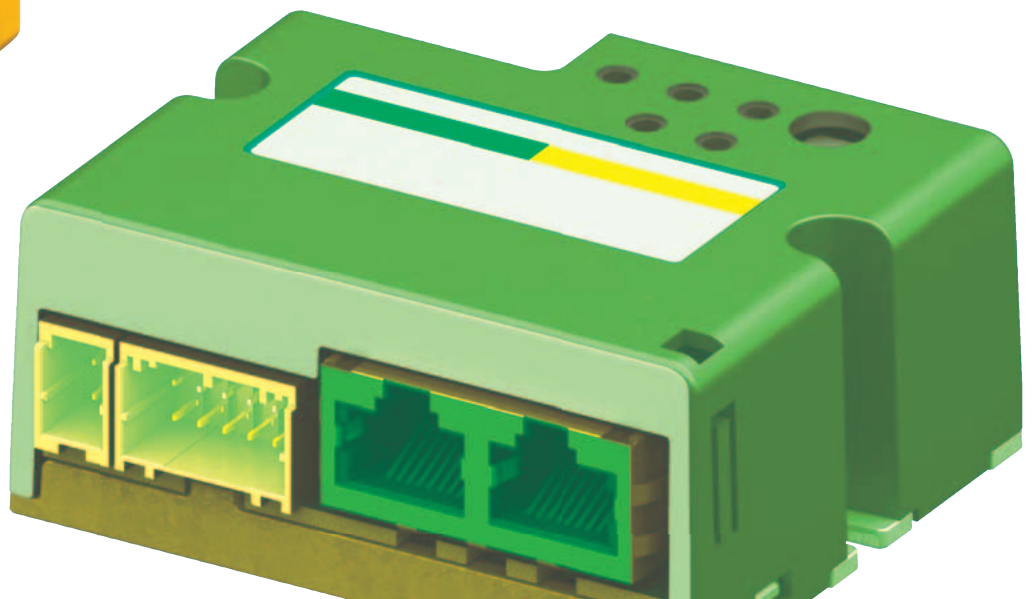
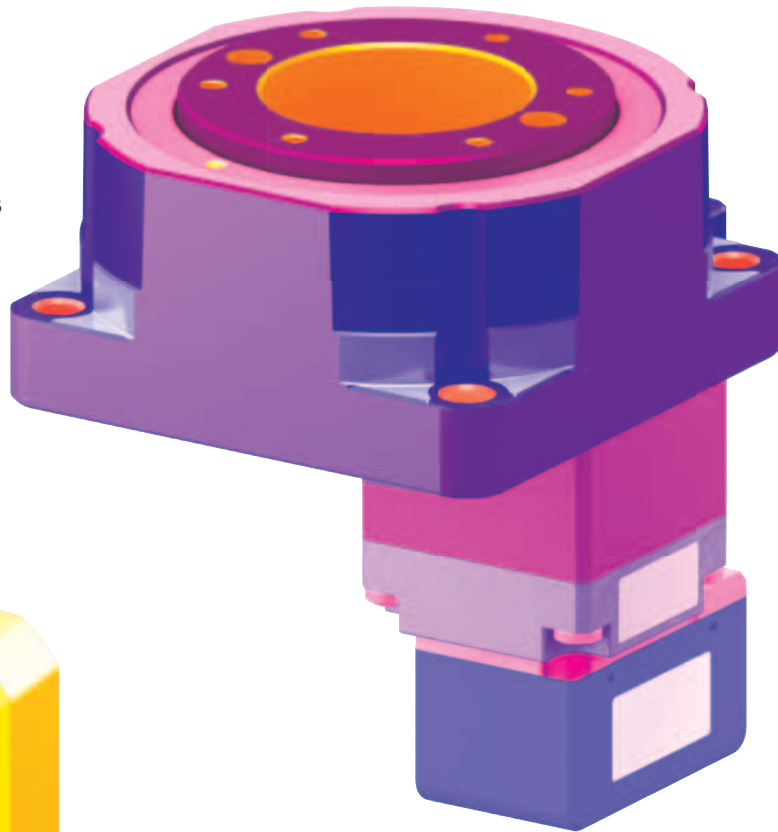
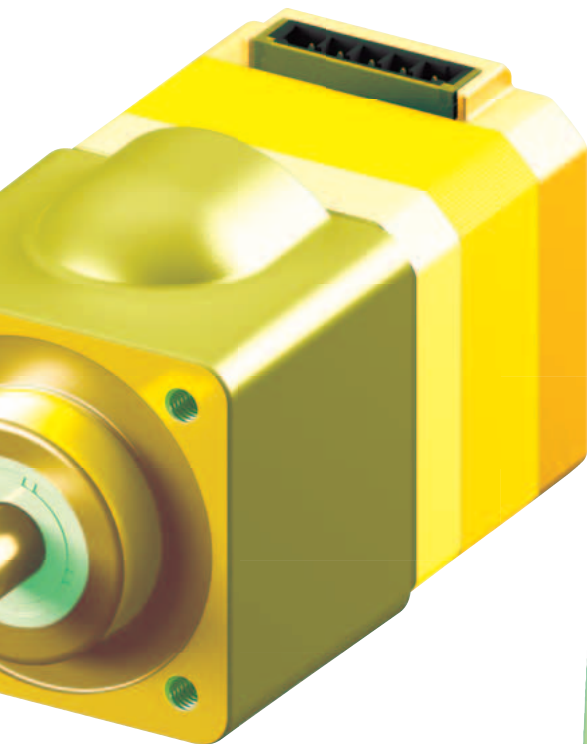


## Product Guide 2025

*α*STEP Hybrid Control System  
Network Controllers  
Robot Controller  
Servo Motors  
Stepper Motors  
Encoders  
Stepper Motor Linear Attachments  
Brushless Motors  
Standard AC Motors  
Cooling Fans



**AVAILABLE WORLDWIDE,  
STARTING FROM A SINGLE UNIT.**



# GLOBAL SALES NETWORK

*15 countries*

## Bringing Oriental Motor to the Global Market

Industrial – Medical – Packaging – Material Handling – and so much more.

Worldwide, our refined product development enables daily operations across all fields of business. Honoring our corporate philosophy built on over 100 years of history. We continually evolve to meet our customers' needs-wherever they are.

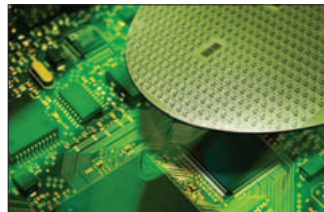
Medical



Packaging



Semiconductor



Factory Automation (FA)



Material Handling



Food Processing



Security



Environmental



# Oriental Motor Products

## $\alpha$ STEP Hybrid Control System



- Mechanical Absolute Encoder Stepper Motors
- Closed Loop
- Positioning, Speed, Torque Control
- Electromagnetic Brake Types
- Geared Types



- Linear & Rotary Actuators
- Transport
- Push/Pull
- Lifting
- Gripping
- Rotating

## Network – Controllers



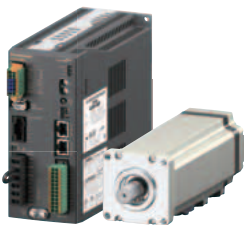
- EtherNet/IP
- EtherCAT
- PROFINET
- Modbus (RTU)
- Modbus (TCP, UDP)
- CC-Link
- MECHATROLINK
- Single and Multi-axis controllers

## Robot Controller



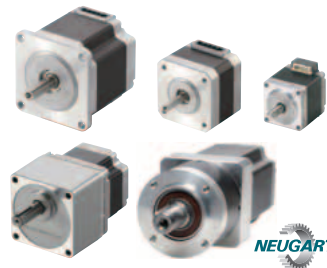
- Easy Programming and Control of In-house Designed Robots
- Compatible with  $\alpha$ STEP AZ Series Family of Products
- EtherNet/IP

## Servo Motors



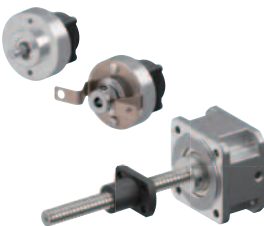
- Mechanical Absolute Encoder Servo Motors
- Continuous Speed or Positioning for Long Distance
- Network Compatible Drivers

## Stepper Motors



- 2 Phase 1.8°, 0.9°
- 5 Phase 0.72°, 0.36°
- Encoder Motors
- Electromagnetic Brake Types
- Geared Types
- Drivers

## Encoders / Linear Attachments



- Compact, High-resolution Incremental Encoders
- Linear Motion Mechanism with a Leadscrew and a Resin Nut

## Brushless Motors



- Speed Control
- Compact Yet Powerful
- Excellent Speed & Torque Performance
- Space Saving
- Energy Saving
- No Brushes = No Maintenance

## Standard AC Motors



- 1 W (1/750 HP)~3 HP
- Single & 3 Phase
- Fixed Speed
- Speed Control
- Electromagnetic Brake Types
- Geared Types

## Cooling Fans



- AC or DC Input
- Alarms
- Axial Flow
- Blowers
- Cross Flow
- Thermostats
- Enclosure Types



# Oriental Motor Corporate Overview



Company	ORIENTAL MOTOR CO., LTD.
Founded	1885
Established	1950
Representative	President Eiji Kawahito
Capital	4.1 billion yen
Sales	Consolidated 60.7 billion yen (At the end of March 2024)
Number of Employees	Consolidated 2,942 (At the end of March 2024)
Company Activity	Development, manufacture and sale of small precision motors and electronic circuits for motion control
Head Office	4-8-1, Higashiueno, Taito-ku, Tokyo, 110-8536, Japan
.....	
R&D Center	Tsuruoka-Chuo Plant
Factories	Tsuruoka-Nishi Plant
	Soma Plant
	Tsukuba Plant
	Tsuchiura Plant
	Kashiwa Plant
	Kofu Plant
	Takamatsu-Kozai Plant
	Takamatsu-Kokubunji Plant
	Manufacturing Technology R&D Center (Joso, Ibaraki)

## Oriental Motor Supports Global Manufacturing

Since its founding in Japan in 1885, Oriental Motor globally has been providing the optimal motion systems as part of our total service, to meet the widest market demands. For over a century we have concentrated on technological advancement and product design improvement. This emphasis is evident in the sophisticated devices that we market today. Oriental Motor's sales and service network is international, with offices throughout North America, Europe and Asia. Domestically, ORIENTAL MOTOR U.S.A. CORP. was established in 1978. We produce a wide variety of fractional horsepower products to meet all your motion control needs.

### Quality

In order to meet all motion control needs, we expanded our product line. Our accumulated technological excellence reflects our long years of dedication to quality. With our strengths, such as high torque, high precision, long life, low noise and ease of selection, our established systems aim to produce products that our customers can rely on.



### Short Lead Times

You can order the products listed in our catalog or website at any time, from anywhere, and in any quantity you require. We deliver orders of any size, from one piece or more, with the shortest lead-times. With our stable production, quality control and logistics systems, we relentlessly pursue improvements and excellence in order to continue providing our products and services to our customers all over the world.

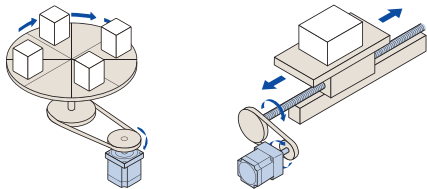


# Oriental Motor Service and Support

Products and technology are only valuable when coupled with skilled people and services to support them. ORIENTAL MOTOR U.S.A. CORP. has dedicated over 40 years to establishing a service and support system to better serve customers. It is our goal to provide the best product and service from the design phase, through the sale and beyond. Please call us to meet your motion control needs.

## Before and After Sales Service

### Motor Sizing & Selection



Utilize our [Free Online Sizing Tools](#) for help finding the proper specifications for your application. Application Engineers and Technical Support Staff are also available to assist you in properly sizing and selecting your motor based on your individual application. Simply call **1-800-468-3982**

### Customer Service & Technical Support



Available from 8:30 EST to 5:00 PST, one phone call provides access to the experts on our products. Call toll free **1-800-468-3982** to speak with an Oriental Motor associate. Spanish support is available. For online inquiries, technical searches, and on demand technical videos use our website.

## Contact Us ● Estimates ● Product Inquiries ● Orders ● General Information

### By Live Chat



[www.orientalmotor.com](http://www.orientalmotor.com)

“Technical Support Assistance” pop up  
Available - Monday to Friday,  
8:30am EST to 5:00pm PST

### By Email



[www.orientalmotor.com/contact](http://www.orientalmotor.com/contact)

Technical Support  
Customer Service / Sales

### By Phone



Hours - Monday to Friday,  
8:30am EST to 5:00pm PST

**Toll-free** Customer Support Center

**Support: 1-800-468-3982**  
**Sales: 1-800-448-6935**

### Oriental Motor Offers:

Fast Delivery

No Minimum Order  
Required

Dedicated Support

## See Full Product Details

Visit our website for expanded product information, specifications, CAD, accessories and more.



oriental motor

search

Find the Right Solution from Approximately **50,000 Products**

# $\alpha$ STEP Hybrid Control System

Position, Speed and Torque Control

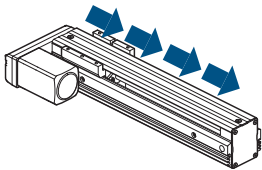
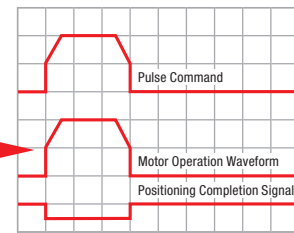
## What is $\alpha$ STEP?

$\alpha$ STEP is a “hybrid” stepper motor-based motor & driver that together, performs independent control which combines the advantages of “open loop” and “closed loop” performance. In addition to high-accuracy positioning and speed control, it can perform control that restricts the motor's generated torque to a user set value (such as push-motion operation).

**Normal Condition (Positioning deviation is less than  $\pm 1.8^\circ$ )**

Motor is controlled in open loop mode like a stepper motor.

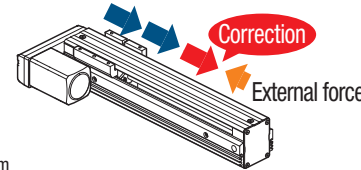
- The tuning-free feature allows for high accuracy and high responsiveness to commands
- Hunting-free (Complete stop)
- Constant monitoring of the motor's status

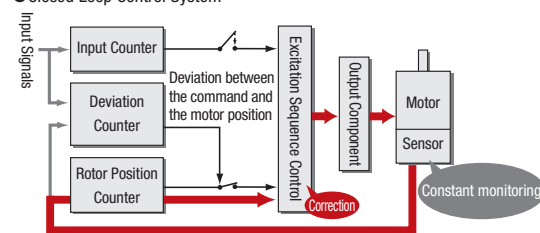
**Overload Condition (Positioning deviation is  $\pm 1.8^\circ$  min.)**

The closed loop mode is engaged to maintain the positioning operation.

Reliability as a result of monitoring and correction of positions and speed



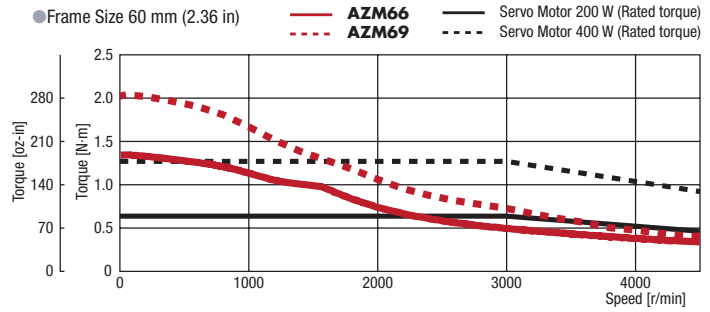
● Closed Loop Control System



## Performance

“Rated output” is not listed because  $\alpha$ STEP has no “rated speed.” Refer to the graph on the right to compare rated torque of  $\alpha$ STEP to watts of servo motor's rated output torque.

- Generates high torque in the mid-to-low speed range
- Excels at frequent starting and stopping operation that requires acceleration/deceleration torque

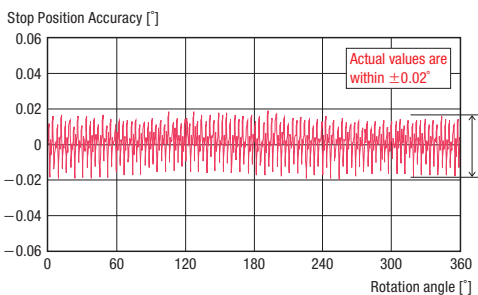


● Data for the speed-torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.

## Stopping Accuracy

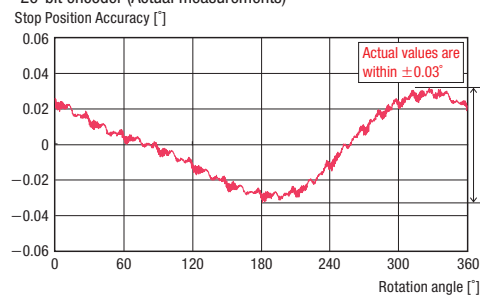
The stopping accuracy of a typical  $\alpha$ STEP is  $\pm 0.05^\circ$  (under no load), which is equivalent to that of servo motors. These graphs show the actual measured stopping accuracies when an  $\alpha$ STEP and an AC servo motor were rotated once.

● Stopping accuracy of  $\alpha$ STEP (Actual measurements)



[Example] When the ball screw lead is 10 mm, the  $\alpha$ STEP stopping accuracy is  $\pm 1.4\mu\text{m}$  and the repetitive positioning accuracy of a common ground ball screw is  $\pm 10\mu\text{m}$ .

● Stopping accuracy of AC servo motor with a common 20-bit encoder (Actual measurements)



The stopping accuracy of an AC servo motor is the encoder resolution  $\pm 1$  pulse\*. The above shows the actual values that result from differences in the encoder's assembly.  
\*1,048,576 p/rev at 20 bits

# Advantages of the **AZ** Series

The **AZ** Series *QSTEP* hybrid control system features absolute sensing using a multiple-rotation mechanical sensor. The system continuously monitors the motors position even during a sudden power off situation.

- Mechanical-Type Sensor / Multiple-Rotation Absolute System**  
 ±900 rotations the driver knows where the motor position is.  
 No return to home is necessary.
- Home Setting Method Improves Return-to-Home Accuracy**  
 Home operation does not depend on a sensor sensitivity.
- No External Sensors or Batteries Required**  
 The driver uses the motor sensor to determine rotor position
- No Hunting / No Gain Tuning**  
 Utilizes the high response and mechanical advantage of a Stepper Motor
- Continues Operation Even with Sudden Load Fluctuations and Sudden Acceleration**  
 Runs in normally open loop control. If overloaded, switches to closed loop control.
- Monitoring Functions**  
 Speed, motor, driver temperature, load factor, odometer and much more can easily be monitored.

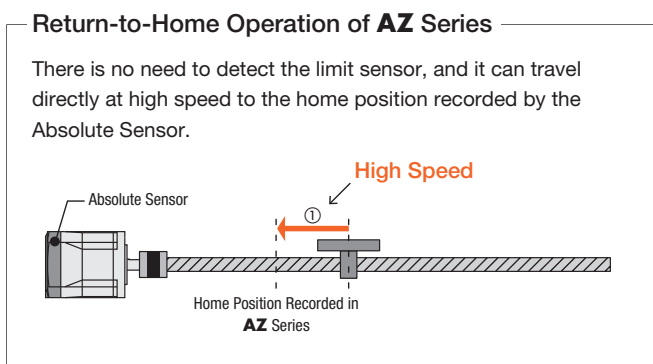
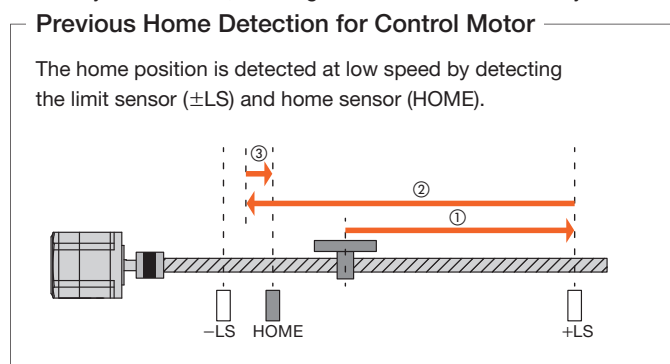


## No External Sensors Required

The **AZ** Series driver uses the positioning information managed by the mechanical absolute sensor. The position information can be preserved, even if the power turns off or if the cable between the motor and the drive is disconnected. No battery required.

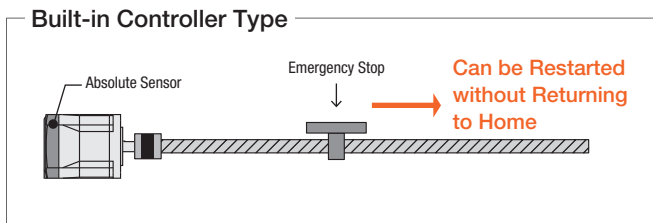
### Shortened Reset Time ① High Speed Return-to-Home

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

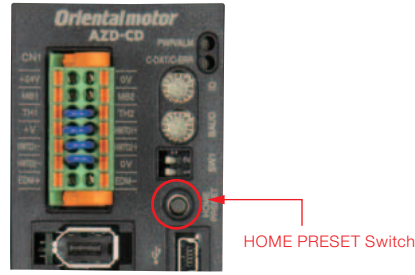


### Shortened Reset Time ② Return-to-Home is not Necessary

If the power shuts down during a positioning operation, the positioning information is retained. For built-in controller types, positioning operations can restart without performing a return-to-home operation when recovering from an emergency stop of the production line or a blackout.



● **AZ Series Driver Types**

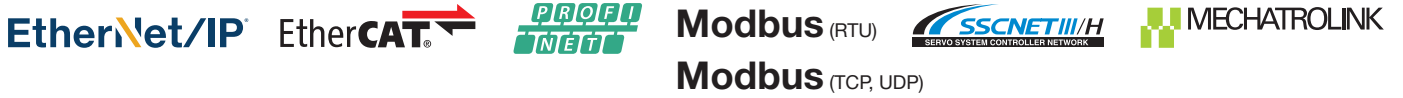


**Home Setting Method**

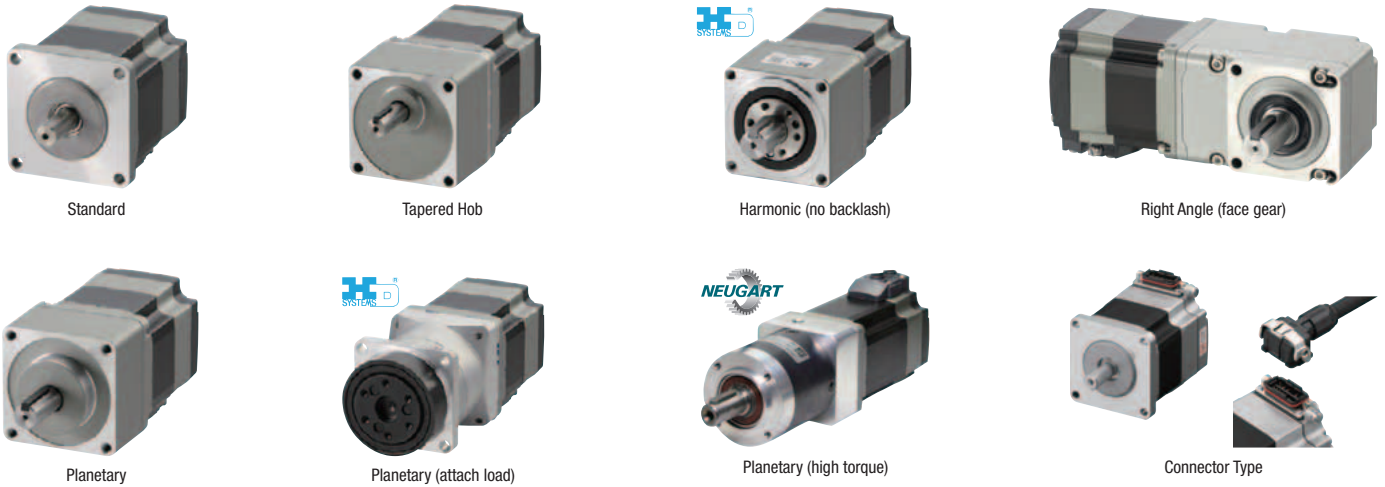
The home position can be easily set by pressing a switch on the drivers surface, which is saved by the Mechanical Absolute Encoder. In addition, home setting is possible with the **MEXE02** data setting software or external input signal.

- AC or DC Input
- Stored Data, Pulse Input Type
- Network / RS-485 / Monitoring
- No Additional Sensors Required

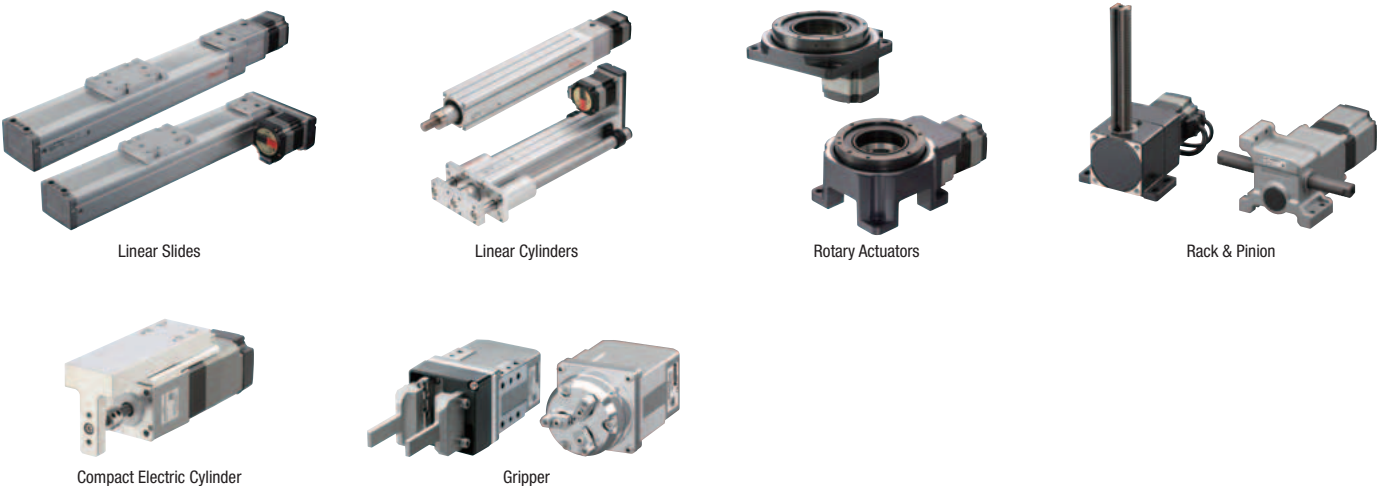
Home position is easy to adjust by moving the motor to a desired position manually.



● **Motor / Geared Types**



● **Actuator Types**





● AC Input – Single Axis



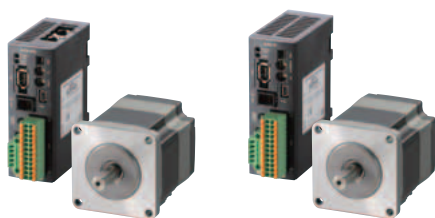
AC Input

**AZ Series**



Frame Sizes	1.65 in (42 mm), 2.36 in (60 mm), 3.35 / 3.54 in (85 / 90 mm)	
Holding Torque	42 oz-in~974 lb-in (0.3~110 N-m)	
Resolution (P/R)	100~10,000	
Options	Electromagnetic Brake	
Gear Types	Tapper Hob / Planetary / Right Angle / Harmonic	
Driver Types	Pulse / RS-485 / EtherNet/IP / EtherCAT / Profinet	
Main Power Supply	Single-Phase (VAC)	100-120 / 200-240
	Three-Phase (VAC)	200-240
Control Power Supply (VDC)	24	

● DC Input – Single Axis



DC Input

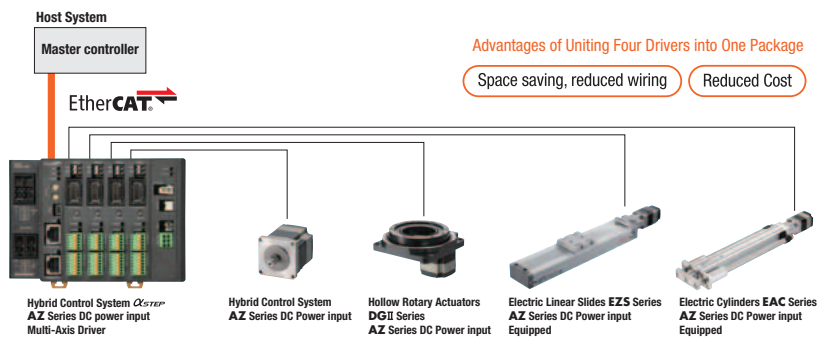
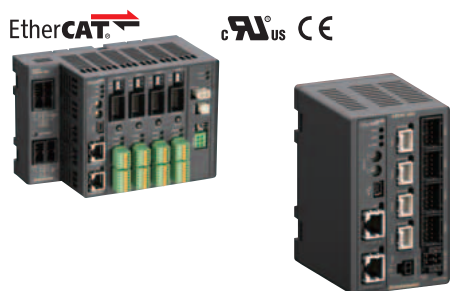
**AZ Series**



Frame Sizes	0.79 in (20 mm), 1.10 in (28 mm), 1.38 in. (35 mm), 1.65 in (42 mm), 2.36 in (60 mm)	
Holding Torque	2.8 oz-in~354 lb-in (0.02~40 N-m)	
Resolution (P/R)	100~10,000	
Options	Electromagnetic Brake	
Gear Types	Tapper Hob / Planetary / Right Angle / Harmonic	
Driver Types	Pulse / RS-485 / EtherNet/IP / EtherCAT / Profinet	
Power Supply	VDC	24/48

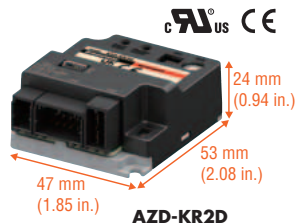
\*Profinet Only

Multi- Axis (DC Input)  
2, 3 or 4 axis type



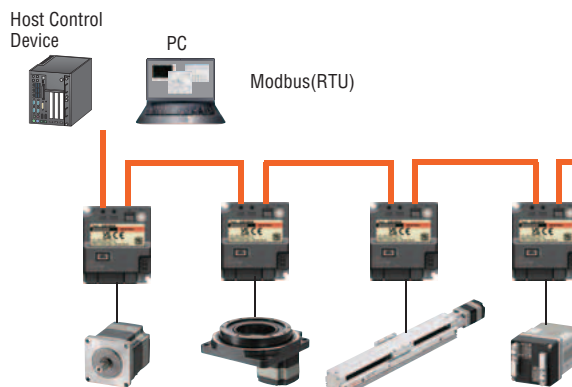
● The connected motors and linear & rotary actuators are representative examples.

mini Driver



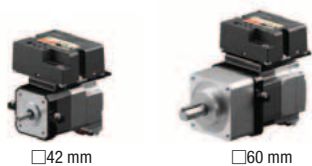
**EtherCAT**  
**EtherNet/IP**  
**PROFINET**  
**Modbus (RTU)**  
**Modbus (TCP, UDP)**

FA Network Compatible



Mounting Brackets

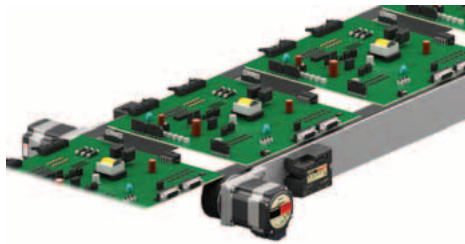
● This allows **AZ** mini drivers to be mounted on the side of an **AZ** motor connector type.



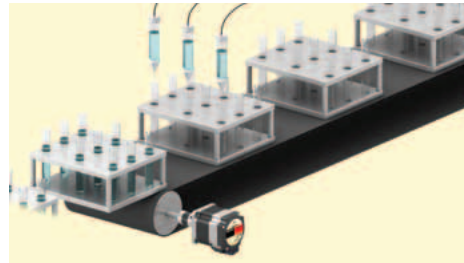
\*By using **AZD-KR2D** in combination with a network converter (gateway), control by CC-Link, MECHATROLINK or EtherCAT can be supported.

# Application Examples

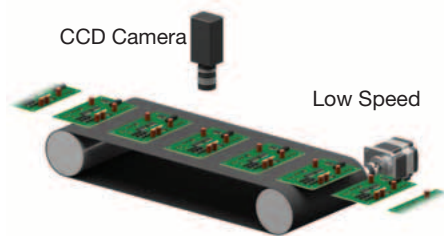
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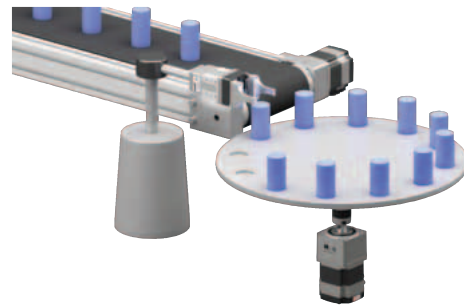
Complete synchronization with commands



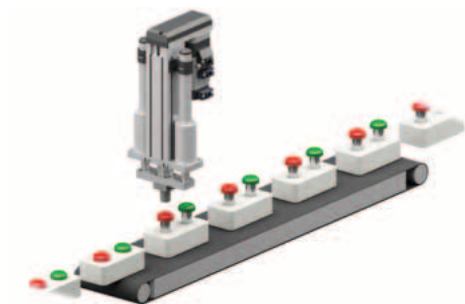
Frequent repetitive starting and stopping



Low-vibration operation



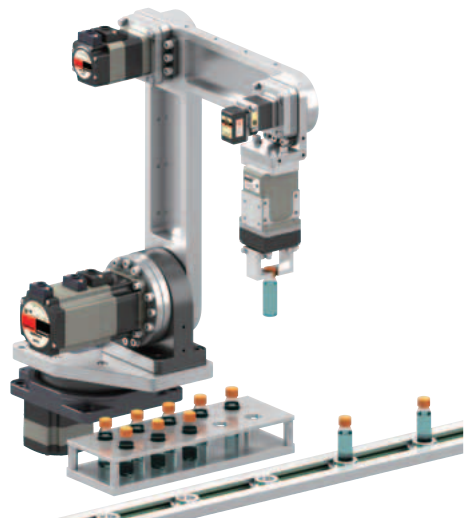
Transfer of large inertial load



Push-motion operation



X-Y-Z gantry system



Arm robot  
Refer to Robot Controller **MRC01** on Page 18.



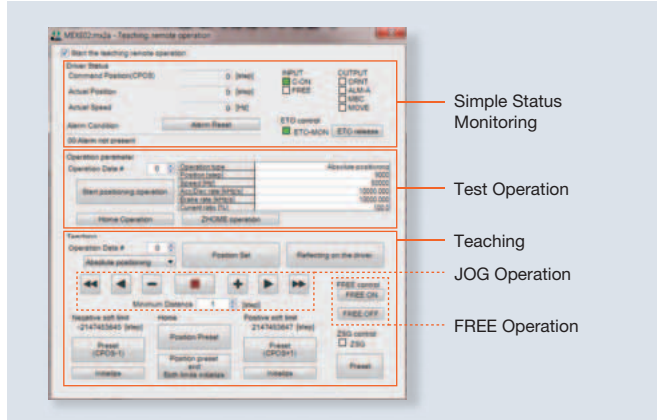
Parallel link robot

# Support Software MEXE02

The **MEXE02** support software is a universal motion control and monitor software used with many products from Oriental Motor, such as the **AZ Series**, **CVD Series** or brushless DC drivers for the **BLE2 Series** and **BLV Series R Type**. The **MEXE02** support software is ideal for designing and testing motion to production, by copying the programs to the driver to monitoring the status of motion applications. The programming method of the **MEXE02** software differs from traditional stored program type controllers. Instead of writing long programs and subroutines, data sets are written in the form of a table. Each data set contains parameters for a specific motion profile with its own starting speed, operating speed, acceleration/deceleration rates, and torque (current)...etc. This software is free and can be easily downloaded from our website.

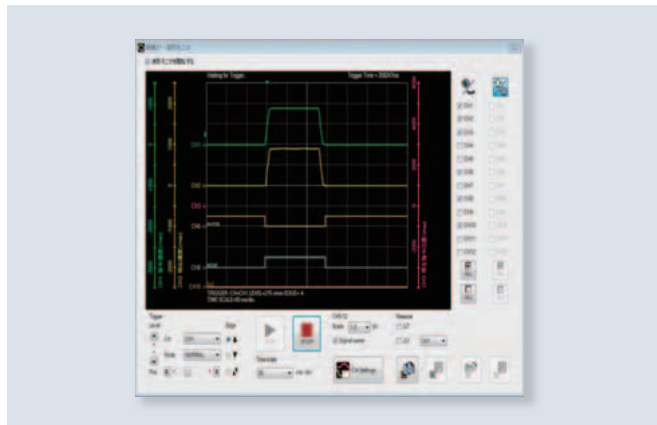
## Teaching and Remote Operations At startup

It is possible to easily set the home position and drive the motor from the support software. Teaching and test operation are performed before connecting to the host system, which shortens the equipment's startup time.



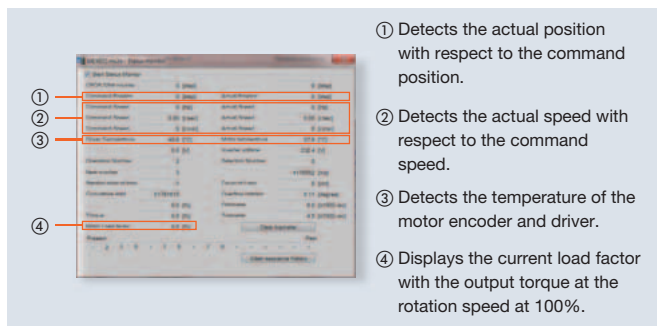
## Waveform Monitoring At startup

Monitors the motor's operating status and output signal status with oscilloscope-like images. Use at equipment startup, adjustment, etc.



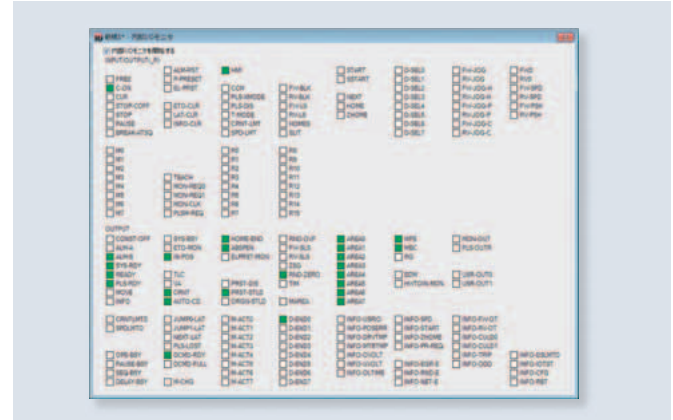
## Status Monitoring At startup

Besides operating speed, motor and driver temperature, load factor monitoring, and cumulative rotations, etc., can also be monitored since the start of use. The desired signals can be output for these items, allowing for efficient maintenance.



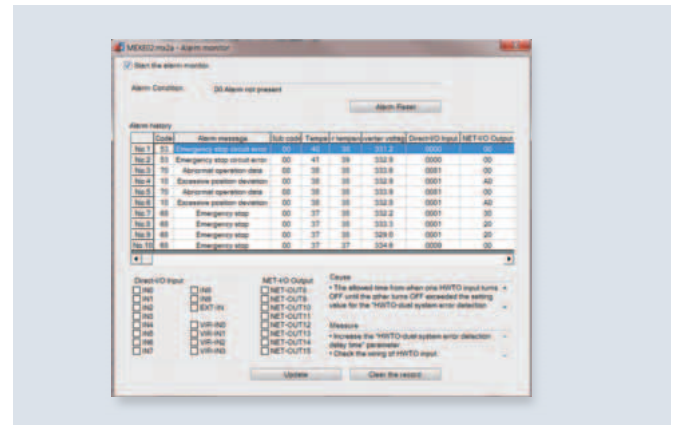
## I/O Testing At startup While running

Easily performs input signal monitoring and forced output of output signals. This is a convenient function for checking connection with the host system and network I/O operations.



## Alarm Monitoring At startup

When any abnormality occurs, the details of the abnormality, operating status and countermeasure can be verified.



## Multi-Monitoring Compatibility

Several setting screens for data setting, test operation, monitoring, etc. can be opened and used on separate screens at the same time. This makes equipment startup, adjustment, etc. easier.



# Linear & Rotary Actuators

**αSTEP Hybrid Control System**

A broad selection of linear & rotary electric actuators using the **AZ Series αSTEP** hybrid control system as the driver source are available for a wide range of motion requirements.

● **Electric Slide**



● **Electric Cylinder**



**NEW MRC01** robot controller available for gantry applications.



Refer to page 18.

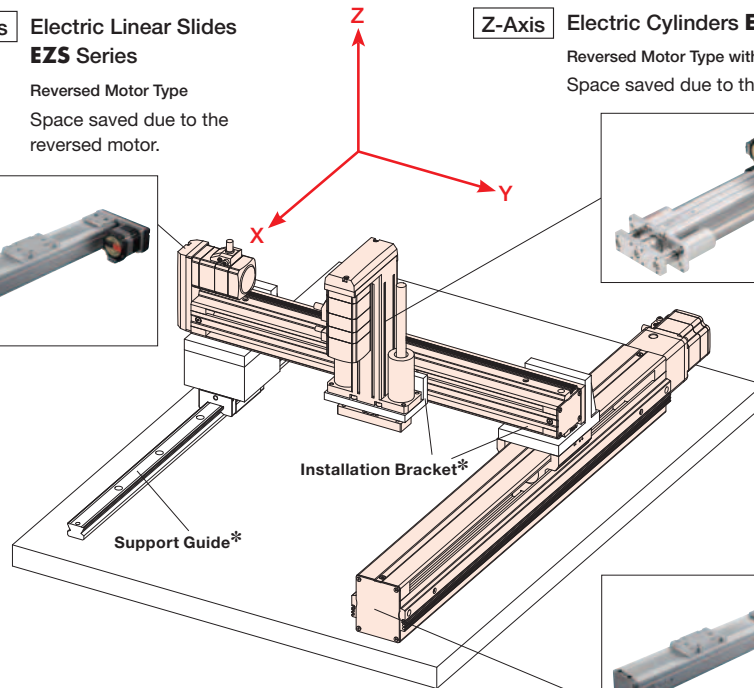
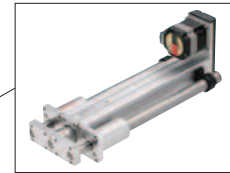
**Y-Axis Electric Linear Slides EZS Series**

Reversed Motor Type  
Space saved due to the reversed motor.



**Z-Axis Electric Cylinders EAC Series**

Reversed Motor Type with Shaft Guide Cover  
Space saved due to the reversed motor.

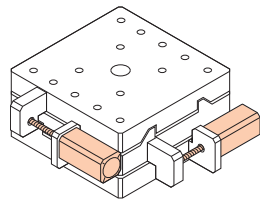


\*Support guide and installation brackets supplied by the customer.

**X-Axis Electric Linear Slides EZS Series Straight Type**



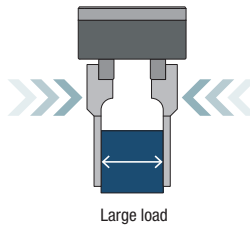
● **Compact Electric Cylinder**



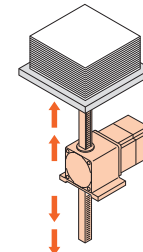
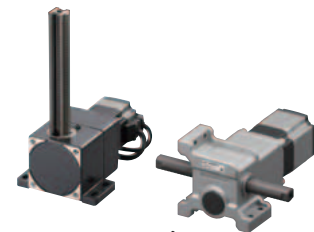
● **Gripper**



\*Gripper Arms not included



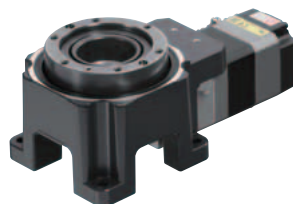
● **Rack & Pinion**



● **Hollow Electric Rotary Actuator**



Vertical Mount Type



Horizontal Mount Type



Large-Diameter Hollow Output Table  
Makes Simple Wiring and Piping Possible



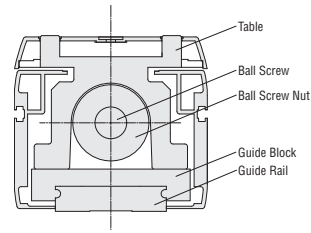
# Linear Motion / Transport

## EZS Series



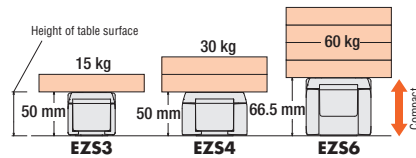
### ● High Rigidity / High Accuracy Guide

\*LM Guide and Ball Retainer are registered trademarks of THK.



Traveling Parallelism of 0.03 mm or Less

### ● Slim with High Transportable Mass



## EZS Series: with AZ Series



Max. Speed (mm/s)	800	
Max. Transportable Mass - Vertical (kg)	30	
Max. Transportable Mass - Horizontal (kg)	60	
Repetitive Positioning Accuracy (mm)	±0.02	
Stroke Length (mm)	50 - 850	
Power Supply	VDC	24/48
	Single-Phase (VAC)	100-120 / 200-240
	Three-Phase (VAC)	200-240

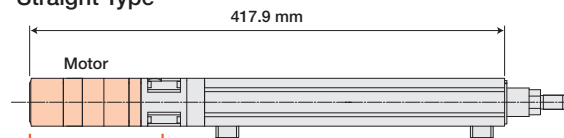
# Push / Pull

## EAC Series

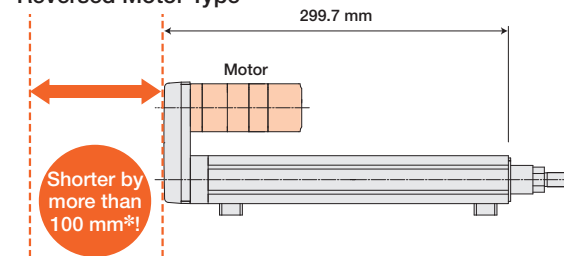


### ● High Strength, Space Savings

#### Straight Type

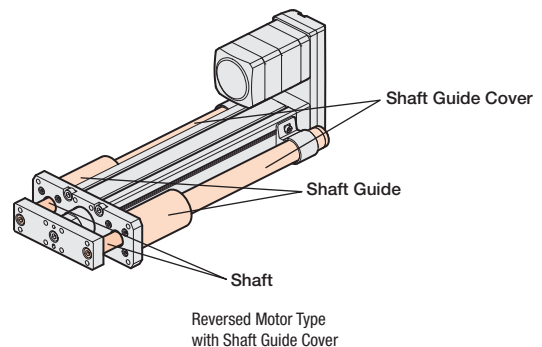


#### Reversed Motor Type



\*When electromagnetic brake is installed

### ● With or Without Guide Cover



## EAC Series: with AZ Series



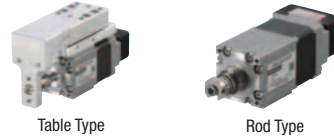
Max. Speed (mm/s)	600	
Max. Transportable Mass - Vertical (kg)	30	
Max. Transportable Mass - Horizontal (kg)	60	
Repetitive Positioning Accuracy (mm)	±0.02	
Stroke Length (mm)	50 - 300	
Max. Thrust Force (N)	400	
Max. Push Force (N)	500	
Power Supply	VDC	24/48
	Single-Phase (VAC)	100-120 / 200-240
	Three-Phase (VAC)	200-240

# Push / Pull / Transport

DR/DRS Series



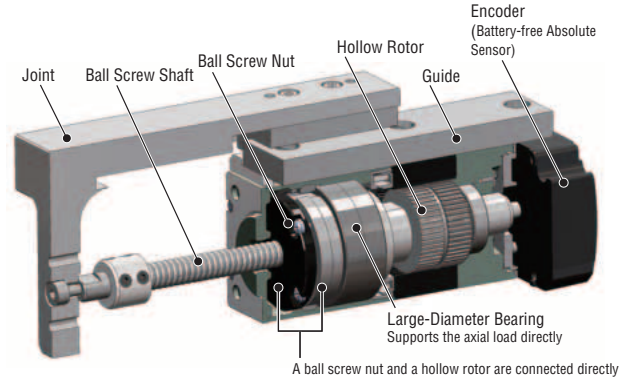
- Micromovement and High Positioning Accuracy
- Compact, Space Saving



DR/DRS Series: with AZ Series

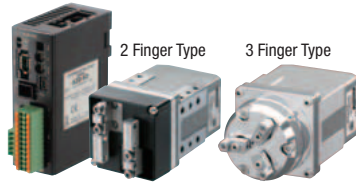


Frame Size (mm)	20 / 28 / 42 / 60	
Max. Speed (mm/s)	200	
Max. Transportable Mass - Vertical (kg)	50	
Max. Transportable Mass - Horizontal (kg)	50	
Max. Thrust Force (N)	500	
Repetitive Positioning Accuracy (mm)	±0.003/±0.005/±0.01	
Stroke Length (mm)	25~50	
Options	Brake / Guide / Ball Screw Cover / Installation Plate	
Power Supply	VDC	24/48

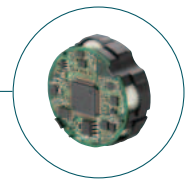
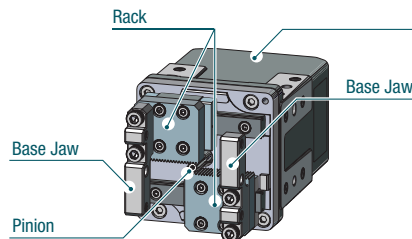


# Gripping

EH Series



- High Reliability, Closed Loop Control



Battery-Free Absolute Sensor (ABZO Sensor)

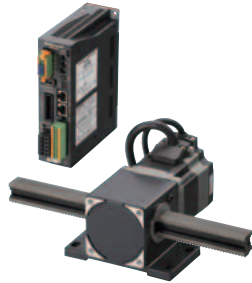
Type	2-Finger*1 Square	3-Finger Cylinders, complex shapes, spheres
Suitable for Gripping Load Shape		
Moving Range		<p>When Open: P.C.D. <math>\phi</math>30.9 mm</p> <p>When Closed: P.C.D. <math>\phi</math>7 mm</p> <p>Opening Width: <math>\phi</math>23.9 mm</p>
Max. Gripping Force [N]	25	50
Permissible Load [N] (Permissible axial load [N])*2	5	15

\*1 The values correspond to the specifications for Model 4

\*2 For 3-finger type

# Linear Motion / High Power

## L Series

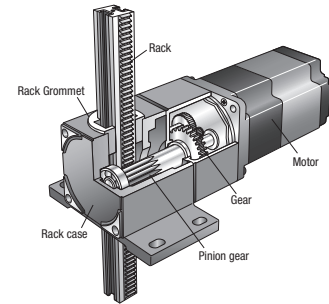


### L Series: with AZ Series

Frame Size (mm)		60/80
Max. Speed (mm/s)	High-Speed Type	500
	Large Transportable Mass Type	90
Max. Transportable Mass (kg)	High-Speed Type	20
	Large Transportable Mass Type	100
Max. Thrust Force (N)	High-Speed Type	220
	Large Transportable Mass Type	1008
Stroke Length (mm)		100~1000
Type		Horizontal / Vertical
Option		Electromagnetic Brake
Power Supply	VDC	24/48
	Single-Phase (VAC)	100-120, 200-240
	Three-Phase (VAC)	200-240



● Compact and High Strength



## LJ Series



LJ Linear Head

αSTEP AZ Series

### LJ Series: with AZ Series

Frame Size (mm)		90
Max. Speed (mm/s)		500
Max. Transportable Mass (kg)	40 mm/s	200
	188 mm/s	55
Max. Thrust Force (N)		1961
Stroke Length (mm)		100~700
Type		Horizontal / Vertical
Combination Motors*		<b>AZ Series TS Geared Type</b>
Power Supply	Single-Phase (VAC)	100-120
	Three-Phase (VAC)	200-240



\*Also available with Three-Phase Induction Motors **KIIS** Series electromagnetic type

# Rotate

## DGII Series



Vertical Mount Type

Horizontal Mount Type

● Can be Linked to Cobots



FANUC

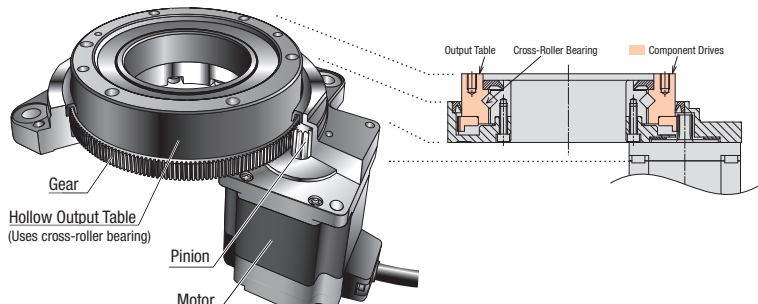
● High Positioning Accuracy, Non-Backlash

### DGII Series with AZ Series

Frame Size (mm)		60/85/130/200
Diameter of Hollow Section (mm)		28/33/62/100
Permissible Torque (N-m)		50
Permissible Axial Load (N)		4000
Lost Motion		2 arcmin
Option		Electromagnetic Brake
Repetitive Positioning Accuracy		±15 sec / ±0.004°
Power Supply	VDC	24/48
	Single-Phase (VAC)	100-120 / 200-240
	Three-Phase (VAC)	200-240



● Large-Diameter, Hollow Output Table



# Network / Controller Products

## Overview

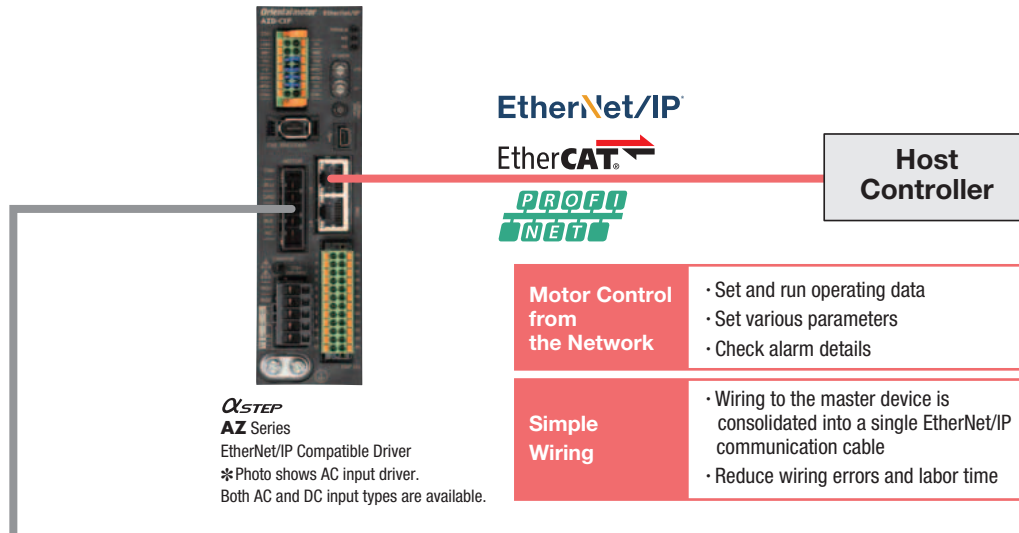
Motor control via network communication can detect the status of the motor directly by data. This results in a shorter development period, increased reliability and maintainability of the equipment.









By expanding the network supported product line, Oriental Motor meets diversifying network environments of factory automation (FA).



Oriental Motor offers single axis EtherNet/IP, EtherCAT, or Profinet communications in our **AZ** Series family of stored data drivers.

\*Different part numbers required



AZ Series Motors and Linear & Rotary Actuators			
● The Products shown below are representative examples.			
AC Input / DC Input			
 <b>AZ Series</b>	 Hollow Rotary Actuators <b>DGII Series</b>	 Electric Linear Slides <b>EZS Series</b>	 Electric Cylinders <b>EAC Series</b>
AC Input / DC Input		DC Input Only	
 Rack and Pinion Systems <b>L Series</b>	 Compact Electric Cylinders <b>DR Series</b>	 Compact Electric Cylinders <b>DRS2 Series</b>	 Electric Gripper <b>EH Series</b>

• EDS File for EtherNet/IP  
An EDS file has been prepared to allow EtherNet/IP-compatible products to be used more easily.  
The EDS file can be downloaded from the Oriental Motor website.

• ESI File for EtherCAT  
An ESI file has been prepared to allow EtherCAT compatible products to be used more easily.  
The ESI file can be downloaded from the Oriental Motor website.

• GDS File for PROFINET  
A GDS file has been prepared to allow PROFINET-compatible products to be used more easily.  
The GDS file can be downloaded from the Oriental Motor website.

EtherNet/IP™ is a trademark of ODVA, Inc

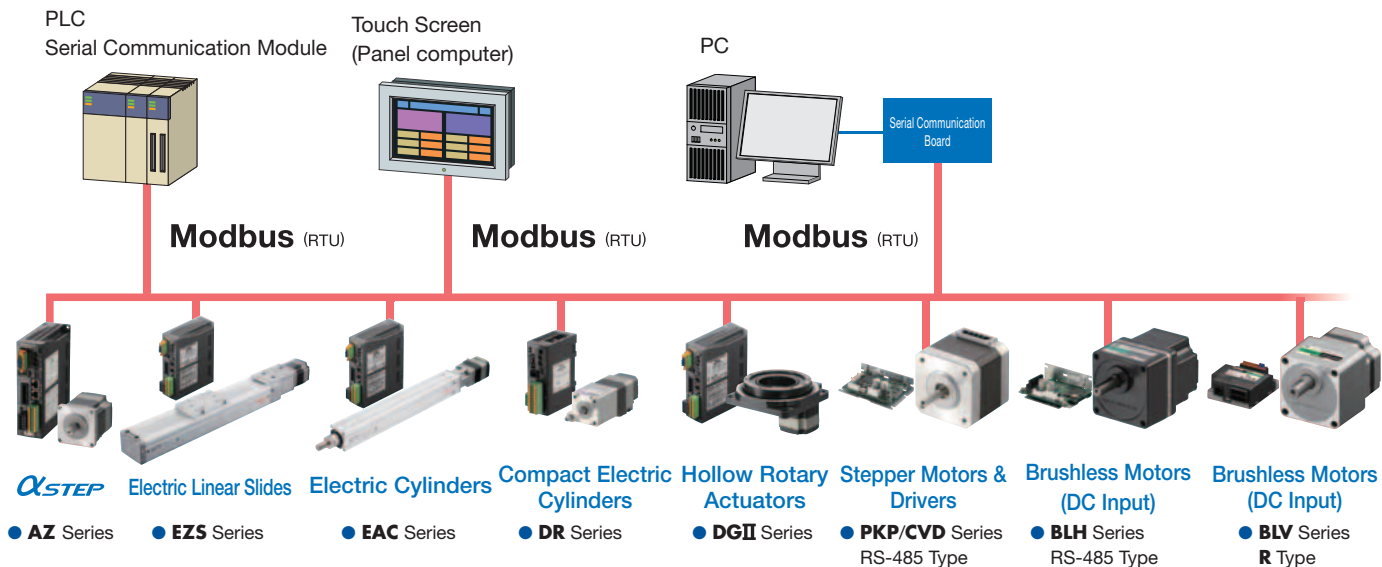
EtherCAT is a registered trademark licensed by Beckhoff Automation GmbH, Germany

PROFINET is a trademark or registered trademark of PROFIBUS Nutzerorganisation e.V. (PNO).



# Modbus (RTU)

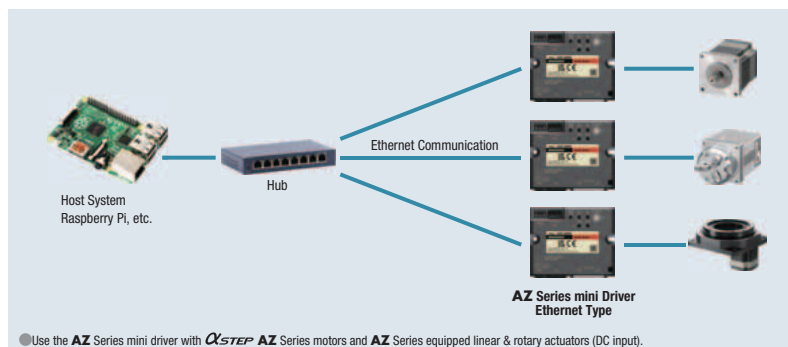
Oriental Motor offers single axis Modbus (RTU) communication in our **AZ, PKP/CVD** RS-485 Type, **BLV R** Type and linear based products.  
 \*Modbus is a registered trademark of Schneider Automation Inc.



# Modbus (TCP, UDP)



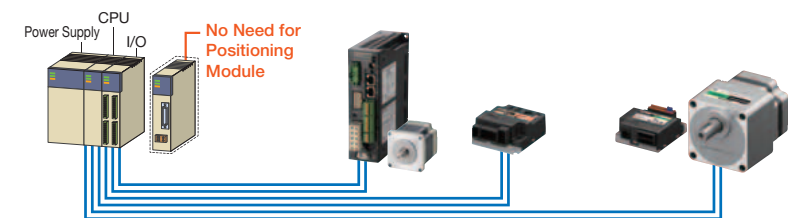
**Modbus (TCP, UDP)**  
**AZ Series mini Driver**  
 Ethernet Type



# Built-In Controller (Stored Data Type)

For I/O or Network control, stored data drivers with built-in controller ability (stored data type) using our **MEXE02** Support Software (Free Download) is available in our **AZ Series** and **BLV Series R** Type of products.

- Easy Control
- Low-Cost Design
- Space Saving



The operating data is set in the driver, and is then selected and executed from the host system.

- Simple Wiring
- No Additional Pulse Module Required
- I/O Control
- Driver / Motor Monitoring
- Daisy Chain up to 16 Drivers
- Use with **MEX02** Support Software

## Gateways

Oriental Motor offers additional Gateway Network Converters.

- \*Ether**CAT**™ is a registered trademark licensed by Beckhoff Automation GmbH, Germany
- \*MECHATROLINK is a registered trademark of MECHATROLINK Members Association
- \*SSCNETIII/H is a registered trademark of Mitsubishi Electric Corporation

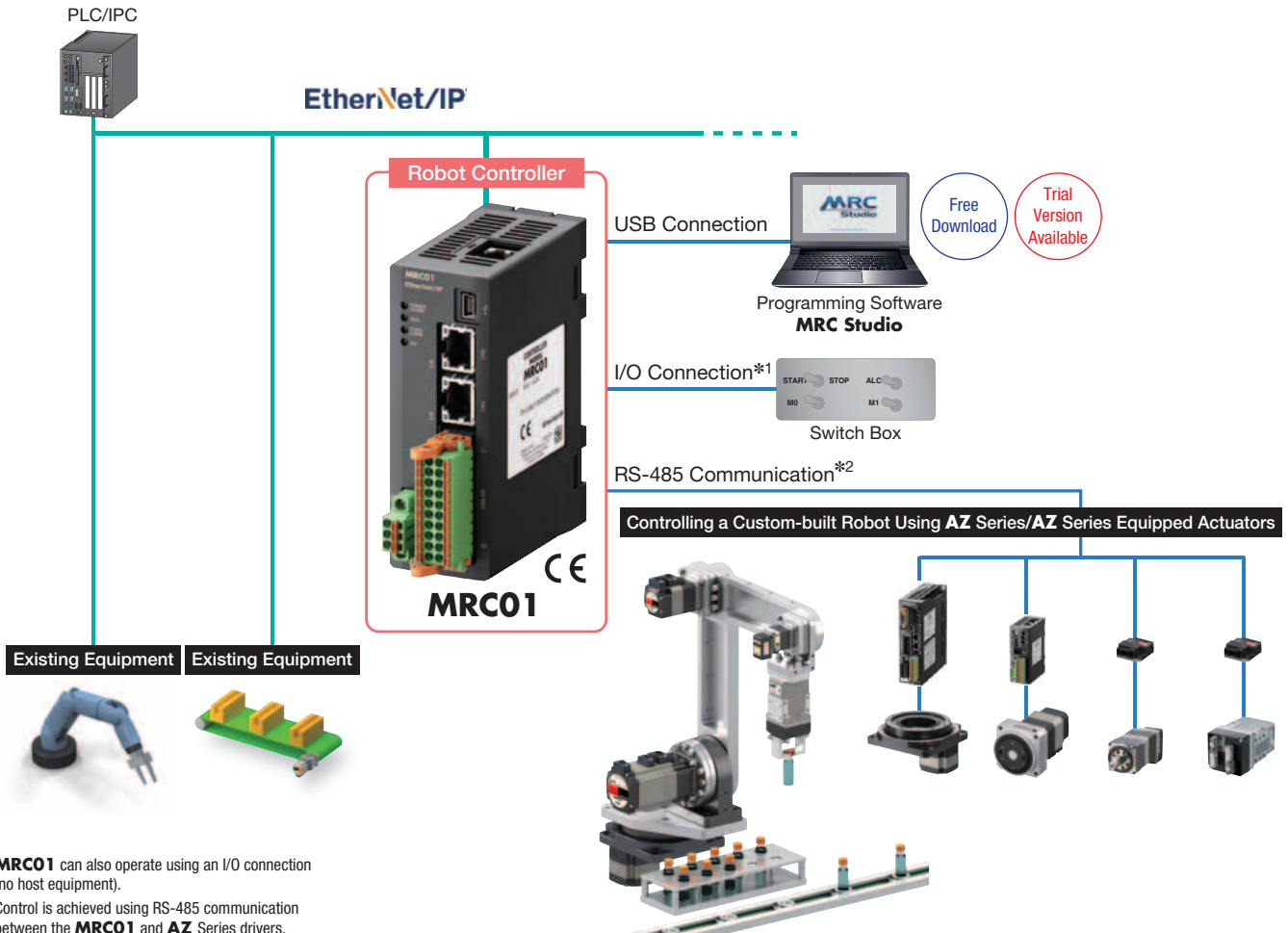


# Robot Controller

The **MRC01** robot controller supports easy programming and control of in-house designed custom built robots. Use the **αSTEP AZ** Series family of products to support your in-house design for improved performance and ease of use.

## ● Easily Introduce Custom-Built Robots to Existing Systems

The connection between the **MRC01** and host system is controlled directly via EtherNet/IP™. Custom-built robots can be added easily, without the need to make major changes to the control system in the existing equipment.



## ● Applicable Products

This controller can connect to the following **AZ** Series drivers. It can also be connected to an **AZ** Series-equipped Linear & Rotary Actuators.

### AZ Series Drivers

- Built-in Controller Type
  - Single-Phase 100-120 VAC, Single-Phase/Three-Phase 200-240 VAC
  - 24/48 VDC
- mini Driver RS-485 Communication Type
  - 24/48 VDC

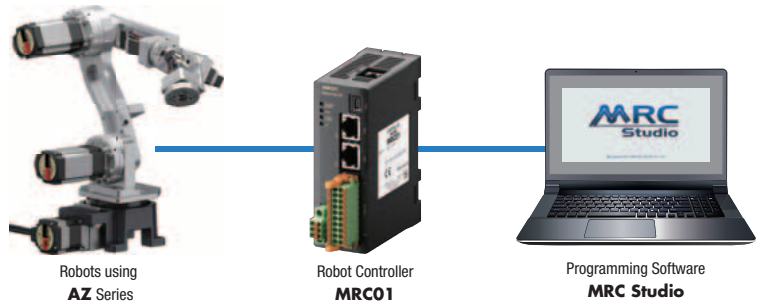
### AZ Series Motors, AZ Series-Equipped Linear & Rotary Actuators

- Motors
- Hollow Rotary Actuators **DGII** Series
- Compact Linear Actuators **DR** Series **DR52** Series
- Electric Linear Slides **EZS** Series
- Electric Cylinders **EAC** Series
- Lack and Pinion Systems **L** Series
- Electric Gripper **EH** Series

# Easy Setup, Even for Beginners

The Programming Software “**MRC Studio**” simplifies the robot setup process, guiding users from the initial configuration to the final programming stages.

\*The **MRC Studio** software and EDS files can be downloaded for free from the Oriental Motor website.



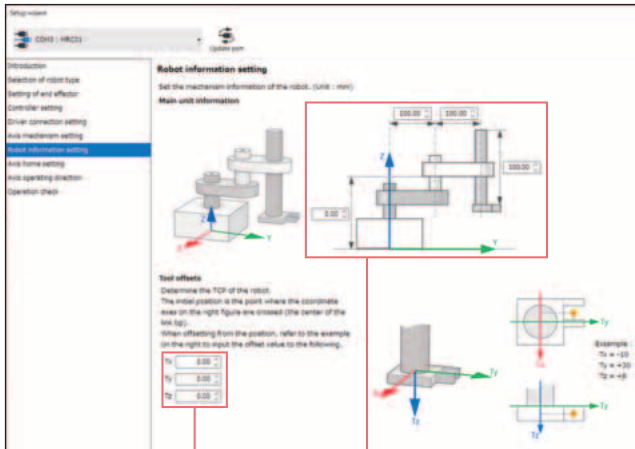
● Follow Set Up Steps



Proceed through initial setting of the robot by following the wizard menu.



● Input Dimensions (Arm Length, etc.) With the Help of the Illustration



Dimensions are entered directly into the input spaces on the illustrations.

● Select the Robot Type

**Example**

**SCARA**

2 link elevating end axis + Rz axis

2 link elevating base axis + Rz axis

**Articulated**

3 link base axis swivels + Rz axis

3 link linear motion of base axis + Rz axis

**Perpendicular**

X-Y-Z

# Servo Motors

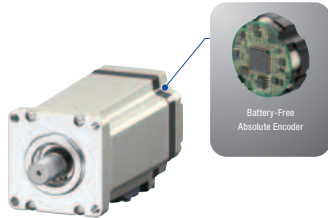
**AZX** Series servo motors are suitable for continuous speed control or positioning applications with a large amount of travel since they achieve high torque in the high speed range.

The basic operations are the same as the **AZ** Series, making combined use in equipment easy.

## Battery-Free Absolute Encoder

The **AZX** Series is equipped with the same battery-free mechanical absolute encoder (ABZO sensor) as the **AZ** Series.

These are dedicated servo motors for positioning and continuous operation.



- **Mechanical-Type Encoder**  
Holds positioning information even when powered off
- **Multi-Turn Absolute Encoder**  
Absolute position detection is possible with  $\pm 900$  rotations (1800 rotations) of the motor shaft from the reference home position

### ● No External Sensors Required

Thanks to the absolute system, a home sensor or external sensor is not required.

#### Advantages

- High-Speed Return-to-Home + Improved Return-to-Home Accuracy
- Reduced Cost
- Simple Wiring
- Not Affected by External Sensor Malfunctions

### ● Battery-Free

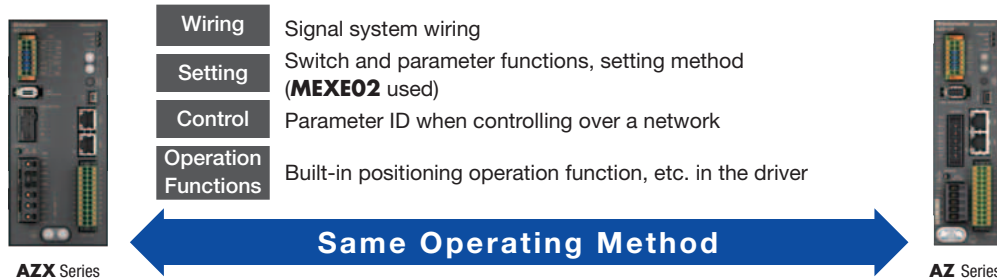
No battery is necessary for a mechanical-type encoder. Positioning information is managed mechanically by the ABZO sensor.

#### Advantages

- No Battery Replacement Required
- No Battery Installation Space Required (Unlimited driver installation possibilities)
- Safe for Overseas Shipping

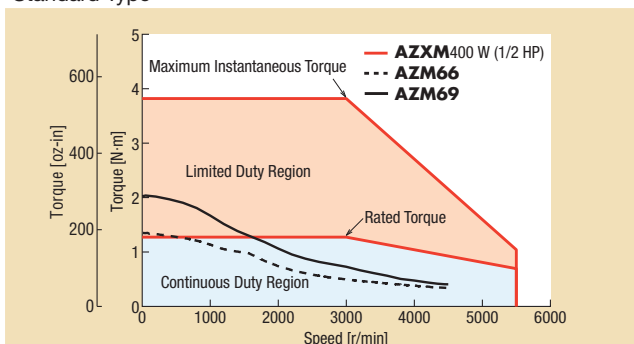
## Same Basic Operations as AZ Series

Using the **AZX** Series and **AZ** Series together in the same equipment can eliminate the work of operational changes.

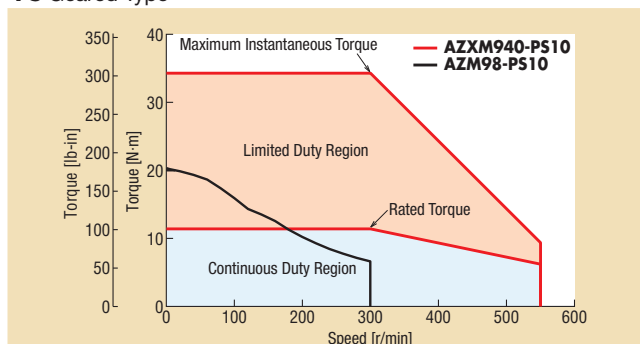


## High Torque in the High Speed Range

Standard Type



PS Geared Type



● This is a comparison of the speed – torque characteristics of the **AZX** Series and **AZ** Series. The **AZX** Series offers superior torque in the high speed range, the **AZ** Series is better in the low speed range.



# AZX Series



AC Input

## AZX Series

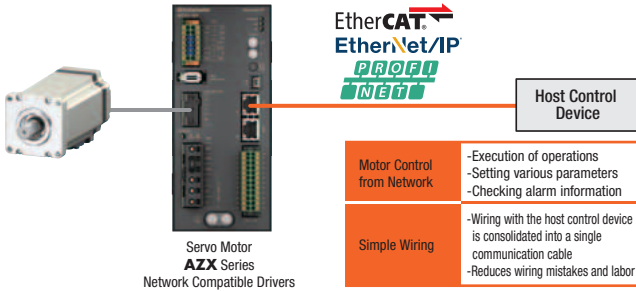


Output Power	400 W / 600 W	
Rated Torque	180 oz-in~370 lb-in (1.27~43.1 N.m)	
Max. Instantaneous Torque	540 oz-in~1400 lb-in (3.82~162 N.m)	
Resolution (P/R)	100-10,000	
Option	Electromagnetic Brake	
Gear Types	Planetary	
Driver Types	Ethernet, EtherCAT, Profinet	
Power Supply	Single-Phase (VAC)	200-240
	Three-Phase (VAC)	200-240



### ● Network Compatible Drivers

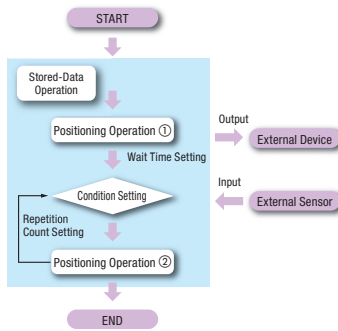
These drivers are EtherCAT, EtherNet/IP and PROFINET-compatible. The host control device and driver are connected with one communication cable, reducing wiring.



### ● Sequence Function Simplifies Programming\*

**AZX** Series positioning operations come with a variety of sequence functions, such as a timer setting between operations and linked operation, conditional branching, and loop counting. These can be set using the support software **MEXEO2**, which helps simplify the host controller's sequence program.

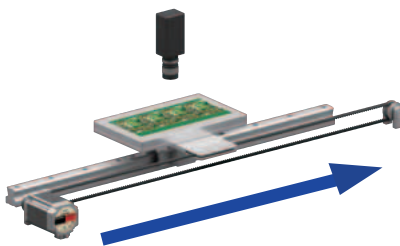
\*EtherCAT-compatible drivers are not supported.



- Positioning Operation Data Setting (Max. 256 points)
- General-Purpose I/O Signal Counts (Input 6, output 6)
- Communication I/O Signal Counts (Input 16, output 16)

# Application Examples

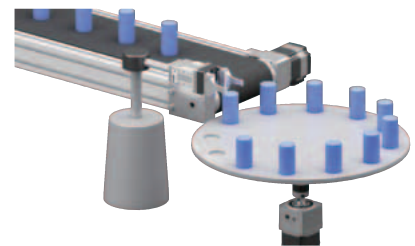
Long distance positioning



Long stroke machinery, such as inspection equipment



Continuous speed control



# Stepper Motors

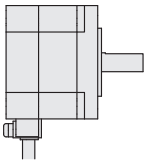


Oriental Motor offers a wide range of high torque stepper motors in frame sizes from 0.79 in. (20 mm) up to 3.54 in. (90 mm). Geared types, encoders, brake options and various motor windings are offered.

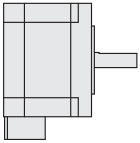
For improved performance, full time microstepping drivers with Smooth Drive are available, reducing noise and vibration and controlling heat output.

## Stepper Motor Types

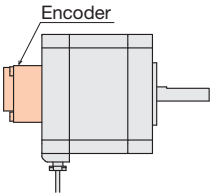
### ● Standard



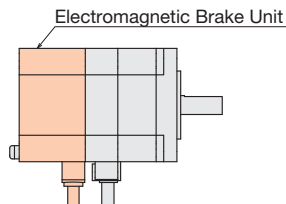
### ● High-Resolution Type



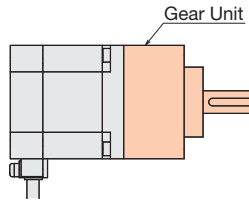
### ● Encoder Type



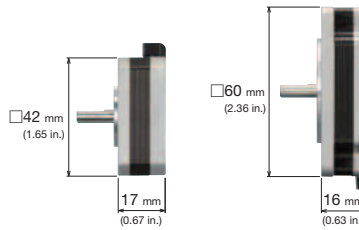
### ● Electromagnetic Brake Type



### ● Geared Type

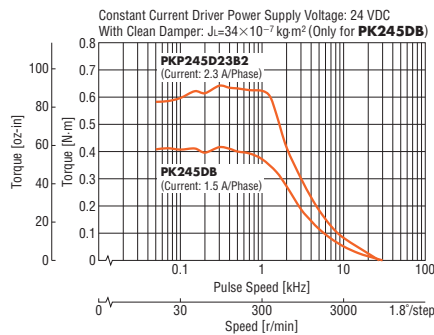


### ● Flat Type

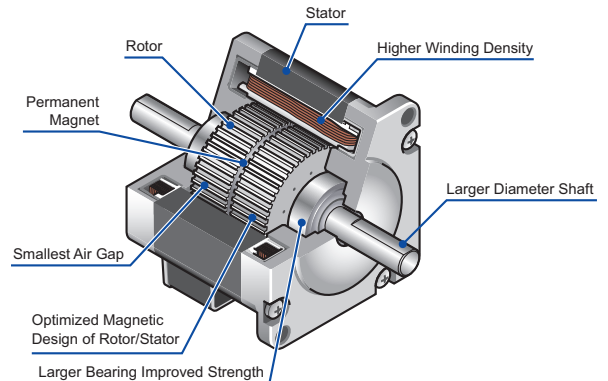


## PKP Stepper Motor Features

### ● Increased Torque: New PKP to PK

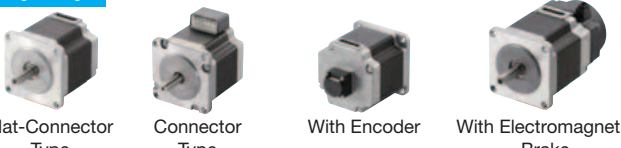
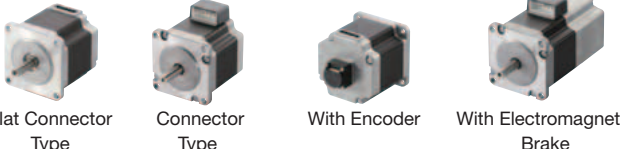
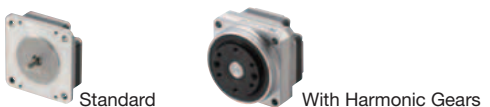



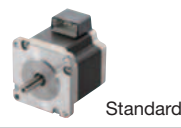
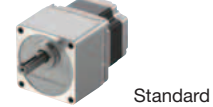


### ● New Design: Run Cooler or Downsize



# PKP Series

• Bipolar (4 lead wires) and unipolar (5 or 6 lead wires) wiring types are available.

2-Phase	Motor Type	Motor Frame Size	Additional Function		
			Standard	With Encoder	With Electromagnetic Brake
<b>Standard Type</b> (Basic Step Angle: 1.8°/step) High Strength  Flat-Connector Type    Connector Type    With Encoder    With Electromagnetic Brake Standard		□ 20 mm	●	●	—
		□ 28 mm	●	●	●
		□ 35 mm	●	●	●
		□ 42 mm	●	●	●
		□ 56.4 mm	●	●	●
		□ 60 mm*1	●	—	—
		□ 85 mm	●	—	—
<b>High-Resolution Type</b> (Basic Step Angle: 0.9°/step) High Strength  Flat Connector Type    Connector Type    With Encoder    With Electromagnetic Brake Standard		□ 28 mm	●	●	—
		□ 42 mm	●	●	●
		□ 56.4 mm	●	●	●
<b>Flat Type</b> (Basic Step Angle: 0.018° to 1.8°/step)  Standard    With Harmonic Gears		□ 42 mm	●	—	—
		□ 60 mm	●	—	—
		□ 51 mm	With Harmonic Gears		
		□ 61 mm	With Harmonic Gears		
<b>SH Geared Type</b> (Basic Step Angle: 0.05° to 0.5°/step)  Standard    With Encoder		□ 28 mm	●	NEW	—
		□ 42 mm	●	●	—
		□ 60 mm	●	●	—
		□ 90 mm*1	●	—	—
<b>CS Geared Type</b> (Basic Step Angle: 0.09 to 0.36°/step)  Standard		□ 28 mm	●	—	—
		□ 42 mm	●	—	—
		□ 60 mm	●	—	—
5-Phase	Motor Type	Motor Frame Size	Additional Function		
			Standard	With Encoder	With Electromagnetic Brake
<b>Standard Type</b> (Basic Step Angle: 0.72°/step) High Strength  Flat-Connector Type    Connector Type    With Encoder Standard		□ 20 mm*1	●	●	—
		□ 28 mm	●	NEW	—
		□ 42 mm	●	●	—
		□ 56.4 mm	●	●	—
		□ 60 mm	●	●	—
		□ 85 mm*1	●	—	—
<b>High-Resolution Type</b> (Basic Step Angle: 0.36°/step)  Standard		□ 28 mm	●	NEW	—
		□ 42 mm	●	NEW	—
		□ 60 mm	●	NEW	—
<b>TS Geared Type</b> (Basic Step Angle: 0.024 to 0.2°/step)  Standard		□ 42 mm	●	—	—
		□ 60 mm	●	—	—

●: 2 types are available—the "Flat Connector Type" and the "Connector Type".

\*1 This is the conventional PK Series.

Q-STEP Hybrid Control  
 AZ Series  
 Actuators  
 Network  
 Robot Controller  
 Servo Motors  
 Stepper Motors  
 Encoder / Linear Attachments  
 Brushless Motors  
 Standard AC Motors  
 Cooling Fans  
 Before Selection / Warranty

# CVD Driver




2-Phase

5-Phase

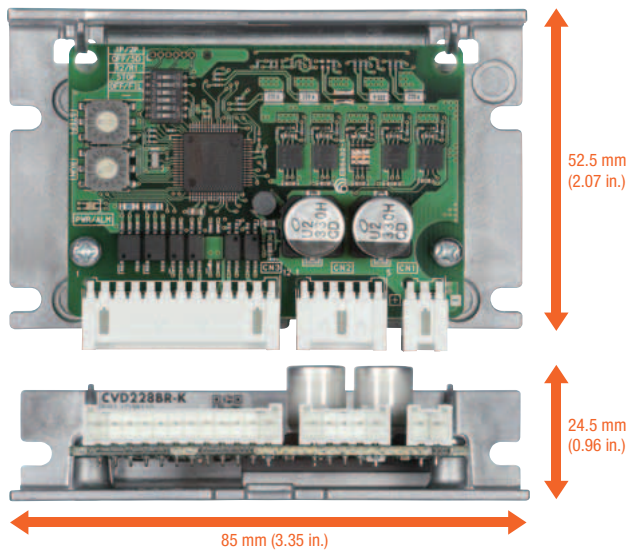
Driver for Stepper Motors

Compact

Low Vibration

<p>Bipolar Driver for 2-Phase Stepper Motors Driver for 5-Phase Stepper Motors <b>CVD Series—Pulse Input Type</b></p>	 <p>Right Angle with Installation Plate      With Installation Plate      Without Installation Plate</p>
<p>Bipolar Driver for 2-Phase Stepper Motors Driver for 5-Phase Stepper Motors <b>CVD Series RS-485 Communication Type</b></p>	 <p>Right Angle with Installation Plate      With Installation Plate</p>
<p>Bipolar Driver for 2-Phase/5-Phase Stepper Motors <b>CVD Series S Type</b>  Driver for 5-Phase Stepper Motors <b>CVD Series SC Type</b></p>	<p>● <b>CVD Series S Type</b></p>  <p>· SPI Communication-Compatible      · Pulse Input-Compatible</p>

● Industry's Top, Compact, High Performance Driver

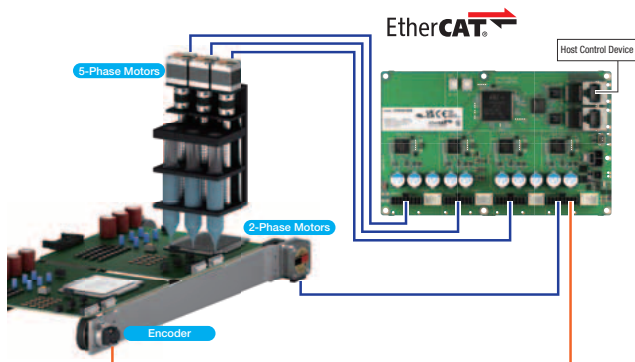


Mass 20 g (0.71 oz) to 70 g (2.47 oz)

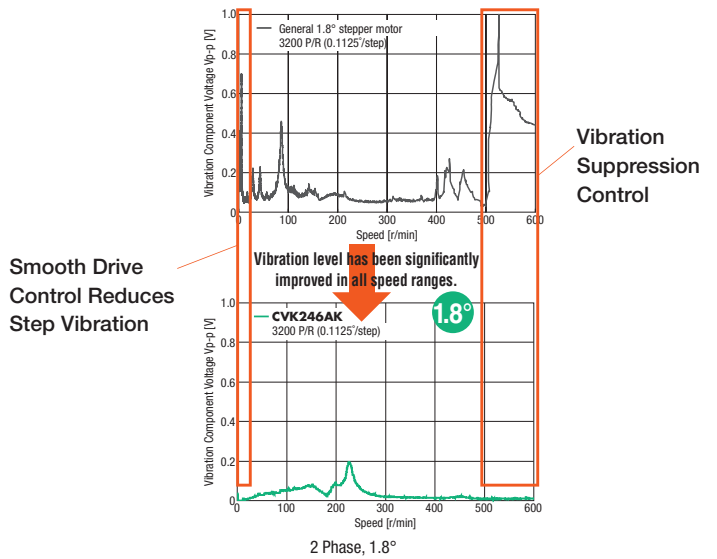
(Differs according to the driver type.)

● CVD Series Multi-Axis Type EtherCAT Compatible

This compact, lightweight 4-axis control driver reduces wiring and saves valuable space.

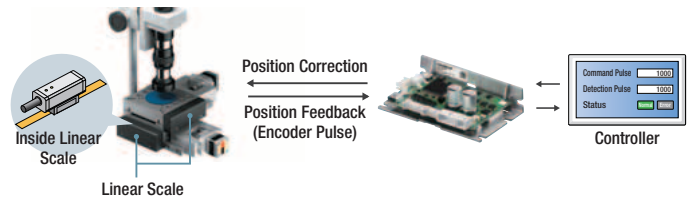


● Low Vibration with Full-Time Microstepping



● CVD Series Fully Closed-Loop Control Type

This driver enables precise positioning when combined with high resolution rotary and linear encoders.



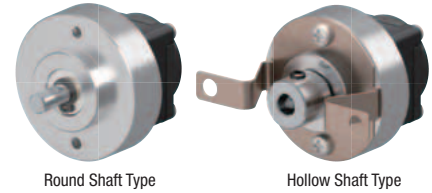


# Rotary Encoder and Stepper Motor Linear Attachments

## Rotary Encoder

The rotary encoder is a small, thin, lightweight, high-resolution incremental encoder.

- Outer Diameter  $\phi 30$  mm
- Voltage Output, Line Driver Output



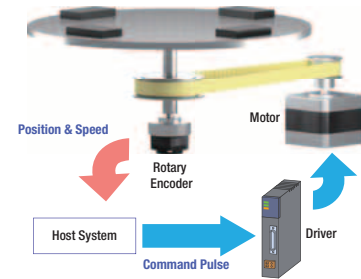
Round Shaft Type

Hollow Shaft Type

Output Shaft Type	Resolution (P/R)	Output Circuit Type
Round Shaft Type	1000	Line Driver
		Voltage
Round Shaft Type	2000	Line Driver
		Voltage
Hollow Shaft Type	1000	Line Driver
		Voltage
Hollow Shaft Type	2000	Line Driver
		Voltage

● Connection cables must be ordered individually.

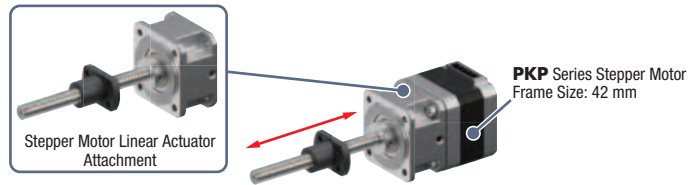
- Application Example  
In a belt-and-pulley mechanism, it is possible to detect the difference in rotation between the motor and mechanism due to belt deflection or breakage.



## Linear Actuator Attachment

Stepper motor linear actuator attachment is a linear motion mechanism with a lead screw and resin nut.

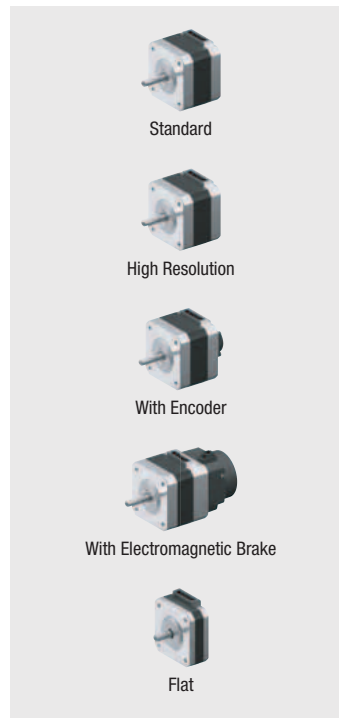
- Thrust Force 100 N
- Self-Locking Force 100 N
- Capable of Load Holding



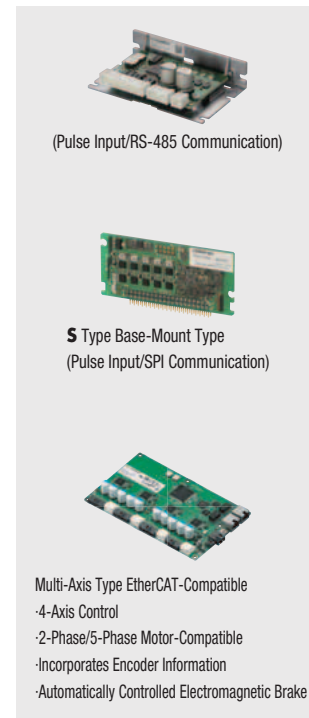
Mounting Adapter for Linear Actuator □42 mm



2-Phase/5-Phase Stepper Motors PKP Series □42 mm



CVD Series Driver



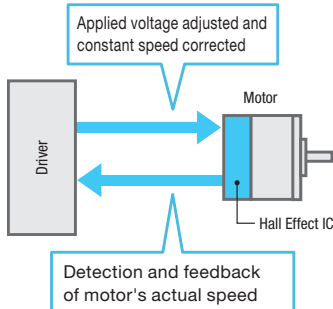
# Brushless Motors



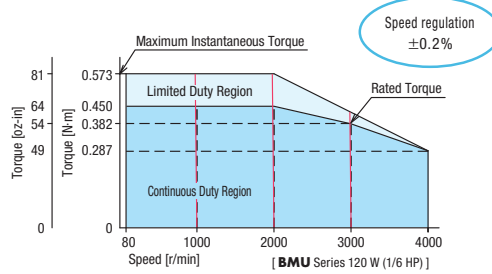
Brushless motors offer excellent energy efficiency and savings equivalent to IE4, excellent speed stability, as well as a wide speed control range. Brushless motors use permanent magnets in the rotor of three-phase motors. With Brushless motors there is no brush and commutator resulting in a maintenance free motor.

On the inside of the stator, there is a built-in hall effect IC (magnetic sensor) that detects magnetic field changes with the permanent magnets. The feedback signals from the hall effect IC of the motor are compared with the setting speed by the driver and the motor speed is adjusted continuously.

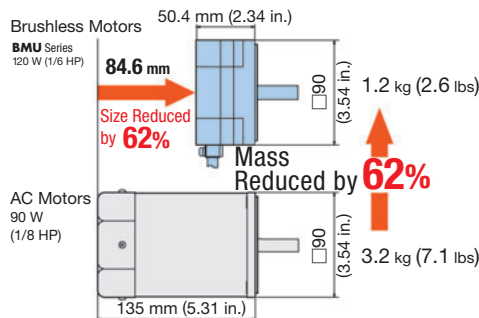
## Control Method



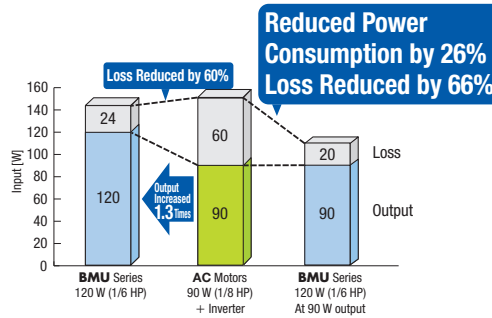
## Wide Speed Range: 80~4000 r/min



## Compact and Lightweight

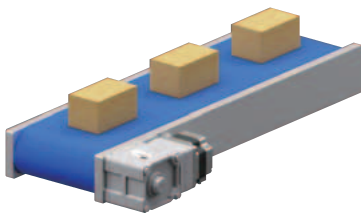


## Energy Savings



# Application Examples

Conveyor / Transportation



Agitators/Pumps/Dispensers







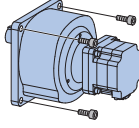


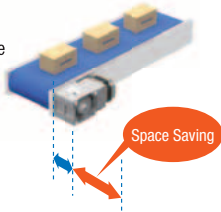


Torque Limiting



# Brushless DC Motor Gear Options

These gearheads can be combined with brushless DC motors and offer a wide variety of gear ratio variations and high strength types, expanding the available options.

Gearhead Type	Parallel Shaft Gearhead				Right-Angle Gearhead	Hollow Shaft Flat Gear	
	<b>GFV</b> Gears <b>GFS</b> Gears	<b>JV</b> Gears	<b>JB</b> Gears	<b>CS</b> Geared Motor	<b>JH</b> Gears	<b>FR</b> Gears	
External View							
Features	<ul style="list-style-type: none"> <li>Long Life, High Strength</li> <li>Output Shaft: Iron, Stainless Steel</li> </ul>	<ul style="list-style-type: none"> <li>High Gear Ratio up to 1/450</li> <li>Flange Installation</li> <li>Output Shaft: Stainless Steel</li> </ul>	<ul style="list-style-type: none"> <li>High Gear Ratio up to 1/1200</li> <li>Does not Saturate</li> <li>Permissible Torque</li> <li>Leg Installation</li> </ul>	<ul style="list-style-type: none"> <li>Increased Load-bearing Capacity (Compared to a parallel shaft gearhead)</li> <li>Center Shaft</li> </ul>	<ul style="list-style-type: none"> <li>Space Saving, Low Cost</li> <li>High Strength</li> <li>Output Shaft: Stainless Steel</li> </ul>	<ul style="list-style-type: none"> <li>Space Saving, Low Cost</li> <li>Does not Saturate</li> <li>Permissible Torque</li> </ul>	
Advantages of Installation	<ul style="list-style-type: none"> <li>Install on Flange Face</li> </ul> 		<ul style="list-style-type: none"> <li>No Mounting Brackets Required</li> </ul> 	<ul style="list-style-type: none"> <li>The Output Shaft Protrudes from the Center, so Design is Easy</li> </ul> 	<ul style="list-style-type: none"> <li>Space Saving</li> <li>Can be Connected Directly to the Drive Shaft</li> </ul> 		
Output Power of Combinable Motors	AC Input	30 W, 60 W, 120 W, 200 W, 300 W, 400 W	200 W, 300 W, 400 W	200 W, 300 W, 400 W	—	60 W, 120 W, 200 W, 300 W, 400 W	30 W, 60 W, 120 W, 200 W, 300 W, 400 W
	DC Input	15 W, 30 W, 50 W, 60 W, 100 W, 200 W, 400 W	—	—	30 W, 50 W, 60 W	—	30 W, 50 W, 60 W, 100 W, 200 W, 400 W
Gear Ratio	<b>5 to 200</b>	<b>100 to 450</b>	<b>5 to 1200</b>	<b>5 to 20</b>	<b>5 to 200</b>	<b>5 to 200</b>	
Rated Life	10000 hours*	5000 hours	5000 hours	10000 hours	5000 hours	10000 hours	
Permissible Radial Load/Permissible Axial Load	1400 N/400 N	3123 N/480 N	3672 N/577 N	200 N/70 N	2405 N/550 N	2040 N/800 N	
Permissible Torque	70 N-m	198 N-m	518 N-m	2.9 N-m	82.8 N-m	54 N-m	


\*The rated life for 15 W is 5,000 hours.

The values for permissible radial load, permissible axial load, and permissible torque are for the following operating conditions. They will vary based on the combined motor output power and gearhead gear ratio.

- Output Power: 200 W (For **CS** geared motors, values are for 50 W models.)
- Motor Shaft Speed: 3000 r/min
- Gear Ratio : Maximum gear ratio for each gearhead (Example: For **GFV** gear, the gear ratio is 200)

**Hollow Shaft Flat Gearhead**

**[Internal Gearhead Structure]**

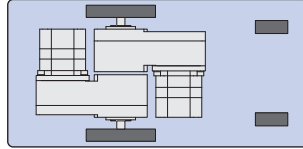


Improved gear case rigidity and larger diameters for gears and bearings lead to high permissible torque and long life.

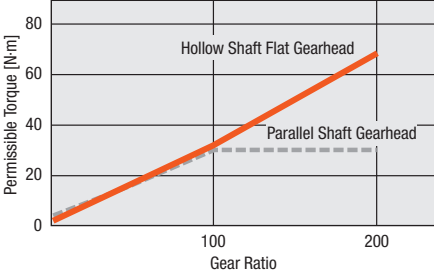
**[Characteristic Configuration]**

Wheel drive units, etc. can be arranged in a compact configuration with alternating directions.

\*Now available in smaller sizes.



**[Frame Size 90 mm]**



# AC Input Motor / Driver

## BMU Series



Max. of 10 m (32.8 ft.)  
without an Extension Cable



- Simple Driver Controls
- Easy Wiring & Set Up
- 4 Speeds - Data Setting
- Digital Display Built into the Driver
- IP66/67 Motors



Turn the dial and set to the desired speed.



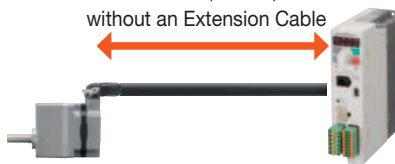
### BMU Series

Output Power - Watts (HP)	30 W (1/25 HP)~400 W (1/2 HP)	
Frame Size - mm (in.)	60 mm (2.36 in.)~110 mm (4.33 in.)	
Speed Range (r/min)	80~4000	
Option	IP67 Type	
Gear Types	Parallel, Foot, Right Angle, H1 Food Grade Grease (Parallel Shaft type), FR Hollow Shaft	
Power Supply	Single-Phase (VAC)	100-120 / 200-240
	Three-Phase (VAC)	200-240

## BLE2 Series



Max. of 20 m (65.6 ft.)  
without an Extension Cable



- Easy Set up via Front Control Panel
- Side By Side Mounting
- Up to 16 Preset Speeds
- External DC Voltage Control
- **MEXE02** Support Software
- IP66/67 Motors



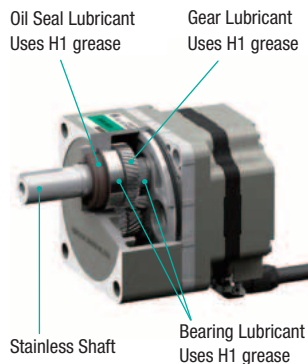
• The control panel cannot be removed from the driver.



### BLE2 Series

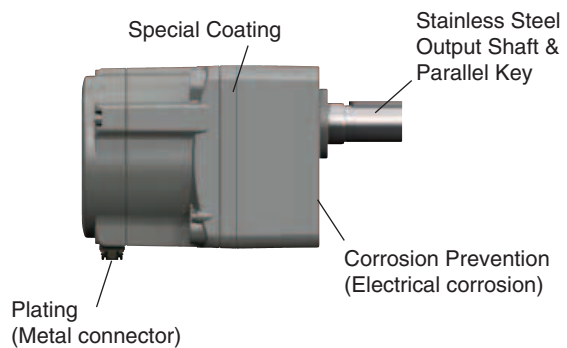
Output Power - Watts (HP)	30 W (1/25 HP)~400 W (1/2 HP)	
Frame Size - mm (in.)	60 mm (2.36 in.)~110 mm (4.33 in.)	
Speed Range (r/min)	80~4000	
Option	Electromagnetic Brake / IP67 Type	
Gear Types	Parallel, Foot, Right Angle, H1 Food Grade Grease (Parallel Shaft type), FR Hollow Shaft	
Power Supply	Single-Phase (VAC)	100-120 / 200-240
	Three-Phase (VAC)	200-240

### • H1 Food-Grade Grease (IP66)



H1 Food-Grade Grease is a grease registered by the NSF as part of a category where the "lubricants used in food-processing environments where there is the possibility of incidental food contact."

### • Watertight, Dust-Resistant (IP67)





# DC Input Motor and Driver

## BLS Series



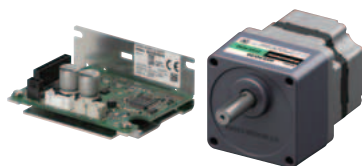
- Constant speed operation
- AC gearheads can be used
- 100 to 4000 r/min
- **MEXEO2** Support Software

### BLS Series



Output Power	25 W (1/30 HP)~120 W (1/6 HP)	
Frame Size - mm (in.)	60 mm (2.36 in.)~90 mm (3.54 in.)	
Speed Range (r/min)	100~2000 (standard) or 100~4000 (high strength)	
Option	IP65 or IP40	
Gear Types	Parallel, FR Hollow Shaft	
Power Supply	VDC	24

## BLH Series



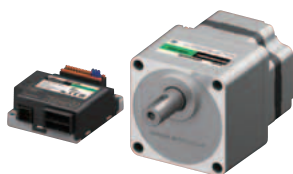
- 2 Motor types (Connector or Cable)
- 3 Driver types (Analog, Digital or RS-485 Communications)
- 80 to 3000 r/min
- Torque Limiting & Deceleration Stop
- **MEXEO2** Support Software

### BLH Series



Output Power - Watts (HP)	15 W (1/50 HP)~100 W (1/8 HP)	
Frame Size - mm (in.)	42 mm (1.65 in.)~90 mm (3.54 in.)	
Speed Range (r/min)	80~3000	
Option	Electromagnetic Brake	
Gear Types	Parallel, FR Hollow Shaft, Center Shaft	
Power Supply	VDC	24

## BLV Series R Type



- Communications Control Through Modbus (RTU) and CANopen
- 1 to 4000 r/min
- Battery-Operated
- **MEXEO2** Support Software

### BLV Series R Type

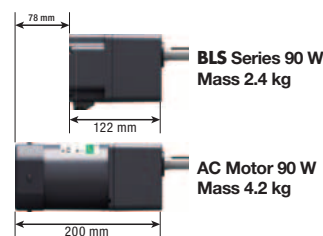


Output Power - Watts (HP)	60 W (1/12 HP)~400 W (1/2 HP)	
Frame Size - mm (in.)	60 mm (2.36 in.)~110 mm (4.33 in.)	
Speed Range (r/min)	1~4000	
Option	Electromagnetic Brake	
Gear Types	Parallel, FR Hollow Shaft, Center Shaft	
Power Supply	VDC	24 / 48

\*24 VDC 400 W driver, **BLVD-KBRD**, is CE marking only.

- **BLS Series** is a Smaller, More Efficient AC Motor Alternative

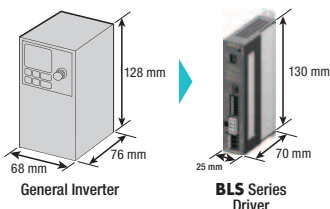
### Smaller and Lighter Motor



Motor Length  
78 mm  
Reduction

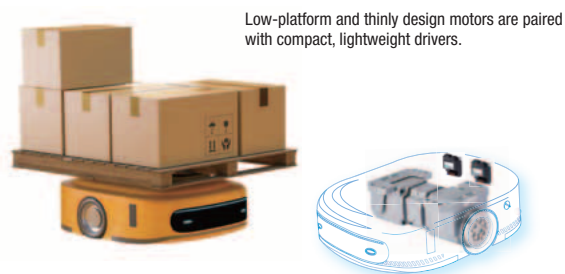
Mass  
1.8 kg  
Reduction

### Slimmer Driver

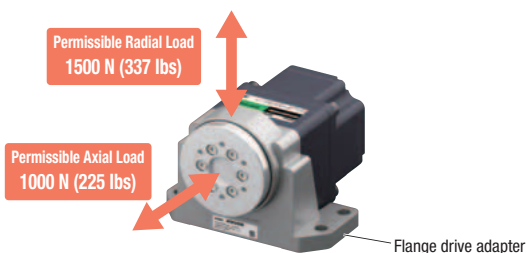


Volume  
65%  
Reduction

- **BLV Series R Type** and **BLH Series** are Transport Robot Solutions



### Significantly Increased Permissible Load with Flange Drive Adapter



# Standard AC Motors

Standard AC motors are used generally as a power source for automated equipment because they can be operated easily by connecting directly to an AC power supply. A standard AC motor supports various applications including high torque output, stopping or variable speeds. By using with a gear head, brake pack or speed controller, Standard AC Motors offer simple to use convenience and flexibility.

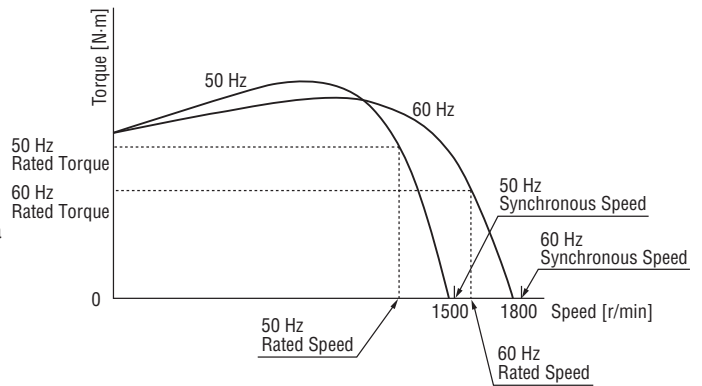
## ● The Power Supply Frequency Determines the Speed

The basic speed (synchronous speed) of a standard AC motor is determined by the power supply frequency and the number of poles. Many of our standard AC motors have four poles, so their synchronous speed is as follows:

- 50 Hz: 1500 r/min
- 60 Hz: 1800 r/min

The actual speed varies according to the load torque. With our motors, the speed roughly falls within the following ranges at a load torque equivalent to the rated torque:

- 50 Hz: 1200 to 1300 r/min
- 60 Hz: 1450 to 1600 r/min



Speed – Torque Characteristics

# Constant Speed AC Motors

## Induction / Reversible Motors World K Series



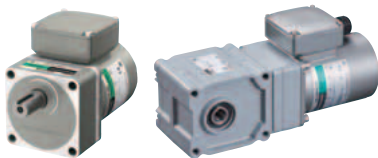
- Standard AC Motors
- Overheat Protection Built-in
- Long Life – 10,000 hrs
- Right Angle Gearheads Available

### World K Series



Type	Induction, Reversible	
Output Power	1 W (1/750 HP) ~ 90 W (1/8 HP)	
Frame Size	42 mm (1.65 in.) ~ 90 mm (3.54 in.)	
Options	Terminal Box / Conduit Box / Electromagnetic Brake	
	150 W (1/5 HP) 2-Pole (No Gear type)	
Gear Types	Parallel, Right Angle Hollow or Solid	
Power Supply	Single-Phase (VAC)	100-115 / 220-230
	Three-Phase (VAC)	220-230

## KIIS Series



Use with Fuji Electric Inverter



- For use with 1/8 HP up to 3 HP Three-Phase Motors
- Single-Phase 115 VAC or 230 VAC input, Three-Phase 230 VAC or Three-Phase 480 VAC input

- Uni-Direction, Continuous Operation
- High Strength Gears, High Permissible Torque
- Long Life – 10,000 hrs
- Low Noise

### KIIS Series



Type	Induction	
Output Power	30 W (1/25 HP) ~ 200 W (1/4 HP)	
Frame Size	80 mm (3.15 in.) ~ 110 mm (4.33 in.)	
Options	Terminal Box / Electromagnetic Brake	
	Stainless Steel Shafts	
Gear Types	Parallel, Right Angle Hollow or Solid	
Power Supply	Three-Phase (VAC)	220-415

## Brother ie3 MMD Series



Features Electrocoat Paint

- Helical (parallel) and Hypoid (right angle) gear type motors
- Pre-assembled, motor & gear
- Slip fit "O" ring design for mounting in any direction

Single or Three-Phase  
**Brother ie3 Mid Series Helical / Hypoid Gear Type**



Type	Induction
Output Power	400 W (1/2 HP)~3 HP
Recommended Speed Range with VFD (r/min)	90~3600 (3~120 Hz)
Options	Terminal Box / Electromagnetic Brake
	Stainless Steel Shafts
Gear Types	Parallel, Right Angle Hollow or Solid

## FPW Series IP67 Rated



- Conforms to IEC Standard IP67
- Pre-assembled, Motor & Gear
- Water Tight and Dust Resistant

Single-Phase / Three-Phase  
**FPW Series**



Type	Induction
Output Power	25 W (1/30 HP)~90 W (1/8 HP)
Frame Size	80 mm (3.15 in.)~104 mm (4.09 in.)
Gear Types	Parallel
Single-Phase (VAC)	110-115 / 220-230
Three-Phase (VAC)	200-230

## Torque Motors Torque Control



Power Controller

Set/Adjust  
Motor Torque



Torque Motor

TMP-1 Power Controller  
(sold separately)

Single-Phase  
**World K Series**



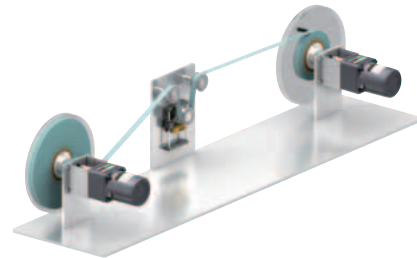
Type	Torque Motor
Output Power	3 W (1/250 HP)~20 W (1/38 HP)
Frame Size	60 mm (2.36 in.)~90 mm (3.54 in.)
Gear Types	Parallel
Single-Phase	110-115 / 220-230

# Applications

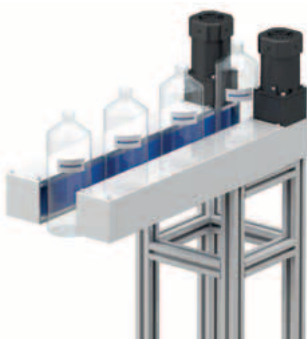
Belt Conveyor



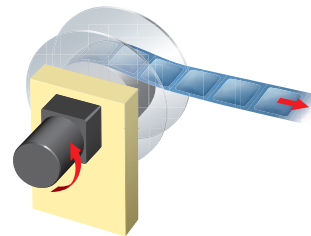
Tension Control



Pinch Conveyor



Packing System



# Cooling Fans

## Fans and Thermal Management

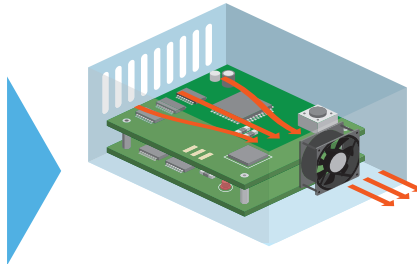
Today's fans are designed to move air allowing for cooling, controlling an area of space or for protecting electronics. Many of our fans come with alarm features designed for warning or for preventative maintenance. Oriental Motor helps make selecting the appropriate type of fan for today's applications simple.

### Axial Flow Fans

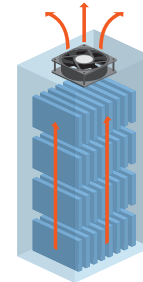
- AC or DC Input



Device Ventilation and Cooling



Cooling Densely Mounted Devices

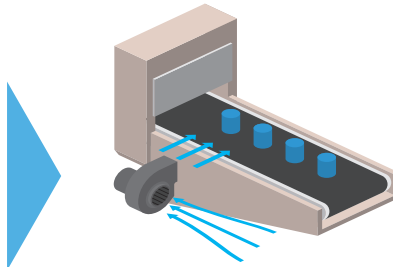


### Centrifugal Blowers

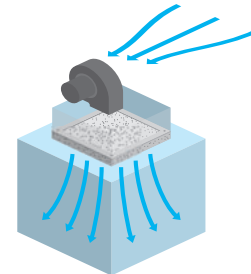
- AC or DC Input



Air-Blow Cooling or Drying

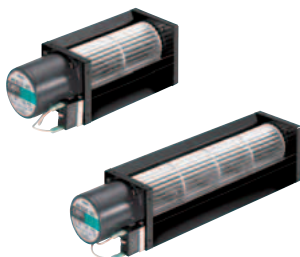


Cooling with High Static Pressure

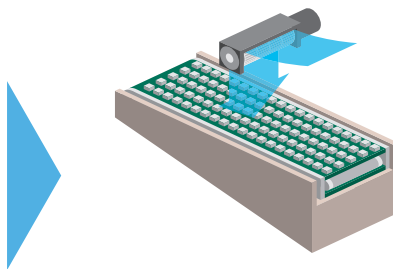


### Cross Flow Fans

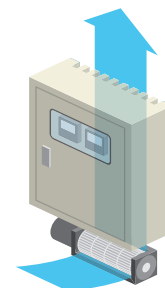
- AC or DC Input



Uniform Cooling or Drying



Cooling for Long or Thin Spaces



### Thermostat

- Centigrade (°C)



Automatically turning it ON/Off with a Set Timer



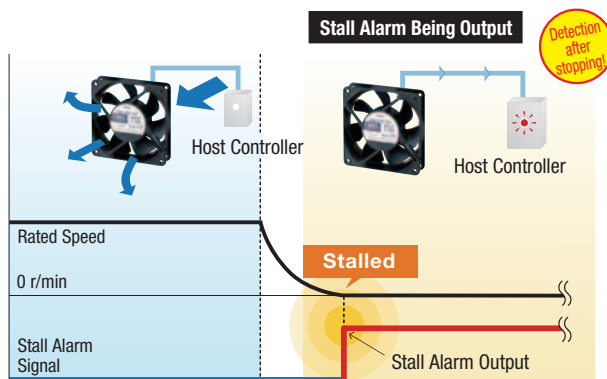


# Alarm Types

Cooling fans with alarms allow for prevention of unexpected problems or malfunctions.

## ● Locked Rotor Alarm

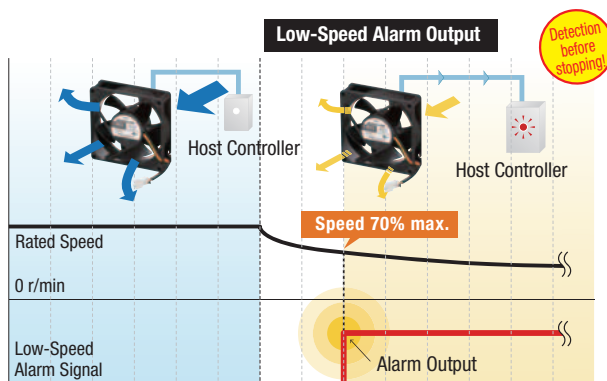
The fan will emit an alarm when the fan rotation has stopped. This will alert you to interruptions immediately, so that action / replacement can be made.



## ● Low-Speed Alarm

The fan will emit an alarm when the fan slows down possibly due to the introduction of foreign particles or other problems. This helps with predictive maintenance.

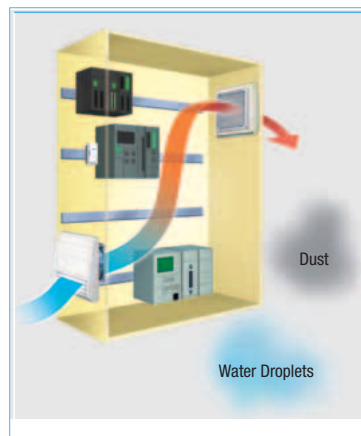
If multiple fans are running, it will also allow for replacement of only the fans experiencing a reduced cooling capacity.



# Enclosure Types



- AC or DC Input
- Complete Assembly
- IP2X, IP4X or IP55 Models
- Suction or Exhaust Type



# Accessories



- Finger Guards
- Filters
- Screens
- Plug Cords

# Environmental Efforts

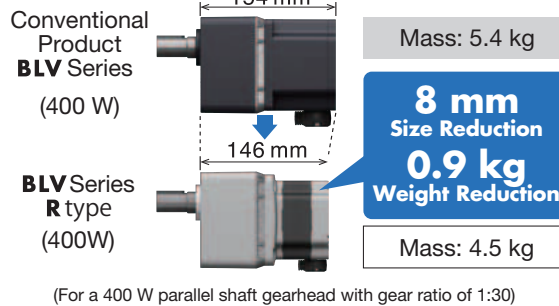
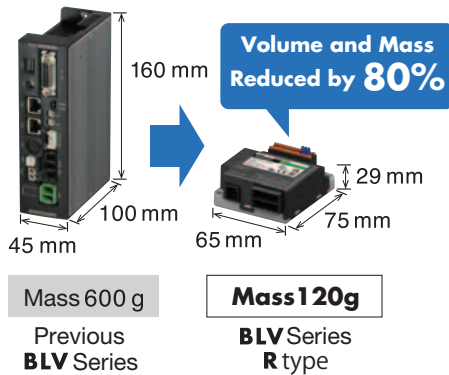
Oriental Motor has proactively supported activities that give consideration to global environmental conservation. Energy savings, conservation of natural resources and reduction of waste and carbon dioxide are implemented at various stages of the product lifecycle. By providing beneficial products that feature high efficiency, compact size, high power and long life, Oriental Motor hopes to achieve the various needs that our customers require, while contributing to environmental conservation activities.

## High-efficiency Motors for Compact and Lightweight Delivery Robots

The **BLV Series R Type** is a brushless motor with DC power input intended to facilitate equipment downsizing and weight reductions. Decreasing product size and weight enables reduced CO<sub>2</sub> emissions during transport and other applications. Furthermore, these brushless motors use permanent magnets in their rotors to reduce loss and achieve high-efficiency operations.

### Save Resources

We have achieved major size and weight reductions for both the motor and the driver.



### Save Power

By redesigning the motor structure to mitigate loss, this motor achieves lower power consumption compared with our conventional product. This extends the battery life and allows for the motor to run longer.

## Low Power Consumption EC Fan and Thermostats that Save Energy

By using brushless motors in the **EMU Series**, power consumption is reduced by approximately 70% compared with the conventional product.

(Conventional Product **MU Series**)

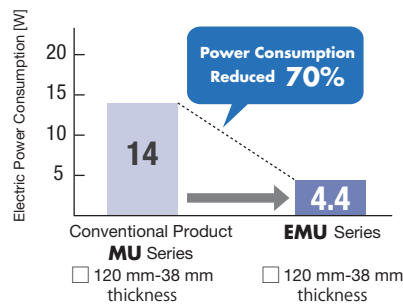
The mass of the fan has been lightened by approximately 45% by using resin in the frame, which reduces CO<sub>2</sub> emissions during transport and saves resources.

In addition, the use of a thermostat cuts down on power consumption of the cooling fan, thus making equipment more energy-efficient overall.

### EMU Series EC Fan

#### Save Power

- Power Consumption: 4.4 W
- Expected life: 60,000 hours (2.2 times longer than the conventional product)
- Mass: 0.29 kg (45% reduction compared with the conventional product)
- Wide-ranging voltage specifications: single-phase 100–240 V (50/60 Hz)



### Thermostat for Fan

#### Save Power

- This thermostat saves power and energy by only operating the cooling fan when internal equipment temperature is high and cooling is required.



# Before Selecting a Product

## Scope of Intended Applications

Our products are designed and manufactured for use in general industrial applications. They are not intended for use in nuclear power generation, aerospace, railway, vehicle, entertainment machinery, safety equipment, medical equipment or any other application having a significant effect on human life or property.

## Safety Precautions

Before using any product, carefully read the “operating manual” to ensure correct operation.

## Return, Replacement and Repair After Delivery

- ORIENTAL MOTOR U.S.A. CORP. is confident that you will be completely satisfied with your purchase. In the unlikely event that a delivered product has been damaged during shipping or if you receive an incorrect order, ORIENTAL MOTOR U.S.A. CORP. will correct the problem. Please contact your local sales office or distributor where the product was purchased.
- If you need to return a product because of a technical issue, please contact ORIENTAL MOTOR U.S.A. CORP. technical support at 1-800-468-3982 (847-871-5931 or 310-715-3303 if outside the USA & Canada) to try to determine the cause of the problem. If your problem cannot be resolved, you will receive instructions on how to obtain an RMA number and how to return the product.

## Warranty and Limitation of Liability

### Warranty

Oriental Motor U.S.A. Corporation (the “Company”) warrants to the first end user Buyer that the products and parts thereof, when shipped will be free from defects in materials comprising the same and in the Company’s workmanship. If any such defects exist or later appear, the Company shall undertake, at its sole expense, prompt remedial action as stated herein to correct the same; provided however, that the Company shall have no obligation or liability under this warranty unless it shall have received written notice specifying such defects no later than two (2) years from the date of shipment.

## Lead Time

Oriental Motor's lead time is characterized by best in class, with many of our catalog products available to ship in 3 to 9 business days (for orders placed before 12pm PST). Your order is shipped using only reputable carriers or any carrier of your choice to ensure on-time and damage free-delivery. Our manufacturing processes support our fast delivery and short lead time to allow us to support your needs. Our Just-In-Time production system allows the manufacturing of an order with little notice, in any quantity requested. Additionally, our one-by-one process allows us to manufacture one product as easily as one thousand.

In addition, Oriental Motor will quote “Available to Ship” shipping dates for guaranteed quantities on our website for most products. For larger quantities please contact your local sales office.

### LIMITATION OF LIABILITY

THE COMPANY SHALL HAVE NO LIABILITY WHATSOEVER IN ANY EVENT FOR PAYMENT OF ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING WITHOUT LIMITATION, DAMAGES FOR INJURY TO ANY PERSON OR PROPERTY. BY ACCEPTING THE PRODUCTS AND/OR PARTS THEREOF, THE FIRST END USER BUYER OR SUBSEQUENT USER AGREES THAT THE COMPANY SHALL NOT BE LIABLE FOR INDEMNIFICATION OR CONTRIBUTION (IN WHOLE OR IN PART) EITHER EXPRESSLY OR BY IMPLICATION. IF FOR ANY REASON OF THE FOREGOING PROVISIONS SHALL BE INEFFECTIVE, THE COMPANY’S LIABILITY FOR DAMAGES ARISING OUT OF ITS MANUFACTURE OR SALE OF ITS PRODUCTS OR PARTS, OR USE THEREOF, WHETHER SUCH LIABILITY IS BASED ON WARRANTY, CONTRACT, NEGLIGENCE, STRICT LIABILITY IN TORT OR OTHERWISE, SHALL NOT IN ANY EVENT EXCEED THE FULL PURCHASE PRICE OF SUCH PRODUCTS AND PARTS THEREOF.

Any action against the Company based upon any liability or obligation arising hereunder any law applicable to the sale or its products or parts thereof, or the use thereof, must be commenced within two (2) years after the cause of such actions arises.



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## ORIENTAL MOTOR U.S.A. CORP.

### Western Sales and Customer Service Center

Tel: (310) 715-3301

Fax: (310) 225-2594

#### Los Angeles

Tel: (310) 715-3301

#### San Jose

Tel: (408) 392-9735

### Midwest Sales and Customer Service Center

Tel: (847) 871-5900

Fax: (847) 472-2623

#### Chicago

Tel: (847) 871-5900

### Eastern Sales and Customer Service Center

Tel: (781) 848-2426

Fax: (781) 848-2617

#### Boston

Tel: (781) 848-2426

#### Toronto

Tel: (905) 502-5333

### Technical Support

Tel: (800) 468-3982

8:30 A.M. to 5:00 P.M., P.S.T. (M-F)

7:30 A.M. to 5:00 P.M., C.S.T. (M-F)

Se Habla Español

Tel: (847) 871-5931

E-mail:

[techsupport@orientalmotor.com](mailto:techsupport@orientalmotor.com)

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