## E Servo Motor Features

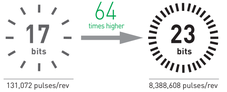
- Speeds up to 6000 RPM
- Encoder resolution option 17 bits / 23 bits
- High servo control bandwidth allows for precise angular motor positioning
- Quick and easy installation interface
- IP67 option available for 50 W- 750 W, optional brake and key

**Application**

Panels, semiconductor, lasers, PCB drilling, machine tools, measurement/inspection, energy and other automation industries

Optimize motor performance with E2 series Drives

### 1 Improved Processing Accuracy

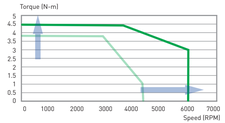



131,072 pulses/rev — Last Generation

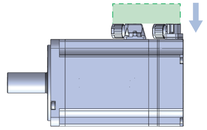
8,388,608 pulses/rev — New Generation

### 2 High Speed

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



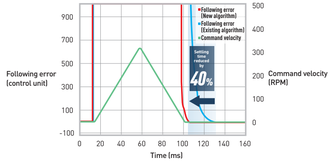

### 3 Compact Size



7 % shorter than previous high.
[Shown without brake.]

### 4 Tuning Functions

With our next-generation algorithm, the vibration of mechanism can be suppressed and the shaking in positioning can be solved, which improves the performance of servo motor to quickly enter the designated target position.




## E Motor Model Description

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

**Rated Speed / Maximum Speed**[*1]
A: 2000 / 3000[RPM][*2]
C: 3000 / 6000[RPM][*3]
D: 2000 / 5000[RPM][*4]

**Inertia**
M: Medium inertia

**Output Power**[*1]
05: 50 W
10: 100 W
20: 200 W
40: 400 W
75: 750 W
1K: 1000 W
1A: 1200 W
2K: 2000 W

**Drive Input Voltage**
2: 220 Vac

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

**Reserved**
Stabdard: 0
(1 kW/1.2 kW/2 kW only)
IP67: R
(50 W-750 W only)

**Encoder Type**
17 bits(incremental): C
17 bits(absolute): D
23 bits(incremental): E
23 bits(absolute): F

**Holding Break Options**
Without holding brake: 0
With holding brake: B

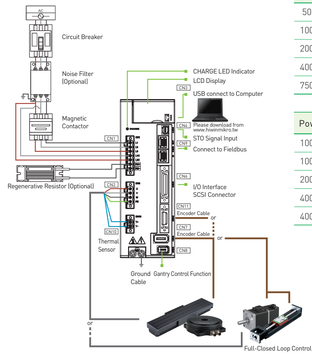
Note: 1.Refer to the motor specification parameter table for the relationship between motor speed and power.
2.1 kW
3.50 W-750 W
4.1.2 kW / 2 kW

| Motor | | | | Drive | Cable Items | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Power Extension Cable[*3] | | Encoder Extension Cable[*3] | |
| Series | Driver Input Voltage | Rated Power | Specification[*1] | Specification[*2] | Without Holding Brake | With Holding Brake | Incremental | Absolute |
| E | Single/Three phase 220 V | 50 W | EM1-C-M-05-2-□-□-R-□ | ED2□-□□-003-1-A-00 | HVPS045A□□MB[*4]<br>HVPS04RA□□MB[*4] | HVPS06SA□□MB[*4]<br>HVPS06RA□□MB[*4] | HVE23ISB□□MB[*4]<br>HVE23IRB□□MB[*4] | HVE23ASB□□MB[*4]<br>HVE23ARB□□MB[*4] |
| | | 100 W | EM1-C-M-10-2-□-□-R-□ | | | | | |
| | | 200 W | EM1-C-M-20-2-□-□-R-□ | | | | | |
| | | 400 W | EM1-C-M-40-2-□-□-R-□ | | | | | |
| | | 750 W | EM1-C-M-75-2-□-□-R-□ | ED2□-□□-006-1-A-00 | | | | |
| | | 1 kW | EM1-A-M-1K-2-□-□-0-□ | | | | | |
| | Three phase 220 V | 1.2 kW | EM1-D-M-1A-2-□-□-0-□ | ED2□-□□-009-1-A-00 | HVPM04BA□□MB<br>HVPM04CA□□MB | HVPM06BA□□MB<br>HVPM06CA□□MB | HVE23IBB□□MB<br>HVE23ICB□□MB | HVE23ABB□□MB<br>HVE23ACB□□MB |
| | | 2 kW | EM1-D-M-2K-2-□-□-0-□ | ED2□-□□-012-4-A-00 | | | | |

Note: 1.Please refer E motor model description for options of motor shaft, oil seal and brake.
2.Please refer to E2 drive model description.
3.Standard Cable length is 3 m / 5 m / 7 m / 10 m. □□: 03, 05, 07, 10
4.R: IP67 (0 Degree)
S: IP67 (180 Degree)

## Drive Wiring Diagrams

50 W-1.2 kW (used with E2 Drive)




## With Single-Axis Robot Description

| Power | Spec. | With Single-Axis Robot [KK] | | | Max.Load [Parallel] | Max.Load [Vertical] |
|---|---|---|---|---|---|---|
| 50 W | EM1-C-M-05 | KK40 | KK50 | - | 20 kg | 10 kg |
| 100 W | EM1-C-M-10 | KK40 | KK50 | KK60D | 30 kg | 10 kg |
| 200 W | EM1-C-M-20 | KK80 | KK86D | - | 60 kg | 20 kg |
| 400 W | EM1-C-M-40 | KK80 | KK86D | KK100 | 80 kg | 20 kg |
| 750 W | EM1-C-M-75 | KK130 | - | - | 100 kg | 30 kg |

| Power | Spec. | With Single-Axis Robot [KA/KC] | | Max.Load [Parallel] | Max.Load [Vertical] |
|---|---|---|---|---|---|
| 100 W | EM1-C-M-10 | KA100 | - | 30 kg | 10 kg |
| 100 W | EM1-C-M-10 | KC50-B | - | 10 kg | 5 kg |
| 200 W | EM1-C-M-20 | KA136 | KA170 | 50 kg | 25 kg |
| 400 W | EM1-C-M-40 | KA136 | KA170 | 100 kg | 50 kg |
| 400 W | EM1-C-M-40 | KC80-B | - | 80 kg | 15 kg |

AC Servo Motor

Single-Axis Robot

**HIWIN. MIKROSYSTEM**

HIWIN MIKROSYSTEM New Generation AC Servo Motors

With HIWIN MIKROSYSTEM E2 Drive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**HIWIN MIKROSYSTEM CORP.**
No.6, Jingke Central Rd.,
Taichung Precision Machinery Park,
Taichung 408211, Taiwan
Tel: +886-4-2355-0110
Fax: +886-4-2355-0123
www.hiwinmikro.tw
business@hiwinmikro.tw

**HIWIN GmbH**
OFFENBURG, GERMANY
www.hiwin.de
www.hiwin.eu
info@hiwin.de

**HIWIN Schweiz GmbH**
JONA, SWITZERLAND
www.hiwin.ch
info@hiwin.ch

**HIWIN KOREA**
SUWON · CHANGWON, KOREA
www.hiwin.kr
info@hiwin.kr

**HIWIN JAPAN**
KOBE · NAGOYA · TOKYO · TOHOKU · NAGANO · SHIZUOKA · HOKURIKU · HIROSHIMA · FUKUOKA · KUMAMOTO, JAPAN
www.hiwin.co.jp
info@hiwin.co.jp

**HIWIN s.r.o.**
BRNO, CZECH REPUBLIC
www.hiwin.cz
info@hiwin.cz

**HIWIN CHINA**
SUZHOU, CHINA
www.hiwin.cn
info@hiwin.cn

**HIWIN USA**
CHICAGO, U.S.A.
www.hiwin.com
info@hiwin.com

**HIWIN FRANCE**
STRASBOURG, FRANCE
www.hiwin.fr
info@hiwin.de

**Mega-Fabs Motion Systems, Ltd.**
HAIFA, ISRAEL
www.mega-fabs.com
info@mega-fabs.com

**HIWIN Srl**
BRUGHERIO, ITALY
www.hiwin.it
info@hiwin.it

**HIWIN SINGAPORE**
SINGAPORE
www.hiwin.sg
info@hiwin.sg


# E Series

## AC Servo Motors & Drives



www.hiwinmikro.tw

## Specification

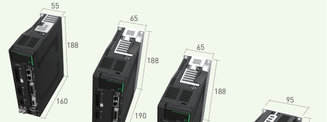
| Motor Parameter | Symbol | Unit | Middle Inertia 50 W | 100 W | 200 W | 400 W |
|---|---|---|---|---|---|---|
| | | | EM1CM052□□R□ | EM1CM102□□R□ | EM1CM202□□R□ | EM1CM402□□R□ |
| Drive input voltage | V | V | AC220 | AC220 | AC220 | AC220 |
| Rated power | W | W | 50 | 100 | 200 | 400 |
| Rated torque | Tc | Nm | 0.16 | 0.32 | 0.64 | 1.27 |
| Rated current | Ic | A(rms) | 0.64 | 0.78 | 1.6 | 2.5 |
| Max. torque | Tp | Nm | 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 | Nm / 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-m²[×10⁻⁴] | 0.0368 (0.0401) | 0.0620 (0.0653) | 0.263 (0.326) | 0.48 (0.49) |
| Mass (with brake) | M | kg | 0.30 (0.50) | 0.41 (0.61) | 0.80 (1.03) | 1.20 (1.74) |
| Insulation class | - | | Class F | | | |
| Protection class | - | | Total enclosed, self-cooled, IP67 (except for shaft) | | | |
| Insulation resistance | - | | 10MΩ, DC 500 V | | | |
| Insulation voltage resistance | - | | AC1500 V, 60 seconds | | | |
| **Holding Brake Specifications** | | | | | | |
| Static friction torque | Tb | Nm | 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 |

## E2 Drive Features

- 3.2 kHz speed response
- Tuneless function
- Advanced autotuning
- Ripple compensation
- Unique gantry control function
- Network with industrial communication devices
- Supports various motor types
- Built-in STO function
- Support various encoder interface protocols such as Digital, Analog, Tamagawa, EnDat, and BiSS-C

### Applications

Industries related to VDU, semiconductor, automation, laser cutting, PCB, etc.




ED2□-□□-003-1
ED2□-□□-006-1

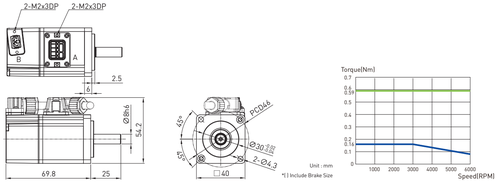

ED2□-□□-009-1


ED2□-□□-009-3

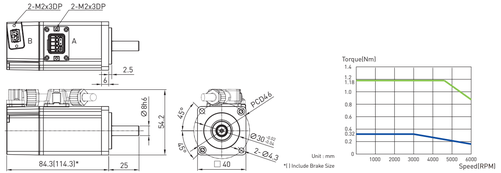

ED2□-□□-012-4
ED2□-□□-018-2

## Middle Inertia

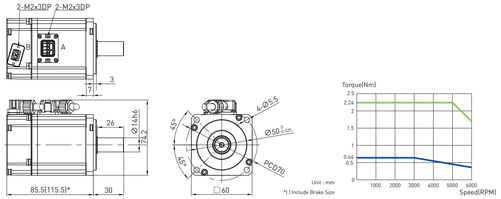
### 50 W



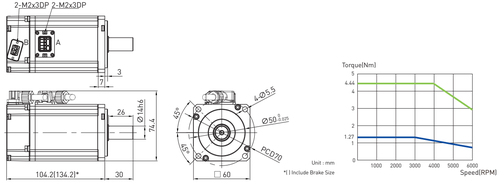

### 100 W




### 200 W

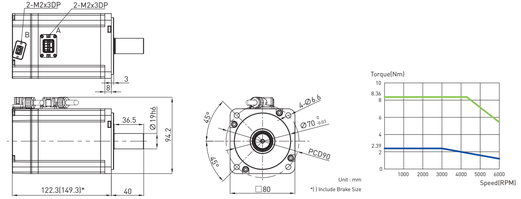



### 400 W

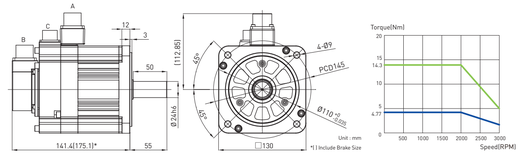



## Middle Inertia

### 750 W

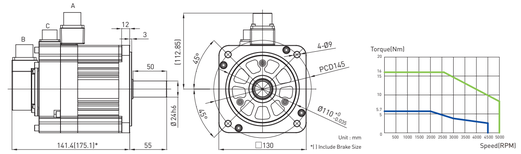



### 1 kW

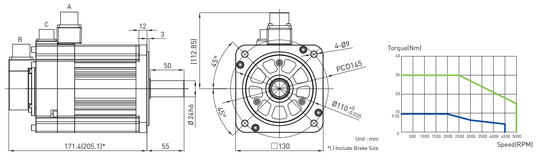



## Middle Inertia, High Speed

### 1.2 kW




### 2 kW




| Motor Parameter | Symbol | Unit | Middle Inertia 750 W | 1 kW | Middle Inertia, High Speed 1.2 kW | 2 kW |
|---|---|---|---|---|---|---|
| | | | EM1CM752□□0□ | EM1AM1K2□□0□ | EM1DM1A2□□0□ | EM1DM2K2□□0□ |
| Drive input voltage | V | V | AC220 | AC220 | AC220 | AC220 |
| Rated power | W | W | 750 | 1000 | 1200 | 2000 |
| Rated torque | Tc | Nm | 2.39 | 4.77 | 5.73 | 9.55 |
| Rated current | Ic | A(rms) | 4.65 | 5.1 | 9.1 | 12 |
| Max. torque | Tp | Nm | 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 | Nm / 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-m²[×10⁻⁴] | 1.44 (1.47) | 7.2 (8.0) | 7.2 (8.0) | 12.8 (13.3) |
| Mass (with brake) | M | kg | 2.64 (3.30) | 5.4 (6.2) | 5.3 (6.1) | 7.9 (8.7) |
| Insulation class | - | | Class F | | | |
| Protection class | - | | IP67 | 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 | Nm | 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 |

## E2 Drive Model Description

**E D 2 S - V 0 - 0 0 3 - 1 - C - 0 0**

**Type**
S: Standard
F: Fieldbus

**Control Interface**
S: V0: Voltage command and Pulse
F: E0: EtherCAT [CoE]*1
P0: PROFINET*1
R0: EtherNet/IP*1
L3: MECHATROLINK-III*1

**Rated Output**
003: 3 Arms
006: 6.3 Arms
009: 9.4 Arms
012: 12 Arms
018: 18 Arms

Note*1: EtherCAT® is a registered trademark of Beckhoff Automation Co., Ltd.
PROFINET® is a registered trademark of PROFIBUS & PROFINET International (PI).
EtherNet/IP® is a trademark of ODVA, Inc.
MECHATROLINK is a registered trademark of MECHATROLINK Members Association.

**Reserved**

**Function Model**
AC: A
Basic: B
Advanced: C
GT: T

**Power Input**
1/3-phase 100-240 Vac; 48-120 Vdc: 1
(Rated 003, 006, 009)
3-phase 200-240 Vac: 2
(Rated 018)
3-phase 200-480 Vac: 3
(Rated 009)
1/3-phase 100-240 Vac: 4
(Rated 012)