

Standard AC Motors

Watertight, Dust-Resistant Motors

Watertight, Dust-Resistant Motors

RoHS RoHS-Compliant

Watertight, Dust-Resistant Motors

FPW Series

Induction Type

● Additional Information ●
 Technical reference → Page F-1
 Safety standards → Page G-2

The **FPW** Series are geared motors which conform to the IEC Standard IP67 (Recognized by UL). They are ideal for applications where they are splashed or where the equipment needs washing periodically. These watertight motors are available in 25 W, 40 W, 60 W and 90 W models, and conform to the RoHS Directive.



● List of safety standard approved products (Model, Standards, File No., Certification Body)
 → Page G-10



■ Features

● Watertight and Dust-Resistant Performance IP67

The **FPW** Series motors are watertight, dust-resistant geared induction motors which conform to the IEC Standard IP67. They can be used where they are splashed with water, but they are not suitable for use under high pressure jets of water or immersion in water.

IP67: IP codes indicating the grade of dust-resistance and waterproofing are specified under IEC 60529 and EN 60034-5 (= IEC 60034-5).

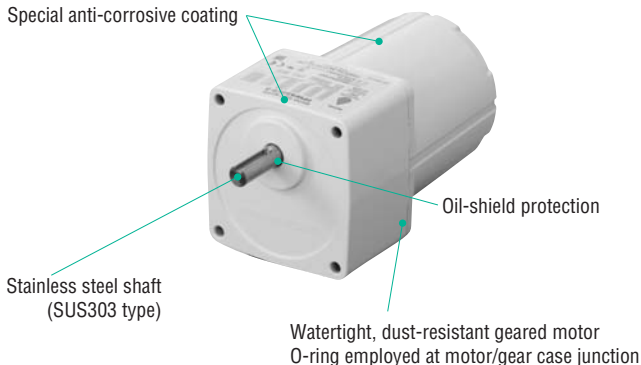
FPW Series recognized by UL conforms to IP67 (UL File No. E166348).

● Improved Anti-Corrosion Properties

High corrosion resistance is achieved through special anti-corrosive coating and re-examination of shaft material [stainless steel (SUS303 type)].

● Designed and Constructed for Watertight and Dust-Resistance

Special anti-corrosive coating



● Conform to Safety Standards

The **FPW** Series is recognized by UL/CSA Standards and conforms to CE Marking (Low Voltage Directive). These motors are also certified under the China Compulsory Certification System (CCC System).

● **RoHS** RoHS-Compliant

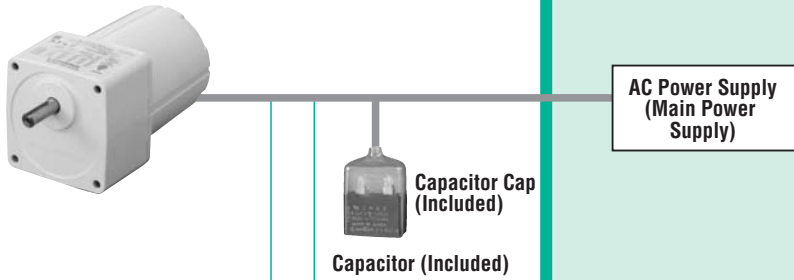
The **FPW** Series conforms to the RoHS Directive that prohibits the use of six chemical substances including lead and cadmium.

● Details of RoHS Directive → Page G-23

System Configuration

FPW Series (Body)

Watertight, Dust-Resistant Motors




AC Power Supply (Main Power Supply)

Capacitor Cap (Included)


Capacitor (Included)

Peripheral Equipment (Sold separately)


① Brake Pack **SB50W**
(→ Page A-143)




② Inverter **FE100/FE200**
(→ Page A-195)



Accessories (Sold separately)



③ Power Relay Box for Watertight Type
(→ Page A-237)



④ Extension Cable for Watertight Type
(→ Page A-238)

| No. | Product Name | Overview | Page |
|-----|-------------------------------------|---|-------|
| ① | Brake Pack | Use this brake pack to stop the motor instantaneously, perform bi-directional operation, and more. | A-143 |
| ② | Inverter | Combine this inverter with a three-phase motor for easy speed control. Equipped with a digital display meter. | A-195 |
| ③ | Power Relay Box for Watertight Type | When the cable of a watertight motor is extended, use this terminal box to connect cables (TB4-0608) . | A-237 |
| ④ | Extension Cable for Watertight Type | Cable for extending the wiring distance between the motor and power supply. Use this cable together with the power relay box for watertight type (5 m, 10 m). | A-238 |

● Example of System Configuration



- The system configuration shown above is an example. Other combinations are available.
- A capacitor is included with single-phase motors. The capacitors for the motors are neither watertight nor dust-resistant.

Product Number Code

FPW 4 25 C 2 - 15 E

① ② ③ ④ ⑤ ⑥ ⑦

| | | |
|---|----------------------|--|
| ① | Series | FPW: FPW Series |
| ② | Motor Frame Size | 4: 80 mm 5: 90 mm 6: 104 mm |
| ③ | Output Power (W) | (Example) 25: 25 W |
| ④ | Power Supply Voltage | A: Single-Phase 100 VAC, 110/115 VAC C: Single-Phase 200 VAC, 220/230 VAC S: Three-Phase 200/220/230 VAC |
| ⑤ | | 2: RoHS-Compliant |
| ⑥ | Gear Ratio | |
| ⑦ | Included Capacitor | J: For Single-Phase 100 VAC and 200 VAC U: For Single-Phase 110/115 VAC E: For Single-Phase 220/230 VAC |

● The **J**, **U** and **E** at the end of the model name indicate that the unit includes a capacitor. These letters are not listed on the motor nameplate.

When the motor is approved under various safety standards, the model name on the nameplate is the approved model name. → Page G-10

(Example) Model: **FPW425C2-15E**

→ Motor nameplate and product approved under various safety standards: **FPW425C2-15**

Product Line (RoHS)

| Output Power | Power Supply Voltage | Model | Gear Ratio | Page |
|--------------|-----------------------------|--------------------|--------------|-------|
| 25 W | Single-Phase 100 VAC | FPW425A2-□J | 3~180 | * |
| | Single-Phase 110/115 VAC | FPW425A2-□U | 3~180 | * |
| | Single-Phase 200 VAC | FPW425C2-□J | 3~180 | * |
| | Single-Phase 220/230 VAC | FPW425C2-□E | 3~180 | A-211 |
| | Three-Phase 200/220/230 VAC | FPW425S2-□ | 3~180 | A-211 |
| 40 W | Single-Phase 100 VAC | FPW540A2-□J | 3~180 | * |
| | Single-Phase 110/115 VAC | FPW540A2-□U | 3~180 | * |
| | Single-Phase 200 VAC | FPW540C2-□J | 3~180 | * |
| | Single-Phase 220/230 VAC | FPW540C2-□E | 3~180 | A-211 |
| | Three-Phase 200/220/230 VAC | FPW540S2-□ | 3~180 | A-211 |
| 60 W | Single-Phase 100 VAC | FPW560A2-□J | 3~180 | * |
| | Single-Phase 110/115 VAC | FPW560A2-□U | 3~180 | * |
| | Single-Phase 200 VAC | FPW560C2-□J | 3~180 | * |
| | Single-Phase 220/230 VAC | FPW560C2-□E | 3~180 | A-211 |
| | Three-Phase 200/220/230 VAC | FPW560S2-□ | 3~180 | A-211 |
| 90 W | Single-Phase 100 VAC | FPW690A2-□J | 3~180 | * |
| | Single-Phase 110/115 VAC | FPW690A2-□U | 3~180 | * |
| | Single-Phase 200 VAC | FPW690C2-□J | 3~180 | * |
| | Single-Phase 220/230 VAC | FPW690C2-□E | 3~180 | A-211 |
| | Three-Phase 200/220/230 VAC | FPW690S2-□ | 3~180 | A-211 |

● Enter the gear ratio in the box (□) within the model name.

* For the single-phase 100 VAC, the single-phase 110/115 VAC and the single-phase 200 VAC models, please contact the nearest Oriental Motor sales office.

— The following items are included in each product. —

Motor, Capacitor*, Capacitor Cap*, Mounting Screws, Parallel Key, Operating Manual

* Only for single-phase motors

Specifications – Continuous Rating (RoHS)



| Model | Output Power W | Voltage VAC | Frequency Hz | Current A | Starting Torque mN·m | Rated Torque mN·m | Rated Speed r/min | Capacitor μ F |
|----------------|----------------|------------------|--------------|-----------|----------------------|-------------------|-------------------|-------------------|
| TP FPW425C2-□E | 25 | Single-Phase 220 | 50 | 0.27 | 110 | 205 | 1200 | 1.5 |
| | | | 60 | 0.23 | | 170 | 1450 | |
| | | Single-Phase 230 | 50 | 0.27 | 120 | 205 | 1200 | |
| | | | 60 | 0.23 | | 170 | 1450 | |
| TP FPW425S2-□ | 25 | Three-Phase 200 | 50 | 0.23 | 240 | 190 | 1300 | - |
| | | | 60 | 0.21 | | 160 | 1550 | |
| | | Three-Phase 220 | 60 | 0.21 | 160 | 160 | 1600 | |
| | | | 60 | 0.22 | | 160 | 1600 | |
| TP FPW540C2-□E | 40 | Single-Phase 220 | 50 | 0.39 | 200 | 315 | 1250 | 2.3 |
| | | | 60 | 0.35 | | 260 | 1500 | |
| | | Single-Phase 230 | 50 | 0.39 | | 300 | 1300 | |
| | | | 60 | 0.34 | | 260 | 1500 | |
| TP FPW540S2-□ | 40 | Three-Phase 200 | 50 | 0.32 | 400 | 300 | 1300 | - |
| | | | 60 | 0.30 | | 260 | 1550 | |
| | | Three-Phase 220 | 60 | 0.30 | 260 | 260 | 1600 | |
| | | | 60 | 0.31 | | 260 | 1600 | |
| TP FPW560C2-□E | 55 | Single-Phase 220 | 50 | 0.52 | 300 | 430 | 1250 | 3.0 |
| | 60 | | 60 | 0.48 | | 405 | 1450 | |
| | 55 | Single-Phase 230 | 50 | 0.51 | | 430 | 1250 | |
| | | | 60 | 0.47 | | 405 | 1450 | |
| TP FPW560S2-□ | 60 | Three-Phase 200 | 50 | 0.48 | 600 | 450 | 1300 | - |
| | | | 60 | 0.43 | | 500 | 1550 | |
| | | Three-Phase 220 | 60 | 0.44 | 500 | 380 | 1600 | |
| | | | 60 | 0.45 | | 380 | 1600 | |
| TP FPW690C2-□E | 90 | Single-Phase 220 | 50 | 0.82 | 400 | 700 | 1250 | 4.5 |
| | | | 60 | 0.73 | | 605 | 1450 | |
| | | Single-Phase 230 | 50 | 0.81 | | 700 | 1250 | |
| | | | 60 | 0.71 | | 605 | 1450 | |
| TP FPW690S2-□ | 90 | Three-Phase 200 | 50 | 0.54 | 700 | 680 | 1300 | - |
| | | | 60 | 0.51 | | 570 | 1550 | |
| | | Three-Phase 220 | 60 | 0.50 | 700 | 570 | 1600 | |
| | | | 60 | 0.49 | | 570 | 1600 | |

TP: Contains a built-in thermal protector (automatic return type). If a motor overheats for any reason, the thermal protector is activated and the motor is stopped. When the motor temperature drops, the thermal protector closes and the motor restarts. Be sure to turn the motor off before inspecting.

- Enter the gear ratio in the box (□) within the model name.
- The value for each specification applies to the motor only.
- In addition to the products shown above, the products for single-phase 100 VAC, single-phase 110/115 VAC and single-phase 200 VAC are also available. Please contact the nearest Oriental Motor sales office.

General Specifications

| Item | Specifications |
|-----------------------|--|
| Insulation Resistance | 100 M Ω or more when 500 VDC megger is applied between the windings and the case after rated operation under normal ambient temperature and humidity. |
| Dielectric Strength | Sufficient to withstand 1.5 kV at 50 Hz or 60 Hz applied between the windings and the case for 1 minute after rated operation under normal ambient temperature and humidity. |
| Temperature Rise | Temperature rise of windings are 80°C or less measured by the resistance change method after rated operation under normal ambient temperature and humidity. (Three-phase type: 70°C or less) |
| Insulation Class | Class B (130°C) |
| Overheat Protection | Built-in thermal protector (automatic return type) Operating temperature; open: 130 \pm 5°C, close: 82 \pm 15°C |
| Ambient Temperature | Three-Phase 200 VAC: -10 ~ +50°C (non-freezing) Single-Phase 220/230 VAC, Three-Phase 220/230 VAC: -10 ~ +40°C (non-freezing) |
| Degree of Protection | IP67 |

Notes:

- Since these are special watertight, dust-resistant geared motors, the motor and gearhead sections cannot be disassembled.
- The capacitors for the motors are neither watertight nor dust-resistant.

■ Gearmotor – Torque Table

● 50 Hz

Unit = N·m

| Model | Speed r/min | 500 | 417 | 300 | 250 | 200 | 167 | 120 | 100 | 83 | 60 | 50 | 42 | 30 | 25 | 20 | 17 | 15 | 12.5 | 10 | 8.3 |
|---------------------------------|----------------|----------|------------|----------|----------|------------|----------|-------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|------------|------------|------------|
| | Gear Ratio | 3 | 3.6 | 5 | 6 | 7.5 | 9 | 12.5 | 15 | 18 | 25 | 30 | 36 | 50 | 60 | 75 | 90 | 100 | 120 | 150 | 180 |
| FPW425C2-□E (230 VAC) | Rated | 0.50 | 0.60 | 0.83 | 1.0 | 1.2 | 1.5 | 2.1 | 2.5 | 3.0 | 3.7 | 4.5 | 5.4 | 6.8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| | Starting | 0.29 | 0.35 | 0.49 | 0.58 | 0.73 | 0.87 | 1.2 | 1.5 | 1.7 | 2.2 | 2.6 | 3.2 | 4.0 | 4.8 | 5.9 | 7.1 | 7.9 | 8 | 8 | 8 |
| FPW425C2-□E (220 VAC) | Rated | 0.50 | 0.60 | 0.83 | 1.0 | 1.2 | 1.5 | 2.1 | 2.5 | 3.0 | 3.7 | 4.5 | 5.4 | 6.8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| | Starting | 0.27 | 0.32 | 0.45 | 0.53 | 0.67 | 0.80 | 1.1 | 1.3 | 1.6 | 2.0 | 2.4 | 2.9 | 3.6 | 4.4 | 5.4 | 6.5 | 7.3 | 8 | 8 | 8 |
| FPW425S2-□ | Rated | 0.46 | 0.55 | 0.77 | 0.92 | 1.2 | 1.4 | 1.9 | 2.3 | 2.8 | 3.5 | 4.2 | 5.0 | 6.3 | 7.5 | 8 | 8 | 8 | 8 | 8 | 8 |
| | Starting | 0.46 | 0.55 | 0.77 | 0.92 | 1.2 | 1.4 | 1.9 | 2.3 | 2.8 | 3.5 | 4.2 | 5.0 | 6.3 | 7.5 | 8 | 8 | 8 | 8 | 8 | 8 |
| FPW540C2-□E (220 VAC) | Rated | 0.77 | 0.92 | 1.3 | 1.5 | 1.9 | 2.3 | 3.2 | 3.8 | 4.6 | 5.7 | 6.9 | 8.3 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| | Starting | 0.49 | 0.58 | 0.81 | 0.97 | 1.2 | 1.5 | 2.0 | 2.4 | 2.9 | 3.7 | 4.4 | 5.3 | 6.6 | 7.9 | 9.9 | 10 | 10 | 10 | 10 | 10 |
| FPW540C2-□E (230 VAC) | Rated | 0.73 | 0.87 | 1.2 | 1.5 | 1.8 | 2.2 | 3.0 | 3.6 | 4.4 | 5.5 | 6.6 | 7.9 | 9.9 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| | Starting | 0.49 | 0.58 | 0.81 | 0.97 | 1.2 | 1.5 | 2.0 | 2.4 | 2.9 | 3.7 | 4.4 | 5.3 | 6.6 | 7.9 | 9.9 | 10 | 10 | 10 | 10 | 10 |
| FPW540S2-□ | Rated | 0.73 | 0.87 | 1.2 | 1.5 | 1.8 | 2.2 | 3.0 | 3.6 | 4.4 | 5.5 | 6.6 | 7.9 | 9.9 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| | Starting | 0.73 | 0.87 | 1.2 | 1.5 | 1.8 | 2.2 | 3.0 | 3.6 | 4.4 | 5.5 | 6.6 | 7.9 | 9.9 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| FPW560C2-□E | Rated | 1.0 | 1.3 | 1.7 | 2.1 | 2.6 | 3.1 | 3.9 | 4.7 | 5.7 | 7.1 | 8.5 | 10.2 | 14.2 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| | Starting | 0.73 | 0.87 | 1.2 | 1.5 | 1.8 | 2.2 | 2.7 | 3.3 | 3.9 | 5.0 | 5.9 | 7.1 | 9.9 | 11.9 | 13.3 | 15 | 15 | 15 | 15 | 15 |
| FPW560S2-□ | Rated | 1.1 | 1.3 | 1.8 | 2.2 | 2.7 | 3.3 | 4.1 | 4.9 | 5.9 | 7.4 | 8.9 | 10.7 | 14.9 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| | Starting | 1.1 | 1.3 | 1.8 | 2.2 | 2.7 | 3.3 | 4.1 | 4.9 | 5.9 | 7.4 | 8.9 | 10.7 | 14.9 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| FPW690C2-□E | Rated | 1.7 | 2.0 | 2.8 | 3.4 | 4.3 | 5.1 | 6.4 | 7.7 | 9.2 | 12.8 | 15.3 | 18.4 | 23.1 | 27.7 | 30 | 30 | 30 | 30 | 30 | 30 |
| | Starting | 0.97 | 1.2 | 1.6 | 1.9 | 2.4 | 2.9 | 3.7 | 4.4 | 5.3 | 7.3 | 8.8 | 10.5 | 13.2 | 15.8 | 19.8 | 23.8 | 26.4 | 30 | 30 | 30 |
| FPW690S2-□ | Rated | 1.7 | 2.0 | 2.8 | 3.3 | 4.1 | 5.0 | 6.2 | 7.4 | 8.9 | 12.4 | 14.9 | 17.9 | 22.4 | 26.9 | 30 | 30 | 30 | 30 | 30 | 30 |
| | Starting | 1.7 | 2.0 | 2.8 | 3.3 | 4.1 | 5.0 | 6.2 | 7.4 | 8.9 | 12.4 | 14.9 | 17.9 | 22.4 | 26.9 | 30 | 30 | 30 | 30 | 30 | 30 |

● 60 Hz

Unit = N·m

| Model | Speed r/min | 600 | 500 | 360 | 300 | 240 | 200 | 144 | 120 | 100 | 72 | 60 | 50 | 36 | 30 | 24 | 20 | 18 | 15 | 12 | 10 |
|---------------------------------|----------------|----------|------------|----------|----------|------------|----------|-------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|------------|------------|------------|
| | Gear Ratio | 3 | 3.6 | 5 | 6 | 7.5 | 9 | 12.5 | 15 | 18 | 25 | 30 | 36 | 50 | 60 | 75 | 90 | 100 | 120 | 150 | 180 |
| FPW425C2-□E (230 VAC) | Rated | 0.41 | 0.50 | 0.69 | 0.83 | 1.0 | 1.2 | 1.7 | 2.1 | 2.5 | 3.1 | 3.7 | 4.5 | 5.6 | 6.7 | 8 | 8 | 8 | 8 | 8 | 8 |
| | Starting | 0.29 | 0.35 | 0.49 | 0.58 | 0.73 | 0.87 | 1.2 | 1.5 | 1.7 | 2.2 | 2.6 | 3.2 | 4.0 | 4.8 | 5.9 | 7.1 | 7.9 | 8 | 8 | 8 |
| FPW425C2-□E (220 VAC) | Rated | 0.41 | 0.50 | 0.69 | 0.83 | 1.0 | 1.2 | 1.7 | 2.1 | 2.5 | 3.1 | 3.7 | 4.5 | 5.6 | 6.7 | 8 | 8 | 8 | 8 | 8 | 8 |
| | Starting | 0.27 | 0.32 | 0.45 | 0.53 | 0.67 | 0.80 | 1.1 | 1.3 | 1.6 | 2.0 | 2.4 | 2.9 | 3.6 | 4.4 | 5.4 | 6.5 | 7.3 | 8 | 8 | 8 |
| FPW425S2-□ | Rated | 0.39 | 0.47 | 0.65 | 0.78 | 0.97 | 1.2 | 1.6 | 1.9 | 2.3 | 2.9 | 3.5 | 4.2 | 5.3 | 6.3 | 7.9 | 8 | 8 | 8 | 8 | 8 |
| | Starting | 0.39 | 0.47 | 0.65 | 0.78 | 0.97 | 1.2 | 1.6 | 1.9 | 2.3 | 2.9 | 3.5 | 4.2 | 5.3 | 6.3 | 7.9 | 8 | 8 | 8 | 8 | 8 |
| FPW540C2-□E | Rated | 0.63 | 0.76 | 1.1 | 1.3 | 1.6 | 1.9 | 2.6 | 3.2 | 3.8 | 4.7 | 5.7 | 6.8 | 8.6 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| | Starting | 0.49 | 0.58 | 0.81 | 0.97 | 1.2 | 1.5 | 2.0 | 2.4 | 2.9 | 3.7 | 4.4 | 5.3 | 6.6 | 7.9 | 9.9 | 10 | 10 | 10 | 10 | 10 |
| FPW540S2-□ | Rated | 0.63 | 0.76 | 1.1 | 1.3 | 1.6 | 1.9 | 2.6 | 3.2 | 3.8 | 4.7 | 5.7 | 6.8 | 8.6 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| | Starting | 0.63 | 0.76 | 1.1 | 1.3 | 1.6 | 1.9 | 2.6 | 3.2 | 3.8 | 4.7 | 5.7 | 6.8 | 8.6 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| FPW560C2-□E | Rated | 0.98 | 1.2 | 1.6 | 2.0 | 2.5 | 3.0 | 3.7 | 4.4 | 5.3 | 6.7 | 8.0 | 9.6 | 13.4 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| | Starting | 0.73 | 0.87 | 1.2 | 1.5 | 1.8 | 2.2 | 2.7 | 3.3 | 3.9 | 5.0 | 5.9 | 7.1 | 9.9 | 11.9 | 13.3 | 15 | 15 | 15 | 15 | 15 |
| FPW560S2-□ | Rated | 0.92 | 1.1 | 1.5 | 1.8 | 2.3 | 2.8 | 3.5 | 4.2 | 5.0 | 6.3 | 7.5 | 9.0 | 12.5 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| | Starting | 0.92 | 1.1 | 1.5 | 1.8 | 2.3 | 2.8 | 3.5 | 4.2 | 5.0 | 6.3 | 7.5 | 9.0 | 12.5 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| FPW690C2-□E | Rated | 1.5 | 1.8 | 2.5 | 2.9 | 3.7 | 4.4 | 5.5 | 6.6 | 7.9 | 11.0 | 13.2 | 15.9 | 20.0 | 24.0 | 29.9 | 30 | 30 | 30 | 30 | 30 |
| | Starting | 0.97 | 1.2 | 1.6 | 1.9 | 2.4 | 2.9 | 3.7 | 4.4 | 5.3 | 7.3 | 8.8 | 10.5 | 13.2 | 15.8 | 19.8 | 23.8 | 26.4 | 30 | 30 | 30 |
| FPW690S2-□ | Rated | 1.4 | 1.7 | 2.3 | 2.8 | 3.5 | 4.2 | 5.2 | 6.2 | 7.5 | 10.4 | 12.5 | 15.0 | 18.8 | 22.6 | 28.2 | 30 | 30 | 30 | 30 | 30 |
| | Starting | 1.4 | 1.7 | 2.3 | 2.8 | 3.5 | 4.2 | 5.2 | 6.2 | 7.5 | 10.4 | 12.5 | 15.0 | 18.8 | 22.6 | 28.2 | 30 | 30 | 30 | 30 | 30 |

● Enter the gear ratio in the box (□) within the model name.

● The speed is calculated by dividing the motor's synchronous speed (50 Hz: 1500 r/min, 60 Hz: 1800 r/min) by the gear ratio.

The actual speed is 2-20% less than the displayed value, depending on the load.

Permissible Overhung Load and Permissible Thrust Load

| Model | Gear Ratio | Permissible Overhung Load | | Permissible Thrust Load N |
|-------------|------------|---------------------------|---------------------------|------------------------------|
| | | 10 mm from Shaft End N | 20 mm from Shaft End N | |
| FPW425 Type | 3~18 | 100 | 150 | 50 |
| | 25~180 | 200 | 300 | |
| FPW540 Type | 3~18 | 250 | 350 | 100 |
| | 25~180 | 300 | 450 | |
| FPW560 Type | 3~9 | 400 | 500 | 150 |
| | 12.5~18 | 450 | 600 | |
| | 25~180 | 500 | 700 | |
| FPW690 Type | 3~9 | 550 | 800 | 200 |
| | 12.5~180 | 650 | 1000 | |

Permissible Load Inertia: J

Unit = J × 10⁻⁴ kg·m²

| Model | Gear Ratio | 3 | 3.6 | 5 | 6 | 7.5 | 9 | 12.5 | 15 | 18 | 25 | 30 | 36 | 50 | 60 | 75 | 90 | 100 | 120 | 150 | 180 | |
|-------------|------------|------|------|------|------|------|------|------|------|-----|------|------|------|------|------|------|------|------|------|------|------|------|
| FPW425 Type | | 2.79 | 4.02 | 7.75 | 11.2 | 17.4 | 25.1 | 48.4 | 69.8 | 100 | 194 | 279 | 402 | 775 | 775 | 775 | 775 | 775 | 775 | 775 | 775 | 775 |
| FPW540 Type | | 6.75 | 9.72 | 18.8 | 27 | 42.2 | 60.8 | 117 | 169 | 243 | 469 | 675 | 972 | 1875 | 1875 | 1875 | 1875 | 1875 | 1875 | 1875 | 1875 | 1875 |
| FPW560 Type | | 9.9 | 14.3 | 27.5 | 39.6 | 61.9 | 89.1 | 172 | 248 | 356 | 688 | 990 | 1426 | 2750 | 2750 | 2750 | 2750 | 2750 | 2750 | 2750 | 2750 | 2750 |
| FPW690 Type | | 18 | 25.9 | 50 | 72 | 113 | 162 | 313 | 450 | 648 | 1250 | 1800 | 2592 | 5000 | 5000 | 5000 | 5000 | 5000 | 5000 | 5000 | 5000 | 5000 |

Dimensions (Unit = mm)

- Mounting screws are included with the motor. Dimensions for mounting screws → Page A-246
- Enter the gear ratio in the box (□) within the model name.

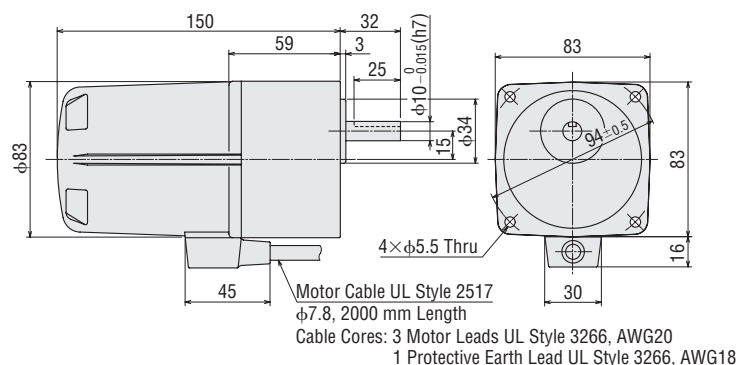
● 25 W

◇ Geared Motors

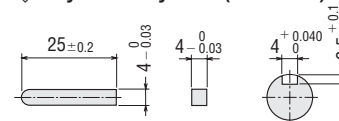
FPW425C2-□E, FPW425S2-□

Motor: FPW425C2-□, FPW425S2-□

Mass: 3.0 kg



◇ Key and Key Slot (Included)



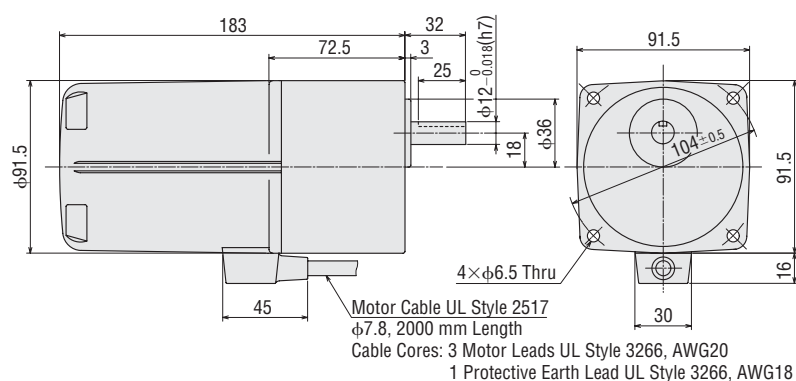
● 40 W

◇ Geared Motors

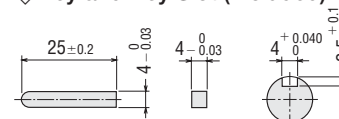
FPW540C2-□E, FPW540S2-□

Motor: FPW540C2-□, FPW540S2-□

Mass: 4.0 kg



◇ Key and Key Slot (Included)



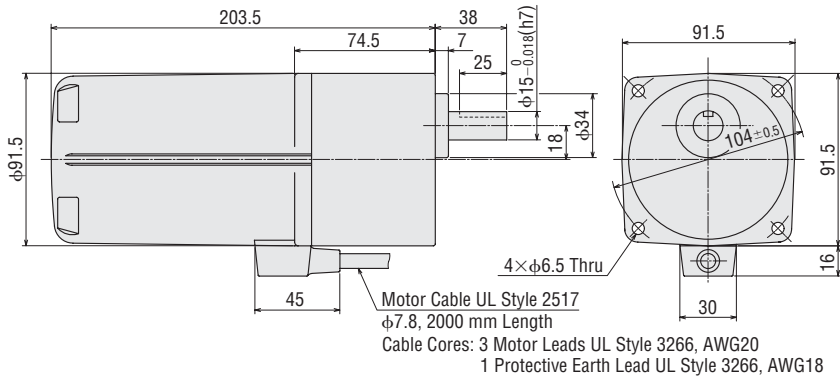
● 60 W

◇ Geared Motors

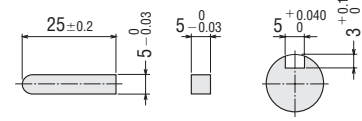
FPW560C2-□E, FPW560S2-□

Motor: FPW560C2-□, FPW560S2-□

Mass: 5.0 kg



◇ Key and Key Slot (Included)



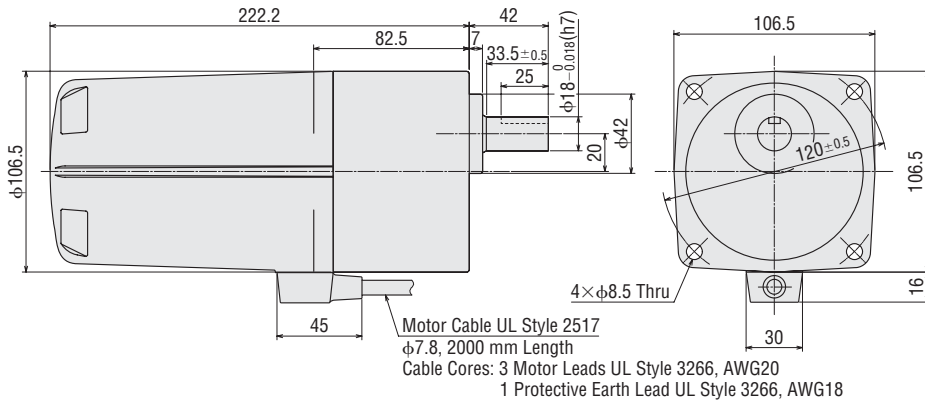
● 90 W

◇ Geared Motors

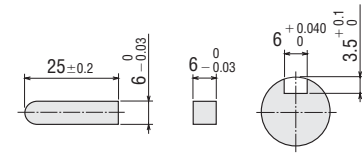
FPW690C2-□E, FPW690S2-□

Motor: FPW690C2-□, FPW690S2-□

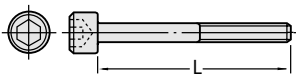
Mass: 7.5 kg



◇ Key and Key Slot (Included)



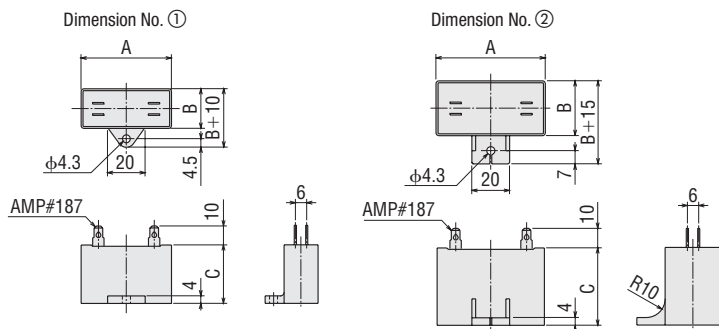
◇ Mounting Screws (Included) (Material: Stainless steel)



| | Length: L (mm) | Size |
|--------------------|----------------|----------|
| FPW425 Type | 80 | M5 P0.8 |
| FPW540 Type | 90 | M6 P1.0 |
| FPW560 Type | 90 | M6 P1.0 |
| FPW690 Type | 100 | M8 P1.25 |

● 4 flat washers and hexagonal nuts are included.

◇ Capacitor (Included with single-phase motors)



◇ Capacitor Dimensions (mm)

| Model | Capacitor Model | A | B | C | Mass (g) | Dimension No. |
|---------------------|-----------------|----|------|----|----------|---------------|
| FPW425C2 -□E | CH15BFAUL | 38 | 21 | 31 | 35 | ① |
| FPW540C2 -□E | CH23BFAUL | 48 | 21 | 31 | 40 | ① |
| FPW560C2 -□E | CH30BFAUL | 58 | 21 | 31 | 50 | ① |
| FPW690C2 -□E | CH45BFAUL | 58 | 23.5 | 37 | 73 | ② |

- A capacitor cap is included with a capacitor.
- Enter the gear ratio in the box (□) within the model name.

■ Connection and Operation

- The direction of motor rotation is as viewed from the shaft end of the motor. CW represents the clockwise direction, while CCW represents the counterclockwise direction.
- The connection method varies with the output power or the gear ratio.
- For added safety, it is advisable to use a ground fault interrupt circuit in situations where the motor is likely to get wet during operation.

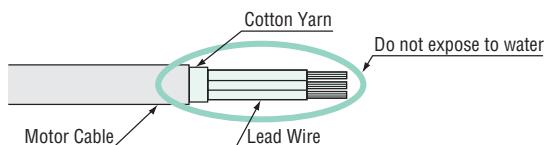
| | Single-Phase 220/230 VAC | | Three-Phase 200/220/230 VAC | |
|--------------|---|--|---|---|
| 25 W 40 W | Gear Ratio 3~18 50~180 | Gear Ratio 25~36 | Gear Ratio 3~18 50~180 | Gear Ratio 25~36 |
| 60 W | Gear Ratio 3~9 25~60 | Gear Ratio 12.5~18 75~180 | Gear Ratio 3~9 25~60 | Gear Ratio 12.5~18 75~180 |
| 90 W | Gear Ratio 3~9 50~180 | Gear Ratio 12.5~36 | Gear Ratio 3~9 50~180 | Gear Ratio 12.5~36 |
| | Clockwise | Clockwise | Clockwise | Clockwise |
| | Counterclockwise | Counterclockwise | Counterclockwise To change the rotation direction, change any two connections between R, S and T. | Counterclockwise To change the rotation direction, change any two connections between R, S and T. |

Note:

- Change the direction of single-phase motor rotation only after bringing the motor to a stop. If an attempt is made to change the direction of rotation while the motor is rotating, motor may ignore reversing command or change its direction of rotation after some delay.
- How to connect a capacitor → Page A-247

● Wiring Precautions

The terminals of the motor cable are not waterproofed. Be sure not to splash water on the terminal, otherwise water could seep inside the motor through the lead wire or the cotton yarn, resulting in damage to the motor.



Standard AC Motors

Accessories

| | <u>Page</u> |
|--|-------------|
| Motor/Gearhead Mounting Brackets..... | A-230 |
| Flexible Couplings | A-233 |
| External Speed Potentiometer..... | A-237 |
| Power Relay Box for Watertight Type..... | A-237 |
| Extension Cable for Watertight Type..... | A-238 |
| Extension Cables..... | A-238 |
| Connection Cables | A-239 |
| Front Cover..... | A-239 |
| Noise Filter | A-240 |
| CR Circuit for Surge Suppression | A-240 |

Accessories

Motor/Gearhead Mounting Brackets RoHS

Dedicated mounting Brackets for attaching and securing a motor and gearhead. They are high-strength type, which can be used with high power motor and gearhead. These brackets come with tapped holes. To mount the motor and gearhead, simply fasten with the screws provided to the gearhead. To mount the motor alone, mounting screws must be purchased separately.

Please note that these mounting brackets cannot be used with the following products:

- Right-angle gearheads (**RH** type, **RA** type)
- Right-angle shaft type (**BH** Series)
- Watertight, dust-resistant motors
- Hollow shaft flat gearhead (**GFS2G**□**FR**, **GFS4G**□**FR**, **GFS5G**□**FR**)
- **GFS6G**□



■ For Motor Frame Size: □42 mm

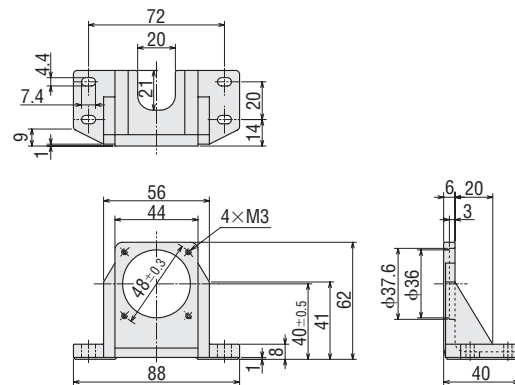
● Model: **SOLOM3**

Mass: 85 g Material: Aluminum alloy

◇ Applicable Products

BLH Series Round shaft type
Frame size 42 mm motor

● Dimensions (Unit = mm)



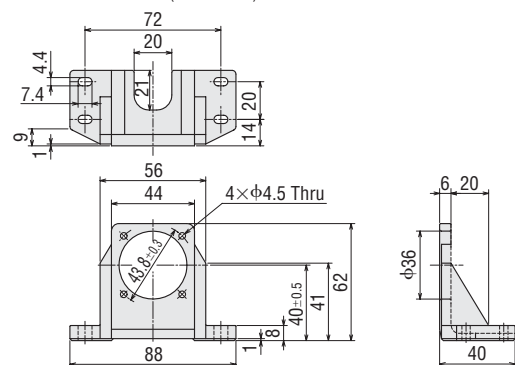
● Model: **SOLOB**

Mass: 85 g Material: Aluminum alloy

◇ Applicable Products

BLH Series Geared motor

● Dimensions (Unit = mm)



■ For Motor Frame Size: □60 mm

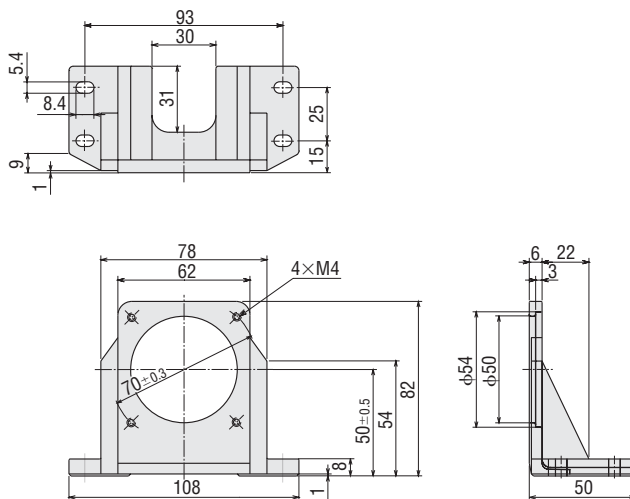
● Model: **SOL2M4**

Mass: 135 g Material: Aluminum alloy

◇ Applicable Products

- 2GN gearhead
- GFS2G gearhead
- Frame size 60 mm motor

● Dimensions (Unit = mm)



■ For Motor Frame Size: □70 mm

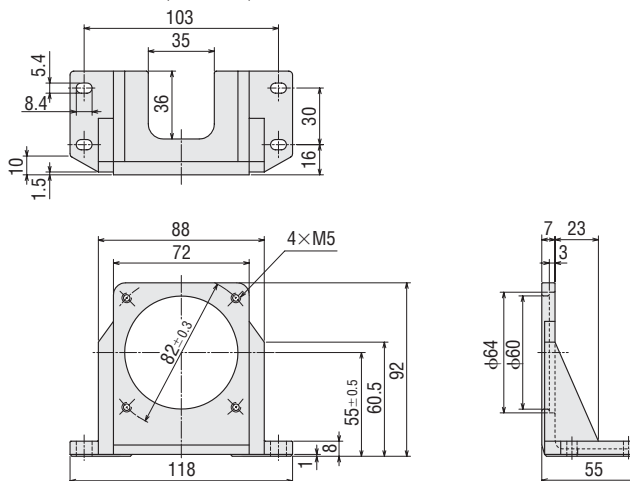
● Model: **SOL3M5**

Mass: 175 g Material: Aluminum alloy

◇ Applicable Products

- 3GN gearhead
- Frame size 70 mm motor

● Dimensions (Unit = mm)



■ For Motor Frame Size: □80 mm

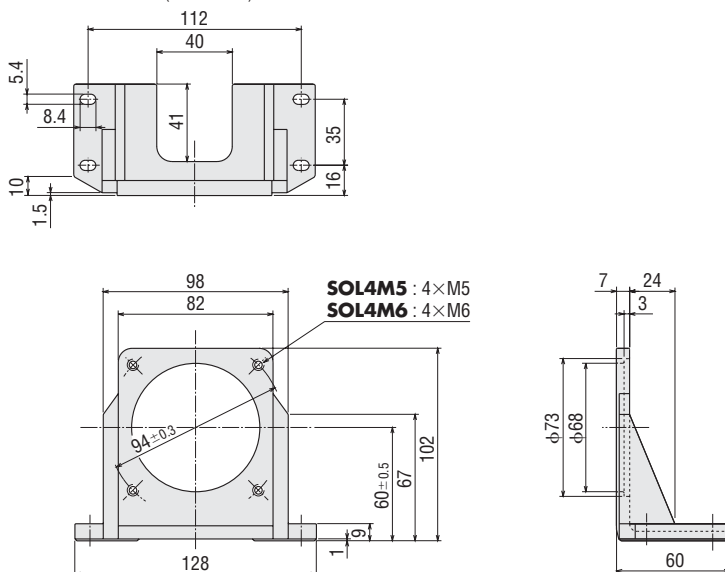
● Model: **SOL4M5, SOL4M6**

Mass: 210 g Material: Aluminum alloy

◇ Applicable Products

- **SOL4M5**
4GN gearhead
For standard AC motors with a frame size 80 mm
- **SOL4M6**
GFS4G gearhead
For brushless DC motors with a frame size 80 mm

● Dimensions (Unit = mm)



■ For Motor Frame Size: □ 90 mm

● Model: **SOL5M6, SOL5M8**

Mass: 270 g Material: Aluminum alloy

◇ Applicable Products

● **SOL5M6**

5GN gearhead

5GE gearhead

5GU□KB gearhead

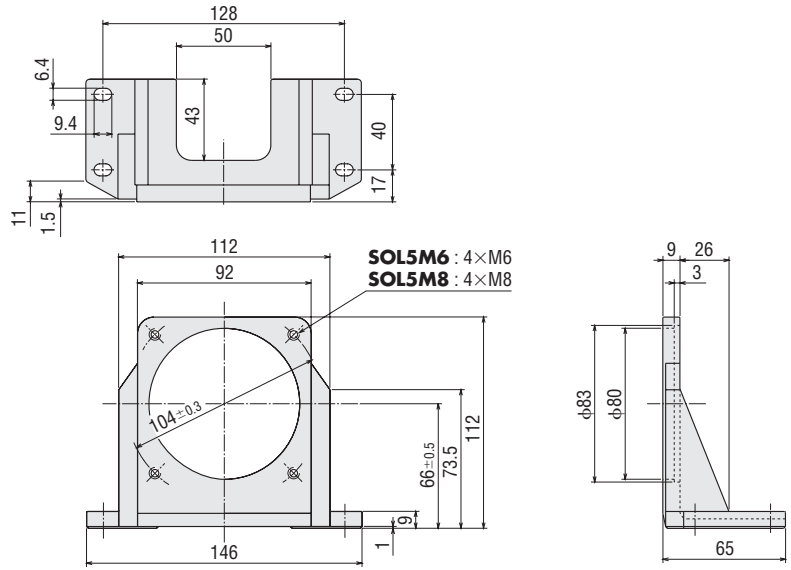
For standard AC motors with a frame size 90 mm

● **SOL5M8**

GFS5G gearhead

For brushless DC motors with a frame size 90 mm

● Dimensions (Unit = mm)



■ For Motor Frame Size: □ 104 mm

● Model: **SOL6M8**

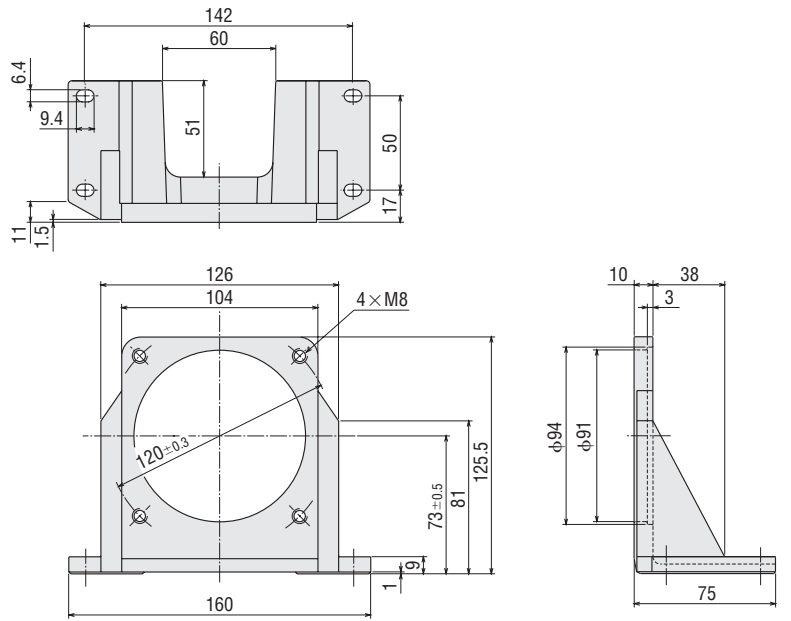
Mass: 380 g Material: Aluminum alloy

◇ Applicable Products

BH Series

BLF Series Round shaft type

● Dimensions (Unit = mm)



Flexible Couplings RoHS

These products are clamp type couplings to connect motor or gearhead shaft to the shaft of the equipment to be connected. Once the motor or gearhead are determined, the coupling can be selected.



Features

- Couplings come with shaft holes and have standardized combinations for different diameter shaft holes.
- Characteristics are the same for clockwise and counterclockwise rotation.
- Oil-resistant and electrically insulated
- Aluminum alloy construction
- The driven shaft is not damaged, since shafts are joined by clamping.
- Easy installation due to a separated hub and sleeve design

Selecting a Flexible Coupling

Once you decide on a motor or gearhead and the shaft diameter of the equipment to be connected, you can select the proper flexible coupling to use. **MCL** couplings are available in external diameter that provide the strength required for the torque of motor or gearhead.

Example **MCL 30 10 12**

Inner Diameter d1 Inner Diameter d2

- For uniform load, when the gearhead is **4GN□S** (shaft outer diameter of $\phi 10$ mm) and the shaft diameter of the equipment to be connected is $\phi 12$ mm, use **MCL301012**.
- For impact-applied use, when the gearhead is **4GN□S** (shaft outer diameter of $\phi 10$ mm) and the shaft diameter of the equipment to be connected is $\phi 12$ mm, use **MCL401012**.

Product Number Code

MCL 40 12 15

① ② ③ ④

| | | |
|---|--|---|
| ① | Flexible Coupling | |
| ② | Outer Diameter of Coupling | 20: $\phi 20$ mm ~ 65: $\phi 65$ mm |
| ③ | Inner Diameter d1 (Small Inner Diameter) | 05: $\phi 5$ mm ~ 25: $\phi 25$ mm |
| ④ | Inner Diameter d2 (Large Inner Diameter) | 05: $\phi 5$ mm ~ 25: $\phi 25$ mm |

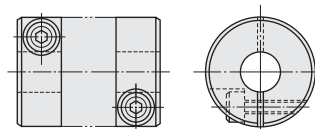
● Details of applicable products → Page A-234

Mounting on a Shaft

The **MCL** couplings are clamp type for mounting the flexible coupling to the shaft.

Clamp Type

Clamp type couplings use the binding force of the screw to compress the axis hole diameter and thereby fasten the coupling to the shaft. This does not damage the shaft and is easy to mount and remove. The following table shows the screw tightening torque. And, the use of a torque wrench is recommended for tightening.



| Type | *MCL20 | MCL30 | MCL40 | MCL55 | MCL65 |
|--|--------|-------|-------|-------|-------|
| Tightening torque [N·m] | 1 | 2.5 | 12 | 25 | 50 |
| Tightening torque of key press screw [N·m] | 0.7 | 1.7 | 1.7 | 1.7 | 4 |

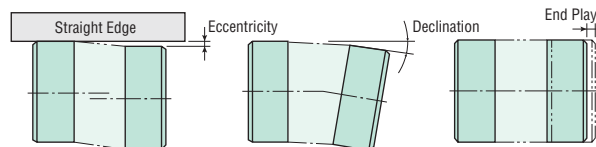
* The screws for holding shaft flat are used for **MCL20** Type.

Alignment Adjustment

Flexible couplings tolerate misalignment of the axis center and transfer rotation angle and torque, but produce vibration when the permissible value for misalignment is exceeded. This can dramatically shorten the life of coupling. Be sure to adjust the alignment.

Misalignment of the axis center includes eccentricity (parallel error of both centers), declination (angle error of both centers) and end play (shaft movement in the axial direction). To keep misalignment within the permissible value, always check and adjust the alignment.

To increase the life of the coupling, we recommend keeping misalignment to below 1/3 of the permissible value.



Notes:

- Misalignment or excessive torque beyond the permissible values will deform the coupling and shorten its life.
- If you hear a strange metallic noise from the coupling while operating, stop the motor immediately and check for misalignment, shaft interference, loose screws or the like.
- When the load fluctuates substantially, paint adhesive over the screws or switch to a larger coupling diameter. This helps to prevent coupling screws from coming loose.
- When using couplings that have no key slot, as on the **MCL20**, **MCL30**, etc., fasten clamping screws before fastening set screws.
- Only use the screws specified by Oriental Motor. Other screws may damage the couplings.
- Do not bring fingers or hands into contact with an operating coupling as injury may result. Always use protective covers to prevent accidents. Also, install safety systems that stop motor rotation as soon as the protective cover is opened.
- Always be sure the power is off during installation. Should the drive unit accidentally start running, injury can occur by being drawn into the device. Always check that main power supply of the device is off before installation.

■ Applicable Products

Couplings are also available for round shaft motors if a shaft diameter matches.

□: For uniform load □: For impact load □: Common use of uniform load and impact load

| Gearhead Model | | Gearhead Output Shaft Outer Diameter mm | Applicable Shaft Diameter to be Connected mm | | | | | | | | | | | Coupling Type | Nominal Torque N·m | Mass g | Outer Diameter mm | Length mm | | | |
|--|--|--|--|----|----|-----|-----|-----|-----|-----|-----|-----|-----|---------------|-----------------------|-----------|----------------------|--------------|-----|-----|------|
| Uniform Load | Impact Load | | φ5 | φ6 | φ8 | φ10 | φ12 | φ14 | φ15 | φ16 | φ18 | φ20 | φ22 | | | | | | φ25 | | |
| 2GN□S | | φ8 | | | | | | | | | | | | | | | MCL20 | 5 | 19 | φ20 | 29 |
| | 2GN□S | φ8 | | | | | | | | | | | | | | | | | | | |
| 3GN□S 4GN□S 4GN□RA GFS2G□ | 3GN□S GFS2G□ | φ10 | | | | | | | | | | | | | | | MCL30 | 12.5 | 66 | φ30 | 43.5 |
| 5GN□S 5GN□RA | | φ12 | | | | | | | | | | | | | | | | | | | |
| | 4GN□S 4GN□RA | φ10 | | | | | | | | | | | | | | | MCL40 | 25 | 150 | φ40 | 64 |
| | 5GN□S 5GN□RA | φ12 | | | | | | | | | | | | | | | | | | | |
| 5GE□S 5GU□KB 5GE□RA 5GU□RA GFS4G□ | | φ15 | | | | | | | | | | | | | | | MCL55 | 60 | 350 | φ55 | 76 |
| | 5GE□S 5GU□KB 5GE□RA 5GU□RA GFS4G□ | φ15 | | | | | | | | | | | | | | | | | | | |
| GFS5G□ BH6G2-□ | GFS5G□ | φ18 | | | | | | | | | | | | | | | MCL65 | 160 | 570 | φ65 | 87.5 |
| | BH6G2-□ | φ18 | | | | | | | | | | | | | | | | | | | |
| BH6G2-□RA GFS6G□ | BH6G2-□RA GFS6G□ | φ22 | | | | | | | | | | | | | | | | | | | |

● The load in this table are of common use. Check the specifications values of each coupling for details.

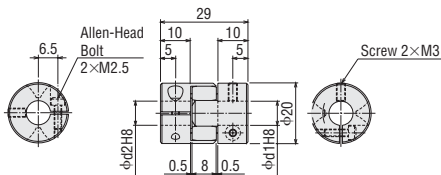
Specifications

| Model | Dimension | | | | Nominal Torque [N·m] | Mass [g] | Moment of Inertia J ($\times 10^{-4}$ kg·m ²) | Permissible Eccentricity [mm] | Permissible Declination [°] | End Play [mm] |
|---|------------------------|----------------|--------------------------------|--------------------------------|-------------------------|-------------|---|----------------------------------|--------------------------------|------------------|
| | Outer Diameter [mm] | Length [mm] | Shaft Hole Diameter d1 [mm] | Shaft Hole Diameter d2 [mm] | | | | | | |
| MCL200505 MCL200506 MCL200508 MCL200606 MCL200608 MCL200808 | φ20 | 29 | 5 | 5 | 5.0 | 19 | 0.01 | 0.15 | 1.0 | +0.8 0 |
| 5 | | | 6 | | | | | | | |
| 5 | | | 8 | | | | | | | |
| 6 | | | 6 | | | | | | | |
| 6 | | | 8 | | | | | | | |
| 8 | | | 8 | | | | | | | |
| MCL300808 MCL300810 MCL300812 MCL301010 MCL301012 MCL301212 | φ30 | 43.5 | 8 | 8 | 12.5 | 66 | 0.083 | 0.2 | 1.0 | +1.0 0 |
| 8 | | | 10 | | | | | | | |
| 8 | | | 12 | | | | | | | |
| 10 | | | 10 | | | | | | | |
| 10 | | | 12 | | | | | | | |
| 12 | | | 12 | | | | | | | |
| MCL401010 MCL401012 MCL401014 MCL401015 MCL401016 MCL401212 MCL401214 MCL401215 MCL401216 MCL401414 MCL401415 MCL401416 MCL401515 MCL401516 MCL401616 | φ40 | 64 | 10 | 10 | 25.0 | 150 | 0.36 | 0.2 | 1.0 | +1.2 0 |
| 10 | | | 12 | | | | | | | |
| 10 | | | 14 | | | | | | | |
| 10 | | | 15 | | | | | | | |
| 10 | | | 16 | | | | | | | |
| 12 | | | 12 | | | | | | | |
| 12 | | | 14 | | | | | | | |
| 12 | | | 15 | | | | | | | |
| 12 | | | 16 | | | | | | | |
| 14 | | | 14 | | | | | | | |
| 14 | | | 15 | | | | | | | |
| 14 | | | 16 | | | | | | | |
| 15 | | | 15 | | | | | | | |
| 15 | | | 16 | | | | | | | |
| 16 | | | 16 | | | | | | | |
| MCL551515 MCL551516 MCL551518 MCL551520 MCL551525 MCL551616 MCL551618 MCL551620 MCL551625 MCL551818 MCL551820 MCL551825 | | | φ55 | 76 | | | | | | |
| 15 | 16 | | | | | | | | | |
| 15 | 18 | | | | | | | | | |
| 15 | 20 | | | | | | | | | |
| 15 | 25 | | | | | | | | | |
| 16 | 16 | | | | | | | | | |
| 16 | 18 | | | | | | | | | |
| 16 | 20 | | | | | | | | | |
| 16 | 25 | | | | | | | | | |
| 18 | 18 | | | | | | | | | |
| 18 | 20 | | | | | | | | | |
| 18 | 25 | | | | | | | | | |
| MCL651515 MCL651516 MCL651518 MCL651520 MCL651525 MCL651616 MCL651618 MCL651620 MCL651625 MCL651818 MCL651820 MCL651825 MCL652022 MCL652222 MCL652225 | φ65 | 87.5 | 15 | 15 | 160 | 570 | 3.7 | 0.2 | 1.0 | +1.5 0 |
| 15 | | | 16 | | | | | | | |
| 15 | | | 18 | | | | | | | |
| 15 | | | 20 | | | | | | | |
| 15 | | | 25 | | | | | | | |
| 16 | | | 16 | | | | | | | |
| 16 | | | 18 | | | | | | | |
| 16 | | | 20 | | | | | | | |
| 16 | | | 25 | | | | | | | |
| 18 | | | 18 | | | | | | | |
| 18 | | | 20 | | | | | | | |
| 18 | | | 25 | | | | | | | |
| 20 | | | 22 | | | | | | | |
| 22 | | | 22 | | | | | | | |
| 22 | | | 25 | | | | | | | |

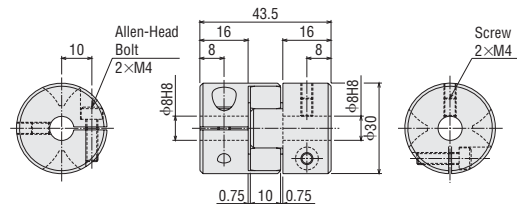
● The specifications above are the values when combined with Oriental Motor's motor or gearhead.

Dimensions (Unit = mm)

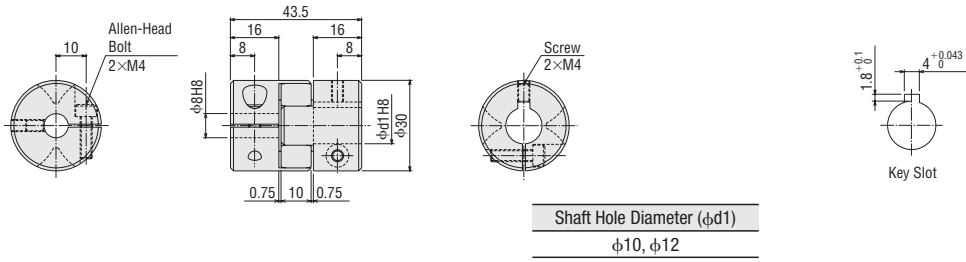
MCL20 type



MCL300808

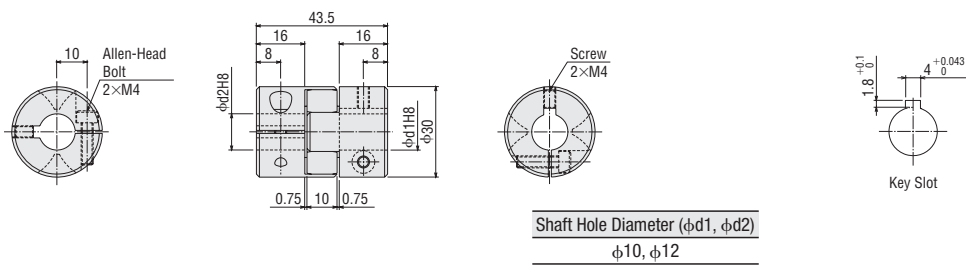


MCL300810
MCL300812



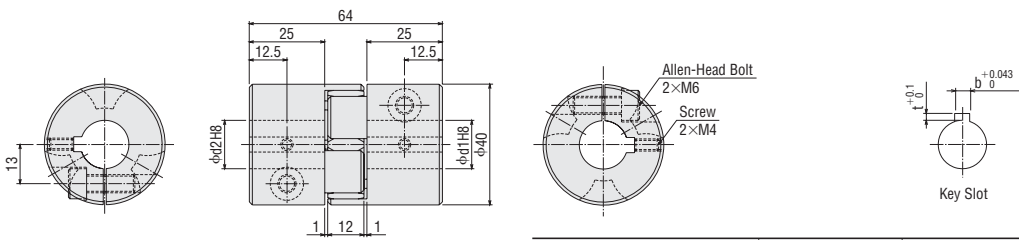
Shaft Hole Diameter ($\phi d1$)
 $\phi 10, \phi 12$

MCL301010
MCL301012
MCL301212



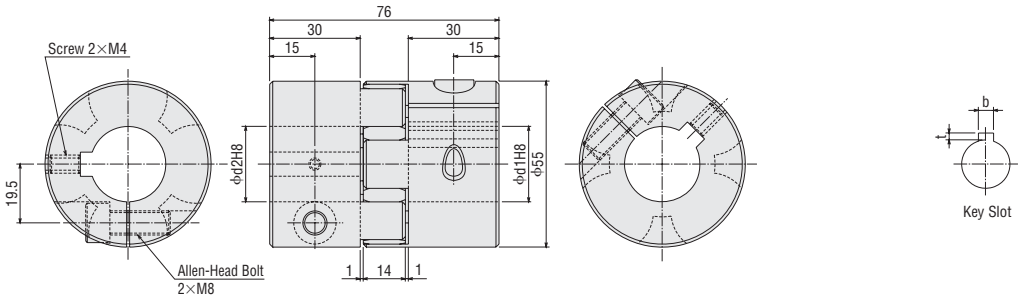
Shaft Hole Diameter ($\phi d1, \phi d2$)
 $\phi 10, \phi 12$

MCL40 type



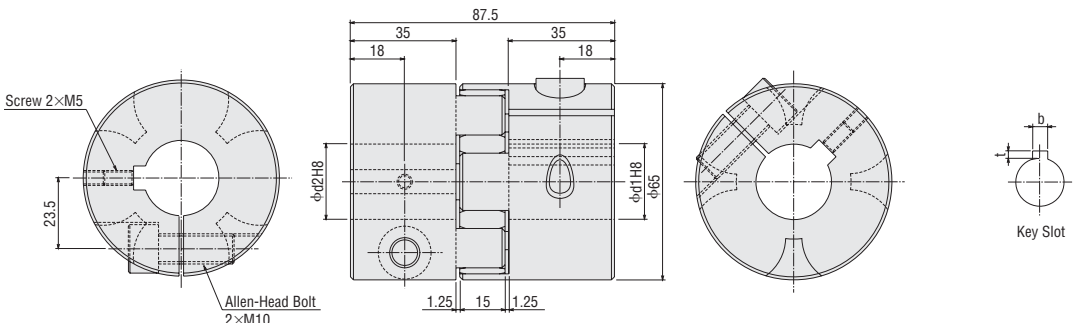
| Shaft Hole Diameter ($\phi d1, \phi d2$) | Key Slot Width b | Key Slot Length t |
|--|------------------|-------------------|
| $\phi 10, \phi 12$ | 4 | 1.8 |
| $\phi 14, \phi 15, \phi 16$ | 5 | 2.3 |

MCL55 type



| Shaft Hole Diameter ($\phi d1, \phi d2$) | Key Slot Width b | Key Slot Length t |
|--|------------------|-------------------|
| $\phi 15, \phi 16$ | $5^{+0.043}_0$ | $2.3^{+0.1}_0$ |
| $\phi 18, \phi 20$ | $6^{+0.052}_0$ | $2.8^{+0.1}_0$ |
| $\phi 25$ | $8^{+0.052}_0$ | $3.3^{+0.2}_0$ |

MCL65 type



| Shaft Hole Diameter ($\phi d1, \phi d2$) | Key Slot Width b | Key Slot Length t |
|--|------------------|-------------------|
| $\phi 15, \phi 16$ | $5^{+0.043}_0$ | $2.3^{+0.1}_0$ |
| $\phi 18, \phi 20, \phi 22$ | $6^{+0.052}_0$ | $2.8^{+0.1}_0$ |
| $\phi 25$ | $8^{+0.052}_0$ | $3.3^{+0.2}_0$ |

External Speed Potentiometer RoHS

- Model: **PAVR-20KZ**
(20 k Ω 1/4 W, with a linear resistance vs. angle curve)

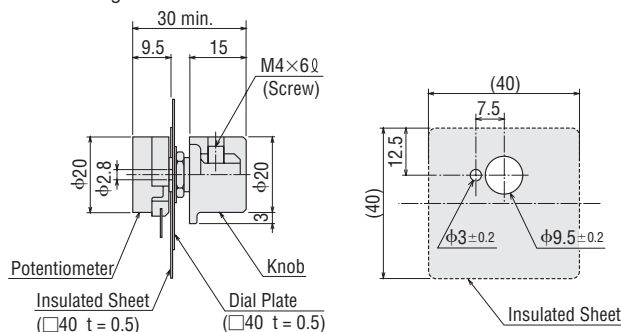


- ◇ Applicable Products
ES02
BLF Series
BLH Series

Note:

- One set of this external speed potentiometer is included with **ES02**.
External speed potentiometer is not included with **BLF** Series and **BLH** Series.
The external speed potentiometer is used for control involving multiple speed settings.

- Dimensions (Unit = mm)
Mass: 20 g



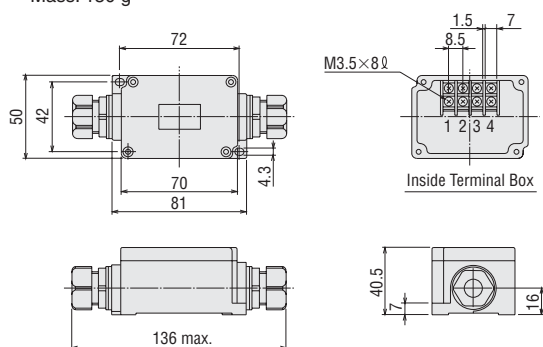
Recommended thickness of a mounting plate is a maximum 4.5 mm.

Power Relay Box for Watertight Type RoHS

- Model: **TB4-0608** (4-Terminal Type)



- Dimensions (Unit = mm)
Mass: 150 g



- ◇ Applicable Motors
FPW Series
BH Series

Applicable cable diameter: $\phi 6.5 \sim \phi 8.5$ mm

- The power relay box conforms to IP65 only when used with an extension cable for watertight type for **FPW** Series. (Does not conform to IP65 when used with **BH** Series.)

Screws for the sealed connector and the cover of power relay box should be adjusted to the torque shown below.

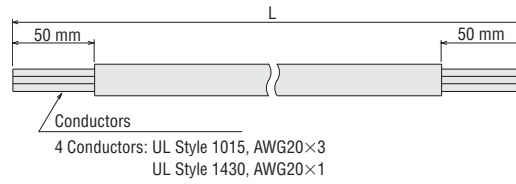
| | |
|--------------------------|---------------|
| Sealed connector | 1.0~1.5 N·m |
| Cover of power relay box | 0.54~0.66 N·m |

- This product can be used with lead wire type. However, they are not watertight. Also, note that lead wires cannot be fixed with the sealed connectors.

Extension Cable for Watertight Type RoHS

Use with the power relay box for watertight type. An extension of 5 m and 10 m is possible.

| Number of Conductors | Model | Applicable Product | Cable Length: L (m) |
|----------------------|------------------|--------------------|---------------------|
| 4 Conductors | CC05AC43P | BH Series | 5 |
| | CC10AC43P | FPW Series | 10 |



Specifications

Conductor construction: Refer to the dimension on the right

Finished outer diameter: $\phi 7.8$

Outer casing: Heat-resistant vinyl chloride

Extension Cables

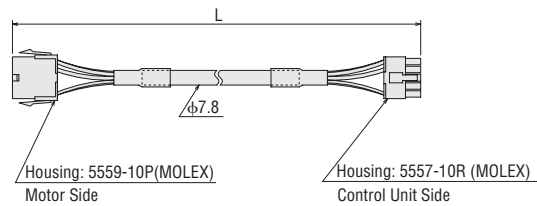
Cables for US Series RoHS

Extension cable for connecting **US** Series motor and control unit. Two types are available, depending on the motor output power. The maximum extension length is 4.75 m.

Applicable Motors

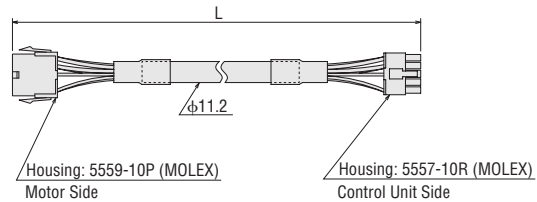
◇ **US206, US315, US425** and **US540** types

| Model | Cable Length: L (m) |
|-----------------|---------------------|
| CC01SU05 | 1 |
| CC02SU05 | 2 |
| CC03SU05 | 3 |
| CC04SU05 | 4 |



◇ **US560** and **US590** types

| Model | Cable Length: L (m) |
|-----------------|---------------------|
| CC01SU07 | 1 |
| CC02SU07 | 2 |
| CC03SU07 | 3 |
| CC04SU07 | 4 |



Note:

- These cables are for exclusive use with RoHS-Compliant. They cannot be connected to **US** Series that do not conform to RoHS Directive, as the connector is different.

Connection Cables RoHS

This cable is needed when connecting the motor and inverter (**FE100/FE200**) or extending their wiring length.

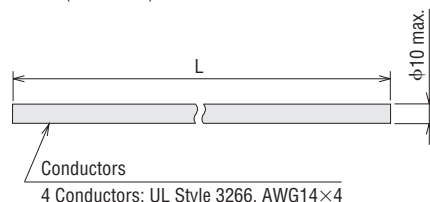
● **Applicable Products**

◇ **FE100/FE200**

| Model | Cable Length: L (m) |
|-----------------|---------------------|
| CC01AC04 | 1 |
| CC02AC04 | 2 |
| CC03AC04 | 3 |
| CC05AC04 | 5 |
| CC10AC04 | 10 |
| CC20AC04 | 20 |



● **Dimensions** (Unit = mm)

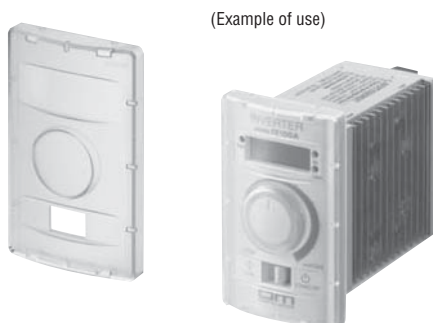


Front Cover RoHS

A clear cover placed over the front panel of inverter **FE100/FE200**. This cover prevents accidental contact with the speed potentiometer and resulting shift in the set speed. The front cover is not waterproof.

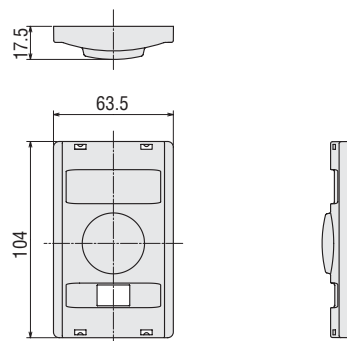
● **Model: PAFC01**

◇ **Applicable Product**
FE100/FE200



● **Dimensions** (Unit = mm)

Mass: 10 g



Noise Filter RoHS

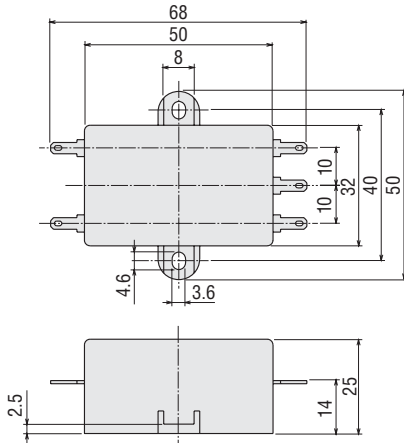
The noise filter can be used to reduce electrical noise generated by speed controller and brake pack.

● **Model: ZCB2203-11S**

250 VAC 3A

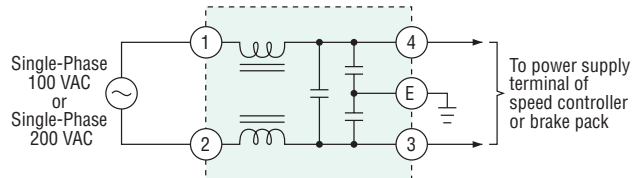
● **Dimensions** (Unit = mm)

Mass: 55 g

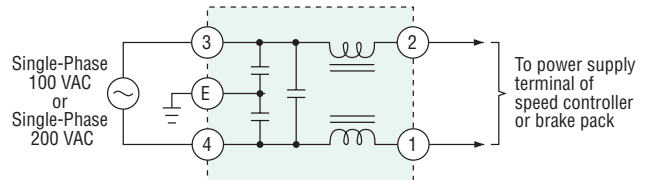


● **Connecting Method**

1. Protection from external noise



2. Prevention of noise generation

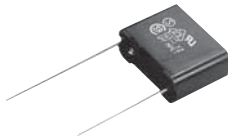


CR Circuit for Surge Suppression RoHS

This product is used to protect the contacts of the relay or switch used in the bi-directional circuit section or the instantaneous stop circuit section of a motor.

● **Model: EPCR1201-2**

250 VAC (120 Ω, 0.1 μF)



● **Dimensions** (Unit = mm)

Mass: 5 g

