

## Compact Linear Actuators

DRS2 Series  $\alpha$ STEP AZ Equipped

&lt;Additional Information&gt;

- Technical reference → Page H-1
- Regulations & Standards → Page I-2



● For detailed information about regulations and standards, please see the Oriental Motor website.



Type with a Guide  
Built-in Controller

Type without a Guide  
Pulse Input

The **DRS2** Series uses the  $\alpha$ STEP AZ Series equipped with the Absolute Sensor for the driving motor. The Absolute Sensor is a mechanical multi-turn Absolute Sensor, so an external sensor is not required. The **DRS2** Series helps to save space and reduce wiring, as well as offer a more compact and lightweight design for the equipment.

- Optimized for Providing Micromovements and High Positioning Accuracy
- Reduces Startup Time
- Saves Space and Reduces Wiring with the Absolute Sensor
- Highly Efficient Push-Motion Operation



What is FLEX?

FLEX is the collective name for products that support I/O control, Modbus (RTU) control, and FA network control via network converters.

These products enable simple connection and simple control, shortening the total lead time for system construction.

## Features

### Perfect for Micromovements and High Positioning Accuracy

#### ● The Product Integrates a Stepper Motor with a Ball Screw

The hollow rotor and ball screw nut have been integrated. Since no connecting parts are necessary, there is less backlash than when coupling rigidity, etc. combines other parts, and highly accurate positioning can be achieved.

#### ● Driven by Ground Ball Screw or Rolled Ball Screw

[Min. Traveling Amount]

**0.001** mm

[Repetitive Positioning Accuracy]

Ground ball screw:  $\pm 0.003$  mm    Rolled ball screw:  $\pm 0.01$  mm

#### ● High Transportable Mass and High Speed are Achieved

##### ● Type with a Guide

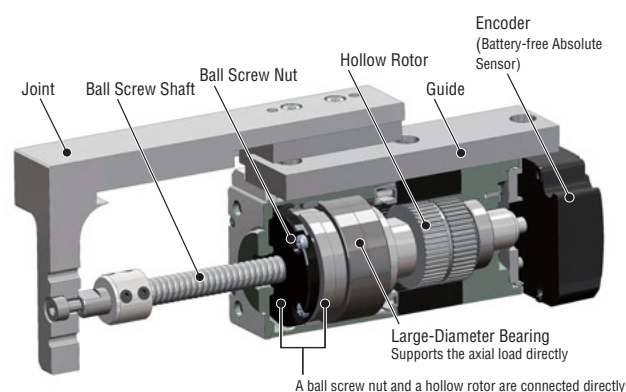
[Maximum Transportable Mass]

- Horizontal direction: **10** kg (Lead 2 mm), **5** kg (Lead 8 mm)
- Vertical direction: **10** kg (Lead 2 mm), **5** kg (Lead 8 mm)

[Maximum Speed]

**50** mm/sec (Lead 2 mm), **200** mm/sec (Lead 8 mm)

Stroke **40** mm



#### ● Absolute Sensor

This is the battery-free mechanical multi-turn absolute sensor. The inclusion of this compact and low-cost absolute system saves space and wiring, because a home sensor is not required.

## Startup Time Reduced

### ● Compact Body Houses Entire Linear Motion Mechanism

- Since customers do not need to provide parts, the time needed for installing, designing, and selecting parts can be reduced.
- The number of man-hours required for assembly and adjusting the installation accuracy can be reduced, contributing to higher productivity.

### ● Parameters Set at Operation

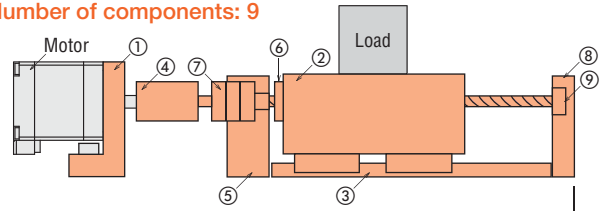
[Min. Traveling Amount]  
 Built-in Controller Type: 0.001 mm  
 Pulse Input Type : 0.001 mm/step

### ● Comparison of the Number of Components

Configuration examples of cases where the load is driven by the same stroke

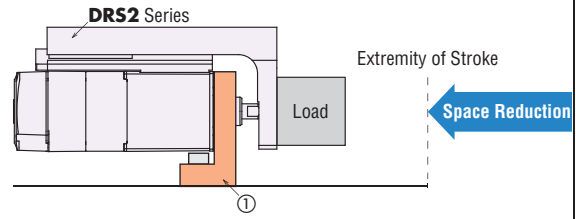
#### ◇ If Made by Customers

Number of components: 9



#### ◇ DRS2 Series, Using the Guide Type

Number of components: 1

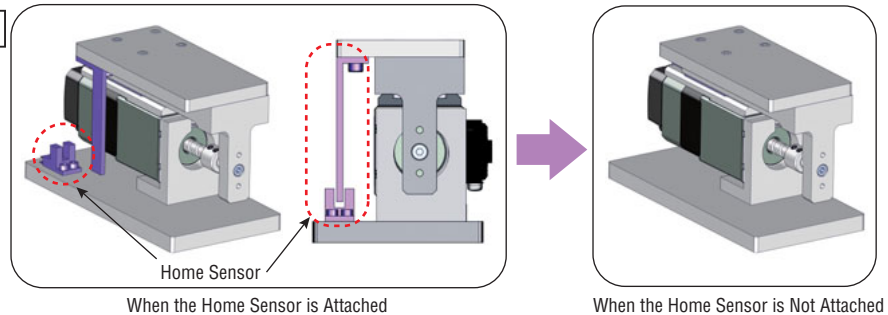


[Parts Used] ① Installation plate ② Transportation table ③ Linear guide  
 ④ Coupling ⑤ Fixed-side block ⑥ Ball screw ⑦ Fixed-side bearing  
 ⑧ Support-side block ⑨ Support-side bearing

## Space Saving and Less Wiring with the Absolute Sensor

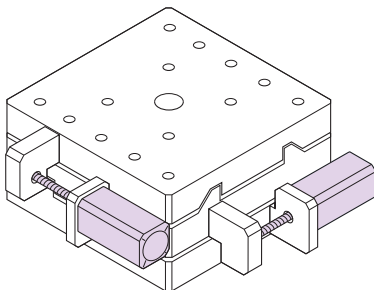
In addition to the compact and lightweight body, the motors with absolute sensors do not require a home sensor. This saves space and wiring, and lets you avoid routine maintenance or trouble caused by using a home sensor.

### Application Example

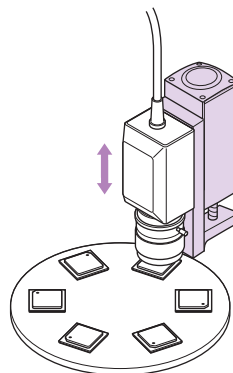


## Typical Applications

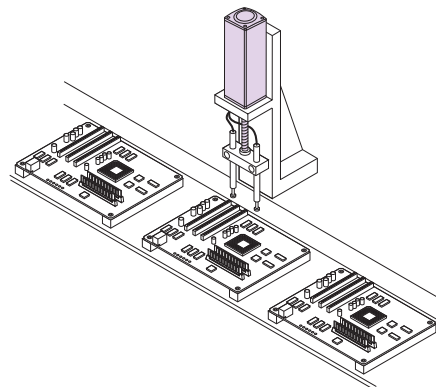
Driving an X-Y Stage  
 (Automated micrometer head)



Focusing of a CCD Camera



Vertical Movement of Probes



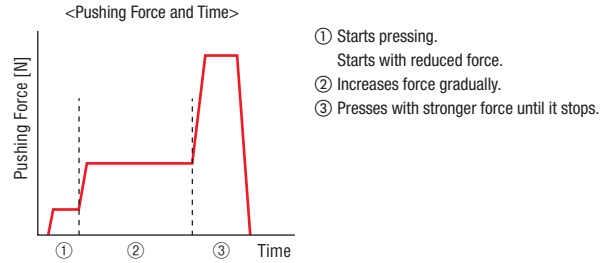
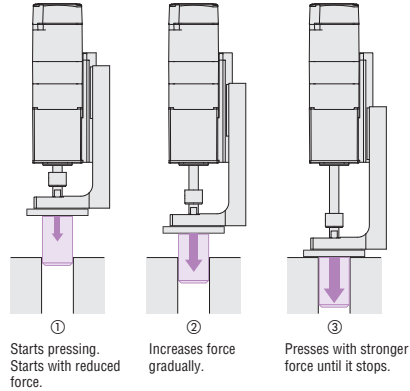
## Efficient Push-Motion Operation

### ● Flexible Pushing Force and Timing

The **DRS2** Series can easily perform a push-motion operation after a positioning operation. Also, the pushing force and timing are adjustable.

#### MERIT

- You can set the pushing force and push timing to an operation data No., and then select the data No. to change the settings.
- There are different ways to change the pressing phases, such as dropping the force so that the position does not shift, slowly increasing the force, or rapidly increasing the force.

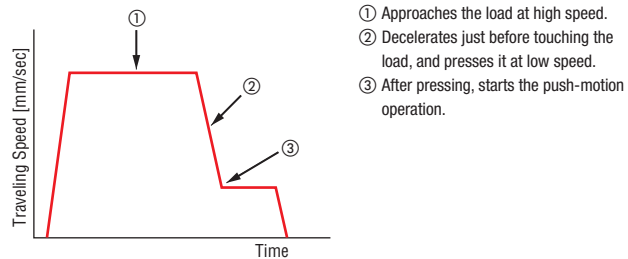
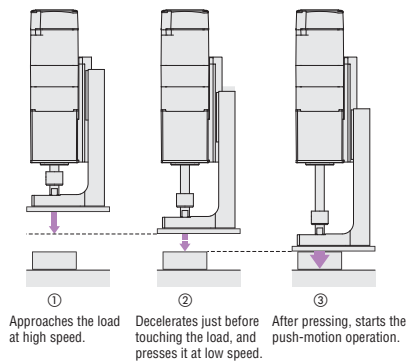


### ● Pressing at Low Speed

The motor can approach the load at high speed. The motor decelerates just before hitting the surface at low speed.

#### MERIT

- Since the pressing impact is minimal, a mechanism for shock absorption is not required.
- The motor can approach at high speed just before reaching the surface, thus reducing the takt time.



### ● Push-Motion Operation with Pulse Input Type

When T-MODE input is set, push-motion operation is possible, without the overload alarm for the pulse input type being generated. This is useful for push-motion operation while using pulse signal control.

## Newly Developed Absolute Sensor

Oriental Motor has developed a compact, low-cost, battery-free mechanical type absolute sensor (patented). This can help improve productivity and reduce costs.

### ● Mechanical-Type Sensor

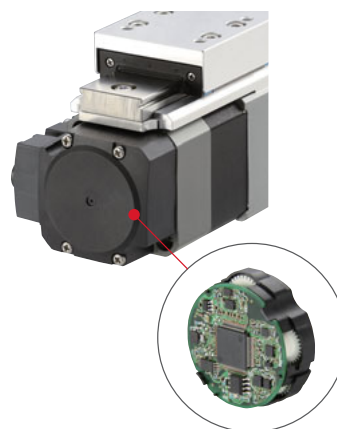
A mechanical sensor composed of multiple gears is employed. Positioning information is detected by recognizing the angle of the individual gears.

### ● Multi-turn absolute sensor

Absolute position detection is possible with  $\pm 900$  rotations (1800 rotations) of the motor shaft from the reference home position.

### ● Home Setting Method

The home position can be easily set by pressing a switch on the driver's surface, which is saved by the Absolute Sensor. In addition, home setting is possible with the data setting software (**MEXE02**) or by using an external input signal.



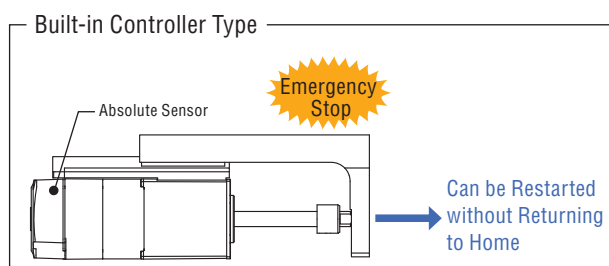
Battery-free Absolute Sensor

## Battery-free

No battery is required thanks to a mechanical-type sensor. Positioning information is managed mechanically by the absolute sensor.

### ● Holding Positioning Information

Even if the power shuts down during a positioning operation or the cable between the actuator and the driver is disconnected, the positioning information is retained. With the built-in controller type, you can restart the positioning operation, without performing return-to-home after an emergency stop on the production line or a blackout.



## No External Sensors Required

With the use of the absolute system, external sensors such as the home sensor and the limit sensor are not needed.

### ● High Speed Return-to-Home

Because return-to-home is possible without using an external sensor, return-to-home can be performed at high speed without taking the specifications for sensor sensitivity into account, allowing for a shortened machine cycle.

### ● Reduced Cost

Sensor costs and wiring costs can be reduced, allowing for lower system costs.

### ● Simple Wiring

Wiring is simplified, and the degree of freedom for equipment design is increased.

### ● Reduced Maintenance

Because there is no battery that needs replacing, maintenance time and costs can be reduced.

### ● Unlimited Driver Installation Possibilities

Because there is no need to secure space for battery replacement, there are no restrictions on the installation location of the driver, improving the flexibility and freedom of the layout design of the control cabinet.

### ● Safe for Overseas Shipping

Normal batteries will self-discharge, so care must be taken when the equipment requires a long shipping time, such as when being sent overseas. The Absolute Sensor does not require a battery, so there is no limit as to how long the positioning information is maintained. In addition, there is no need to worry about various safety regulations, which must be taken into consideration when shipping a battery overseas.

### ● Not Affected by External Sensor Malfunctions

There is no need for concern about sensor malfunctions, sensor failures, or sensor wire disconnections.

### ● Improved Return-to-Home Accuracy

Home position accuracy is increased because the return-to-home operation is performed regardless of any variations in home sensor sensitivity.

● If no limit sensor is installed, movements that exceed the limit values can be avoided through the use of the limits in the driver software.

Overview,  
Product  
Series

Electric  
Linear  
Slides

**Q**STEP  
AZ/AR  
EAS

**Q**STEP  
AZ/AR  
EZS

Electric  
Cylinders

**Q**STEP  
AZ/AR  
EAC

Compact  
Linear  
Actuators

**Q**STEP  
AZ  
DRS2

**DRLII**

Installation

Hollow  
Rotary  
Actuators

**Q**STEP  
AZ/AR  
DGII

Accessories

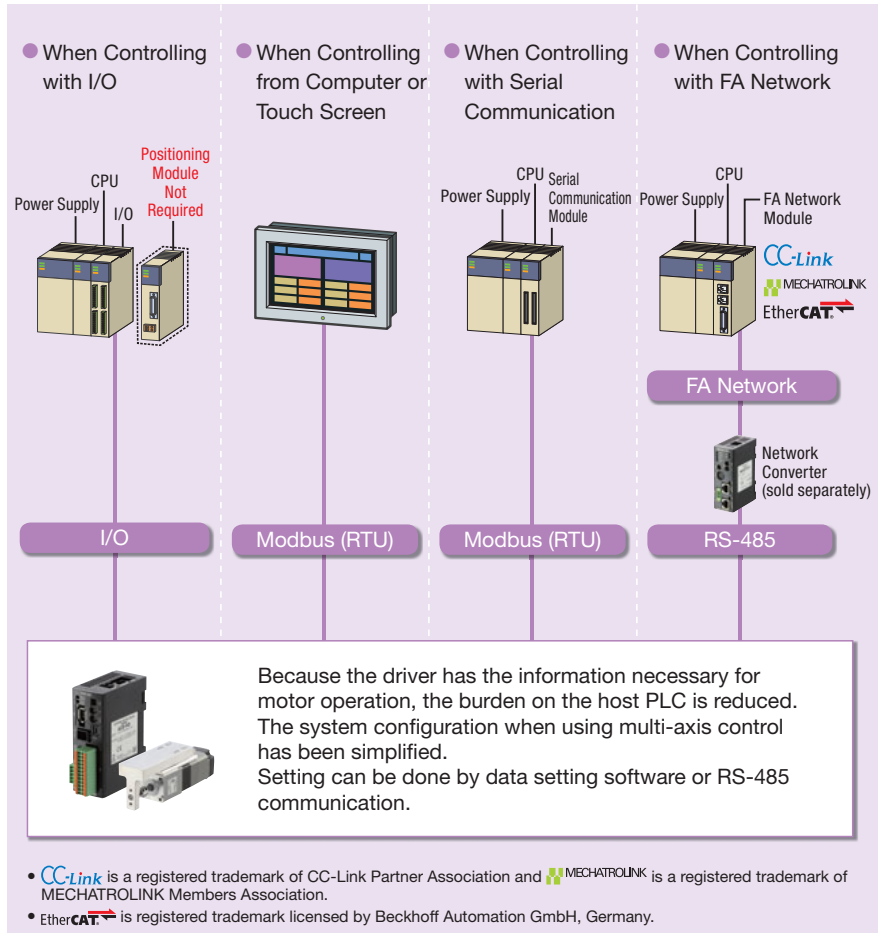
## 2 Driver Types Available to Match the System Configuration

### Built-in Controller Type **FLEX**

With this type, the operating data is set in the driver, and is then selected and executed from the host system. Host system connection and control are performed with any of the following: I/O, Modbus (RTU), RS-485, or FA network. By using a network converter (sold separately), CC-link, MECHATROLINK or EtherCAT communication are possible.

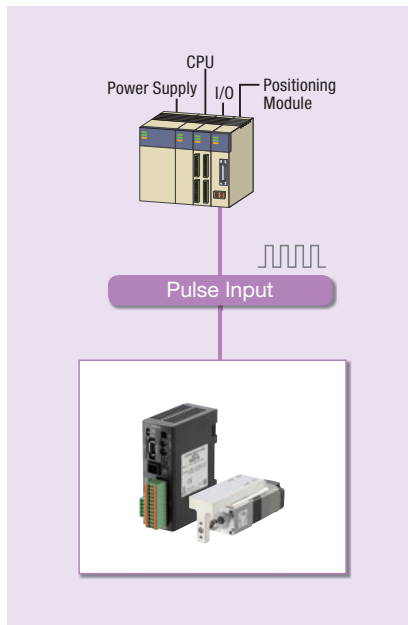
#### **FLEX**

FLEX is the collective name for products that support I/O control, Modbus (RTU) control, and FA network control via network converters. These products enable simple connection and simple control, shortening the total lead time for system construction.



### Pulse Input Type

This type executes operations by inputting pulses into the driver. It controls the motor using a positioning module (pulse generator).



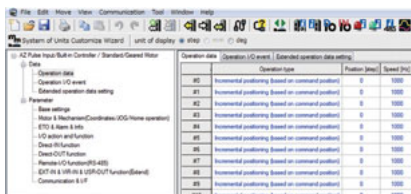
## Set and Operate Easily from a PC

By using the data setting software **MEXE02**, data setting, saving, actual operation, and confirmation via each monitor function can be performed easily on a computer. The data setting software **MEXE02** can be downloaded from the website.



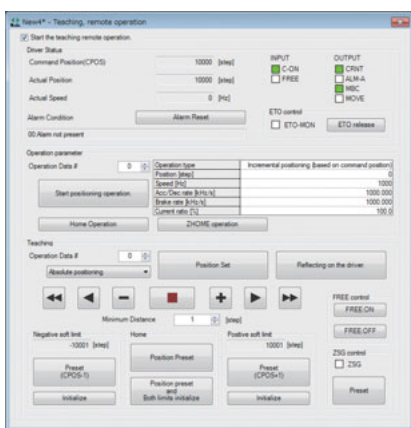
### ● Operating Data/Parameter Settings

You can easily set and save the operating data and parameters on a computer. And then by forwarding the saved data when you replace the driver, etc. the settings will be the same.



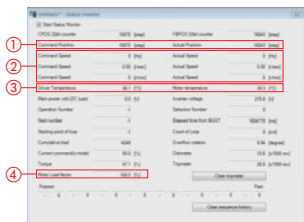
### ● Teaching and Remote Operation

Data setting software can be used to drive the motor. This can be used for teaching or test drive purposes.



### ● Status Monitor

In addition to being able to monitor the speed, motor, driver temperature, and load factor during operations, the integrating rotation amount, etc. can be monitored from the start of use. The signal for each item can be output at your discretion, which leads to effective maintenance.



- ① Detects the actual position in comparison to the command position.
- ② Detects the actual speed in comparison to the command speed.
- ③ Detects the temperature of the motor encoder section and inside the driver.
- ④ With the output torque of the motor speed at 100%, the current load factor can be displayed.

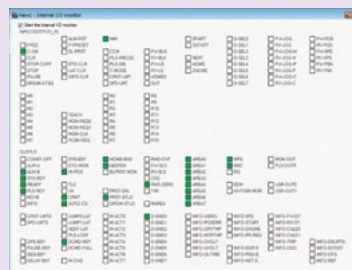
### ● Multi-Monitoring Compatible

Multi-monitoring enables remote operation or teaching while monitoring.

## Various Monitoring Functions

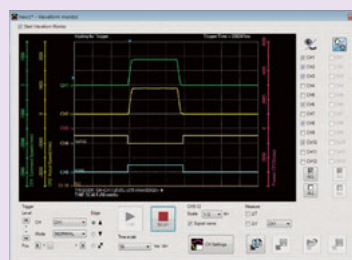
### ● I/O Monitoring

The status of the I/O wired to the driver can be checked on a computer. This can be used for post-wiring I/O checks or I/O checks during operation.



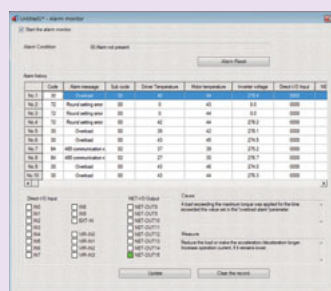
### ● Waveform Monitoring

The operating status of the motor (such as command speed and motor load factor) can be checked from an oscilloscope-like image. This can be used for equipment start-up and adjustment.



### ● Alarm Monitoring

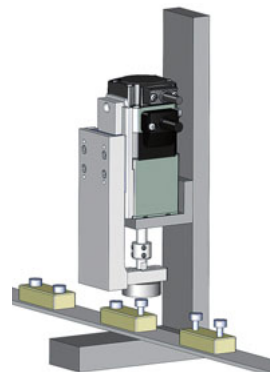
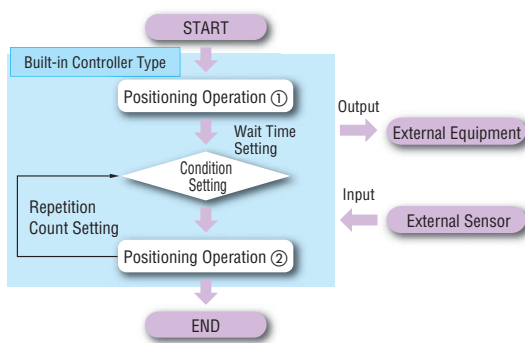
When an abnormality occurs, the details of the abnormality and the solution can be checked.



## Simplified Program with Simple Sequence Functions (Available only on the built-in controller type.)

For built-in controller types, you can simplify the sequence control program by incorporating output signals for controlling other devices or external input signals from sensors.

- Number of Positioning Operation Data Sets (Up to 256)
- General-Purpose I/O Signal Counts (Input 9, Output 6)
- Communication I/O Signal Counts (Input 16, Output 16)



Overview, Product Series

Electric Linear Slides

Q/STEP AZ/AR EAS

Q/STEP AZ/AR EZS

Electric Cylinders

Q/STEP AZ/AR EAC

Compact Linear Actuators

Q/STEP AZ DRS2

DRLII

Installation

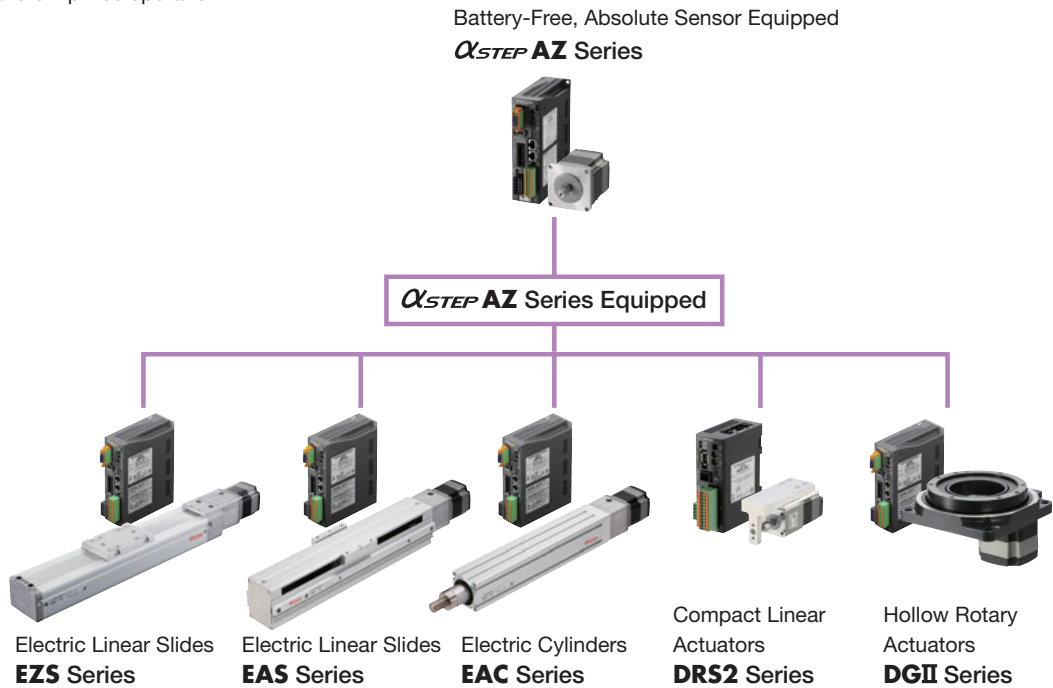
Hollow Rotary Actuators

Q/STEP AZ/AR DGII

Accessories

### Standardized Wiring, Control, and Maintenance Parts

Various mechanical components equipped with  $\alpha$ STEP AZ Series are available. Wiring, control, and maintenance parts have been standardized, since the same motors and drivers are equipped, which reduces the startup time and simplifies operation.



#### Merits of Standardization

● **Wiring Standardization**

Labor used for electrical design and wiring can be saved, since the I/O pin assignment is the same.

● **Control Standardization**












These products can be operated via the same method, since the control method is the same. For the network control, the remote I/O and the command code are also the same. The labor of making the program can be eliminated.

● **Maintenance Parts Standardization**

Maintenance parts can be minimized, since the motor, driver, and cable are common to all. Management costs (parts cost, management space) can be reduced.

### Various Combinations Available

For the **DRS2** Series, compact linear actuators, drivers, or connection cable sets need to be ordered separately. They can be purchased in various combinations.

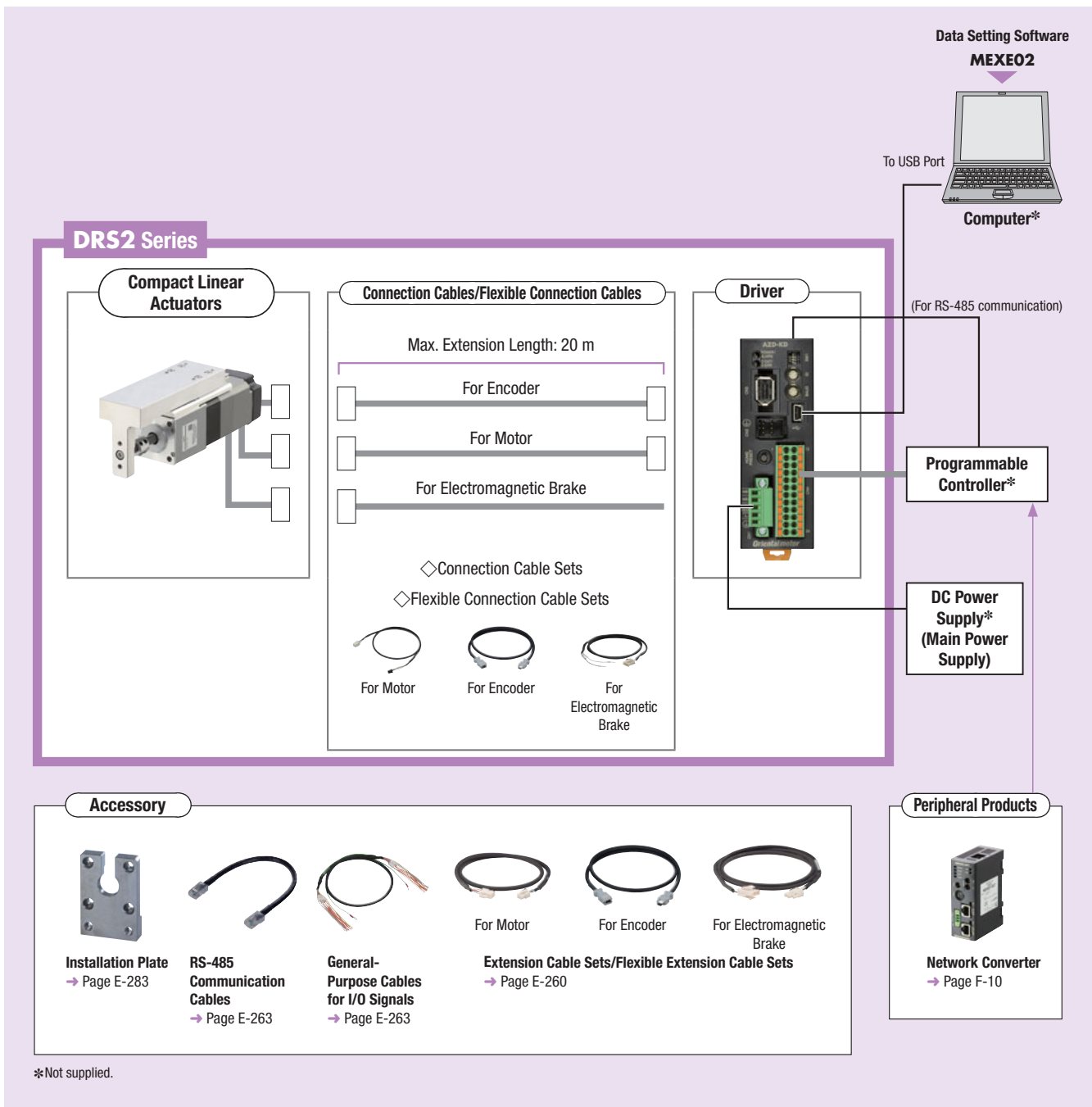
Compact Linear Actuators						Driver (24 VDC/48 VDC)	Connection Cable Sets		
Configuration	Frame Size	Stroke	Ball Screw Type	Lead (mm)	Cable Direction				
● Without Electromagnetic Brake  ● With Electromagnetic Brake 	42 mm	40 mm	Rolloff	2	Right/Left	● Built-in Controller Type 	● Without Electromagnetic Brake  For Motor  For Encoder		
				8					
● Without Electromagnetic Brake  ● With Electromagnetic Brake 			Rolloff	2	-	● Pulse Input Type 	● With Electromagnetic Brake  For Motor  For Encoder  For Electromagnetic Brake		
				8				2	
					Ground	2			

## System configuration

Compact linear actuators, drivers, and a set of connection cables/flexible connection cables need to be ordered individually.

### When Equipped with AZ Series, Built-in Controller Type with Electromagnetic Brake

An example of a configuration using I/O control or RS-485 communication is shown below.



### Example of System Configuration

DRS2 Series			Accessory	
Compact Linear Actuators	Driver	Connection Cable Sets	Installation Plate	For I/O Signal General-Purpose Cable (1 m)
<b>DRSM42RG-04A2AZMK</b>	<b>AZD-KD</b>	<b>CC030VZFB2</b>	<b>PADRL-42</b>	<b>CC16D010B-1</b>
€895.00	€360.00	€63.00	€174.00	€18.00

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

Overview, Product Series

Electric Linear Slides

Q<sub>STEP</sub> AZ/AR EAS

Q<sub>STEP</sub> AZ/AR EZS

Electric Cylinders

Q<sub>STEP</sub> AZ/AR EAC

Compact Linear Actuators

Q<sub>STEP</sub> AZ DRS2

DRLII

Installation

Hollow Rotary Actuators

Q<sub>STEP</sub> AZ/AR DGII

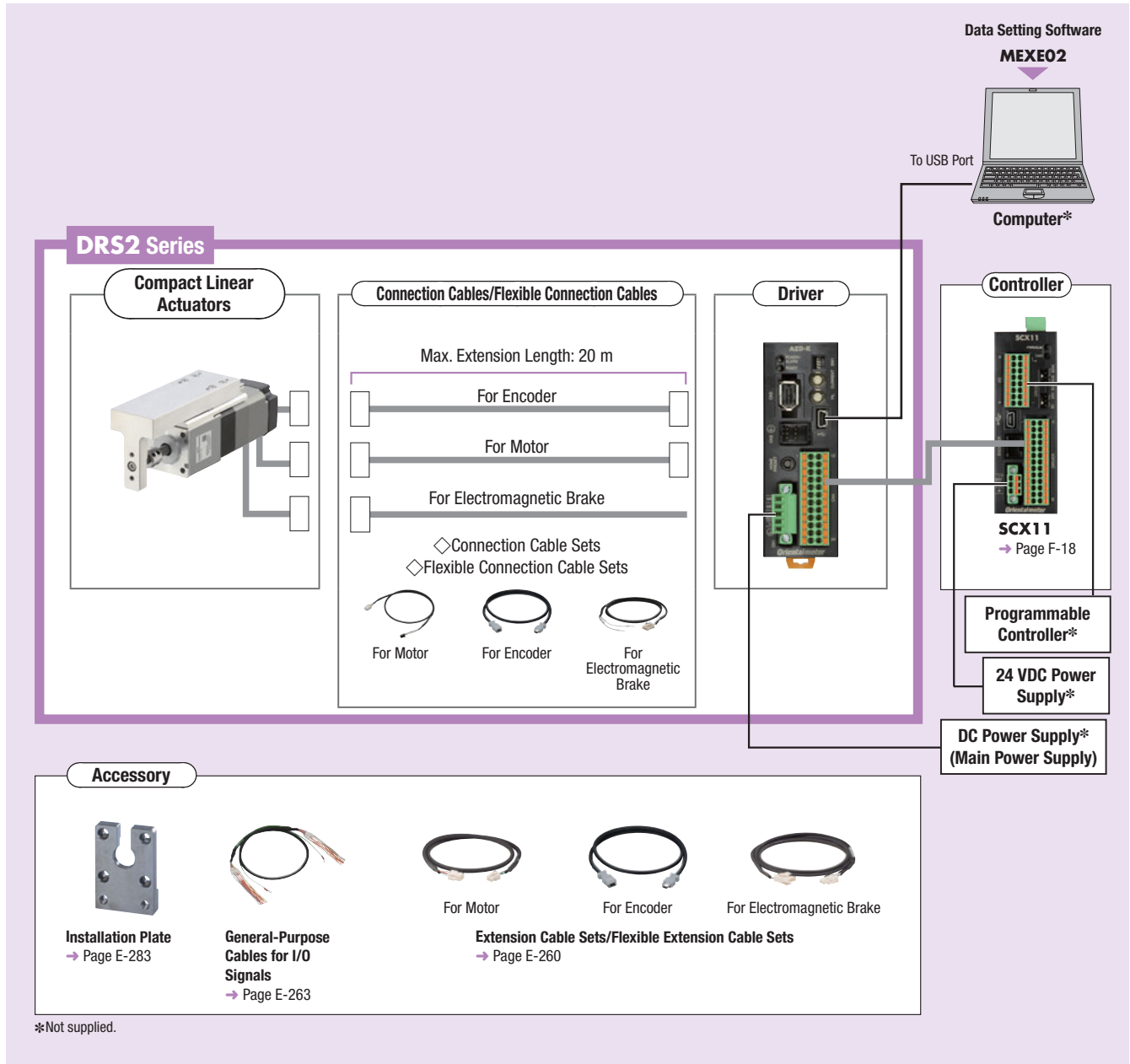
Accessories



Compact linear actuators, drivers, or a set of connection cables/flexible connection cables are need to be ordered respectively.

●When Equipped with **AZ Series, Pulse Input Type with Electromagnetic Brake**

An example of a single-axis system configuration with the **SCX11** controller is shown below.



●Example of System Configuration

DRS2 Series			+	Controller	Accessory	
Compact Linear Actuators	Driver	Connection Cable Sets		Installation Plate	For I/O Signal General-Purpose Cable (1 m)	
<b>DRSM42RG-04A2AZMK</b> €895.00	<b>AZD-K</b> €310.00	<b>CC030VZFB2</b> €63.00		<b>SCX11</b> €215.00	<b>PADRL-42</b> €174.00	<b>CC16D010B-1</b> €18.00

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

## Product Number

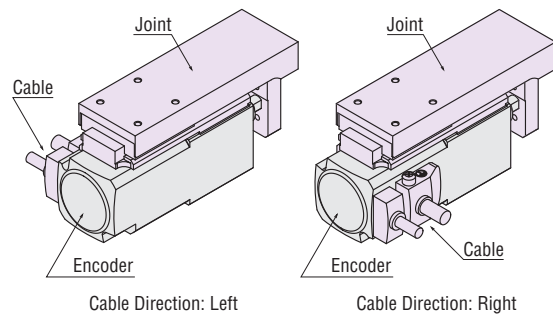
### Compact Linear Actuators

**DRSM 42 R G - 04 A 2 AZ M K**

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩

①	Series Name	<b>DRSM: DRS2 Series</b>
②	Frame Size	<b>42: 42 mm</b>
③	Cable Direction*	<b>R: Right</b> <b>L: Left</b> Blank: Type without Guide
④	Configuration	<b>G: Type with Guide</b> Blank: Type without Guide
⑤	Stroke	<b>04: 40 mm</b>
⑥	Ball Screw Type	<b>A: Rolled Ball Screw</b> <b>B: Ground Ball Screw</b>
⑦	Lead	<b>2: 2 mm 8: 8 mm</b>
⑧	Motor Type	<b>AZ: AZ Series</b>
⑨	Electromagnetic Brake	<b>A: Without Electromagnetic Brake</b> <b>M: With Electromagnetic Brake</b>
⑩	Motor Specification	<b>K: DC Power Supply Input</b>

\*The cable outlet direction is only for the type with a guide.  
The cable direction is as viewed from the encoder with the joint part facing up.



### Driver

**AZD - K D**

① ② ③

①	Driver Type	<b>AZD: AZ Series Driver</b>
②	Power Supply Input	<b>K: 24 VDC/48 VDC</b>
③	Line	<b>D: Built-in Controller Type</b> Blank: Pulse Input Type

### Connection Cable Sets/Flexible Connection Cable Sets

**CC 050 V Z F B 2**

① ② ③ ④ ⑤ ⑥ ⑦

①		<b>CC: Cables</b>
②	Length	<b>005: 0.5 m 010: 1 m 015: 1.5 m 020: 2 m</b> <b>025: 2.5 m 030: 3 m 040: 4 m 050: 5 m</b> <b>070: 7 m 100: 10 m 150: 15 m 200: 20 m</b>
③	Reference Number	
④	Applicable Models	<b>Z: AZ Series</b>
⑤	Cable Type	<b>F: Connection Cable Sets</b> <b>R: Flexible Connection Cable Sets</b>
⑥	Electromagnetic Brake	Blank: Without Electromagnetic Brake <b>B: With Electromagnetic Brake</b>
⑦	Cable Specifications	<b>2: DC Power Supply Input</b>

Overview,  
Product  
Series

Electric  
Linear  
Slides

**Q**STEP  
AZ/AR  
EAS

**Q**STEP  
AZ/AR  
EZS

Electric  
Cylinders

**Q**STEP  
AZ/AR  
EAC

Compact  
Linear  
Actuators

**Q**STEP  
AZ  
DRS2

**DRLII**

Installation

Hollow  
Rotary  
Actuators

**Q**STEP  
AZ/AR  
DGII

Accessories

**Product Line**

● Compact Linear Actuators

◇ Type with a Guide  
Rolled Ball Screw



With electromagnetic brake

Electromagnetic Brake	Lead [mm]	Cable Direction	Product Name	List Price
Without Electromagnetic Brake	2	Right	<b>DRSM42RG-04A2AZAK</b>	€730.00
		Left	<b>DRSM42LG-04A2AZAK</b>	€730.00
	8	Right	<b>DRSM42RG-04A8AZAK</b>	€813.00
		Left	<b>DRSM42LG-04A8AZAK</b>	€813.00
With Electromagnetic Brake	2	Right	<b>DRSM42RG-04A2AZMK</b>	€895.00
		Left	<b>DRSM42LG-04A2AZMK</b>	€895.00
	8	Right	<b>DRSM42RG-04A8AZMK</b>	€978.00
		Left	<b>DRSM42LG-04A8AZMK</b>	€978.00

The following items are included with each product.  
Compact Linear Actuator, Operating Manual

◇ Type without a Guide  
Rolled Ball Screw



With electromagnetic brake

Electromagnetic Brake	Lead [mm]	Product Name	List Price
Without Electromagnetic Brake	2	<b>DRSM42-04A2AZAK</b>	€530.00
	8	<b>DRSM42-04A8AZAK</b>	€612.00
With Electromagnetic Brake	2	<b>DRSM42-04A2AZMK</b>	€695.00
	8	<b>DRSM42-04A8AZMK</b>	€777.00

The following items are included with each product.  
Compact Linear Actuator, Operating Manual, Installation Procedure

● Driver

◇ Built-in Controller Type

Product Name	List Price
<b>AZD-KD</b>	€360.00



The following items are included with each product.  
Driver, Connector Set for Driver, Operating Manual

● Connection Cable Sets/Flexible Connection Cable Sets

◇ Without Electromagnetic Brake



Product Line	Length L (m)	Product Name	List Price	
				For Motor
Connection Cable Sets	0.5	<b>CC005VZF2</b>	€29.00	
	1	<b>CC010VZF2</b>	€29.00	
	1.5	<b>CC015VZF2</b>	€33.00	
	2	<b>CC020VZF2</b>	€38.00	
	2.5	<b>CC025VZF2</b>	€43.00	
	3	<b>CC030VZF2</b>	€48.00	
	4	<b>CC040VZF2</b>	€75.00	
	5	<b>CC050VZF2</b>	€84.00	
	7	<b>CC070VZF2</b>	€104.00	
	10	<b>CC100VZF2</b>	€135.00	
	15	<b>CC150VZF2</b>	€187.00	
	20	<b>CC200VZF2</b>	€237.00	
	Flexible Connection Cable Sets	0.5	<b>CC005VZR2</b>	€65.00
		1	<b>CC010VZR2</b>	€65.00
1.5		<b>CC015VZR2</b>	€70.00	
2		<b>CC020VZR2</b>	€76.00	
2.5		<b>CC025VZR2</b>	€80.00	
3		<b>CC030VZR2</b>	€85.00	
4		<b>CC040VZR2</b>	€97.00	
5		<b>CC050VZR2</b>	€108.00	
7		<b>CC070VZR2</b>	€137.00	
10		<b>CC100VZR2</b>	€181.00	
15		<b>CC150VZR2</b>	€262.00	
20		<b>CC200VZR2</b>	€326.00	

◇ Type with a Guide  
Ground Ball Screw



With electromagnetic brake

Electromagnetic Brake	Lead [mm]	Cable Direction	Product Name	List Price
Without Electromagnetic Brake	2	Right	<b>DRSM42RG-04B2AZAK</b>	€979.00
		Left	<b>DRSM42LG-04B2AZAK</b>	€979.00
	8	Right	<b>DRSM42RG-04B2AZMK</b>	€1,144.00
		Left	<b>DRSM42LG-04B2AZMK</b>	€1,144.00

The following items are included with each product.  
Compact Linear Actuator, Operating Manual

◇ Type without a Guide  
Ground Ball Screw



With electromagnetic brake

Electromagnetic Brake	Lead [mm]	Product Name	List Price
Without Electromagnetic Brake	2	<b>DRSM42-04B2AZAK</b>	€778.00
		<b>DRSM42-04B2AZMK</b>	€943.00

The following items are included with each product.  
Compact Linear Actuator, Operating Manual, Installation Procedure

◇ Pulse Input Type

Product Name	List Price
<b>AZD-K</b>	€310.00



The following items are included with each product.  
Driver, Connector Set for Driver, Operating Manual

◇ With Electromagnetic Brake



Product Line	Length L (m)	Product Name	List Price	
				For Motor
Connection Cable Sets	0.5	<b>CC005VZFB2</b>	€40.00	
	1	<b>CC010VZFB2</b>	€40.00	
	1.5	<b>CC015VZFB2</b>	€46.00	
	2	<b>CC020VZFB2</b>	€52.00	
	2.5	<b>CC025VZFB2</b>	€57.00	
	3	<b>CC030VZFB2</b>	€63.00	
	4	<b>CC040VZFB2</b>	€93.00	
	5	<b>CC050VZFB2</b>	€103.00	
	7	<b>CC070VZFB2</b>	€127.00	
	10	<b>CC100VZFB2</b>	€163.00	
	15	<b>CC150VZFB2</b>	€225.00	
	20	<b>CC200VZFB2</b>	€285.00	
	Flexible Connection Cable Sets	0.5	<b>CC005VZRB2</b>	€87.00
		1	<b>CC010VZRB2</b>	€87.00
1.5		<b>CC015VZRB2</b>	€95.00	
2		<b>CC020VZRB2</b>	€103.00	
2.5		<b>CC025VZRB2</b>	€109.00	
3		<b>CC030VZRB2</b>	€115.00	
4		<b>CC040VZRB2</b>	€131.00	
5		<b>CC050VZRB2</b>	€146.00	
7		<b>CC070VZRB2</b>	€184.00	
10		<b>CC100VZRB2</b>	€237.00	
15		<b>CC150VZRB2</b>	€331.00	
20		<b>CC200VZRB2</b>	€422.00	

## Compact Linear Actuator Specifications

### Type with a Guide



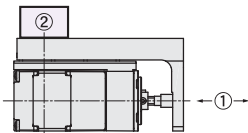
With electromagnetic brake

Product Name		DRSM42RG-04A2AZAK	DRSM42RG-04A2AZMK	DRSM42RG-04A8AZAK	DRSM42RG-04A8AZMK	DRSM42RG-04B2AZAK	DRSM42RG-04B2AZMK	
Cable Direction: Right								
Cable Direction: Left								
Ball Screw Type		Rolled				Ground		
Electromagnetic Brake		Without Electromagnetic Brake	With Electromagnetic Brake	Without Electromagnetic Brake	With Electromagnetic Brake	Without Electromagnetic Brake	With Electromagnetic Brake	
Lead	mm	2		8		2		
Stroke	mm	40						
Min. Traveling Amount	mm	0.001						
Transportable Mass	Horizontal	kg	10	10	5	5	10	
	Vertical	kg	-	-	-	-	-	
Pushing Force	N	400		100		400		
Thrust Force	N	~200		~50		~200		
Holding Force	Power ON	N	200	200	50	50	200	
	Electromagnetic Brake	N	-	200	-	50	200	
Maximum Speed	mm/s	50		200		50		
Repetitive Positioning Accuracy	① End	mm	±0.01				±0.003	
	② Top	mm	±0.02				±0.005	
Lost Motion	mm	0.05 max.				0.02 max.		
Static Permissible Moment	N·m			Mp: 1.3	Mv: 1.0	Mr: 2.5		
Dynamic Permissible Moment	N·m			Mp: 1.3	Mv: 1.0	Mr: 2.5		
Electromagnetic Brake	Type	-	Power off activated type	-	Power off activated type	-	Power off activated type	
	Power Supply Voltage	-	24 VDC±5%*	-	24 VDC±5%*	-	24 VDC±5%*	

\*For the type with an electromagnetic brake, the 24 VDC±4% specification applies if the wiring distance between the actuator and driver is 20 m.

#### Note

- Repetitive positioning accuracy



① Repetitive positioning accuracy is measured at the tip of the guide.

② Repetitive positioning accuracy is measured on the linear guide.

Otherwise, undifferentiated things are common.

### Type without a Guide



With electromagnetic brake

Product Name		DRSM42-04A2AZAK	DRSM42-04A2AZMK	DRSM42-04A8AZAK	DRSM42-04A8AZMK	DRSM42-04B2AZAK	DRSM42-04B2AZMK
Ball Screw Type		Rolled				Ground	
Electromagnetic Brake		Without Electromagnetic Brake	With Electromagnetic Brake	Without Electromagnetic Brake	With Electromagnetic Brake	Without Electromagnetic Brake	With Electromagnetic Brake
Lead	mm	2		8		2	
Stroke	mm	40					
Min. Traveling Amount	mm	0.001					
Transportable Mass	Horizontal	kg	40	40	10	10	40
	Vertical	kg	-	20	-	5	20
Pushing Force	N	400		100		400	
Thrust Force	N	~200		~50		~200	
Holding Force	Power ON	N	200	200	50	50	200
	Electromagnetic Brake	N	-	200	-	50	200
Maximum Speed	mm/s	50		200		50	
Repetitive Positioning Accuracy	mm	±0.01				±0.003	
Lost Motion	mm	0.05 max.				0.02 max.	
Electromagnetic Brake	Type	-	Power off Activated Type	-	Power off Activated Type	-	Power off Activated Type
	Power Supply Voltage	-	24 VDC±5%*	-	24 VDC±5%*	-	24 VDC±5%*

\*For the type with an electromagnetic brake, the 24 VDC±4% specification applies if the wiring distance between the actuator and driver is 20 m.

● For the specifications and characteristics at 48 VDC input, please contact the nearest Oriental Motor sales office.

## Driver Specifications

Driver Type		Built-in Controller Type	Pulse Input Type
Driver Product Name		AZD-KD	AZD-K
Power Supply Input	Voltage	24 VDC $\pm 5\%^{*1}$ / 48 VDC $\pm 5\%$	
	Input Current	Without Electromagnetic Brake	1.72
	<b>DRSM42</b>	With Electromagnetic Brake	1.80
I/O Function	Max. Input Pulse Frequency	-	Line driver output by programmable controller: 1 MHz (When the pulse duty is 50%) Open-collector output by programmable controller: 250 kHz (When the pulse duty is 50%) Negative Logic Pulse Input (Initial value)
	Number of Positioning Data Sets	256 Points	256 Points <sup>*2</sup>
	Direct Input	10 Points	6 Points
	Direct Output		6 Points
	RS-485 Communication Network Input	16 Points	-
	RS-485 Communication Network Output	16 Points	-
Setting Tool	Data Setting Software <b>MEXE02</b>	<input type="radio"/>	<input type="radio"/>
Coordinates Management Method		Battery-free Absolute System	
Operation	Operation Type	Positioning Operation	<input type="radio"/> *2
		Positioning Push-Motion Operation	<input type="radio"/> *2
	Positioning Method	Independent Operation	<input type="radio"/> *2
		Sequential Operation	<input type="radio"/> *2
		Multistep Speed-Change (Configuration Connection)	<input type="radio"/> *2
	Sequence Control	Loop Operation (Repetitive)	<input type="radio"/> *2
		Event Jump Operation	<input type="radio"/> *2
	Continuous Operation	Position Control	<input type="radio"/> *2
		Speed Control	<input type="radio"/> *2
		Torque Control	<input type="radio"/> *2
Pushing		<input type="radio"/> *2	
Return-to-Home Operation	Return-to-Home Operation	<input type="radio"/>	
	High Speed Return-to-Home Operation	<input type="radio"/>	
JOG Operation		<input type="radio"/>	
Monitor/Information	Waveform Monitoring	<input type="radio"/>	<input type="radio"/>
	Overload Detection	<input type="radio"/>	<input type="radio"/>
	Overheat Detection (Motor · Driver)	<input type="radio"/>	<input type="radio"/>
	Position · Speed Information	<input type="radio"/>	<input type="radio"/>
	Temperature Detection (Motor · Driver)	<input type="radio"/>	<input type="radio"/>
	Motor Load Factor	<input type="radio"/>	<input type="radio"/>
Alarm	Distance Traveled · Integrating Distance Traveled	<input type="radio"/>	<input type="radio"/>

\*1 For the type with an electromagnetic brake, the 24 VDC $\pm 4\%$  specification applies if the wiring distance between the actuator and driver is 20 m.

\*2 This can be used by setting with the data setting software **MEXE02**.

## Built-in Controller Type RS-485 Communication Specifications

Protocol	Modbus RTU Mode
Electrical Characteristics	EIA-485 Based, Straight Cable Use shielded twisted-pair cables (TIA/EIA-568B CAT5e or better recommended). The max. total extension length is 50 m.
Communication Mode	Half duplex and start-stop synchronization (data: 8 bits, stop bit: 1 bit or 2 bits, parity: none, even, or odd)
Baud Rate	9600 bps/19200 bps/38400 bps/57600 bps/115200 bps/230400 bps are available
Connection Type	Up to 31 units can be connected to a single programmable controller (master equipment).

## General Specifications

	Actuator	Driver
Thermal Class	130 (B)	-
Insulation Resistance	100 M $\Omega$ or more when a 500 VDC megger is applied between the following places: · Case – Motor Windings · Case – Electromagnetic Brake Windings*	100 M $\Omega$ or more when a 500 VDC megger is applied between the following places: · Protective Earth Terminal – Power Supply Terminal
Dielectric Strength	Sufficient to withstand the following for 1 minute: · Case – Motor Windings 1.0 kVAC 50 Hz or 60 Hz · Case – Electromagnetic Brake Windings* 1.0 kVAC 50 Hz or 60 Hz	-
Operating Environment (In operation)	Ambient Temperature	0~+40°C (Non-freezing)
	Ambient Humidity	85% or less (Non-condensing)
	Atmosphere	No corrosive gases or dust. The product should not be exposed to water, oil or other liquids.
Degree of Protection	-	IP10
Multiple Rotation Detection Range Upon Power OFF	$\pm 900$ Rotation (1,800 rotations)	

\*Only for types with an electromagnetic brake.

## Note

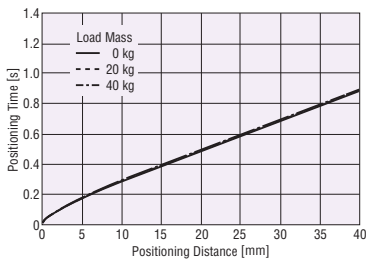
- Do not measure insulation resistance or perform a dielectric strength test while the motor and driver are connected.  
Also, do not perform these tests on the motor absolute sensor part.

## Positioning Distance – Positioning Time, Operating Speed, Acceleration

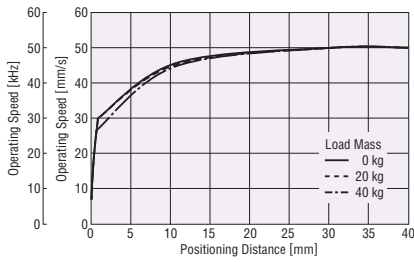
● Lead: 2 mm

◇ Horizontal Direction Installation

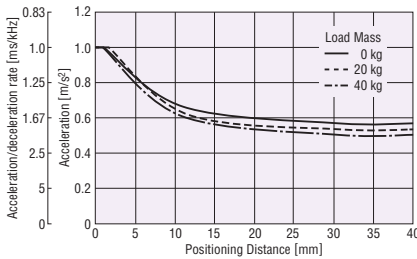
● Positioning Distance – Positioning Time



● Positioning Distance – Operating Speed

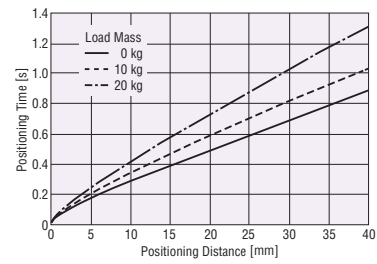


● Positioning Distance – Acceleration

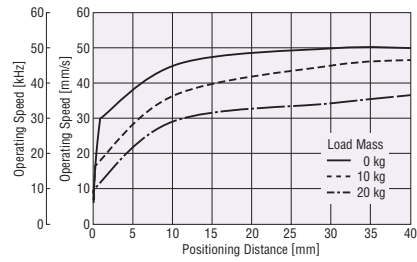


◇ Vertical Direction Installation

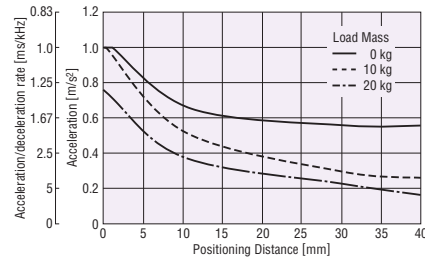
● Positioning Distance – Positioning Time



● Positioning Distance – Operating Speed



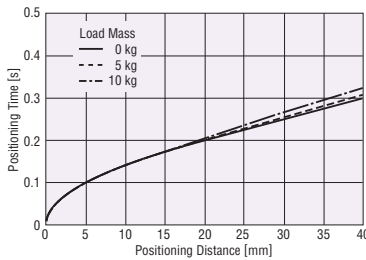
● Positioning Distance – Acceleration



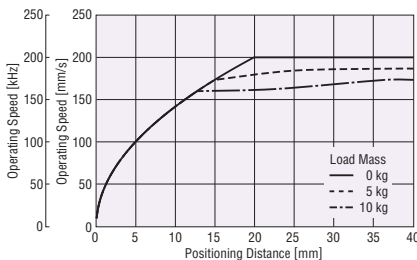
● Lead: 8 mm

◇ Horizontal Direction Installation

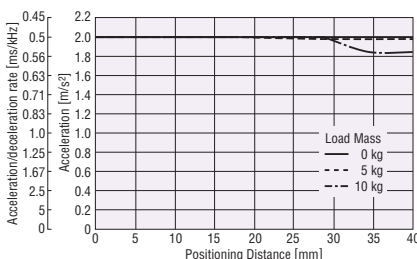
● Positioning Distance – Positioning Time



● Positioning Distance – Operating Speed

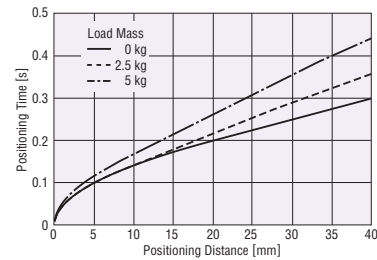


● Positioning Distance – Acceleration

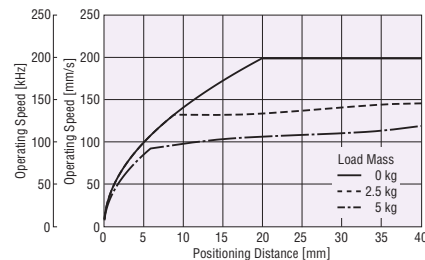


◇ Vertical Direction Installation

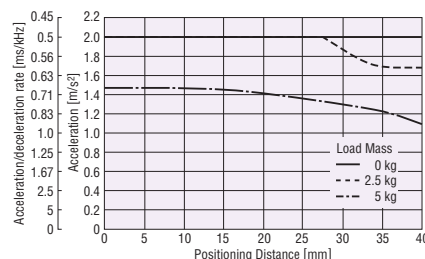
● Positioning Distance – Positioning Time



● Positioning Distance – Operating Speed



● Positioning Distance – Acceleration

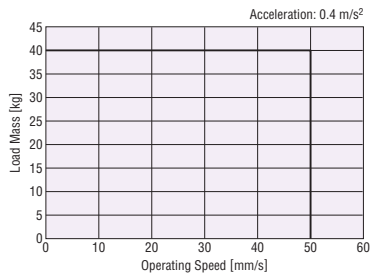


● For the specification and characteristics of 48 VDC input, please contact the nearest Oriental Motor sales office.

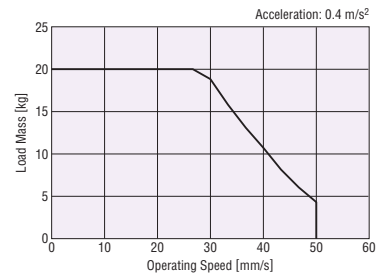
### Operating Speed – Load Mass

● Lead: 2 mm

◇ Horizontal Direction Installation

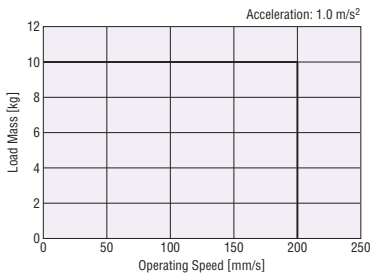


◇ Vertical Direction Installation

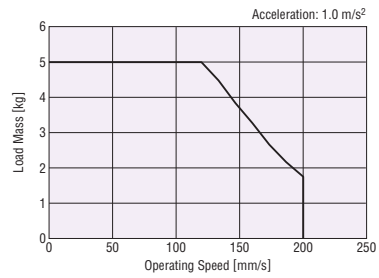


● Lead: 8 mm

◇ Horizontal Direction Installation

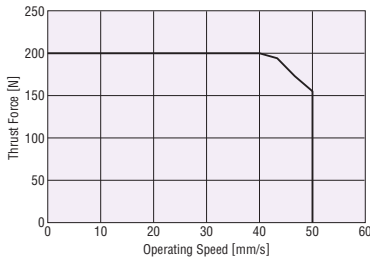


◇ Vertical Direction Installation

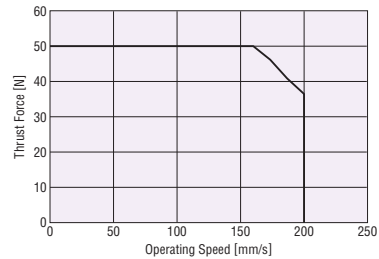


### Operating Speed – Thrust Force

● Lead: 2 mm

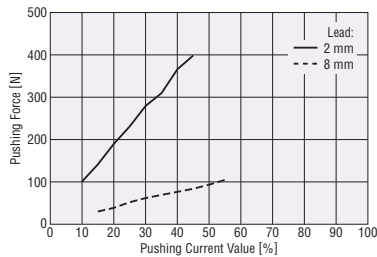


● Lead: 8 mm



### Actual Pushing Force

The pushing current value and pushing force of the **DRS2** Series are explained below. Check the actual pushing force when using it.



- The above characteristics diagram shows the representative values that result from using the **DRS2** Series horizontally.
- The relationship between the pushing current value and pushing force varies depending on the following conditions. Check it on the actual equipment.
  - Installation conditions (horizontal or vertical installation)
  - Load conditions
- The upper speed limit of the push-motion operation is 6 mm/s (same for 2 mm and 8 mm lead).

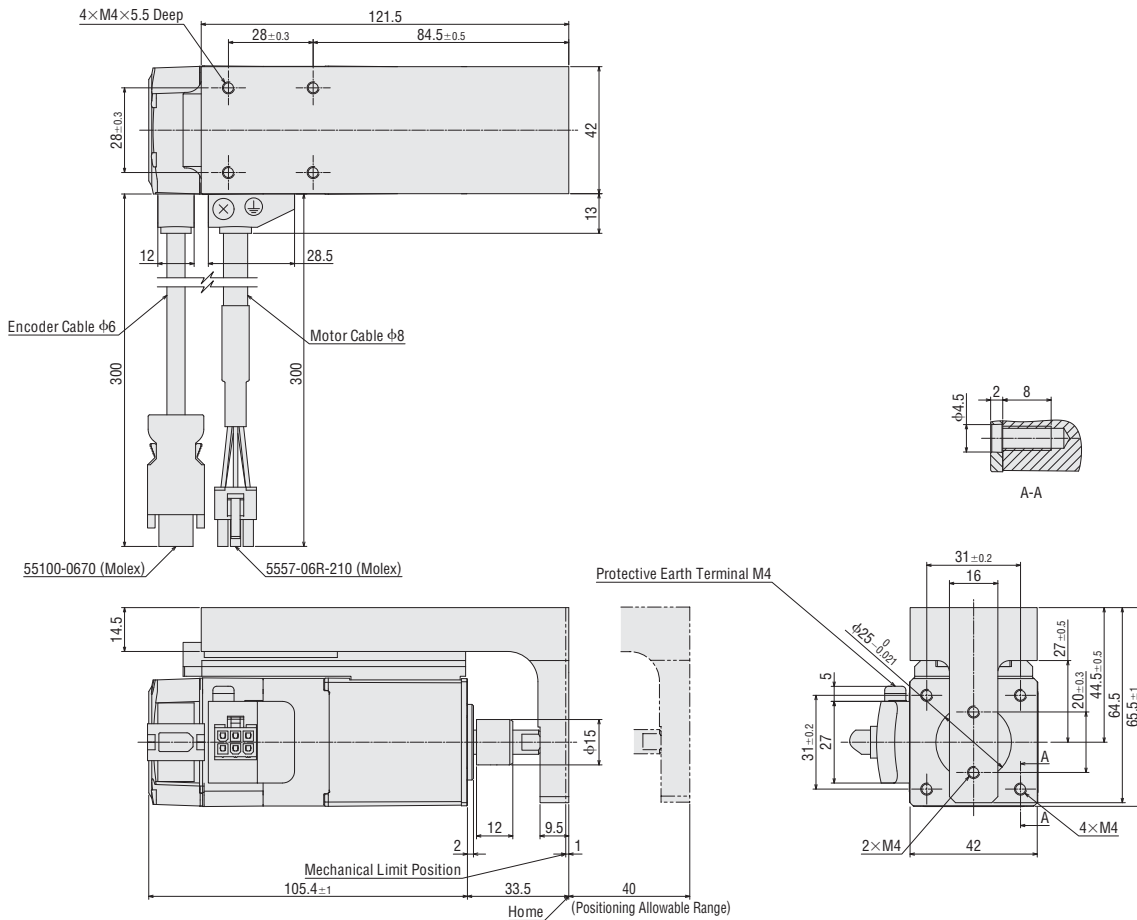
● For the specification and characteristics of 48 VDC input, please contact the nearest Oriental Motor sales office.

## Dimensions (Unit: mm)

### Compact linear actuators

#### ◇ Type with a Guide (Cable Direction: Right)

Product Name	Mass kg
<b>DRSM42RG-04A2AZAK</b> <b>DRSM42RG-04B2AZAK</b> <b>DRSM42RG-04A8AZAK</b>	1.10



● The figures above show the dimensions when the cable direction is to the right. For the dimensions when the cable direction is to the left, refer to the Oriental Motor website. [www.orientalmotor.eu](http://www.orientalmotor.eu)

Overview,  
Product  
Series

Electric  
Linear  
Slides

ALSTEP  
AZ/AR  
EAS

ALSTEP  
AZ/AR  
EES

Electric  
Cylinders

ALSTEP  
AZ/AR  
EAC

Compact  
Linear  
Actuators

ALSTEP  
AZ  
DRS2

DRLII

Installation

Hollow  
Rotary  
Actuators

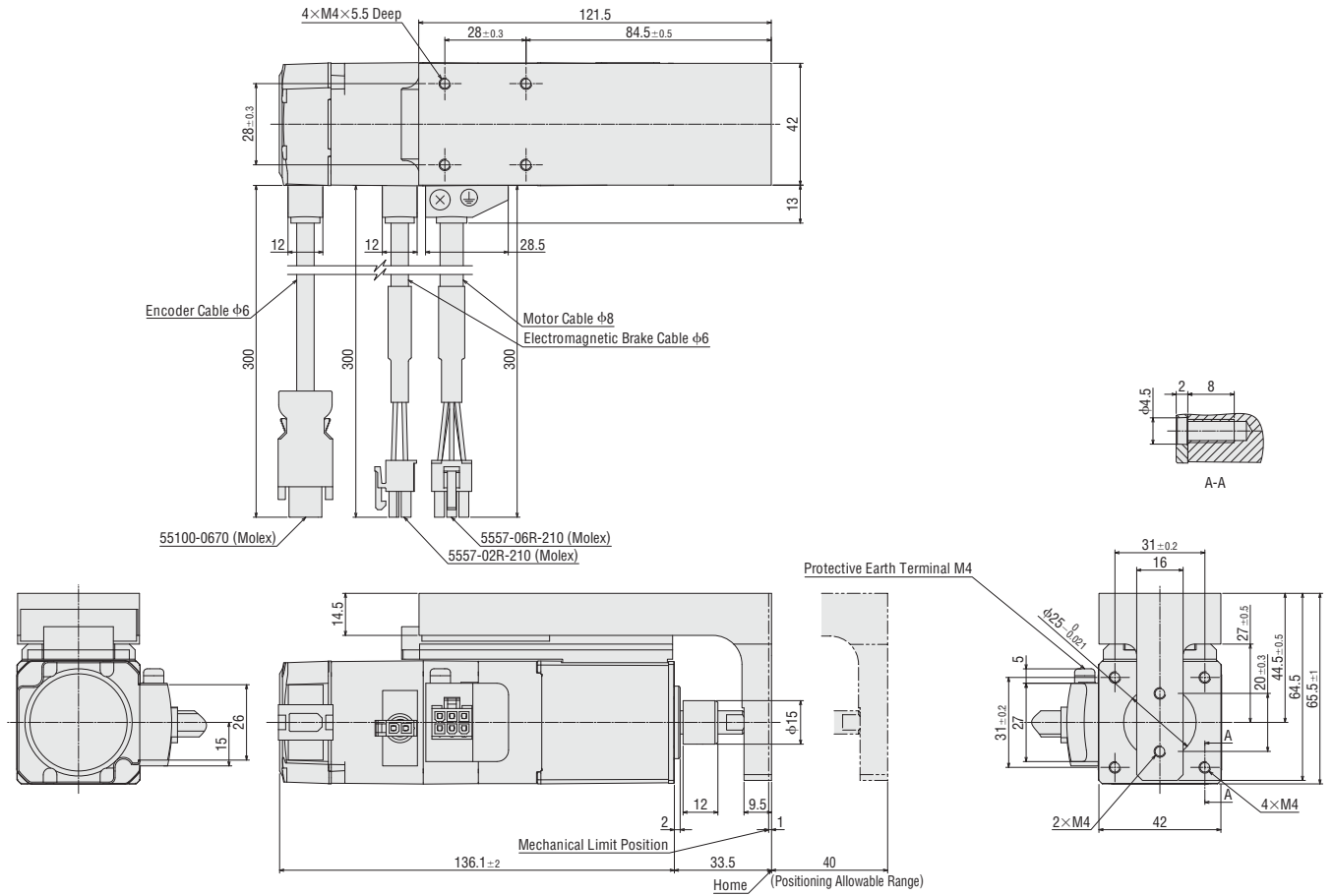
ALSTEP  
AZ/AR  
DGII

Accessories



◇ Type with a Guide With Electromagnetic Brake (Cable Direction: Right)

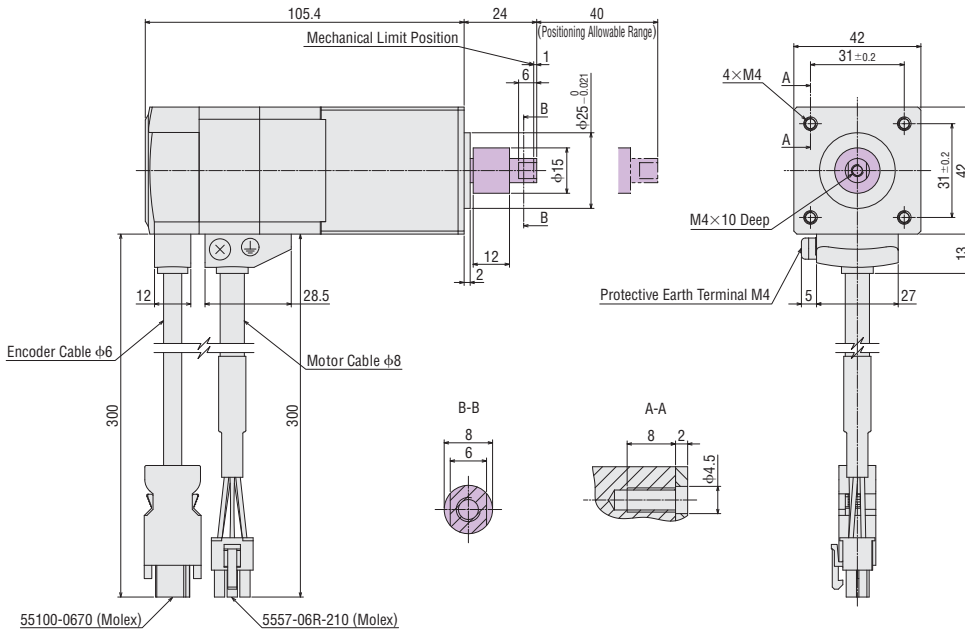
Product Name	Mass kg
DRSM42RG-04A2AZMK DRSM42RG-04B2AZMK DRSM42RG-04A8AZMK	1.30



● The figures above show the dimensions when the cable direction is to the right. For the dimensions when the cable direction is to the left, refer to the Oriental Motor website. [www.orientalmotor.eu](http://www.orientalmotor.eu)

◇ Type without a Guide

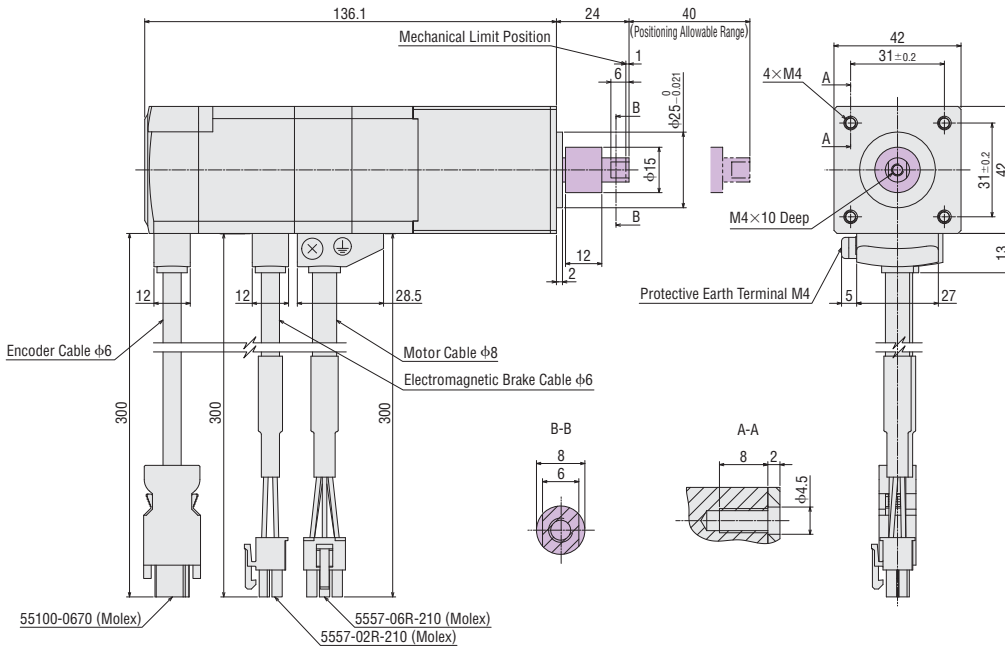
Product Name	Mass kg
<b>DRSM42-04A2AZAK</b> <b>DRSM42-04B2AZAK</b> <b>DRSM42-04A8AZAK</b>	0.68



● The shaded areas are moving parts.

◇ Type without a Guide With Electromagnetic Brake

Product Name	Mass kg
<b>DRSM42-04A2AZMK</b> <b>DRSM42-04B2AZMK</b> <b>DRSM42-04A8AZMK</b>	0.85



● The shaded areas are moving parts.

Overview,  
Product  
Series

Electric  
Linear  
Slides

Q<sub>STEP</sub>  
AZ/AR  
EAS

Q<sub>STEP</sub>  
AZ/AR  
EES

Electric  
Cylinders

Q<sub>STEP</sub>  
AZ/AR  
EAC

Compact  
Linear  
Actuators

Q<sub>STEP</sub>  
AZ  
DRS2

DRLII

Installation

Hollow  
Rotary  
Actuators

Q<sub>STEP</sub>  
AZ/AR  
DGII

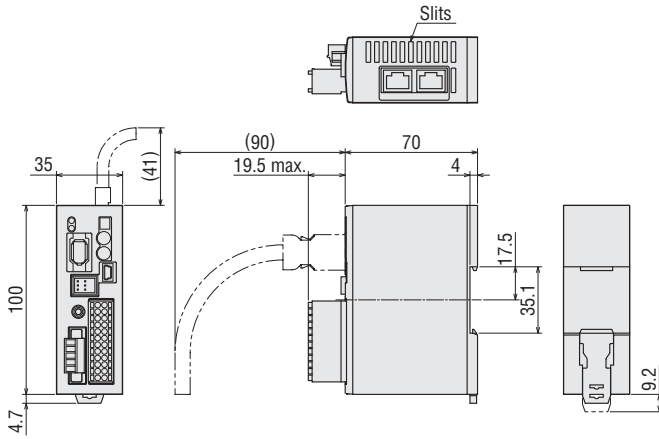
Accessories

● Driver

◇ Built-in Controller Type

Product name : **AZD-KD**

Mass : 0.15 kg



● Included

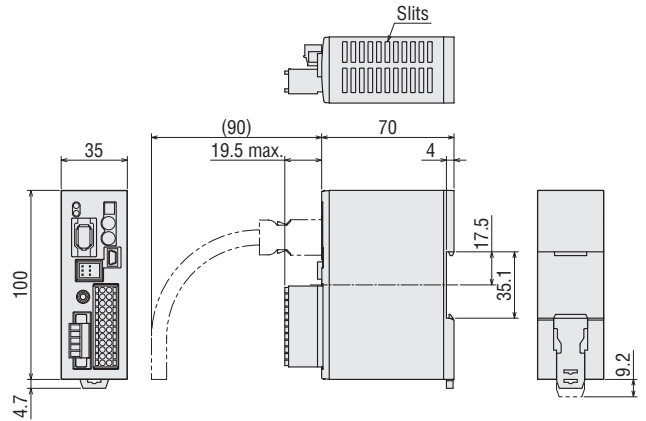
Connector for Main Power Supply/Electromagnetic Brake Connection (CN1)  
connector : MC1,5/5-STF-3,5  
(PHOENIX CONTACT)

I/O Signals Connector (CN4)  
connector : DFMC1,5/12-ST-3,5  
(PHOENIX CONTACT)

◇ Pulse Input Type

Product name : **AZD-K**

Mass : 0.15 kg



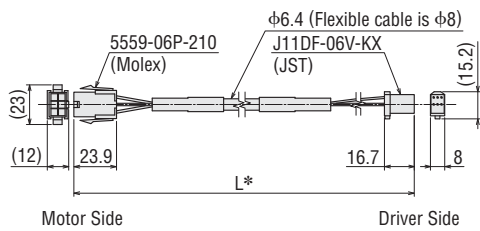
● Included

Connector for Main Power Supply/Electromagnetic Brake Connection (CN1)  
connector : MC1,5/5-STF-3,5  
(PHOENIX CONTACT)

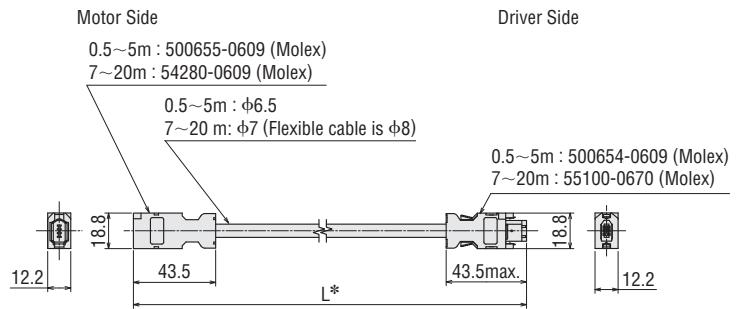
I/O Signals Connector (CN4)  
connector : DFMC1,5/12-ST-3,5  
(PHOENIX CONTACT)

● Connection Cable Sets/Flexible Connection Cable Sets

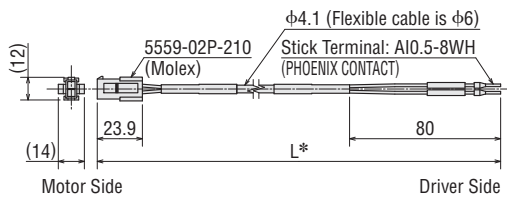
◇ Cable for Motor



◇ Cable for Encoder



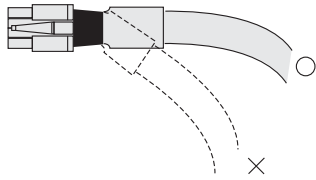
◇ Cable for Electromagnetic Brake (Only for Types with Electromagnetic Brake)



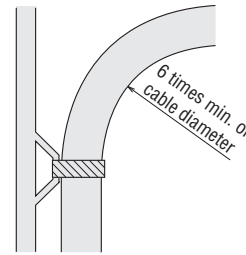
\*The length L (m) is specified where L is located in "■ Product Line" on page E-210.

## Note on Use of Flexible Cables

① Do not allow the cable to bend at the cable connector.

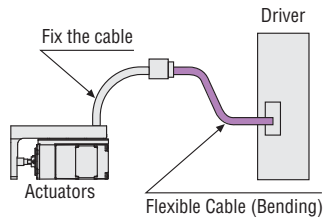


② Bending radius should be at least 6 times of the cable diameter.

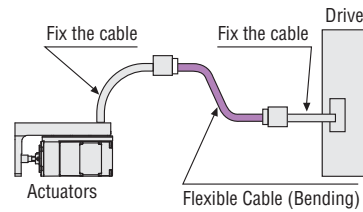


③ The rotary actuator cable and the included cable should not be bent or flexed. Use the flexible cable in applications where the cable is bent or flexed.

• For Flexible Connection Cables



• For Flexible Extension Cables



## Connection and Operation

● Built-in Controller Type

→ Page A-205

● Pulse Input Type

→ Page A-209

Overview,  
Product  
Series

Electric  
Linear  
Slides

*Q*STEP  
AZ/AR  
EAS

*Q*STEP  
AZ/AR  
EZS

Electric  
Cylinders

*Q*STEP  
AZ/AR  
EAC

Compact  
Linear  
Actuators

*Q*STEP  
AZ  
DRS2

DRLII

Installation

Hollow  
Rotary  
Actuators

*Q*STEP  
AZ/AR  
DGII

Accessories