

Standard AC Motors

Watertight, Dust-Resistant Motors

Overview,
Product
Series

Constant
Speed
Motors

Single-Phase
Induction
Motors

Three-Phase
Induction
Motors

Reversible
Motors

Electromagnetic
Brake Motors

Torque
Motors

**Watertight,
Dust-Resistant Motors**

Watertight,
Dust-Resistant
Motors

Brake Pack

Accessories

Installation

Watertight, Dust-Resistant Motors

FPW Series

Induction Type



- Geared motors that conform to IEC Standard IP67.
- Suitable for use in locations where the equipment is splashed or needs to be washed with water periodically.
- Output powers of 25 W, 40 W, 60 W and 90 W are available.

Features

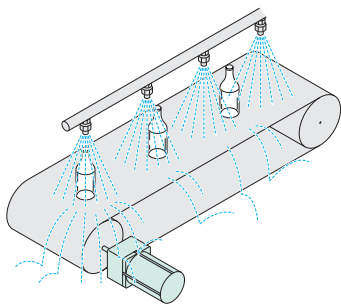
● Watertight and Dust-Resistant Performance IP67

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.

- Not available 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 IEC 60034-5.

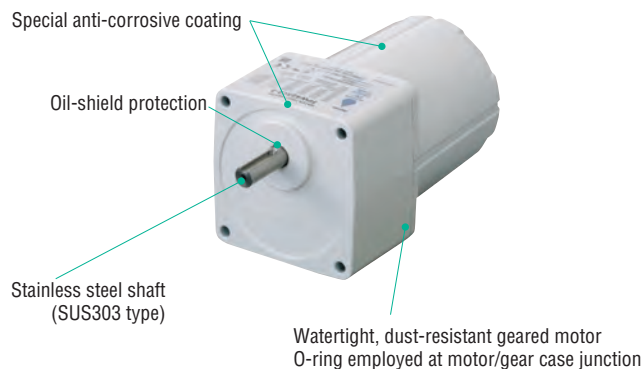
FPW Series recognized by UL conforms to IP67 (UL File No. E166348).



● Improved Anti-Corrosion Properties

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

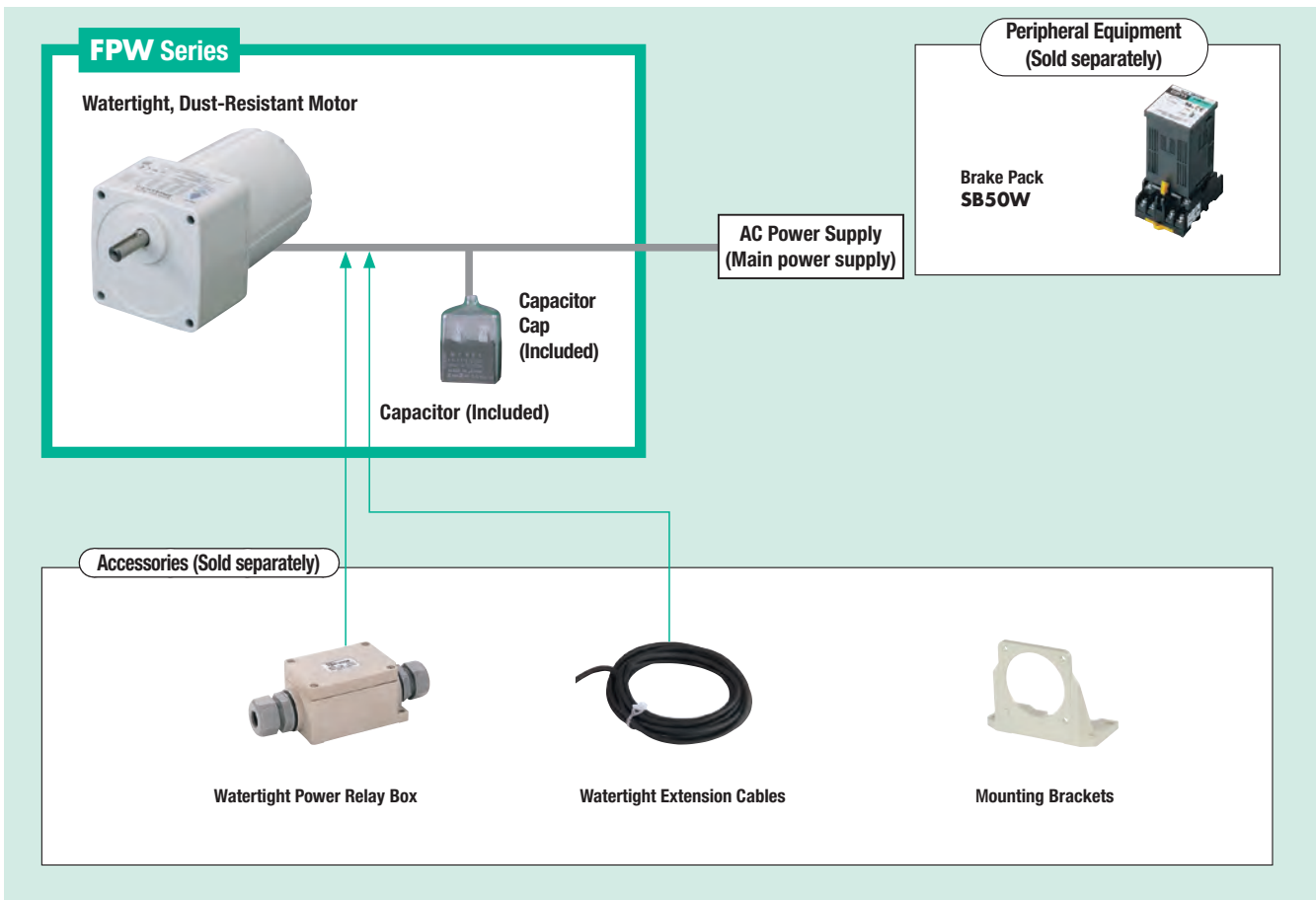
● Designed and Constructed for Watertight and Dust-Resistance



● Conforms to 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).

System Configuration



System Configuration Example

FPW Series Geared Motor FPW425C2-25E	+	Sold Separately	
		Watertight Power Relay Box TB4-0608	Watertight Extension Cable (5 m) CC05AC43P

- 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

FPW 4 25 C 2 - 15 E

① ② ③ ④ ⑤ ⑥ ⑦

①	Series Name	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	C: Single-Phase 220/230 VAC S: Three-Phase 200/220/230 VAC
⑤	RoHS Directive-Compliant	2: RoHS Directive-Compliant
⑥	Gear Ratio	
⑦	Included Capacitor	E: Capacitor for Single-Phase 220/230 VAC

- The product name listed on the motor nameplate does not include the code **(E)** that indicates the type of capacitor. Certification regarding various safety standards is acquired for the product name on the motor nameplate, please visit www.orientalmotor.eu.
(Example) Product Name: **FPW425C2-15E**
→ Motor nameplate and product approved under various safety standards:
FPW425C2-15

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Installation

Product Line

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.

Output Power	Power Supply Voltage	Product Name	Gear Ratio
25 W	Single-Phase 220/230 VAC	FPW425C2-□E	3 - 18
			25 - 36
			50 - 180
	Three-Phase 200 VAC Three-Phase 220/230 VAC	FPW425S2-□	3 - 18
			25 - 36
			50 - 180
40 W	Single-Phase 220/230 VAC	FPW540C2-□E	3 - 18
			25 - 36
			50 - 180
	Three-Phase 200 VAC Three-Phase 220/230 VAC	FPW540S2-□	3 - 18
			25 - 36
			50 - 180

Output Power	Power Supply Voltage	Product Name	Gear Ratio
60 W	Single-Phase 220/230 VAC	FPW560C2-□E	3 - 9
			12.5 - 18
			25 - 60
	Three-Phase 200 VAC Three-Phase 220/230 VAC	FPW560S2-□	3 - 9
			12.5 - 18
			25 - 60
90 W	Single-Phase 220/230 VAC	FPW690C2-□E	3 - 9
			12.5 - 36
			50 - 180
	Three-Phase 200 VAC Three-Phase 220/230 VAC	FPW690S2-□	3 - 9
			12.5 - 36
			50 - 180

The following items are included in each product.
 Motor, Capacitor*, Capacitor Cap*, Mounting Screws, Parallel Key, Operating Manual
 *Single-phase motors only

Specifications – Continuous Rating



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

TP: This indicates that there is 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 power supply off before inspecting.

● The values for each specification are the characteristics for when there is only a motor.

● A number indicating the gear ratio is entered where the box □ is located within the product name.

General Specifications

Item	Specifications
Insulation Resistance	The measured value is 100 MΩ or more when a 500 VDC megger is applied between the windings and the case after rated operation under normal ambient temperature and humidity.
Dielectric Strength	No abnormality is judged even with application of 1.5 kVAC at 50 Hz or 60 Hz between the windings and the case for 1 minute after rated operation under normal ambient temperature and humidity.
Temperature Rise	The winding temperature rise is measured at 80°C or less (70°C or less for three-phase type) using the resistance change method after rated operation under normal ambient temperature and humidity.
Thermal Class	130 (B)
Overheat Protection	Built-in thermal protector (automatic return type) Open: 130±5°C, Close: 82±15°C
Operating Ambient Temperature	-10 - +40°C (non-freezing) Three-Phase 200 VAC: -10 - +50°C (non-freezing)
Degree of Protection	IP67

Note

- 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.

Permissible Torque

50 Hz

Unit: Nm

Product Name	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 (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	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	8
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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	30

60 Hz

Unit: Nm

Product Name	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	30

- A number indicating the gear ratio is entered where the box □ is located within the product 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.

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Electromagnetic Brake Motors

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Permissible Radial Load and Permissible Axial Load

Product Name	Gear Ratio	Permissible Radial Load		Permissible Axial Load
		10 mm from Output Shaft End	20 mm from Output Shaft End	
FPW425 Type	3 - 18	N	N	50
	25 - 180	100	150	
FPW540 Type	3 - 18	200	300	100
	25 - 180	250	350	
FPW560 Type	3 - 9	300	450	150
	12.5 - 18	400	500	
	25 - 180	450	600	
FPW690 Type	3 - 9	500	700	200
	12.5 - 180	550	800	
		650	1000	

Permissible Inertia J

Unit: $\times 10^{-4}$ kgm²

Product Name	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
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
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
FPW690 Type		18	25.9	50	72	113	162	313	450	648	1250	1800	2592	5000	5000	5000	5000	5000	5000	5000	5000

Dimensions (Unit mm)

- Mounting screws are included.
- A number indicating the gear ratio is entered where the box □ is located within the product name.

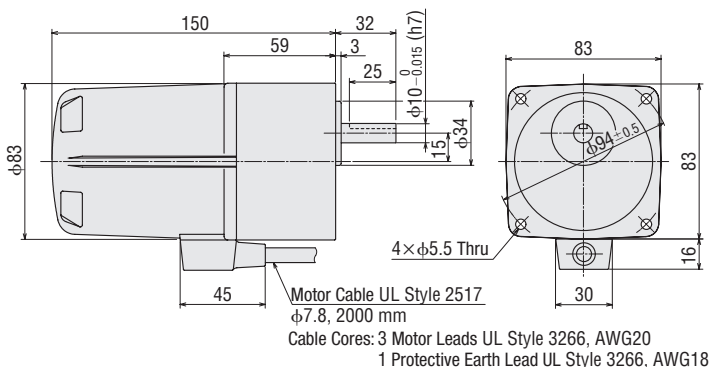
25 W

Geared Motor

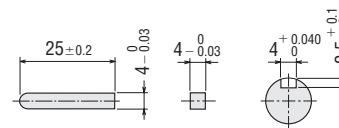
FPW425C2-□E, FPW425S2-□

Motor: FPW425C2-□, FPW425S2-□

Mass: 3.0 kg



Key and Key Slot (Included)



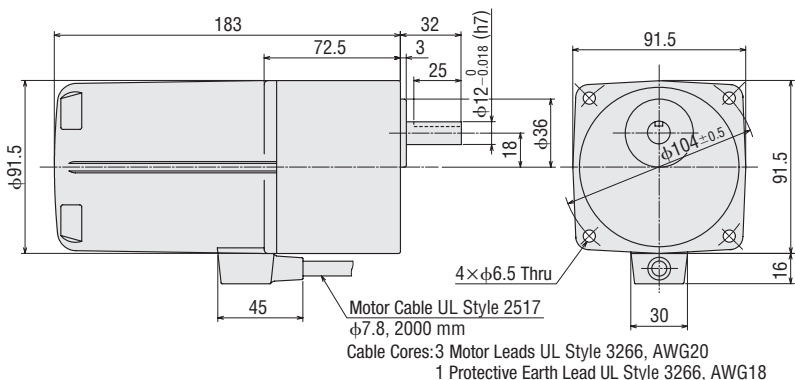
40 W

Geared Motor

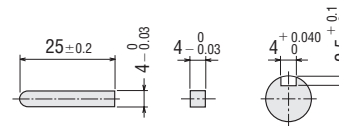
FPW540C2-□E, FPW540S2-□

Motor: FPW540C2-□, FPW540S2-□

Mass: 4.0 kg



Key and Key Slot (Included)



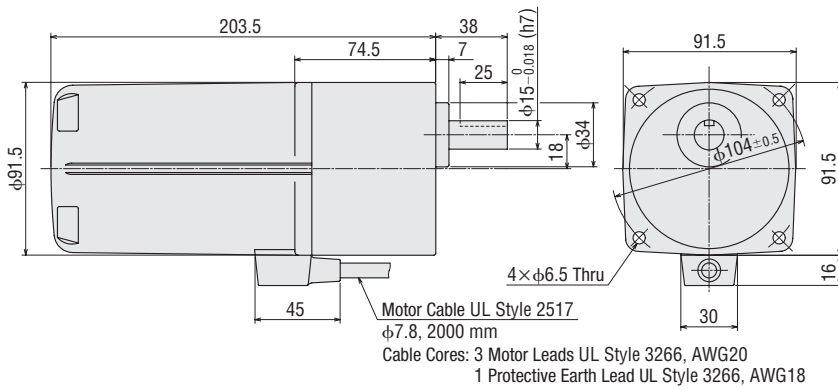
● 60 W

◇ Geared Motor

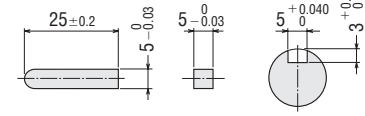
FPW560C2-□E, FPW560S2-□

Motor: FPW560C2-□, FPW560S2-□

Mass: 5.0 kg



◇ Key and Key Slot (Included)



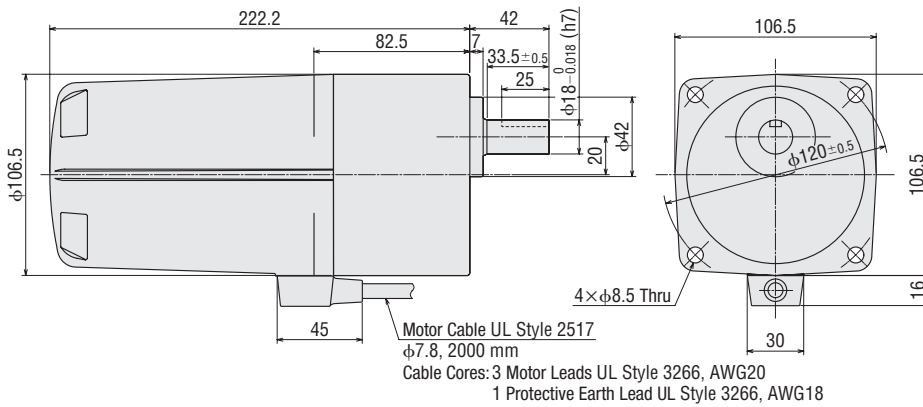
● 90 W

◇ Geared Motor

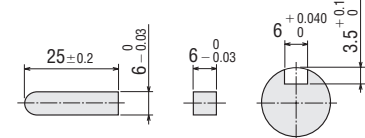
FPW690C2-□E, FPW690S2-□

Motor: FPW690C2-□, FPW690S2-□

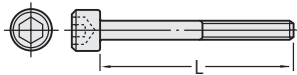
Mass: 7.5 kg



◇ Key and Key Slot (Included)



◇ Mounting Screws (Material: Stainless Steel)



	Length: L [mm]	Screw 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.

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Series

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Torque
Motors

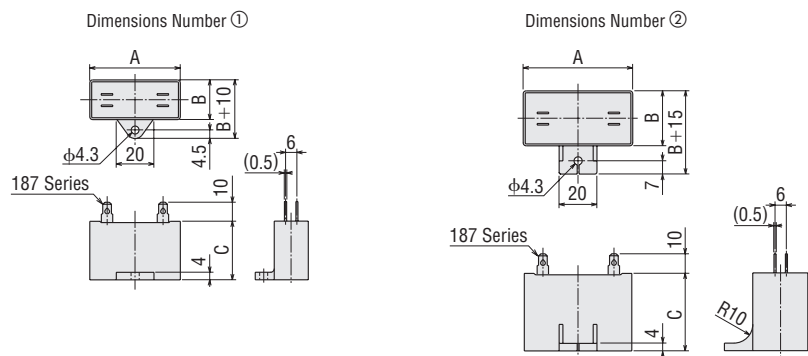
Watertight,
Dust-Resistant
Motors

Brake Pack

Accessories

Installation

◇ Capacitor (Included with single-phase motors)



◇ Capacitor Dimensions (mm)

Product Name	Capacitor Product Name	A	B	C	Mass [g]	Dimensions No.
FPW425C2-□E	CH15BFAUL	38	21	31	37	①
FPW540C2-□E	CH23BFAUL	48	21	31	43	①
FPW560C2-□E	CH30BFAUL	58	21	31	50	①
FPW690C2-□E	CH45BFAUL	58	23.5	37	73	②

- A capacitor cap is included with the capacitor.
- A number indicating the gear ratio is entered where the box □ is located within the product name.

■ Connection and Operation

- The rotation direction of the motor is as viewed from the output shaft 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 interrupter in situations where the motor is likely to get wet during operation.

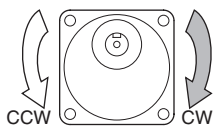
	Single-Phase 220/230 VAC		Three-Phase 200/220/230 VAC	
25 W 40 W	Gear Ratio 3 - 18 50 - 180	Gear Ratio 25 - 36	Gear Ratio 3 - 18 50 - 180	Gear Ratio 25 - 36
60 W	Gear Ratio 3 - 9 25 - 60	Gear Ratio 12.5 - 18 75 - 180	Gear Ratio 3 - 9 25 - 60	Gear Ratio 12.5 - 18 75 - 180
90 W	Gear Ratio 3 - 9 50 - 180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

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, the motor may ignore the reversing command or change its direction of rotation after some delay.

● Rotation Direction

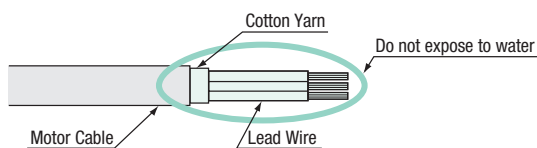
The rotation direction of the motor is indicated when viewed from the output shaft side of the motor. CW is used to indicate clockwise rotation and CCW is used for counterclockwise rotation.



The rotation direction when viewed from the output shaft side of the motor

● Notes on Wiring

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



Standard AC Motors

Accessories

Overview,
Product
Series

Constant
Speed
Motors

Single-Phase
Induction
Motors

Three-Phase
Induction
Motors

Reversible
Motors

Electromagnetic
Brake Motors

Torque
Motors

Watertight,
Dust-Resistant
Motors

Brake Pack

Accessories

Accessories

Installation

	<u>Page</u>
Motor and Gearhead Mounting Brackets.....	C-154
Flexible Couplings	C-158
Watertight Power Relay Box	C-163
Watertight Extension Cables	C-163
CR Circuit for Surge Suppression	C-163

Motor and Gearhead Mounting Brackets

This is an aluminum die cast mounting bracket for gearheads and geared motors. There are also high-strength models available for high-power motors and gearheads.

Long, horizontal holes make it easy to make fine adjustments during installation.



Mounting Brackets

Torque Arms

Couplings

Power Relay Box

Extension Cables

CR Circuit for Surge Suppression

Product Line

Material: Aluminum alloy Surface treatment: paint

Standard AC Motors, Speed Control Motors

Select the pinion shaft type based on the gearhead to be attached.

Product Name	Applicable Product					
	Standard AC Motors		Brushless Motors		AC Speed Control Motors	
	Combination Type Geared Motor	Round Shaft Type	Combination Type	Round Shaft Type	Combination Type	Round Shaft Type
SOL0M3	—	—	—	BLH015-A	—	—
SOL0B	—	—	BLH015-□	—	—	—
SOL2M4F	2IK6, 2RK6	2IK6, 2RK6	BLM230	BLM230, BLM260	DSCI26	DSCI26
SOL2M4	—	—	BXS230, BLH230	BXS230, BLH230	—	—
SOL3M5F	—	3IK15, 3RK15	—	—	—	DSCI315
SOL3M6F	3IK15, 3RK15	—	—	—	DSCI315	—
SOL4M5F	—	4IK25, 4RK25	—	—	—	DSCI425
SOL4M5	—	—	—	—	—	—
SOL4M6F	4IK25, 4RK25	—	BLM460	—	DSCI425	—
SOL4M6	—	—	BXS460, BLH450	BXS460, BLH450	—	—
SOL5M6F	—	5IK40, 5RK40 5IK60, 5RK60 5IK90, 5RK90 5IK100	—	—	—	DSCI540, DSCI560, DSCI590
SOL5M6	—	—	—	—	—	—
SOL5M8F	5IK40, 5RK40 5IK60, 5RK60 5IK90, 5RK90 5IK100	—	BLM5120	BLM5120, BLM5200, BLM5300	DSCI540, DSCI560, DSCI590	—
SOL5M8	—	—	BXS5120, BLH5100	BXS5120, BLH5100	—	—
SOL6M8F	7IK200	—	BLM6200, BLM6300	—	—	—
SOL6M8	—	—	BXS6200, BXS6400	BXS6200, BXS6400	—	—

Letters are provided in the applicable products table for identifying the series.

Note

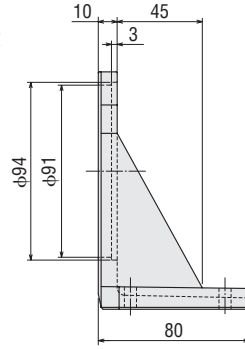
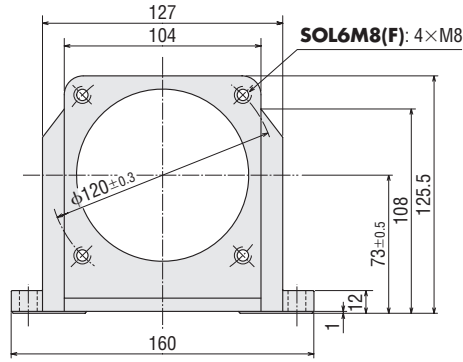
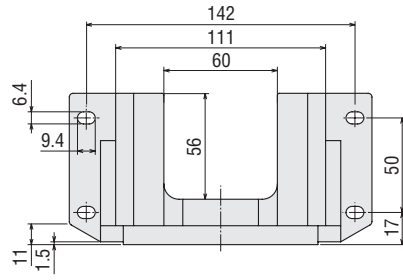
Not available for the following products.

KIS Series Right-Angle Geared Motor

Hollow Shaft Flat Gearhead (**GFS2G□FR, GFS4G□FR, GFS5G□FR, GFS6G□FR**)

A number indicating the gear ratio is entered where the box □ is located within the product name.

SOL6M8F, SOL6M8
 Mass: 430 g



Mounting
 Brackets

Torque
 Arms

Couplings

Power
 Relay Box

Extension
 Cables

CR Circuit
 for Surge
 Suppression

Overview,
Product
Series

Constant
Speed
Motors

Single-Phase
Induction
Motors

Three-Phase
Induction
Motors

Reversible
Motors

Electromagnetic
Brake Motors

Torque
Motors

Watertight,
Dust-Resistant
Motors

Brake Pack

Accessories

Installation

Flexible Couplings

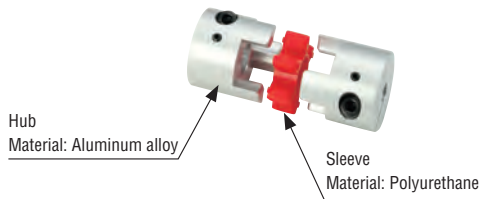
These are clamp type couplings for connecting the motor/gearhead shaft with the driven shaft. Once the motor or gearhead is determined, the coupling can be selected.



- Mounting Brackets
- Torque Arms
- Couplings
- Power Relay Box
- Extension Cables
- CR Circuit for Surge Suppression

Features

- Can be used with high torque
- Excellent for preventing eccentricity
- The structure features a separated hub and sleeve, so workability during installation is improved.



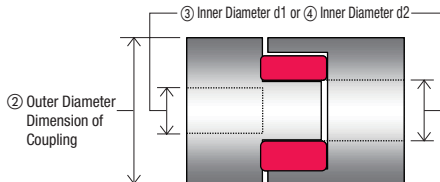
Product Number Code

MCL 40 12 15

- ① ② ③ ④

①	Flexible Coupling
②	Outer Diameter Dimension of Coupling 20 : φ20 mm - 65 : φ65 mm
③	Inner Diameter d1 (Smaller side) 05 : φ5 mm - 25 : φ25 mm
④	Inner Diameter d2 (Larger side) 05 : φ5 mm - 25 : φ25 mm

● Applicable products → Page C-246



Product Line

Product Name
MCL20 □
MCL30 □
MCL40 □
MCL55 □
MCL65 □

● A number indicating the coupling inner diameter is entered where the box □ is located within the product name.

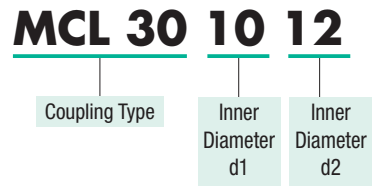
Selecting a Flexible Coupling

Once you have decided on a motor and gearhead as well as the driven shaft diameter, this determines the necessary coupling to use.

The coupling selection process is explained using the conditions below.

- Condition
 - Model: **2IK6** (shaft diameter φ10 mm)
 - Applicable Driven Shaft Diameter: φ12 mm
 - Uniform load*
 - Selection Procedure
1. Select a coupling appropriate for the **2IK6** with a uniform load from the applicable products table on the following page.
Coupling Type: **MCL30**
 2. From the applicable products table on the following page, find a product from the **MCL30** type that is compatible with a shaft diameter of φ10 mm and a driven shaft diameter of φ12 mm.

● Applicable Coupling Model



* Uniform load and impact load are the two types of load conditions.
Uniform Load: When a uniform load is applied such as with a conveyor etc.
Shock Load: When shock-inducing loads are applied from frequent starting and stopping

Applicable Products

- Standard AC Motors, Speed Control Motors
- Couplings can also be used with round shaft types. Select a coupling with the same inner diameter size as the motor shaft diameter.
- For the **BXII** Series round shaft type, refer to the **MCS** coupling.

Coupling Selection Table

- Standard AC Motors, Speed Control Motors

○: Uniform load ●: Compatible with uniform and shock load

Gearhead Model		Coupling Type	Shaft Diameter		Connected Device Shaft Diameter mm											
Uniform Load	Shock Load		05	06	08	10	12	14	15	16	18	20	22	25		
			[mm]	φ5	φ6	φ8	φ10	φ12	φ14	φ15	φ16	φ18	φ20	φ22	φ25	
BLH015	BLH015	MCL20	06	φ6	●	●	●									
2IK, 2RK, BLM230, BXS230, BLH230, DSCI26	2IK, 2RK, BLM230, BXS230, BLH230, DSCI26	MCL30	10	φ10			●	●	●							
3IK15, 3RK15, DSCI315	–		12	φ12			○	○	○							
–	3IK15, 3RK15, DSCI315	MCL40	12	φ12			●	●	●	●	●					
4IK25, 4RK25, BLM460, BXS460, BLH450, DSCI425	–		15	φ15				○	○	○	○	○				
–	4IK25, 4RK25, BLM460, BXS460, BLH450, DSCI425	MCL55	15	φ15							●	●	●	●	●	
5IK40, 5RK40, 5IK60, 5RK60, 5IK90, 5RK90, 5IK100, BLM5120, BXS5120, BLH5100, DSCI540, DSCI560, DSCI590	5IK40, 5RK40, 5IK60, 5RK60, 5IK90, 5RK90, 5IK100, BLM5120, BXS5120, BLH5100, DSCI540, DSCI560, DSCI590		18	φ18								●	●	●	●	●
BLM6200, BLM6300, BXS6200, BXS6400, 7IK200	BLM6200, BLM6300, BXS6200, BXS6400, 7IK200	MCL65	22	φ22									●	●	●	

- The load in this table are of common use. Check the specifications values of each coupling for details.
- Letters are provided in the applicable products table for identifying the series.

Overview, Product Series

Constant Speed Motors

Single-Phase Induction Motors

Three-Phase Induction Motors

Reversible Motors

Electromagnetic Brake Motors

Torque Motors

Watertight, Dust-Resistant Motors

Brake Pack

Accessories

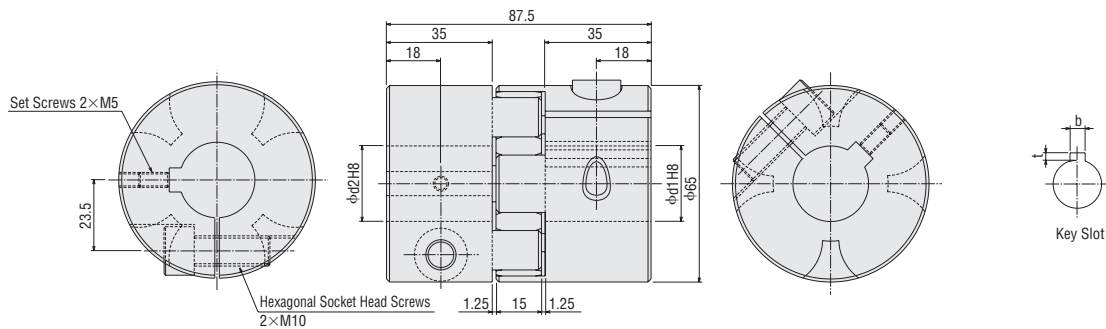
Installation

Specifications

Coupling Type	Product Name	Dimensions				Normal Torque [Nm]	Mass [g]	Inertia J [$\times 10^{-4}$ kgm ²]	Permissible Eccentricity [mm]	Permissible Declination [°]	End Play [mm]
		Outer Diameter [mm]	Overall Length [mm]	Shaft Hole Diameter d1 [mm]	Shaft Hole Diameter d2 [mm]						
Mounting Brackets	MCL20	φ20	29	5	5	5.0	19	0.01	0.15	1.0	+0.8 0
				5	6						
				5	8						
				6	6						
				6	8						
Torque Arms	MCL20	φ20	29	8	8	5.0	19	0.01	0.15	1.0	+0.8 0
				8	8						
				8	10						
				8	12						
				10	10						
Couplings	MCL30	φ30	43.5	10	10	12.5	66	0.083	0.2	1.0	+1.0 0
				10	12						
				10	12						
				10	12						
				12	12						
Power Relay Box	MCL30	φ30	43.5	12	12	12.5	66	0.083	0.2	1.0	+1.0 0
				12	12						
				12	12						
				12	12						
				12	12						
Extension Cables	MCL40	φ40	64	10	10	25.0	150	0.36	0.2	1.0	+1.2 0
				10	12						
				10	14						
				10	15						
				10	16						
CR Circuit for Surge Suppression	MCL40	φ40	64	12	12	25.0	150	0.36	0.2	1.0	+1.2 0
				12	14						
				12	14						
				12	15						
				12	16						
				12	16						
				12	16						
				14	14						
				14	15						
				14	16						
				15	15						
				15	16						
				15	16						
				16	16						
				MCL55	φ55						
15	16										
15	18										
15	20										
15	25										
16	16										
16	18										
16	20										
16	25										
18	18										
18	20										
18	25										
18	25										
MCL65	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 and gearhead.

MCL65 Type



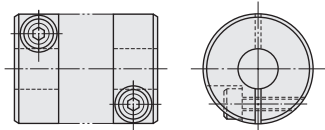
Shaft Hole Diameter ($\phi d1$, $\phi d2$)	Key Slot Width b	Key Slot Length t
$\phi 15$, $\phi 16$	$5^{+0.043}_0$	$2.3^{+0.1}_0$
$\phi 18$, $\phi 20$, $\phi 22$	$6^{+0.052}_0$	$2.8^{+0.1}_0$
$\phi 25$	$8^{+0.052}_0$	$3.3^{+0.2}_0$

Mounting to a Shaft

MCL couplings are clamp type couplings.

● Clamp Type

Clamp type couplings use the tightening force of the screw to compress the shaft 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. We recommend using a torque wrench to fasten.



Type	MCL20*	MCL30	MCL40	MCL55	MCL65
Tightening Torque [Nm]	1	2.5	12	25	50
Tightening Torque of Key Press Screw [Nm]	0.7	1.7	1.7	1.7	4

*The MCL20 type are screws used to clamp flat sections.

Mounting Brackets

Torque Arms

Couplings

Power Relay Box

Extension Cables

CR Circuit for Surge Suppression

Watertight Power Relay Box

Product Line

4-terminal type

Product Name
TB4-0608



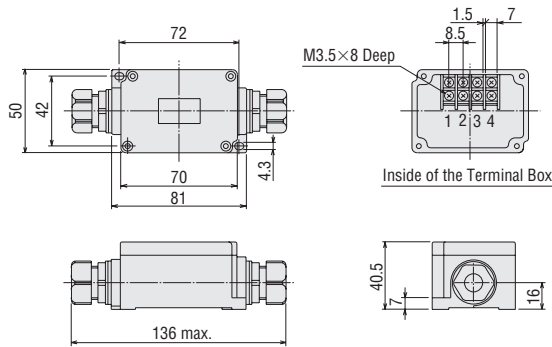
Applicable Products

FPW Series

Applicable Cable Diameter: $\phi 6.5 - \phi 8.5$

Dimensions (Unit mm)

Mass: 150 g



- This product conforms to the IP65 degree of protection rating only when used with a watertight extension cable for the **FPW Series**.

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

Cable gland 1.0 to 1.5 Nm
Cover of power relay box 0.54 to 0.66 Nm

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

Watertight Extension Cables

These cables are used with watertight power relay boxes. Extensions of 5 m and 10 m are available.

Product Line

Number of Conductors	Product Name	Applicable Products	Length L [m]
4 Conductors	CC05AC43P	FPW Series	5
	CC10AC43P		10



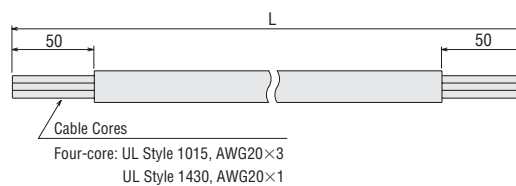
Specifications

Cable Cores Construction: Refer to the dimension on the right

Finished Outer Diameter: $\phi 7.8$

Outer Sheath: Heat-resistant vinyl chloride

Dimensions (Unit mm)



CR Circuit for Surge Suppression

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

Product Line

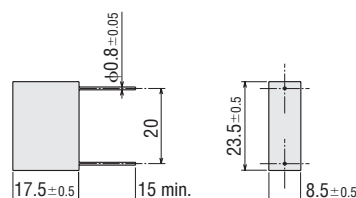
250 VAC (120 Ω , 0.1 μ F)

Product Name
EPCR1201-2



Dimensions (Unit mm)

Mass: 5 g



Orientalmotor

These products are manufactured at plants certified with the international standards **ISO 9001** (for quality assurance) and **ISO 14001** for systems of environmental management).

Specifications are subject to change without notice. This catalogue was published in January 2024.

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