Orientalmotor

Product Guide

XSTEP Hybrid Control System Linear & Rotary Actuators Network – Controllers Stepper Motors Brushless Motors Standard AC Motors Cooling Fans Modular Automation



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.



Orientalmotor

Products of Oriental Motor

Oriental Motor offers approximately 50,000 items as standard products.

Your optimal motion system can be found among our extensive product line-up. From our industry leading **QSTEP** Hybrid family of positioning products, high torque stepper motors to our speed control or constant speed motors designed for value and long life. For thermal management we offer a wide range of cooling fans, alarms and accessories.

OLSTEP Hybrid Control System



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



• EtherNet/IP



Brushless Motors

- e Ether CAT. 🕈
- PROFI
- Modbus (RTU)
- CC-Link
- MECHATROLINK
- Single Axis
- Controller

Speed Control

Performance

Space Saving

• Energy Saving

Compact Yet PowerfulExcellent Speed & Torque

• No Brushes = No Maintenance

Stepper Motors



Standard AC Motors

EUGART

DriversEncoder Motors

101015

1 W (1/750 HP)~3 HP
Single & 3 Phase

• 2 Phase 1.8°, 0.9°

• Electromagnetic

Brake Types

Geared Types

• 5 Phase 0.72°, 0.36°

• Linear & Rotary Actuators

TransportPush/Pull

• Lifting

Gripping

Rotating

- Single & 3 Phase
 Fixed Speed
- Fixed Speed
 Speed Control
- Electromagnetic Brake Types
- Geared Types

Cooling Fans



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

Short Lead Times

Delivering What is Needed, When it is Needed.

Our manufacturing 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 hundred.

Our main products are stocked and able to ship from the warehouse closest to your ship to location.



Modular Automation



- Flexibility in Production Layout
 High-Mix, Low-Volume
 - Hign-Mix, Low-Volu
 Production
 - Energy Saving
 - Productivity Improvements
 - Space Saving
 - Resolve Labor Shortage

Oriental Motor Corporate Overview



Company Founded	ORIENTAL MOTOR CO., LTD. 1885
Established	1950
Representative	President Eiji Kawahito
Capital	4.1 billion yen
Sales	Consolidated 66.8 billion yen (At the end of March 2022)
Number of Employees	Consolidated 3,079 (At the end of March 2022)
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 Factories

Tsuruoka-Chuo Plant 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)



Tsuruoka-Chuo Plant

Development of standard

AC motors and brushless

motors. Development and

manufacturing of control

Tsuruoka-Nishi Plant

AC motors, brushless motors and gearheads.



Soma Plant Development and manufacturing of stepper motors and control circuits.





Tsuchiura Plant Development and manufacturing of gearheads and motorized actuators.





Takamatsu-Kozai Plant Development and manufacturing of stepper motors.

Kashiwa Plant Research and development on the ideal accessories and peripheral equipment for every product.



Takamatsu-Kokubunji Plant Manufacturing of stepper motors.

Kofu Plant Manufacturing and production technology

development of control circuits. Evaluating, analyzing and measuring various products.



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.



Speed

You can order the products listed in our catalog or website anytime, anywhere and in any quantity you need. 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.



Product & Technology Training

Virtual or On-Site Technical Seminar

Oriental Motor offers virtual or in-person training and product demonstrations at your location. Contact your local sales office or our Technical Support Team for more information or to schedule a training seminar.

Lunch & Learn Seminars

You can schedule an on-site lunch & learn seminar with our Sales and Application Engineer staff. For this one-hour session, Oriental Motor will discuss our latest technology for solving simple to challenging motion requirements.



Oriental Motor **Provides Customer Support for Products and Services**



At Oriental Motor, we carry nearly 50,000 standard products, including motors, actuators and fans.

With our solid production, quality control and logistics systems, Oriental Motor products can be delivered to customers when they need it, in as little as 1 day, starting from an order of just 1 piece.

Oriental Motor also offers an extensive support system to help customers select the optimal product. From selection, design and equipment setup, to after-sales services, Oriental Motor provides support for all of our customers' needs.



See Full Product Details

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

ns, **ental motor search**

Find the Right Solution from Approximately 50,000 Products



- Motion control basics and application examples
- Tips for motor selection, programming, and troubleshooting





XSTEP Hybrid Control System

Position, Speed and Torque Control

What is *RSTEP*?

XSTEP 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 torgue to a user set value (such as push-motion operation).





Performance

"Rated output" is not listed because **QSTEP** has no "rated speed." Refer to the graph on the right to compare rated torgue of *QSTEP* 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





Stopping Accuracy

The stopping accuracy of a typical QSTEP is ±0.05° (under no load), which is equivalent to that of servo motors. These graphs show the actual measured stopping accuracies when an α_{STEP} and an AC servo motor were rotated once.



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



The stopping accuracy of an AC servo motor is the encoder resolution ± 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

*Q***STEP** Hybrid Control

Standard AC Motors

Application Examples



Complete synchronization with commands



Low-vibration operation Push-Motion Operation even at a speed near 0 r/min



Frequent repetitive starting and stopping



Transfer of large inertial load



Push-motion operation



Arm robot Refer to Robot Controller MRC01 on Page 20.



X-Y-Z gantry system



Parallel link robot

Advantages of the AZ Series

The **AZ** Series *QSTEP* hybrid control system features absolute sensing using a multiple-rotation mechanical sensor. The system constantly 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 with the AZ Series

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.

- Return-to-Home Operation of AZ Series

There is no need to detect the limit sensor, and it can travel directly at high speed to the home position recorded by the Absolute Sensor.





AZ Series Driver Types



Compact Electric Cylinder

Gripper

*Q***STEP** Hybrid Control

AZ Series

Actuators

Network

Stepper Motors

Brushless Motors

Standard AC Motors

Cooling Fans

Modular Automation

Before Selection / Warranty

AC Input – Single Axis



AC Input

AZ Series

•				
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)		1000		
Options		Electromagnetic Brake		
Gear Types		Tapper Hob / Planetary / Right Angle / Harmonic		
Driver Types		Pulse / RS-485 / EtherNet/IP / EtherCAT / Profinet		
Main Davies Conselu	Single-Phase (VAC)	100-120 / 200-240		
Main Power Supply	Three-Phase (VAC)	200-240		
Control Power Supply (VDC)		24		
Starting From (Motor + Driver + Cable)		\$963.00		

DC Input – Single Axis



AZ Series		c 'AL °us* C €
Frame Sizes		0.79 in (20 mm), 1.10 in (28 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)		1000
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
Starting From (Motor+Driver+Cable)		\$773.00

*Profinet Only

DC Input

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







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

mini Driver



FA Network Compatible



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

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*Q***STEP** Hybrid Control

Stepper Motors

Cooling Fans

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 from **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 **MEXEO2** 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

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.

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3 -	Lances has rearran 1 and	re
	the second secon	s
	Anna and Anna Anna	3 C
4 -		n
	The second second	@ C

- Detects the actual position with respect to the command position.
- ② Detects the actual speed with respect to the command speed.
- 3) Detects the temperature of the motor encoder and driver.
- ④ Displays the current load factor with the output torque at the rotation speed at 100%.

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 *Control System*

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



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

Linear Motion / Transport



EZS Series: with AZ Series		91 ° (€
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
	VDC	24/48
Power Supply	Single-Phase (VAC)	100-120 / 200-240
	Three-Phase (VAC)	200-240
Starting From (Actuator+Driver+Cable)		\$1,412.00

Push / Pull



EAC Series: with AZ Series		FL ((
Max. Speed (mm/	s)	600	
Max. Transportabl	e Mass - Vertical (kg)	28	
Max. Transportabl	e Mass - Horizontal (kg)	60	
Repetitive Positioning Accuracy (mm)		±0.02	
Stroke Length (mm)		50 - 300	
Thrust Force (N)		400	
Push Force (N)		500	
	VDC	24/48	
Power Supply	Single-Phase (VAC)	100-120 / 200-240	
	Three-Phase (VAC)	200-240	
Starting From (Actuator+Driver+Cable)		\$1,228.00	

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





*When electromagnetic brake is installed

100 mm

With or Without Guide Cover



Reversed Motor Type with Shaft Guide Cover

Push / Pull / Transport Micromovement and High Positioning Accuracy

DR/DRS Series

Compact, Space Saving







DR/DRS Series: with AZ Seri	CE	
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)		$\pm 0.003/\pm 0.005/\pm 0.01$
Stroke Length (mm)		25~50
Options		Brake / Guide / Ball Screw Cover / Installation Plate
Power Supply VDC		24/48
Starting From (Actuator + Driver + Cable)		\$1.196.00



Gripping

EH Series



EH Series: with AZ Series	(6	
Maximum Grip Force (N)		27
Repetitive Positioning Accuracy (mm)	each side	±0.02
Backlash (mm)	each side	0.1
Stroke (mm)		25 (12.5 each side)
Maximum Speed (mm/s)		156 (78 each side)
Push Speed (mm/s)		20 (10 each side)
Minimum Travel Amount (mm)		0.02 (0.01 each side)
Permissble Load (N)		15
Static Permissble Moment (N·m)		MP:1.2 MY:0.12 MR: 0.4
Power Supply	VDC	24/48
Starting From (Actuator+Driver+Cable)		\$1,251.00

Small and Light Weight



High Reliability, Closed Loop Control





Battery-Free Absolute Sensor (ABZO Sensor)









Measure

Measure the load size

Linear Motion / High Power



L Series: with AZ Ser	c¶Uus CE	
Frame Size (mm)		60/80
Mov. Crood (mm/o)	High-Speed Type	500
Max. Speed (mm/s)	Large Transportable Mass Type	90
May Transportable Mass (kg)	High-Speed Type	20
wax. Iransportable wass (kg)	Large Transportable Mass Type	100
May Thrust Force (N)	High-Speed Type	220
wax. Thrust Force (N)	Large Transportable Mass Type	1008
Stroke Length (mm)		100~1000
Туре		Horizontal / Vertical
Option		Electromagnetic Brake
	VDC	24/48
Power Supply	Single-Phase (VAC)	100-120, 200-240
	Three-Phase (VAC)	200-240
Starting Price (Actuator + Driver + Cable)		\$1,328.00





LJ Series



LJ Linear Head *Also available with Three-Phase Induction Motors KIIS Series electromagnetic type

Rotate PGII Series

LJ Series: with AZ Series

Frame Size (mm)		90
Max. Speed (mm/s)		500
Max Transportable Mass (kg)	40 mm/s	200
wax. Italispultable wass (kg)	188 mm/s	55
Max. Thrust Force (N)		1961
Stroke Length (mm)	100~700	
Туре		Horizontal / Vertical
Combination Motors*	AZ Series TS Geared Type	
Power Supply	Single-Phase (VAC)	100-120
rowei Suppiy	Three-Phase (VAC)	200-240
Starting Price (Actuator+Motor+Driver+Cable)		\$1,778.00



□200 mm (□7.87 in.)

High Positioning Accuracy, Non-Backlash

Vertical Mount: with AZ Series		AU °CE	
Frame Size (mm)		60/85/130/200	
Diameter of Hollo	w Section (mm)	28/33/62/100	
Permissible Torqu	e (N·m)	50	
Permissible Axial Load (N)		4000	
Lost Motion		2 arcmin	
Option		Electromagnetic Brake	
Repetitive Positioning Accuracy		±15 sec / ±0.004°	
	VDC	24/48	
Power Supply	Single-Phase (VAC)	100-120 /200-240	
	Three-Phase (VAC)	200-240	
Starting From (Actuator + Driver + Cable)		\$1,537.00	

Example: DG200R





Before Selection / Warranty

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).

EtherNet/IP EtherCAT





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



• 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.



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 MEXEO2 Support Software (Free Download) is available in our AZ Series and BLV Series R Type of products.



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

Single Axis Programmable Controller (Stored Program Type)

The SCX11 universal controller is a highly functional and sophisticated controller, equipped with program editing and execution functions and able to control the motor via various serial ports such as USB, RS-232C and CANODER.



- Stand Alone Pulse Generator
- Store up to 100 Sequence Programs
- External Encoder Input
- USB Port Standard
- Direct Command Operation via CANODER
- 24 VDC
- List Price: \$383.00







CANopea-Connector



Cooling Fans

Before Selection / Warranty

Gateways

Oriental Motor offers additional Gateway Network Converters. *EtherCATT 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



*Q***STEP** Hybrid Control

AZ Series

Actuators

Network

Robot Controller MRC01

The MRC01 robot controller supports easy programing and control of in-house designed custom built robots. Use the *Aster* 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 MRCO1 and host system is controlled directly via EtherNet/IPTM. Custom-built robots can be added easily, without the need to make major changes to the control system from the existing equipment.



Single-Phase 100-120 VAC, Single-Phase/Three-Phase 200-240 VAC

mini Driver RS-485 Communication Type



DRS2 Series 24/48 VDC Electric Linear Slides Electric Cylinders Lack and Pinion Systems Electric Gripper **EZS** Series **EAC** Series L Series **EH** Series 24/48 VDC

Application Example

This is an in-house (original) SCARA robot that automates pick-and-place and transport between processes in a limited space. It is used in automated production lines for gluing, measuring, and assembly, which were conventionally done manually.



Number of Axes	5 Axes (3 L	inks + Lift + Electric Gripper)		
Robot Control	Robot Cont	Robot Controller MRC01		
Transportable Mass	0.7 kg			
Maximum Speed	500 mm/s (Maximum Speed at Gripper Base Jaws)			
Maximum Speed of Each Axis	Axis 1	500 mm/s		
	Axis 2	500 mm/s		
	Axis 3	500 mm/s		
	Axis 4	40 mm/s		
	Axis 5	156 mm/s (Both Sides)		
Device Main Power	100V AC			
Drive/Control Power supply	24V DC			
Mass (SCARA Robot Part)	4 kg			

System Configuration

It is controlled by Ethernet/IP. The MRCO1 and AZ series drivers are controlled via RS-485 communication.



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







PKP Stepper Motor Features

Increased Torque: New PKP to PK





(0.67 in.)



(0.63 in.

PKP Series



CVD Driver

VDC



1.8°/0.9°/0.72°/0.36° PKP Series	CE*
Frame Sizes	0.79 in (20 mm), 1.10 in (28 mm), 1.38 in (35 mm) 1.65 in (42 mm), 2.22/2.36 in (56.4/60 mm), 3.35 / 3.54 in (85 / 90 mm)
Holding Torque	2.8 oz-in~1062 lb-in (0.02~120 N·m)
Papalution (P/P)	2 Phase (1.8°/0.9°)
Resolution (F/R)	5 Phase (0.72°/0.36°)
Ontione	Flat Motor / Electromagnetic Brake / Encoder

High Torque, Low Vibration, Ridged Construction, Downsizing

Low Vibration with Full-Time Microstepping

/ottage

[V] q-qV s

Component Voltage

ration

General 1.8° stepper moto 3200 P/R (0.1125°/step)

CVK246AK 3200 P/R (0.1125°/step

300

300

Speed [r/min] 2 Phase, 1.8°

Cable sold separately

Board Mounting Type CVD-S type

2 Phase (1.8°/0.9°)

5 Phase (0.72°/0.36°)

0.5~4.5*

2048 per step

125,000 steps per rev.

24

0.5~4.8*

\$143.00

*Varies by items. See the website for the details.

Options

Gear Types

Starting From (Motor)

Smooth Drive

Step Vibration

Control Reduces

5 Phase (0.72°/0.36°)			
Flat Motor / Electromagnetic Brake / Encoder			
(500P/R optical type. 1000P/R magnetic type is coming soon.)			
Spur / Spur with Center Shaft / Tapper Hob / Planetary / Harmonic			
\$46.00			

Actuators

AZ Series

*Q***STEP** Hybrid Control

Industry's	Тор

CE



DC Input

CVD Series

Smooth Drive

Max Resolution Power Supply

Motor Types (Bi-polar)

Output Current (Amps)

Input Current (Amps)

Starting From (Driver)

*See individual driver for ratings

Pulse Input Type



S Type

I/O or SPI Communication Setting





SC Type Speed Control

p, Compact, High Performance Driver



Mass 20 g (0.71 oz) to 70 g (2.47 oz) (Differs according to the driver type.)



Vibration Suppression

Brushless Motors

Standard AC Motors



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



Compact and Lightweight



•Wide Speed Range: 80~4000 r/min



Energy Savings



Application Examples

Conveyor / Transportation







Torque Limiting



Geared Options

Parallel Shaft GFV Gear		Parallel Shaf	t JV Gear	Foot Mounted Pa	arallel Shaft JB Gear	Right Angle Hollow	Shaft JH Gear
Radial Load	IP66	Radial Load	IP66	Radial Loa	d IP44	Radial Load	IP66
Axial Load		Axial Load	Te	Axial Load	2)	0	Axial Load
50:1 Gear Reduction; 3000 RPM at M	otor 4	450:1 Gear Reduction; 30	00 RPM at Motor	600:1 Gear Reduction	n; 3000 RPM at Motor	200:1 Gear Reduction; 30	00 RPM at Motor
Radial (Overhung) Load 28	0 Ib F	Radial (Overhung) Load	1163 lb	Radial (Overhung) Loa	ad 1331 lb	Radial (Overhung) Load	772 lb
Axial (Thrust) Load 6	7 lb	Axial (Thrust) Load	154 lb	Axial (Thrust) Load	185 lb	Axial (Thrust) Load	176 lb
Rated Torque 483	p-in F	Rated Torque	3814 lb-in	Rated Torque	5159 lb-in	Rated Torque	1575 lb-in

Hypoid Gear





· Hypoid gears allow for high permissible torque without saturation even at higher gear ratios

Hollow Shaft Flat Gear (FR Type)



- High Permissible Torque
- Space Saving
- Long Life
- Suitable for AGV Designs [m·N] [I]-800 80 Hollow Shaft Flat Geart Permissible Torque 700 - 700 arallel Shaft Gear ۰. 100 200

Gear Ratio [Frame Size 90 mm (3.54 in.)]







Bearing Lubricant Stainless Shaft Uses H1 grease

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."

H1 Food-Grade Grease is a

Helical Gear



• Helical gears allow for the motor torque to be fully utilized even at the highest gear ratio.





Watertight, Dust-Resistant (IP67)



Plating (Metal connector)

Stainless Steel Output Shaft & Parallel Key

(Electrical corrosion)

*Q***STEP** Hybrid Control

AZ Series

Actuators

Network

Before Selection / Warranty

AC Input Motor / Driver

BMU Series



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



BLE2 Series



Max. of 20 m (65.6 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



- Easy Set up via Front Control Panel
- Side By Side Mounting
- Up to 16 Preset Speeds
- External DC Voltage Control
- MEXEO2 Support Software
- IP66/67 Motors



The control panel cannot be removed from the driver

(6

BLE2 Series		removed from the driver.					
Output Power - Watts (H	P)	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					
Dowor Supply	Single-Phase (VAC)	100-120 / 200-240					
Fower Suppry	Three-Phase (VAC)	200-240					
Starting From (Motor + Driver + Cable)		\$458.00					

DC Input Motor and Driver

BLH Series



BLV Series **R** Type



Modular Automation Products Refer to Page 32.

- •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 (H	P)	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				
Starting From (Motor + Driver + Cable)		\$286.00				

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

BLV Series R Type



Before Selection / Warranty

Transport Robot Solutions

With the ability to run on battery power, our BLV Series R Type and BLH Series brushless motors can be used as the drive axle for modular robots (AGV/AMR/GTP*) or embedded in other similar Modular devices. These motors contribute to the handling of a wide variety of operating patterns and modular modes in various workplace environments.

*AGV: Automatic Guided Vehicle. AMR: Autonomous Mobile Robot. GTP: Goods To Person

Low-Platform and Thin Design

Face surface mounting with the Flange Drive Adapter



Flange Drive Adapter Sold Separately

BLV Series R Type

60 W (1/12 HP), 100 W (1/8 HP), 200 W (1/4 HP), 400 W (1/2 HP)



BLH Series 15 W (1/50 HP), 30 W (1/25 HP), 50 W (1/15 HP)





The **BLH** Series can be controlled by software created in ROS.

For Larger Loads Used in Robots and Conveyors

A transport robot's load capacity is affected by its permissible radial load. Using a Flange Drive Adapter or a hollow shaft flat gearhead supports requirements of increasing load size and installation in robots and conveyors.

Permissible Radial Load

*1: The motor shaft speed is at or below 300 r/min *2: The motor shaft speed is 100-3000 r/min

Permissible Radial Load									[N (lbs)]
Gear Ratio		5	10	15	20	30	50	100	200
When Using a Flange Drive Adapter	100 W (1/8 HP)*1	1500 (337)							
Hollow Shaft Flat Gearhead	200 W (1/4 HP), 400 W (1/2 HP) ^{*2}	1230 (276)		1680 (377)		2040 (458)			
	100 W (1/8 HP)	900 (202)		1300 (291)		1500 (337)			
	50 W (1/15 HP), 60 W (1/12 HP)	800 (179) 1200 (269)		(269)					
	30 W (1/25 HP)	450 (101)		500 (112)					



Flange Drive Adapter AGD580B

BLH Series

Modbus(RTU)

Visit our website for free software download. www.orientalmotor.com



Brushless Motors

Standard AC Motors

Cooling Fans

Automatior Modular

Network

AZ Series

Actuators







Side-mounting with the

Hollow Shaft Flat Gearhead



 Setting via Networks BLV Series R Type

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.



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

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 460 VAC input

World K Series



	/3			
Туре		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		
Dowor Cupply	Single-Phase (VAC)	100-120 / 220-230		
rower suppry	Three-Phase (VAC)	220-230		
Starting Pricing (Motor+Gear)		\$151.00		

• Uni-Direction, Continuous Operation

- High Strength Gears, High Permissible Torque
- Long Life 10,000 hrs
- Low Noise

KIIS Series



Brother ie3 MMD Series



Features Electrocoat Paint

FPW Series IP67 Rated

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

Single-Phase / Three-Phase

FPW Series

	<u> </u>
Туре	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)	220-230
Starting Pricing (Motor+Gear)	\$320.00

Torque Motors Torque Control

• Helical (parallel) and Hypoid (right angle) gear type motors

• Slip fit "O" ring design for mounting in any direction

Brother ie3 Mid Series Helical / Hypoid Gear Type

• Pre-assembled, motor & gear

Single or Three-Phase

Starting Pricing (Motor+Gear)

Type

Output Power

Options

Gear Types

Speed Range (r/min)

Set/Adjust Motor Torque



Torque Motor

TMP-1 Power Controller (sold separately) List Price: \$135.00

Induction

400 W (1/2 HP)~3 HP

90~3600 (3~120 Hz) Terminal Box / Electromagnetic Brake

Stainless Steel Shafts

Parallel, Right Angle Hollow or Solid

\$626.00

c**₩**us (€

Power Controller



Applications

Belt Conveyor



Pinch Conveyor



Tension Control



Packing System



Modular Automation

AZ Series

Actuators

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



Centrifugal Blowers

AC or DC Input



Cross Flow Fans

AC or DC Input



•Centigrade (°C)



Device Ventilation and Cooling



Air-Blow Cooling or Drying



Uniform Cooling or Drying







Cooling with High Static Pressure



Cooling for Long or Thin Spaces



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

Standard AC Motors

Brushless Motors

Modular Automation

Solutions to Accelerate Automation

Modular Automation-Compatible Products

- Layout-Free Equipment
- Improved Efficiency
- •High-Mix Low-Volume Production
- Reduce Labor Shortages
- Space Saving
- Energy Saving



The Implementation of Layout-Free Automation Equipment and Lines is the Key to Flexibility Modular Automation-Compatible Products Support the Creation of Next Generation Automation

Companies need the flexibility to respond to changes in the external environment such as labor shortages, natural disasters and the constantly changing global situation. Production sites are increasingly adopting automation measures to replace humans for work such as transporting loads, working on production lines or doing work in difficult to access locations. In addition, the number of companies that are working to modularize equipment to allow line configurations to be reconfigured according to the situation is also increasing. The key to solving these issues is the creation of layout-free automation equipment and lines. Modular automation compatible products are a group of products that support the achievement of these goals.

>>>

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The concept of flexible automation equipment and lines

- Use automated transportation instead of fixed conveyors
- The production line can be configured using modularized lightweight and compact equipment
- Eliminates the need to run AC power lines and extends range of movement

Elements necessary to achieve

"Battery drive & DC input" and "Light & compact"

Consider modular automation-compatible products

Modular Automation-Compatible Product Line

"Modular Automation Compatible Products" are a group of products based on the shared concept of battery operation, compact size and lightweight. Ideal for installation in self-propelled equipment and mobile facilities, they contribute to the creation of flexible automation lines and modular automation, which will see increasing demand in the future.



- Low-speed operation from 1 r/min can be performed. Provides smooth drive performance.
- Both the motor and driver are significantly smaller and lighter.
- Contributes to development of compact, battery driven devices.
- Uses Oriental Motor's unique closed loop control.
- Equipped with the newly developed ABZO Sensor This makes an absolute system possible without a battery.
- The mini driver has been designed to be compact and lightweight to save control cabinet space in embedded applications.
- They can be connected to DC input motors and their on-board linear & rotary actuators. Contributes to the development of battery driven devices.

For Example, They Contribute to Following Layout-Free Projects:

Inter-Process Load Transporting Robots





Rack-and-Pinion System L Series Transportation Robot (Wheel-Driven) BLV Series R Type

Flexible Modular Line That Can Be Reconfigured to Match the Product



X-Y-Z Type Modularized Equipment



Distributed Driver Equipment

Distributed driver placement is possible thanks to the small size and light weight of the mini Driver.

This allows for reduced wiring and smaller power distribution panels. Smaller, lighted equipment designs are possible.

Modular **Automation-Compatible Products**

Robot Controller MRC01

A robot controller that allows for easy setting, programming and operation of custom-built robots using the AZ Series. Compatible protocol: EtherNet/IP



DC Axial Flow Fans MD Series

24 VDC input axial flow fans adapted to ventilation and cooling Types: No alarm, with alarm, long life, speed control, waterproof



•EtherCAT® is a patented technology licensed from Beckhoff Automation GmbH (Germany) and is a registered trademark of that company.

- •PROFINET is a trademark or registered trademark of PROFIBUS Nutzerorganisation e.V. (PNO).
- ●Modbus (RTU) is a registered trademark of Schneider Automation Inc. ●EtherNet/IP™ is a trademark of ODVA.

• QSTEP and ABZO Sensor are registered trademarks or trademarks of Oriental Motor Co. in Japan and other countries.

Brushless Motors



AZ Series

Actuators

Network

Stepper Motors

Environmental Efforts

Oriental Motor's Carbon Neutral Initiati

Oriental Motor supports our customers' MOTION with consideration for the environment.



Oriental Motor's Basic Environmental Philosophy and Environmental Policy ISO 9001 and ISO 14001 WEB

Global Regulations & Standards/Management of Chemical Substances in Products WEB

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-byone 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 INDEMIFICATION 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. **AZ** Series

www.orientalmotor.com

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