ORIENTAL MOTOR
GENERAL CATALOGUE

B

Accessories

Accessories

αSTEP

RK
5-Phase with AC Driver

CSK
5-Phase with DC Driver

PMC

NanoStep RFK

5-Phase Stepping Motors

CSK
2-Phase with DC Driver

2-Phase Stepping Motors

Controller

Accessories

Mounting Brackets for Stepping Motors

These mounting brackets are useful for maintaining proper alignment between the motor shaft and the load.
Following five models are provided as standard products.
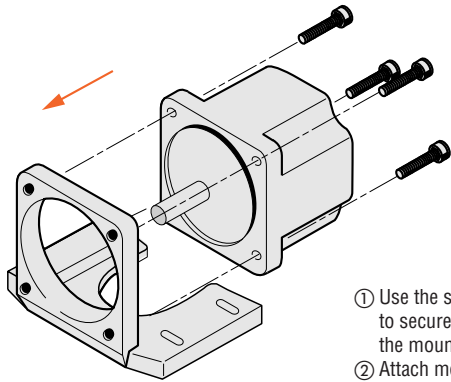
Material : Aluminum die cast

Mounting Bracket Models	Motor Models		
	αSTEP	5-Phase Stepping Motors	2-Phase Stepping Motors
PAL0P	ASC46□K	CSK54□, RFK54□ PK54□	CSK24□, CSK24□M PK24□, PK24□M
PAL2P-5	AS66□, AS69□ ASC66AK	RK56□, CSK56□ RFK56□, PK56□	—
PAL2P-2	—	—	CSK26□, CSK26□M PK26□, PK26□M PK26□J
PAL4P-5	AS98□ AS911AC	RK59□, CSK59□, PK59□	—
PAL4P-2	—	—	PK29□

✳ The figure which shows the length of the motor case is inserted in the □ of the model name.
The character of **A**, and **B** which show the shaft type are omitted.
The mounting bracket base is built with holes large enough to allow for alignment adjustments in the horizontal direction. (Adjustable range : Approximately 6mm)

Note : 1. These mounting brackets are for stepping motors only. They cannot be fitted to compact AC motors.
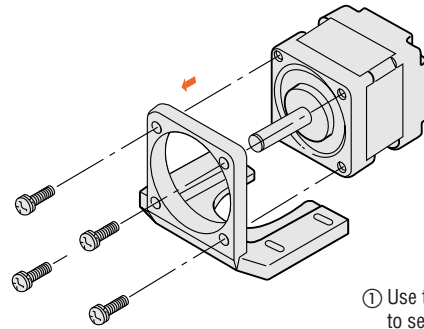2. Also they cannot be fitted to geared type.

■ Mounting

1 PAL2P-□, PAL4P-□

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

2 PAL0P

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

■ Dimensions   scale 1/4, unit＝mm

PALOP Mass 35g

● Screws ：M3P0.5 10mm long
4 pieces, included

PAL2P-5 Mass 110g

● Screws ：M4P0.7 12mm long
4 pieces, included

PAL2P-2 Mass 110g

● Screws ：M4P0.7 12mm long
4 pieces, included

αSTEP

RK

CSK

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NanoStep RFK

5-Phase with AC Driver

5-Phase with DC Driver

5-Phase Stepping Motors
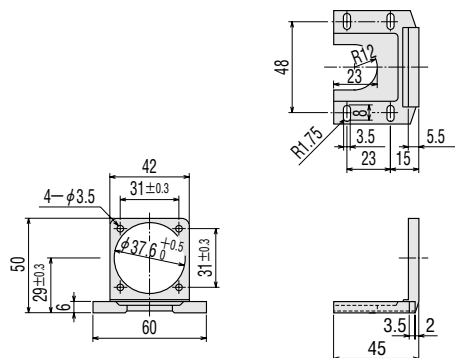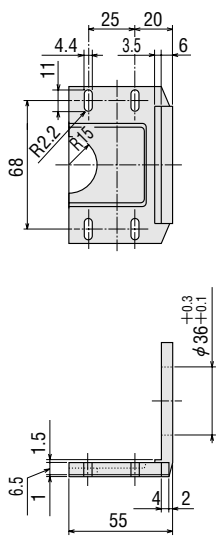
CSK

2-Phase with DC Driver

2-Phase Stepping Motors

Controller

Accessories
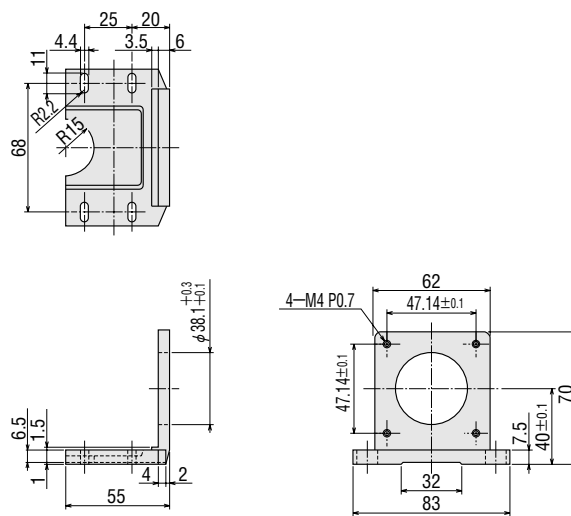
PAL4P-5 Mass 250g

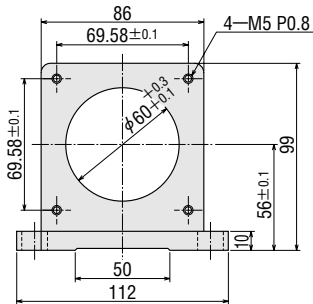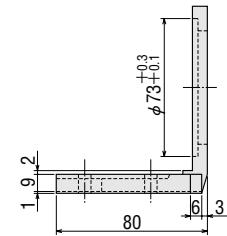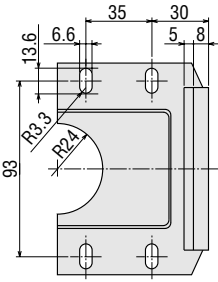● Screws：M5P0.8 16mm long
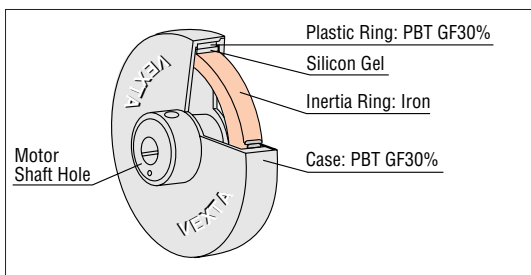　　　　　　4 pieces, included
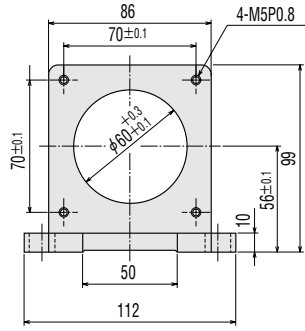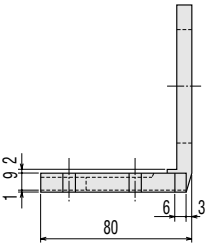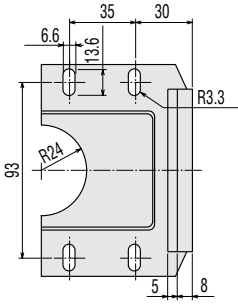
PAL4P-2 Mass 250g

● Screws：M5P0.8 16mm long
　　　　　　4 pieces, included

Clean Damper

The mechanical damper is effective at suppressing stepping motor vibration and improving high-speed performance. Inertial body and silicon gel are hermetically sealed in a plastic case. This offers the following advantages over conventional magnetic dampers.

● **Better for Clean Rooms**
Since there is no frictional dust as in conventional magnetic dampers, it can be used in environments where higher degrees of cleanness is needed.

● **Excellent Vibration Absorption**
The doughnut-shaped internal inertial body and silicon gel absorb vibration.
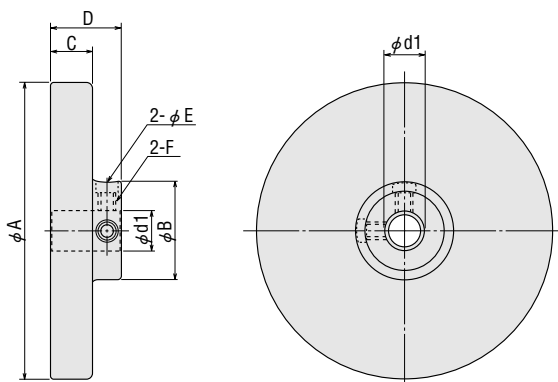
● **High Reliability**
It holds up well in harsh environments and changes little with age because the silicon gel and plastic case used are heat resistant.

Plastic Ring: PBT GF30%
Silicon Gel
Inertia Ring: Iron
Motor Shaft Hole
Case: PBT GF30%

Model	Inertia [kg·m²]	Mass [g]	Compatible Motor (Double Shaft Type)
D4CL-5.0F	34×10^{-7}	24	**CSK54□, PMC3□, RFK54□, PK54□, CSK24□, CSK24□M, PK22□, PK23□ PK24□, PK24□M, CSK543TG, PMC33MG, CSK243SG, PK243SG, PK223SG**
D6CL-6.3F	140×10^{-7}	62	**CSK26□, CSK26□M, PK26□, PK26□M, CSK264SG, PK264SG**
D6CL-8.0F	140×10^{-7}	61	**CSK56□, RFK56□, PK56□, CSK564TG**
D9CL-14F	870×10^{-7}	105	**CSK59□, PK59□, PK29□, PK296SG**

✳ The figure which shows the length of the motor case is inserted in the □ of the model name. The character of **B** which show the shaft type are omitted.
Ambient Temperature : $-20°C \sim +80°C$

■ Dimensions unit＝mm

D
C
φd1
2- φ E
2-F
φA
φd1
φB

Model	φ d1	φ A	φ B	C	D	φ E	F
D4CL-5.0F	$5^{+0.018}_{0}$	φ36±0.5	φ13±0.5	9±0.3	15±0.5	φ4	M3
D6CL-6.3F	$6.35^{+0.022}_{0}$	φ44.5±0.5	φ20±0.5	15±0.3	22±0.5	φ5	M4
D6CL-8.0F	$8^{+0.022}_{0}$						
D9CL-14F	$14^{+0.027}_{0}$	φ79.5±0.5	φ26±0.5	11±0.3	19±0.5	φ5	M4

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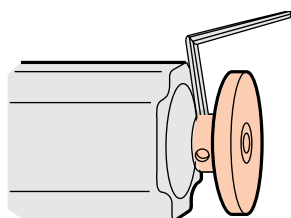
Point the mounting screws of the clean damper toward the motor case, fasten to the shaft and tighten the damper's mounting screws (2 places) with a hexagonal wrench to secure it to the shaft.

Note:
● 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.

STEPPING MOTORS

αSTEP
5-Phase with AC Driver
RK
CSK
PMC
NanoStep RFK
5-Phase with DC Driver
5-Phase Stepping Motors
2-Phase Stepping Motors
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2-Phase with DC Driver
2-Phase Stepping Motors
Controller
Accessories

Flexible Coupling

A flexible coupling ideal for your motor axis diameter and motor torque is available. Once the motor is determined, the coupling can be to. All motor axis diameters of stepping motor units are covered (model of φ 5, φ 6, φ 6.35, φ 8 and φ 14mm).
*Except for geared type.

Features
- Backlash 0 (no backlash).
- Plate springs formed of slits reliably absorb eccentricity, declination and end play.
- Torsional rigidity is high, responsiveness excellent.
- Characteristics are the same in forward and reverse.
- Maintenance free (excellent resistance to oil and chemicals).
- Aluminum alloy construction.
- Even standardized combination of different diameter axis holes for products with existing axis holes.
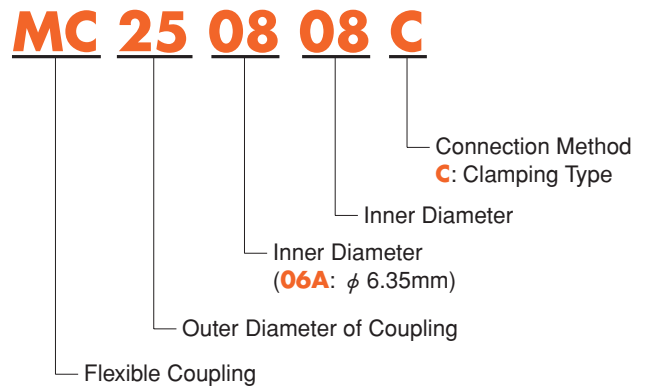- Fastening types: clamping type.

■ Selecting a Flexible Coupling

Once you have decided on a motor and the axis diameter of the equipment to be connected to it, determine the proper flexible coupling to use. Oriental Motor's flexible couplings are available in sizes (external diameter) that provide the strength required for the motor torque.

Example **MC 25 08 08 C**

Internal Diameter — | — Internal Diameter

① When the motor is **CSK566-NATE** (outer diameter of shaft: 8mm) and the axis diameter of the equipment to be connected to the motor is 8mm, use **MC250808C**.
② When the motor is **CSK5913-NATE** (outer diameter of shaft: 14mm) and the axis diameter of the equipment to be connected to the motor is 14mm, use **MC501414C**.

■ Product Number Code

MC 25 08 08 C

- Connection Method
  C: Clamping Type
- Inner Diameter
- Inner Diameter
  (**06A**: φ 6.35mm)
- Outer Diameter of Coupling
- Flexible Coupling

Type	Shaft Diameter D[mm]	αSTEP	5-Phase Packages				2-Phase Packages	5-Phase Motors	2-Phase Motors	Connected Device Axis Diameter D [mm]			
			RK	CSK	PMC	RFK	CSK			φ 5	φ 6	φ 8	φ 14
MC12	φ 5			CSK543 CSK544	PMC3□	RFK543 RFK544	CSK243 CSK243M	PK543 PK544	PK22□P	◎			
MC16	φ 5	ASC46AK ASC3□		CSK545		RFK545	CSK244 CSK244M	PK545	PK243		◎		
MC20	φ 5						CSK245 CSK245M	PK23□P PK244 PK245		◎			
	φ 8		RK564	CSK564		RFK564		PK564				◎	
MC25	φ 5								PK244P		◎		
	φ 6.35						CSK264 CSK264M CSK266 CSK266M		PK264			◎	
	φ 8		RK566	CSK566		RFK566		PK566				◎	
MC32	φ 6.35						CSK268 CSK268M		PK266 PK268			◎	
	φ 8	AS6□ ASC66AK	RK569	CSK569		RFK569		PK569	PK264J			◎	
MC40	φ 14	AS9□	RK596 RK599	CSK596 CSK599				PK596	PK296				◎
MC50	φ 14		RK5913	CSK5913				PK5913	PK299 PK2913				◎

■ Dimensions

MC12-C, MC16-C, MC20-C, MC25-C,MC32-C
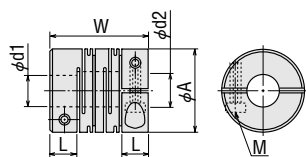
MC40-C, MC50-C
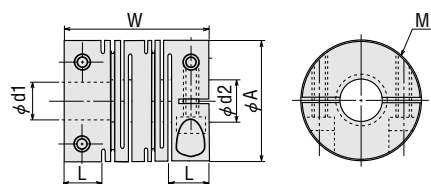
■ Specifications

| Model	Model						Normal Torque [N·m]	Mass [g]	Moment of Inertia [kg·m²]	Static Torsion Spring Constant [N·m/rad]	Permissible Eccentricity [mm]	Permissible Declination [°]	Permissible End Play [mm]
	Outer Diameter φ A [mm]	Length W [mm]	Axis Hole Diameter d1 [mm]	Axis Hole Diameter d2 [mm]	L [mm]	Screw Used M							
MC120505C	12	18.5	5	5	5	M2	0.2	4.5	1×10^{-7}	32	0.1	2	±0.3
MC160506C	16	23	5	6	6.5	M2.5	0.3	9	4×10^{-7}	45	0.1	2	±0.4
MC200506C **MC200808C**	20	26	5 8	6 8	7.5	M2.5	0.5	18	11×10^{-7}	85	0.1	2	±0.4
MC250506C **MC2506A08C** **MC250808C**	25	31	5 6.35 8	6 8 8	8.5	M3	1	33	32×10^{-7}	230	0.15	2	±0.5
MC3206A08C **MC320808C**	32	41	6.35 8	8 8	12	M4	2	75	120×10^{-7}	360	0.15	2	±0.5
MC401414C	40	56	14	14	15	M5	5	170	400×10^{-7}	760	0.2	2	±0.5
MC501414C	50	71	14	14	18	M6	10	320	1200×10^{-7}	3000	0.2	2	±0.5

STEPPING MOTORS

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5-Phase Stepping Motors

2-Phase with DC Driver CSK

2-Phase Stepping Motors

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■ Mounting on a Shaft

Clamping Type

Clamping couplings use the binding force of the screw to compress the axis 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.
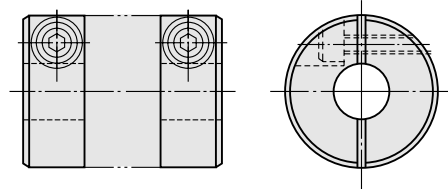
Type	MC12-C	MC16-C	MC20-C	MC25-C	MC32-C	MC40-C	MC50-C
Fastening Torque [N·m]	0.5	1	1	1.5	2.5	4	8

■ 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 to 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.

Straight Edge   Eccentricity   Declination   End Play
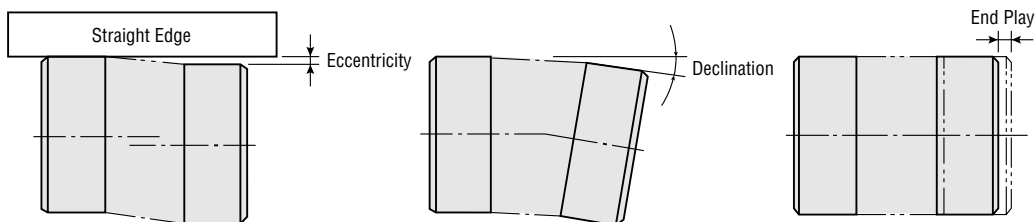
Notes on Use:

1. When misalignment exceeds the permissible value or excessive torque is applied, the service life the coupling is shortened for the plastic deformation.
2. When the coupling emits a sound (metallic sound) during operation, stop operation immediately and ensure there is no misalignment, axis interference or loose screws.
3. When load changes are large, paint the coupling screw with adhesive to prevent coupling screw loosening or substitute a coupling one size larger.

Driver Cables

■ Driver Cable for **RK** Series

Driver Side

Controller Side

This cable is convenient for connecting **RK** series and α_{STEP} drivers to controllers. One end of the cable is a connector that snaps into the driver.
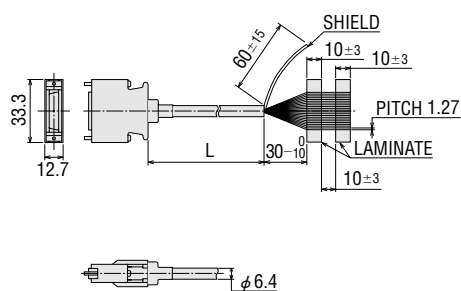Install a connector that matches the controller you are using to the other end of the cable.

Model	Length (L) m	Applicable Package Model
CC20D1-1	1	**RK**
CC20D2-1	2	
CC36D1-1	1	α_{STEP}
CC36D2-1	2	

● Core configuration: AWG28

● **Dimensions**   scale 1/4, unit = mm

For **RK** series

SHIELD
10 ± 3 10 ± 3
60 ± 15
33.3
PITCH 1.27
L
$30{}_{-10}^{0}$
LAMINATE
12.7
10 ± 3

$\phi 6.4$

■ Driver Cable for α_{STEP}

Driver Side

Controller Side

For α_{STEP}

SHIELD
10 ± 3 10 ± 3
60 ± 15
43.46
PITCH 1.27
L
$30{}_{-10}^{0}$
LAMINATE
12.7
10 ± 3

$\phi 7.5$

αSTEP

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CSK

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5-Phase with AC Driver

5-Phase with DC Driver

5-Phase Stepping Motors

CSK

2-Phase with DC Driver

2-Phase Stepping Motors

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Accessories
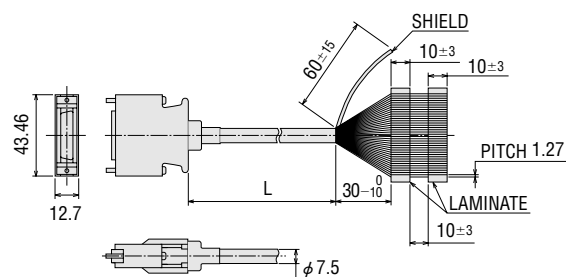
Extension Cables

■ Extension Cable for **RK** Series

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

Model	Length (L) m	Core
CC05PK5	5	
CC10PK5	10	5
CC20PK5	20	

● Core configuration: AWG22
● Finished outer diameter: ϕ 7.2
● Cable rating: 105°C
● Outer casing: oil-resistant, heat-resistant non-migrating vinyl

Note
These extension cables are only for the **RK** series. Do not use them on other stepping motor packages.

■ Extension Cable for αSTEP

These are the dedicated αSTEP extension cables.
This extension cable is convenient when using the αSTEP stepping motor and driver more than 0.4 m apart from each other.

For Standard Types

Model	Length(L) m
CC01AIP	1
CC02AIP	2
CC03AIP	3
CC05AIP	5
CC07AIP	7
CC10AIP	10

For Electromagnetic Brake Types

Model	Length(L) m
CC01AIPM	1
CC02AIPM	2
CC03AIPM	3
CC05AIPM	5
CC07AIPM	7
CC10AIPM	10

● Finished outer diameter : ϕ 7mm

● **Movable Cables**
These movable cables are used between αSTEP **AS**, **ASC** series and dedicated drivers.
This cable has a measured value for refraction resistance about 85 times that for ordinary junction cables.
We recommend this cable when the motor is installed on a moving section and the cable is repeatedly bent and extended.

For Standard Types

Model	Length (L)m
CC01SAR	1
CC02SAR	2
CC03SAR	3
CC05SAR	5
CC07SAR	7
CC10SAR	10

For Electromagnetic Brake Types

Model	Length (L)m
CC01SARM2	1
CC02SARM2	2
CC03SARM2	3
CC05SARM2	5
CC07SARM2	7
CC10SARM2	10

● Finished outer diameter : ϕ 9.5mm

● **Dimensions** scale 1/4, unit = mm
For Standard Types

Motor Side   Driver Side

For Electromagnetic Brake Types

2-Brake Leads 60mm
（Orange／Black, Gray AWG24）
※Movable Cable (Orange, Gray AWG22)
Motor Side   Driver Side
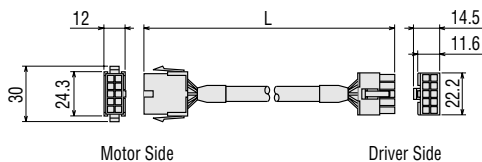
DIN Rail Mounting Plate
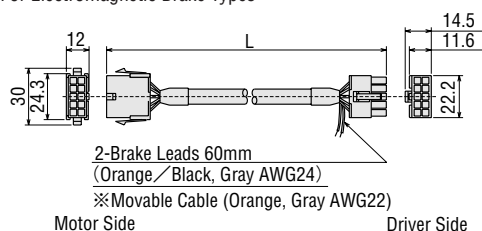
DIN Rail

DIN Rail Mounting Plate
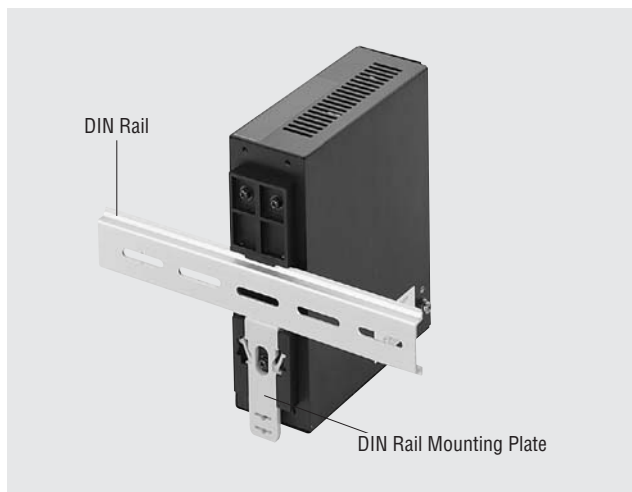
This installation plate is convenient for installing the *αSTEP* **AS** series driver on DIN rails with ease.
The required installation screws come with this installation plate.

Model : **PADP01**

● **Dimensions** **scale 1/4, unit = mm**