Oriental motor

NEW PRODUCTS

RoHS RoHS-Compliant

5-Phase Stepping Motor and Driver Package

RK Series

●Standard Type ●TH Geared Type
●PL Geared Type ●PN Geared Type
●Harmonic Geared Type

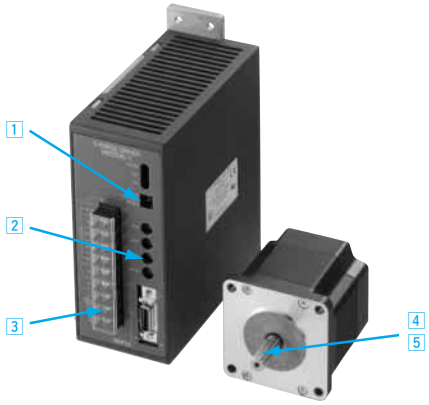
RoHS RoHS-Compliant

5-Phase Stepping Motor and Driver Package

RK Series

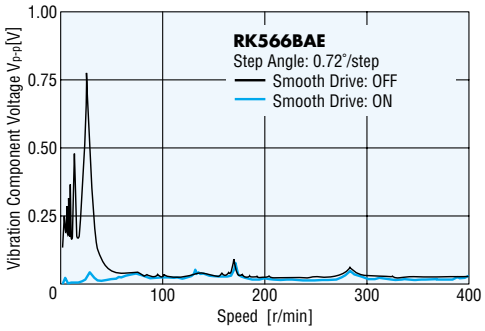
The **RK** Series incorporates new functions and state-of-the-art technologies to achieve the ultimate use of a control motor. The series offers various types including the standard type, electromagnetic brake type, IP65 rated motor type, and four geared types. Three frame sizes of 42 mm, 60 mm and 85 (90) mm are available. The wide range of motor variations and affordable prices make the **RK** Series a perfect solution for your various applications.

Features

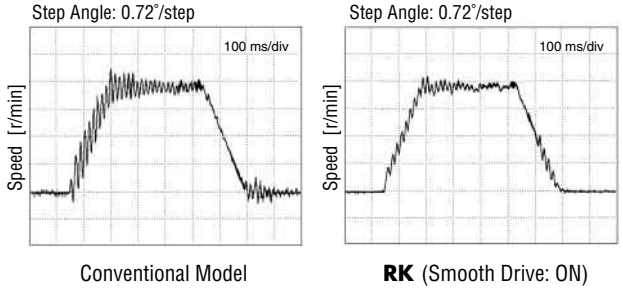


1 Smooth Drive Function

The smooth drive function ensures low-vibration and low-noise operation at low speeds by internally executing microstepping within the driver, working independently of the input pulse frequency of your controller.



The smooth drive function of the **RK** Series improves the settling performance.



Conventional Model **RK** (Smooth Drive: ON)

2 Microstep Drive System

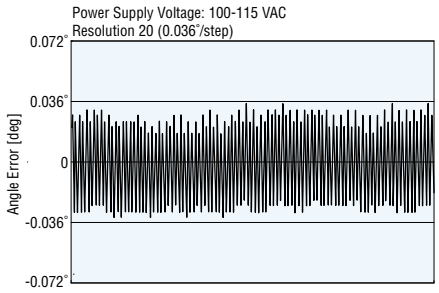
The motor's basic step angle is divided by a maximum of 1/250 without the use of a reduction mechanism or other mechanical elements. 16 resolution levels are available to set the desired resolution. This enables fine positioning and the further reduction of vibration and noise. A motion sequence of "low-speed transfer → high-speed return" can easily be performed without the need for changing from a microstep pulse frequency to a full step pulse frequency. The **RK** Series can also be used in full-step operation.

3 100-115 VAC, 200-230 VAC Power Source Variation

The **RK** Series can be used with most common power supplies available around the world.
They also comply with the international standards, ensuring safe operation.

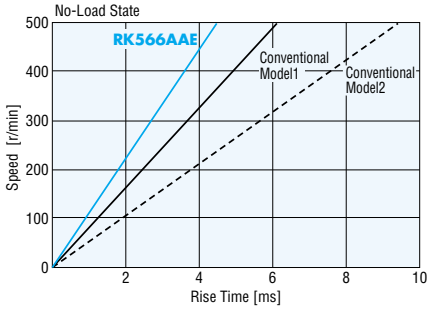
4 Improved Angle Accuracy

Angle accuracy may decrease during use of microstep drivers, due to the effect of current control. However, the drivers used in the **RK** Series are designed to ensure that the motor operates at maximum accuracy.



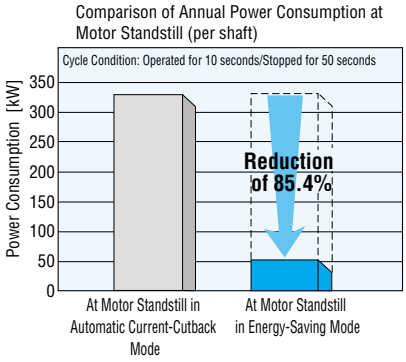
5 Improved Response

The **RK** Series, with its high starting frequency, shortens the machine cycle without affecting acceleration /deceleration rates. This produces a significant savings in time for an operation in which the same cycle is repeated thousands of times each day.



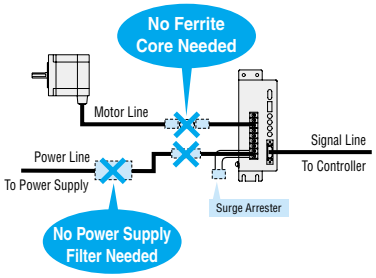
●Environmentally Friendly Energy-Saving Mode

In the energy-saving mode, the supply of current to the motor is stopped and the load is held only with the electromagnetic brake while the motor remains at a standstill. Stopping the supply of current to the motor extends the motor life by limiting the consumption of energy.
(Available only with electromagnetic brake type)



●Safe Operation in Major Countries around the World Compliance with Safety Standards

The **RK** Series complies with the UL/CSA and EN standards. (With the **RK54**□ type, only the driver conforms to the CSA standard.) The CE marking certifies compliance with the EMC Directive and Low-Voltage Directive. Additionally, the **RK** Series conforms to the EMC Directive only through its use of surge arrester. The **RK** Series doesn't require an external ferrite core or filter in the motor line or power line.

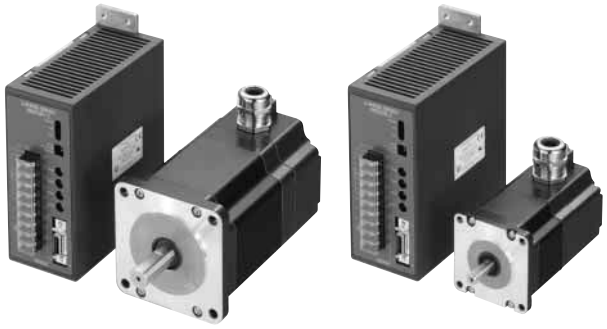


●Protective Earth Terminal

(Excluding motors with a frame size of 42 mm)

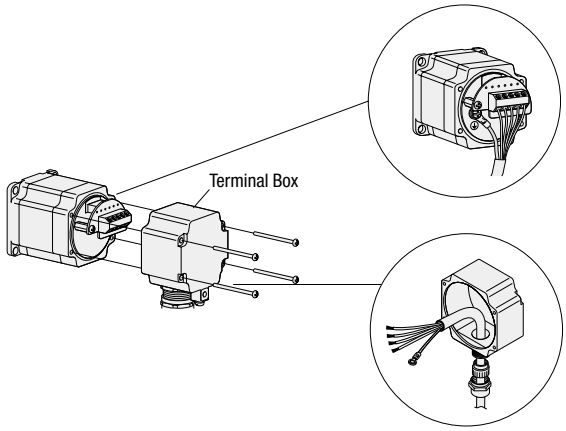
The life of a motor is affected by its bearing. The **RK** Series achieves approx. twice the life of a conventional motor by adopting a modified bearing. (Available only with the standard type and standard electromagnetic-brake type with a frame size of 60 or 85 mm.)

●New IP65 Rated Motor Conforming to the IP65 Standard for Ingress Protection against Dust and Water



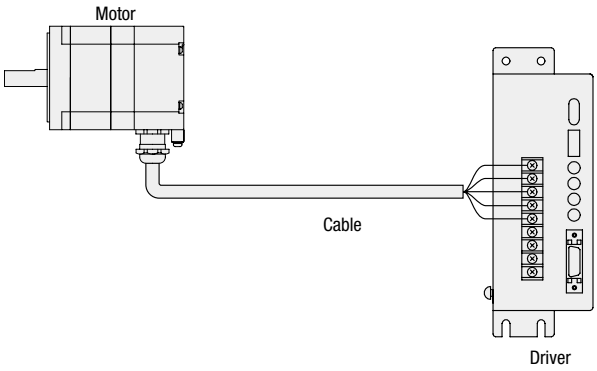
◇Terminal-Block Connection Design

The motor can be wired directly from its terminal block.



◇No Motor/Driver Relay

Since the motor cable can be connected directly with the driver terminals, there is no need for wire connection or soldering on a relay terminal block.



●(RoHS) RoHS-Compliant

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

RoHS (Restriction of Hazardous Substances) Directive:
Directive on restriction of the use of certain hazardous substances in electrical and electronic equipment (2002/95/EC). The RoHS Directive prohibits the use of six chemical substances in electrical and electronic products sold in the E.U. member countries on or after July 1, 2006. The six controlled substances are: lead, hexavalent chromium, cadmium, mercury and two specific brominated flame-retardants (PBB and PBDE).

Wide Variety

The **RK** Series offers a range of motor frame sizes depending on the motor type and power supply voltage specification, as shown below. ("□42" indicates a motor frame size of 42 mm.)

	Power Supply Voltage	Standard Type, Standard Type with Electromagnetic Brake	Standard Type IP65 Rated Motor	**TH** Geared Type	**PL** Geared Type	**PN** Geared Type	Harmonic Geared Type
	Single-Phase 100-115 VAC	□42 □60 □85	□60 □85	□42 □60 □90	□42 □60 □90	□42 □60 □90	□42 □60 □90
	Single-Phase 200-230 VAC	□60 □85	□60 □85	□60 □90	□60 □90	□60 □90	□60 □90

●Standard Type/Standard Type IP65 Rated Motor

Easy-to-use standard types offer balanced performance. The IP65 rated motor conforms to the IP65 standard for ingress protection against dust and water.

●Standard Type with Electromagnetic Brake

A motor combines with power off activated type electromagnetic brake.

●**TH** Geared Type (Low backlash)

A low-cost geared motor offers low backlash.

●**PL** Geared Type (Low backlash)

A geared motor offers low backlash, high strength and wide gear ratios.

●**PN** Geared Type (Non-backlash)

A high-accuracy geared motor achieves a backlash of 3 arc minutes or less. It also provides high strength and wide gear ratios.

●Harmonic Geared Type (Non-backlash)

A high-accuracy, backlash-free geared motor adopts a newly developed harmonic gear. It ensures high strength in a compact body.

Characteristics Comparison for Geared Motors

Wide variety of geared motors are available according to your needs.

	Geared Type	Features	Permissible Torque (Maximum Torque) [N·m]	Backlash [min]	Basic Resolution [deg/step]	Output Shaft Speed [r/min]
Low backlash	 **TH Geared** (Parallel Shaft)	·A wide variety of low gear ratios for high-speed operation ·Gear ratios: 1:3.6, 1:7.2, 1:10, 1:20, 1:30	12	45	0.024	500
Low backlash	 **PL Geared** (Planetary)	·High permissible torque ·Wide variety of gear ratios for selecting the desired step angle. (resolution) ·Centered output shaft ·Gear ratios: 1:5, 1:7.2, 1:10, 1:25, 1:36, 1:50	37	35	0.0144	360
Non-backlash	 **PN Geared** (Planetary)	·High speed (low gear ratio), high positioning precision ·High permissible/maximum torque ·Wide variety of gear ratios for selecting the desired step angle. (resolution) ·Centered output shaft ·Gear ratios: 1:5, 1:7.2, 1:10, 1:25, 1:36, 1:50	Permissible Torque 37 / Maximum Torque 60	3	0.0144	600
Non-backlash	 New Construction **Harmonic Geared** (Harmonic Drive)	·High positioning precision ·High permissible/maximum torque ·High gear ratio, high resolution ·Centered output shaft ·Gear ratios: 1:50, 1:100	Permissible Torque 37 / Maximum Torque 55	0	0.0072	70

Note:

●The values shown above must be used as reference. These values vary depending on the series, frame size and gear ratio.

Safety Standards and CE Marking

Model	Standards	Certification Body	Standards File No.	CE Marking
Stepping Motor	UL 1004 UL 2111 CSA C22.2 No.100*1 CSA C22.2 No.77*1	UL	File No. E64199	Low Voltage Directives EMC Directives
Stepping Motor	EN 60950-1 EN 60034-1 EN 60034-5	VDE*2	Licence No. 114293	
Driver	UL 508C*3 CSA C22.2 No.14	UL	File No. E171462	
Driver	EN 50178	—	—	

*1 Except for **RK54**□ type.

*2 Except for **RK56**□ and **RK59**□ type motors, **PN** geared type **RK544-N**□ motors and harmonic geared type **RK543-H**□ motors.

*3 Test Condition is Maximum Surrounding Air Temperature 50°C according to UL Standards. (UL 508C)

●When the system is approved under various safety standards, the model names in the motor and driver nameplates are the approved model names.

List of Motor and Driver Combinations ➜ Page 39

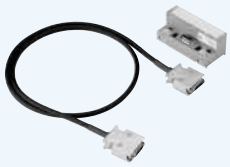
●The EMC value changes according to the wiring and layout. Therefore, the final EMC level must be checked with the motor/driver incorporated in the user's equipment.

System Configuration

An example of a system configuration with the **SG8030** Series controller.

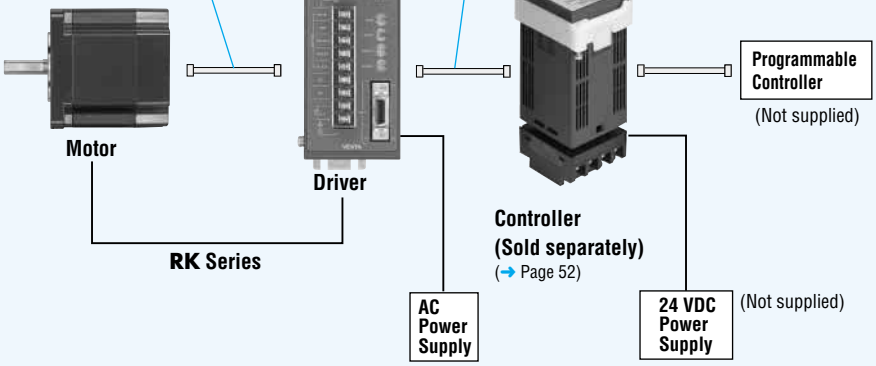
Mounting Brackets (Accessories)
(➜ Page 47)

Extension Cables (Accessories)
(➜ Page 40)



Connector-Terminal Block Conversion Unit (Accessories)
(➜ Page 41)

Flexible Couplings (Accessories)
Non-backlash couplings for high positioning precision.
(➜ Page 42)



●Example of System Configuration

◎: Required under this system.
○: Selectable according to necessity. Oriental Motor can provide as an option.

(Body) | (Sold separately)

RK Series	Controller	Mounting Bracket	Flexible Coupling	Extension Cable (5 m)	Connector-Terminal Block Conversion Unit (1 m)
RK564AAE	SG8030JY-U	PAL2P-5	MCS200808	CC05PK5	CC20T1
	◎	○	○	○	○

●The system configuration shown above is an example. Other combinations are available.

Product Number Code

RK 5 6 6 B □ A E - N 5

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩

①	Series **RK**: **RK** Series
②	**5**: 5-Phase
③	Motor Frame Size **4**: 42 mm **6**: 60 mm **9**: 85 mm (90 mm sq. for Geared Type)
④	Motor Case Length
⑤	Motor Shaft Type **A**: Single Shaft **B**: Double Shaft
⑥	Electromagnetic Brake **Blank**: Without Electromagnetic Brake **M**: With Electromagnetic Brake
⑦	Power Supply Voltage **A**: Single-Phase 100-115 VAC **C**: Single-Phase 200-230 VAC
⑧	Motor Classification
⑨	Type **Blank**: Standard Type **T**: **TH** Geared Type **P**: **PL** Geared Type **N**: **PN** Geared Type **H**: Harmonic Geared Type
⑩	Gear Ratio

Product Line

Standard Type

Power Supply Voltage	Model (Single Shaft)		Model (Double Shaft)	
Single-Phase 100-115 VAC	**RK543AA**		**RK543BA**	
	RK544AA		**RK544BA**	
	RK545AA		**RK545BA**	
	RK564AAE	NEW	**RK564BAE**	NEW
	RK566AAE	NEW	**RK566BAE**	NEW
	RK569AAE	NEW	**RK569BAE**	NEW
	RK596AAE	NEW	**RK596BAE**	NEW
	RK599AAE	NEW	**RK599BAE**	NEW
	RK5913AAE	NEW	**RK5913BAE**	NEW
Single-Phase 200-230 VAC	**RK564ACE**	NEW	**RK564BCE**	NEW
	RK566ACE	NEW	**RK566BCE**	NEW
	RK569ACE	NEW	**RK569BCE**	NEW
	RK596ACE	NEW	**RK596BCE**	NEW
	RK599ACE	NEW	**RK599BCE**	NEW
	RK5913ACE	NEW	**RK5913BCE**	NEW

Standard Type IP65 Rated Motor

Power Supply Voltage	Model
Single-Phase 100-115 VAC	**RK564AAT**
	RK566AAT
	RK569AAT
	RK596AAT
	RK599AAT
	RK5913AAT
Single-Phase 200-230 VAC	**RK564ACT**
	RK566ACT
	RK569ACT
	RK596ACT
	RK599ACT
	RK5913ACT

Standard Type with Electromagnetic Brake

Power Supply Voltage	Model	
Single-Phase 100-115 VAC	**RK543AMA**	
	RK544AMA	
	RK545AMA	
	RK564AMAE	NEW
	RK566AMAE	NEW
	RK569AMAE	NEW
	RK596AMAE	NEW
	RK599AMAE	NEW
	RK5913AMAE	NEW
Single-Phase 200-230 VAC	**RK564AMCE**	NEW
	RK566AMCE	NEW
	RK569AMCE	NEW
	RK596AMCE	NEW
	RK599AMCE	NEW
	RK5913AMCE	NEW

TH Geared Type

Power Supply Voltage	Model (Single Shaft)		Model (Double Shaft)	
Single-Phase 100-115 VAC	**RK543AA-T3.6**		**RK543BA-T3.6**	
	RK543AA-T7.2		**RK543BA-T7.2**	
	RK543AA-T10		**RK543BA-T10**	
	RK543AA-T20		**RK543BA-T20**	
	RK543AA-T30		**RK543BA-T30**	
	RK564AAE-T3.6	NEW	**RK564BAE-T3.6**	NEW
	RK564AAE-T7.2	NEW	**RK564BAE-T7.2**	NEW
	RK564AAE-T10	NEW	**RK564BAE-T10**	NEW
	RK564AAE-T20	NEW	**RK564BAE-T20**	NEW
	RK564AAE-T30	NEW	**RK564BAE-T30**	NEW
	RK596AAE-T3.6	NEW	**RK596BAE-T3.6**	NEW
	RK596AAE-T7.2	NEW	**RK596BAE-T7.2**	NEW
	RK596AAE-T10	NEW	**RK596BAE-T10**	NEW
	RK596AAE-T20	NEW	**RK596BAE-T20**	NEW
	RK596AAE-T30	NEW	**RK596BAE-T30**	NEW
Single-Phase 200-230 VAC	**RK564ACE-T3.6**	NEW	**RK564BCE-T3.6**	NEW
	RK564ACE-T7.2	NEW	**RK564BCE-T7.2**	NEW
	RK564ACE-T10	NEW	**RK564BCE-T10**	NEW
	RK564ACE-T20	NEW	**RK564BCE-T20**	NEW
	RK564ACE-T30	NEW	**RK564BCE-T30**	NEW
	RK596ACE-T3.6	NEW	**RK596BCE-T3.6**	NEW
	RK596ACE-T7.2	NEW	**RK596BCE-T7.2**	NEW
	RK596ACE-T10	NEW	**RK596BCE-T10**	NEW
	RK596ACE-T20	NEW	**RK596BCE-T20**	NEW
	RK596ACE-T30	NEW	**RK596BCE-T30**	NEW

●PL Geared Type

Power Supply Voltage	Model (Single Shaft)		Model (Double Shaft)	
Single-Phase 100-115 VAC	RK545AA-P5		RK545BA-P5	
	RK545AA-P7.2		RK545BA-P7.2	
	RK545AA-P10		RK545BA-P10	
	RK543AA-P25		RK543BA-P25	
	RK543AA-P36		RK543BA-P36	
	RK543AA-P50		RK543BA-P50	
	RK566AAE-P5	NEW	RK566BAE-P5	NEW
	RK566AAE-P7.2	NEW	RK566BAE-P7.2	NEW
	RK566AAE-P10	NEW	RK566BAE-P10	NEW
	RK564AAE-P25	NEW	RK564BAE-P25	NEW
	RK564AAE-P36	NEW	RK564BAE-P36	NEW
	RK564AAE-P50	NEW	RK564BAE-P50	NEW
	RK599AAE-P5	NEW	RK599BAE-P5	NEW
	RK599AAE-P7.2	NEW	RK599BAE-P7.2	NEW
	RK599AAE-P10	NEW	RK599BAE-P10	NEW
	RK596AAE-P25	NEW	RK596BAE-P25	NEW
	RK596AAE-P36	NEW	RK596BAE-P36	NEW
	RK596AAE-P50	NEW	RK596BAE-P50	NEW
Single-Phase 200-230 VAC	RK566ACE-P5	NEW	RK566BCE-P5	NEW
	RK566ACE-P7.2	NEW	RK566BCE-P7.2	NEW
	RK566ACE-P10	NEW	RK566BCE-P10	NEW
	RK564ACE-P25	NEW	RK564BCE-P25	NEW
	RK564ACE-P36	NEW	RK564BCE-P36	NEW
	RK564ACE-P50	NEW	RK564BCE-P50	NEW
	RK599ACE-P5	NEW	RK599BCE-P5	NEW
	RK599ACE-P7.2	NEW	RK599BCE-P7.2	NEW
	RK599ACE-P10	NEW	RK599BCE-P10	NEW
	RK596ACE-P25	NEW	RK596BCE-P25	NEW
	RK596ACE-P36	NEW	RK596BCE-P36	NEW
	RK596ACE-P50	NEW	RK596BCE-P50	NEW

●PN Geared Type

Power Supply Voltage	Model (Single Shaft)		Model (Double Shaft)	
Single-Phase 100-115 VAC	RK544AA-N5		RK544BA-N5	
	RK544AA-N7.2		RK544BA-N7.2	
	RK544AA-N10		RK544BA-N10	
	RK566AAE-N5	NEW	RK566BAE-N5	NEW
	RK566AAE-N7.2	NEW	RK566BAE-N7.2	NEW
	RK566AAE-N10	NEW	RK566BAE-N10	NEW
	RK564AAE-N25	NEW	RK564BAE-N25	NEW
	RK564AAE-N36	NEW	RK564BAE-N36	NEW
	RK564AAE-N50	NEW	RK564BAE-N50	NEW
	RK599AAE-N5	NEW	RK599BAE-N5	NEW
	RK599AAE-N7.2	NEW	RK599BAE-N7.2	NEW
	RK599AAE-N10	NEW	RK599BAE-N10	NEW
	RK596AAE-N25	NEW	RK596BAE-N25	NEW
	RK596AAE-N36	NEW	RK596BAE-N36	NEW
	RK596AAE-N50	NEW	RK596BAE-N50	NEW
Single-Phase 200-230 VAC	RK566ACE-N5	NEW	RK566BCE-N5	NEW
	RK566ACE-N7.2	NEW	RK566BCE-N7.2	NEW
	RK566ACE-N10	NEW	RK566BCE-N10	NEW
	RK564ACE-N25	NEW	RK564BCE-N25	NEW
	RK564ACE-N36	NEW	RK564BCE-N36	NEW
	RK564ACE-N50	NEW	RK564BCE-N50	NEW
	RK599ACE-N5	NEW	RK599BCE-N5	NEW
	RK599ACE-N7.2	NEW	RK599BCE-N7.2	NEW
	RK599ACE-N10	NEW	RK599BCE-N10	NEW
	RK596ACE-N25	NEW	RK596BCE-N25	NEW
	RK596ACE-N36	NEW	RK596BCE-N36	NEW
	RK596ACE-N50	NEW	RK596BCE-N50	NEW

●Harmonic Geared Type

Power Supply Voltage	Model (Single Shaft)		Model (Double Shaft)	
Single-Phase 100-115 VAC	RK543AA-H50		RK543BA-H50	
	RK543AA-H100		RK543BA-H100	
	RK564AAE-H50	NEW	RK564BAE-H50	NEW
	RK564AAE-H100	NEW	RK564BAE-H100	NEW
	RK596AAE-H50	NEW	RK596BAE-H50	NEW
	RK596AAE-H100	NEW	RK596BAE-H100	NEW
Single-Phase 200-230 VAC	RK564ACE-H50	NEW	RK564BCE-H50	NEW
	RK564ACE-H100	NEW	RK564BCE-H100	NEW
	RK596ACE-H50	NEW	RK596BCE-H50	NEW
	RK596ACE-H100	NEW	RK596BCE-H100	NEW

Standard Type Motor Frame Size 42 mm

Specifications RoHS

c UL us CE ●With the **RK54**□ type, only the driver conforms to the CSA standard.

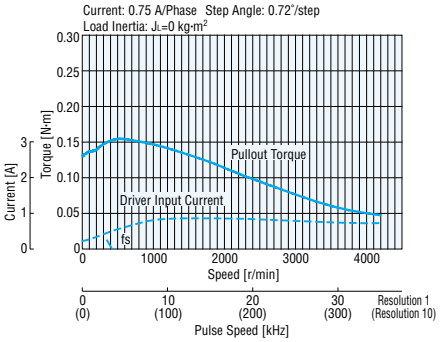
Model	Single-Phase 100-115 VAC	Single Shaft	RK543AA	RK544AA	RK545AA
		Double Shaft	RK543BA	RK544BA	RK545BA
Maximum Holding Torque		N·m	0.13	0.18	0.24
Rotor Inertia		J: kg·m²	35×10^{-7}	54×10^{-7}	68×10^{-7}
Rated Current		A/Phase	0.75		
Basic Step Angle			0.72°		
Power Source			Single-Phase 100-115 VAC±15% 50/60 Hz 1 A		
Excitation Mode			Microstep Basic Angle/n✻(/step)		
Mass		Motor kg	0.25	0.3	0.4
		Driver kg	0.4		
Dimension No.		Motor	1		
		Driver	21		

How to Read Specifications Table ➜ See the following descriptions.

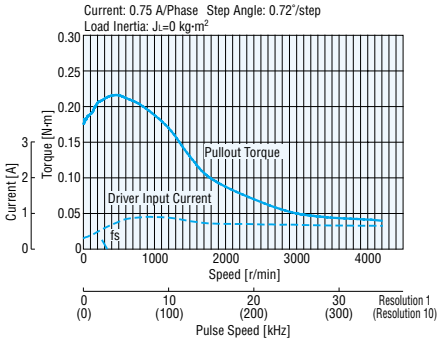
✻Sixteen resolutions are available, where n=1, 2, 2.5, 4, 5, 8, 10, 20, 25, 40, 50, 80, 100, 125, 200 and 250.

Speed – Torque Characteristics fs: Maximum Starting Frequency

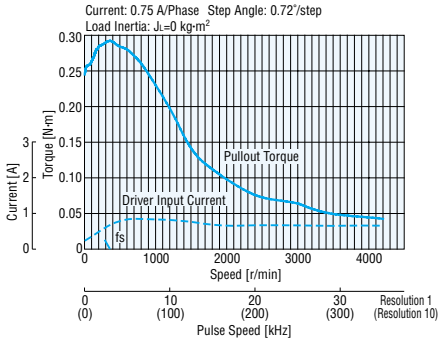
RK543AA/RK543BA



RK544AA/RK544BA



RK545AA/RK545BA



●The pulse input circuit responds to approximately 200 kHz with a pulse duty of 50%.

Notes:

●Pay attention to heat dissipation from motor as there will be a considerable amount of heat under certain conditions.
Be sure to keep the temperature of the motor case under 100°C.
(Under 75°C is required to comply with UL or CSA standards.)

●When using the motor with the dedicated driver, the driver's automatic current cutback function at motor standstill reduces maximum holding torque by approximately 50%.

How to Read Specifications Table

Please read the following information before examining the specifications on pages 9 to 23.

Maximum Holding Torque: The holding torque (5-Phase: 5-Phase Excitation) is the maximum holding power (torque) the stepping motor has when power (rated current) is being supplied but the motor is not rotating (with consideration given to the permissible strength of the gear when applicable). At motor standstill, the driver's "Automatic Current Cutback" function reduces the maximum holding torque by approximately 50%.

Permissible Torque: The permissible torque represents the torque value limited by the mechanical strength of the gear when operated at a constant speed. For the types excluding **PN** and harmonic geared type, the total torque including acceleration/deceleration torque should not exceed this value.

Maximum Torque: This is the maximum torque that can be used instantaneously (for a short time). During acceleration/deceleration, the motor can be operated up to this value. (**PN** geared, harmonic geared type only)

Angle Error: Difference between the theoretical angle of rotation of the output shaft as calculated from the input pulses, and the actual angle of rotation. (**PN** geared type only)

Standard Type Motor Frame Size 60 mm, 85 mm

Specifications RoHS

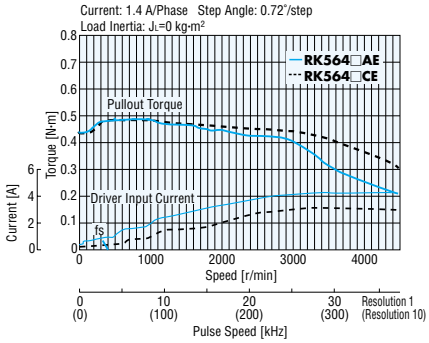
Model	Single-Phase 100-115 VAC	Single Shaft	**RK564AAE**	**RK566AAE**	**RK569AAE**	**RK596AAE**	**RK599AAE**	**RK5913AAE**
		Double Shaft	**RK564BAE**	**RK566BAE**	**RK569BAE**	**RK596BAE**	**RK599BAE**	**RK5913BAE**
	Single-Phase 200-230 VAC	Single Shaft	**RK564ACE**	**RK566ACE**	**RK569ACE**	**RK596ACE**	**RK599ACE**	**RK5913ACE**
		Double Shaft	**RK564BCE**	**RK566BCE**	**RK569BCE**	**RK596BCE**	**RK599BCE**	**RK5913BCE**
Maximum Holding Torque		N·m	0.42	0.83	1.66	2.1	4.1	6.3
Rotor Inertia		J: kg·m^2	175×10^{-7}	280×10^{-7}	560×10^{-7}	1400×10^{-7}	2700×10^{-7}	4000×10^{-7}
Rated Current		A/Phase	1.4					
Basic Step Angle			0.72°					
Power Source			Single-Phase 100-115 VAC ±15% 50/60 Hz 4.5 A Single-Phase 200-230 VAC $^{+10\%}_{-15\%}$ 50/60 Hz 3.5 A					
Excitation Mode			Microstep Basic Angle/n* (/step)					
Mass		Motor kg	0.6	0.8	1.3	1.7	2.8	3.8
		Driver kg	0.85					
Dimension No.		Motor	2			3		
		Driver	22					

How to Read Specifications Table ➜ Page 9

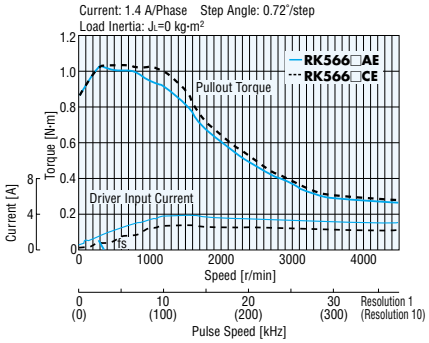
*Sixteen resolutions are available, where n=1, 2, 2.5, 4, 5, 8, 10, 20, 25, 40, 50, 80, 100, 125, 200 and 250.

Speed – Torque Characteristics fs: Maximum Starting Frequency

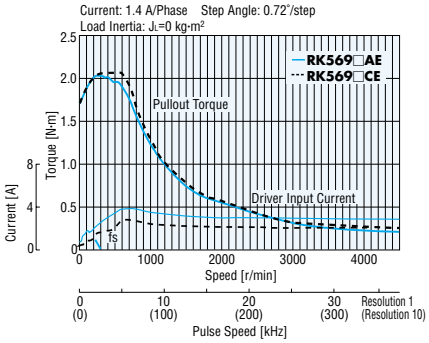
RK564□AE/RK564□CE



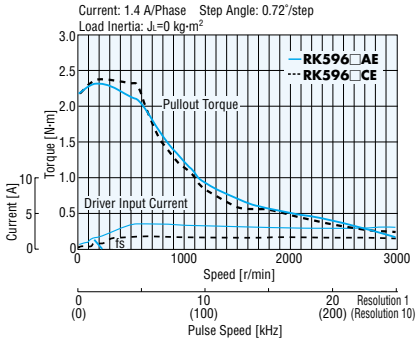
RK566□AE/RK566□CE



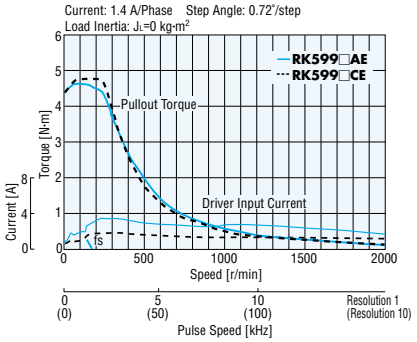
RK569□AE/RK569□CE



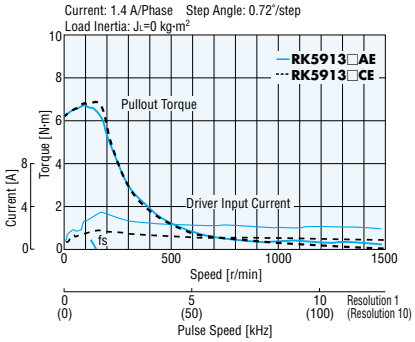
RK596□AE/RK596□CE



RK599□AE/RK599□CE



RK5913□AE/RK5913□CE



- Enter **A** (Single shaft) or **B** (Double shaft) in the box (□) within the model name.
- The pulse input circuit responds to approximately 200 kHz with a pulse duty of 50%.

Notes:

- Pay attention to heat dissipation from motor as there will be a considerable amount of heat under certain conditions.
  Be sure to keep the temperature of the motor case under 100°C.
  (Under 75°C is required to comply with UL or CSA standards.)
- When using the motor with the dedicated driver, the driver's automatic current cutback function at motor standstill reduces maximum holding torque by approximately 50%.

Standard Type IP65 Rated Motor Motor Frame Size 60 mm, 85 mm

Specifications RoHS

Model		RK564AAT / RK564ACT	RK566AAT / RK566ACT	RK569AAT / RK569ACT	RK596AAT / RK596ACT	RK599AAT / RK599ACT	RK5913AAT / RK5913ACT
Maximum Holding Torque	N·m	0.42	0.83	1.66	2.1	4.1	6.3
Rotor Inertia	J: kg·m²	175×10^{-7}	280×10^{-7}	560×10^{-7}	1400×10^{-7}	2700×10^{-7}	4000×10^{-7}
Rated Current	A/Phase	1.4					
Basic Step Angle		0.72°					
Power Source		Single-Phase 100-115 VAC ±15% 50/60 Hz 4.5 A Single-Phase 200-230 VAC $^{+10\%}_{-15\%}$ 50/60 Hz 3.5 A					
Excitation Mode		Microstep Basic Angle/n※1 (/step)					
Insulation Class		Motor: IP65※2 Driver: IP10					
Mass	Motor kg	0.8	1.1	1.6	2.2	3.3	4.4
	Driver kg	0.85					
Dimension No.	Motor	4			5		
	Driver	22					

How to Read Specifications Table ➜ Page 9

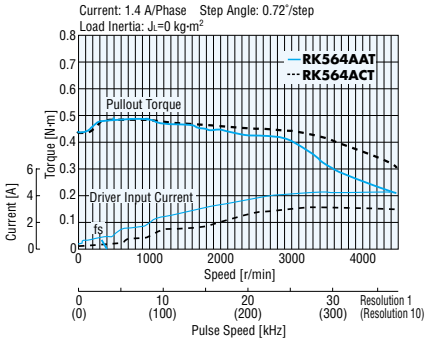
※1 Sixteen resolutions are available, where n=1, 2, 2.5, 4, 5, 8, 10, 20, 25, 40, 50, 80, 100, 125, 200 and 250.

※2 Excluding the gap between the shaft and the flange

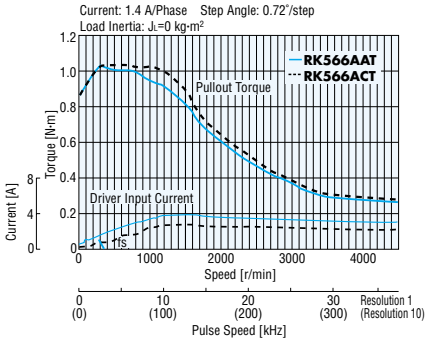
Speed – Torque Characteristics

fs: Maximum Starting Frequency

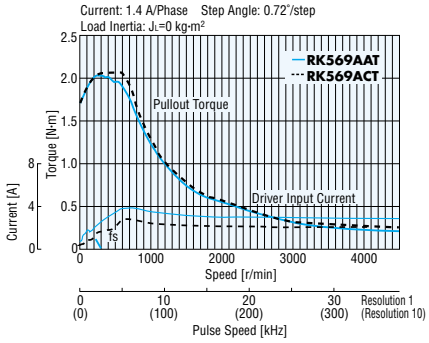
RK564AAT/RK564ACT



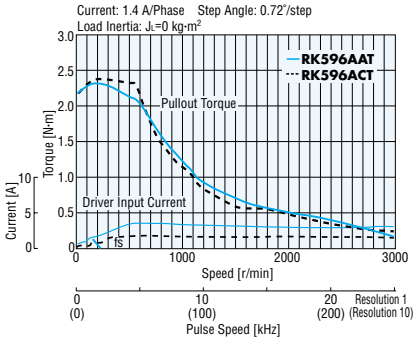
RK566AAT/RK566ACT



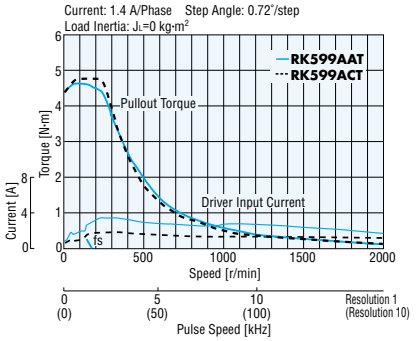
RK569AAT/RK569ACT



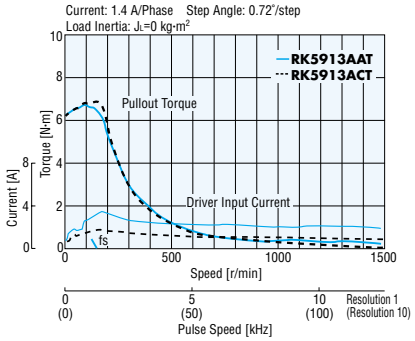
RK596AAT/RK596ACT



RK599AAT/RK599ACT



RK5913AAT/RK5913ACT



●The pulse input circuit responds to approximately 200 kHz with a pulse duty of 50%.

Notes:

●Pay attention to heat dissipation from motor as there will be a considerable amount of heat under certain conditions.
Be sure to keep the temperature of the motor case under 100°C.
(Under 75°C is required to comply with UL or CSA standards.)

●When using the motor with the dedicated driver, the driver's automatic current cutback function at motor standstill reduces maximum holding torque by approximately 50%.

Standard Type with Electromagnetic Brake Motor Frame Size 42 mm

Specifications RoHS

●With the **RK54**□ type, only the driver conforms to the CSA standard.

Model Single-Phase 100-115 VAC Single Shaft			RK543AMA	RK544AMA	RK545AMA
Maximum Holding Torque		N·m	0.13	0.18	0.24
Rotor Inertia		J: kg·m^2	50×10^{-7}	69×10^{-7}	83×10^{-7}
Rated Current		A/Phase	0.75		
Basic Step Angle			0.72°		
Power Source			Single-Phase 100-115 VAC±15% 50/60 Hz 1 A		
Excitation Mode			Microstep Basic Angle/n✻ (/step)		
Electromagnetic Brake	Type		Active when power is off		
	Power Source Input		24 VDC		
	Power Supply Input	A	0.08		
	Static Friction Torque	N·m	0.22		
	Brake Time	ms	20		
	Brake Release Time	ms	30		
	Time Rating		Continuous		
Mass	Motor	kg	0.37	0.42	0.52
	Driver	kg	0.4		
Dimension No.	Motor		6		
	Driver		21		

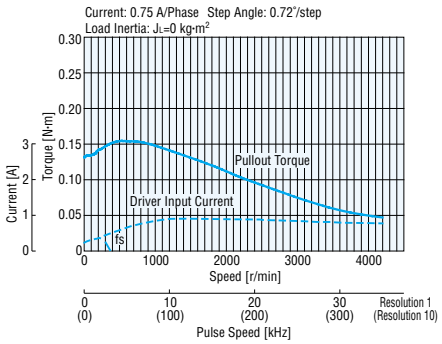
How to Read Specifications Table ➜ Page 9

✻Sixteen resolutions are available, where n=1, 2, 2.5, 4, 5, 8, 10, 20, 25, 40, 50, 80, 100, 125, 200 and 250.

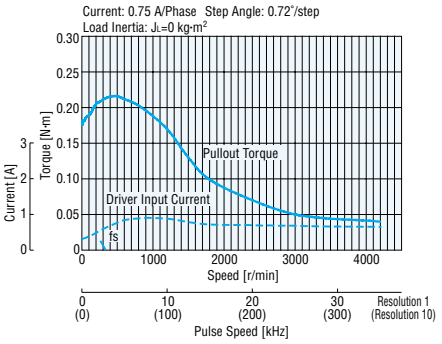
Speed – Torque Characteristics

fs: Maximum Starting Frequency

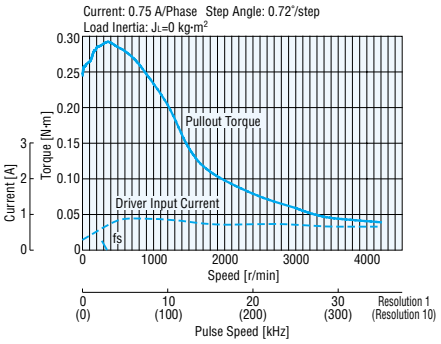
RK543AMA



RK544AMA



RK545AMA



●The pulse input circuit responds to approximately 200 kHz with a pulse duty of 50%.

Notes:

●Pay attention to heat dissipation from motor as there will be a considerable amount of heat under certain conditions.
Be sure to keep the temperature of the motor case under 100°C.
(Under 75°C is required to comply with UL or CSA standards.)

●When using the motor with the dedicated driver, the driver's automatic current cutback function at motor standstill reduces maximum holding torque by approximately 50%.

Standard Type with Electromagnetic Brake Motor Frame Size 60 mm, 85 mm

Specifications RoHS

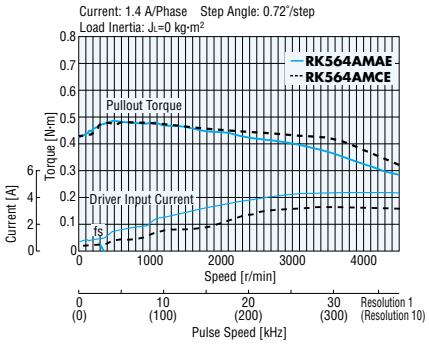
Model			RK564AMAE	RK566AMAE	RK569AMAE	RK596AMAE	RK599AMAE	RK5913AMAE
Single-Phase 100-115 VAC	Single Shaft		RK564AMCE	RK566AMCE	RK569AMCE	RK596AMCE	RK599AMCE	RK5913AMCE
Single-Phase 200-230 VAC	Single Shaft							
Maximum Holding Torque		N·m	0.42	0.83	1.66	2.1	4.1	6.3
Rotor Inertia		J: kg·m²	335×10⁻⁷	440×10⁻⁷	720×10⁻⁷	2470×10⁻⁷	3770×10⁻⁷	5070×10⁻⁷
Rated Current		A/Phase	1.4					
Basic Step Angle			0.72°					
Power Source			Single-Phase 100-115 VAC±15% 50/60 Hz 4.5 A Single-Phase 200-230 VAC $^{+10\%}_{-15\%}$ 50/60 Hz 3.5 A					
Excitation Mode			Microstep Basic Angle/n* (/step)					
Electromagnetic Brake	Type		Active when power is off					
	Power Source Input		24 VDC					
	Power Supply Input	A	0.25			0.42		
	Static Friction Torque	N·m	0.8			4.0		
	Brake Time	ms	20					
	Brake Release Time	ms	30			50		
	Time Rating		Continuous					
Mass	Motor	kg	0.9	1.1	1.6	2.4	3.5	4.5
	Driver	kg	0.85					
Dimension No.	Motor		7			8		
	Driver		22					

How to Read Specifications Table ➜ Page 9

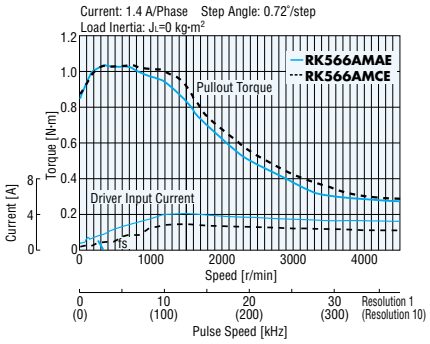
*Sixteen resolutions are available, where n=1, 2, 2.5, 4, 5, 8, 10, 20, 25, 40, 50, 80, 100, 125, 200 and 250.

Speed – Torque Characteristics fs: Maximum Starting Frequency

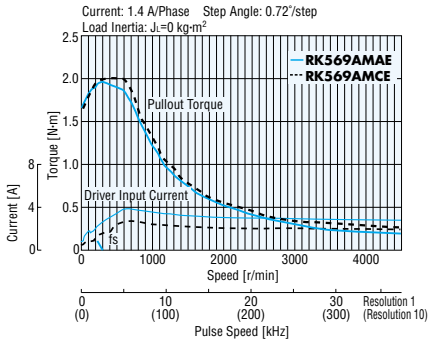
RK564AMAE/RK564AMCE



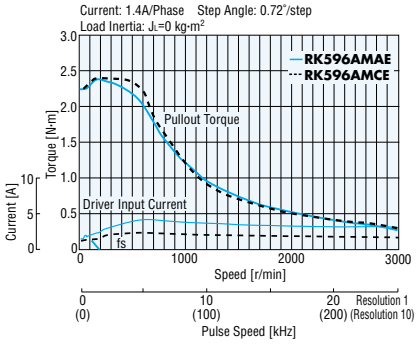
RK566AMAE/RK566AMCE



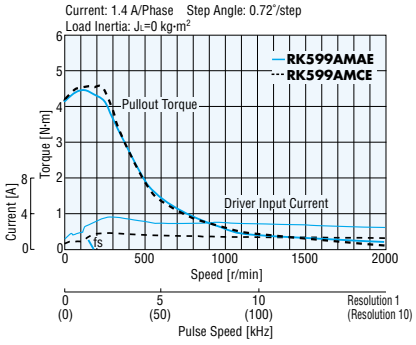
RK569AMAE/RK569AMCE



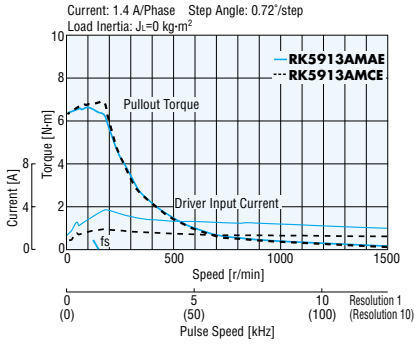
RK596AMAE/RK596AMCE



RK599AMAE/RK599AMCE



RK5913AMAE/RK5913AMCE



●The pulse input circuit responds to approximately 200 kHz with a pulse duty of 50%.

Notes:

●Pay attention to heat dissipation from motor as there will be a considerable amount of heat under certain conditions.
Be sure to keep the temperature of the motor case under 100°C.
(Under 75°C is required to comply with UL or CSA standards.)

●When using the motor with the dedicated driver, the driver's automatic current cutback function at motor standstill reduces maximum holding torque by approximately 50%.

TH Geared Type Motor Frame Size 42 mm

Specifications RoHS

cULus CE ●With the **RK54**□ type, only the driver conforms to the CSA standard.

Model (Single-Phase 100-115 VAC)	Single Shaft / Double Shaft	RK543AA-T3.6 / RK543BA-T3.6	RK543AA-T7.2 / RK543BA-T7.2	RK543AA-T10 / RK543BA-T10	RK543AA-T20 / RK543BA-T20	RK543AA-T30 / RK543BA-T30
Maximum Holding Torque	N·m	0.35	0.7	1	1.5	
Rotor Inertia	J: kg·m^2	35×10^{-7}				
Rated Current	A/Phase	0.75				
Basic Step Angle		0.2°	0.1°	0.072°	0.036°	0.024°
Gear Ratio		1:3.6	1:7.2	1:10	1:20	1:30
Permissible Torque	N·m	0.35	0.7	1	1.5	
Backlash	arc minute (degrees)	45 (0.75°)	25 (0.417°)		15 (0.25°)	
Permissible Speed Range	r/min	0～500	0～250	0～180	0～90	0～60
Power Source		Single-Phase 100-115 VAC±15% 50/60 Hz 1 A				
Excitation Mode		Microstep Basic Angle/n* (/step)				
Mass	Motor kg	0.35				
	Driver kg	0.4				
Dimension No.	Motor	9				
	Driver	21				

How to Read Specifications Table ➜ Page 9

*Sixteen resolutions are available, where n=1, 2, 2.5, 4, 5, 8, 10, 20, 25, 40, 50, 80, 100, 125, 200 and 250.

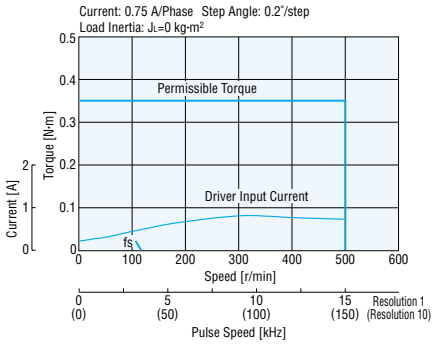
Note:

●Direction of rotation of the motor and that of the gear output shaft are the same for models with gear ratios of 1:3.6, 1:7.2 and 1:10. It is opposite for 1:20 and 1:30 gear ratio models.

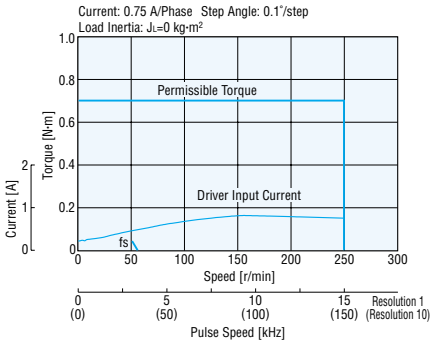
Speed – Torque Characteristics

fs: Maximum Starting Frequency

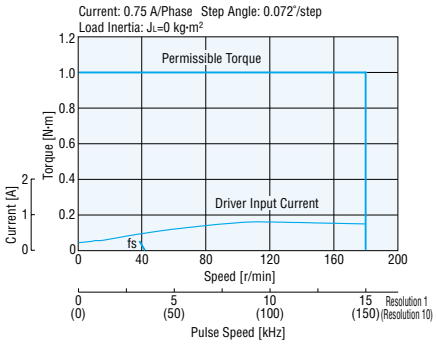
RK543AA-T3.6/RK543BA-T3.6



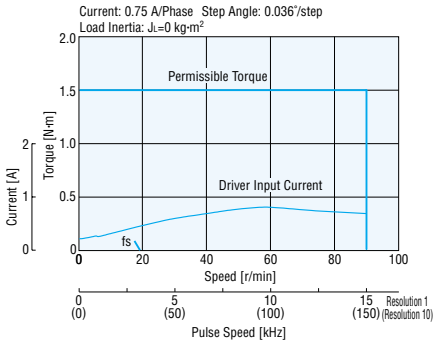
RK543AA-T7.2/RK543BA-T7.2



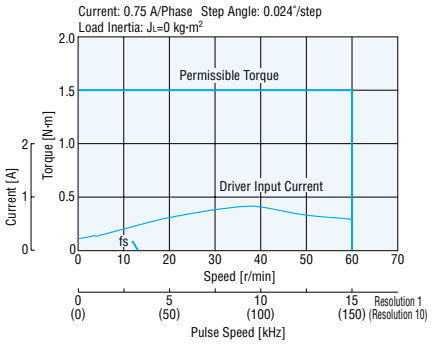
RK543AA-T10/RK543BA-T10



RK543AA-T20/RK543BA-T20



RK543AA-T30/RK543BA-T30



●The pulse input circuit responds to approximately 200 kHz with a pulse duty of 50%.

Notes:

●Pay attention to heat dissipation from motor as there will be a considerable amount of heat under certain conditions.
Be sure to keep the temperature of the motor case under 100°C.
(Under 75°C is required to comply with UL or CSA standards.)

●When using the motor with the dedicated driver, the driver's automatic current cutback function at motor standstill reduces maximum holding torque by approximately 50%.

TH Geared Type Motor Frame Size 60 mm

Specifications RoHS

Model							
Single-Phase 100-115 VAC	Single Shaft	RK564AAE-T3.6	RK564AAE-T7.2	RK564AAE-T10	RK564AAE-T20	RK564AAE-T30
	Double Shaft	RK564BAE-T3.6	RK564BAE-T7.2	RK564BAE-T10	RK564BAE-T20	RK564BAE-T30
Single-Phase 200-230 VAC	Single Shaft	RK564ACE-T3.6	RK564ACE-T7.2	RK564ACE-T10	RK564ACE-T20	RK564ACE-T30
	Double Shaft	RK564BCE-T3.6	RK564BCE-T7.2	RK564BCE-T10	RK564BCE-T20	RK564BCE-T30
Maximum Holding Torque	N·m	1.25	2.5	3	3.5	4
Rotor Inertia	J: kg·m^2	175×10^{-7}				
Rated Current	A/Phase	1.4				
Basic Step Angle		0.2°	0.1°	0.072°	0.036°	0.024°
Gear Ratio		1:3.6	1:7.2	1:10	1:20	1:30
Permissible Torque	N·m	1.25	2.5	3	3.5	4
Backlash	arc minute (degrees)	35 (0.584°)	15 (0.25°)		10 (0.167°)	
Permissible Speed Range	r/min	0～500	0～250	0～180	0～90	0～60
Power Source		Single-Phase 100-115 VAC±15% 50/60 Hz 4.5 A Single-Phase 200-230 VAC $^{+10\%}_{-15\%}$ 50/60 Hz 3.5 A				
Excitation Mode		Microstep Basic Angle/n* (/step)				
Mass	Motor kg	0.95				
	Driver kg	0.85				
Dimension No.	Motor	10				
	Driver	22				

How to Read Specifications Table ➜ Page 9

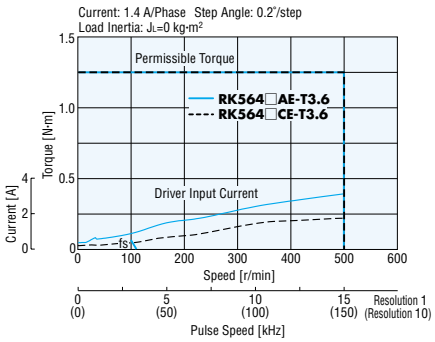
*Sixteen resolutions are available, where n=1, 2, 2.5, 4, 5, 8, 10, 20, 25, 40, 50, 80, 100, 125, 200 and 250.

Note:

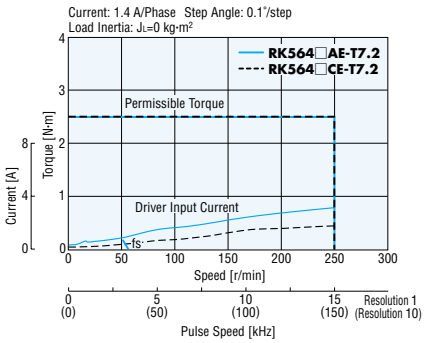
●Direction of rotation of the motor and that of the gear output shaft are the same for models with gear ratios of 1:3.6, 1:7.2 and 1:10. It is opposite for 1:20 and 1:30 gear ratio models.

Speed – Torque Characteristics fs: Maximum Starting Frequency

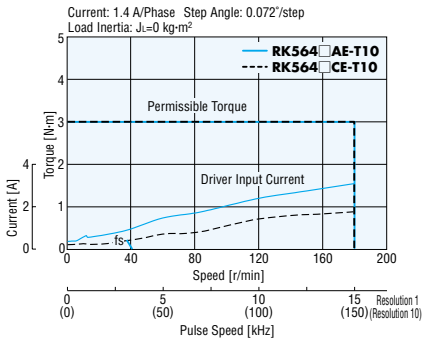
RK564□AE-T3.6/RK564□CE-T3.6



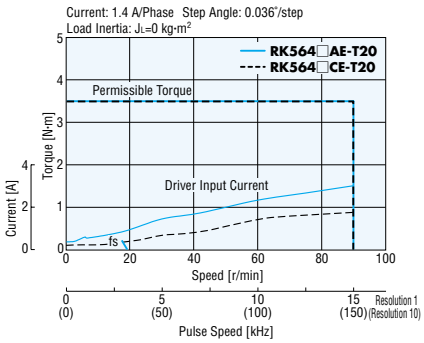
RK564□AE-T7.2/RK564□CE-T7.2



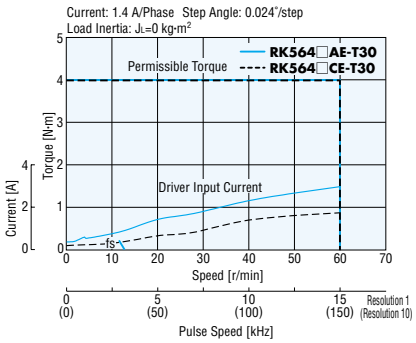
RK564□AE-T10/RK564□CE-T10



RK564□AE-T20/RK564□CE-T20



RK564□AE-T30/RK564□CE-T30



●Enter **A** (Single shaft) or **B** (Double shaft) in the box (□) within the model name.

●The pulse input circuit responds to approximately 200 kHz with a pulse duty of 50%.

Notes:

●Pay attention to heat dissipation from motor as there will be a considerable amount of heat under certain conditions.
Be sure to keep the temperature of the motor case under 100°C.
(Under 75°C is required to comply with UL or CSA standards.)

●When using the motor with the dedicated driver, the driver's automatic current cutback function at motor standstill reduces maximum holding torque by approximately 50%.

TH Geared Type Motor Frame Size 90 mm

Specifications RoHS

Model							
Single-Phase 100-115 VAC	Single Shaft	RK596AAE-T3.6	RK596AAE-T7.2	RK596AAE-T10	RK596AAE-T20	RK596AAE-T30
	Double Shaft	RK596BAE-T3.6	RK596BAE-T7.2	RK596BAE-T10	RK596BAE-T20	RK596BAE-T30
Single-Phase 200-230 VAC	Single Shaft	RK596ACE-T3.6	RK596ACE-T7.2	RK596ACE-T10	RK596ACE-T20	RK596ACE-T30
	Double Shaft	RK596BCE-T3.6	RK596BCE-T7.2	RK596BCE-T10	RK596BCE-T20	RK596BCE-T30
Maximum Holding Torque	N·m	4.5	9		12	
Rotor Inertia	J: kg·m^2	1400×10^{-7}				
Rated Current	A/Phase	1.4				
Basic Step Angle		0.2°	0.1°	0.072°	0.036°	0.024°
Gear Ratio		1:3.6	1:7.2	1:10	1:20	1:30
Permissible Torque	N·m	4.5	9		12	
Backlash	arc minute (degrees)	25 (0.417°)	15 (0.25°)		10 (0.167°)	
Permissible Speed Range	r/min	0～500	0～250	0～180	0～90	0～60
Power Source		Single-Phase 100-115 VAC±15% 50/60 Hz 4.5 A Single-Phase 200-230 VAC $^{+10\%}_{-15\%}$ 50/60 Hz 3.5 A				
Excitation Mode		Microstep Basic Angle/n* (/step)				
Mass	Motor kg	2.85				
	Driver kg	0.85				
Dimension No.	Motor	11				
	Driver	22				

How to Read Specifications Table ➜ Page 9

*Sixteen resolutions are available, where n=1, 2, 2.5, 4, 5, 8, 10, 20, 25, 40, 50, 80, 100, 125, 200 and 250.

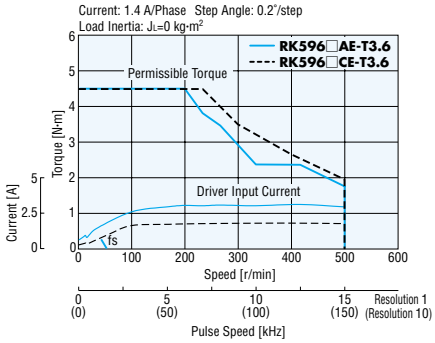
Note:

- Direction of rotation of the motor and that of the gear output shaft are the same for models with gear ratios of 1:3.6, 1:7.2 and 1:10. It is opposite for 1:20 and 1:30 gear ratio models.

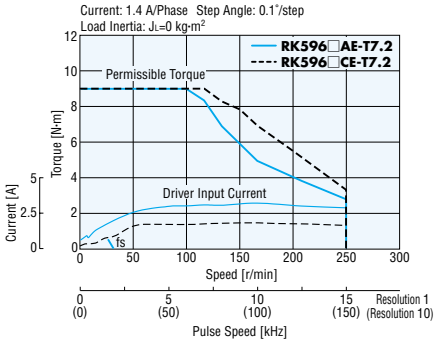
Speed – Torque Characteristics

fs: Maximum Starting Frequency

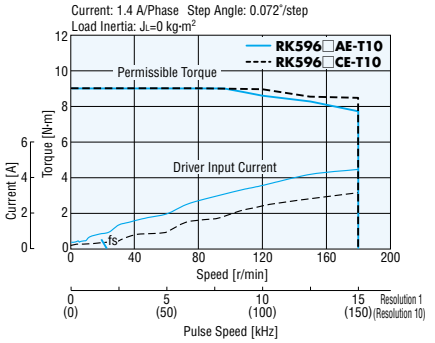
RK596□AE-T3.6/RK596□CE-T3.6



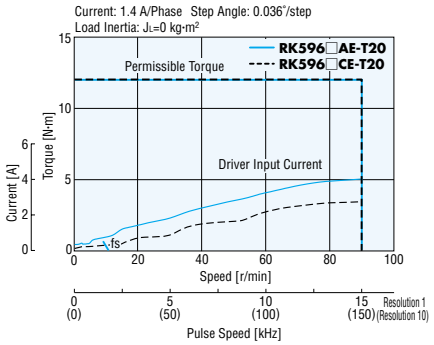
RK596□AE-T7.2/RK596□CE-T7.2



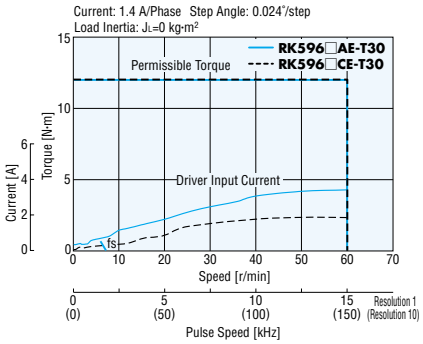
RK596□AE-T10/RK596□CE-T10



RK596□AE-T20/RK596□CE-T20



RK596□AE-T30/RK596□CE-T30



- Enter **A** (Single shaft) or **B** (Double shaft) in the box (□) within the model name.
- The pulse input circuit responds to approximately 200 kHz with a pulse duty of 50%.

Notes:

- Pay attention to heat dissipation from motor as there will be a considerable amount of heat under certain conditions. Be sure to keep the temperature of the motor case under 100°C. (Under 75°C is required to comply with UL or CSA standards.)
- When using the motor with the dedicated driver, the driver's automatic current cutback function at motor standstill reduces maximum holding torque by approximately 50%.

PL Geared Type Motor Frame Size 42 mm

Specifications RoHS

c UL us CE ●With the **RK54**□ type, only the driver conforms to the CSA standard.

Model (Single-Phase 100-115 VAC)	Single Shaft	RK545AA-P5	RK545AA-P7.2	RK545AA-P10	RK543AA-P25	RK543AA-P36	RK543AA-P50
	Double Shaft	RK545BA-P5	RK545BA-P7.2	RK545BA-P10	RK543BA-P25	RK543BA-P36	RK543BA-P50
Maximum Holding Torque	N·m	1	1.5		2.5	3	
Rotor Inertia	J: kg·m²	68×10^{-7}			35×10^{-7}		
Rated Current	A/Phase	0.75					
Basic Step Angle		0.144°	0.1°	0.072°	0.0288°	0.02°	0.0144°
Gear Ratio		1:5	1:7.2	1:10	1:25	1:36	1:50
Permissible Torque	N·m	1	1.5		2.5	3	
Backlash	arc minute (degrees)	35 (0.58°)					
Permissible Speed Range	r/min	0～360	0～250	0～180	0～72	0～50	0～36
Power Source		Single-Phase 100-115 VAC±15% 50/60 Hz 1 A					
Excitation Mode		Microstep Basic Angle/n* (/step)					
Mass	Motor kg	0.58			0.55		
	Driver kg	0.4					
Dimension No.	Motor	12					
	Driver	21					

How to Read Specifications Table ➜ Page 9

*Sixteen resolutions are available, where n=1, 2, 2.5, 4, 5, 8, 10, 20, 25, 40, 50, 80, 100, 125, 200 and 250.

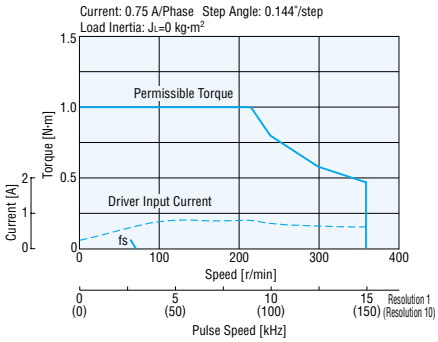
Note:

●Direction of rotation of the motor and that of the gear output shaft are the same.

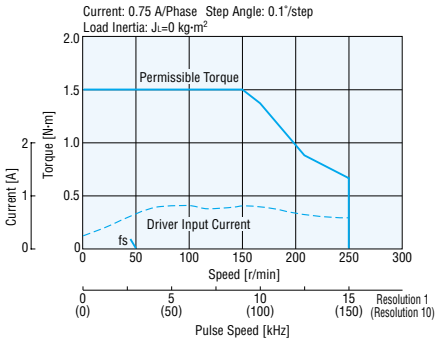
Speed – Torque Characteristics

fs: Maximum Starting Frequency

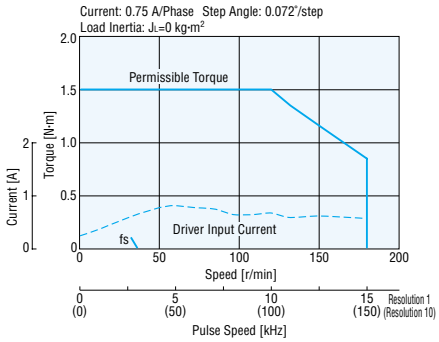
RK545AA-P5/RK545BA-P5



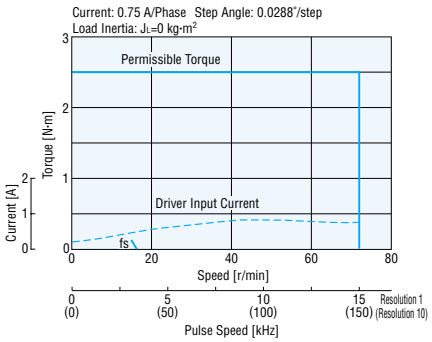
RK545AA-P7.2/RK545BA-P7.2



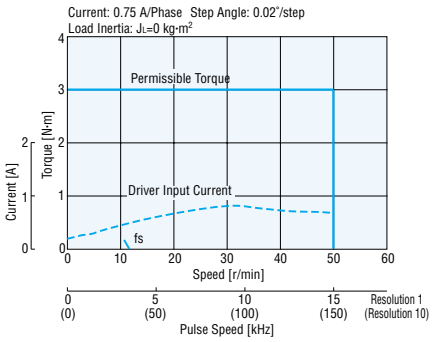
RK545AA-P10/RK545BA-P10



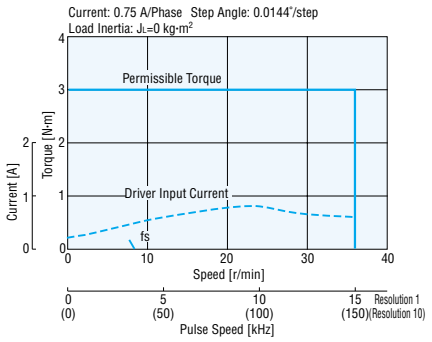
RK543AA-P25/RK543BA-P25



RK543AA-P36/RK543BA-P36



RK543AA-P50/RK543BA-P50



●The pulse input circuit responds to approximately 200 kHz with a pulse duty of 50%.

Notes:

●Pay attention to heat dissipation from motor as there will be a considerable amount of heat under certain conditions.
Be sure to keep the temperature of the motor case under 100°C.
(Under 75°C is required to comply with UL or CSA standards.)

●When using the motor with the dedicated driver, the driver's automatic current cutback function at motor standstill reduces maximum holding torque by approximately 50%.

PL Geared Type Motor Frame Size 60 mm

Specifications RoHS

Model								
Single-Phase 100-115 VAC	Single Shaft	RK566AAE-P5	RK566AAE-P7.2	RK566AAE-P10	RK564AAE-P25	RK564AAE-P36	RK564AAE-P50
	Double Shaft	RK566BAE-P5	RK566BAE-P7.2	RK566BAE-P10	RK564BAE-P25	RK564BAE-P36	RK564BAE-P50
Single-Phase 200-230 VAC	Single Shaft	RK566ACE-P5	RK566ACE-P7.2	RK566ACE-P10	RK564ACE-P25	RK564ACE-P36	RK564ACE-P50
	Double Shaft	RK566BCE-P5	RK566BCE-P7.2	RK566BCE-P10	RK564BCE-P25	RK564BCE-P36	RK564BCE-P50
Maximum Holding Torque	N·m	3.5	4	5	8		
Rotor Inertia	J: kg·m^2	280×10^{-7}			175×10^{-7}		
Rated Current	A/Phase	1.4					
Basic Step Angle		0.144°	0.1°	0.072°	0.0288°	0.02°	0.0144°
Gear Ratio		1:5	1:7.2	1:10	1:25	1:36	1:50
Permissible Torque	N·m	3.5	4	5	8		
Backlash	arc minute (degrees)	20 (0.33°)					
Permissible Speed Range	r/min	0～360	0～250	0～180	0～72	0～50	0～36
Power Source		Single-Phase 100-115 VAC±15% 50/60 Hz 4.5 A Single-Phase 200-230 VAC $^{+10\%}_{-15\%}$ 50/60 Hz 3.5 A					
Excitation Mode		Microstep Basic Angle/n* (/step)					
Mass	Motor kg	1.3			1.4		
	Driver kg	0.85					
Dimension No.	Motor	13					
	Driver	22					

How to Read Specifications Table ➜ Page 9

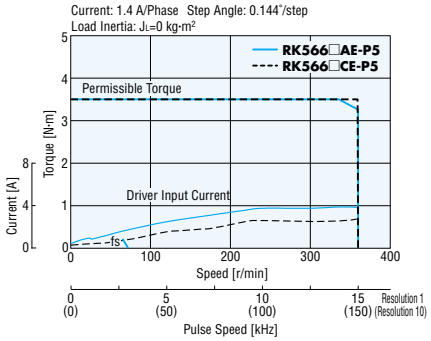
*Sixteen resolutions are available, where n=1, 2, 2.5, 4, 5, 8, 10, 20, 25, 40, 50, 80, 100, 125, 200 and 250.

Note:

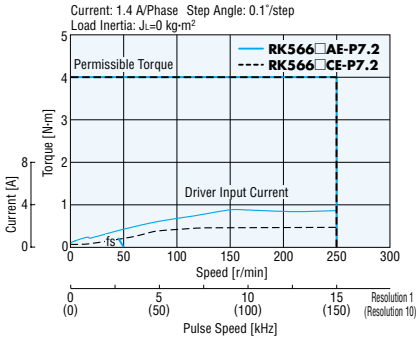
- Direction of rotation of the motor and that of the gear output shaft are the same.

Speed – Torque Characteristics fs: Maximum Starting Frequency

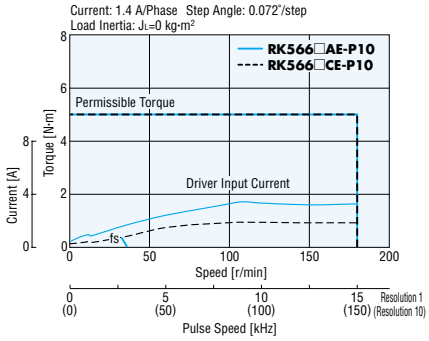
RK566□AE-P5/RK566□CE-P5



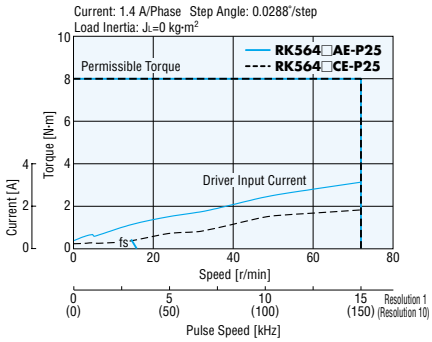
RK566□AE-P7.2/RK566□CE-P7.2



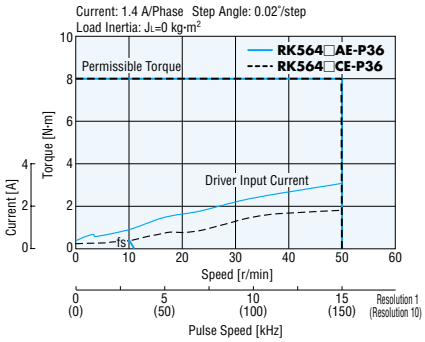
RK566□AE-P10/RK566□CE-P10



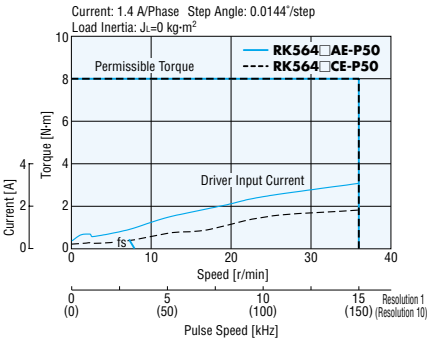
RK564□AE-P25/RK564□CE-P25



RK564□AE-P36/RK564□CE-P36



RK564□AE-P50/RK564□CE-P50



- Enter **A** (Single shaft) or **B** (Double shaft) in the box (□) within the model name.
- The pulse input circuit responds to approximately 200 kHz with a pulse duty of 50%.

Notes:

- Pay attention to heat dissipation from motor as there will be a considerable amount of heat under certain conditions.
  Be sure to keep the temperature of the motor case under 100°C.
  (Under 75°C is required to comply with UL or CSA standards.)
- When using the motor with the dedicated driver, the driver's automatic current cutback function at motor standstill reduces maximum holding torque by approximately 50%.

PL Geared Type Motor Frame Size 90 mm

Specifications RoHS

Model								
Single-Phase 100-115 VAC	Single Shaft	RK599AAE-P5	RK599AAE-P7.2	RK599AAE-P10	RK596AAE-P25	RK596AAE-P36	RK596AAE-P50
	Double Shaft	RK599BAE-P5	RK599BAE-P7.2	RK599BAE-P10	RK596BAE-P25	RK596BAE-P36	RK596BAE-P50
Single-Phase 200-230 VAC	Single Shaft	RK599ACE-P5	RK599ACE-P7.2	RK599ACE-P10	RK596ACE-P25	RK596ACE-P36	RK596ACE-P50
	Double Shaft	RK599BCE-P5	RK599BCE-P7.2	RK599BCE-P10	RK596BCE-P25	RK596BCE-P36	RK596BCE-P50
Maximum Holding Torque	N·m	14	20		37		
Rotor Inertia	J: kg·m^2	2700×10^{-7}			1400×10^{-7}		
Rated Current	A/Phase	1.4					
Basic Step Angle		0.144°	0.1°	0.072°	0.0288°	0.02°	0.0144°
Gear Ratio		1:5	1:7.2	1:10	1:25	1:36	1:50
Permissible Torque	N·m	14	20		37		
Backlash	arc minute (degrees)	15 (0.25°)					
Permissible Speed Range	r/min	0～360	0～250	0～180	0～72	0～50	0～36
Power Source		Single-Phase 100-115 VAC±15% 50/60 Hz 4.5 A Single-Phase 200-230 VAC $^{+10\%}_{-15\%}$ 50/60 Hz 3.5 A					
Excitation Mode		Microstep Basic Angle/n* (/step)					
Mass	Motor kg	4.4			4.2		
	Driver kg	0.85					
Dimension No.	Motor	14					
	Driver	22					

How to Read Specifications Table ➜ Page 9

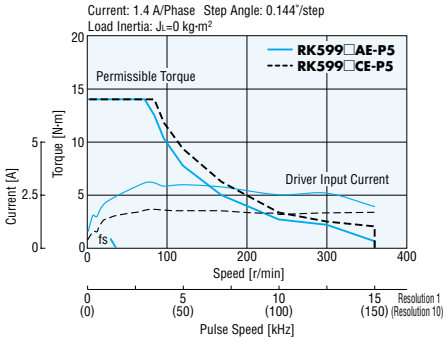
*Sixteen resolutions are available, where n=1, 2, 2.5, 4, 5, 8, 10, 20, 25, 40, 50, 80, 100, 125, 200 and 250.

Note:

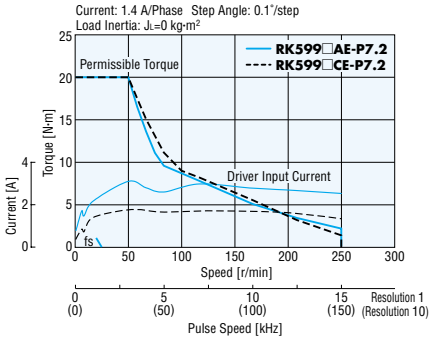
●Direction of rotation of the motor and that of the gear output shaft are the same.

Speed – Torque Characteristics fs: Maximum Starting Frequency

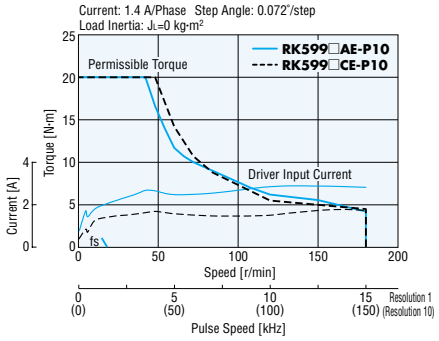
RK599□AE-P5/RK599□CE-P5



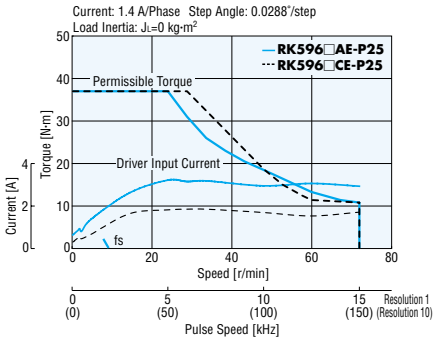
RK599□AE-P7.2/RK599□CE-P7.2



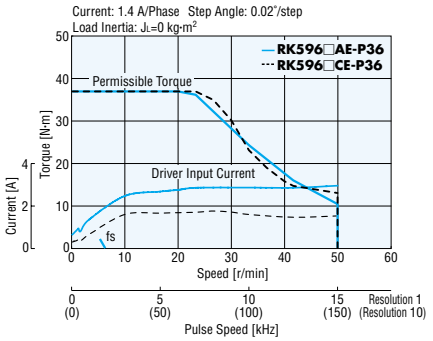
RK599□AE-P10/RK599□CE-P10



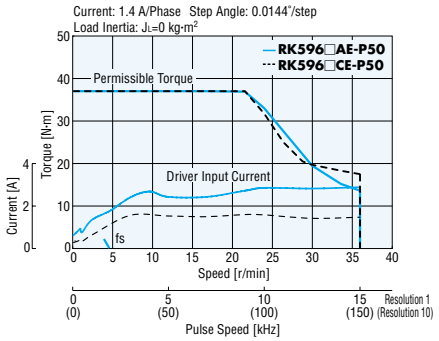
RK596□AE-P25/RK596□CE-P25



RK596□AE-P36/RK596□CE-P36



RK596□AE-P50/RK596□CE-P50



●Enter **A** (Single shaft) or **B** (Double shaft) in the box (□) within the model name.

●The pulse input circuit responds to approximately 200 kHz with a pulse duty of 50%.

Notes:

●Pay attention to heat dissipation from motor as there will be a considerable amount of heat under certain conditions.
Be sure to keep the temperature of the motor case under 100°C.
(Under 75°C is required to comply with UL or CSA standards.)

●When using the motor with the dedicated driver, the driver's automatic current cutback function at motor standstill reduces maximum holding torque by approximately 50%.

PN Geared Type Motor Frame Size 42 mm

Specifications RoHS

c UL us CE ●With the **RK54**□ type, only the driver conforms to the CSA standard.

Model (Single-Phase 100-115 VAC)	Single Shaft / Double Shaft	RK544AA-N5 / RK544BA-N5	RK544AA-N7.2 / RK544BA-N7.2	RK544AA-N10 / RK544BA-N10
Maximum Holding Torque	N·m	0.8	1.2	1.5
Rotor Inertia	J: kg·m²	54×10^{-7}		
Rated Current	A/Phase	0.75		
Basic Step Angle		0.144°	0.1°	0.072°
Gear Ratio		1:5	1:7.2	1:10
Permissible Torque	N·m	0.8	1.2	1.5
Maximum Torque*1	N·m	1.5	2	2
Backlash	arc minute (degrees)	2 (0.034°)		
Angle Error	arc minute (degrees)	6 (0.1°)		
Permissible Speed Range	r/min	0～600	0～416	0～300
Power Source		Single-Phase 100-115 VAC±15% 50/60 Hz 1 A		
Excitation Mode		Microstep Basic Angle/n*2 (/step)		
Mass	Motor kg	0.56		
	Driver kg	0.4		
Dimension No.	Motor	15		
	Driver	21		

How to Read Specifications Table ➜ Page 9

*1 The value of Maximum Torque is for gear. For output torque for geared motor, refer to the Speed-Torque Characteristics.

*2 Sixteen resolutions are available, where n=1, 2, 2.5, 4, 5, 8, 10, 20, 25, 40, 50, 80, 100, 125, 200 and 250.

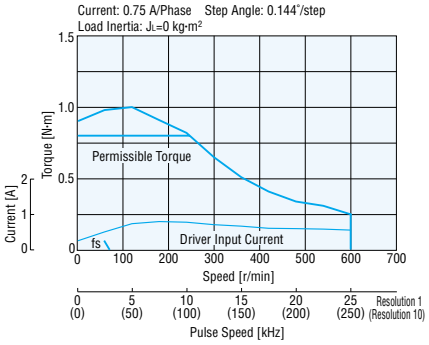
Note:

●Direction of rotation of the motor shaft and that of the gear output shaft are the same.

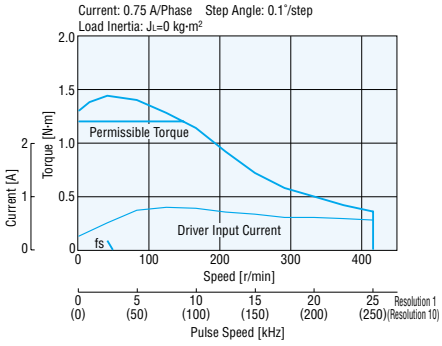
Speed – Torque Characteristics

fs: Maximum Starting Frequency

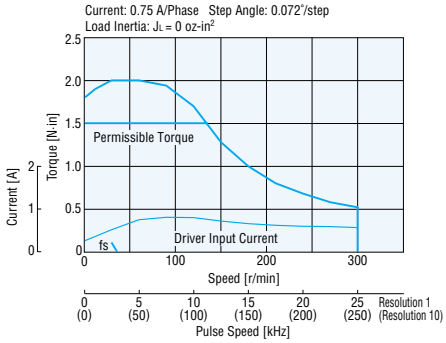
RK544AA-N5/RK544BA-N5



RK544AA-N7.2/RK544BA-N7.2



RK544AA-N10/RK544BA-N10



●The pulse input circuit responds to approximately 200 kHz with a pulse duty of 50%.

Notes:

●Pay attention to heat dissipation from motor as there will be a considerable amount of heat under certain conditions.
Be sure to keep the temperature of the motor case under 100°C.
(Under 75°C is required to comply with UL or CSA standards.)

●When using the motor with the dedicated driver, the driver's automatic current cutback function at motor standstill reduces maximum holding torque by approximately 50%.

PN Geared Type Motor Frame Size 60 mm

Specifications RoHS

Model								
Single-Phase 100-115 VAC	Single Shaft	RK566AAE-N5	RK566AAE-N7.2	RK566AAE-N10	RK564AAE-N25	RK564AAE-N36	RK564AAE-N50
	Double Shaft	RK566BAE-N5	RK566BAE-N7.2	RK566BAE-N10	RK564BAE-N25	RK564BAE-N36	RK564BAE-N50
Single-Phase 200-230 VAC	Single Shaft	RK566ACE-N5	RK566ACE-N7.2	RK566ACE-N10	RK564ACE-N25	RK564ACE-N36	RK564ACE-N50
	Double Shaft	RK566BCE-N5	RK566BCE-N7.2	RK566BCE-N10	RK564BCE-N25	RK564BCE-N36	RK564BCE-N50
Maximum Holding Torque	N·m	3.5	4	5	8		
Rotor Inertia	J: kg·m²	280×10^{-7}			175×10^{-7}		
Rated Current	A/Phase	1.4					
Basic Step Angle		0.144°	0.1°	0.072°	0.0288°	0.02°	0.0144°
Gear Ratio		1:5	1:7.2	1:10	1:25	1:36	1:50
Permissible Torque	N·m	3.5	4	5	8		
Maximum Torque*1	N·m	7	9	11	16	20	
Backlash	arc minute (degrees)	2 (0.034°)			3 (0.05°)		
Angle Error	arc minute (degrees)	5 (0.084°)					
Permissible Speed Range	r/min	0～600	0～416	0～300	0～120	0～83	0～60
Power Source		Single-Phase 100-115 VAC±15% 50/60 Hz 4.5 A Single-Phase 200-230 VAC $^{+10\%}_{-15\%}$ 50/60 Hz 3.5 A					
Excitation Mode		Microstep Basic Angle/n*2 (/step)					
Mass	Motor kg	1.5					
	Driver kg	0.85					
Dimension No.	Motor	16					
	Driver	22					

How to Read Specifications Table ➜ Page 9

*1 The value of Maximum Torque is for gear. For output torque for geared motor, refer to the Speed-Torque Characteristics.

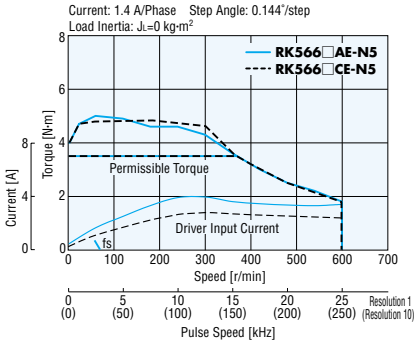
*2 Sixteen resolutions are available, where n=1, 2, 2.5, 4, 5, 8, 10, 20, 25, 40, 50, 80, 100, 125, 200 and 250.

Note:

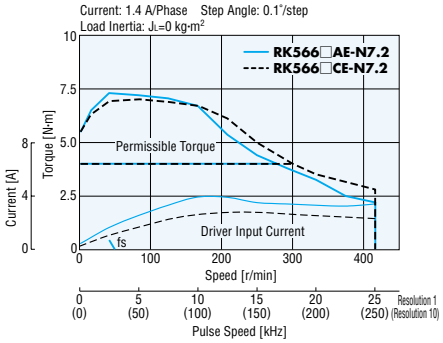
- Direction of rotation of the motor shaft and that of the gear output shaft are the same.

Speed – Torque Characteristics fs: Maximum Starting Frequency

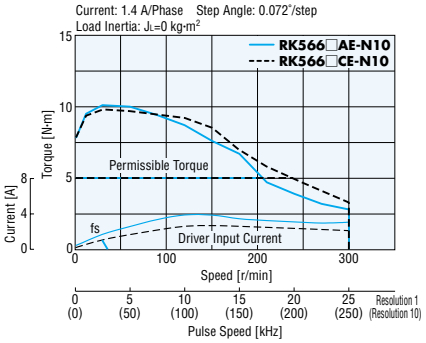
RK566□AE-N5/RK566□CE-N5



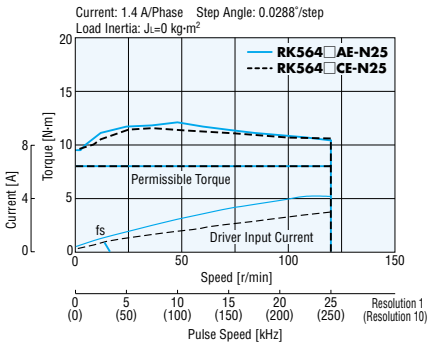
RK566□AE-N7.2/RK566□CE-N7.2



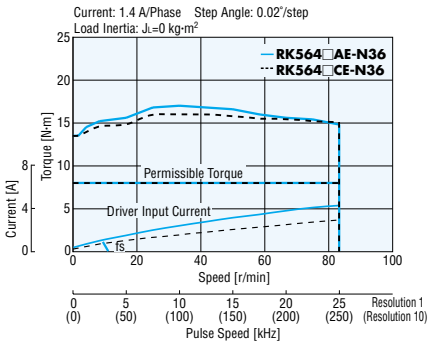
RK566□AE-N10/RK566□CE-N10



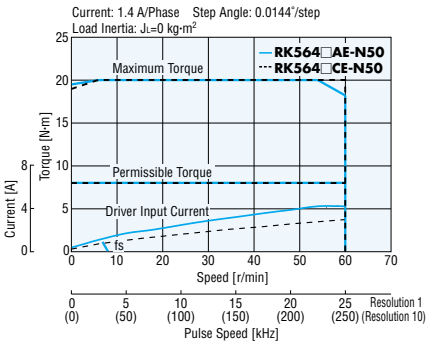
RK564□AE-N25/RK564□CE-N25



RK564□AE-N36/RK564□CE-N36



RK564□AE-N50/RK564□CE-N50



- Enter **A** (Single shaft) or **B** (Double shaft) in the box (□) within the model name.
- The pulse input circuit responds to approximately 200 kHz with a pulse duty of 50%.

Notes:

- Pay attention to heat dissipation from motor as there will be a considerable amount of heat under certain conditions. Be sure to keep the temperature of the motor case under 100°C. (Under 75°C is required to comply with UL or CSA standards.)
- When using the motor with the dedicated driver, the driver's automatic current cutback function at motor standstill reduces maximum holding torque by approximately 50%.

PN Geared Type Motor Frame Size 90 mm

Specifications RoHS

Model								
Single-Phase 100-115 VAC	Single Shaft	RK599AAE-N5	RK599AAE-N7.2	RK599AAE-N10	RK596AAE-N25	RK596AAE-N36	RK596AAE-N50
	Double Shaft	RK599BAE-N5	RK599BAE-N7.2	RK599BAE-N10	RK596BAE-N25	RK596BAE-N36	RK596BAE-N50
Single-Phase 200-230 VAC	Single Shaft	RK599ACE-N5	RK599ACE-N7.2	RK599ACE-N10	RK596ACE-N25	RK596ACE-N36	RK596ACE-N50
	Double Shaft	RK599BCE-N5	RK599BCE-N7.2	RK599BCE-N10	RK596BCE-N25	RK596BCE-N36	RK596BCE-N50
Maximum Holding Torque	N·m	14	20		37		
Rotor Inertia	J: kg·m^2	2700×10^{-7}			1400×10^{-7}		
Rated Current	A/Phase	1.4					
Basic Step Angle		0.144°	0.1°	0.072°	0.0288°	0.02°	0.0144°
Gear Ratio		1:5	1:7.2	1:10	1:25	1:36	1:50
Permissible Torque	N·m	14	20		37		
Maximum Torque*1	N·m	28	35		56	60	
Backlash	arc minute (degrees)	2 (0.034°)			3 (0.05°)		
Angle Error	arc minute (degrees)	4 (0.067°)					
Permissible Speed Range	r/min	0～600	0～416	0～300	0～120	0～83	0～60
Power Source		Single-Phase 100-115 VAC±15% 50/60 Hz 4.5 A Single-Phase 200-230 VAC +10% −15% 50/60 Hz 3.5 A					
Excitation Mode		Microstep Basic Angle/n*2 (/step)					
Mass	Motor kg	5			4.7		
	Driver kg	0.85					
Dimension No.	Motor	17					
	Driver	22					

How to Read Specifications Table ➜ Page 9

*1 The value of Maximum Torque is for gear. For output torque for geared motor, refer to the Speed-Torque Characteristics.

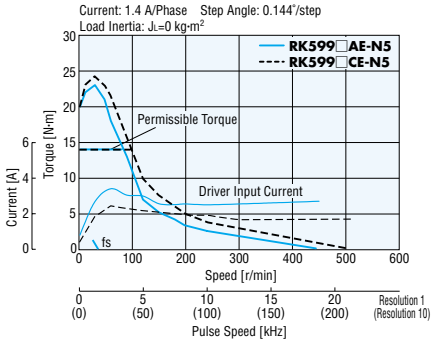
*2 Sixteen resolutions are available, where n=1, 2, 2.5, 4, 5, 8, 10, 20, 25, 40, 50, 80, 100, 125, 200 and 250.

Note:

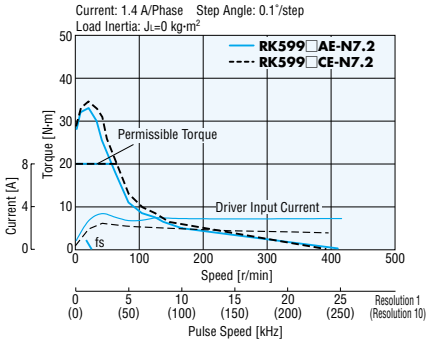
- Direction of rotation of the motor shaft and that of the gear output shaft are the same.

Speed – Torque Characteristics fs: Maximum Starting Frequency

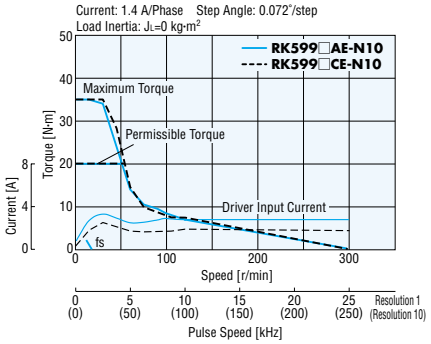
RK599□AE-N5/RK599□CE-N5



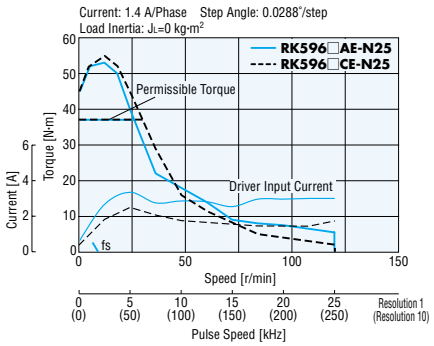
RK599□AE-N7.2/RK599□CE-N7.2



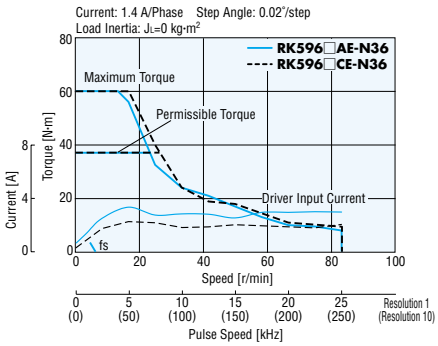
RK599□AE-N10/RK599□CE-N10



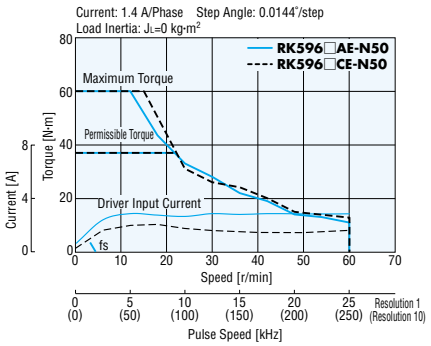
RK596□AE-N25/RK596□CE-N25



RK596□AE-N36/RK596□CE-N36



RK596□AE-N50/RK596□CE-N50



- Enter **A** (Single shaft) or **B** (Double shaft) in the box (□) within the model name.
- The pulse input circuit responds to approximately 200 kHz with a pulse duty of 50%.

Notes:

- Pay attention to heat dissipation from motor as there will be a considerable amount of heat under certain conditions.
  Be sure to keep the temperature of the motor case under 100°C.
  (Under 75°C is required to comply with UL or CSA standards.)
- When using the motor with the dedicated driver, the driver's automatic current cutback function at motor standstill reduces maximum holding torque by approximately 50%.

Harmonic Geared Type Motor Frame Size 42 mm, 60 mm, 90 mm

Specifications RoHS

cULus CE ●With the **RK54**□ type, only the driver conforms to the CSA standard.

Model			RK543AA-H50	RK543AA-H100	RK564AAE-H50	RK564AAE-H100	RK596AAE-H50	RK596AAE-H100
Single-Phase 100-115 VAC	Single Shaft		RK543AA-H50	RK543AA-H100	RK564AAE-H50	RK564AAE-H100	RK596AAE-H50	RK596AAE-H100
	Double Shaft		RK543BA-H50	RK543BA-H100	RK564BAE-H50	RK564BAE-H100	RK596BAE-H50	RK596BAE-H100
Single-Phase 200-230 VAC	Single Shaft		–	–	RK564ACE-H50	RK564ACE-H100	RK596ACE-H50	RK596ACE-H100
	Double Shaft		–	–	RK564BCE-H50	RK564BCE-H100	RK596BCE-H50	RK596BCE-H100
Maximum Holding Torque		N·m	3.5	5	5.5	8	25	37
Rotor Inertia		J: kg·m²	52×10^{-7}		210×10^{-7}		1600×10^{-7}	
Rated Current		A/Phase	0.75		1.4			
Basic Step Angle			0.0144°	0.0072°	0.0144°	0.0072°	0.0144°	0.0072°
Gear Ratio			1:50	1:100	1:50	1:100	1:50	1:100
Permissible Torque		N·m	3.5	5	5.5	8	25	37
Maximum Torque*1		N·m	8.3	11	18	28	35	55
Lost Motion (Load Torque)		arc minute	1.5 max. (±0.16 N·m)	1.5 max. (±0.2 N·m)	0.7 max. (±0.28 N·m)	0.7 max. (±0.39 N·m)	1.5 max. (±1.2 N·m)	
Permissible Speed Range		r/min	0～70	0～35	0～70	0～35	0～70	0～35
Power Source			Single-Phase 100-115 VAC±15% 50/60 Hz 1 A		Single-Phase 100-115 VAC±15% 50/60 Hz 4.5 A Single-Phase 200-230 VAC $^{+10\%}_{-15\%}$ 50/60 Hz 3.5 A			
Excitation Mode			Microstep Basic Angle/n*2 (/step)					
Mass	Motor	kg	0.46		1.08		3.7	
	Driver	kg	0.4		0.85			
Dimension No.	Motor		18		19		20	
	Driver		21		22			

How to Read Specifications Table ➜ Page 9

*1 The value of Maximum Torque is for gear. For output torque for geared motor, refer to the Speed-Torque Characteristics.

*2 Sixteen resolutions are available, where n=1, 2, 2.5, 4, 5, 8, 10, 20, 25, 40, 50, 80, 100, 125, 200 and 250.

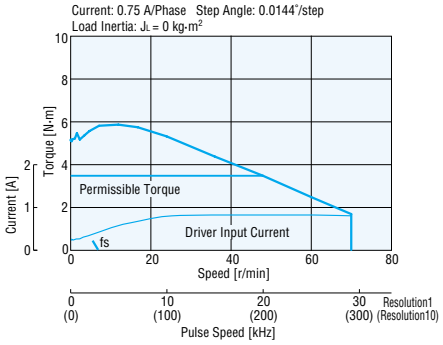
Notes:

- The inertia represents a sum of the inertia of the harmonic gear converted to a motor shaft value, and the rotor inertia.
- Direction of rotation of the motor and that of the gear output shaft are the opposite.

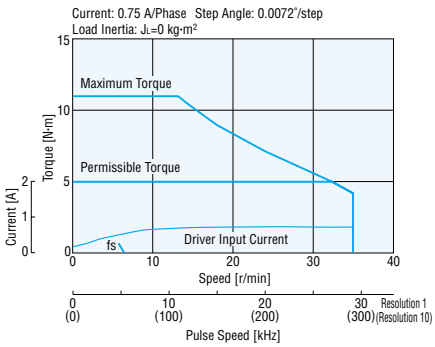
Speed – Torque Characteristics

fs: Maximum Starting Frequency

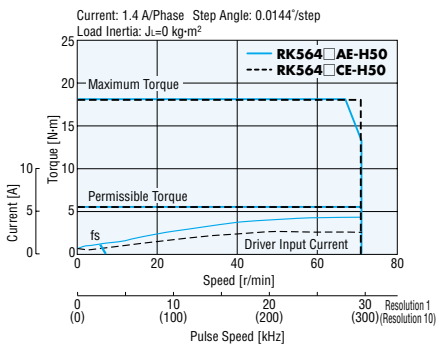
RK543□A-H50



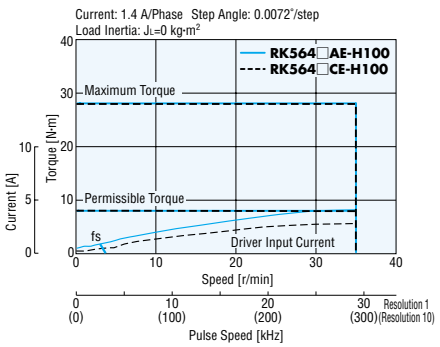
RK543□A-H100



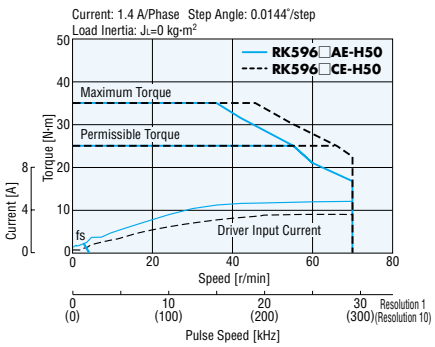
RK564□AE-H50/RK564□CE-H50



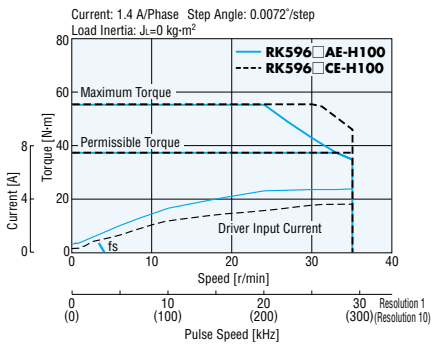
RK564□AE-H100/RK564□CE-H100



RK596□AE-H50/RK596□CE-H50



RK596□AE-H100/RK596□CE-H100



- Enter **A** (Single shaft) or **B** (Double shaft) in the box (□) within the model name.
- The pulse input circuit responds to approximately 200 kHz with a pulse duty of 50%.

Notes:

- Pay attention to heat dissipation from motor as there will be a considerable amount of heat under certain conditions.
  Be sure to keep the temperature of the motor case under 100°C.
  (Under 75°C is required to comply with UL or CSA standards.)
- In order to prevent fatigue of the gear grease in the harmonic gear, keep the temperature of the gear case under 70°C.
- When using the motor with the dedicated driver, the driver's automatic current cutback function at motor standstill reduces maximum holding torque by approximately 50%.

Driver Specifications

Input Signals	Input Mode	Photocoupler input, Input resistance: 220 Ω; Input current: 10～20 mA Photocoupler ON: ＋4.5 V～＋5 V, Photocoupler OFF: 0～＋1 V (Voltage between terminals)
	Pulse Signal (CW Pulse Signal)	Operation command pulse signal (CW direction operation command pulse signal when in 2-pulse input mode), Negative logic pulse input Pulse width: 2.5 μs minimum; Pulse rise/fall: 2 μs maximum Pulse duty: 50% and below The motor moves one step when the pulse input is switched from photocoupler ON to OFF. Maximum input pulse frequency: 200 kHz (When the pulse duty is 50%)
	Rotation Direction Signal (CCW Pulse Signal)	Rotation direction signal, Photocoupler ON: CW, Photocoupler OFF: CCW (CCW direction operation command pulse signal when in 2-pulse input mode), Negative logic pulse input Pulse width: 2.5 μs minimum; Pulse rise/fall: 2 μs maximum Pulse duty: 50% and below The motor moves one step when the pulse input is switched from photocoupler ON to OFF. Maximum input pulse frequency: 200 kHz (When the pulse duty is 50%)
	All Windings Off Signal	When in the "photocoupler ON" state, the output current to the motor is cut off and the motor shaft can be rotated manually. (When rotating the motor shaft manually, release the brake) When the "photocoupler OFF" state, the current is supplied to the motor.
	Electromagnetic Brake Release Signal*	When in the "photocoupler ON" state, the brake is released and the motor is ready for operation. When in the "photocoupler OFF" state, the brake is engaged and the motor shaft is held in position.
	Step Angle Select Signal	Step angle specified by DATA1 when photocoupler OFF Step angle specified by DATA2 when photocoupler ON
Output Signals	Output Mode	Photocoupler, Open Collector Output　External usage conditions: 24 VDC maximum, 10 mA maximum
	Excitation Timing Signal	The signal is output every time the excitation sequence returns to the initial stage "0." (Photocoupler: ON) Example) 0.72°/step (1 resolution): Signal output every 10 pulses, 0.072°/step (10 resolutions): Signal output every 100 pulses
	Overheat Signal	Output is turned off when the driver's internal temperature rises to approximately 80°C or above. (Photocoupler: OFF)
Functions		Automatic Current Cutback, Automatic Current Off, Step Angle Switch, Pulse Input Mode Switch, Electromagnetic Brake Function Switch*, Smooth Drive Function, Energy Save Function*
Indicators (LED)		Power Input, Excitation Timing Signal Output, Overheat Signal Output
Cooling Method		Natural ventilation

* Only for electromagnetic type

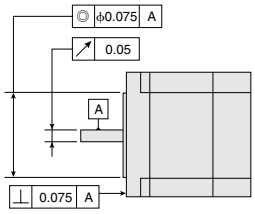
General Specifications

Specifications		Motor	Driver
Insulation Class		Class B (130°C) [Recognized as Class A (105°C) by UL standard]	–
Insulation Resistance		100 MΩ minimum under normal temperature and humidity, when measured by a 500 VDC megger between the windings and the motor casing.	100 MΩ minimum under normal temperature and humidity, when measured by a 500 VDC megger between the following places: · Power input terminal - Protective earth terminal · Motor output terminal - Protective earth terminal · Electromagnetic brake power output terminal*1 - Protective earth terminal · Signal input/output terminals - Power input terminal · Signal input/output terminals - Motor output terminal · Signal input/output terminals*1 - Electromagnetic brake power output terminal
Dielectric Strength		Sufficient to withstand 1.5 kV (1.0 kV for **RK54** □), 50 Hz or 60 Hz applied for one minute between the windings and casing under normal temperature and humidity.	Sufficient to withstand the following for one minute, under normal temperature and humidity. · Power input terminal - Protective earth terminal 1.1 k VAC 50 Hz or 60 Hz · Motor output terminal - Protective earth terminal 1.1 k VAC 50 Hz or 60 Hz · Electromagnetic brake power output terminal*1 - Protective earth terminal 1.1 k VAC 50 Hz or 60 Hz · Signal input/output terminals - Power input terminal 1.8 k VAC 50 Hz or 60 Hz · Signal input/output terminals - Motor output terminal 1.8 k VAC 50 Hz or 60 Hz · Signal input/output terminals*1 - Electromagnetic brake power output terminal 1.8 k VAC 50 Hz or 60 Hz
Operating Environment (In Operation)	Ambient Temperature	−10°C～＋50°C (nonfreezing): Standard type, **TH**, **PL**, **PN** geared type 0°C ～ ＋40°C (nonfreezing): Harmonic geared type	0°C ～ ＋50°C (nonfreezing)
	Ambient Humidity	85% or less (noncondensing)	
	Atmosphere	No corrosive gases, dust, water or oil. (Standard type IP65 rated motor: No corrosive gases)	
Temperature Rise		Temperature rise of the coil measured by the Change Resistance Method is 80°C or less. (at rated current, at standstill, five phases energized)	–
Stop Position Accuracy*2		±3 arc minutes (±0.05°)	–
Shaft Runout		0.05 T.I.R. (mm)*5	–
Radial Play*3		0.025 mm max. of 5 N	–
Axial Play*4		0.075 mm max. of 10 N	–
Concentricity		0.075 T.I.R. (mm)*5	–
Perpendicularity		0.075 T.I.R. (mm)*5	–

*1 Only for electromagnetic type
*2 This value is for 0.72° step under no load. (The value changes with the size of the load.)
*3 Radial Play: Displacement in shaft position in the radial direction, when a 5 N load is applied in the vertical direction to the tip of the motor's shaft.
*4 Axial Play: Displacement in shaft position in the axial direction, when a 10 N load is applied to the motor's shaft in the axial direction.
*5 T.I.R. (Total Indicator Reading): The total dial gauge reading when the measurement section is rotated one revolution centered on the reference axis center.

Note:

●Do not measure insulation resistance or perform the dielectric strength test while the motor and driver are connected.



Permissible Overhung Load and Permissible Thrust Load

Unit = N

Type	Model	Gear Ratio	Overhung Load Distance from Shaft End (mm)					Thrust Load
			0	5	10	15	20	
Standard Type	**RK543□A** **RK544□A** **RK545□A** **RK543AMA** **RK544AMA** **RK545AMA**	–	20	25	34	52	–	The permissible thrust load shall be no greater than the motor mass.
Standard Type IP65 Rated Motor Standard Type with Electromagnetic Brake	**RK564□ □E, RK564A□T** **RK566□ □E, RK566A□T** **RK569□ □E, RK569A□T** **RK564AM□E** **RK566AM□E** **RK569AM□E**	–	63	75	95	130	190	
	RK596□ □E, RK596A□T **RK599□ □E, RK599A□T** **RK5913□ □E, RK5913A□T** **RK596AM□E** **RK599AM□E** **RK5913AM□E**	–	260	290	340	390	480	
TH Geared Type	**RK543□A-T■**	**3.6, 7.2, 10, 20, 30**	10	14	20	30	–	15
	RK564□ □E-T■		70	80	100	120	150	40
	RK596□ □E-T■		220	250	300	350	400	100
PL Geared Type	**RK545□A-P■**	**5, 7.2, 10**	73	84	100	123	–	50
	RK543□A-P■	**25, 36, 50**	109	127	150	184	–	
	RK566□ □E-P5	–	200	220	250	280	320	100
	RK566□ □E-P■	**7.2, 10**	250	270	300	340	390	
	RK564□ □E-P■	**25, 36, 50**	330	360	400	450	520	
	RK599□ □E-P■	**5, 7.2, 10**	480	540	600	680	790	300
	RK596□ □E-P25	–	850	940	1050	1190	1380	
	RK596□ □E-P36	–	930	1030	1150	1310	1520	
	RK596□ □E-P50	–	1050	1160	1300	1480	1710	
PN Geared Type	**RK544□A-N■**	**5, 7.2, 10**	100	120	150	190	–	100
	RK566□ □E-N5	–	200	220	250	280	320	
	RK566□ □E-N■	**7.2, 10**	250	270	300	340	390	
	RK564□ □E-N■	**25, 36, 50**	330	360	400	450	520	
	RK599□ □E-N5	–	480	520	550	580	620	300
	RK599□ □E-N■	**7.2, 10**	480	540	600	680	790	
	RK596□ □E-N25	–	850	940	1050	1110	1190	
	RK596□ □E-N36	–	930	1030	1150	1220	1300	
	RK596□ □E-N50	–	1050	1160	1300	1380	1490	
Harmonic Geared Type	**RK543□A-H■**	**50, 100**	180	220	270	360	510	220
	RK564□ □E-H■	**50, 100**	320	370	440	550	720	450
	RK596□ □E-H■	**50, 100**	1090	1150	1230	1310	1410	1300

●Enter **A** (Single shaft) or **B** (Double shaft) in the box (□) within the model name.
Enter the power supply voltage **A** or **C** in the box (□) within the model name.
Enter the gear ratio in the box (■) within the model name.

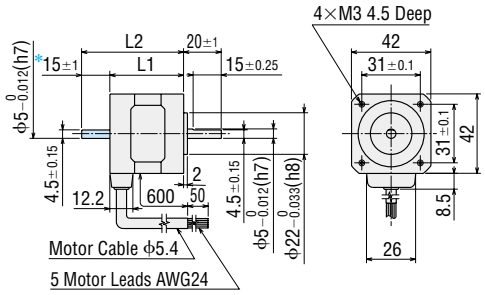
Dimensions (Unit = mm)

Motor

◇Standard Type

1 □42 mm

Model	Motor Model	L1	L2	Mass (kg)
RK543AA	PK543AW	33	–	0.25
RK543BA	PK543BW		48	
RK544AA	PK544AW	39	–	0.3
RK544BA	PK544BW		54	
RK545AA	PK545AW	47	–	0.4
RK545BA	PK545BW		62	

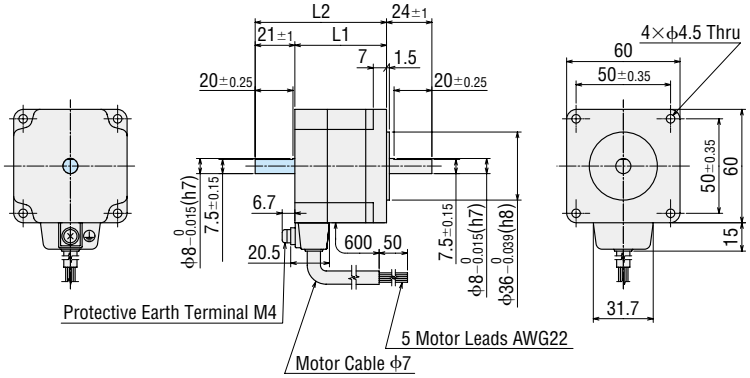


✻The length of machining on double shaft model is 15±0.25.

2 □60 mm

Model	Motor Model	L1	L2	Mass (kg)
RK564A□E	PK564AE	48.5	–	0.6
RK564B□E	PK564BE		69.5	
RK566A□E	PK566AE	59.5	–	0.8
RK566B□E	PK566BE		80.5	
RK569A□E	PK569AE	89	–	1.3
RK569B□E	PK569BE		110	

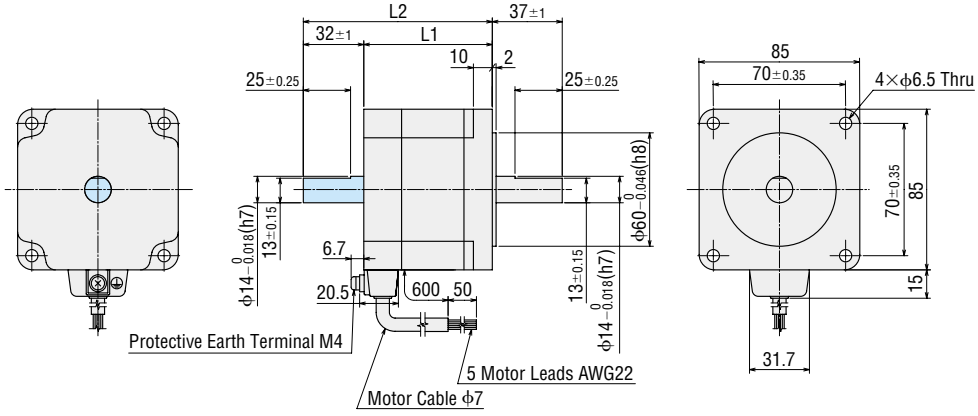
●Enter the power supply voltage **A** or **C** in the box (□) within the model name.



3 □85 mm

Model	Motor Model	L1	L2	Mass (kg)
RK596A□E	PK596AE	68	–	1.7
RK596B□E	PK596BE		100	
RK599A□E	PK599AE	98	–	2.8
RK599B□E	PK599BE		130	
RK5913A□E	PK5913AE	128	–	3.8
RK5913B□E	PK5913BE		160	

●Enter the power supply voltage **A** or **C** in the box (□) within the model name.



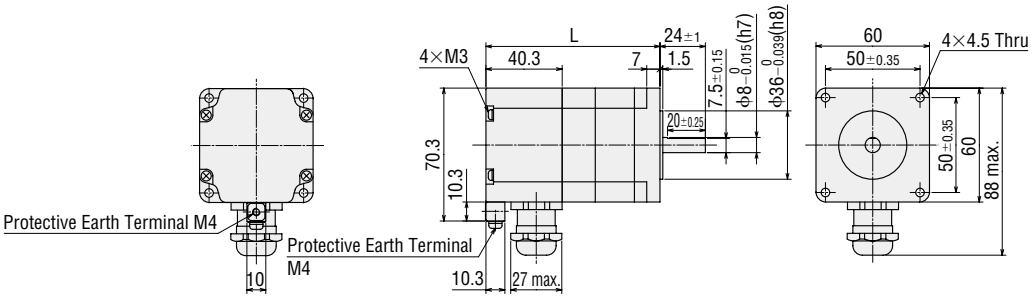
●These dimensions are for double shaft models. For single shaft models, ignore the blue areas.

◇Standard Type IP65 Rated Motor

4 □60 mm

Model	Motor Model	L	Mass (kg)
RK564A□T	PK564AT	92	0.8
RK566A□T	PK566AT	103	1.1
RK569A□T	PK569AT	132.5	1.6

●Enter the power supply voltage **A** or **C** in the box (□) within the model name.

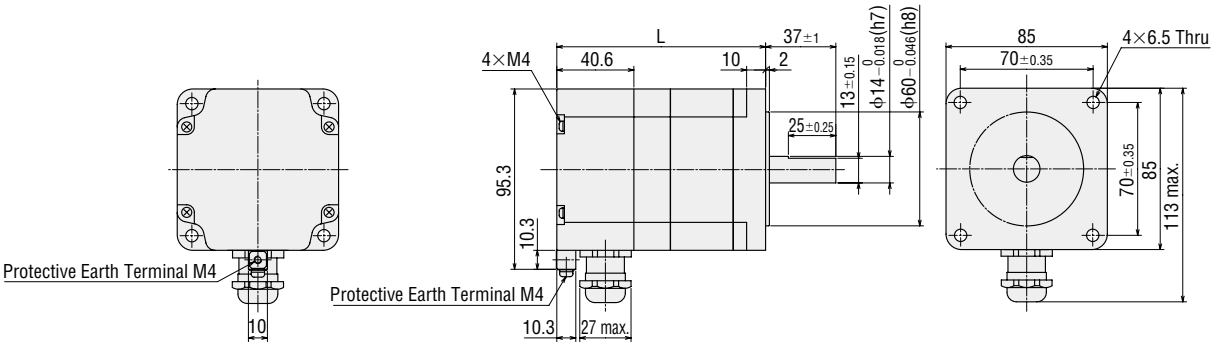


● The outer diameter of the applicable cable (VCT) is φ7 to 13 mm.
An optional motor cable (with protective earth wire) is also available (sold separately). ➜ Page 40

5 □85 mm

Model	Motor Model	L	Mass (kg)
RK596A□T	PK596AT	110	2.2
RK599A□T	PK599AT	140	3.3
RK5913A□T	PK5913AT	170	4.4

●Enter the power supply voltage **A** or **C** in the box (□) within the model name.

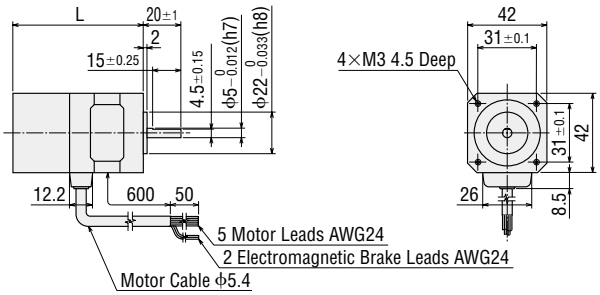


● The outer diameter of the applicable cable (VCT) is φ7 to 13 mm.
An optional motor cable (with protective earth wire) is also available (sold separately). ➜ Page 40

◇Standard Type with Electromagnetic Brake

6 □42 mm

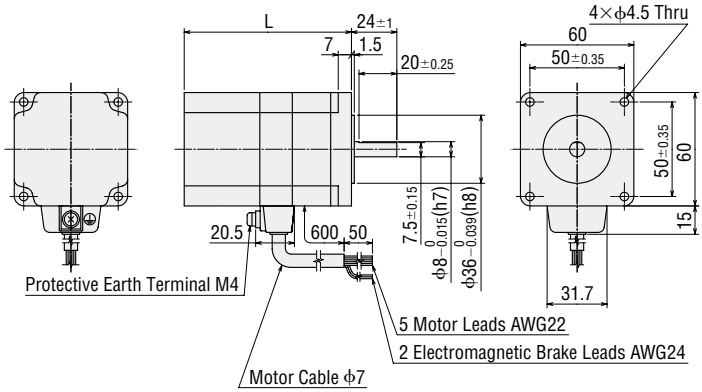
Model	Motor Model	L	Mass (kg)
RK543AMA	PK543AWM	63	0.37
RK544AMA	PK544AWM	69	0.42
RK545AMA	PK545AWM	77	0.52



7 □60 mm

Model	Motor Model	L	Mass (kg)
RK564AM□E	PK564AEM	88.5	0.9
RK566AM□E	PK566AEM	99.5	1.1
RK569AM□E	PK569AEM	129	1.6

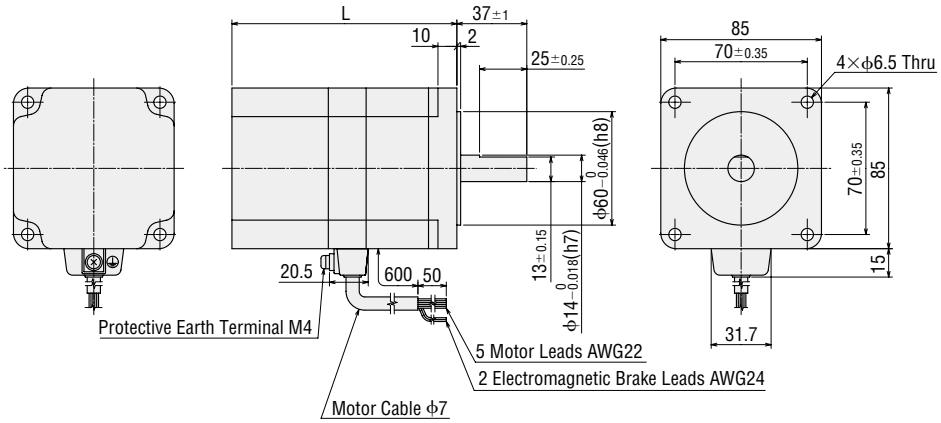
●Enter the power supply voltage **A** or **C** in the box (□) within the model name.



8 □85 mm

Model	Motor Model	L	Mass (kg)
RK596AM□E	PK596AEM	119	2.4
RK599AM□E	PK599AEM	149	3.5
RK5913AM□E	PK5913AEM	179	4.5

●Enter the power supply voltage **A** or **C** in the box (□) within the model name.

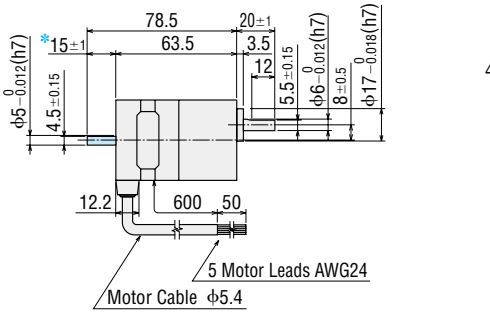


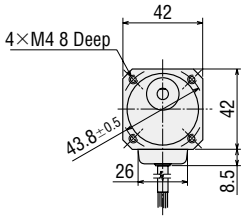
◇TH Geared Type

9 □42 mm

Model	Motor Model	Gear Ratio	Mass (kg)
RK543AA-T□	PK543AW-T□	**3.6, 7.2, 10, 20, 30**	0.35
RK543BA-T□	PK543BW-T□		

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



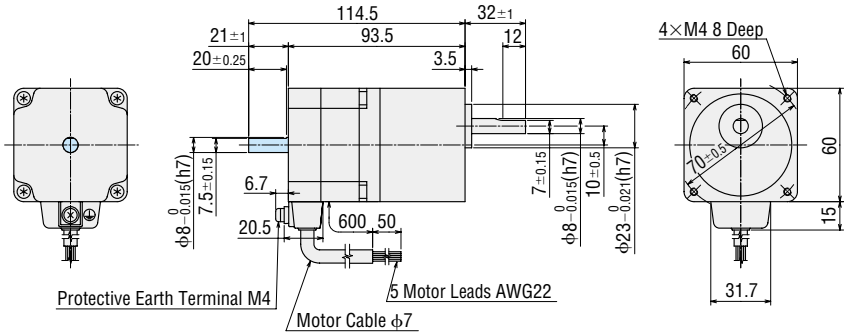


*The length of machining on double shaft model is 15±0.25.

10 □60 mm

Model	Motor Model	Gear Ratio	Mass (kg)
RK564A□E-T□	PK564AE-T□	**3.6, 7.2, 10, 20, 30**	0.95
RK564B□E-T□	PK564BE-T□		

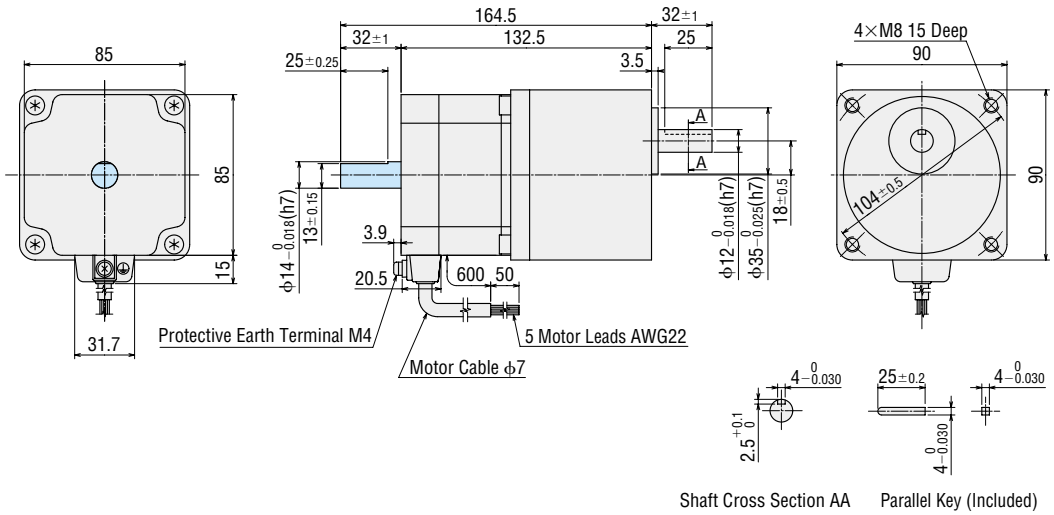
●Enter the power supply voltage **A** or **C** in the box (□) within the model name.
Enter the gear ratio in the box (□) within the model name.



11 □90 mm

Model	Motor Model	Gear Ratio	Mass (kg)
RK596A□E-T□	PK596AE-T□	**3.6, 7.2**	2.85
RK596A□E-T□	PK596AE1-T□	**10, 20, 30**	
RK596B□E-T□	PK596BE-T□	**3.6, 7.2**	
RK596B□E-T□	PK596BE1-T□	**10, 20, 30**	

●Enter the power supply voltage **A** or **C** in the box (□) within the model name.
Enter the gear ratio in the box (□) within the model name.



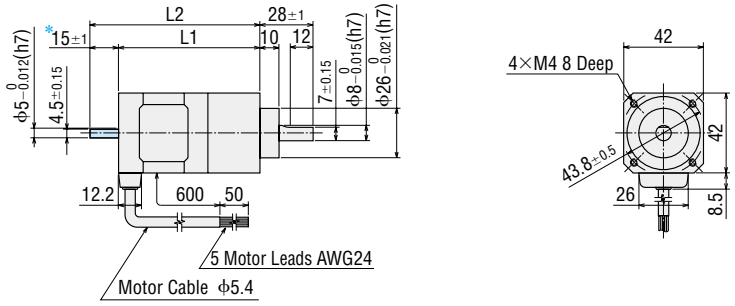
●These dimensions are for double shaft models. For single shaft models, ignore the blue areas.

◇PL Geared Type

12 □42 mm

Model	Motor Model	Gear Ratio	L1	L2	Mass (kg)
RK545AA-P□	PK545AW-P□	**5, 7.2, 10**	74.5	–	0.58
RK545BA-P□	PK545BW-P□			89.5	
RK543AA-P□	PK543AW-P□	**25, 36, 50**	84	–	0.55
RK543BA-P□	PK543BW-P□			99	

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

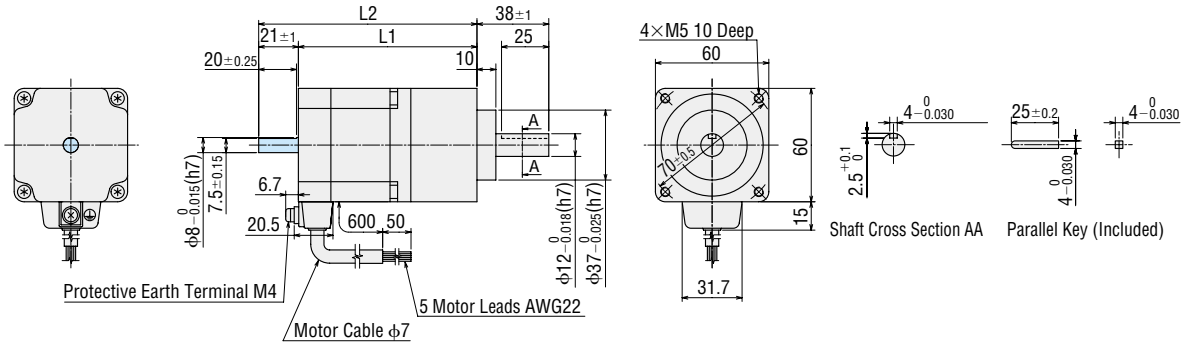


*The length of machining on double shaft model is 15±0.25.

13 □60 mm

Model	Motor Model	Gear Ratio	L1	L2	Mass (kg)
RK566A□E-P□	PK566AE-P□	**5, 7.2, 10**	94.5	–	1.3
RK566B□E-P□	PK566BE-P□			115.5	
RK564A□E-P□	PK564AE-P□	**25, 36, 50**	108.5	–	1.4
RK564B□E-P□	PK564BE-P□			129.5	

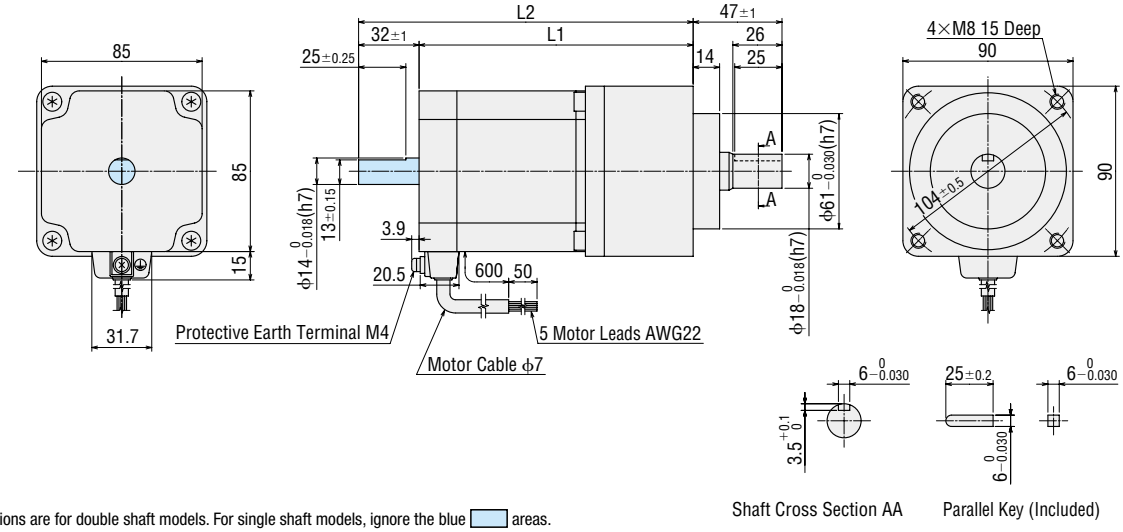
●Enter the power supply voltage **A** or **C** in the box (□) within the model name.
Enter the gear ratio in the box (□) within the model name.



14 □90 mm

Model	Motor Model	Gear Ratio	L1	L2	Mass (kg)
RK599A□E-P□	PK599AE-P□	**5, 7.2, 10**	145	–	4.4
RK599B□E-P□	PK599BE-P□			177	
RK596A□E-P□	PK596AE-P□	**25, 36, 50**	151	–	4.2
RK596B□E-P□	PK596BE-P□			183	

●Enter the power supply voltage **A** or **C** in the box (□) within the model name.
Enter the gear ratio in the box (□) within the model name.



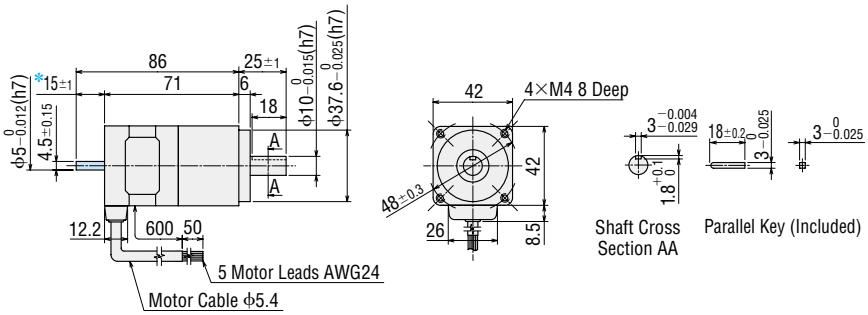
●These dimensions are for double shaft models. For single shaft models, ignore the blue areas.

◇PN Geared Type

15 □42 mm

Model	Motor Model	Gear Ratio	Mass (kg)
RK544AA-N□	PK544AW-N□	**5, 7.2, 10**	0.56
RK544BA-N□	PK544BW-N□		

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

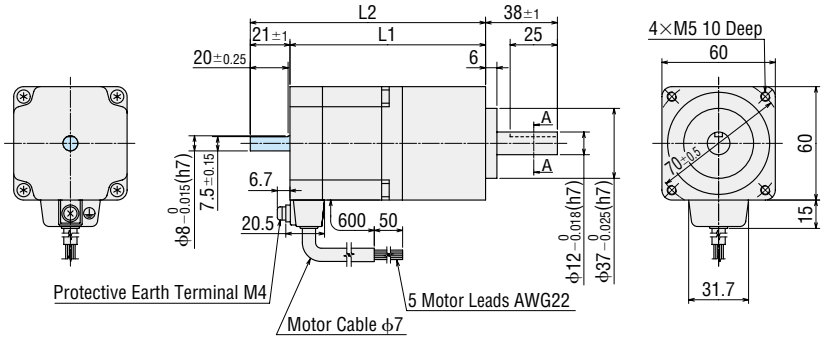


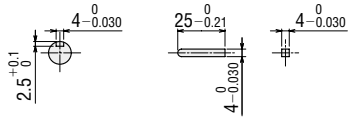
*The length of machining on double shaft model is 15±0.25.

16 □60 mm

Model	Motor Model	Gear Ratio	L1	L2	Mass (kg)
RK566A□E-N□	PK566AE-N□	**5, 7.2, 10**	103.5	–	1.5
RK566B□E-N□	PK566BE-N□			124.5	
RK564A□E-N□	PK564AE-N□	**25, 36, 50**	108.5	–	1.5
RK564B□E-N□	PK564BE-N□			129.5	

●Enter the power supply voltage **A** or **C** in the box (□) within the model name.
Enter the gear ratio in the box (□) within the model name.

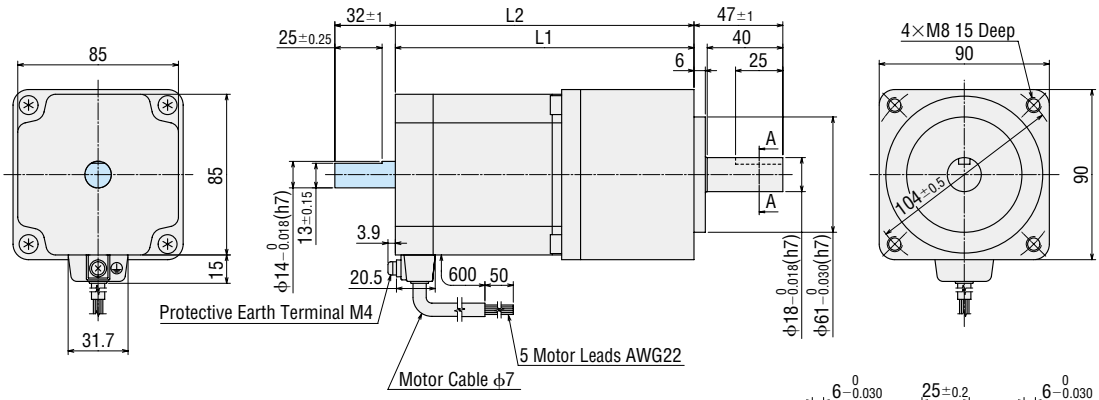


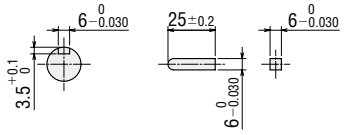


17 □90 mm

Model	Motor Model	Gear Ratio	L1	L2	Mass (kg)
RK599A□E-N□	PK599AE-N□	**5, 7.2, 10**	158	–	5
RK599B□E-N□	PK599BE-N□			190	
RK596A□E-N□	PK596AE-N□	**25, 36, 50**	151	–	4.7
RK596B□E-N□	PK596BE-N□			183	

●Enter the power supply voltage **A** or **C** in the box (□) within the model name.
Enter the gear ratio in the box (□) within the model name.





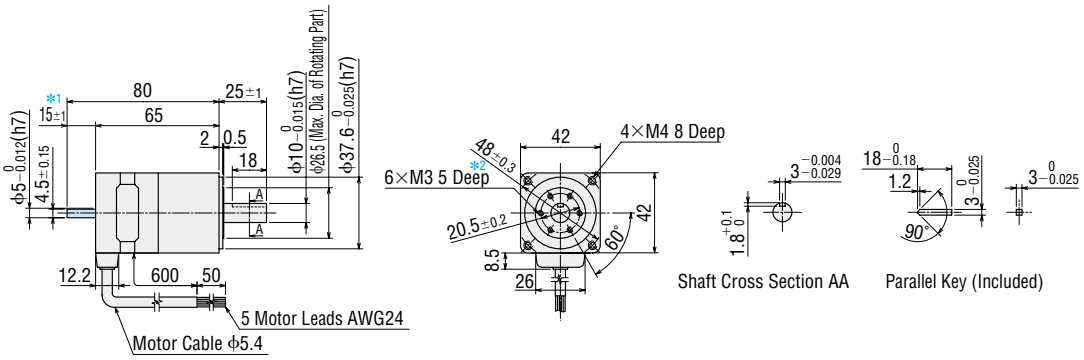
●These dimensions are for double shaft models. For single shaft models, ignore the blue areas.

◇Harmonic Geared Type

18 □42 mm

Model	Motor Model	Gear Ratio	Mass (kg)
RK543AA-H□	PK543AW-H□S	**50, 100**	0.46
RK543BA-H□	PK543BW-H□S		

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

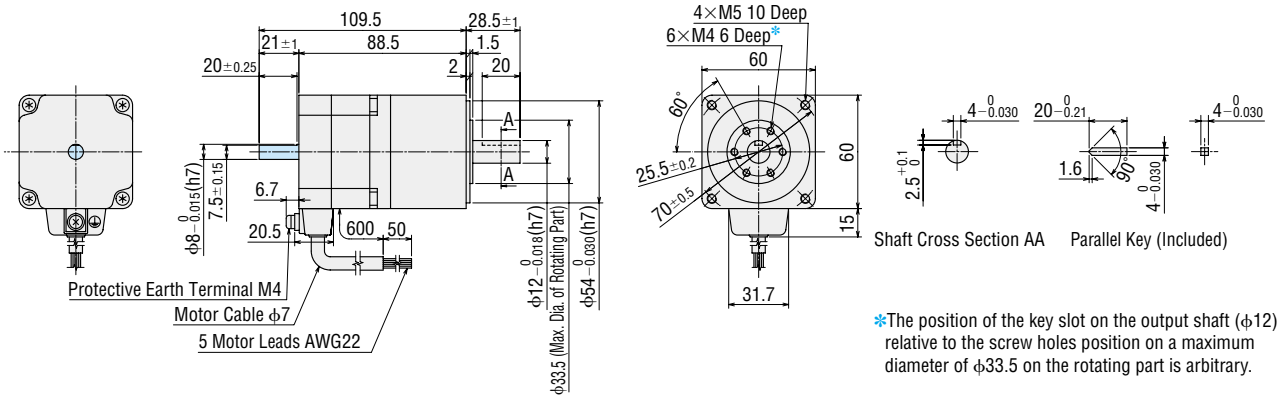


*1 The length of machining on double shaft model is 15±0.25.
*2 The position of the key slot on the output shaft (ϕ10) relative to the screw holes position on a maximum diameter of ϕ26.5 on the rotating part is arbitrary.

19 □60 mm

Model	Motor Model	Gear Ratio	Mass (kg)
RK564A□E-H□	PK564AE-H□S	**50, 100**	1.08
RK564B□E-H□	PK564BE-H□S		

●Enter the power supply voltage **A** or **C** in the box (□) within the model name.
Enter the gear ratio in the box (□) within the model name.

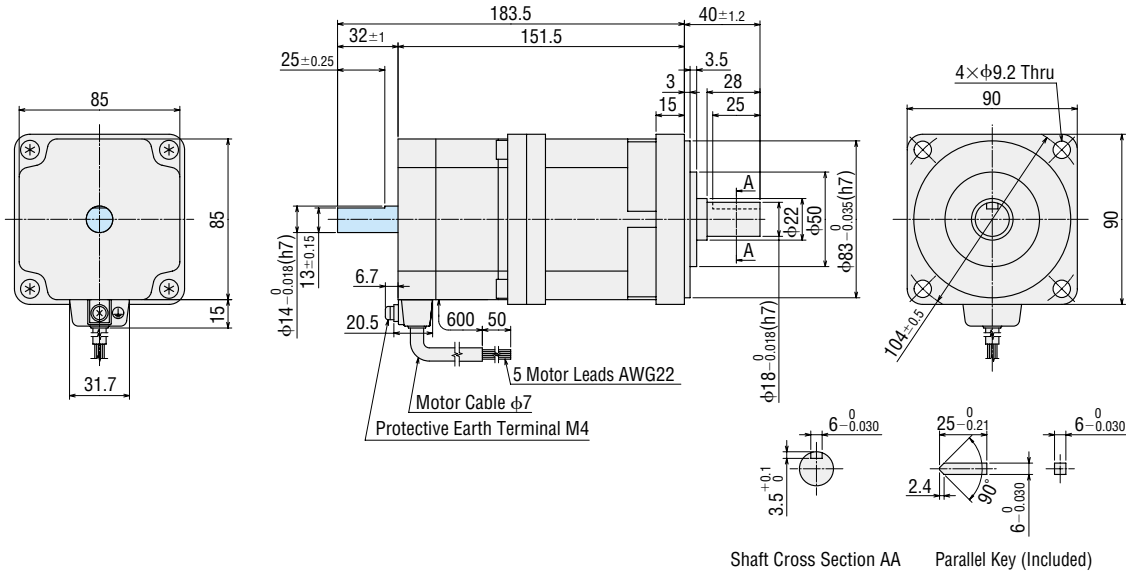


*The position of the key slot on the output shaft (ϕ12) relative to the screw holes position on a maximum diameter of ϕ33.5 on the rotating part is arbitrary.

20 □90 mm

Model	Motor Model	Gear Ratio	Mass (kg)
RK596A□E-H□	PK596AE1-H□	**50, 100**	3.7
RK596B□E-H□	PK596BE1-H□		

●Enter the power supply voltage **A** or **C** in the box (□) within the model name.
Enter the gear ratio in the box (□) within the model name.

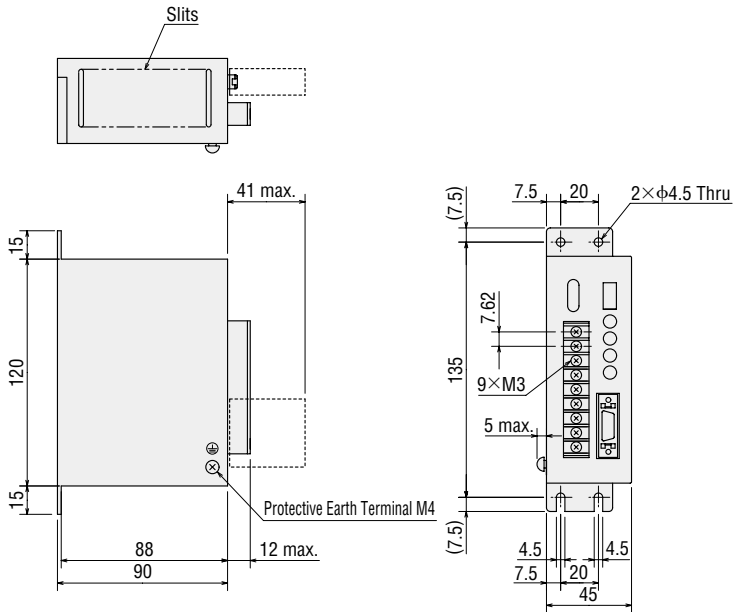


●These dimensions are for double shaft models. For single shaft models, ignore the blue areas.

●Driver

21 Driver Model: RKD507-A
RKD507M-A

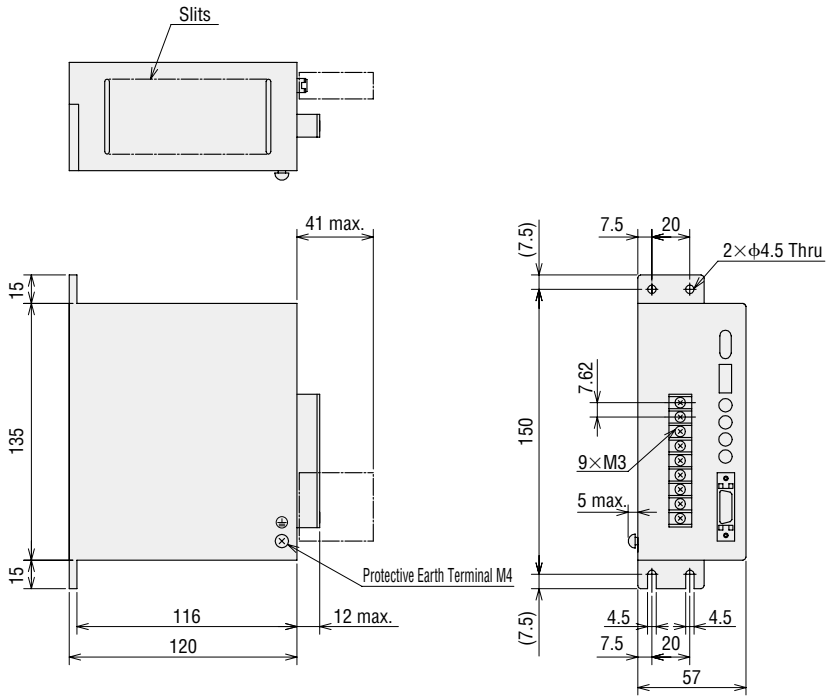
Mass: 0.4 kg



●I/O Connector (Included)
Cover Assembly: 54331-0201 (MOLEX)
Connector: 54306-2019 (MOLEX)

22 Driver Model: RKD514L-A, RKD514L-C
RKD514H-A, RKD514H-C
RKD514LM-A, RKD514LM-C
RKD514HM-A, RKD514HM-C

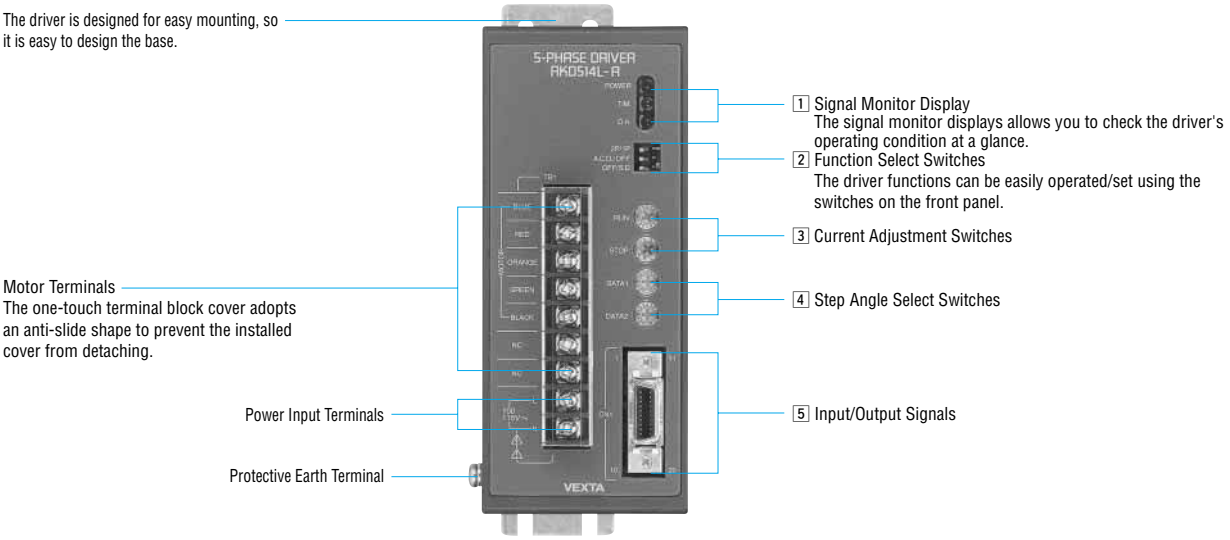
Mass: 0.85 kg



●I/O Connector (Included)
Cover Assembly: 54331-0201 (MOLEX)
Connector: 54306-2019 (MOLEX)

Connection and Operation

Names and Functions of Driver Parts



1 Signal Monitor Display

Indication	Color	Function
POWER	Green	Power Input Display
TIM.	Green	Excitation Timing Output Display
O.H.	Red	Overheat Output Display

2 Function Select Switches

Indication	Switch Name	Function
2P/1P	Pulse Input Mode Switch	Switches between 1-pulse input and 2-pulse input.
A.C.O./OFF	Automatic Current Off Function Switch	When the temperature inside the driver rises above 80˚C, this function automatically switches the motor current off. The function can be set or deactivated with this switch.
OFF/S.D.	Smooth Drive Function Switch	Low vibration and low noise operation are available even in the low speed range without changing the step angle setting. The function can be set or deactivated with this switch.
M.B.F./OFF	Electromagnetic Brake Function Switch (Only for electromagnetic brake type)	The modes of the electromagnetic brake can be switched by combination of the switch settings. The following three modes are available; Power-failure position-holding mode Energy-saving mode Electromagnetic brake control mode
OFF/E.S.	Energy-Saving Mode Switch (Only for electromagnetic brake type)	

3 Current Adjustment Switches

Indication	Switch Name	Function
RUN	Motor Run Current Switch	For adjusting the motor running current
STOP	Motor Stop Current Switch	For adjusting the motor current at standstill.

4 Step Angle Select Switches

Indication	Switch Name	Function
DATA1	Step Angle Select Switch	Each switch can be set to the desired resolution from the 16 resolution levels.
DATA2		

Step Angle Select Switch (Common to DATA1 and DATA2)	Resolution	Step Angle
0	1	0.72˚
1	2	0.36˚
2	2.5	0.288˚
3	4	0.18˚
4	5	0.144˚
5	8	0.09˚
6	10	0.072˚
7	20	0.036˚
8	25	0.0288˚
9	40	0.018˚
A	50	0.0144˚
B	80	0.009˚
C	100	0.0072˚
D	125	0.00576˚
E	200	0.0036˚
F	250	0.00288˚

◇Setting the Step Angles

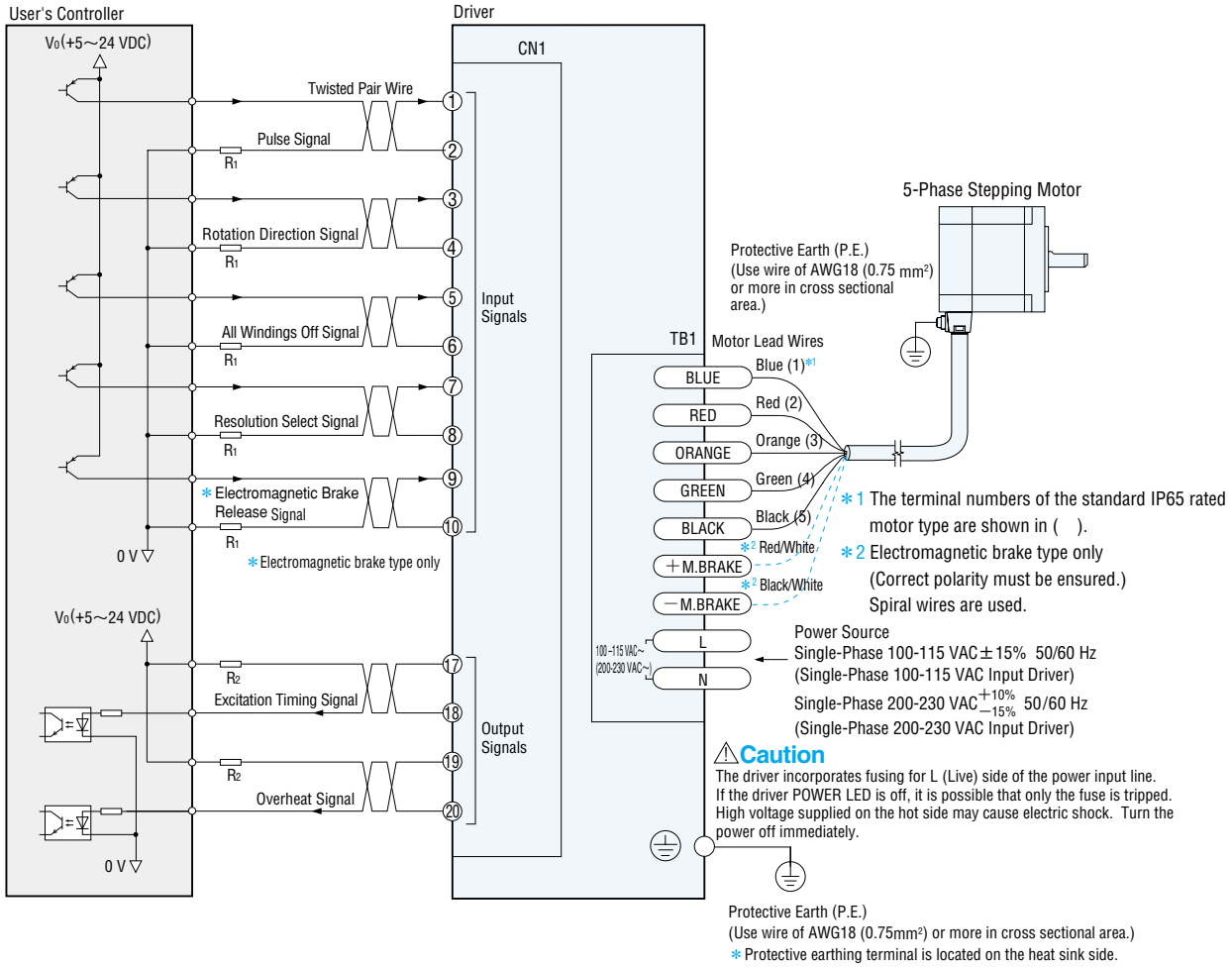
Selects and switches between the two step angle switches (DATA1 and DATA2).
Use the step angle select signal to change the step angle.
Photocoupler OFF: Step angle (resolution) set by DATA1 is selected.
Photocoupler ON: Step angle (resolution) set by DATA2 is selected.

5 Input/Output Signals

Indication	Input/Output Signals	Pin No.	Terminal Name	Function
CN1	Input Signals	1	Pulse Signal (CW Pulse Signal)	Operation command pulse signal. (The motor will rotate in the CW direction when in 2-pulse input mode)
		2		
		3	Rotation Direction Signal (CCW Pulse Signal)	Rotation direction signal Photocoupler ON: CW, Photocoupler OFF: CCW. (The motor will rotate in the CCW direction when in 2-pulse input mode)
		4		
		5	All Windings Off Signal	Cuts the output current to the motor and allows the motor shafts to be rotated manually.
		6		
		7	Step Angle Select Signal	Switches to step angle set in DATA1 and DATA2.
		8		
		9	Electromagnetic Brake Release Signal (Electromagnetic Brake Only)	Releases the electromagnetic brake and enables motor operation.
		10		
	Output Signals	17	Excitation Timing Signal	Outputs signals when the excitation sequence is at STEP 0.
		18		
		19	Overheat Signal	When the temperature inside the driver rises above 80˚C, this function automatically turns the output signal OFF.
		20		

*Refer to Page 36 for details of the signals.

●Connection Diagrams



◇Connecting Input Signal

Keep the input signal voltage to 5 VDC. When the voltage is equal to 5 VDC, the external resistor R_1 is not necessary. When the voltage is above 5 VDC, connect R_1 as shown in the diagram to keep the input current to 20 mA or below. Applying a voltage exceed 5 VDC without using an external resistor will damage the internal elements.

Example) If V_0 is 24 VDC, R_1 must be 1.5 to 2.2 kΩ, 0.5 W or more.

◇Connecting Output Signal

Keep the output signal voltage and current to 24 VDC and 10 mA or below, respectively. When the current is above 10 mA, connect the external resistor R_2 as shown in the diagram to keep it to 10 mA or below. If these specifications are exceeded, the internal elements may be damaged. Check the specification of the connected equipment.

◇Power Supply

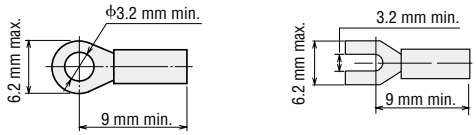
Use a power supply that can supply sufficient input current. When power supply capacity is insufficient, a decrease in motor output can cause the following malfunctions:

- Motor does not rotate properly at high-speed
- Slow motor startup and stopping

◇Notes:

- Use twisted-pair wire of AWG24 (0.2 mm²) or thicker and 2 m or less in length for the signal line.
- Note that as the length of the pulse signal line increases, the maximum transmission frequency decreases.
- Use AWG22 (0.3 mm²) or thicker for motor lines (when extended) and power supply lines, and use AWG18 (0.75 mm²) or thicker for the wire for the protective earthing line.
- Use spot grounding for the grounding of the driver and external controller.
- Signal lines should be kept at least 10 cm away from power lines (power supply lines and motor lines). Do not bind the signal line and power line together.

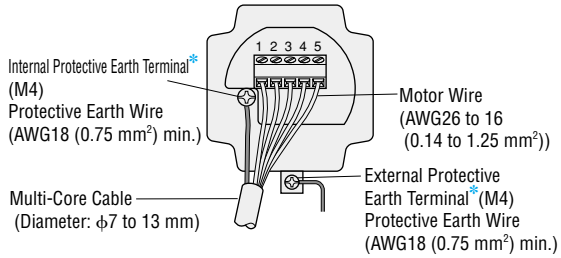
◇Recommended Crimp Terminals



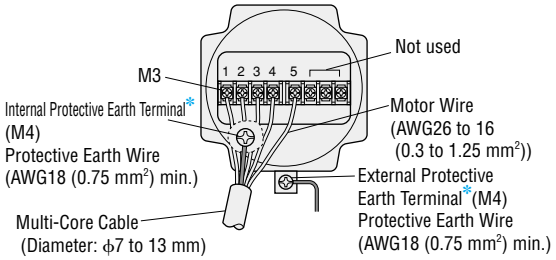
*Crimp terminals are not provided with the package. They must be furnished separately.

●Connection of Standard Type IP65 Rated Motor

RK564A□T, RK566A□T, RK569A□T



RK596A□T, RK599A□T, RK5913A□T



*Use either the internal or external protective earth terminal for grounding.

●Enter the power supply voltage **A** or **C** in the box (□) within the model name.

●Description of Input/Output Signals

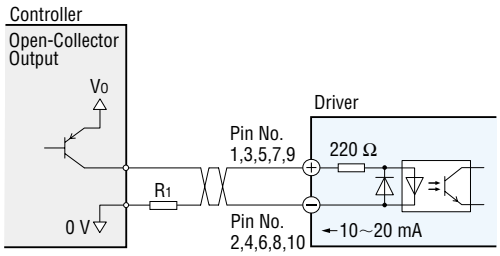
Indication of Input/Output Signal "ON""OFF"

Input (Output) "ON" indicates that the current is sent into the photocoupler (transistor) inside the driver. Input (Output) "OFF" indicates that the current is not sent into the photocoupler (transistor) inside the driver. The input/output remains "OFF" if nothing is connected.

Photocoupler OFF ON

Pulse (CW Pulse) and Rotation Direction (CCW Pulse) Input Signal
All Windings Off (A.W.OFF) Input Signal
Step Angle Select (C/S) Input Signal
Electromagnetic Brake Release (M.B.FREE) Input Signal (Electromagnetic Brake Type only)

◇Input Circuit and Sample Connection

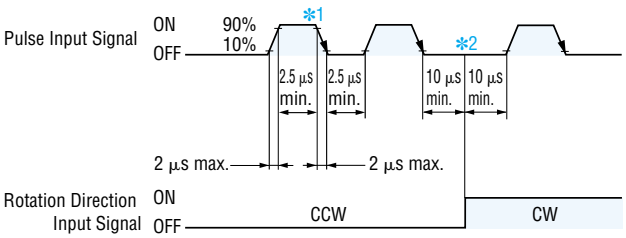


Keep the voltage V_0 between 5 VDC and 24 VDC. When V_0 is equal to 5 VDC, the external resistor R_1 is not necessary. When V_0 is above 5 VDC, connect R_1 to keep the current between 10 mA and 20 mA.

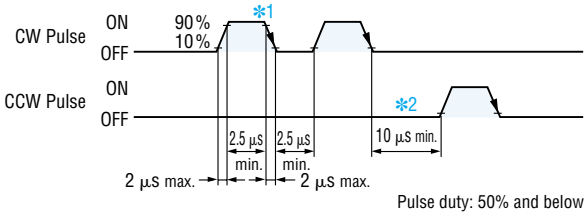
◇Pulse (CW Pulse) and Rotation Direction (CCW Pulse) Input Signal

Pulse Waveform Characteristics

<In 1-pulse Input Mode>



<In 2-pulse Input Mode>



Pulse duty: 50% and below

*1 The shaded area indicates when the photocoupler diode is ON. The motor moves when the photocoupler state changes from ON to OFF.

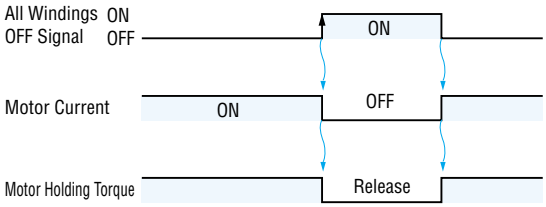
*2 The minimum interval time when changing rotation direction is 20 μs (10 μs minimum in 2-pulse input mode). This value varies greatly depending on the motor type, pulse frequency and load inertia.

◇Pulse Signal Characteristics

- Keep the pulse signal at the "photocoupler OFF" state when no pulses are being input.
- Do not input a CW pulse and CCW pulse simultaneously.
- In 1-pulse input mode, leave the pulse signal at rest ("photocoupler OFF") when changing rotation directions.

◇All Windings Off (A.W.OFF) Input Signal

- Inputting this signal puts the motor in a non-excitation (free) state.
- This signal is used when moving the motor by external force or manual home position is desired. The photocoupler must be "OFF" when operating the motor.



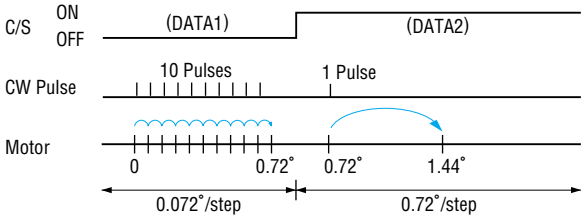
The colored area indicates that the motor provides holding torque in proportion to standstill current set by STOP switch.

- Switching the "All Windings Off" (A.W. OFF) signal from "photocoupler ON" to "photocoupler OFF" does not alter the excitation sequence. When the motor shaft is manually adjusted with the "All Windings OFF" signal input, the shaft will shift up to ±3.6° (Geared type: ±3.6°/gear ratio) from the position set after the "All Windings OFF" signal is released.

◇Step Angle Select (C/S) Input Signal

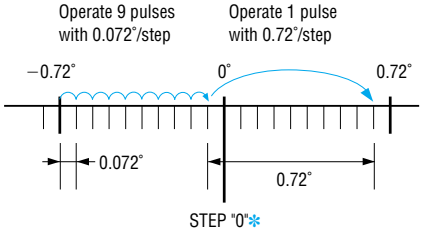
- You may select two step angles (resolutions) from 16 available step angles (resolutions) with the step angle select switches DATA1 and DATA2.
- When the signal is at "photocoupler OFF", a step angle set by DATA1 is selected; at "photocoupler ON", DATA2 is selected.

Example: Changing the step angle from 0.072° to 0.72°



- Be sure to change step angle setting inputs only when the pulse signals are at rest. Switching while moving may cause a positional error of the motor.
- When the step angle is changed by the "Step Angle Select" signal, the "TIMING" signal output may become impossible for some combinations of step angles. When the "TIMING" signal is used, adjust the number of pulses so that the motor can operate with angles that are multiples of 7.2°.

Example: After operate 9 pulses with 0.072°/step setting, change the step angle 0.72°/step and operate with 1 pulse. In this case, "Excitation Timing" signal will not be output because step "0" position is skipped.



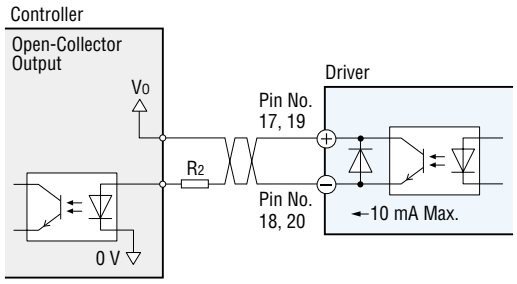
* "Excitation Timing" signal is only output at step "0" sequence.

◇Electromagnetic Brake Release (M.B.FREE) Input Signal (Electromagnetic Brake Type only)

- You can control the electromagnetic brake using the "Electromagnetic Brake Release" signal and function switch.
- When the "Electromagnetic Brake Release" signal is at photocoupler ON, the electromagnetic brake is released.
- When the "Electromagnetic Brake Release" signal is at photocoupler OFF, the electromagnetic brake is engaged and the motor shaft is held in position.

[Excitation Timing (TIM.) Output Signal Overheat (O.H.) Output Signal]

◇Output Circuit and Sample Connection

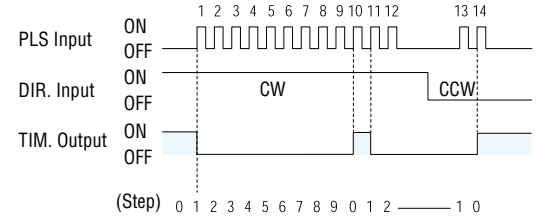


Keep the voltage V_0 between 5 VDC and 24 VDC. Keep the current below 10 mA. If the current exceeds 10 mA, connect external resistor R_2.

◇Excitation Timing (TIM.) Output Signal

- The "Excitation Timing" signal is output to indicate when the motor excitation (current flowing through the winding) is in the initial stage (step "0" at power up).
- The "Excitation Timing" signal is output simultaneously with a pulse input each time the excitation sequence returns to step "0". The excitation sequence will complete one cycle for every 7.2˚ rotation of the motor output shaft.
  Resolution 1: Signal is output once every 10 pulses.
  Resolution 10: Signal is output once every 100 pulses.
  The TIM. LED on the front panel lights when the "Excitation Timing" signal is output.

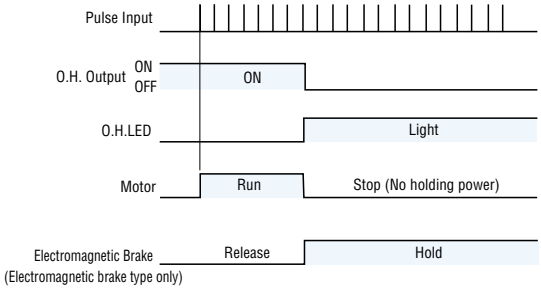
Timing chart at 0.72˚/step (Resolution 1)
When connected as shown in the example connection, the signal will be "photocoupler ON" at step "0".



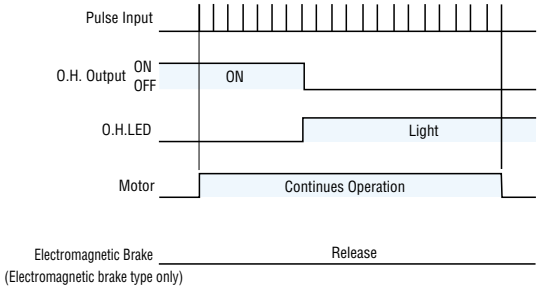
Note:
- When power is turned ON, the excitation sequence is reset to step "0" and the "TIM." signal is output.

◇Overheat (O.H.) Output Signal

- The "Overheat" signal is output to protect the driver from heat damage if the internal temperature of the driver rises above 80˚C. The Overheat LED lights on the front panel when the "Overheat" signal is output.
- You can select whether to stop the motor or continue the operation when an overheat signal is output.
- If the "Automatic Current Off" function switch is set to "A.C.O" position, output current is shut off to stop the motor when the overheat signal is output. With electromagnetic brake type, the electromagnetic brake is engaged and the motor shaft is held in position.



- If the "Automatic Current Off" function switch is set to "OFF" position, the motor continues operation when the overheat signal is output.



- To clear the "Overheat" signal, first resolve the cause and check for safety, then turn power on again.
- The overheat output uses positive logic (Normally Closed), all other outputs use negative logic (Normally Open).

●How to Use the Electromagnetic Brake Function and Energy-Saving Mode (Electromagnetic brake type only)

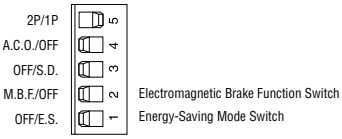
The electromagnetic brake can be operated in the following three modes using the electromagnetic brake switch and energy-saving mode switch.

1. Power-failure position-holding mode ("Electromagnetic Brake Release" signal input disabled)
2. Energy-saving mode ("Electromagnetic Brake Release" signal input used)
3. Electromagnetic brake control mode ("Electromagnetic Brake Release" signal input used)

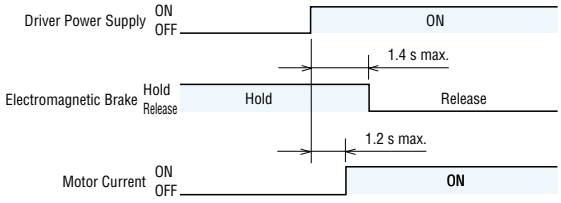
1. Power-failure position-holding mode (Factory setting)

The electromagnetic brake is released and activated in sync with the ON/OFF of the power supply. The "Electromagnetic Brake Release" signal is disabled.

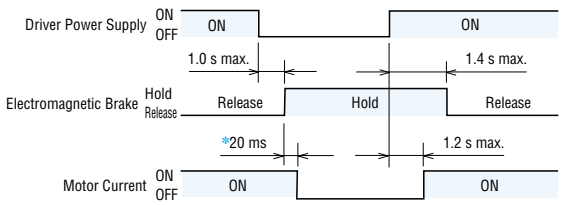
Function switch	Set
Electromagnetic brake switch	M.B.F. side
Energy-saving mode switch	OFF side



During normal operation



Upon power off/power failure

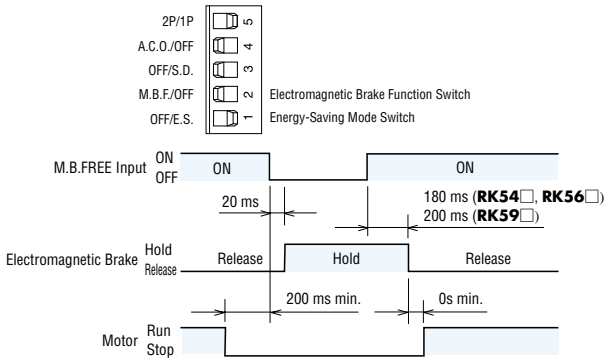


*The above diagram indicates a condition in which the motor is stopped. If a power failure occurs while the motor is running, the duration of motor-current cutoff becomes shorter.

2. Energy-saving mode

The "Electromagnetic Brake Release" signal input is used to switch the operating mode of the electromagnetic brake between Release and Hold. Once the motor has stopped, switching the operating mode of the electromagnetic brake to Hold cuts off the output current. This is useful in the reduction of power consumption and the prevention of an overheated motor/driver.

Function switch	Set
Electromagnetic brake switch	M.B.F. side
Energy-saving mode switch	ON side



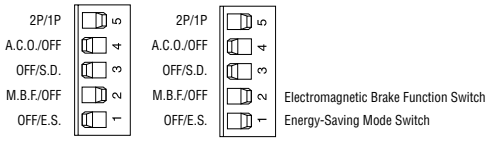
Note:

- If the photocoupler of the "Electromagnetic Brake Release" signal (M.B.FREE) input is turned "OFF" for not more than 20 ms, the electromagnetic brake will not switch from "release" to "hold." Similarly, the electromagnetic brake will not switch from "hold" to "release" if the photocoupler of the "Electromagnetic Brake Release" input is turned "ON" for not more than 150 ms.

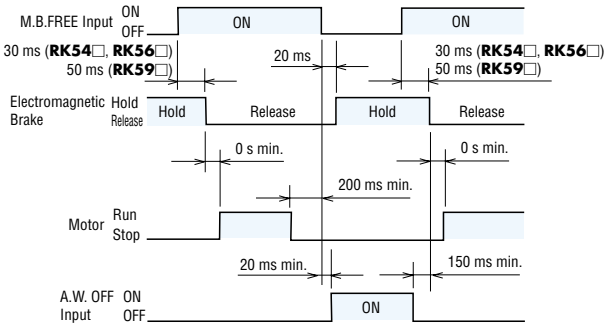
3. Electromagnetic brake control

The "Electromagnetic Brake Release" signal input is used to switch the operating mode of the electromagnetic brake between Release and Hold. The output current is not cut off even when the energy-saving mode switch is being set to the E.S. side.

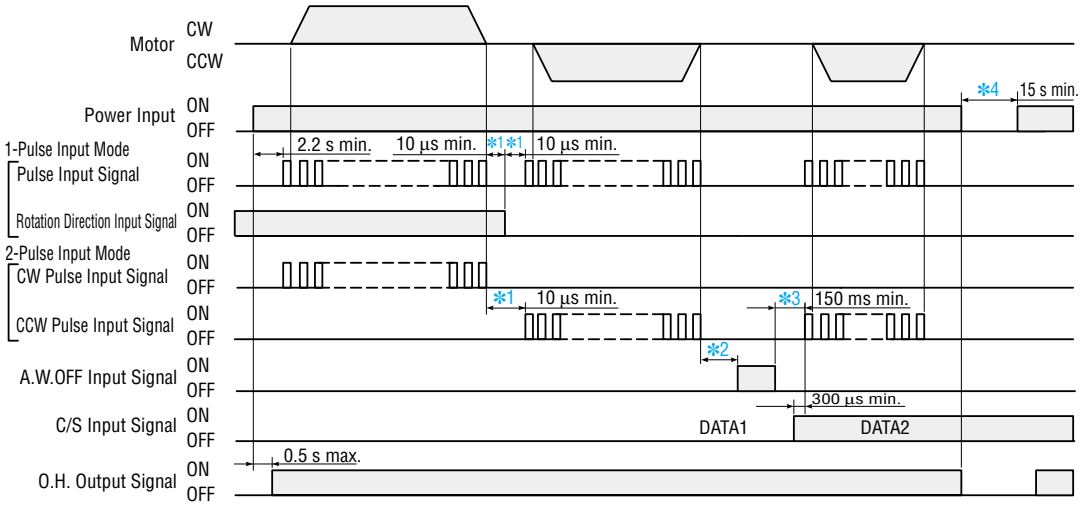
Function switch	Set
Electromagnetic brake switch	OFF side
Energy-saving mode switch	ON side or OFF side



When the "Electromagnetic Brake Release" signal's photocoupler is set to ON, the electromagnetic brake is released and motor operation is enabled.
When the "Electromagnetic Brake Release" signal's photocoupler is set to OFF, the electromagnetic brake holds after the motor stops.
Upon the occurrence of a power failure, the electromagnetic brake operates in the same way it would in the power-failure position-holding mode.



●Timing Chart



*1 Switching time to change direction (1-pulse input mode), and switching time to change CW, CCW pulse (2-pulse input mode) 10 µs minimum is shown as a response time of circuit. The motor may need more time.
*2 Depends on load Inertia, load torque, and starting frequency.
*3 Never input a step pulse signal immediately after switching the "All Windings Off" signal to the "photocoupler OFF" state. The motor may not start.
*4 Wait at least 15 seconds before turning on the power.

List of Motor and Driver Combinations

Model names for motor and driver combinations are shown below.

Type	Model	Motor Model	Driver Model
Standard Type	**RK543□A** **RK544□A** **RK545□A**	PK543□W PK544□W PK545□W	RKD507-A
	RK564□AE **RK566□AE** **RK569□AE**	PK564□E PK566□E PK569□E	RKD514L-A
	RK596□AE **RK599□AE** **RK5913□AE**	PK596□E PK599□E PK5913□E	RKD514H-A
	RK564□CE **RK566□CE** **RK569□CE**	PK564□E PK566□E PK569□E	RKD514L-C
	RK596□CE **RK599□CE** **RK5913□CE**	PK596□E PK599□E PK5913□E	RKD514H-C
Standard Type IP65 Rated Motor	**RK564AAT** **RK566AAT** **RK569AAT**	PK564AT PK566AT PK569AT	RKD514L-A
	RK596AAT **RK599AAT** **RK5913AAT**	PK596AT PK599AT PK5913AT	RKD514H-A
	RK564ACT **RK566ACT** **RK569ACT**	PK564AT PK566AT PK569AT	RKD514L-C
	RK596ACT **RK599ACT** **RK5913ACT**	PK596AT PK599AT PK5913AT	RKD514H-C
Standard Type with Electromagnetic Brake	**RK543AMA** **RK544AMA** **RK545AMA**	PK543AWM PK544AWM PK545AWM	RKD507M-A
	RK564AMAE **RK566AMAE** **RK569AMAE**	PK564AEM PK566AEM PK569AEM	RKD514LM-A
	RK596AMAE **RK599AMAE** **RK5913AMAE**	PK596AEM PK599AEM PK5913AEM	RKD514HM-A
	RK564AMCE **RK566AMCE** **RK569AMCE**	PK564AEM PK566AEM PK569AEM	RKD514LM-C
	RK596AMCE **RK599AMCE** **RK5913AMCE**	PK596AEM PK599AEM PK5913AEM	RKD514HM-C
TH Geared Type	**RK543□A-T3.6** **RK543□A-T7.2** **RK543□A-T10** **RK543□A-T20** **RK543□A-T30**	PK543□W-T3.6 PK543□W-T7.2 PK543□W-T10 PK543□W-T20 PK543□W-T30	RKD507-A
	RK564□AE-T3.6 **RK564□AE-T7.2** **RK564□AE-T10** **RK564□AE-T20** **RK564□AE-T30**	PK564□E-T3.6 PK564□E-T7.2 PK564□E-T10 PK564□E-T20 PK564□E-T30	RKD514L-A
	RK596□AE-T3.6 **RK596□AE-T7.2** **RK596□AE-T10** **RK596□AE-T20** **RK596□AE-T30**	PK596□E-T3.6 PK596□E-T7.2 PK596□E1-T10 PK596□E1-T20 PK596□E1-T30	RKD514H-A
	RK564□CE-T3.6 **RK564□CE-T7.2** **RK564□CE-T10** **RK564□CE-T20** **RK564□CE-T30**	PK564□E-T3.6 PK564□E-T7.2 PK564□E-T10 PK564□E-T20 PK564□E-T30	RKD514L-C
	RK596□CE-T3.6 **RK596□CE-T7.2** **RK596□CE-T10** **RK596□CE-T20** **RK596□CE-T30**	PK596□E-T3.6 PK596□E-T7.2 PK596□E1-T10 PK596□E1-T20 PK596□E1-T30	RKD514H-C

●Enter **A** (Single shaft) or **B** (Double shaft) in the box (□) within the model name.

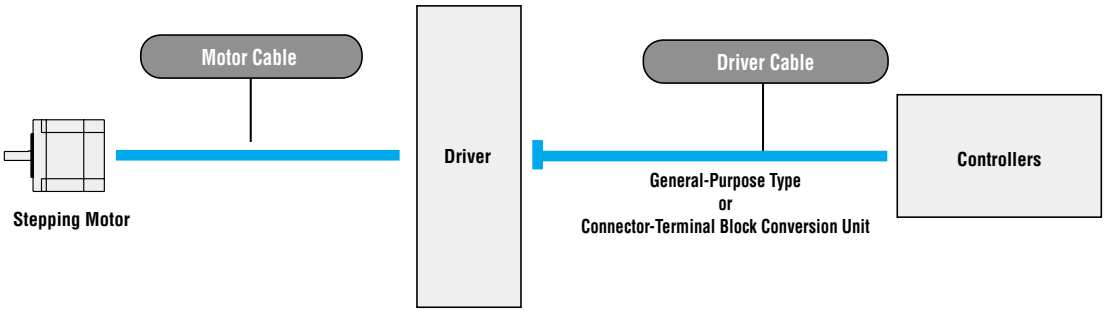
Type	Model	Motor Model	Driver Model
PL Geared Type	**RK545□A-P5** **RK545□A-P7.2** **RK545□A-P10** **RK543□A-P25** **RK543□A-P36** **RK543□A-P50**	PK545□W-P5 PK545□W-P7.2 PK545□W-P10 PK543□W-P25 PK543□W-P36 PK543□W-P50	RKD507-A
	RK566□AE-P5 **RK566□AE-P7.2** **RK566□AE-P10** **RK564□AE-P25** **RK564□AE-P36** **RK564□AE-P50**	PK566□E-P5 PK566□E-P7.2 PK566□E-P10 PK564□E-P25 PK564□E-P36 PK564□E-P50	RKD514L-A
	RK599□AE-P5 **RK599□AE-P7.2** **RK599□AE-P10** **RK596□AE-P25** **RK596□AE-P36** **RK596□AE-P50**	PK599□E-P5 PK599□E-P7.2 PK599□E-P10 PK596□E-P25 PK596□E-P36 PK596□E-P50	RKD514H-A
	RK566□CE-P5 **RK566□CE-P7.2** **RK566□CE-P10** **RK564□CE-P25** **RK564□CE-P36** **RK564□CE-P50**	PK566□E-P5 PK566□E-P7.2 PK566□E-P10 PK564□E-P25 PK564□E-P36 PK564□E-P50	RKD514L-C
	RK599□CE-P5 **RK599□CE-P7.2** **RK599□CE-P10** **RK596□CE-P25** **RK596□CE-P36** **RK596□CE-P50**	PK599□E-P5 PK599□E-P7.2 PK599□E-P10 PK596□E-P25 PK596□E-P36 PK596□E-P50	RKD514H-C
PN Geared Type	**RK544□A-N5** **RK544□A-N7.2** **RK544□A-N10**	PK544□W-N5 PK544□W-N7.2 PK544□W-N10	RKD507-A
	RK566□AE-N5 **RK566□AE-N7.2** **RK566□AE-N10** **RK564□AE-N25** **RK564□AE-N36** **RK564□AE-N50**	PK566□E-N5 PK566□E-N7.2 PK566□E-N10 PK564□E-N25 PK564□E-N36 PK564□E-N50	RKD514L-A
	RK599□AE-N5 **RK599□AE-N7.2** **RK599□AE-N10** **RK596□AE-N25** **RK596□AE-N36** **RK596□AE-N50**	PK599□E-N5 PK599□E-N7.2 PK599□E-N10 PK596□E-N25 PK596□E-N36 PK596□E-N50	RKD514H-A
	RK566□CE-N5 **RK566□CE-N7.2** **RK566□CE-N10** **RK564□CE-N25** **RK564□CE-N36** **RK564□CE-N50**	PK566□E-N5 PK566□E-N7.2 PK566□E-N10 PK564□E-N25 PK564□E-N36 PK564□E-N50	RKD514L-C
	RK599□CE-N5 **RK599□CE-N7.2** **RK599□CE-N10** **RK596□CE-N25** **RK596□CE-N36** **RK596□CE-N50**	PK599□E-N5 PK599□E-N7.2 PK599□E-N10 PK596□E-N25 PK596□E-N36 PK596□E-N50	RKD514H-C
Harmonic Geared Type	**RK543□A-H50** **RK543□A-H100**	PK543□W-H50S PK543□W-H100S	RKD507-A
	RK564□AE-H50 **RK564□AE-H100**	PK564□E-H50S PK564□E-H100S	RKD514L-A
	RK596□AE-H50 **RK596□AE-H100**	PK596□E1-H50 PK596□E1-H100	RKD514H-A
	RK564□CE-H50 **RK564□CE-H100**	PK564□E-H50S PK564□E-H100S	RKD514L-C
	RK596□CE-H50 **RK596□CE-H100**	PK596□E1-H50 PK596□E1-H100	RKD514H-C

●Enter **A** (Single shaft) or **B** (Double shaft) in the box (□) within the model name.

Cables

Various cables provide convenient connection between a motor, driver and controller.

Type of Cables



Motor Cables

Use this cable to extend the wiring distance between the motor and driver, or to connect the IP65 rated motor and driver.

Cable Name	Page
Extention Cable	40
Motor Cable (with protective earth wire)	40

Driver Cables

Use this cable to connect the driver to a controller. Choose the general-purpose cable to be combined with a connector appropriate for the specific controller used, or the connector-terminal block conversion unit that permits connection between the driver and host controller using a terminal block.

Cable Name		Page
Driver Cable	General-Purpose Type	41
Connector-Terminal Block Conversion Unit		41

Motor Cables

Extension Cables RoHS

These extension cables are used between **RK** Series motors and dedicated drivers (except for electromagnetic brake type). They come in three lengths: 5 m, 10 m, and 20 m.

Product Line

Model	Length (m)	Conductors
CC05PK5	5	5
CC10PK5	10	
CC20PK5	20	

- Conductor configuration: 5
- Conductor size: AWG22 (0.3 mm^2)
- Finished outer diameter: ϕ7.2 mm
- Cable rating: 105°C
- Outer casing: Oil-resistant, heat-resistant, non-migrating vinyl

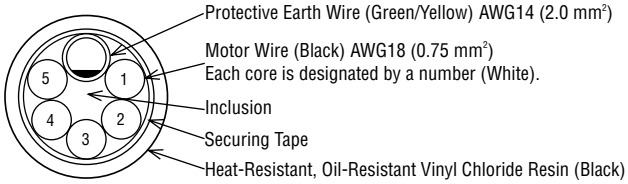
Motor Cable RoHS (with protective earth wire)

A cable for connection between the IP65 rated motor and driver

Product Line

Model	Length (m)	Conductors
CC03PKT	3	6

- Conductor configuration: 6
- Conductor size: Motor wire AWG18 (0.75 mm^2), Protective earth wire AWG14 (2.0 mm^2)
- Finished outer diameter: ϕ12 mm
- Cable rating: 105°C 600 VAC
- Outer casing: Heat-resistant, oil-resistant vinyl chloride resin
- Applicable standards: UL758 (AWM) VW-1, UL Style 2586



Driver Cable

This shielded cable is convenient for connecting **RK** Series driver to controller.

General-Purpose Type RoHS

This is a shielded cable equipped with, at one end of the cable, the half-pitch connector that snaps into the driver for **RK** Series.

Notes:

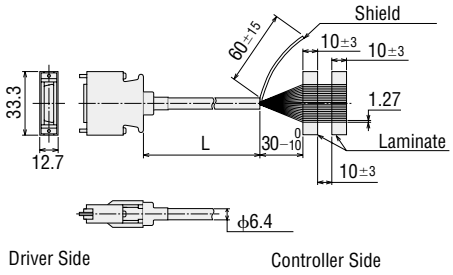
- Note that as the length of the pulse signal line increases, the maximum transmission frequency decreases.
- Install a connector that matches the controller you are using to the other end of the cable.

Product Line

Model	Length L (m)
CC20D1-1	1
CC20D2-1	2

Dimensions (Unit = mm)

Conductor: AWG28 (0.08 mm²)



Connector-Terminal Block Conversion Unit RoHS NEW

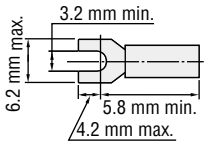
A conversion unit that connects a driver to a host controller using a terminal block.

- With a signal name plate for easy, one-glance identification of driver signal names
- DIN-rail mountable
- Cable length: 1 m

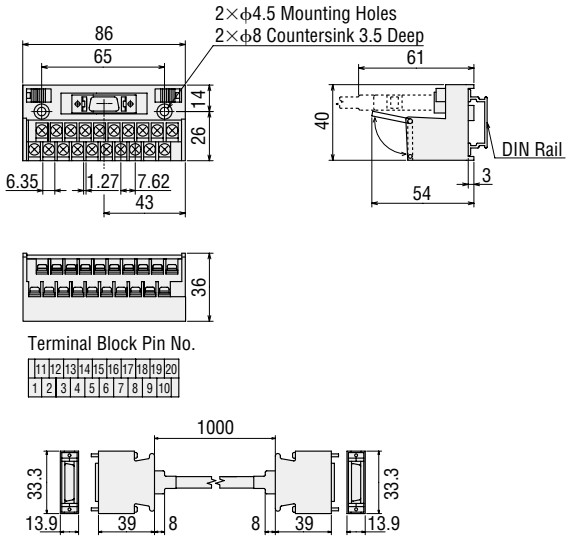
Product Line

Model	Length (m)
CC20T1	1

- Recommended Crimp Terminals
- Terminal screw size: M3
- Tightening torque: 1.2 N·m
- Applicable minimum lead wire: AWG22 (0.3 mm²)



Dimensions (Unit = mm)



Flexible Couplings RoHS NEW

A flexible coupling ideal for your motor is available. Once you have decided on a motor and gear, you can select the recommended coupling easily. All motor shaft diameters of stepping motor packages are available (including geared motors).

Features of MCS Couplings

This three-piece coupling adopts an aluminum alloy hub and a resin spider. The simple construction ensures that the high torque generated by a geared motor can be transmitted reliably. The proper elasticity of the spider suppresses motor vibration.

- High accuracy (usable for geared motor) has been realized.
- A spider (material: polyurethane) controls the vibration generated by the motor.
- No backlash.

Product Number Code

MCS 30 08 12

① ② ③ ④

①	**MCS** Couplings
②	Outer Diameter of Coupling
③	Inner Diameter d1 (Smaller Side) (**F04** represents ϕ6.35 mm)
④	Inner Diameter d2 (Larger Side) (**F04** represents ϕ6.35 mm)

Coupling Selection Table

Applicable Motor **RK** Series	Gear Ratio	Motor Shaft Diameter (mm)	Type	Driven Shaft Diameter (mm) ϕ4	ϕ5	ϕ6	ϕ6.35	ϕ8	ϕ10	ϕ12	ϕ14	ϕ15	ϕ16	ϕ18	ϕ20	ϕ25
RK543□A **RK544□A** **RK545□A** **RK543AMA** **RK544AMA** **RK545AMA**	–	ϕ5	**MCS14**	●	●	●										
RK543□A-T3.6	–	ϕ6		●	●	●										
RK543□A-T□	**7.2, 10**	ϕ6	**MCS20**		●	●	●	●	●							
RK564□□E, RK564A□T **RK566□□E, RK566A□T** **RK564AM□E** **RK566AM□E** **RK545□A-P5**	–	ϕ8			●	●	●	●	●							
RK544□A-N□	**5, 7.2**	ϕ10				●	●	●	●							
RK543□A-T□	**20, 30**	ϕ6	**MCS30**			●	●	●	●							
RK569□□E, RK569A□T **RK569AM□E** **RK543□A-P25**	–	ϕ8				●	●	●	●	●						
RK564□□E-T□	**3.6, 7.2**															
RK545□A-P□	**7.2, 10**															
RK544□A-N10	–	ϕ10				●	●	●	●	●	●					
RK596□□E, RK596A□T **RK596AM□E**	–	ϕ14							●	●	●		●			
RK564□□E-T□	**10, 20, 30**	ϕ8	**MCS40**					●	●	●		●				
RK543□A-P□	**36, 50**															
RK543□A-H□	**50, 100**	ϕ10						●	●	●		●				
RK566□□E-P□ **RK566□□E-N□**	**5, 7.2**	ϕ12						●	●	●		●				
RK596□□E-T□	**3.6, 7.2, 10, 20, 30**	ϕ12	**MCS55**													
RK566□□E-P10	–															
RK564□□E-P□	**25, 36, 50**									●	●	●	●			
RK566□□E-N10	–															
RK564□□E-N□	**25, 36, 50**															
RK564□□E-H□	**50, 100**															
RK599□□E, RK599A□T **RK5913□□E, RK5913A□T** **RK599AM□E** **RK5913AM□E**	–	ϕ14								●	●	●	●			
RK599□□E-P5 **RK599□□E-N5**	–	ϕ18										●	●	●	●	
RK599□□E-P□	**7.2, 10**	ϕ18	**MCS65**													
RK596□□E-P□	**25, 36, 50**															
RK599□□E-N□	**7.2, 10**												●	●	●	●
RK596□□E-N□	**25, 36, 50**															
RK596□□E-H□	**50, 100**															

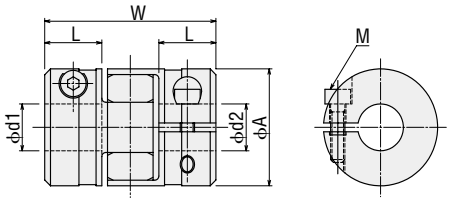
- Enter **A** (Single shaft) or **B** (Double shaft) in the box (□) within the model name.
  Enter the power supply voltage **A** or **C** in the box (□) within the model name.
  Enter the gear ratio in the box (□) within the model name.

Specifications

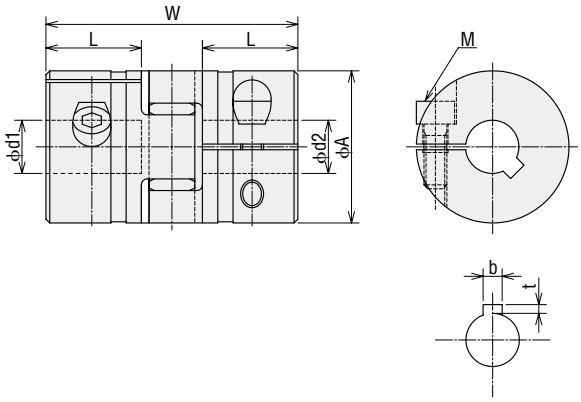
Model	Dimensions							Normal Torque	Mass	Inertia	Static Torsion Spring Constant	Permissible Eccentricity	Permissible Declination	Permissible End Play
	Outer Diameter ϕA mm	Length W mm	Axis Hole Diameter d1 H7 mm	Axis Hole Diameter d2 H7 mm	Key Slot Tolerance b/t mm	L mm	Screw Used M	N·m	g	kg·m²	N·m/rad	mm	deg	mm
MCS140405	14	22	4	5	–	7	M2	2.0	6.7	0.184×10^{-6}	22.9	0.06	0.9	$^{+0.6}_{0}$
MCS140406			4	6										
MCS140505			5	5										
MCS140506			5	6										
MCS140606			6	6										
MCS200505	20	30	5	5	–	10	M2.5	5.0	19.8	1.059×10^{-6}	51.6	0.08	0.9	$^{+0.8}_{0}$
MCS200506			5	6										
MCS2005F04			5	6.35										
MCS200508			5	8										
MCS200606			6	6										
MCS2006F04			6	6.35										
MCS200608			6	8										
MCS200610			6	10										
MCS20F04F04			6.35	6.35										
MCS20F0408			6.35	8										
MCS20F0410			6.35	10										
MCS200808			8	8										
MCS200810			8	10										
MCS201010			10	10										
MCS300606	30	35	6	6	–	11	M3	12.5	44.6	6.057×10^{-6}	171.9	0.09	0.9	$^{+1.0}_{0}$
MCS3006F04			6	6.35										
MCS300608			6	8										
MCS300610			6	10										
MCS30F04F04			6.35	6.35										
MCS30F0408			6.35	8										
MCS30F0410			6.35	10										
MCS300808			8	8										
MCS300810			8	10										
MCS300812			8	12										
MCS301010			10	10										
MCS301012			10	12										
MCS301014			10	14										
MCS301212			12	12										
MCS301214			12	14										
MCS301414			14	14										
MCS301416			14	16										
MCS400808	40	66	8	8	ϕ8 b: 2±0.0125 t: 1 $^{+0.1}_{0}$	25	M6	17.0	139	42.29×10^{-6}	859.5	0.06	0.9	$^{+1.2}_{0}$
MCS400810			8	10										
MCS400812			8	12										
MCS400815			8	15										
MCS401010			10	10	ϕ10 b: 3±0.0125 t: 1.4 $^{+0.1}_{0}$									
MCS401012			10	12										
MCS401015			10	15										
MCS401212			12	12	ϕ12 b: 4±0.015 t: 1.8 $^{+0.1}_{0}$									
MCS401215			12	15										
MCS551212	55	78	12	12	ϕ14 b: 5±0.015 t: 2.3 $^{+0.1}_{0}$	30	M6	60.0	282	109.1×10^{-6}	2063	0.10	0.9	$^{+1.4}_{0}$
MCS551214			12	14										
MCS551215			12	15	ϕ15 b: 5±0.015 t: 2.3 $^{+0.1}_{0}$									
MCS551216			12	16										
MCS551414			14	14										
MCS551415			14	15	ϕ16 b: 5±0.015 t: 2.3 $^{+0.1}_{0}$									
MCS551416			14	16										
MCS551518			15	18	ϕ18 b: 6±0.015 t: 2.8 $^{+0.1}_{0}$									
MCS551618			16	18										
MCS551818			18	18										
MCS551820			18	20	ϕ20 b: 6±0.015 t: 2.8 $^{+0.1}_{0}$									
MCS651618	65	90	16	18	ϕ25 b: 8±0.018 t: 3.3 $^{+0.2}_{0}$	35	M8	160.0	535	417.1×10^{-6}	3438	0.11	0.9	$^{+1.5}_{0}$
MCS651818			18	18										
MCS651820			18	20										
MCS651825			18	25										

Dimensions (Unit = mm)

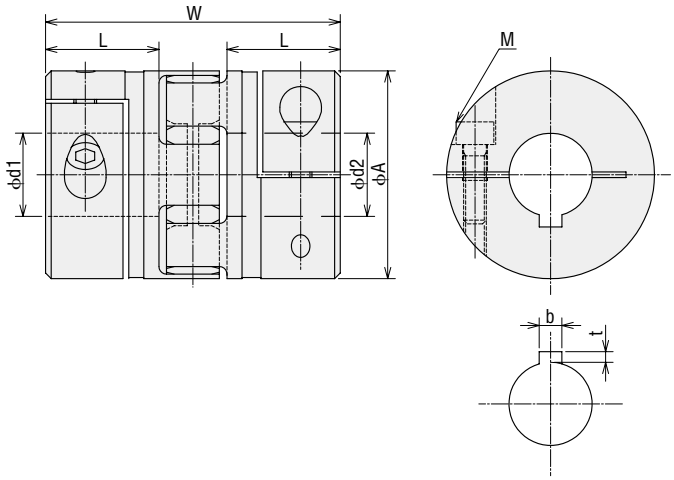
MCS14 Mass: 6.7 g
MCS20 Mass: 19.8 g
MCS30 Mass: 44.6 g



MCS40 Mass: 139 g



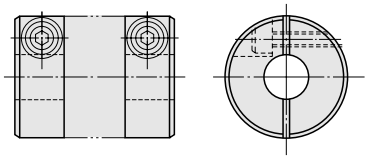
MCS55 Mass: 282 g
MCS65 Mass: 535 g



Mounting to a Shaft

Clamp Type

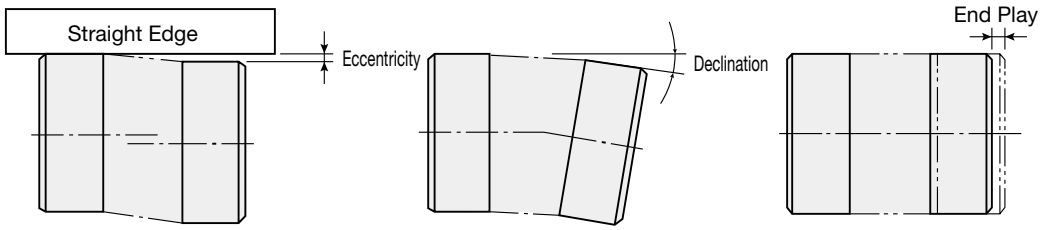
Clamp couplings use the binding force of the screw to compress the shaft hole diameter and thereby fasten the coupling to the shaft. This does not damage the shaft and is easy to mount and remove. The following table shows the screw binding torque. We recommend use of a torque wrench to fasten the coupling.



Type		MCS14	MCS20	MCS30	MCS40	MCS55	MCS65
Tightening Torque	N·m	0.37	0.76	1.34	10.5	10.5	25

Alignment Adjustment

Flexible couplings tolerate misalignment of the axis center and transfer rotational angle and torque, but produce vibration when the permissible value for misalignment is exceeded. This can dramatically shorten the coupling's service life. This requires alignment adjustment.
Misalignment of the axis center includes eccentricity (parallel error of both centers), declination (angular error of both centers) and end play (shaft movement in the axial direction). To keep misalignment within the permissible value, always check and adjust the alignment.
To increase the service life of the coupling, we recommend keeping misalignment to below 1/3 of the permissible value.



Notes:

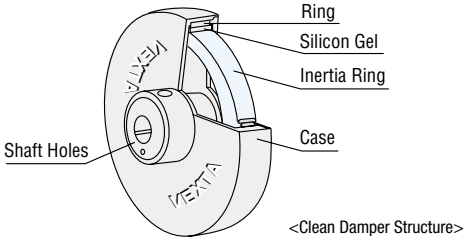
- When misalignment exceeds the permissible value or excessive torque is applied, the coupling's shape will deform, and service life is shortened.
- When the coupling emits a metallic sound during operation, stop operation immediately and ensure there is no misalignment, axis interference or loose screws.
- When load changes are large, paint the coupling set screw with an adhesive to prevent the coupling screw from loosening.

Clean Dampers RoHS

Mechanical dampers suppress stepping motor vibration and improve high-speed performance. An inertia body and silicon gel are hermetically sealed in a plastic case.

Features

- Excellent vibration absorption
  The doughnut-shaped internal inertia body and silicon gel absorb vibration. This feature enables a stable damping effect.
- Since there is no frictional dust as in conventional magnetic dampers, it can be used in environments where higher degrees of cleanness is needed.
- High reliability
- It holds up well in harsh environments and changes little with age because the silicon gel and plastic case used are heat resistant.
- Machine part is sealed hermetically in a plastic case. This ensures safety and doesn't generate noise.
- This clean damper is an accessory for double-shaft types. It can be used with various geared motors of double-shaft type.



<Clean Damper Structure>

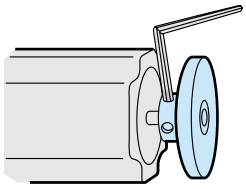
Product Line

Model	Inertia kg·m²	Mass g	Applicable Motor
D4CL-5.0F	34×10⁻⁷	24	**RK54□BA** **RK543BA-T■** **RK54□BA-P■** **RK544BA-N■** **RK543BA-H■**
D6CL-8.0F	140×10⁻⁷	61	**RK56□B□E** **RK564B□E-T■** **RK56□B□E-P■** **RK56□B□E-N■** **RK564B□E-H■**
D9CL-14F	870×10⁻⁷	105	**RK59□B□E** **RK596B□E-T■** **RK59□B□E-P■** **RK59□B□E-N■** **RK596B□E-H■**

Ambient Temperature: −20℃～+80℃

- Enter the motor case length in the box (□) within the model name.
  Enter the power supply voltage **A** or **C** in the box (□) within the model name.
  Enter the gear ratio in the box (■) within the model name.

Installation of the Clean Damper



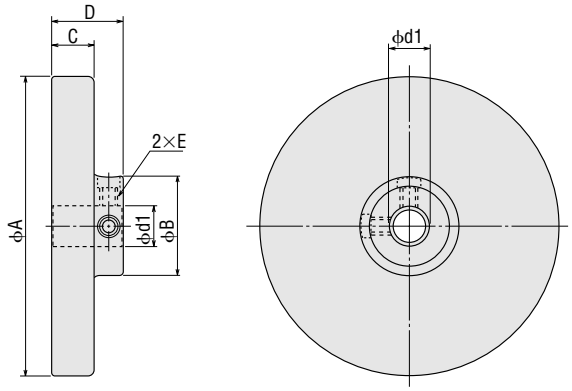
Point the mounting screws of the clean damper toward the motor case, fasten to the shaft and tighten the damper's mounting screws (2 places) with a hexagonal wrench to secure it to the shaft.

Model		D4CL-5.0F	D6CL-8.0F	D9CL-14F
Tightening Torque	N·m	0.4	1.5	1.5

Notes:

- There are mounting screws with hexagonal holes in two damper locations, so tighten them both before running the motor.
- The damper rotates at the same speed as the motor shaft, so do not touch it while the motor is running.

Dimensions (Unit = mm)



Model	ϕd1	ϕA	ϕB	C	D	E
D4CL-5.0F	$\phi\ 5\ ^{+0.018}_{0}$	ϕ36±0.5	ϕ13±0.5	9±0.3	15±0.5	M3
D6CL-8.0F	$\phi\ 8\ ^{+0.022}_{0}$	ϕ44.5±0.5	ϕ20±0.5	15±0.3	22±0.5	M4
D9CL-14F	$\phi\ 14\ ^{+0.027}_{0}$	ϕ79.5±0.5	ϕ26±0.5	11±0.3	19±0.5	M4

Motor Mounting Brackets

Mounting brackets are convenient for installation of standard stepping motors and geared type stepping motors.

Product Line

Standard Type

Material: Aluminum die cast

Mounting Bracket Models	Applicable Motor
PAF0P	**RK54□□A** **RK54□AMA**
PAL0P	**RK54□□A** **RK54□AMA**
PAL2P-5	**RK56□□AE** **RK56□□CE** **RK56□AMAE** **RK56□AMCE** **RK56□AAT** **RK56□ACT**
PAL4P-5	**RK59□□AE** **RK59□□CE** **RK59□AMAE** **RK59□AMCE** **RK59□AAT** **RK59□ACT**

- Enter the motor case length in the box (□) within the model name.
  Enter **A** (Single shaft) or **B** (Double shaft) in the box (□) within the model name.
- The mounting bracket base is built with holes large enough to allow for alignment adjustments in the horizontal direction.
- These mounting brackets can be perfectly fitted to the pilot of the stepping motors. (except for **PAL0P**)

Note:

- They cannot be used with geared stepping motors.

Geared Type

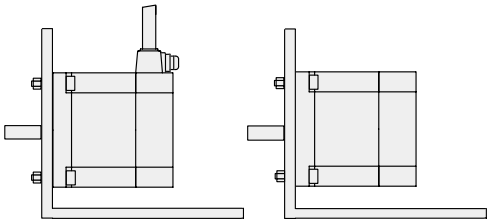
Material: Aluminum die cast RoHS

Mounting Bracket Models	Applicable Motor
SOL0B	**RK543□A-T■** **RK54□□A-P■**
SOL2A	**RK564□AE-T■** **RK564□CE-T■**
SOL2B	**RK56□□AE-P■** **RK56□□CE-P■**
SOL5B	**RK596□AE-T■** **RK596□CE-T■** **RK59□□AE-P■** **RK59□□CE-P■**

- Enter the motor case length in the box (□) within the model name.
  Enter **A** (Single shaft) or **B** (Double shaft) in the box (□) within the model name.
  Enter the gear ratio in the box (■) within the model name.
- The mounting bracket base is built with holes large enough to allow for alignment adjustments in the horizontal direction.
- Install **SOL2A** and **SOL2B** using the supplied screws.
  No screws are supplied for installing **SOL0B** and **SOL5B**. Provide appropriate screws separately.

Motor Installation Direction

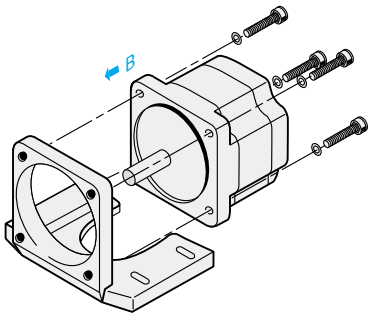
The motor cable comes out at right angles to the motor. Orientate the motor so that the cable faces either upwards or sideways.



Cable facing upward　　Cable facing sideways

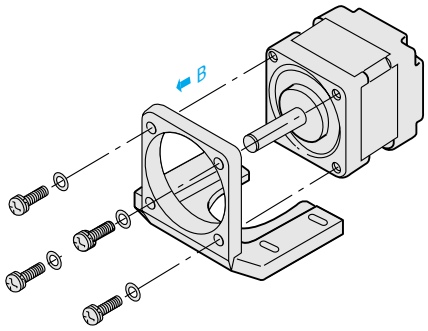
Mounting the Motor

1 PAL2P-5, PAL4P-5



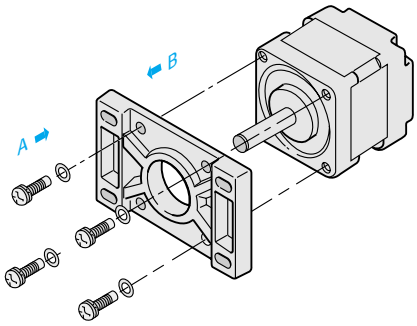
①Use the screws provided to secure the motor to the mounting bracket.
②Attach the motor from the direction shown by the arrow (B).

2 PAL0P, SOL0B, SOL2A, SOL2B, SOL5B



①Use the screws provided to secure the motor to the mounting bracket.
②Attach the motor from the direction shown by the arrow (B).

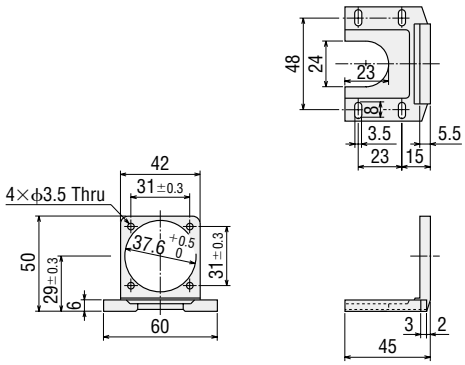
3 PAF0P



①Use the screws provided to secure the motor to the mounting bracket.
②Attach motor from the direction shown by either arrow (A) or arrow (B).

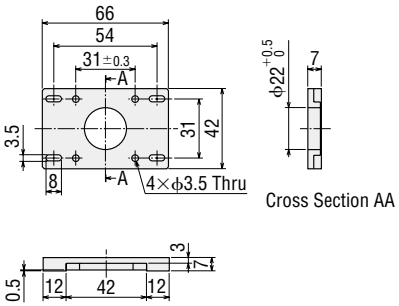
Dimensions (Unit = mm)

PAL0P
Mass: 35 g



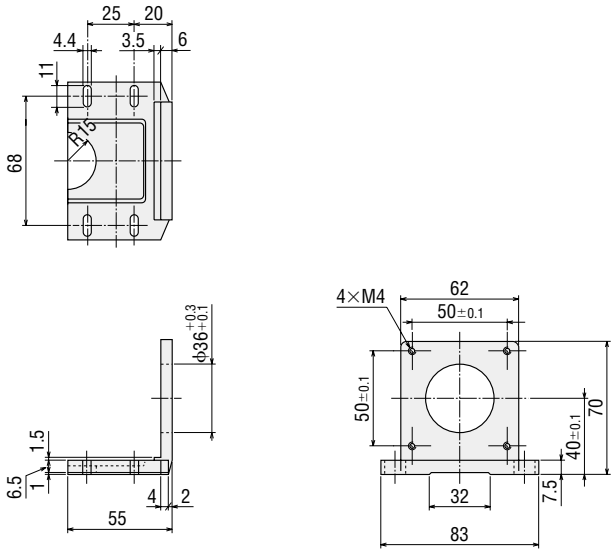
●Screws (Included)
M3P0.5 Length 10 mm ··· 4 Pieces

PAF0P
Mass: 30 g



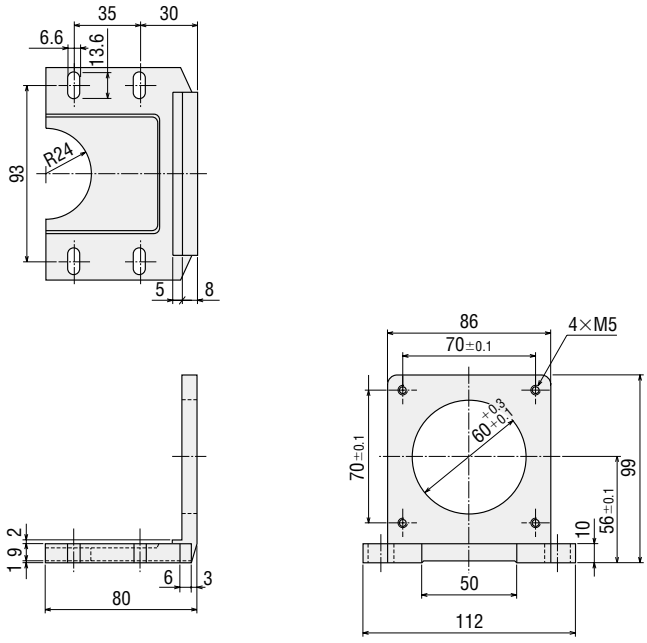
●Screws (Included)
M3P0.5 Length 7 mm ··· 4 Pieces

PAL2P-5
Mass: 110 g



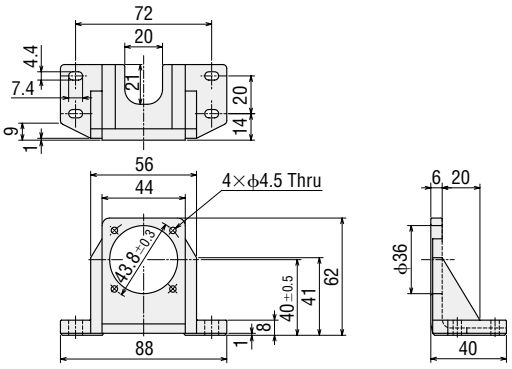
●Screws (Included)
M4P0.7 Length 12 mm ··· 4 Pieces

PAL4P-5
Mass: 250 g



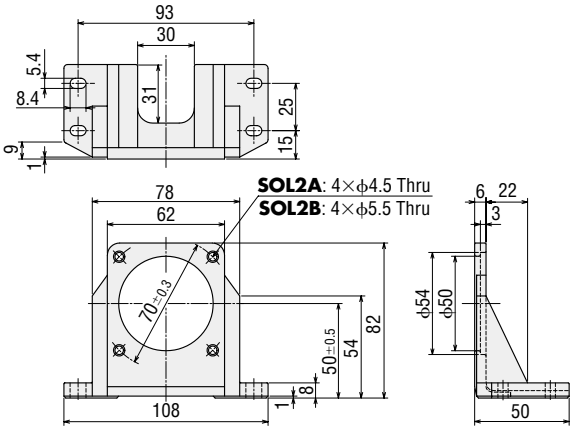
●Screws (Included)
M5P0.8 Length 16 mm ··· 4 Pieces

SOL0B
Mass: 85 g



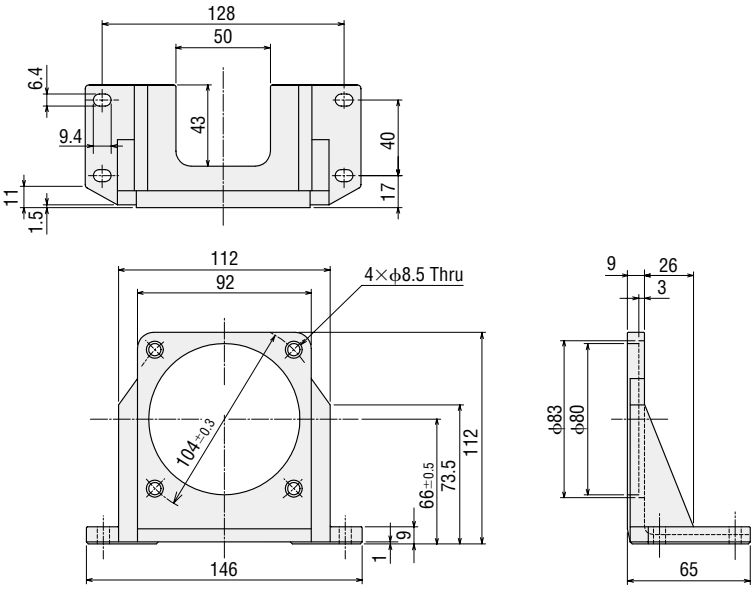
SOL2A
Mass: 120 g

SOL2B
Mass: 120 g



●Screws (Included)
M4P0.7 Length 12 mm ··· 4 Pieces (**SOL2A**)
M5P0.8 Length 15 mm ··· 4 Pieces (**SOL2B**)

SOL5B
Mass: 270 g



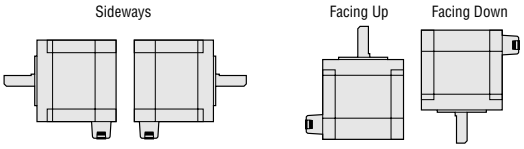
Before Using a Stepping Motor

■Motor Installation

●Direction of Mounting

Motors can be mounted freely in any direction as shown below. Regardless of how the motor is mounted, take care not to apply an overhung load or thrust load on the shaft.

Make sure the cable does not contact the mounting surface causing undesirable force on the cable.



Notes:

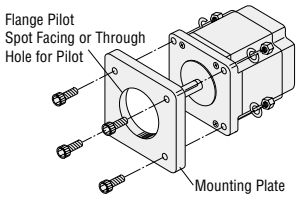
- Do not disassemble the motors.
- Do not apply any shock to the motor.

●Mounting Method

Considering heat radiation and vibration isolation as much as possible, mount the motor tightly against a metal surface.

◇Through Hole Type

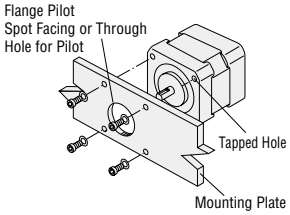
Model	Thickness of the Mounting Plate
RK56□□AE **RK56□□CE** **RK56□AMAE** **RK56□AMCE** **RK56□AAT** **RK56□ACT**	5 mm min.
RK59□□AE **RK59□□CE** **RK59□AMAE** **RK59□AMCE** **RK59□AAT** **RK59□ACT**	8 mm min.
RK596□AE-H□ **RK596□CE-H□**	12 mm min.



- Enter the motor case length in the box (□) within the model name.
  Enter **A** (Single shaft) or **B** (Double shaft) in the box (□) within the model name.
  Enter the gear ratio in the box (□) within the model name.

◇Tapped Hole Type

Model	Thickness of the Mounting Plate
RK54□□A **RK54□AMA**	3 mm min.
RK543□A-T□ **RK54□□A-P□** **RK544□A-N□** **RK543□A-H□** **RK564□AE-T□** **RK564□CE-T□**	5 mm min.
RK56□□AE-P□ **RK56□□CE-P□** **RK56□□AE-N□** **RK56□□CE-N□** **RK564□AE-H□** **RK564□CE-H□** **RK596□AE-T□** **RK596□CE-T□**	8 mm min.
RK59□□AE-P□ **RK59□□CE-P□** **RK59□□AE-N□** **RK59□□CE-N□**	12 mm min.



- Enter the motor case length in the box (□) within the model name.
  Enter **A** (Single shaft) or **B** (Double shaft) in the box (□) within the model name.
  Enter the gear ratio in the box (□) within the model name.

■Driver Installation

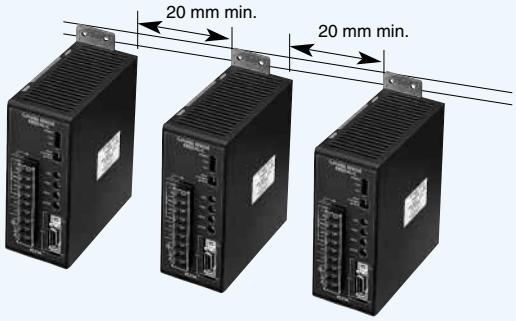
●Installation Direction and Method

Drivers are designed to dissipate heat through natural convection. Install the driver vertically as shown in the photograph.

- Firmly install on a metal plate that has good heat conductivity, such as iron or aluminum 2 mm or more in thickness.

●Using Multiple Axes

When using multiple stepping motor axes, driver temperature rise will cause ambient temperature to rise. At least 20 mm must be allowed between driver units and at least 25 mm between drivers and other equipment or structures.
Install a forced-air cooling fan if ambient temperatures exceed 50˚C.



●Installation Conditions

Install the driver in a location that meets the following conditions, or the product may be damaged.

- Indoors (This product is designed and manufactured to be installed within another device)
- Ambient temperature: 0˚C to +50˚C (nonfreezing)
- Ambient humidity: 85% or less (noncondensing)
- Not exposed to explosive, flammable, or corrosive gas
- Not exposed to direct sunlight
- Not exposed to dust
- Not exposed to water or oil (except for IP65 rated motor)
- A place where heat can escape easily
- Not exposed to continuous vibration or excessive impact

Notes:

- When installing the driver in an enclosed space such as a control box, or somewhere close to a heat-radiating object, vent holes should be used to prevent the driver from overheating.
- Do not install the driver in a location where a source of vibration will cause the driver to vibrate.
- In situations where drivers are located close to a large noise source such as high frequency welding machines or large electromagnetic switches, take steps to prevent noise interference, either by inserting noise filters or connecting the driver to a separate circuit.
- Take care that pieces of conductive material (filings, pins, pieces of wire, etc.) do not enter the drivers.

Controller for Stepping Motor

SG8030JY RoHS

With the **SG8030** Series, all operations including data setting can easily be performed using the four touch-screen buttons on the top panel. In addition, the number of signal lines is reduced to a minimum for easy connection.

DIN Rail Mounting Model

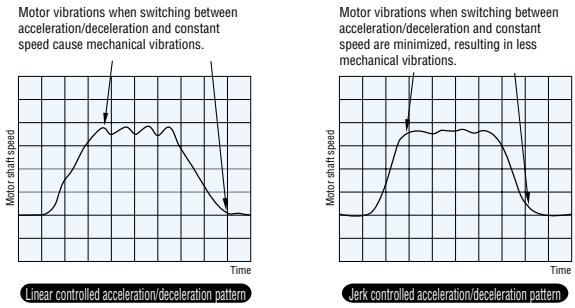
Recessed Mounting Model

Features

●Jerk Limiting Control Function Suppresses Motor Drive Vibrations

The "Jerk limiting control function" effectively minimizes vibrations during motor drive and stop. This is especially useful in applications such as driving a belt pulley, to ensure smooth motion of transported works.

●Measurement conditions
Application: Belt drive
Operation mode: Positioning operation
Load: 10 kg

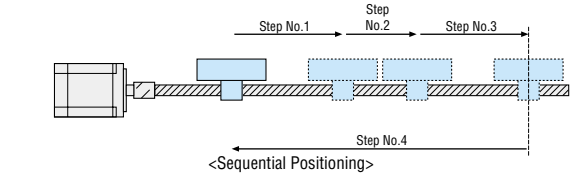


✻These diagrams are simulated. Actual effect will differ depending on mechanical construction.

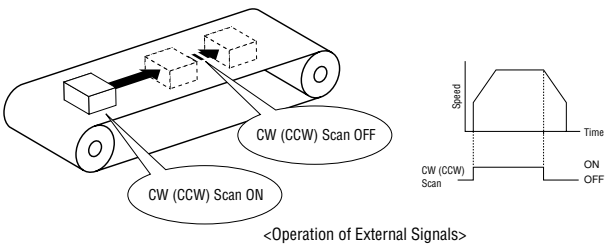
To achieve the same positioning time with jerk controlled acceleration/deceleration, set the acceleration/deceleration rate to 1/2 that of linear controlled acceleration/deceleration.

●Sequential Positioning Operation/External Signal Operation Possible

In "Sequential positioning operation", the start signal always causes execution from step No. 1 in a preselected sequence.
In "External signal operation", when the CW scan (or CCW scan) signal input goes ON, operation starts. When the signal goes OFF, slowdown stop occurs. This is useful for moving the work manually to a desired position.



<Sequential Positioning>



<Operation of External Signals>

●Maximum Oscillation Frequency 200 kHz

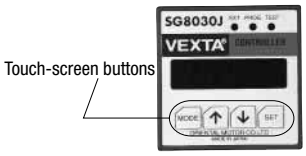
The "Maximum oscillation frequency of 200 kHz" allows motor control in micro steps.

●1-Pulse Output/2-Pulse Output Mode Select Possible

In addition to the 2-pulse output mode, the controller can also provide 1-pulse operation mode, which makes it compatible with a wide range of motor drivers.

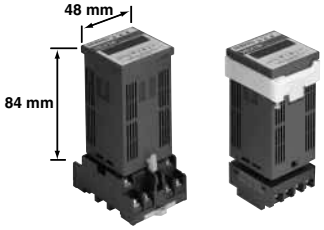
●Top Panel Single Interface for All Settings and Operation Checks

All operations including setting of various data can be performed using the four touch-screen buttons on the top panel. You can also check the status of each operation simply by checking the display on the top panel.



●48×48 mm DIN Size and Two Mounting Configurations Are Provided.

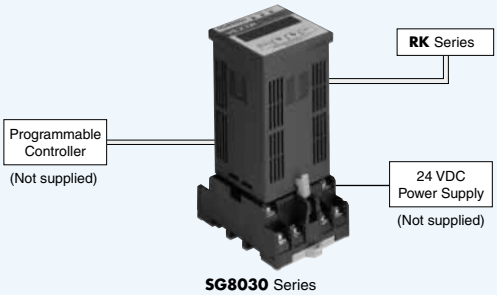
The unit is very compact, measuring only 48 (W)×48 (D)×84 (H) mm.
Two mounting configurations are available, for DIN rail mounting and recessed mounting.



<DIN Rail Mounting Model> <Recessed Mounting Model>

System Configuration

●Configuration Example of Combination with RK Series



Product Line

Type	Model
DIN Rail Mounting Model	**SG8030JY-D**
Recessed Mounting Model	**SG8030JY-U**

Specifications

Model		SG8030JY-D SG8030JY-U
Number of Control Axes		1 axis
Positioning Data	Number of Settings	4 steps
	Setting Mode	Set with touch key on front panel (stored in EEPROM)
	Setting Method	Incremental mode (point to point)
Positioning Control	Mode	Sequential-step positioning Step-select positioning
	Move Distance Setting Range	Incremental 1～99999 pulses
	Starting Pulse Speed Setting Range (VS)	100 Hz～10 kHz (100 Hz units)
	Operating Pulse Speed Setting Range (VR)	100 Hz～200 kHz (100 Hz units)
	Acceleration/Deceleration Rate Setting Range (TR)	1～100 ms/kHz (28 rates: ✻)
Pulse Output Mode		1-pulse output/2-pulse output mode select possible
Operation Modes		Positioning operation (INDEX operation) Return to mechanical home operation (HOME operation) Continuous operation (SCAN operation) 1-Pulse operation (JOG operation: Test mode only)
Control Modes		External input mode (EXT) Program mode (PROG) Test mode (TEST)
Number of Maximum Return Pulses		–
Mechanical Home Return Function		Sensor detection of home through designation of mechanical home detection direction of rotation
Input Signals		24 VDC photocoupler input, input resistance 4.7 kΩ Current sinking input
Output Signals		PNP Transistor output linked to photocoupler 24 VDC max. 25 mA max., Current sourcing output
Power Supply Voltage		24 VDC±5% current consumption 0.1 A
Ambient Temperature		0℃～+40℃ (Nonfreezing)
Ambient Humidity		20%～85% (Noncondensing)

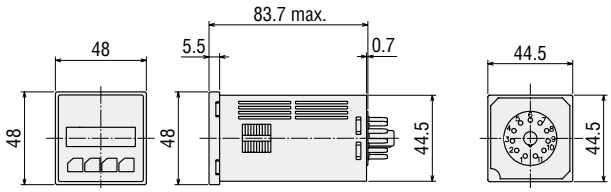
✻The following 28 acceleration/deceleration rates can be selected. [unit: ms/kHz]
1, 2, 4, 5, 6, 8, 10, 12, 14, 15, 16, 18, 20, 22, 24, 25, 26, 28, 30, 35, 40, 45, 50, 60, 70, 80, 90, 100

Dimensions (Unit = mm)

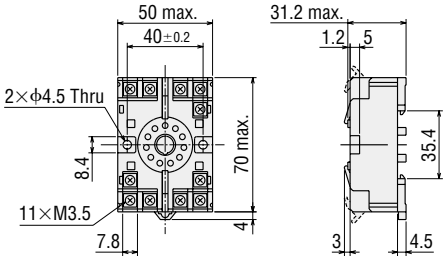
●DIN Rail Mounting Model

◇SG8030JY-D

Mass: 0.17 kg



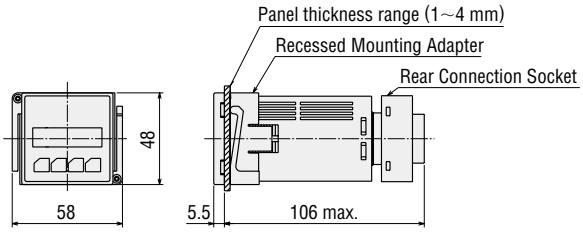
◇Flush Connection Socket (Included)



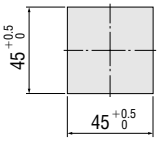
●Recessed Mounting Model

◇SG8030JY-U

Mass: 0.15 kg

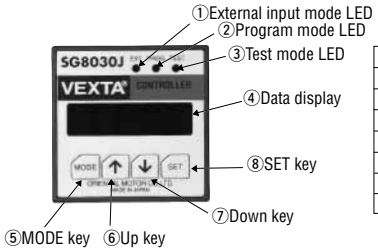


◇Panel Mounting Cut-Out Dimensions



Connection and Operation

Names and Functions of Controller Parts



①	EXT(LED): Lights up when external input is selected.
②	PROG (LED): Lights up when program mode is selected.
③	TEST (LED): Lights up when test mode is selected.
④	Data display: Shows operation and setting status.
⑤	MODE key
⑥	↑ key
⑦	↓ key
⑧	SET key

◇Connection Socket Signal Table

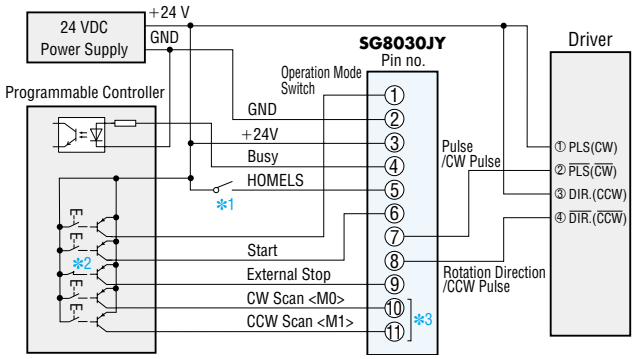
Pin No.	Signal Designation	I/O	Function
1 *	Operation Mode Input	Input	S: Switching positioning/home detection operation D: Switching positioning/home detection operation and continuous operation
2	GND	Input	GND connecting terminal
3	+24V	Input	24 VDC power supply input terminal
4	BUSY	Output	Output during pulse oscillation
5	HOMELS	Input	Mechanical home detection sensor
6	Start	Input	Start signal
7	Pulse/CW Pulse	Output	1 pulse output mode: Pulse 2 pulse output mode: CW Pulse
8	Rotation Direction/CCW Pulse	Output	1 pulse output mode: Direction of rotation 2 pulse output mode: CCW Pulse
9	Emergency Stop	Input	Stop all operations (including busy output)
10 *	S: CW Scan D: M0 [CW Scan]	Input	S: CW continuous operation D: M0 data select signal [CW continuous operation]
11 *	S: CCW Scan D: M1 [CCW Scan]	Input	S: CCW continuous operation D: M1 data select signal [CCW continuous operation]

●Indications in brackets [ ] apply to state when mode switching signal was input.

*Only pins 1, 10, 11 differ for sequential positioning and selection positioning.
"S" in the table indicates sequential positioning and "D" indicates selection positioning.

Wiring Diagrams

◇Connection between SG8030JY and RK Series

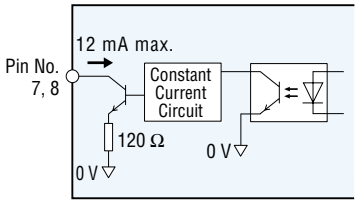


*1 Use normal open (NO) limit control of the mechanical home sensor.
*2 Power for the external stop input signal must always be ON during normal operation. When not using the external stop input signal, always connect to the +24 V terminal.
*3 Designations in < > brackets are for data selection mode.

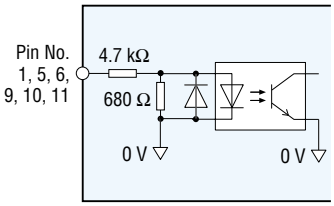
Notes:
●External resistor does not need to be installed on the pulse outputs, because they contain constant current circuits.
●Note that the length of the pulse signal line increases, the maximum transmission frequency decreases.

Description of Input/Output Signal

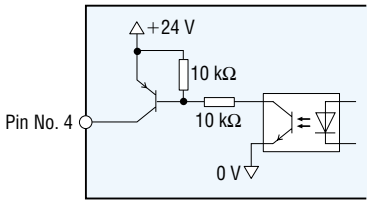
◇Output Signals to Driver



◇Input Signals from Programmable Controller and Limit Sensor



◇Output Signals to Programmable Controller

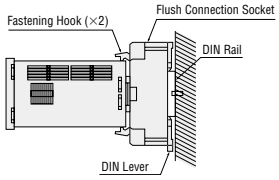


Before Using a Controller

■Installation Method

◇DIN Rail Mounting Using Flush Connection Socket

1. Mount the flush connection socket to the DIN rail. (The DIN lever should face down.)
2. Insert the controller terminals firmly into the flush connection socket.
3. Engage the fastening hooks (two places) of the flush connection socket on the controller to secure the assembly.

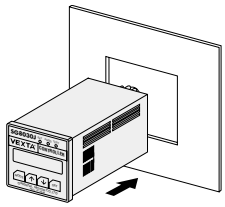


Note:

●Mount the controller only after connecting all required leads to the terminals of the flush connection socket.

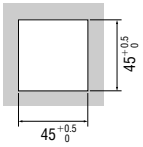
◇Panel Mounting Using Rear Connection Socket

●The **SG8030** Series can be affixed to a plate of 1 to 4 mm in thickness.



1. Push in the controller from the front side of the mounting plate.
2. Insert the burying-type adapter from the back and push it in until the gap with the mounting plate becomes minimal.
3. Affix with the fixing screws (two locations) of the burying-type adapter.
4. Insert the controller terminals firmly into the rear connection socket.

Panel Mounting Cut-Out Dimensions (Unit = mm)



■Installation Location

●**Indoors, ambient temperature 0˚C～+40˚C (Nonfreezing)**

●If the ambient temperature exceeds 40˚C, use a fan to provide forced cooling. Otherwise internal heat buildup may lead to damage.

●When attaching the controller in an enclosed space such as a control box, or somewhere close to a heat-radiating object, ventilation holes should be used to prevent the controllers from overheating.

●**Ambient humidity 85% maximum (Noncondensing)**

●**Not exposed to corrosive gases or dust**

Take care that pieces of conductive material (filing, pins, pieces of wire, etc.) do not enter the controllers. Otherwise circuit damage may occur.

●**Not exposed to water or oil**

Exposure to liquids can lead to corrosion or short-circuits.

●**Not exposed to direct sunlight**

●**Not in the vicinity of noise sources**

In situations where controllers are located close to a large noise source such as high frequency welding machines or large electromagnetic switches, take steps to prevent noise interference, either by inserting noise filters, using shielded wires or connecting the controller to a separate circuit.

●**Not in the vicinity of vibration sources**

When the controller is to be installed in a location where a source of vibration will cause the controller to be damaged.

This product is manufactured at a plant certified with the international standards **ISO 9001** (for quality assurance) and **ISO 14001** (for systems of environmental management).

Orientalmotor

Specifications are subject to change without notice.
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