# PRODUCT NUMBER CODE

## Motor

| 5 | I | K | 40 | R | GN | - | C | T |
|---|---|---|---|---|---|---|---|---|
| ① | ② | ③ | ④ | ⑤ | ⑥ | | ⑦ | ⑧ |

| | | |
|---|---|---|
| ① | Motor frame size | 0: 42mm 2: 60mm 3: 70mm 4: 80mm 5: 90mm 6: 104mm |
| ② | Motor type<br>I : Induction motor R : Reversible motor T : Torque motor | |
| ③ | Series | K : K series |
| ④ | Output power (W) | (Example) 40 : 40W |
| ⑤ | R : The auffix "-R" after the output power means speed adjustable motor. | |
| ⑥ | Motor shaft type<br>GN : GN type pinion shaft GU : GU type pinion shat<br>A : Round shaft A1 : Keyway | |
| ⑦ | Voltage·Poles<br>A : Single-phase 110V50/60Hz 4P E : Single-phase 110V/120V60Hz 4P S3 : Three-phase 380/400/415V50/60Hz 4P<br>B : Single-phase 110V50Hz 2P H : Single-phase 220/230V60Hz 4P T : Three-phase 200/220/230V50/60Hz 2P<br>C : Single-phase 220/230V50Hz S : Three-phase 200/220/230V50/60Hz 4P T3 : Three-phase 380/400/415V50/60Hz 2P<br>4P D : Single-phase 220V50Hz 2P | |
| ⑧ | T : Terminal box type<br>F : W/Fan FF : W/Forced fan<br>M : Power off activated type electromagnetic brake motor | |

## Description Of Reducer Model

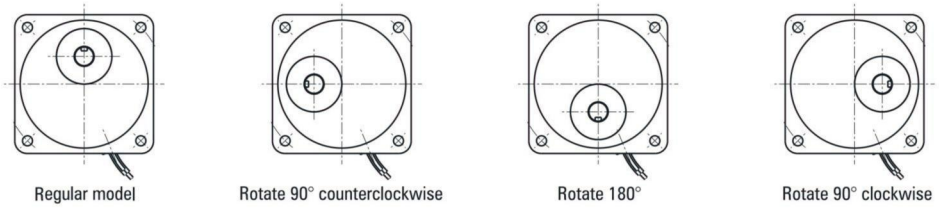
| 5 | GN | 50 | K |
|---|---|---|---|
| ① | ② | ③ | ④ |

| | | |
|---|---|---|
| ① | Gearhead frame size | 0: 42mm 2: 60mm 3: 70mm 4: 80mm 5: 90mm 6: 104mm |
| ② | Type of pinion | GN : GN type gear GU : GU type gear |
| ③ | Gear ratio | (e.g) 50 : Gear ratio of 1 : 50<br>10x denotes the decimal gearhead of ratio 1 : 10 |
| ④ | Bearing type | K : Bearing (Make KB for type GU square case) |

Note: If the motor assembly with parallel gear box pls cancel item no 5, if assembly with right angle gear box pls cancel item no 4.

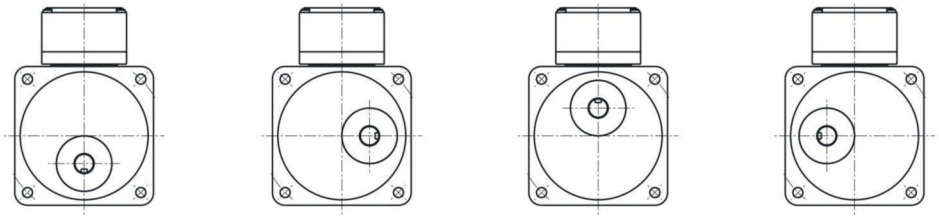
## Parallel Shaft Series

● Lead Style



Regular model | Rotate 90° counterclockwise | Rotate 180° | Rotate 90° clockwise

● Junction Box



Regular model | Rotate 90° counterclockwise | Rotate 180° | Rotate 90° clockwise

# GENERAL SPECIFICATIONS OF MOTORS

## 6W～150W、2P・High Speed

| Item | Specifications |
|---|---|
| Insulation Resistance | In the circumstance of normal temperature and humidity, the resistance can be up to 100MΩ, measured DC 500vinsulation resistance measurer between the motor wiring and motor shell while the motor is working. |
| Insulation Voltage | In the circumstance of normal temperature and humidity, there will be no problem supplying the power of 1. 5kV (three-phase 400V is 2kV) at 50Hz/60Hz between the metal wiring and motor shell for 1 minute while the motor is working. |
| Temperature Rise | The temperature rise of winding are 80℃ or less measured by the resistance change method after rated motor operation under normal ambient temperature and humidity, with connecting a gearhead or equivalent heat radiation plate※. |
| Insulation Class | UL/CSA Standards: Class A (105℃)EN<br>Standards: Class B (130℃) |
| Overheat Protection | Thermal protector inside (automatic return)<br>Class B (opening: 120℃±5℃、75℃±15℃)<br>Class F (opening: 145℃±5℃、100℃±15℃) |
| Ambient Temperature | Single-phase 100VAC、Three-phase 200VAC: -10～+50℃ (Non Freezing) Others: -10～+40℃ (Non Freezing) |
| Ambient Humidity | ≤85% (Non condensing) |
| Protection Class | Lead wire type: IP20<br>Terminal box type<br>Single-phase 100V50/60HZ、110/120V60HZ、220/230V50HZ、220/230V60HZ<br>25W-180W Type: IP54 (Excluing the installation surface of the round shaft type) Three-phase 200/220 /230V50/60HZ、380/400/415V50/60HZ<br>25W-180W Type: IP54 (Excluing the installation surface of the round shaft type) |

## Heat Radiation Plate (Material: Aluminum)

| Motor Type | Size | Thickness (mm) |
|---|---|---|
| 3W type | 80X80 | 5 |
| 6W type | 115X115 | |
| 15W type | 125X125 | |
| 25W(2P·high-speed 4IK40 type, 4IK60 type) | 135X135 | |
| 40W、60W type | 165X165 | |
| 60W、90W、120W type (2P·High-speed 5IK150 type) | 200X200 | |
| 120W、140W、200W type | 230X230 | |

## Power Off Activated Type Electromagnetic Brake Motor Features

1、 Structure and operation principle

Table 3 is the structure for the electromagnetic brake motor. We produce the power off activated type. Exerting the voltage on the winding, it will magnetize the armature pressed by the spring. The motor will be in a stage of rotating, when there is a backlash between the armature and brake rim. Once the winding voltage is cut down, under the influence of spring, the armature press the brake rim, which will create a brake force. Then the motor gets to a stop.

2、 The characteristics of the electromagnetic brake

It is an AC power off activated type electromagnetic brake which is connected directly with the motor. It will get to a blink stop and keep load when the supply is power off. It will keep the torque between 0.05～2.0Nm. It is especially suitable for the safety brake in the circumstance of unconsciously power off. The electromagnetic can change its direction frequently. It can be stopped 6 times in a minute. But be sure that it lasts for 3 seconds or more.

After we set a commutating loop in the brake, it can share the power supply with the motor.

※The value is standard. It will be change in different condition. When actually used, be sure to make the surface temperature of the motor less than 90℃.

3、 The features for the starting time and brake time

The starting time means the time for the motor's starting time plus the electromagnetic brake release time. The brake time means the time from power cut off to the time of motor completely stop. The over-run, starting time and brake time will be different according to the different applications.

## Electromagnetic Brake (Power Off Activated Type)

| Phase | Size | Output | Voltage | Frequency | Current | Input | Keep Torque | | Over-run |
|---|---|---|---|---|---|---|---|---|---|
| | MM | W | V | Hz | A | W | N.cm | Kgf.cm | Cycles |
| 1Phase | 70 | 15 | 110<br>120<br>220<br>230 | 50/60 | 0.091 | 8.20 | 0.50 | 50 | 3.5 |
| | 80 | 25 | | | | | | | |
| | 90 | 40 | | | | | | | |
| | | 60 | | | 0.111 | 10.0 | 1.00 | 100 | |
| | | 90 | | | | | | | |
| | | 120 | | | | | | | |
| | 100 | 120 | | | | | | | |
| | | 140 | | | | | | | |
| | | 200 | | | 0.144 | 13.0 | 2.00 | 200 | |
| 3Phase | 60 | 6 | 220～230 | 50/60 | 0.073 | 6.60 | 0.25 | 25 | |
| | 70 | 15 | 380～415 | | 0.037 | 6.60 | 0.25 | 25 | |
| | 80 | 25 | 200～230<br>380～415 | | 0.091 | 8.20 | 0.50 | 50 | |
| | 90 | 40 | | | | | | | |
| | | 60 | | | 0.046 | 8.20 | 0.50 | 50 | |
| | | 90 | 200～230<br>380～415 | | 0.111 | 10.0 | 1.00 | 100 | |
| | | 120 | | | | | | | |
| | 100 | 120 | | | 0.056 | 10.0 | 1.00 | 100 | |
| | | 140 | | | | | | | |
| | | 200 | 200～230<br>380～415 | | 0.144 | 13.0 | 2.00 | 200 | |
| | | | | | 0.144 | 13.0 | 2.00 | 200 | |

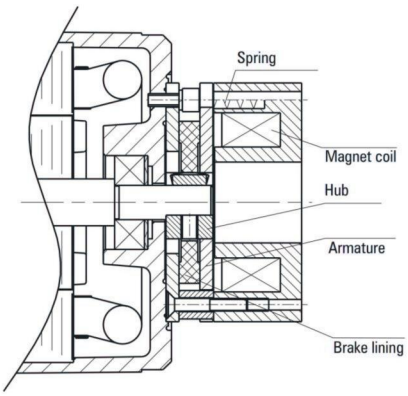



Fig.3

## The Features Of The Speed Control Motor

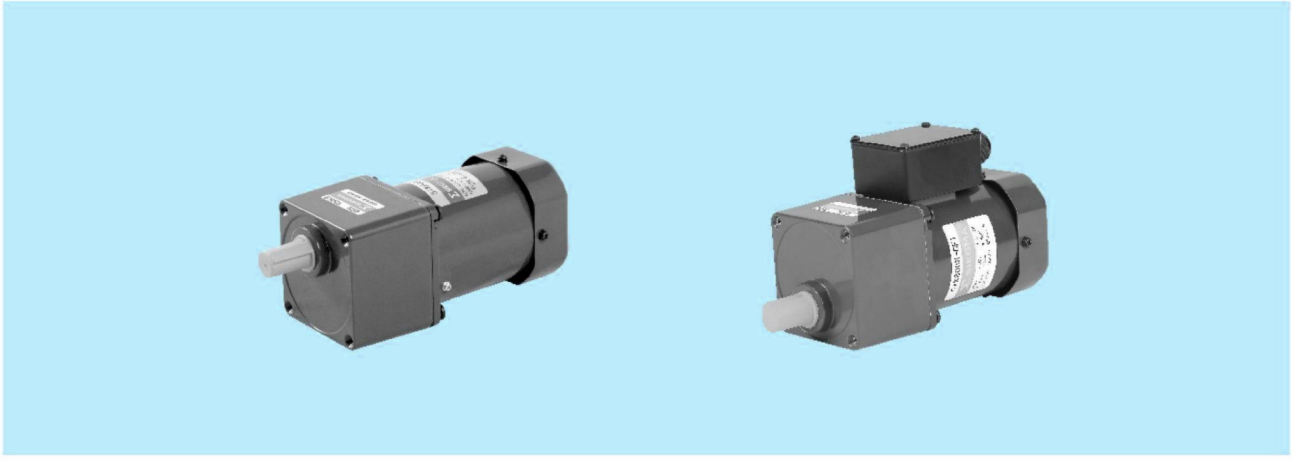
1、 It is a unit of the controller and motor. It only needs to connect one time. The speed can be easily adjusted by the potentiometer. The controller is fixed with speed-control loop, capacitor, speed enactment and etc. There is no function of instant stop in the unit.

2、 The controller can make the speed variable between 90-1400r/min at 50Hz and 90-1700r/min at 60Hz.

3、 Please don't run motor at low speed for long time avoiding overheat.

# INDUCTION MOTORS

## 60W □90mm



## Specs Continuous Rating

| Model・Type Upper:Pinion Shaft Below:Round Shaft | | Output power | Voltage | Frequency | Current | Starting Torque | Rated Torque | Rated Speed | Capacitor |
|---|---|---|---|---|---|---|---|---|---|
| Lead Wire Type Dimensions① | Terminal Box Type Dimensions② | W | V | Hz | A | mN.m | mN.m | r/min | μF |
| 5IK60GN-AF ( 5IK60A-AF ) | 5IK60GN-AFT ( 5IK60A-AFT ) | 60 | 1ph 100 | 50 | 1.00 | 320 | 470 | 1250 | 20.0 |
| | | | | 60 | 1.10 | | 380 | 1550 | |
| 5IK60GN-EF ( 5IK40A-EF ) | 5IK60GN-EFT ( 5IK60A-EFT ) | 60 | 1ph 110 | 60 | 0.80 | 300 | 380 | 1550 | 12.0 |
| | | | 1ph 120 | | 0.85 | | | | |
| 5IK60GN-CF ( 5IK60A-CF ) | 5IK60GN-CFT ( 5IK60A-CFT ) | 60 | 1ph 220 | 50 | 0.50 | 340 | 470 | 1250 | 4.0 |
| | | | 1ph 230 | | 0.55 | | | | |
| 5IK60GN-HF ( 5IK60A-HF ) | 5IK60GN-HFT ( 5IK60A-HFT ) | 60 | 1ph 220 | 60 | 0.50 | 340 | 380 | 1550 | 4.0 |
| | | | 1ph 230 | | 0.55 | | | | |
| 5IK60GN-SF ( 5IK60A-SF ) | 5IK60GN-SFT ( 5IK60A-SFT ) | 60 | 3ph 220 | 50 | 0.45 | 1000 | 470 | 1250 | - |
| | | | | 60 | 0.40 | 800 | 380 | 1550 | |
| 5IK60GN-S3F ( 5IK60A-S3F ) | 5IK60GN-S3FT ( 5IK60A-S3FT ) | 60 | 3ph 380 | 50 | 0.26 | 1000 | 470 | 1250 | - |
| | | | | 60 | 0.23 | 800 | 380 | 1550 | |

- When the motor is approved under various safety standards, the model name on the nameplate is the approved model name.
- Note: "-A" it means the voltage 110V, the assembly capacitor vaule it is according the label.

## Type

### Motor

| Type | Model | |
|---|---|---|
| | Pinion Shaft | Round Shaft |
| Lead Wire Type | 5IK60GN-AF | 5IK60A-AF |
| | 5IK60GN-EF | 5IK60A-EF |
| | 5IK60GN-CF | 5IK60A-CF |
| | 5IK60GN-HF | 5IK60A-HF |
| | 5IK60GN-SF | 5IK60A-SF |
| | 5IK60GN-S3F | 5IK60A-S3F |
| Terminal Box Type | 5IK60GN-AFT | 5IK60A-AFT |
| | 5IK60GN-EFT | 5IK60A-EFT |
| | 5IK60GN-CFT | 5IK60A-CFT |
| | 5IK60GN-HFT | 5IK60A-HFT |
| | 5IK60GN-SFT | 5IK60A-SFT |
| | 5IK60GN-S3FT | 5IK60A-S3FT |

### Parallel Shaft Gearhead (Sold Separately)

| Gearhead Type | Gearhead Model | Gear Ratio |
|---|---|---|
| Long Life ● Low Noise | 5GN□K | 3、3.6、5、6、7.5、9、10、12.5、15、18、20、25、30、36、40、50、60、75、90、100、120、150、180、200 |
| | 5GN10XK ( Decimal Gearhead ) | |

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

## Gear Motor-Torque Table

- Gearhead and mid-gearbox can be sold separately. Enter the code that represents the terminal box type (T) in the box (□) within the model name.
- Enter the gear ratio in the box (□) within the model name.

- The colored background ▭ indicates the same rotating direction of the motor while the rotating direction of others are opposite.
- The speed is calculated by dividing the motor's synchronous speed (50Hz：1500r/min、60Hz：1800r/min) by the gear ratio. The actual speed is 2%～20% less than the displayed value, depending on the size of the load.

- To reduce the speed beyond the gear ratio in the table, attach a decimal gearhead (gear ratio:10) between the gearhead and motor. In that case, the permissible torque is 10N·m.

## Allowance Torque Unit：Upside（N.m）/ Belowside（kgf.cm）

| Type Motor/Gearhead | Gear Ratio | | 3 | 3.6 | 5 | 6 | 7.5 | 9 | 10 | 12.5 | 15 | 18 | 20 | 25 | 30 | 36 | 40 | 50 | 60 | 75 | 90 | 100 | 120 | 150 | 180 | 200 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Speed r/min | 50Hz | 500 | 417 | 300 | 250 | 200 | 166 | 150 | 120 | 100 | 83 | 75 | 60 | 50 | 41 | 37 | 30 | 25 | 20 | 16 | 15 | 12.5 | 10 | 8.3 | 7.5 |
| | | 60Hz | 600 | 500 | 360 | 300 | 240 | 200 | 180 | 144 | 120 | 100 | 90 | 72 | 60 | 50 | 45 | 36 | 30 | 24 | 20 | 18 | 15 | 12 | 10 | 9 |
| 5IK60GN-AF□<br>5IK60GN-EF□<br>5IK60GN-CF□<br>5IK60GN-HF□<br>5IK60GN-SF□<br>5IK60GN-S3F□ | 5GN□K | 50Hz | 1.10 | 1.40 | 1.90 | 2.30 | 2.90 | 3.40 | 3.57 | 4.80 | 5.70 | 6.80 | 7.03 | 8.60 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 |
| | | | 11.2 | 14.2 | 19.3 | 23.4 | 29.6 | 34.7 | 36.4 | 48.9 | 58.1 | 69.3 | 71.7 | 87.7 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | 60Hz | 0.92 | 1.10 | 1.50 | 1.80 | 2.30 | 2.80 | 2.99 | 3.80 | 4.60 | 5.50 | 5.70 | 6.90 | 8.30 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 |
| | | | 9.38 | 11.2 | 15.3 | 18.3 | 23.4 | 28.5 | 30.5 | 38.7 | 46.9 | 56.1 | 58.2 | 70.1 | 84.7 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

## To Allow The Hoisting Of The Load Allow Axial Load

Motor (Round shaft) →P215
Gearhead→P215

## J Permissible Load Inertia J For Gearhead

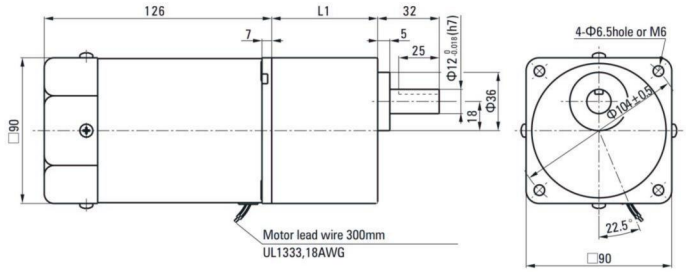
→P215

## Dimensions (Unit mm)

Mounting screws are included with gearhead.

● Lead Wiring Type ①

Weight：Motor： 2.7kg　　Gearhead： 1.35kg



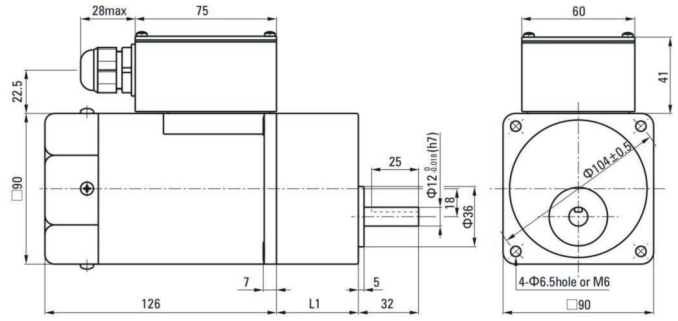

| Motor Model | Gearhead Model | Gear Ratio | L1 |
|---|---|---|---|
| 5IK60GN-AF<br>5IK60GN-EF<br>5IK60GN-CF<br>5IK60GN-HF<br>5IK60GN-SF<br>5IK60GN-S3F | 5GN□K | 3～200 | 60 |

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

●Gear ratio 3～18, short case is possible (L1＝42)

● Terminal Box Type ②

Weight：Motor： 2.85kg　　Gearhead： 1.35kg

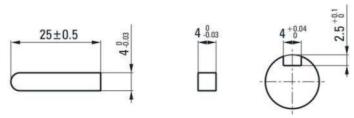



| Motor Model | Gearhead Model | Gear Ratio | L1 |
|---|---|---|---|
| 5IK60GN-AFT<br>5IK60GN-EFT<br>5IK60GN-CFT<br>5IK60GN-HFT<br>5IK60GN-SFT<br>5IK60GN-S3FT | 5GN□K | 3～200 | 60 |

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

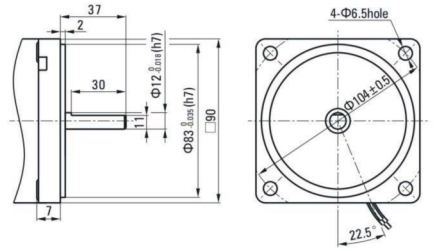
●Gear ratio 3～18, short case is possible (L1＝32)

● Key・Keyway (Accessory Of Gearhead)




● Shaft Section Of Round Shaft Type

Excluding weight and the shaft section motor shape are the same as those of the pinion shaft type.

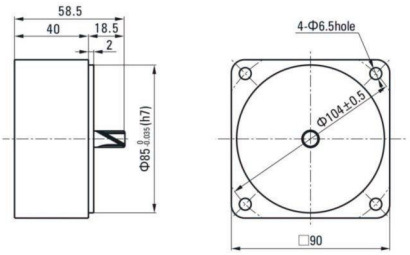



● Decimal Gearhead

Can be connected to GN pinion shaft type

5GN10XK

Weight：0.6kg

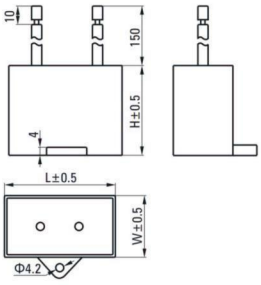



## Formal Dimension Of Capacitor

| Model | | Capacitor Model | L | W | H |
|---|---|---|---|---|---|
| Pinion Shaft | Round Shaft | | | | |
| 5IK60GN-AF□ | 5IK60A-AF□ | ZD200CFAUL | 47 | 23 | 35 |
| 5IK60GN-EF□ | 5IK60A-EF□ | ZD120CFAUL | 47 | 17 | 31 |
| 5IK60GN-CF□ | 5IK60A-CF□ | ZD40BFAUL | 47 | 17 | 31 |

● Note: Conventional capacitor is a lead wire type. Inserted 187# is optional

● Enter the code that represents the terminal box type (T) in the box (□) within the model name

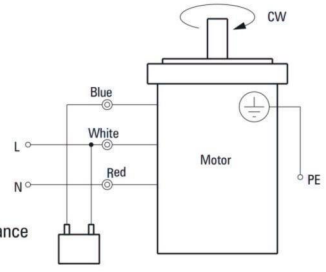
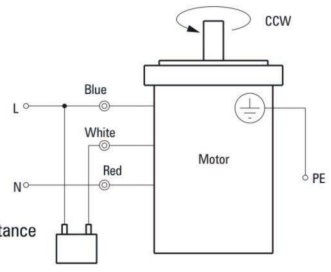
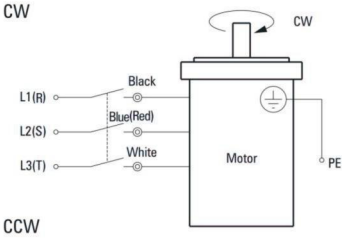


## Wiring Diagram

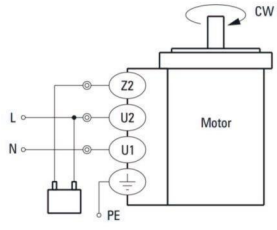
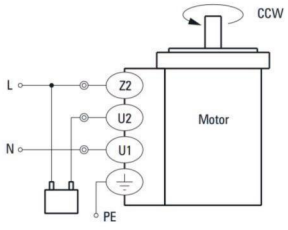
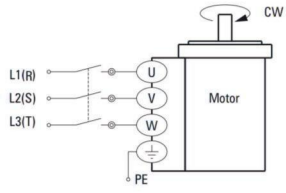
●The direction of motor rotation is as viewed from the shaft end of motor. CW represents the clockwise direction, while CCW represents the counterclockwise direction.

●Name indicated in the list is pinion shaft type, also valid for the equivalent round shaft type.

### Lead Wire Type

| 5IK60GN-AF、5IK60GN-EF、 5IK60GN-HF、5IK60GN-CF | | 5IK60GN-SF(S3F) |
|---|---|---|
| CW<br><br><br>Capacitance | CCW<br><br><br>Capacitance | CW<br><br><br>CCW<br>To change the rotation direction change any two connections among R, S and T |

### Terminal Box Type

| 5IK60GN-AFT、5IK60GN-EFT、 5IK60GN-HFT、5IK60GN-CFT | | 5IK60GN-SFT(S3FT) |
|---|---|---|
| CW<br><br><br>Capacitance | CCW<br><br><br>Capacitance | CW<br><br><br>CCW<br>To change the rotation direction change any two connections among U, V and W |

Note:

Change the direction of single-phase motor rotation only after bring 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.