World K Series IP65 Terminal Box Type Induction Motors

6 W, 15 W, 25 W, 40 W

□60 mm, □70 mm, □80 mm, □90 mm

Features

●IP65 Specification Suitable for Use in Factory Environment

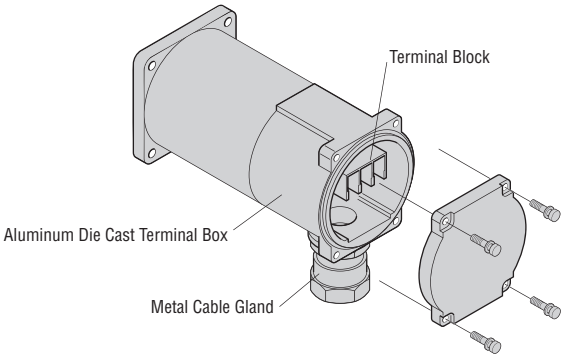
The world **K** series IP65 terminal box type include parts with excellent environmental resistance to meet the needs of factory environments.

◇Protection Performance against Dust and Water Conforming to IP65 Rating for Degree of Protection

The degree of protection conforms to IP65 by using an O-ring in the motor and an oil seal construction in the gearhead. These motors are ideal for use in an environment requiring dust resistance and water resistance to protect against cutting powder suspended in air, splashed water droplets, etc.

◇Strong Metal Terminal Box

A sturdy aluminum die-cast terminal box is fitted with a metal cable gland.

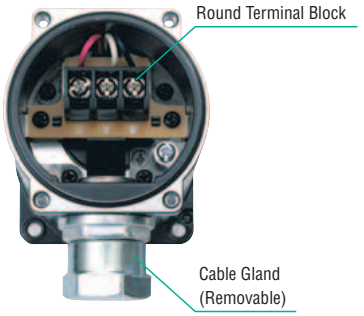


●Terminal Box with Easy-to-Use Structure

The terminal box provided at the back of the motor not only offers high environmental resistance, but it is also structured to ensure ease of use.

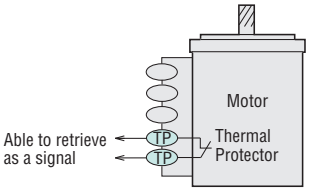
User-Friendly Design

- Wires can be connected using round crimp terminals.
- The direction in which the cables are taken out can be changed according to the combination of motor and gearhead.
- The cable gland can be removed to connect a conduit pipe, etc., instead.



●Lineup of Overheat Protection Devices (Thermal Protectors) for Signal

An overheat protection device (thermal protector) is built into 15 W to 40 W motors. A signal type that can use a conventional automatic return type thermal protector to retrieve the operation of the overheat protection device as a signal and control the operation and stopping of the motor is available. *Oriental Motor has a thermal protector for automatic return type and signal type to meet your various needs.



✻Connect the motor properly so that the power of the motor can be interrupted when the thermal protector is activated. Connection example ➜ Page C-59

●Combination Type with Assembled Motor and Gearhead

Combination type products are delivered with the motor and gearhead pre-assembled. This can reduce the number of assembly man-hours and alleviate any worries about damaging the motor shaft during assembly. The combination type uses a **GN-S** gearhead.

◇Long Life, Low Noise **GN-S** Gearhead is Available

Adopting innovative technologies and structure, the “long life, low noise **GN-S** gearhead” achieves a long rated life of 10000 hours*, twice as long as the level of a conventional gearhead. Also, the gearhead is designed for low noise.

✻For the rated life time definition, refer to “Life of Gearheads” on page G-35.

● Can be combined with a right-angle gearhead. For details, please contact the nearest Oriental Motor sales office.

Note

● It does not conform to the IP65 rating when used with a decimal gearhead.

Product Line

Combination Type	This type comes with the motor and its dedicated gearhead pre-assembled. This simplifies installing in equipment. Motors and gearheads are also available separately to facilitate changes in motor and gearhead combinations and if spare gearheads are required.

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.

Combination Type

◇Thermal Protector for Automatic Return Type RoHS

Output Power	Power Supply Voltage	Product Name	Gear Ratio
6 W*	Single-Phase 100 VAC	**2IK6AB-□S**	**3~180**
	Single-Phase 110/115 VAC	**2IK6FB-□S**	
	Single-Phase 200 VAC	**2IK6CB-□S**	
	Single-Phase 220/230 VAC	**2IK6EB-□S**	
	Three-Phase 200/220/230 VAC	**2IK6SB-□S**	
15 W	Single-Phase 100 VAC	**3IK15AB-□S**	**3~180**
	Single-Phase 110/115 VAC	**3IK15FB-□S**	
	Single-Phase 200 VAC	**3IK15CB-□S**	
	Single-Phase 220/230 VAC	**3IK15EB-□S**	
	Three-Phase 200/220/230 VAC	**3IK15SB-□S**	

*6 W models are impedance protected. A thermal protector is not built in.

Output Power	Power Supply Voltage	Product Name	Gear Ratio
25 W	Single-Phase 100 VAC	**4IK25AB-□S**	**3~180**
	Single-Phase 110/115 VAC	**4IK25FB-□S**	
	Single-Phase 200 VAC	**4IK25CB-□S**	
	Single-Phase 220/230 VAC	**4IK25EB-□S**	
	Three-Phase 200/220/230 VAC	**4IK25SB-□S**	
40 W	Single-Phase 100 VAC	**5IK40AB-□S**	**3~180**
	Single-Phase 110/115 VAC	**5IK40FB-□S**	
	Single-Phase 200 VAC	**5IK40CB-□S**	
	Single-Phase 220/230 VAC	**5IK40EB-□S**	
	Three-Phase 200/220/230 VAC	**5IK40SB-□S**	

◇Thermal Protector for Signal Type RoHS

Output Power	Power Supply Voltage	Product Name	Gear Ratio
15 W	Single-Phase 100 VAC	**3IK15AB-□SS**	**3~180**
	Single-Phase 110/115 VAC	**3IK15FB-□SS**	
	Single-Phase 200 VAC	**3IK15CB-□SS**	
	Single-Phase 220/230 VAC	**3IK15EB-□SS**	
	Three-Phase 200/220/230 VAC	**3IK15SB-□SS**	
25 W	Single-Phase 100 VAC	**4IK25AB-□SS**	**3~180**
	Single-Phase 110/115 VAC	**4IK25FB-□SS**	
	Single-Phase 200 VAC	**4IK25CB-□SS**	
	Single-Phase 220/230 VAC	**4IK25EB-□SS**	
	Three-Phase 200/220/230 VAC	**4IK25SB-□SS**	

Output Power	Power Supply Voltage	Product Name	Gear Ratio
40 W	Single-Phase 100 VAC	**5IK40AB-□SS**	**3~180**
	Single-Phase 110/115 VAC	**5IK40FB-□SS**	
	Single-Phase 200 VAC	**5IK40CB-□SS**	
	Single-Phase 220/230 VAC	**5IK40EB-□SS**	
	Three-Phase 200/220/230 VAC	**5IK40SB-□SS**	

The following items are included in each product.
Motor, Gearhead, Capacitor*1, Capacitor Cap*1, Mounting Screws, Parallel Key*2, Operating Manual
*1 Single-phase motors only
*2 Only for products with a key slot on the output shaft

Round Shaft Type

◇Thermal Protector for Automatic Return Type RoHS

Output Power	Power Supply Voltage	Product Name
6 W*	Single-Phase 100 VAC	**2IK6A-AW2BJ**
	Single-Phase 110/115 VAC	**2IK6A-AW2BU**
	Single-Phase 200 VAC	**2IK6A-CW2BJ**
	Single-Phase 220/230 VAC	**2IK6A-CW2BE**
	Three-Phase 200/220/230 VAC	**2IK6A-SW2B**
15 W	Single-Phase 100 VAC	**3IK15A-AW2BJ**
	Single-Phase 110/115 VAC	**3IK15A-AW2BU**
	Single-Phase 200 VAC	**3IK15A-CW2BJ**
	Single-Phase 220/230 VAC	**3IK15A-CW2BE**
	Three-Phase 200/220/230 VAC	**3IK15A-SW2B**
25 W	Single-Phase 100 VAC	**4IK25A-AW2BJ**
	Single-Phase 110/115 VAC	**4IK25A-AW2BU**
	Single-Phase 200 VAC	**4IK25A-CW2BJ**
	Single-Phase 220/230 VAC	**4IK25A-CW2BE**
	Three-Phase 200/220/230 VAC	**4IK25A-SW2B**
40 W	Single-Phase 100 VAC	**5IK40A-AW2BJ**
	Single-Phase 110/115 VAC	**5IK40A-AW2BU**
	Single-Phase 200 VAC	**5IK40A-CW2BJ**
	Single-Phase 220/230 VAC	**5IK40A-CW2BE**
	Three-Phase 200/220/230 VAC	**5IK40A-SW2B**

*6 W models are impedance protected. A thermal protector is not built in.

◇Thermal Protector for Signal Type RoHS

Output Power	Power Supply Voltage	Product Name
15 W	Single-Phase 100 VAC	**3IK15A-AW2BSJ**
	Single-Phase 110/115 VAC	**3IK15A-AW2BSU**
	Single-Phase 200 VAC	**3IK15A-CW2BSJ**
	Single-Phase 220/230 VAC	**3IK15A-CW2BSE**
	Three-Phase 200/220/230 VAC	**3IK15A-SW2BS**
25 W	Single-Phase 100 VAC	**4IK25A-AW2BSJ**
	Single-Phase 110/115 VAC	**4IK25A-AW2BSU**
	Single-Phase 200 VAC	**4IK25A-CW2BSJ**
	Single-Phase 220/230 VAC	**4IK25A-CW2BSE**
	Three-Phase 200/220/230 VAC	**4IK25A-SW2BS**
40 W	Single-Phase 100 VAC	**5IK40A-AW2BSJ**
	Single-Phase 110/115 VAC	**5IK40A-AW2BSU**
	Single-Phase 200 VAC	**5IK40A-CW2BSJ**
	Single-Phase 220/230 VAC	**5IK40A-CW2BSE**
	Three-Phase 200/220/230 VAC	**5IK40A-SW2BS**

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

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

IP65 Terminal Box Type Induction Motors

6 W

□60 mm

Specifications – Continuous Rating RoHS

Product Name and Type Upper Product Name: Combination Type Lower Product Name in ( ): Round Shaft Type	Output Power W	Voltage VAC	Frequency Hz	Current A	Starting Torque mN·m	Rated Torque mN·m	Rated Speed r/min	Capacitor μF
ZP **2IK6EB-□S** (**2IK6A-CW2BE**)	6	Single-Phase 220	50	0.103	38	49	1150	0.6
			60	0.091	40	41	1450	
		Single-Phase 230	50	0.107	45	49	1200	
			60	0.094	40	41	1450	
ZP **2IK6SB-□S** (**2IK6A-SW2B**)	6	Three-Phase 200	50	0.081	49	49	1200	–
			60	0.072	41	41	1400	
		Three-Phase 220	60	0.076	41	41	1500	
		Three-Phase 230	60	0.079	41	41	1500	

- A number indicating the gear ratio is entered where the box □ is located within the product name.
- The values in the table are characteristics for the motor only.
- Safety standards ➜ Page H-2

ZP: These products are impedance protected.

Permissible Torque When Combination Type

- A number indicating the gear ratio is entered where the box □ is located within the product name.
- A colored background ▭ indicates gear shaft rotation in the same direction as the motor shaft. Others rotate in the opposite direction.
- 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 to 20% less than the displayed value, depending on the load.
- To reduce the speed beyond the gear ratio in the table, attach a decimal gearhead of gear ratio 1:10 between the gearhead and the motor. In that case, the permissible torque is 3 N·m.

◇50Hz

Unit = N·m

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**
2IK6EB-□S **2IK6SB-□S**		0.12	0.14	0.20	0.24	0.30	0.36	0.50	0.60	0.71	0.89	1.1	1.3	1.6	1.9	2.4	2.9	3	3	3	3

◇60Hz

Unit = N·m

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**
2IK6EB-□S **2IK6SB-□S**		0.10	0.12	0.17	0.20	0.25	0.30	0.42	0.50	0.60	0.75	0.90	1.1	1.4	1.6	2.0	2.4	2.7	3	3	3

Permissible Overhung Load and Permissible Thrust Load

Motors (Round shaft type) ➜ Page C-16
Gearheads ➜ Page C-16

Permissible Load Inertia: J of Gearhead

➜ Page C-17

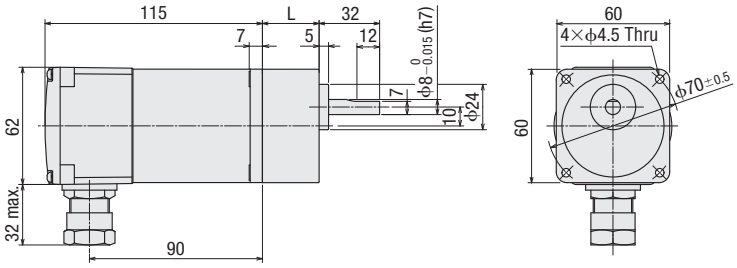
Dimensions (Unit = mm)

- Mounting screws are included with gearheads. Dimensions for mounting screws ➜ Page C-254
- A number indicating the gear ratio is entered where the box □ is located within the product name.

6 W

◇Combination Type

Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg
2IK6EB-□S	2IK6GN-CW2BE	2GN□S	**3~18**	30	1.3
2IK6SB-□S	2IK6GN-SW2B		**25~180**	40	

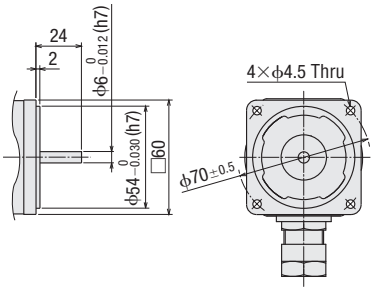


- Applicable cable diameter is ϕ8~ϕ12.
- Details of terminal box ➜ Page C-255

◇Shaft Section of Round Shaft Type

The motor's dimensions (excluding the shaft section) are the same as those of the pinion shaft types.

Mass: 0.9 kg

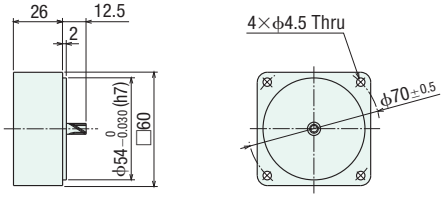


◇Decimal Gearhead

This can be attached to the **GN** pinion shaft type.

2GN10XS

Mass: 0.2 kg



IP65 Terminal Box Type Induction Motors

15 W

□70 mm

Specifications – Continuous Rating RoHS

Product Name and Type Upper Product Name: Combination Type Lower Product Name in ( ): Round Shaft Type		Output Power	Voltage	Frequency	Current	Starting Torque	Rated Torque	Rated Speed	Capacitor
Thermal Protector for Automatic Return Type	Thermal Protector for Signal Type	W	VAC	Hz	A	mN·m	mN·m	r/min	μF
TP **3IK15EB-□S** (**3IK15A-CW2BE**)	TP **3IK15EB-□SS** (**3IK15A-CW2BSE**)	15	Single-Phase 220	50	0.19	70	125	1200	1.0
				60	0.16	65	105	1450	
			Single-Phase 230	50	0.19	75	125	1200	
				60	0.16	65	105	1450	
TP **3IK15SB-□S** (**3IK15A-SW2B**)	TP **3IK15SB-□SS** (**3IK15A-SW2BS**)	15	Three-Phase 200	50	0.17	110	110	1350	–
				60	0.14	85	100	1600	
			Three-Phase 220	60	0.15	100	100	1650	
			Three-Phase 230	60	0.16	100	100	1650	

- A number indicating the gear ratio is entered where the box □ is located within the product name.
- The values in the table are characteristics for the motor only.
- Safety standards ➜ Page H-2

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 automatically. Be sure to turn the power supply off before inspecting.

TP: This indicates that there is a built-in thermal protector for signal that enables the retrieval of whether the thermal protector contacts are open or closed. Connection example ➜ Page C-59

Permissible Torque When Combination Type

- A number indicating the gear ratio is entered where the box □ is located within the product name.
  S indicating the thermal protector for signal is entered where the box ◇ is located within the product name.
- A colored background ▭ indicates gear shaft rotation in the same direction as the motor shaft. Others rotate in the opposite direction.
- 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 to 20% less, depending on the load.
- To reduce the speed beyond the gear ratio in the table, attach a decimal gearhead of gear ratio 1:10 between the gearhead and the motor. In that case, the permissible torque is 5 N·m.

◇50 Hz

Unit = N·m

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**
3IK15EB-□S◇		0.30	0.36	0.51	0.61	0.76	0.91	1.3	1.5	1.8	2.3	2.7	3.3	4.1	5	5	5	5	5	5	5
3IK15SB-□S◇		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	5	5	5	5	5

◇60 Hz

Unit = N·m

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**
3IK15EB-□S◇		0.26	0.31	0.43	0.51	0.64	0.77	1.1	1.3	1.5	1.9	2.3	2.8	3.5	4.2	5	5	5	5	5	5
3IK15SB-□S◇		0.24	0.29	0.41	0.49	0.61	0.73	1.0	1.2	1.5	1.8	2.2	2.6	3.3	4.0	5	5	5	5	5	5

Permissible Overhung Load and Permissible Thrust Load

Motors (Round shaft type) ➜ Page C-16
Gearheads ➜ Page C-16

Permissible Load Inertia: J of Gearhead

➜ Page C-17

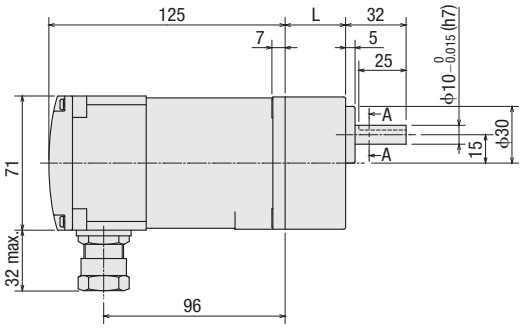
Dimensions (Unit = mm)

- Mounting screws are included with gearheads. Dimensions for mounting screws ➜ Page C-254
- A number indicating the gear ratio is entered where the box □ is located within the product name.

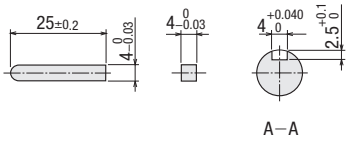
15 W

◇Combination Type (Thermal Protector for Automatic Return Type)

Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg
3IK15EB-□S	3IK15GN-CW2BE	3GN□S	**3~18**	32	1.95
3IK15SB-□S	3IK15GN-SW2B		**25~180**	42	



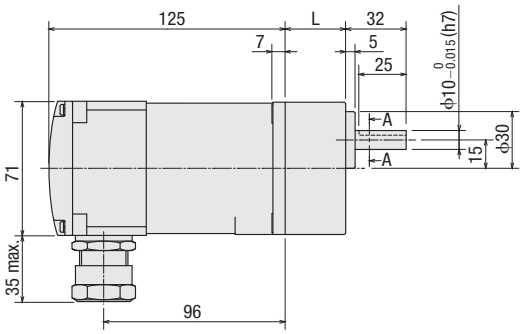
◇Key and Key Slot (Included)



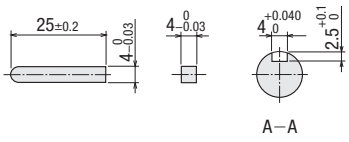
- Applicable cable diameter is Φ8~Φ12.
- Details of terminal box ➜ Page C-255

◇Combination Type (Thermal Protector for Signal Type)

Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg
3IK15EB-□SS	3IK15GN-CW2BSE	3GN□S	**3~18**	32	1.95
3IK15SB-□SS	3IK15GN-SW2BS		**25~180**	42	



◇Key and Key Slot (Included)

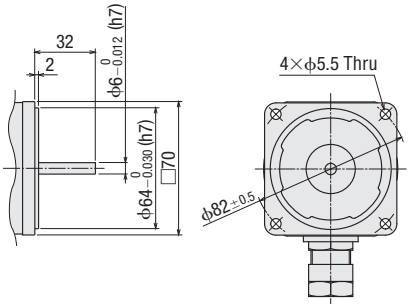


- Applicable cable diameter is Φ12~Φ16.
- Details of terminal box ➜ Page C-255

◇Shaft Section of Round Shaft Type

The motor's dimensions (excluding the shaft section) are the same as those of the pinion shaft types.

Mass: 1.4 kg

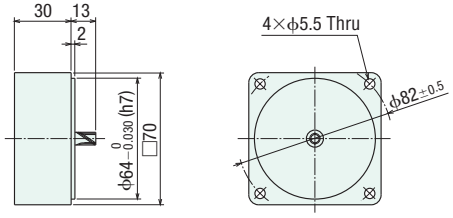


◇Decimal Gearhead

This can be attached to the **GN** pinion shaft type.

3GN10XS

Mass: 0.3 kg



IP65 Terminal Box Type Induction Motors

25 W

□80 mm

Specifications – Continuous Rating RoHS

Product Name and Type Upper Product Name: Combination Type Lower Product Name in ( ): Round Shaft Type		Output Power	Voltage	Frequency	Current	Starting Torque	Rated Torque	Rated Speed	Capacitor
Thermal Protector for Automatic Return Type	Thermal Protector for Signal Type	W	VAC	Hz	A	mN·m	mN·m	r/min	μF
TP **4IK25EB-□S** (**4IK25A-CW2BE**)	TP **4IK25EB-□SS** (**4IK25A-CW2BSE**)	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 **4IK25SB-□S** (**4IK25A-SW2B**)	TP **4IK25SB-□SS** (**4IK25A-SW2BS**)	25	Three-Phase 200	50	0.23	240	190	1300	–
				60	0.21	160	160	1550	
			Three-Phase 220	60	0.21	160	160	1600	
			Three-Phase 230	60	0.22	160	160	1600	

- A number indicating the gear ratio is entered where the box □ is located within the product name.
- The values in the table are characteristics for the motor only.
- Safety standards ➜ Page H-2

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 automatically. Be sure to turn the power supply off before inspecting.

TP: This indicates that there is a built-in thermal protector for signal that enables the retrieval of whether the thermal protector contacts are open or closed. Connection example ➜ Page C-59

Permissible Torque When Combination Type

- A number indicating the gear ratio is entered where the box □ is located within the product name.
  S indicating the thermal protector for signal is entered where the box ◇ is located within the product name.
- A colored background ▭ indicates gear shaft rotation in the same direction as the motor shaft. Others rotate in the opposite direction.
- 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 to 20% less, depending on the load.
- To reduce the speed beyond the gear ratio in the table, attach a decimal gearhead of gear ratio 1:10 between the gearhead and the motor.
  In that case, the permissible torque is 8 N·m. When a gearhead of 1/25 to 1/36 is attached, the value for permissible torque is 6 N·m.

◇50 Hz

Unit = N·m

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**
4IK25EB-□S◇		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
4IK25SB-□S◇		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

◇60 Hz

Unit = N·m

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**
4IK25EB-□S◇		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
4IK25SB-□S◇		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

Page
Features C-48 / System Configuration C-23 / Product Line C-49 / Specifications C-54
Dimensions C-55 / Connection Diagrams C-58 / Motor and Gearhead Combinations C-60

Permissible Overhung Load and Permissible Thrust Load

Motors (Round shaft type) ➜ Page C-16
Gearheads ➜ Page C-16

Permissible Load Inertia: J of Gearhead

➜ Page C-17

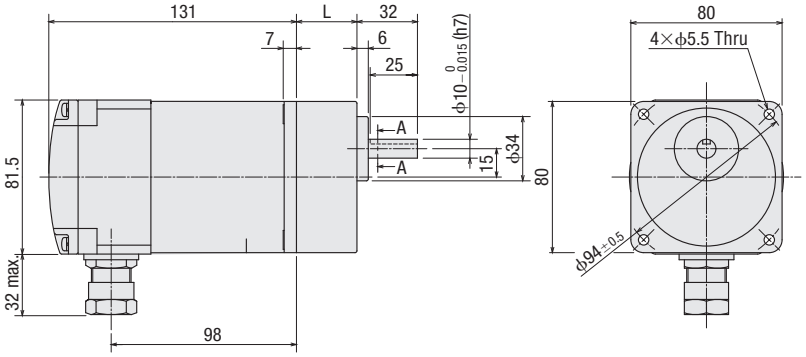
Dimensions (Unit = mm)

- Mounting screws are included with gearheads. Dimensions for mounting screws ➜ Page C-254
- A number indicating the gear ratio is entered where the box □ is located within the product name.

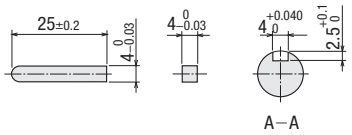
25 W

◇Combination Type (Thermal Protector for Automatic Return Type)

Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg
4IK25EB-□S	4IK25GN-CW2BE	4GN□S	**3~18**	32	2.55
4IK25SB-□S	4IK25GN-SW2B		**25~180**	42.5	



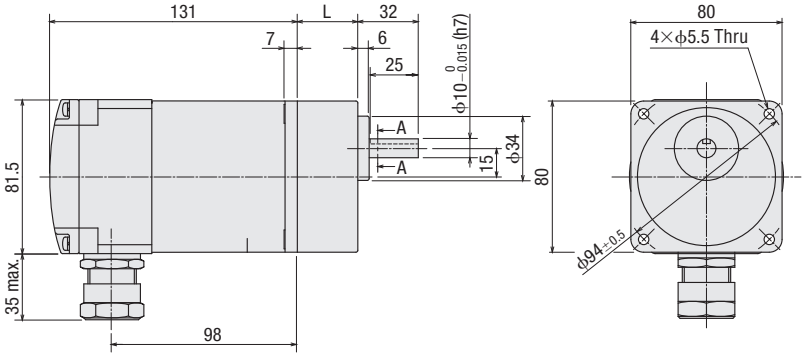
◇Key and Key Slot (Included)



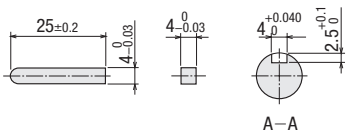
- Applicable cable diameter is Φ8~Φ12.
- Details of terminal box ➜ Page C-255

◇Combination Type (Thermal Protector for Signal Type)

Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg
4IK25EB-□SS	4IK25GN-CW2BSE	4GN□S	**3~18**	32	2.55
4IK25SB-□SS	4IK25GN-SW2BS		**25~180**	42.5	



◇Key and Key Slot (Included)

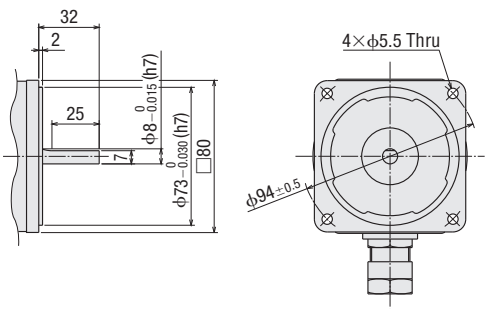


- Applicable cable diameter is Φ12~Φ16.
- Details of terminal box ➜ Page C-255

◇Shaft Section of Round Shaft Type

The motor's dimensions (excluding the shaft section) are the same as those of the pinion shaft types.

Mass: 1.9 kg

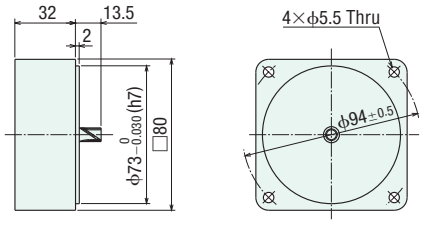


◇Decimal Gearhead

This can be attached to the **GN** pinion shaft type.

4GN10XS

Mass: 0.4 kg



IP65 Terminal Box Type Induction Motors

40 W

□90 mm

Specifications – Continuous Rating RoHS

Product Name and Type Upper Product Name: Combination Type Lower Product Name in ( ): Round Shaft Type		Output Power	Voltage	Frequency	Current	Starting Torque	Rated Torque	Rated Speed	Capacitor
Thermal Protector for Automatic Return Type	Thermal Protector for Signal Type	W	VAC	Hz	A	mN·m	mN·m	r/min	μF
TP **5IK40EB-□S** **(5IK40A-CW2BE)**	TP **5IK40EB-□SS** **(5IK40A-CW2BSE)**	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 **5IK40SB-□S** **(5IK40A-SW2B)**	TP **5IK40SB-□SS** **(5IK40A-SW2BS)**	40	Three-Phase 200	50	0.32	400	300	1300	–
				60	0.30	260	260	1550	
			Three-Phase 220	60	0.30	260	260	1600	
			Three-Phase 230	60	0.31	260	260	1600	

- A number indicating the gear ratio is entered where the box □ is located within the product name.
- The values in the table are characteristics for the motor only.
- Safety standards ➜ Page H-2

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 automatically. Be sure to turn the power supply off before inspecting.

TP: This indicates that there is a built-in thermal protector for signal that enables the retrieval of whether the thermal protector contacts are open or closed. Connection example ➜ Page C-59

Permissible Torque When Combination Type

- A number indicating the gear ratio is entered where the box □ is located within the product name.
  S indicating the thermal protector for signal is entered where the box ◇ is located within the product name.
- A colored background ▭ indicates gear shaft rotation in the same direction as the motor shaft. Others rotate in the opposite direction.
- 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 to 20% less than the displayed value, depending on the load.
- To reduce the speed beyond the gear ratio in the table, attach a decimal gearhead of gear ratio 1:10 between the gearhead and the motor. In that case, the permissible torque is 10 N·m.

◇50 Hz

Unit = N·m

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**
5IK40EB-□S◇ (Single-Phase 220 VAC)		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
5IK40EB-□S◇ (Single-Phase 230 VAC) **5IK40SB-□S◇**		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

◇60 Hz

Unit = N·m

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**
5IK40EB-□S◇ **5IK40SB-□S◇**		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

Permissible Overhung Load and Permissible Thrust Load

Motors (Round shaft type) ➜ Page C-16
Gearheads ➜ Page C-16

Permissible Load Inertia: J of Gearhead

➜ Page C-17

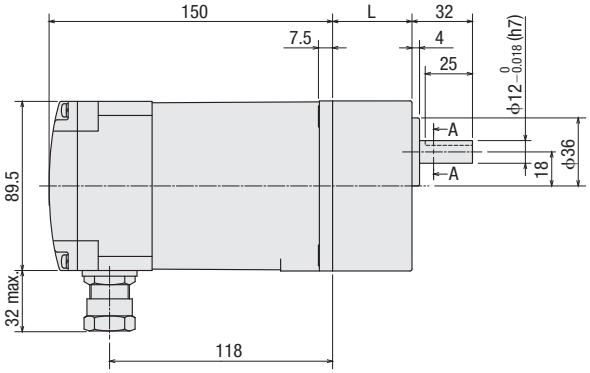
Dimensions (Unit = mm)

- Mounting screws are included with gearheads. Dimensions for mounting screws ➜ Page C-254
- A number indicating the gear ratio is entered where the box □ is located within the product name.

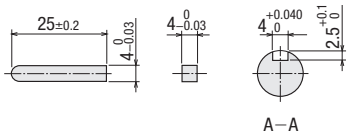
40 W

◇Combination Type (Thermal Protector for Automatic Return Type)

Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg
5IK40EB-□S	5IK40GN-CW2BE	5GN□S	**3~18**	42	4.2
5IK40SB-□S	5IK40GN-SW2B		**25~180**	60	



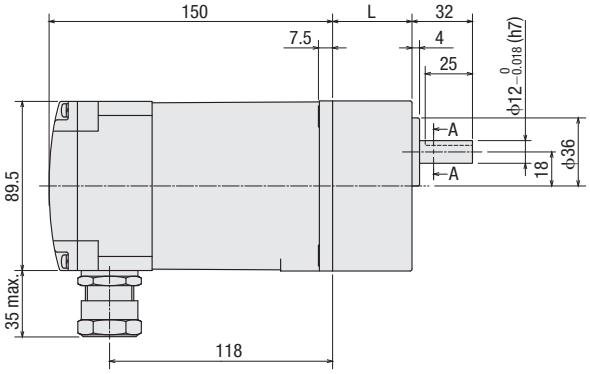
◇Key and Key Slot (Included)



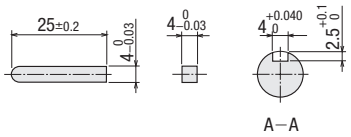
- Applicable cable diameter is φ8~φ12.
- Details of terminal box ➜ Page C-255

◇Combination Type (Thermal Protector for Signal Type)

Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg
5IK40EB-□SS	5IK40GN-CW2BSE	5GN□S	**3~18**	42	4.2
5IK40SB-□SS	5IK40GN-SW2BS		**25~180**	60	



◇Key and Key Slot (Included)

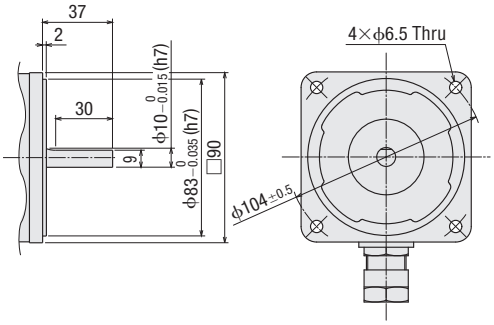


- Applicable cable diameter is φ12~φ16.
- Details of terminal box ➜ Page C-255

◇Shaft Section of Round Shaft Type

The motor's dimensions (excluding the shaft section) are the same as those of the pinion shaft types.

Mass: 2.7 kg

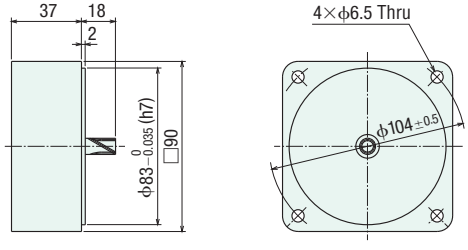


◇Decimal Gearhead

This can be attached to the **GN** pinion shaft type.

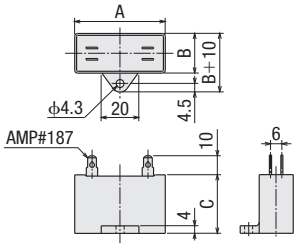
5GN10XS

Mass: 0.6 kg



Dimensions (Unit = mm)

Capacitor (Included with single-phase motors)



◇Capacitor Dimensions (mm)

Product Name and Type Upper Product Name: Combination Type Lower Product Name in ( ): Round Shaft Type		Capacitor Product Name	A	B	C	Mass (g)	Capacitor Cap
Thermal Protector for Automatic Return Type	Thermal Protector for Signal Type						
2IK6EB-□S **(2IK6A-CW2BE)**	–	CH06BFAUL	31	14.5	23.5	18	Included
3IK15EB-□S **(3IK15A-CW2BE)**	**3IK15EB-□SS** **(3IK15A-CW2BSE)**	CH10BFAUL	37	18	27	27	
4IK25EB-□S **(4IK25A-CW2BE)**	**4IK25EB-□SS** **(4IK25A-CW2BSE)**	CH15BFAUL	38	21	31	37	
5IK40EB-□S **(5IK40A-CW2BE)**	**5IK40EB-□SS** **(5IK40A-CW2BSE)**	CH23BFAUL	48	21	31	43	

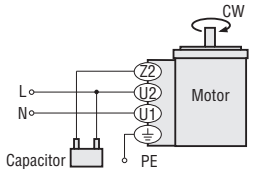
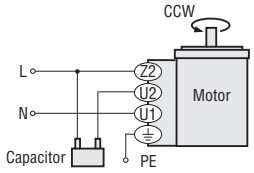
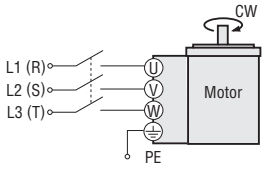
● A number indicating the gear ratio is entered where the box □ is located within the product name.

Connection Diagram

● 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 rotation direction of the gearhead output shaft may differ from that of the motor output shaft depending on the gear ratio of the gearhead.
Refer to the permissible torque table of the combination type for the rotation direction.

Thermal Protector for Automatic Return Type, Impedance Protected

Single-Phase Motor		Three-Phase Motor
Clockwise	**Counterclockwise**	**Clockwise**
		
		Counterclockwise To change the rotation direction to counterclockwise, change any two connections between R, S and T.

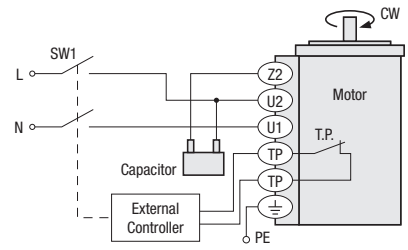
●Thermal Protector for Signal Type

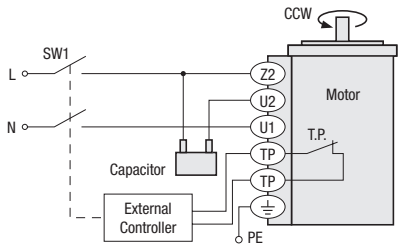
●If the motor with built-in thermal protector abnormally heats for some reason, the contacts (normally closed) become open. When the temperature of the motor decreases, the contacts of the thermal protector are reset (closed).

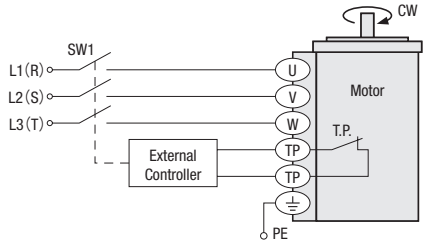
●Operate SW1 with the external controller and shut off the motor's power supply in order to stop the motor when the thermal protector has been activated.

●Even if the thermal protector automatically returns, ensure that the power supply remains shut off with SW1.

Single-Phase Motor		Three-Phase Motor
Clockwise	**Counterclockwise**	**Clockwise**







Counterclockwise
To change the rotation direction to counterclockwise, change any two connections between R, S and T.

◇Connection Example of Thermal Protector for Signal Type

When Relays and Switches are Used

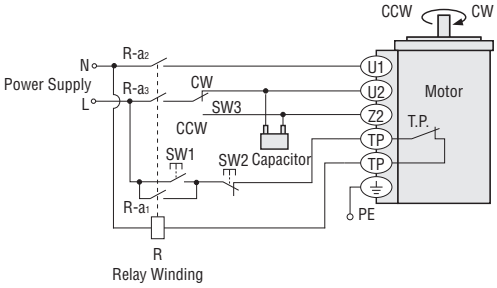
•Connect the motor properly so that the power of the motor can be interrupted when the thermal protector is activated.

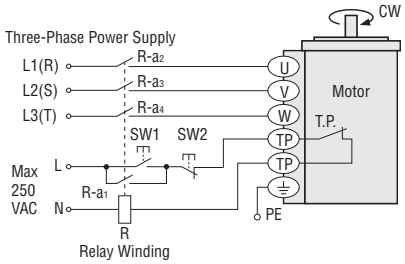
•When switch SW1 (normally open) is turned ON, the motor operates. When switch SW2 (normally closed) is turned ON, the motor stops.

Single-Phase Motor	Three-Phase Motor
Clockwise	**Clockwise**

Clockwise
To rotate the motor in the clockwise (CW) direction, turn the switch (SW3) to CW.

Counterclockwise
To rotate the motor in the counterclockwise (CCW) direction, turn the switch (SW3) to CCW.





Counterclockwise
To change the rotation direction to counterclockwise, change any two connections between R, S and T.

Note

●Configure the circuit properly so that the motor does not unexpectedly start even when the thermal protector is automatically reset.

●Do not connect the thermal protector directly to a power source. Always connect a switch or relay.

◇Contact Capacity

Number	Single-Phase 220/230 VAC	Remarks
SW1 SW2 SW3	250 VAC 5 A min. (Inductive load)	–
R-a1 R-a2 R-a3 R-a4	250 VAC 5 A min. (Inductive load)	Switched simultaneously

●Connect a CR circuit for surge suppression to the forward/reverse select switch to protect the contact. **EPCR1201-2** (sold separately) is available as an accessory. ➜ Page C-250

●How to connect a capacitor ➜ Page C-255

●Z2, U2, U1 U, V, W: Motor power line, TP: Thermal protector

◇Thermal Protector Specifications (Thermal Protector for Signal Type)

Item	Specifications
Operating Temperature	Open: 130±5°C, Close: 90±15°C (Normally Closed)
Contact Specifications	Rated operational voltage and rated operational current (resistance load) 250 VAC 2 A, 26 VDC 2 A Minimum Load Condition: 85 VAC 50 mA, 5 VDC 5 mA Initial Contact Resistance: 50 mΩ max.
Dielectric Strength	No abnormality is judged even with application of 3.0 kVAC at 50 Hz or 60 Hz between the motor windings and the thermal protector lead wire cores for 1 minute after rated operation under normal ambient temperature and humidity.

●Connecting Method

◇Applicable Cable Diameter

ϕ8～12 mm (Thermal Protector for Automatic Return Type, Impedance Protected)
ϕ12～16 mm (Thermal Protector for Signal Type)

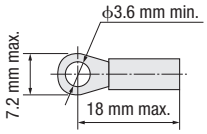
◇Applicable Lead Wire Diameter

AWG18 (0.75 mm^2) min.

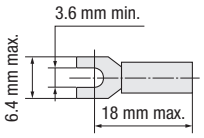
◇Applicable Crimp Terminal

Connection to Terminal Block

- Insulated Round Terminal

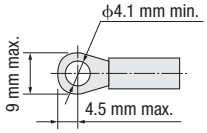


- Insulated Fork Terminal



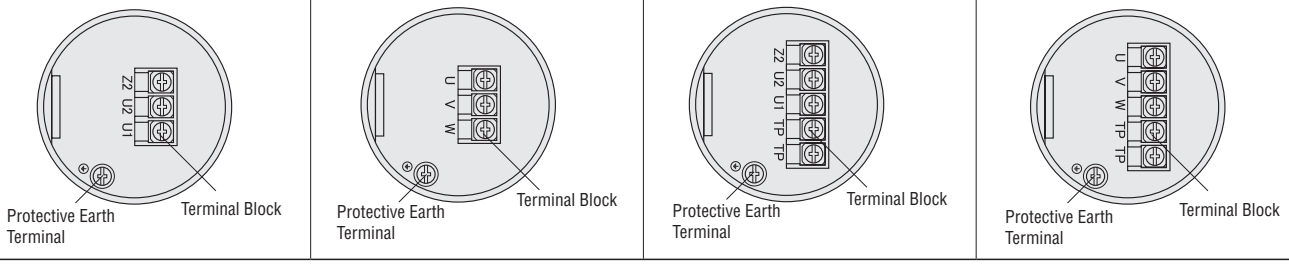
Connection to Protective Earth Terminal

- Insulated Round Terminal



◇Inside of the Terminal Box

Thermal Protector for Automatic Return Type, Impedance Protected		Thermal Protector for Signal Type	
Single-Phase Motor	Three-Phase Motor	Single-Phase Motor	Three-Phase Motor



●Z2, U2, U1 U, V, W: Motor power line, TP: Thermal protector

■List of Motor and Gearhead Combinations

●Combination Type

◇Thermal Protector for Automatic Return Type

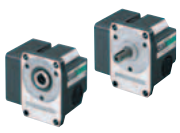
Output Power	Product Name	Motor Product Name	Gearhead Product Name
6 W	**2IK6EB-□S**	2IK6GN-CW2BE	2GN□S
	2IK6SB-□S	2IK6GN-SW2B	
15 W	**3IK15EB-□S**	3IK15GN-CW2BE	3GN□S
	3IK15SB-□S	3IK15GN-SW2B	
25 W	**4IK25EB-□S**	4IK25GN-CW2BE	4GN□S
	4IK25SB-□S	4IK25GN-SW2B	
40 W	**5IK40EB-□S**	5IK40GN-CW2BE	5GN□S
	5IK40SB-□S	5IK40GN-SW2B	

◇Thermal Protector for Signal Type

Output Power	Product Name	Motor Product Name	Gearhead Product Name
15 W	**3IK15EB-□SS**	3IK15GN-CW2BSE	3GN□S
	3IK15SB-□SS	3IK15GN-SW2BS	
25 W	**4IK25EB-□SS**	4IK25GN-CW2BSE	4GN□S
	4IK25SB-□SS	4IK25GN-SW2BS	
40 W	**5IK40EB-□SS**	5IK40GN-CW2BSE	5GN□S
	5IK40SB-□SS	5IK40GN-SW2BS	

Gearheads, Peripheral Equipment

Space Saving
Right-Angle Gearheads
➜ Page C-213



Instantaneous Stop
Brake Pack
➜ Page C-229

Speed Control
Inverters
➜ Page D-136

Accessories
Mounting Brackets
➜ Page C-240

Couplings
➜ Page C-245

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