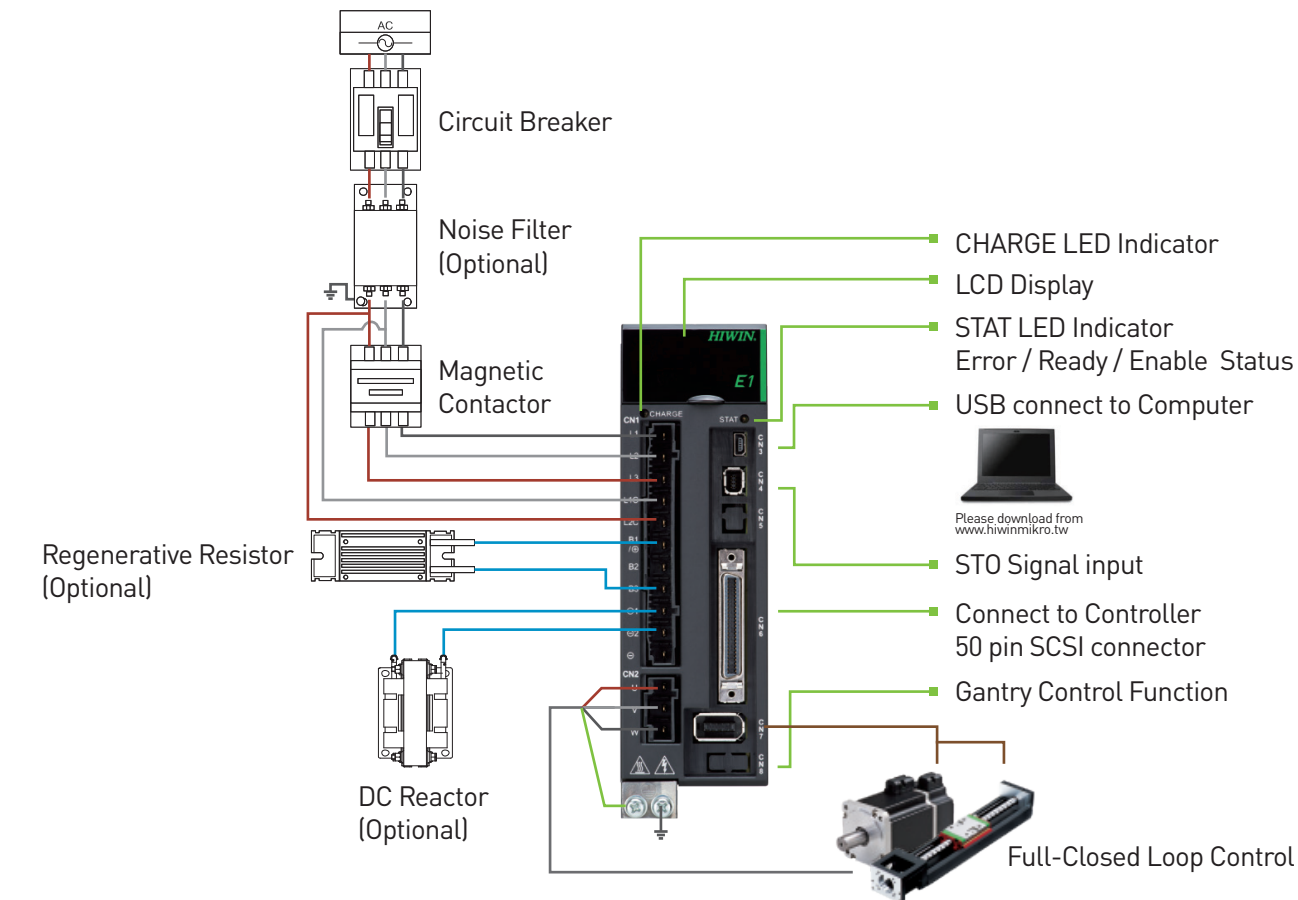
Series	Motor		Drive	Optional Items				
	Driver Input Voltage	Rated Power		Specification <sup>*1</sup>	Power Extension Cable <sup>*3</sup>		Encoder Extension Cable <sup>*3</sup>	
EM1	Single/Three phase 220V	50W	EM1-C-M-05-2-□-□-0-□	ED1□□□□-0422-A□□□□	Without Holding Brake	With Holding Brake	Incremental	Absolute
		100W	EM1-C-M-10-2-□-□-0-□					
		200W	EM1-C-M-20-2-□-□-0-□					
		400W	EM1-C-M-40-2-□-□-0-□					
		750W	EM1-C-M-75-2-□-□-0-□					
	Three phase 220V	1kW	EM1-A-M-1K-2-□-□-0-□	ED1□□□□-1022-A□□□□	HVP04BB□□MB/ HVP04CB□□MB	HVP06BB□□MB/ HVP06CB□□MB	HVE23IBB□□MB/ HVE23ICB□□MB	HVE23ABB□□MB/ HVE23ACB□□MB
		1.2kW	EM1-D-M-1A-2-□-□-0-□					
		2kW	EM1-D-M-2K-2-□-□-0-□					

\*1 : Please refer E1 motor model description for options of motor shaft, oil seal and brake.

\*2 : Please refer E1 drive model description for options of drive.

\*3 : Standard Cable length is 3m/5m/7m/10m. □□: 03、05、07、10

## Drive Wiring Diagrams



## HIWIN MIKROSYSTEM

HIWIN MIKROSYSTEM New Generation AC Servo Motors



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# E1 Series

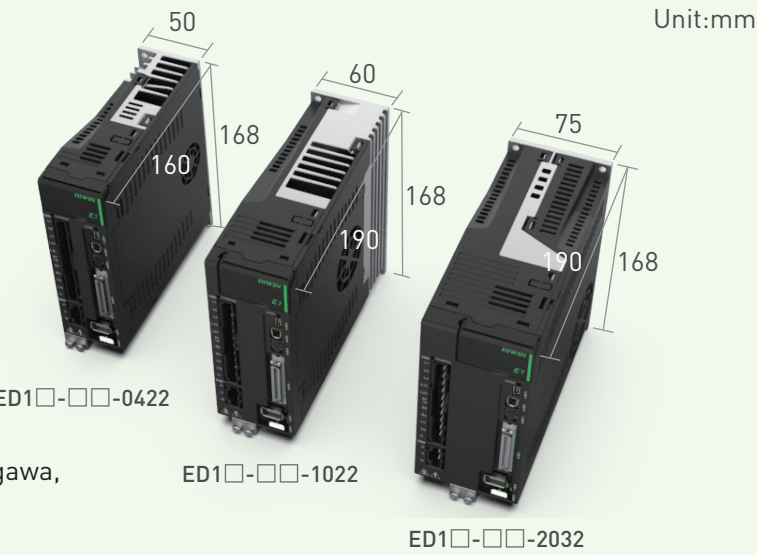
AC Servo Motors & Drives

# Specification

Middle Inertia						
		50W	100W	200W	400W	
Motor Parameter	Symbol	Unit	EM1CM052□□□□	EM1CM102□□□□	EM1CM202□□□□	EM1CM402□□□□
Drive input voltage	V	V	AC220	AC220	AC220	AC220
Rated power	W	W	50	100	200	400
Rated torque	Tc	N.m	0.16	0.32	0.64	1.27
Rated current	Ic	A[rms]	0.64	0.78	1.6	2.5
Max. torque	Tp	N.m	0.59	1.18	2.24	4.44
Max. current	Ip	A[rms]	2.8	3.45	6.4	10
Rated speed	ωc	rpm	3000	3000	3000	3000
Max. speed	ωp	rpm	6000	6000	6000	6000
Torque constant	Kt	N·m / Arms	0.25	0.41	0.4	0.508
Back EMF constant	Ke	Vrms / krpm	18.526	28.364	27.23	33.87
Resistance (line to line)	R	Ω	25.24	22.72	5.53	3.59
Inductance (line to line)	L	mH	13.09	13.86	8.76	7.22
Rotor inertia (with brake)	J	kg·m <sup>2</sup> (×10 <sup>-4</sup> )	0.0368 [0.0401]	0.0620 [0.0653]	0.263[0.326]	0.48[0.49]
Mass (with brake)	M	kg	0.36 [0.56]	0.47 [0.67]	0.851 [1.085]	1.25[1.8]
Insulation class	Class F					
Protection class	Total enclosed, self-cooled, IP65(except for shaft and connector)					
Insulation resistance	10MΩ, DC 500V					
Insulation voltage resistance	AC1500V, 60 seconds					
Holding Brake Specifications						
Static friction torque	Tb	N.m	0.32	0.32	1.3	1.3
Enabled current	Ab	A	0.25	0.25	0.32	0.32
Brake input voltage	V	V	DC24±10%	DC24±10%	DC24±10%	DC24±10%
Braking time	to	ms	40	40	30	30
Release time	tr	ms	20	20	20	20

## E1 Series Drive Features

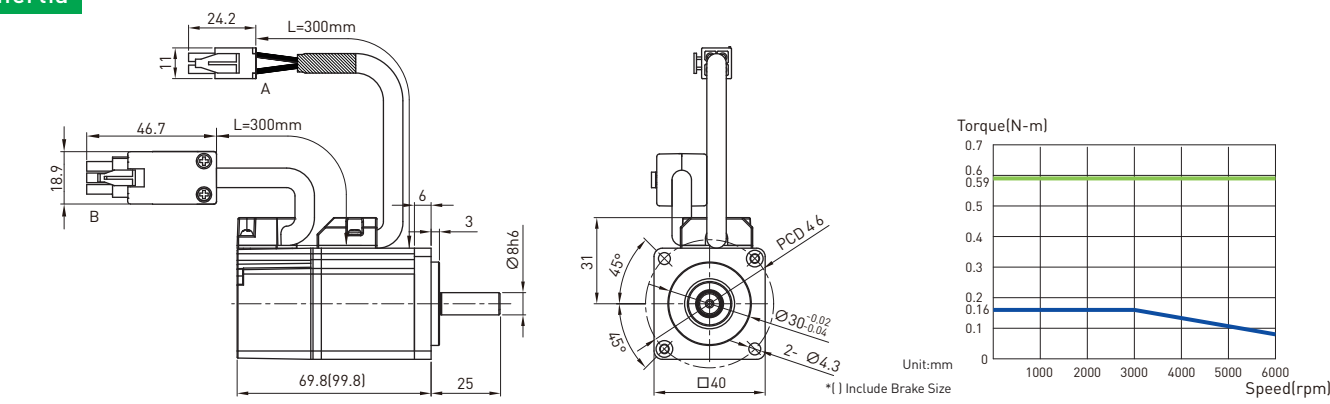
- Tuneless function
- Advanced auto-tuning
- Ripple compensation
- Drive-level gantry control hardware
- Industrial motion field bus
- Support AC, Linear and Direct Drive Motors
- Integrated STO function
- Excellent smart cube supports Digital, Analog, Tamagawa,
- EnDat and BiSS-C encoders<sup>1</sup>



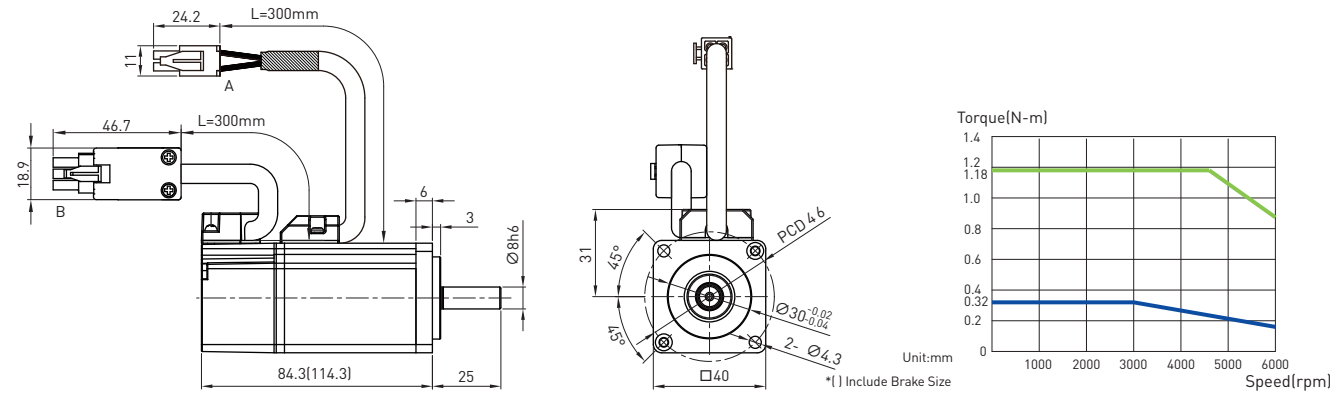
Note:  
<sup>1</sup> EnDat® is a registered trademark of HEIDENHAIN GmbH.  
 BiSS® is a registered trademark of IC-Haus GmbH.

## Middle Inertia

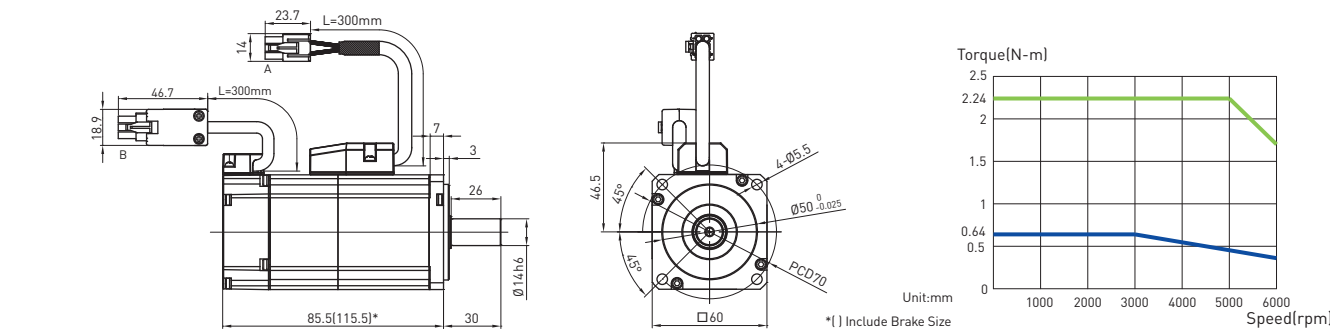
50W



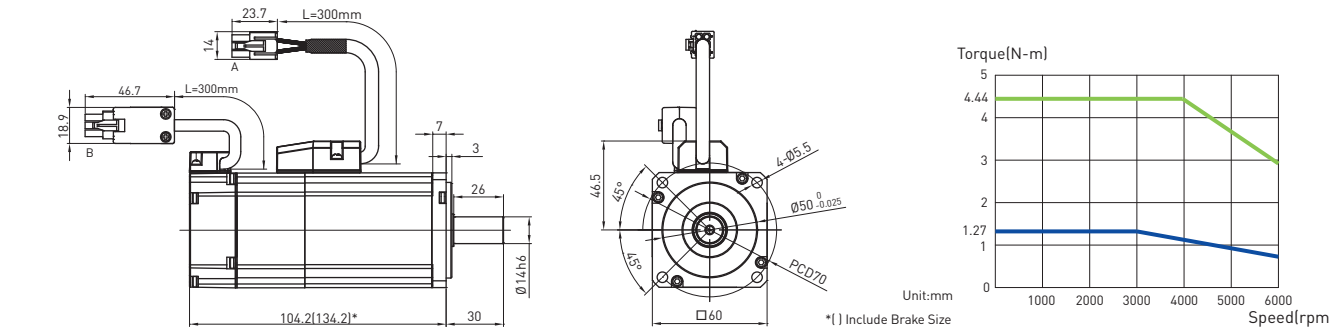
100W



200W

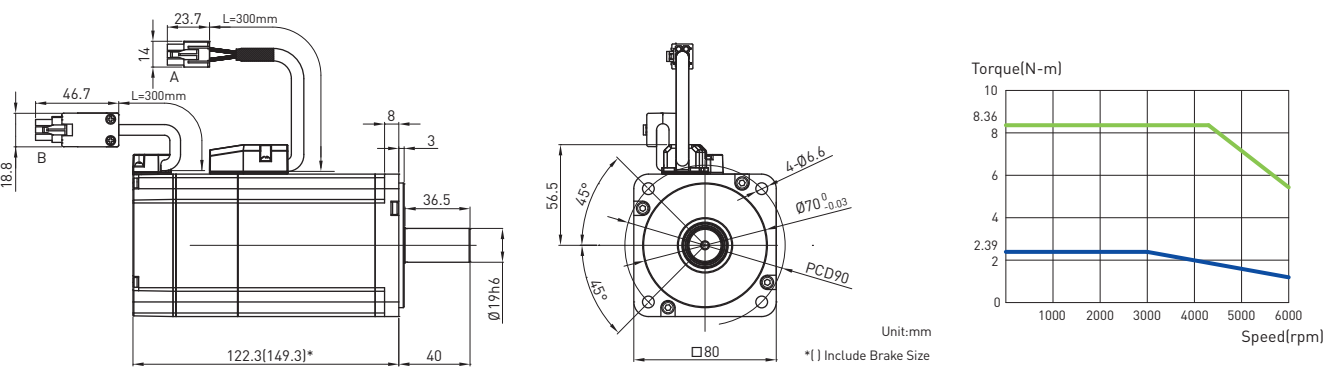


400W

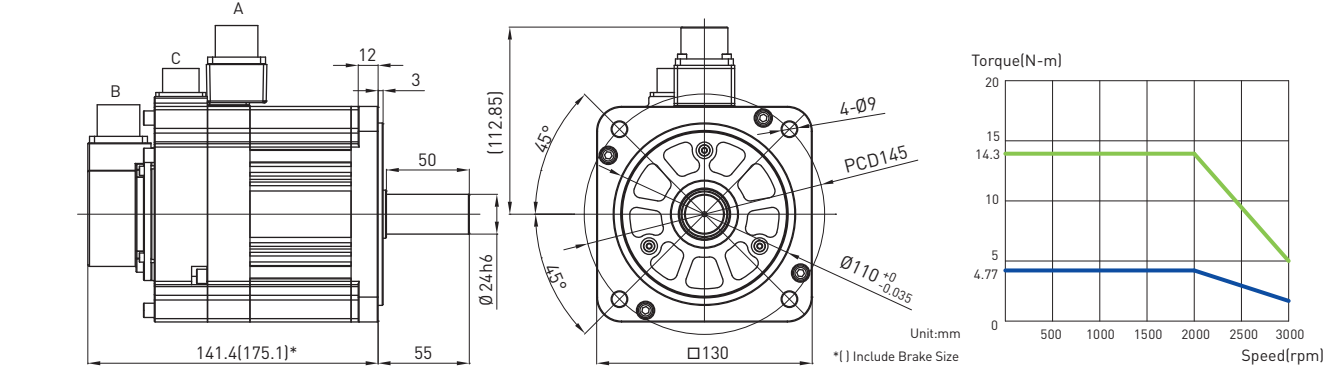


## Middle Inertia

750W

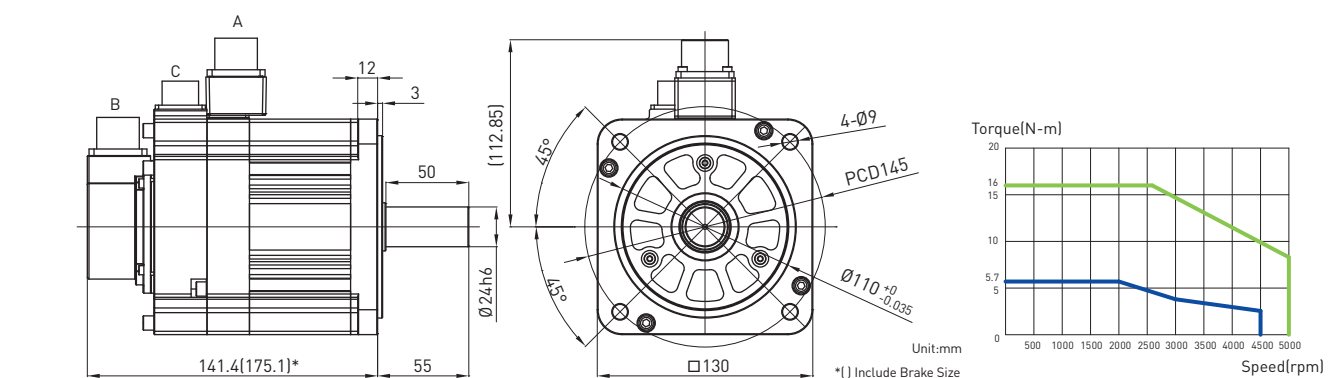


1KW

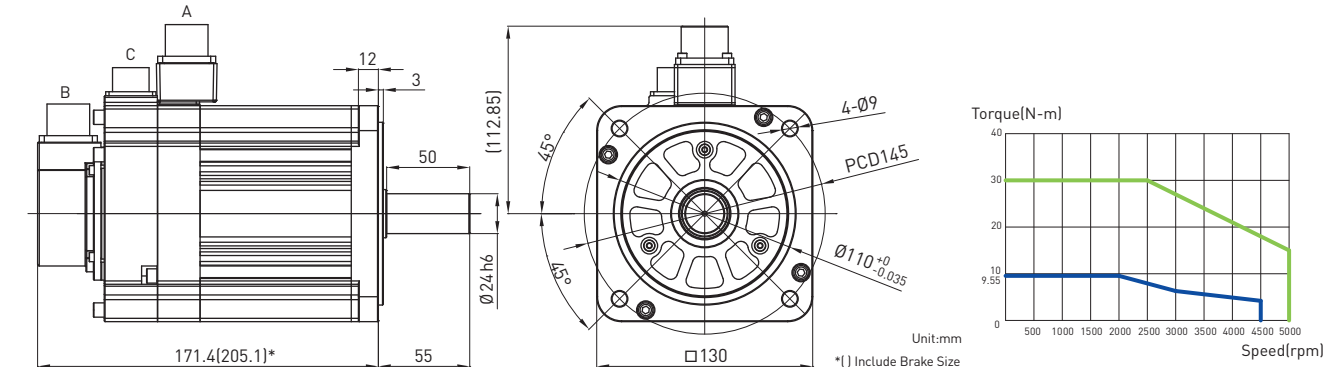


## Middle Inertia, High Speed

1.2KW



2KW

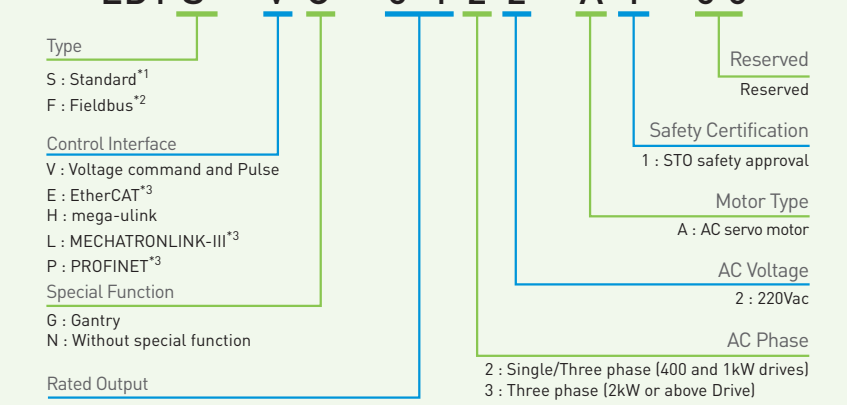


## Middle Inertia, High Speed

Motor Parameter	Symbol	Unit	Middle Inertia		Middle Inertia, High Speed	
			750W	1kW	1.2kW	2kW
Drive input voltage	V	V	AC220	AC220	AC220	AC220
Rated power	W	W	750	1000	1200	2000
Rated torque	Tc	N.m	2.39	4.77	5.73	9.55
Rated current	Ic	A[rms]	4.65	5.1	9.1	12
Max. torque	Tp	N.m	8.36	14.3	16	30
Max. current	Ip	A[rms]	18.6	15.3	27	42
Rated speed	ωc	rpm	3000	2000	2000	2000
Max. speed	ωp	rpm	6000	3000	5000	5000
Torque constant	Kt	N·m / Arms	0.514	0.935	0.63	0.796
Back EMF constant	Ke	Vrms / krpm	33.48	54.15	41.52	50.49
Resistance (line to line)	R	Ω	1.08	0.81	0.482	0.264
Inductance (line to line)	L	mH	4.6	8	4.54	2.825
Rotor inertia (with brake)	J	kg·m <sup>2</sup> (×10 <sup>-4</sup> )	1.44 [1.47]	7.2 [8.0]	7.2 [8.0]	12.8 [13.3]
Mass (with brake)	M	kg	2.7 [3.36]	5.4 [6.2]	5.3 [6.1]	7.9 [8.7]
Insulation class	Class F					
Protection class	Total enclosed, self-cooled, IP65 (except for shaft and connector)					
Insulation resistance	10MΩ, DC 500V					
Insulation voltage resistance	AC1500V, 60 seconds					
Holding Brake Specifications						
Static friction torque	Tb	N.m	2.4	10	10	10
Enabled current	Ab	A	0.36	0.56	0.56	0.56
Brake input voltage	V	V	DC24 ±10%	DC24 ±10%	DC24 ±10%	DC24 ±10%
Braking time	to	ms	45	80	80	80
Release time	tr	ms	10	30	30	30

## E1 Drive Model Description

ED1 S - V G - 0 4 2 2 - A 1 - 0 0



Note:  
<sup>1</sup>: Applicable control interface: Voltage command+Pulse  
<sup>2</sup>: Applicable control interface: EtherCAT, HiLink, LIMECHROLINK III  
<sup>3</sup>: EtherCAT is a registered trademark of Beckhoff Automation Co., Ltd.  
 MECHATROLINK is a registered trademark of MECHATROLINK Members Association.  
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