

Orientalmotor

Standard AC Motors
Three-Phase High-Efficiency
Induction Motors

KIIS Series

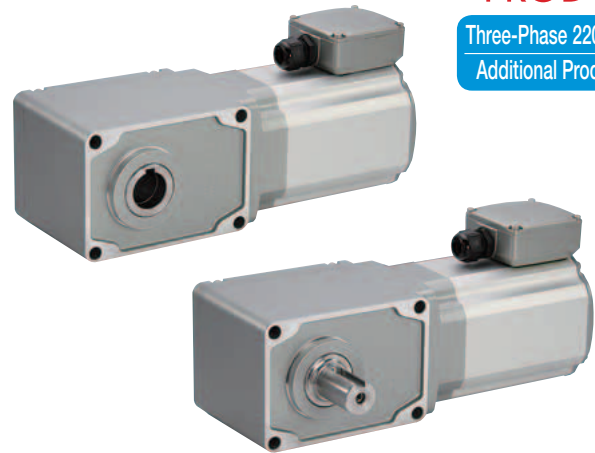
200 W (1/4 HP) Type

Three-Phase 220/230 VAC Input

The **KIIS** Series of three-phase induction motors now have a higher efficiency than ever before, thanks to revisions to the basic motor design.

NEW
PRODUCTS

Three-Phase 220/230 VAC
Additional Product Line



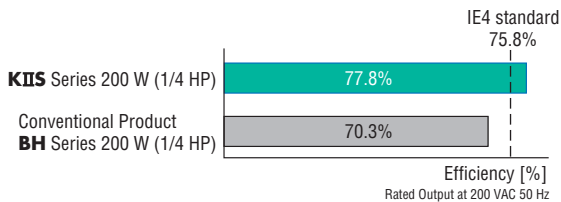
Features

High-Efficiency IE4

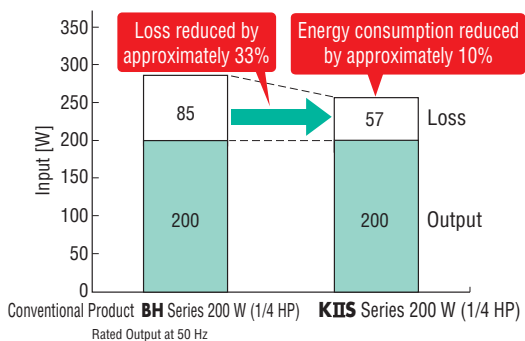
● 77.8% Efficiency (rated output), Meets IE4* Standards

A motor efficiency of 77.8% (rated output) has been achieved thanks to an optimized magnet design and the use of specialized parts. The motor loss has been greatly decreased, and the motor output power increased. Motors now feature a fanless design.

*Its high efficiency satisfies the efficiency class IE4 criteria of the international standard IEC 60034-30-1.

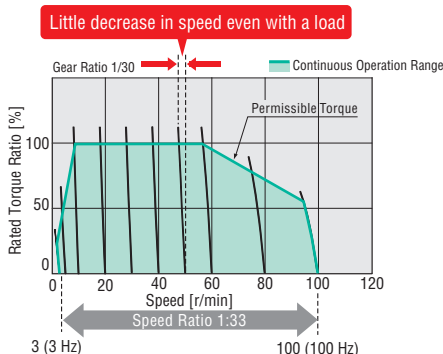


● Energy Consumption Decreased by up to 10%



Optimized for Combination with an Inverter

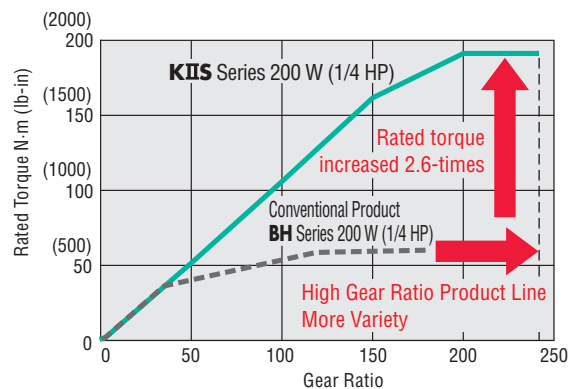
Speed can be controlled in a broad range from low to high. There is also little speed fluctuation due to load, resulting in more stable speed control.



High-Strength, High-Torque

A gearhead with excellent torque and strength is utilized.

● Rated Torque 190 N·m (1682 lb-in)



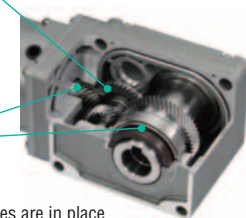
● Hypoid Gears

A hypoid gear is utilized at the first reducer step

A high-strength helical gear is placed at the last step to increase strength

Oil Seal

A special oil seal is utilized, improving sealing
Grease leak countermeasures are in place



Excellent Environmental Resistance

● Drip-Proof IP66-Compliant Specifications

The sealing of the motor, gearhead, and terminal box is improved. Since it is fanless, it has a sealed structure and is compliant with protection code IP66.

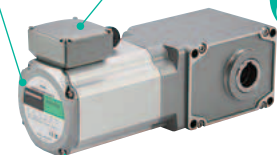
IP66: The IP indication that shows the watertight and dust-resistant performance as specified under IEC 60529 and IEC 60034-5.

Fanless structure

No cooling fan is needed at the back of the motor, thanks to the high-efficiency design. No dust, etc. gets inside. This also makes the motor quieter.

Thin terminal box

IP66 compliant



Screws (exposed portions)
Stainless steel

● Please see page 2 for materials and surface treatment.

Product Number

● Right-Angle Geared Type (Induction motors)

7 I K 200 V ES T2 - GHR 15

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

①	Motor Frame Size	7 : 110 mm
②	Motor Type	I : Induction Motor
③	Series Name	K : KII Series
④	Output Power (W)	(Example) 200 : 200 W (1/4 HP)
⑤	V : Three-Phase High-Efficiency Motor	
⑥	Power Supply Voltage and Number of Poles	ES : Three-Phase 220/230 VAC 4 Poles
⑦	T2 : Terminal Box Type	
⑧	Output Shaft Type/Direction	GHR : Hollow Shaft Type GAR : Solid Shaft Type (R Shaft) GAL : Solid Shaft Type (L Shaft)
⑨	Gear Ratio	Number: Gearhead Gear Ratio

Product Line

● Hollow Shaft Type

Type	Product Name	Gear Ratio	List Price
Terminal Box Type	7IK200VEST2-GHR <input type="checkbox"/>	15, 20, 25, 30, 40, 50, 60	\$490.00
		75, 100, 120, 150, 200, 240	\$525.00

The following items are included with each product.
Geared Motor, Installation Screws, Parallel Key, Safety Cover, Operating Manual

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

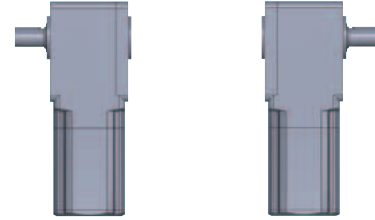
● Solid Shaft Type

Type	Product Name	Gear Ratio	List Price
Terminal Box Type	7IK200VEST2-GAR <input type="checkbox"/> 7IK200VEST2-GAL <input type="checkbox"/>	15, 20, 25, 30, 40, 50, 60	\$452.00
		75, 100, 120, 150, 200, 240	\$485.00

The following items are included with each product.
Geared Motor, Installation Screws, Parallel Key, Operating Manual

Shaft Configuration of Solid Shaft Type

Either left or right side output shaft configuration can be selected with the solid shaft type. Select the type that best suits the equipment.



● This is the direction of the gear output shaft when viewed from the back of the terminal box.

General Specifications

Item	Specifications
Insulation Resistance	The measured value is 100 MΩ min. when a 500 VDC megger is applied between the windings and the case after continuous operation under normal ambient temperature and humidity.
Dielectric Strength	Sufficient to withstand 1.5 kVAC 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 the windings is 80°C (144°F) or less measured by the resistance change method after rated load continuous operation under normal ambient temperature and humidity.
Heat-Resistant Class	130(B)
Operating Ambient Temperature	0~40°C (+32~+104°F) (non-freezing)
Operating Ambient Humidity	85% max. (non-condensing)
Degree of Protection	Terminal box type: IP66 (Please see below for materials and surface treatment.)

Note

● No built-in overheat protection device (thermal protector).
When there is an overload or the output shaft is locked, use the electromagnetic switch and the inverter's electronic thermal function to prevent motor burnout.

Materials

Motor case, gear case, bracket, terminal box: Aluminum
Output shaft: S45C
Screws: Stainless steel (only exposed portions)

Surface treatment

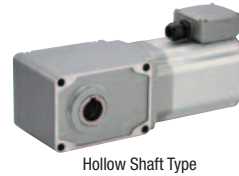
Motor case: Alumite treatment
Gear case, bracket, terminal box: Paint (excluding installation surfaces)

Induction Motors

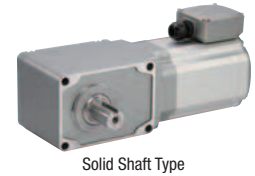
200 W (1/4 HP)

□ 110 mm (4.33 in.)

Right-Angle Geared Type



Hollow Shaft Type



Solid Shaft Type

Specifications – Continuous Rating



Product Name			Output	Voltage	Frequency	Current
Hollow Shaft Type	Solid Shaft Type (R shaft)	Solid Shaft Type (L shaft)	W (HP)	VAC	Hz	A
71K200VEST2-GHR □	71K200VEST2-GAR □	71K200VEST2-GAL □	200 (1/4)	Three-Phase 220	50	1.00
					60	0.90
			200 (1/4)	Three-Phase 230	50	1.02
					60	0.89

Gear Ratio		15	20	25	30	40	50	60	75	100	120	150	200	240
Speed [r/min]	50 Hz	100	75	60	50	37	30	25	20	15	12.5	10	7.5	6.2
	60 Hz	120	90	72	60	45	36	30	24	18	15	12	9	7.5
Rated Torque Upper Level: N·m Lower Level: lb-in	50 Hz	15.5	20.8	26.1	31.4	42.1	52.7	63.3	79.3	105	127	159	190	190
		137	184	230	270	370	460	560	700	920	1120	1400	1680	1680
	60 Hz	12.8	17.3	21.7	26.1	35	43.9	52.8	66.1	88.3	106	132	177	190
		113	153	192	230	300	380	460	580	780	930	1160	1560	1680
Starting Torque Upper Level: N·m Lower Level: lb-in	50/60 Hz	16.1	21.6	27.1	32.6	43.7	54.7	65.7	82.3	110	132	165	190	190
		142	191	230	280	380	480	580	720	970	1160	1460	1680	1680
Permissible Inertia Upper Level: J: × 10 ⁻⁴ kg·m ² Lower Level: oz-in ²	At Instantaneous Stop	450	800	1250	1800	3200	5000	5000	5000	5000	5000	5000	5000	5000
		2500	4400	6800	9800	17500	27000	27000	27000	27000	27000	27000	27000	27000
Permissible Radial Load Upper Level: N Lower Level: lb.	Hollow Shaft*	10 mm (0.39 in.) from installation surface	2400						3200					
		20 mm (0.79 in.) from installation surface	540						720					
	Solid Shaft	10 mm (0.39 in.) from end of output shaft	2200						3000					
		20 mm (0.79 in.) from end of output shaft	490						670					
Permissible Axial Load Upper Level: N Lower Level: lb.		1900						3200						
		420						720						
		2000						3400						
		450						760						

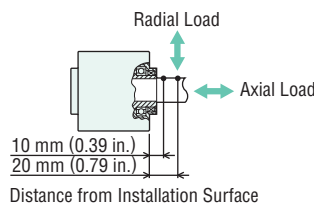
- *The radial load at each distance can also be calculated with a formula.
- The speed is calculated by dividing the motor's synchronous speed (50 Hz: 1500 r/min, 60 Hz: 1800 r/min) by the gear ratio.
The actual speed is 2 to 10% less than the displayed value, depending on the load.
- No built-in overheat protection device (thermal protector).
When there is an overload or the output shaft is locked, use the electromagnetic switch and the inverter's electronic thermal function to prevent motor burnout.
- When operating with an inverter, please use an inverter frequency setting of 100 Hz max.

Note

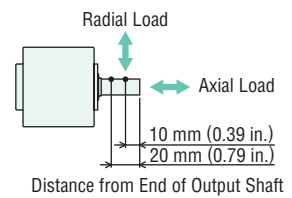
- Do not perform instantaneous bi-directional operations.

◇ Load Position

● Hollow Shaft Type



● Solid Shaft Type



◇ Calculating the Permissible Radial Load for the Hollow Shaft Type

When one end of the load shaft is not supported by a bearing unit as shown in the figure to the right, calculate the permissible radial load using the following formula.

(This mechanism experiences the highest amount of radial load.)

● Gear ratio of 15:1 ~ 40:1

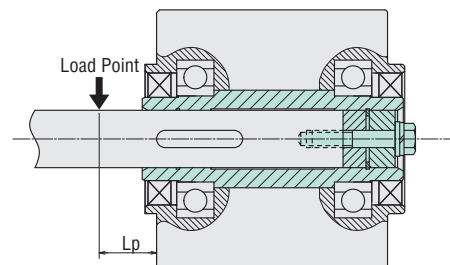
$$\text{Permissible radial load } W \text{ [N (lb)]} = \frac{105.5 \text{ mm (4.15 in.)}}{105.5 \text{ mm (4.15 in.)} + L_p} \times 2620 \text{ N (589 lb)}$$

2620 [N (lb)]: Permissible radial load at the flange-installation surface

● Gear ratio of 50:1 ~ 240:1

$$\text{Permissible radial load } W \text{ [N (lb)]} = \frac{105.5 \text{ mm (4.15 in.)}}{105.5 \text{ mm (4.15 in.)} + L_p} \times 3500 \text{ N (786 lb)}$$

3500 [N (lb)]: Permissible radial load at the flange-installation surface



L_p [mm (in.)]: Distance from flange-installation surface to radial load point

◇ Solid Shaft Type (L shaft)

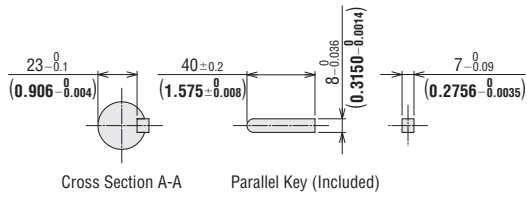
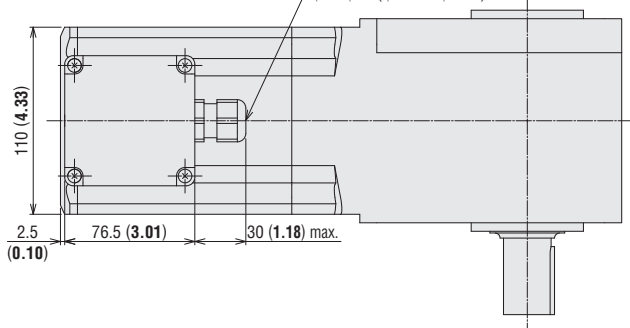
7IK200VEST2-GAL□

Mass: 13.0 kg (28.6 lb)

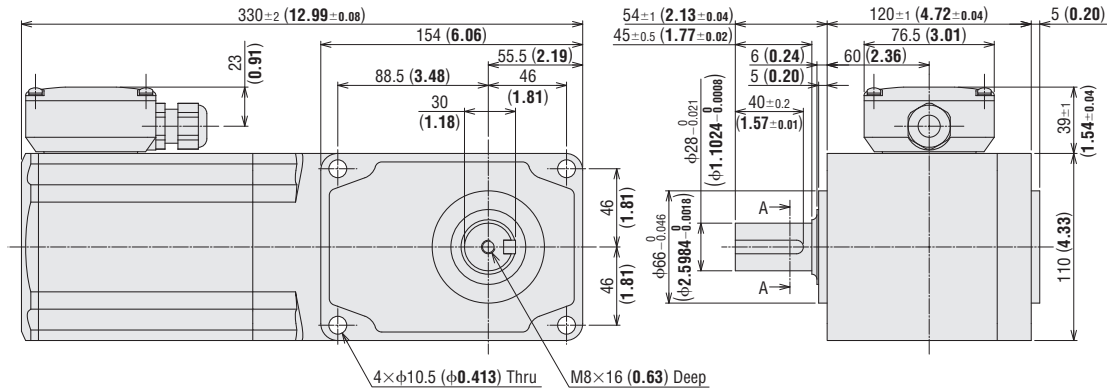
2D CAD A1335

3D CAD

Applicable Cable Diameter:
φ7~φ13 (φ0.28~φ0.51)

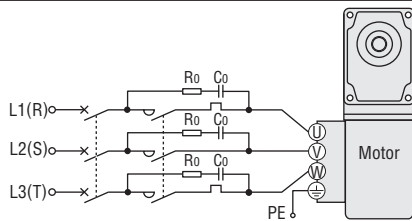


● At the time of shipment, a parallel key is fixed in the key slot of the gearhead shaft.



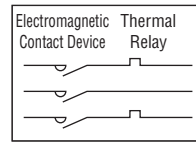
■ Connection Diagram

Terminal Box Type



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

[Electromagnetic Switch]



[Surge Protection]

Connect the CR circuit for surge suppression (-□-||-).

R₀=5~200 Ω

C₀=0.1~0.2 μF 200 WV

● EPCR1201-2 (sold separately) is available as an accessory at Oriental Motor.

Note

When there is an overload or the output shaft is locked, use the electromagnetic switch and the inverter's electronic thermal function to prevent motor burnout.

● Rotation direction (in the case of the connection diagram above)

The rotation direction of the output shaft is as follows, by type and gear ratio.

Type	Gear Ratio 15~60	Gear Ratio 75~240
Hollow Shaft Type		
Solid Shaft Type	R shaft: L shaft:	R shaft: L shaft:

Recommended Electromagnetic Switch

When connecting the motor to a power source, ensure that an electromagnetic switch is connected.
 Use the following product or an equivalent product for the electromagnetic switch.
 Use the rated current of the motor as the setting current for the thermal relay.
 The rated current of the motor can be confirmed in the specifications of each product.

- Fuji Electric FA Components & Systems Co., Ltd.
 Part number: SC11AAN-□ 10TK
 ● The coil code is located in the box (□) within the part number.

- Mitsubishi Electric Corporation
 Part number: MSO-T10 0.9 A 200 V 200 VAC

Coil Code	50 Hz	60 Hz
2	200 VAC	200-220 VAC
M	200-220 VAC	220-240 VAC
P	220-240 VAC	240-260 VAC

Use with an Inverter

When using in combination with an inverter, the conditions for the inverter frequency setting are as follows.
 ● Right-angle geared type: 100 Hz max.
 Please see the operating manual for the motor settings and notes.

Load Shaft Installation Method for Hollow Shaft Types

● Example of Load Shaft Installation Method

Load shaft installation differs depending on the fixing method. Please install as shown in the diagrams below.

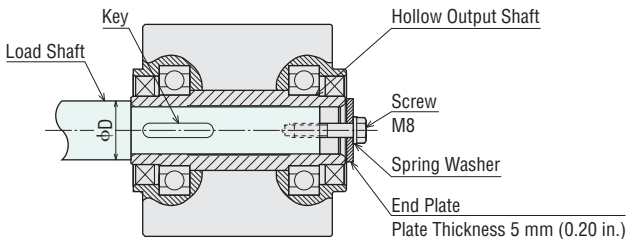
- Install the load shaft to the hollow output shaft by aligning the center of the hollow shaft with that of the load shaft.
- The hollow output shaft has a key slot. Machine a matching key slot on the load shaft and use the supplied key to fix the two shafts across the slots.
- The recommended tolerance of the load shaft is h7.
- If the motor is intended to receive large shocks due to frequent instantaneous stops or carry a large radial load, use a stepped load shaft.

Note

- When installing the load shaft to the hollow output shaft, be careful not to damage the hollow output shaft or bearing.
- To prevent sticking, apply a coat of grease on the exterior surface of the load shaft and interior surface of the hollow output shaft.
- Do not attempt to modify or machine the hollow output shaft. Doing so may damage or break the bearing.

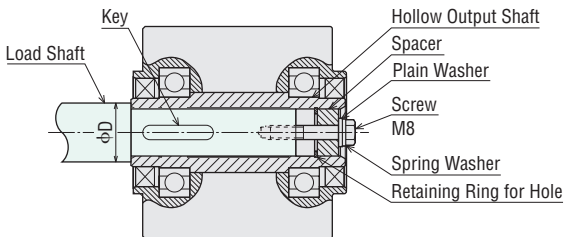
◇ Fixing Method when Using an End Plate

● Stepped Load Shaft



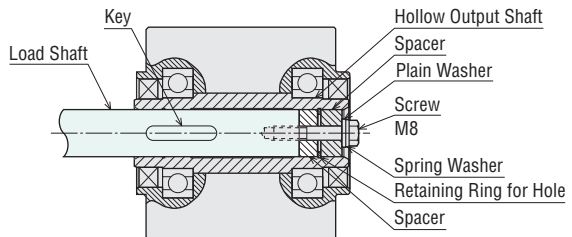
◇ Fixing Method when Using a Retaining Ring for Hole

● Stepped Load Shaft



- After installing a load shaft, install the safety cover.

● Straight Load Shaft



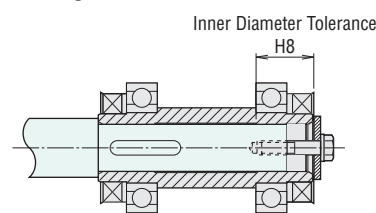
Recommended Load Shaft Installation Dimensions

Unit: mm (in.)

Product Name	7IK
Inner Diameter of Hollow Shaft (H8)	$\phi 30^{+0.033}_0$ ($\phi 1.1811^{+0.0013}_0$)
Shaft Diameter of Load Shaft (h7)	$\phi 30^{0}_{-0.021}$ ($\phi 1.1811^{0}_{-0.0008}$)
Nominal Hole Diameter of Retaining Ring	$\phi 30$ ($\phi 1.18$) C Type Retaining Ring
Stepped Shaft Outer Diameter ϕD	$\phi 44$ ($\phi 1.73$)
Spacer Thickness	6 (0.24)

- Retaining rings for holes, spacers, screws or other parts used to install the load shaft are not included and must be supplied by the customer.

◇ Length of Load Shaft

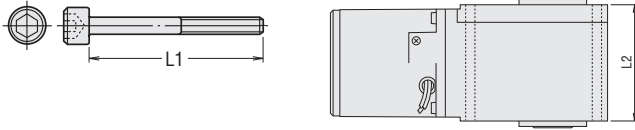


An inner diameter tolerance of 8 mm (0.315 in.) or more for the H8 component on the fixing side of the load shaft is recommended.

Dimensions for Installation Screws

The following screws are included.

Right-Angle Geared Type



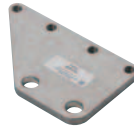
Product Name	Installation Screws		L2 mm (in.)
	L1 mm (in.)	Screw Size	
7IK	135 (5.31)	M10 P1.5	120 (4.72)

- Installation screws: Four plain washers and four spring washers are included
- The installation screw material is stainless steel.

Accessories (Sold separately)

Torque Arm

This is a baffle that prevents the gearhead from rotating due to reaction force from the load shaft when installing the gearhead of a right-angle geared type or hollow shaft geared type.



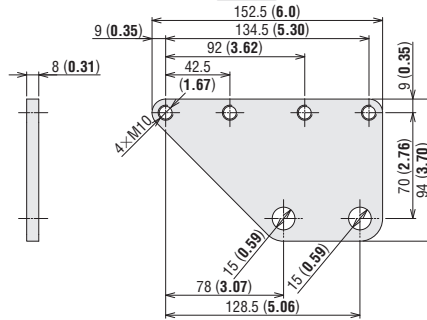
Product Line

Material: Stainless steel

Product Name	List Price	Applicable Product
SOT7A	\$50.00	7IK200VJST2-GHR <input type="checkbox"/> Right-Angle Geared Type Hollow Shaft Type

Dimensions Unit = mm (in.)

Mass: 620 g (21.9 oz) **2D CAD** A1345



Flexible Coupling NEW

This is a clamping type coupling that connects the geared motor of the solid shaft type and the mating shaft.



Product Line

Product Name	List Price	Applicable Product
MCL65M2528	\$191.00	7IK200VJST2-GA <input type="checkbox"/> <input type="checkbox"/>
MCL65M2828		Right-Angle Geared Type Solid Shaft Type

Specifications

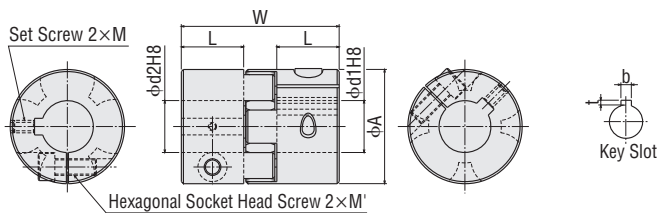
Product Name	Dimensions							Normal Torque	Mass	Inertia	Permissible Eccentricity	Permissible Declination	End Play
	Outer Diameter ϕA	Overall Length W	Shaft Hole Diameter d1H8	Shaft Hole Diameter d2H8	L	Set Screws	Hexagonal Socket Head Screws						
MCL65M2528	$\phi 65$	87.5	25 (0.9843)	28 (1.1024)	35	M5	M10	200	560	3.5 (19.1)	0.08	1.0	+1.5 (0.059)
MCL65M2828	(2.56)	(3.44)	28 (1.1024)	28 (1.1024)	(1.38)			(1770)	(19.8)		(3.1×10^{-3})		0

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

Dimensions Unit = mm (in.)

MCL65M type

2D CAD A708 **3D CAD**



Shaft Hole Diameter ($\phi d1$)	Key Slot Width b	Key Slot Depth t
$\phi 25$ (0.9843)	$8^{+0.052}$	$3.3^{+0.2}$
$\phi 28$ (1.1024)	$(0.315^{+0.0020})$	$(0.13^{+0.0008})$

CR Circuit for Surge Suppression

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

◇ **Product Name: EPCR1201-2**

List Price: \$5.00

250 VAC (120 Ω , 0.1 μ F)

- Either **R** or **L** indicating the direction of the output shaft is located in the box within the product name.
- A number indicating the gear ratio is specified where the box is located in the product name.

■ **KIIS & KII Series AC Induction Motors & Gear Motors**

For a complete line of Three-Phase or Single-Phase AC Induction motors with Hypoid or Parallel shaft gear heads, visit our website. www.orientalmotor.com

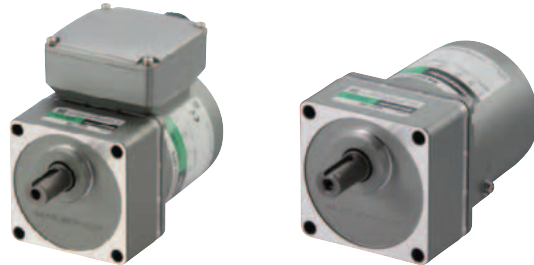
Additional **KIIS** Series three-phase induction motors are available from 60 W (1/12 HP) up to 100 W (1/8 HP) with either Imperial or Metric standard output shafts.

The **KII** Series single-phase is available from 6 W (1/125 HP) up to 90 W (1/8 HP) with either Imperial or Metric standard output shafts.

KIIS Series



KII Series



Specifications are subject to change without notice. This catalog was published in November, 2015.

ORIENTAL MOTOR U.S.A. CORP.

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