Stepping Motors

Installation
Installation

Motor Installation

Mounting Direction
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.

![Mounting Directions](image)

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 plane.

Mounting Method for Through Hole Type

![Mounting Plate for Through Hole Type](image)

Installation Conditions
Install the motor 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: 
  - $-10^\circ C - +50^\circ C$ ($+32^\circ F - +122^\circ F$) (non-freezing)
  - $0^\circ C - +40^\circ C$ ($+32^\circ F - +104^\circ F$) (non-freezing): Harmonic geared type
- Ambient humidity: 85% or less (non-condensing)
- Not exposed to explosive, flammable or corrosive gases
- Not exposed to direct sunlight
- Not exposed to dust
- Not exposed to water or oil (except for industrial connector and terminal box type motors)
- A place where heat can escape easily
- Not exposed to continuous vibration or excessive impact

Notes:
- When installing the motor 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 motor from overheating.
- Do not install the motor in a location where a source of vibration will cause the motor to vibrate.

Thickness of the Mounting Plate for Through Hole Type

<table>
<thead>
<tr>
<th>Model</th>
<th>RK Series</th>
<th>CRK Series</th>
<th>UMK Series</th>
<th>CMK Series</th>
<th>2-Phase Stepping Motor</th>
<th>Thickness of the Mounting Plate</th>
</tr>
</thead>
<tbody>
<tr>
<td>RK564</td>
<td>RK566</td>
<td>CRK564</td>
<td>UMK264</td>
<td>CMK256</td>
<td>PK256</td>
<td>5 mm (0.2 in.) min.</td>
</tr>
<tr>
<td>RK566</td>
<td>RK569</td>
<td>CRK566</td>
<td>UMK266</td>
<td>CMK258</td>
<td>PK258</td>
<td></td>
</tr>
<tr>
<td>RK569</td>
<td>RK569</td>
<td>CRK569</td>
<td>UMK268</td>
<td>CMK264</td>
<td>PK266</td>
<td></td>
</tr>
<tr>
<td>RK596</td>
<td>RK596</td>
<td>CRK564</td>
<td>RBK264</td>
<td>CMK264</td>
<td>PK268</td>
<td></td>
</tr>
<tr>
<td>RK599</td>
<td>RK599</td>
<td>CRK566</td>
<td>RBK266</td>
<td>CMK268</td>
<td>PK268</td>
<td></td>
</tr>
<tr>
<td>RK5913</td>
<td>RK5913</td>
<td>CRK569</td>
<td>RBK296</td>
<td>CMK296</td>
<td>PK296</td>
<td>8 mm (0.31 in.) min.</td>
</tr>
<tr>
<td>RK596-H</td>
<td>RK596-H</td>
<td>CRK564</td>
<td>RBK299</td>
<td>CMK299</td>
<td>PK299</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>RBK2913</td>
<td>CMK2913</td>
<td>PK2913</td>
<td>12 mm (0.47 in.) min.</td>
</tr>
</tbody>
</table>

Enter the gear ratio into the box (\(\ldots\)).
## Mounting Method for Tapped Hole Type

![Mounting Method for Tapped Hole Type Diagram]

## Thickness of the Mounting Plate for Tapped Hole Type

<table>
<thead>
<tr>
<th>Model</th>
<th>RK Series</th>
<th>CRK Series</th>
<th>UMK Series</th>
<th>CMK Series</th>
<th>2-Phase Stepping Motor</th>
<th>Thickness of the Mounting Plate</th>
</tr>
</thead>
<tbody>
<tr>
<td>C-321</td>
<td>—</td>
<td>CRK513</td>
<td>—</td>
<td>CMK223</td>
<td>PK223P, PK224P, PK225P</td>
<td>2 mm (0.08 in.) min.</td>
</tr>
<tr>
<td>AS46</td>
<td>—</td>
<td>CRK523</td>
<td>UMK243</td>
<td>CMK233P</td>
<td>PK233P, PK235P, PK236P</td>
<td>3 mm (0.12 in.) min.</td>
</tr>
<tr>
<td>ASC34</td>
<td>RK543</td>
<td>CRK524</td>
<td>UMK244</td>
<td>CMK235P</td>
<td>PK235P, PK237P, PK238P</td>
<td>4 mm (0.16 in.) min.</td>
</tr>
<tr>
<td>ASC36</td>
<td>RK544</td>
<td>CRK545</td>
<td>UMK245</td>
<td>CMK235P</td>
<td>PK235P, PK237P, PK238P</td>
<td>5 mm (0.2 in.) min.</td>
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<tr>
<td>A546</td>
<td>RK546</td>
<td>CRK513-H</td>
<td>—</td>
<td>CMK246-SG</td>
<td>PK246-SG</td>
<td>8 mm (0.31 in.) min.</td>
</tr>
<tr>
<td>A566</td>
<td>RK564</td>
<td>CRK564-H</td>
<td>—</td>
<td>CMK246-SG</td>
<td>PK246-SG</td>
<td>12 mm (0.47 in.) min.</td>
</tr>
</tbody>
</table>

*Enter the gear ratio into the box (□).*
**Driver Installation**

**AC Input Type**

**Installation Direction and Method**

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

- **Models with Built-In Brackets**
  - Applicable Product
    - RK Series

- **Separate Bracket Models**
  - Applicable Products
    - STEP AS Series
    - UMK Series

- **Using Multiple Axes**
  - When using multiple stepping motor axes, driver temperature rise will cause ambient temperatures to rise. At least 20 mm (0.79 in.) must be allowed between driver units and at least 25 mm (0.98 in.) between drivers and other equipment or structures. Install a forced-air cooling fan if ambient temperatures exceed 50°C (122°F) [40°C (104°F) for some products].

- **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 (+32°F to 122°F) (non-freezing)
    - 0°C to 40°C (+32°F to 104°F) for AS Series built-in controller driver and UMK Series driver
  - Ambient humidity: 85% or less (non-condensing)
  - Not exposed to explosive, flammable or corrosive gases
  - Not exposed to direct sunlight
  - Not exposed to dust
  - Not exposed to water or oil
  - 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.

- Firmly install on a metal surface that has good heat conductivity, such as iron or aluminum 2 mm (0.08 in.) or more in thickness.
- To directly install the driver without using the mounting brackets and screws provided, pay particular attention to the length of the screws used for the tapped holes. For AS Series, the use of screw that would penetrate 3 mm (0.12 in.) or more through the surface of the driver may cause damage to the driver.
DC Input Type

● Installation Direction

Considering heat radiation, install the driver vertically or metal plate side down. Install the driver in a way that the power element side faces up and the aluminum electrolytic capacitor side faces down.

◇ Horizontal Installation

◇ Vertical Installation

Note:
- The driver can generate a great deal of heat depending on the operating conditions. Make sure that the temperature of the heat sink does not exceed 80˚C (176˚F). [When the temperature of the heat sink exceeds 80˚C (176˚F), forced cooling is required.]

● 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~+40˚C (+32~+104˚F) (non-freezing)
- Ambient humidity: 85% or less (non-condensing)
- Not exposed to explosive, flammable or corrosive gases
- Not exposed to direct sunlight
- Not exposed to dust
- Not exposed to water or oil
- 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 Installation

EMP400 Series

DIN Rail Mounting
- Use DIN rails with a width of 35 mm (1.38 in.).
- Use end plates to secure the controller.
- DIN rails and end plates are not provided with the product.

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Screw Mounting
- When fastening the controller with screws, use the two screw holes at the top and bottom.
- The mounting holes should be machined for either M3 or M4 size screws. Use washers to secure the controller.
- The controller case is made from a resin. Take care not to damage the mounting hole.

Note:
- Mounting screws are not included in the product.

Panel Mounting Cut-Out Dimensions  Unit = mm (in.)

2 × M4 (or 2 × M3)

Installation of OP300
- The OP300 can be affixed to a plate of 1 to 3 mm (0.04 to 0.12 in.) in thickness. The connection cable cannot be installed if the plate is thicker than 3 mm (0.12 in.), so exercise caution.
- Push in the unit from the front side of the mounting plate.

Panel Mounting Cut-Out Dimensions  Unit = mm (in.)

SG8030J

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

Note:
- Mount the controller only after connecting all required leads to the terminals of the flush mounting socket.

Panel Mounting Using Rear Connection Socket
- The SG8030J can be affixed to a plate of 1 to 4 mm (0.04 to 0.16 in.) in thickness.
1. Push in the controller from the front side of the mounting plate.
2. Insert the recessed mounting adapter from the back and push it in until the gap with the mounting plate becomes minimal.
3. Affix with the fixing screws (two places) of the recessed mounting adapter.
4. Insert the controller terminals firmly into the rear connection socket.

Panel Mounting Cut-Out Dimensions  Unit = mm (in.)

Installation Conditions
Install the controller 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~+50°C (+32~+122°F) (non-freezing)  
  [SG8030J: 0~+40°C (+32~+104°F) (non-freezing)]
- Ambient humidity: 85% or less (non-condensing)
- Not exposed to explosive, flammable or corrosive gases
- Not exposed to direct sunlight
- Not exposed to dust
- Not exposed to water or oil
- A place where heat can escape easily
- Not exposed to continuous vibration or excessive impact

Notes:
- When installing the controller in an enclosed space such as a control box, or somewhere closed to a heat-radiating object, vent holes should be used to prevent the controller from overheating.
- Do not install the controller in a location where a source of vibration will cause the controller to vibrate.
- 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 or connecting the controller to a separate circuit.
- Take care that places of conductive material (filings, pins, pieces of wire, etc.) do not enter the controllers.

Note:
- Do not suspend the OP300 from the connection cable.
<table>
<thead>
<tr>
<th>Component</th>
<th>AC Input</th>
<th>DC Input</th>
<th>Accessory</th>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stepping Motors</td>
<td></td>
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<td>Accessory</td>
<td>SC8030</td>
<td>5-Phase Microstep</td>
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<tr>
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<td>With Encoder</td>
<td>EM8400</td>
<td>2-Phase Full/Half</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Without Encoder</td>
<td>CM8400</td>
<td>2-Phase PK/PV</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>PK EMP400 SG8030J</td>
<td>2-Phase PK</td>
</tr>
</tbody>
</table>

**Accessories**

- C-325

**Controllers**

- C-325