Oriental motor

PRODUCT GUIDE

Hybrid Stepper Servo Motors

Stepper Motors

Servo Motors

Brushless DC Motors

Standard AC Motors

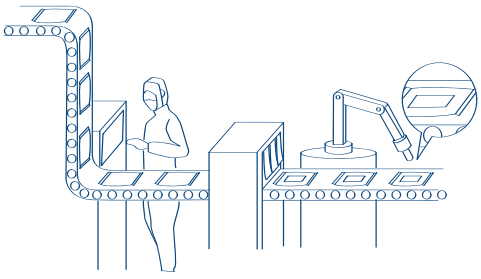
Linear & Rotary Actuators

Cooling Fans

2024

AVAILABLE WORLDWIDE, STARTING FROM A SINGLE UNIT

We contribute to society by broadening the horizons of life and industry.

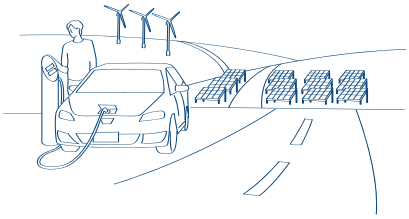


Factory automation

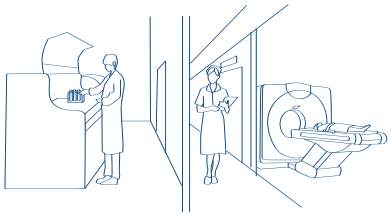
Equipment for manufacturing semiconductors and electronic components

Equipment for food processing/ measurement/packaging

Transport and financial equipment



Renewable energy



Medical equipment

GLOBAL SALES NETWORK

40 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.

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High performance with compact design

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Simply connect a capacitor and supply power from a commercial power supply

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Incorporating a motor and a linear-motion mechanism

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A wide range of cooling fans and axial flow fans, ideal for ventilation cooling

HYBRID STEPPER SERVO MOTORS

αSTEP

The **AZ** Series enables absolute positioning without the need for a battery. The total cost is reduced because no additional sensors are required. As a result, the **AZ** Series offers absolute positioning at an economical price.

AZ Series

FEATURES

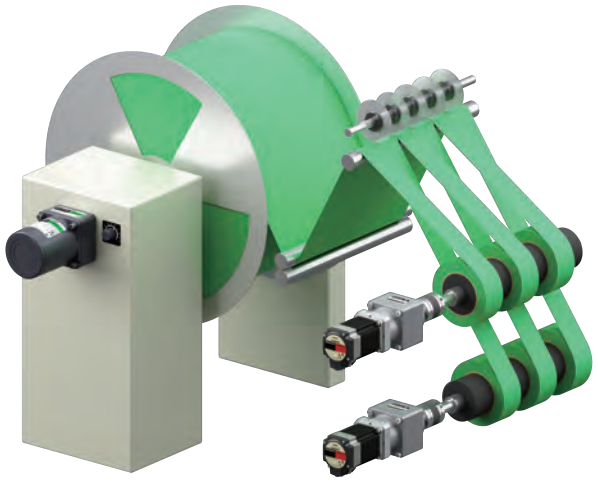
Multirotation Absolute System
Absolute position detection is possible up to ±900 (1800) rotations of the motor shaft from the home position.
For 20/28 mm frame sizes it is ±450 (900) rotations.

No External Sensors
As it is an absolute system, external sensors such as a home sensor or limit sensor are not required.

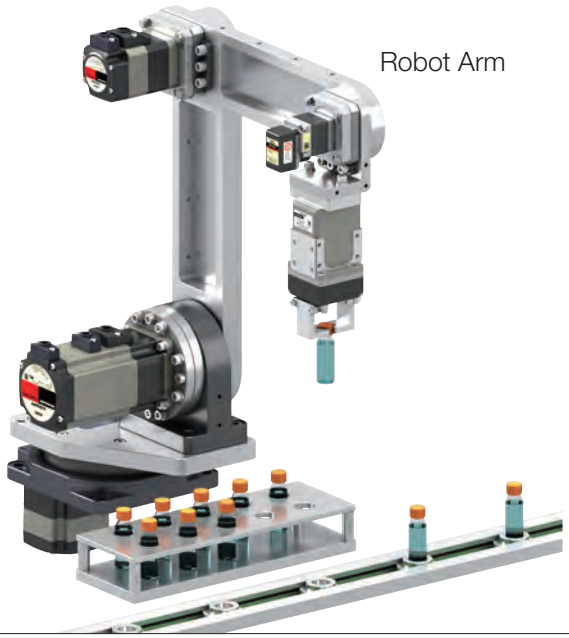
Energy-saving
Energy saving is achieved through high efficiency, reducing motor heat generation.

APPLICATIONS

Slitting Machine



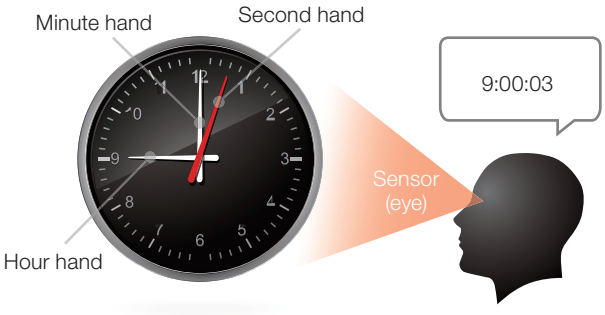
Robot Arm



MECHANICAL SENSOR

Analogue clocks measure the current time based on the positions of the second hand, minute hand and hour hand. The **AZ** Series **ABZO** sensor is a mechanical sensor equipped with multiple gears equivalent to the hands of a clock. The position information is detected based on the angles of the respective gears. No electricity is required, so a backup battery is not neccesssary.

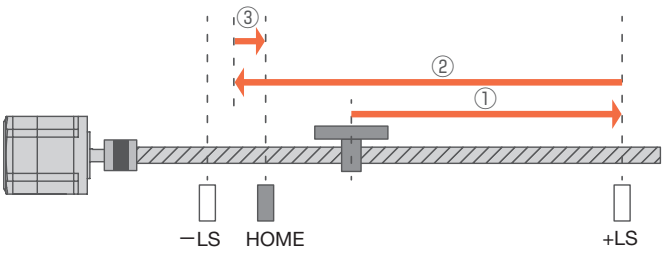
・Basic principles are like an analogue clock



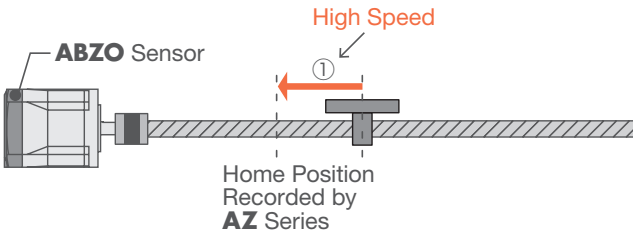
NO EXTERNAL SENSORS

Return-to-home can be performed at high speed without the need to take sensor sensitivity and response time into account, allowing for a shortened machine cycle.

・Standard homing method with limit and home sensors



・High-speed homing method with **AZ** Series



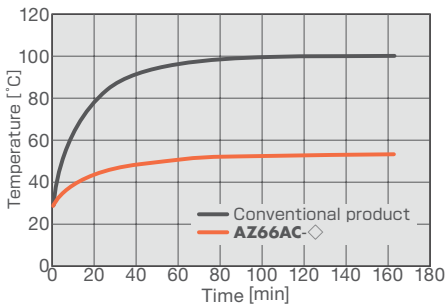
ENERGY SAVING

By using a high efficiency motor, heat generation can be reduced significantly.
Power consumption is reduced by 47 % compared to previous levels.

・Temperature distribution using thermography

Image shows motors operating under the same conditions.

・Motor surface temperature during operation under the same conditions



AZ SERIES

HYBRID STEPPER SERVO αSTEP
CABLE TYPE

Max. Holding Torque
0.036 - 52 Nm

Output Shaft Rotation Speed
0 - 6000 r/min

Frame Size
20 - 90 mm

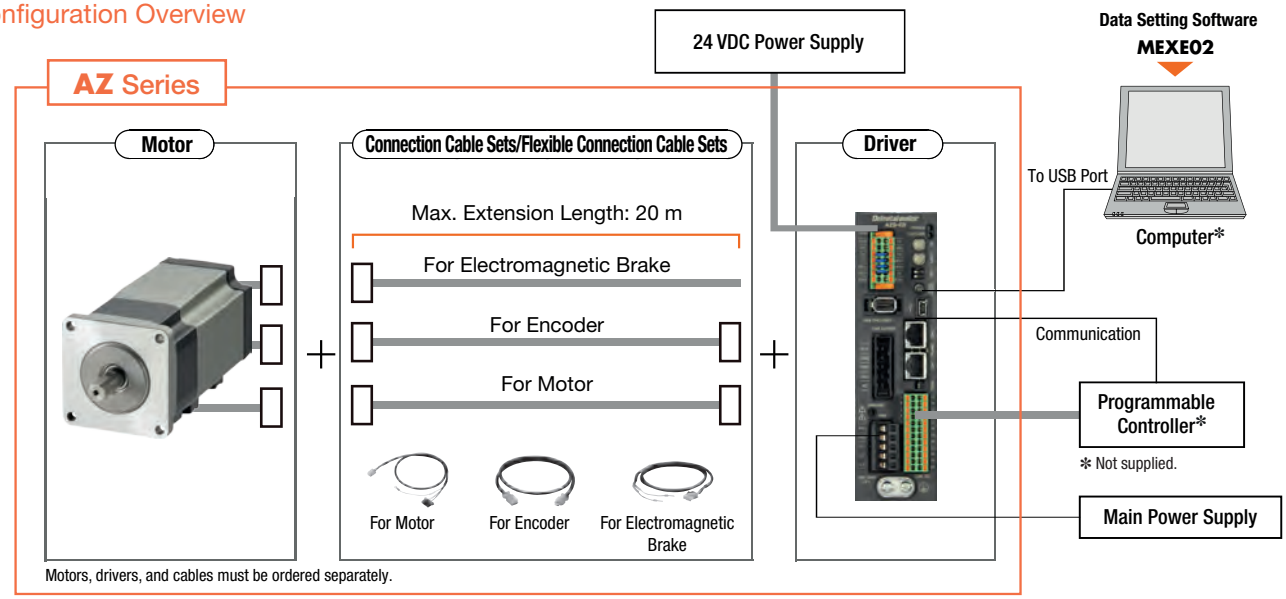
- Absolute sensor, position control
- No external sensors necessary
- Low heat development
- EtherCAT, EtherNet/IP, PROFINET, Modbus RTU

Further information

Characteristics Table

Frame Size [mm]	Max. Holding Torque [Nm]	Resolution [°/Pulse]	Options
20	0.036	0.36	-
28	0.19	0.36	-
40	2.5	0.04 - 0.072	Electromagnetic brake, Harmonic gearhead
42	5	0.0036 - 0.36	Electromagnetic brake, Harmonic gearhead, Planetary gearhead, Tapered gearhead, Right-Angle gearhead
60	10	0.0036 - 0.36	
85	4	0.36	Electromagnetic brake
90	52	0.0036 - 0.1	Electromagnetic brake, Harmonic gearhead, Planetary gearhead

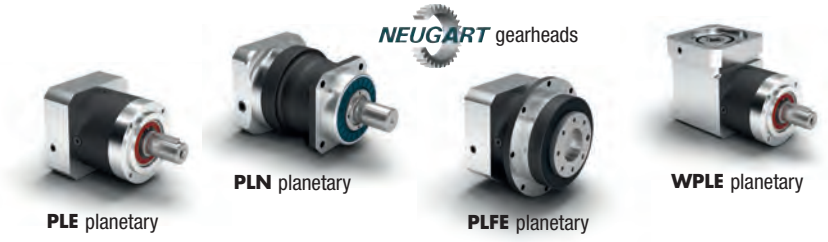
Configuration Overview



αSTEP AZ Series - Neugart
Motor and Gearhead are Pre-assembled

- Ø40 ~ Ø80 mm
- Save Energy with High Reliability and High Efficiency
- High Speed Return-to-Home
- Equipped with a newly developed ABZO sensor - battery-free

NEUGART gearheads



PLE planetary
PLN planetary
PLFE planetary
WPLE planetary

Product Number

Motor, Standard

AZM 6 6 A 0 C

① ② ③ ④ ⑤ ⑥

Motor with **PS**, **HPG** or Harmonic Gearhead

AZM 6 6 A C - HP15 F

① ② ③ ④ ⑥ ⑦ ⑧ ⑨

①	Motor	**AZM**: **AZ** Series
②	Motor Frame Size	**1**: 20 mm, **2**: 28 mm **4**: 42 mm (**HPG** Geared Type is 40 mm) **6**: 60 mm **9**: 85 mm (Geared Type is 90 mm)
③	Motor Case Length	
④	Configuration	**A**: Single Shaft **M**: With Electromagnetic Brake
⑤	Shaft Shape	Blank: With flattened shaft (D-Cut) **0**: Straight Type **1**: With Key
⑥	Winding Type	**C**: AC Power Supply Input Specifications **K**: DC Power Supply Input Specifications
⑦	Geared Type	**PS**: **PS** Geared Type **HP**: **HPG** Geared Type **HS**: Harmonic Geared Type
⑧	Gear Ratio	Number: Reduction ratio
⑨	Output Shaft Type	Blank: **HPG** with round shaft and feather key **F**: **HPG** with Flange

Motor with **TS** or **FC** Gearhead

AZM 6 6 A C - TS 10 U A

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

①	Motor	**AZM**: **AZ** Series
②	Motor Frame Size	**4**: 42 mm **6**: 60 mm **9**: 90 mm (**TS** Geared Type)
③	Motor Case Length	
④	Configuration	**A**: Single Shaft **M**: With Electromagnetic Brake
⑤	Motor Type	**C**: AC Power Supply Input Specifications **K**: DC Power Supply Input Specifications
⑥	Geared Type	**TS**: **TS** Geared Type **FC**: **FC** Geared Type
⑦	Gear Ratio	Number: Reduction ratio
⑧	Cable Direction*	**U**: Up **L**: Left **R**: Right (only **TS** Geared Type) **D**: Down (only **FC** Geared Type)
⑨	Identification	**A**: Solid shaft (**FC** Geared Type)

*With the output shaft pointing to the left the cable direction is defined by looking from the gearhead side.

Driver

AZD - K D

① ② ③

①	Driver Type	**AZD**: **AZ** Series
②	Power Supply Input	**A**: Single-Phase 110~120 VAC **C**: Single-Phase, Three-Phase 200~240 VAC* **K**: 24/48 VDC
③	Type	Blank: Pulse Input **D**: Built-in Controller **X**: Pulse Input with RS-485 Communication **ED**: With EtherCAT interface **EP**: With Ethernet/IP interface **PN**: With PROFINET interface

*WARNING: The **AZ** Series is not suitable for operation on 3 × 400 VAC.

Connection Cable Sets/Flexible Connection Cable Sets

CC 050 V Z □ F B 2

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

①		**CC**: Cable
②	Length	**005**: 0.5 m **010**: 1 m **015**: 1.5 m **020**: 2 m **025**: 2.5 m **030**: 3 m **040**: 4 m **050**: 5 m **070**: 7 m **100**: 10 m **150**: 15 m **200**: 20 m
③	Reference Number	
④	Applicable Models	**Z**: **AZ** Series motors
⑤	Reference Number	Blank: Frame Size 40 to 90 mm **2**: Frame Size 20 mm, 28 mm
⑥	Cable Type	**F**: Connection Cable Sets **R**: Flexible Connection Cable Sets
⑦	Electromagnetic Brake	Blank: For Motors without Electromagnetic Brake **B**: For Motors with Electromagnetic Brake
⑧	Cable Specifications	Blank: For drivers with AC Power Supply Input **2**: For drivers with DC Power Supply Input

For detailed information please refer to the **AZ** Series catalogue on our website:
www.orientalmotor.eu

AZ SERIES

HYBRID STEPPER SERVO αSTEP
CONNECTOR TYPE

Max. Holding Torque
0.3 - 36 Nm

Output Shaft Rotation Speed
4500 r/min

Frame Size
42 - 60 mm

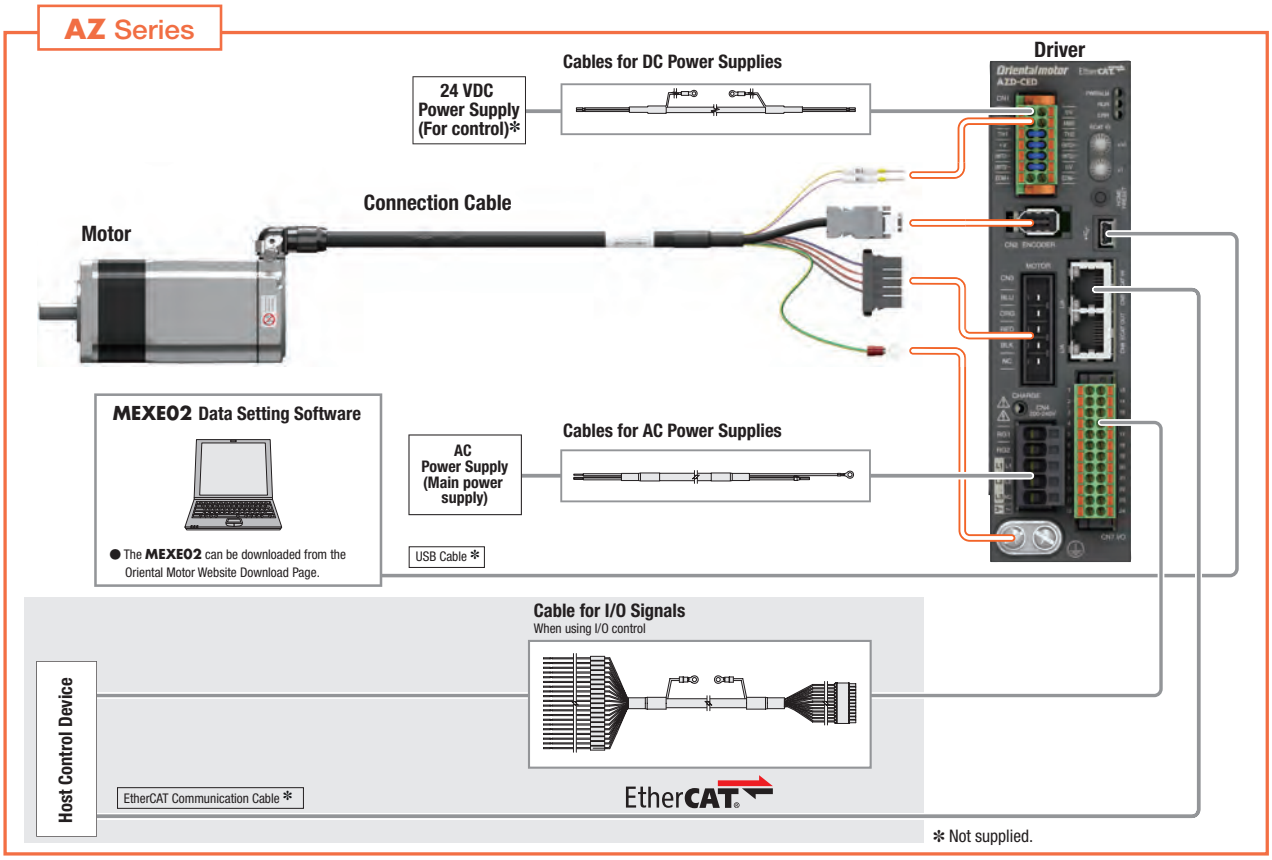
- One cable connection
- Absolute sensor, position control
- No external sensors necessary
- EtherCAT, EtherNet/IP, PROFINET, Modbus RTU

Further information

Characteristics Table

Frame Size [mm]	Max. Holding Torque [Nm]	Resolution [°/Pulse]	Options
42	5	0.0036 - 0.36	Electromagnetic brake, Harmonic gearhead, Planetary gearhead, Tapered gearhead, Right-Angle gearhead
60	10	0.0036 - 0.36	

Configuration Overview



αSTEP AZ Series - Neugart
Motor and Gearhead are Pre-assembled

· Ø40 ~ Ø60 mm
· Save Energy with High Reliability and High Efficiency
· High Speed Return-to-Home
· Equipped with a newly developed ABZO sensor - battery-free

NEUGART gearheads

PLE planetary

Product Number

● Motor

AZM 6 6 A 0 C H

① ② ③ ④ ⑤ ⑥ ⑦

①	Motor	**AZM**: **AZ** Series
②	Motor Frame Size	**4**: 42 mm **6**: 60 mm
③	Motor Case Length	
④	Configuration	**A**: Single Shaft **M**: Type with Electromagnetic Brake
⑤	Additional Function*	**0**: Round Shaft **1**: Key Type
⑥	Winding Type	**C**: AC Input Specification
⑦	Motor Connection Method	**H**: Connector Type

*Standard type products without an additional function number have a round shaft with a flat section.

● Motor with **PS** or Harmonic Gearhead

AZM 6 6 A C H-PS 7.2

① ② ③ ④ ⑥ ⑦ ⑧ ⑨

①	Motor	**AZM**: **AZ** Series
②	Motor Frame Size	**4**: 42 mm **6**: 60 mm
③	Motor Case Length	
④	Configuration	**A**: Single Shaft **M**: Type with Electromagnetic Brake
⑤	Winding Type	**C**: AC Input Specification
⑥	Motor Connection Method	**H**: Connector Type
⑧	Geared Type	**PS**: **PS** Geared Type **HS**: Harmonic Geared Type
⑨	Gear Ratio	

● Motor with **TS**

AZM 6 6 A C H- TS 7.2 U

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

①	Motor	**AZM**: **AZ** Series
②	Motor Frame Size	**4**: 42 mm **6**: 60 mm
③	Motor Case Length	
④	Configuration	**A**: Single Shaft **M**: Type with Electromagnetic Brake
⑤	Winding Type	**C**: AC Input Specification
⑥	Motor Connection Method	**H**: Connector Type
⑦	Geared Type	**TS**: **TS** Geared Type
⑧	Gear Ratio	
⑨	Connector Direction	**U**: Up **L**: Left **R**: Right

● Motor with **FC**

AZM 6 6 A C H-FC 7.2 U A

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩

①	Motor Type	**AZM**: **AZ** Series
②	Motor Frame Size	**4**: 42 mm **6**: 60 mm
③	Motor Case Length	
④	Configuration	**A**: Single Shaft **M**: Type with Electromagnetic Brake
⑤	Winding Type	**C**: AC Input Specification
⑥	Motor Connection Method	**H**: Connector Type
⑦	Geared Type	**FC**: **FC** Geared Type
⑧	Gear Ratio	
⑨	Connector Direction*	**D**: Down **U**: Up
⑩	Identification	**A**: Solid Shaft

*The connector direction is as viewed from the gearhead side with the output shaft facing left.

● Connection Cables/Flexible Connection Cables

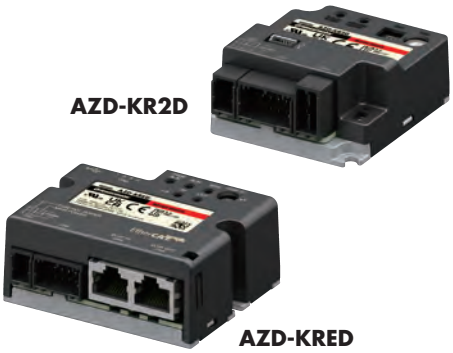
CCM 010 Z1 A F F

① ② ③ ④ ⑤ ⑥

①		**CCM**: Cable
②	Length	**010**: 1 m, **020**: 2 m, **030**: 3 m, **050**: 5 m, **070**: 7 m, **100**: 10 m
③	Applicable Model	**Z1**: **AZ** Series Connector Type
④	Description	**A**: AC Input for Motor/Encoder **B**: AC Input For Motor/Encoder/ Electromagnetic Brake Type
⑤	Cable Outlet Direction*	**F**: Output Shaft Direction **V**: Vertical **B**: Opposite to Output Shaft Direction
⑥	Cable Type	**F**: Connection Cable **R**: Flexible Connection Cable

*Three types of the connection cables with different cable outlet directions are available. Please select the cable outlet direction needed for the installation.

For detailed information please refer to the **AZ** Series Connector Type catalogue on our website:
www.orientalmotor.eu



Input Current
0.4 - 3.7 A

Weight
56 - 100 gr

Power Supply Input
24 VDC/48 VDC

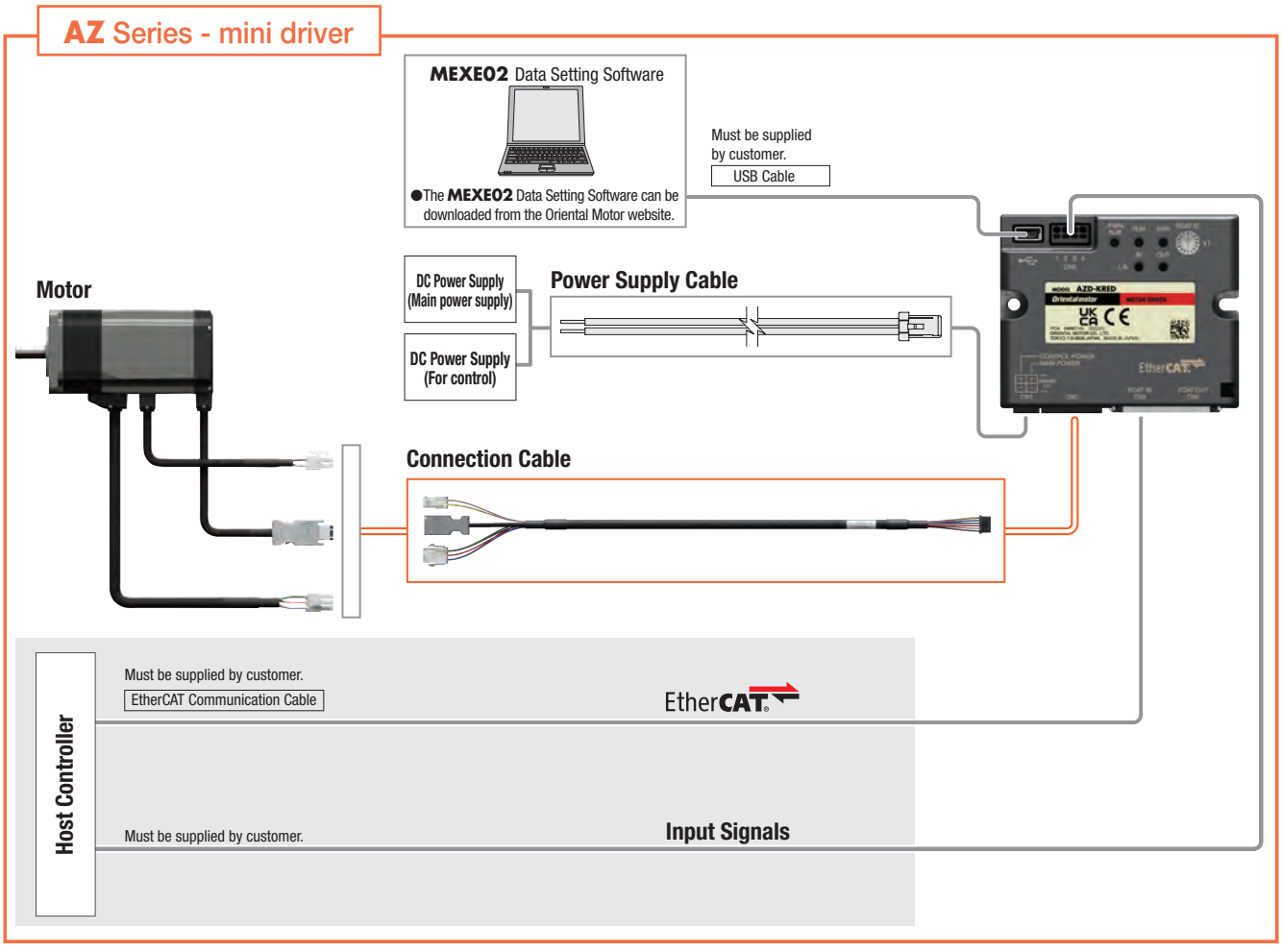
- Compact Design
- Light Weight Design
- Compatible with Battery Power
- EtherCAT EtherNet/IP PROFINET Modbus RTU RS-485

Further information

List of Combinations

Product	Cable Type	Connector Type
Motor	Round shaft Type	Round shaft Type
	TS Geared Type	**TS** Geared Type
	FC Geared Type	**FC** Geared Type
	PS Geared Type	**PS** Geared Type
	HPG Geared Type	-
	Harmonic Geared Type	Harmonic Geared Type
	Neugart Geared Type	Neugart Geared Type

Configuration Overview



Product Number

●Driver

AZD - K R 2 D

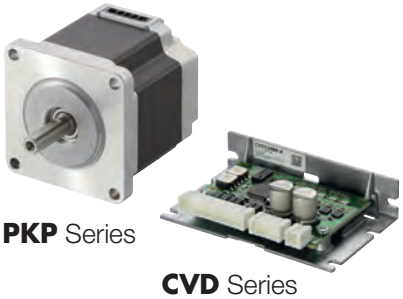
① ② ③ ④ ⑤

①	Driver Type	**AZD**: **AZ** Series Driver
②	Power Supply Input	**K**: 24 VDC/48 VDC
③	Driver Figure	**R**: Compact
④	Reference Number	
⑤	Type	**ED**: EtherCAT Drive Profile-Compatible **EP**: EtherNet/IP **PN**: PROFINET **D**: RS-485 Communication Type **X**: Pulse Input Type with RS-485 Communication

For detailed information please refer to the **AZ** Series mini driver catalogue on our website:
www.orientalmotor.eu

OPEN LOOP STEPPER MOTORS

2-phase and 5-phase high-torque stepper motors are available with a wide variety of frame sizes and motor options. The **CVD** Series drivers are optimally matched to the **PKP** Series motors.



PKP Series

CVD Series

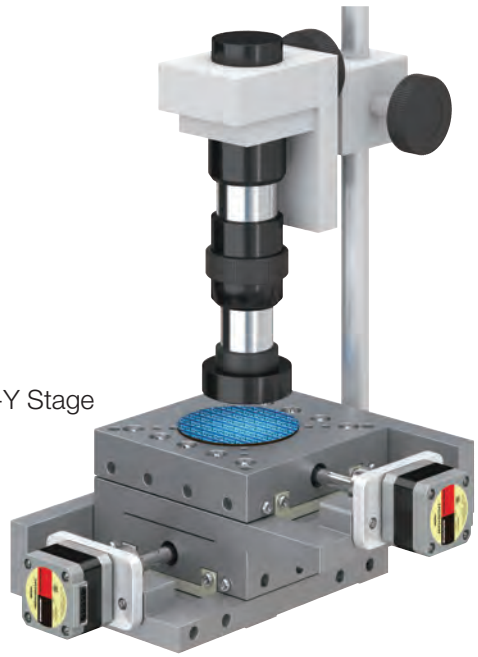
FEATURES

Excellent Synchronisation, High-Response Operation
Stepper motors are ideal for applications requiring frequent starting and stopping.

Holding the Stop Position
Stepper motors are ideal for applications where the low rigidity of the mechanism requires the absence of vibration upon stopping.

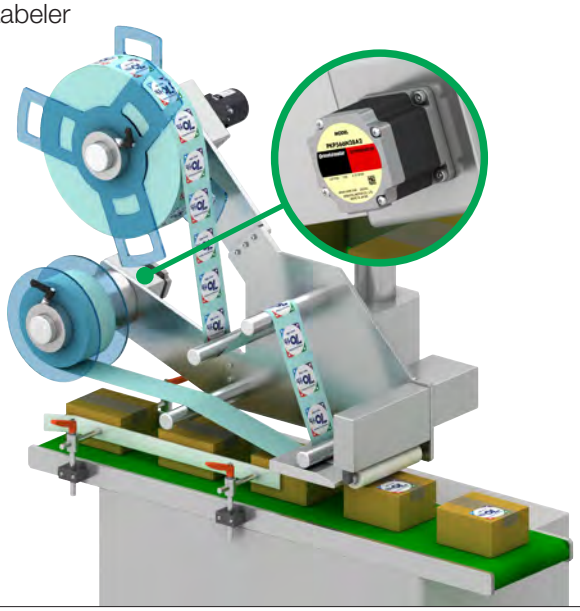
High Resolution Types
High resolution stepper motors have a smaller basic step angle for improved stopping accuracy.

APPLICATIONS



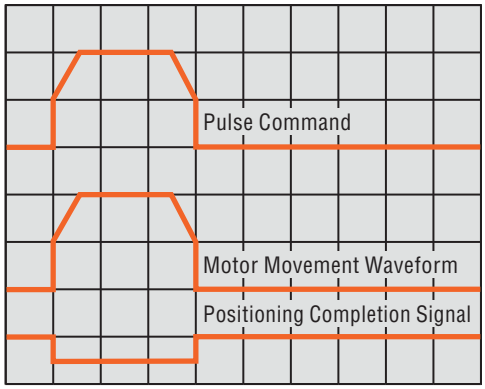
X-Y Stage

Labeler



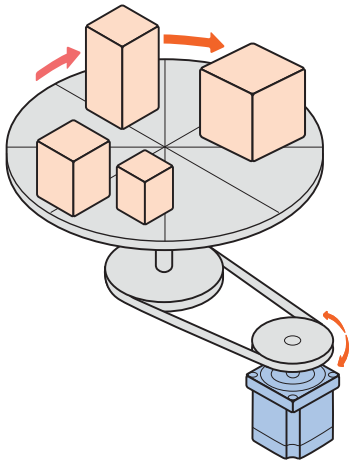
SYNCHRONISATION, HIGH RESPONSE

Stepper motors operate synchronously with commands, generate high torque with a compact body, and offer excellent acceleration performance and response. They are ideal for applications requiring frequent starting and stopping.



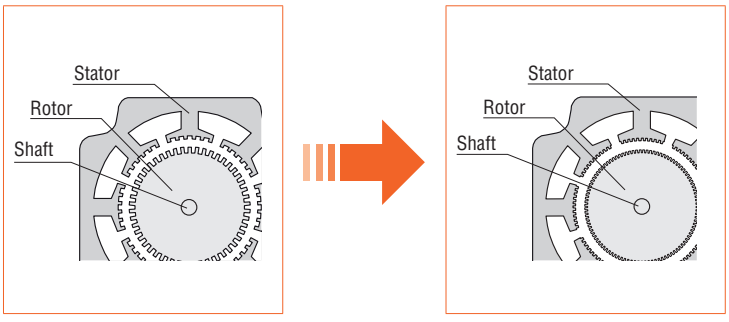
HOLDING THE STOP POSITION

During positioning, the motor stops with its own holding force without hunting. This makes it ideal for applications where the low rigidity of the mechanism requires absence of vibration upon stopping.



HIGH RESOLUTION STEPPER MOTORS

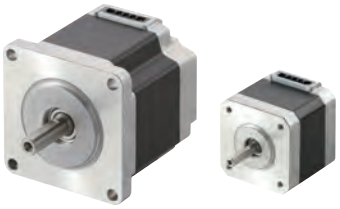
Increased resolution is realised with a higher number of motor teeth. For 1.8° stepper motors the step angle becomes 0.9°, for 0.72° stepper motors 0.36°.



Standard Type (50 teeth)

High-Resolution Type (100 teeth)

2-PHASE STEPPER MOTORS



Max. Holding Torque
0.014 - 9.5 Nm

Basic Step Angle
0.018° - 1.8°

Frame Size
13 - 85 mm

- High torque in the lower speed range
- Compact design
- Low heat development
- Energy saving

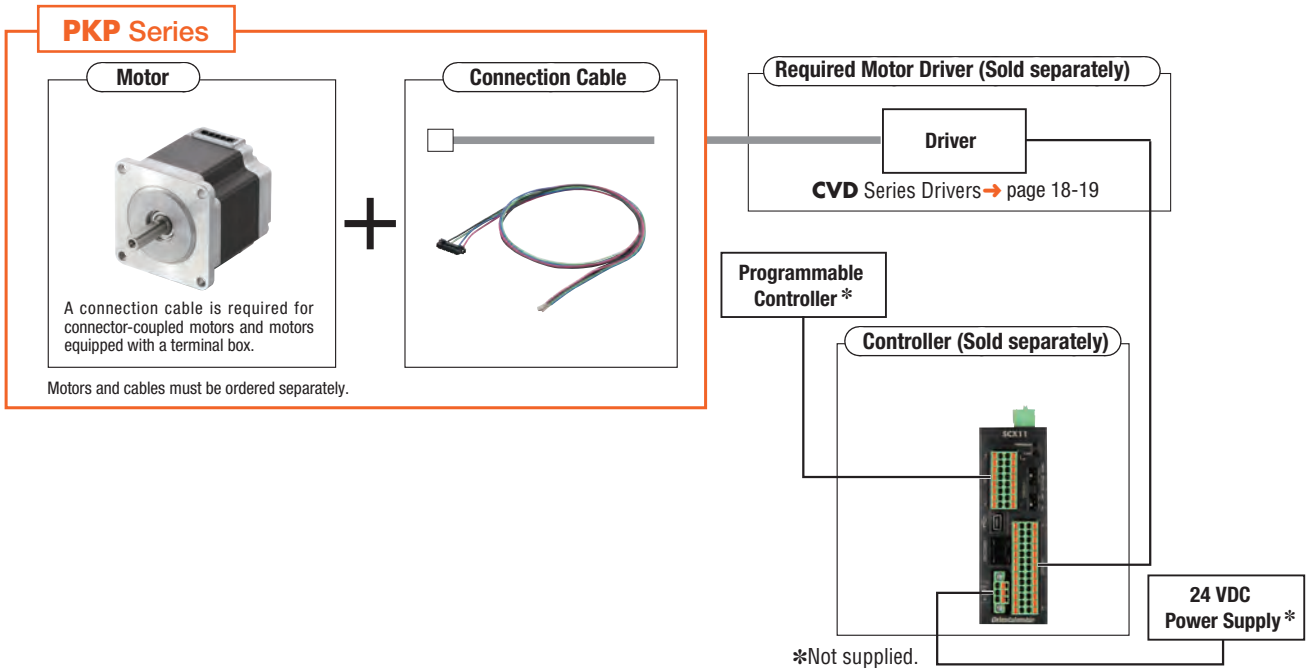
Further information

Product Line

Motor Options	Basic Step Angle	Frame Size [mm]										Driver
		13	20	28	35	42	51	56.4	60	61	85	
Standard Type	1.8°	●*	●	●	●	●	-	●	-	-	●	**CVD** Series see page 18-19
Standard Type with Encoder	1.8°	-	●	●	●	●	-	●	-	-	-	
Standard Type with electromagnetic brake	1.8°	-	-	●	●	●	-	●	-	-	-	
High-Resolution Type	0.9°	-	-	●	-	●	-	●	-	-	-	
High-Resolution Type with Encoder	0.9°	-	-	-	-	●	-	●	-	-	-	
High-Resolution Type with electromagnetic brake	0.9°	-	-	-	-	●	-	●	-	-	-	
Flat Type	1.8°	-	-	-	-	●	-	-	●	-	-	
Flat Type with Harmonic Geared	0.018° - 0.036°	-	-	-	-	-	●	-	-	●	-	
Standard Type with Parallel Shaft Gears	**SH** 0.05° - 0.5° **CS** 0.09° - 0.36°	-	-	●	-	●	-	-	●	-	-	

*Comming soon

Configuration Overview



Product Number

●Standard 2-Phase Stepper Motor
Standard Type with Electromagnetic Brake

PKP 2 6 4 D 28 A 2

① ② ③ ④ ⑥ ⑦ ⑧ ⑨

●High Resolution 2-Phase Stepper Motor/
High-Resolution Type with Electromagnetic Brake

PKP 2 6 4 M D 28 A 2

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

①	Motor	**PKP**: **PKP** Series
②		**2**: For 2-phase stepper motors
③	Frame Size	**0**: 13 mm **1**: 20 mm **2**: 28 mm **3**: 35 mm **4**: 42 mm **6**: 56.4 mm **9**: 85 mm
④	Motor Case Length	
⑤	Basic Step Angle	Blank: 1.8° **M**: 0.9°
⑥	Number of Lead Wires	**D**: 4 Leads **U**: 5 or 6 Leads
⑦	Motor Winding Specification	
⑧	Configuration	**A**: Single Shaft **B**: Double Shaft **M**: with an Electromagnetic Brake
⑨	Reference Number	

●Standard 2-Phase Stepper Motor with Encoder

PKP 2 6 4 D 28 A 2 - R2F L

① ② ③ ④ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪

●High Resolution 2-Phase Stepper Motor with Encoder

PKP 2 4 3 M D 15 A 2 - R2F L

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪

①	Motor	**PKP**: **PKP** Series
②		**2**: For 2-phase stepper motors
③	Frame Size	**1**: 20 mm **2**: 28 mm **3**: 35 mm **4**: 42 mm **6**: 56.4 mm
④	Motor Case Length	
⑤	Basic Step Angle	Blank: 1.8° **M**: 0.9°
⑥	Number of Lead Wires	**D**: 4 Leads **U**: 5 or 6 Leads
⑦	Phase Current	× 0.1 A
⑧	Shaft	**A**: Single Shaft
⑨	Connector Classification	
⑩	Encoder Resolution	**R2E**: 200 P/R **R2F**: 400 P/R **R3J**: 1000 P/R
⑪	Encoder Output Type	**L**: Line Driver

●Flat Type

PKP 2 4 2 D 23 A 2

① ② ③ ④ ⑥ ⑦ ⑧ ⑩

PKP 2 6 2 F D 15 A W

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

●Flat Type with Harmonic Geared

PKP 2 4 2 D 23 A 2 - H 100

① ② ③ ④ ⑥ ⑦ ⑧ ⑩ ⑪ ⑫

PKP 2 6 2 F D 15 A W - H 100 S

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑪ ⑫ ⑬

①	Motor	**PKP**: **PKP** Series
②		**2**: For 2-phase stepper motors
③	Frame Size	**4**: 42 mm (Harmonic Geared type is 51 mm.) **6**: 60 mm (Harmonic Geared type is 61 mm.)
④	Motor Case Length	
⑤	Motor Classification	**F**: Frame Size 60 mm
⑥	Number of Lead Wires	**D**: 4 Leads
⑦	Phase Current	× 0.1 A
⑧	Shaft	**A**: Single Shaft
⑨	Cable Type	Blank: Connector Coupled Type **W**: Lead Wire Type
⑩	Reference Number	
⑪	Geared Type	Blank: Flat Type **H**: Flat Type Harmonic Geared
⑫	Gear Ratio	
⑬	Gear Classification	

●**SH** Geared Type, **CS** Geared Type

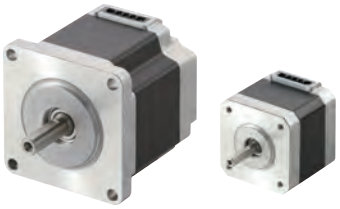
PKP 2 4 3 D 23 B 2 - SG 18

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩

①	Motor	**PKP**: **PKP** Series
②		**2**: For 2-phase stepper motors
③	Frame Size	**2**: 28 mm **4**: 42 mm **6**: 60 mm
④	Motor Case Length	
⑤	Number of Lead Wires	**D**: 4 Leads **U**: 5 or 6 Leads
⑥	Motor Winding Specification	
⑦	Configuration	**A**: Single Shaft **B**: Double Shaft
⑧	Connector Classification	
⑨	Geared Type	**SG**: **SH** Geared Type **CS**: **CS** Geared Type
⑩	Gear Ratio	Number: Reduction ratio

For detailed information please refer to the **PKP** Series catalogue on our website:
www.orientalmotor.eu

5-PHASE STEPPER MOTORS



Max. Holding Torque
0.052 - 2.3 Nm

Basic Step Angle
0.36° - 0.72°

Frame Size
28 - 60 mm

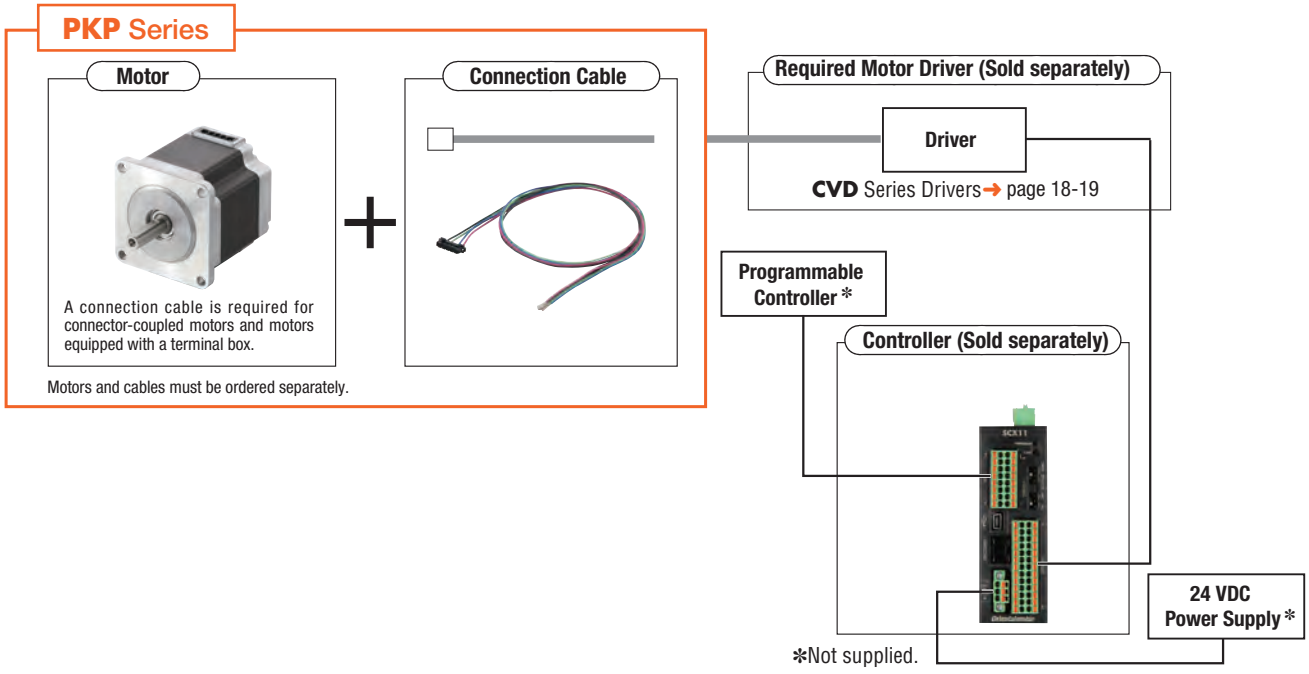
- Compact design
- High torque in the upper speed range
- Low vibration
- Low heat generation
- Energy saving

Further information

Product Line

Motor	Basic Step Angle	Frame Size [mm]				Driver
		28	42	56.4	60	
Standard Type	0.72°	●	●	●	●	**CVD** Series see page 18 - 19
Standard Type with Encoder	0.72°	-	●	●	●	
High-Resolution Type	0.36°	-	●	-	●	

Configuration Overview



Product Number

●Standard 5-Phase Stepper Motor

PKP 5 6 6 F N 24 A 2

① ② ③ ④ ⑤ ⑦ ⑧ ⑨ ⑩

●High Resolution 5-Phase Stepper Motor

PKP 5 4 4 M N 18 A

① ② ③ ④ ⑥ ⑦ ⑧ ⑨

●Standard 5-Phase Stepper Motor with Encoder

PKP 5 6 6 F N 24 A 2 - R2G L

① ② ③ ④ ⑤ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫

①	Motor	**PKP**: **PKP** Series
②		**5**: For 5-phase stepper motors
③	Frame Size	**2**: 28 mm **4**: 42 mm **6**: 56.4 mm (60 mm when the motor classification is "**F**")
④	Motor Case Length	
⑤	Motor Classification	**F**: Frame Size 60 mm
⑥	Basic Step Angle	Blank: 0.72° **M**: 0.36°
⑦	Number of Lead Wires	**N**: 5 Leads
⑧	Phase Current	× 0.1 A
⑨	Configuration	**A**: Single Shaft **B**: Double Shaft
⑩	Connector Classification	
⑪	Encoder Resolution	**R2G**: 500 P/R
⑫	Encoder Output Circuit Type	**L**: Line Driver

●Connection Cable for Motor

LC 5 N 06 E

① ② ③ ④ ⑤

①		**LC**: Connection Cable
②		**5**: For 5-phase stepper motors
③	Cable Classification	**N**: For 5-phase stepper motors
④	Length	**06**: 0.6 m **10**: 1 m
⑤	Reference Letter	

●Connection Cable for Encoder

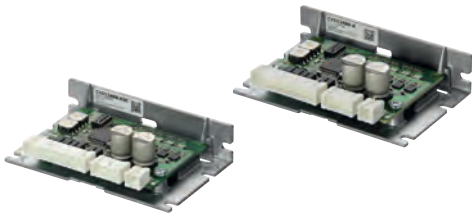
LC E 08 A - 006

① ② ③ ④ ⑤

①		**LC**: Connection Cable
②	Cable Classification	**E**: For Encoder
③	Appropriate Products	**08**: For encoders with line driver output
④	Reference Letter	
⑤	Length	**006**: 0.6 m

For detailed information please refer to the **PKP** Series catalogue on our website:
www.orientalmotor.eu

2-PHASE/5-PHASE STEPPER MOTOR DRIVERS



Input Current
0.5 - 4.8 A

Motor Drive Current
0.35 - 4.5 A/Phase

Power Supply Input
24 VDC

- Compact and lightweight
- Low vibration
- For 2- or 5-phase Stepper motors

Further information

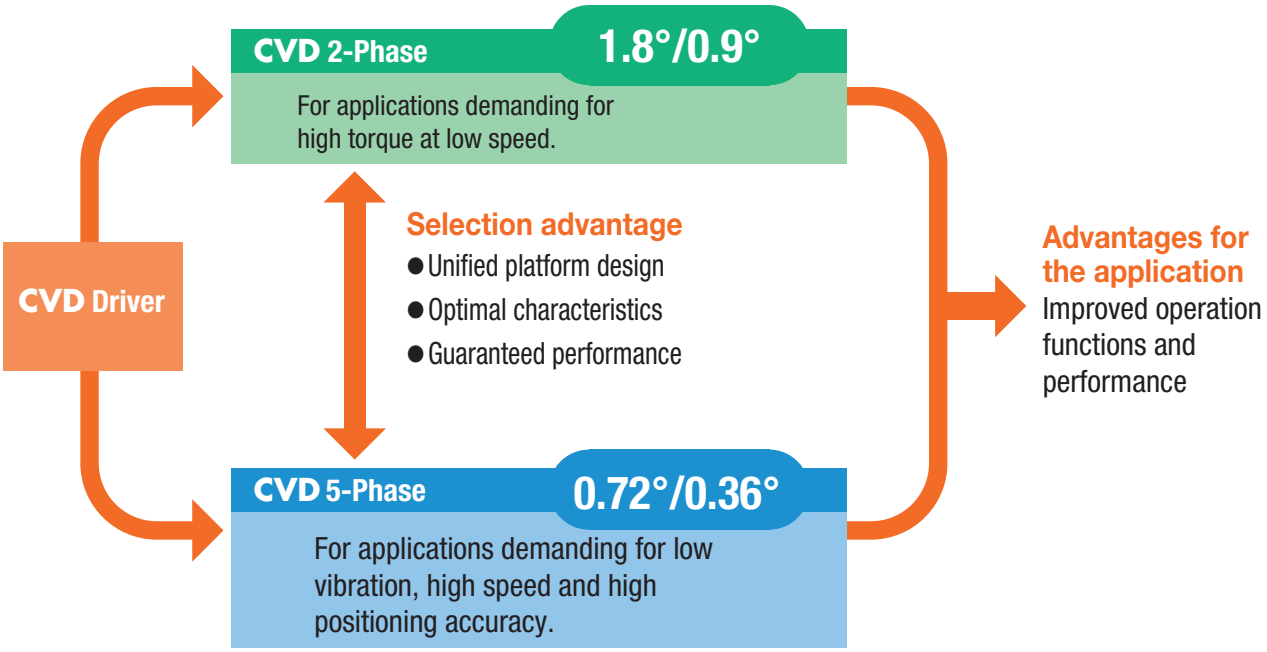
Product Line

CE UK CA

Control Method	With Pulse-Input	With RS485 Interface	With Speed Control
I/O	-	Return to the reference point Positioning mode Speed specification [2-phase/5-phase]	2 speeds selectable only for 5-phase stepper motors
Pulse-Input	1-stroke/2-stroke mode Adjustable microstep resolution	-	-
Modbus (RTU)	-	Return to the reference point Positioning mode Direct Data Operation* Speed control	-

*Operation with direct data means that the parameters for position and speed are overwritten each time.

Problem-free change between 2-phase and 5-phase technology



1.8°/0.9° and 0.72°/0.36° stepper motors use specific drivers that must be selected to match the motor technology used. **CVD** Series 2-phase and 5-phase stepper motor drivers are compatible in terms of function and dimensions. This allows you to select the optimal motor according to your specification, regardless of the motor technology. In addition, the motors are characterised by compactness and low weight.

Product Number

●Driver with Pulse-Imput

CVD 2 23 F B R - K _

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

①	Driver	**CVD**: **CVK** Series
②		**2**: For 2-phase stepper motors **5**: For 5-phase stepper motors
③	Phase Current	× 0.1 A
④	Reference Letter	
⑤	Mounting Plate	Blank: Without mounting plate **B**: With mounting plate
⑥	Connector Configuration	Blank: Straight **R**: Right Angle
⑦	Power Supply Input	**K**: 24 VDC
⑧	Driver Classification	Blank: Pulse-Imput

●Driver with RS485 Interface

CVD 2 B R - K R

① ② ③ ④ ⑤ ⑥

①	Driver	**CVD**: **CVK** Series
②		**2**: For 2-phase stepper motors **5**: For 5-phase stepper motors
③	Mounting Plate	Blank: Without mounting plate **B**: With mounting plate
④	Connector Configuration	Blank: Straight **R**: Right Angle
⑤	Power Supply Input	**K**: 24 VDC
⑥	Driver Classification	**R**: RS-485 Communication

●Driver with Speed Control

CVD 5 18 B R - K SC

① ② ③ ④ ⑤ ⑥ ⑦

①	Driver	**CVD**: **CVK** Series
②		**5**: For 5-phase stepper motors
③	Phase Current	× 0.1 A
④	Mounting Plate	Blank: Without mounting plate **B**: With mounting plate
⑤	Connector Configuration	Blank: Straight **R**: Right Angle
⑥	Power Supply Input	**K**: 24 VDC
⑦	Driver Classification	**SC**: Speed Control

For detailed information please refer to the **CVD** Series catalogue on our website:
www.orientalmotor.eu

SERVO MOTORS

The **AZX** Series is equipped with a battery-free absolute sensor. They are suitable for 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.

AZX Series

FEATURES

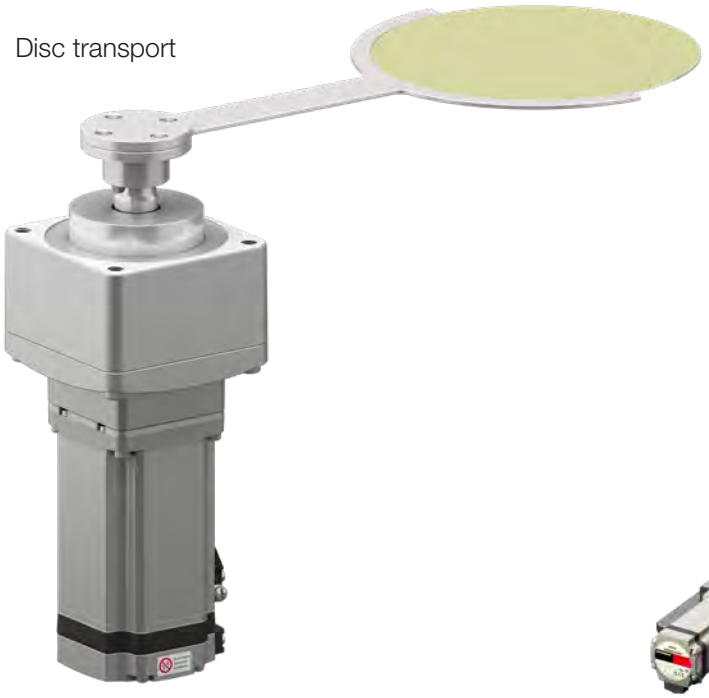
PS Geared type available
Available in planetary geared type. Geared type is relatively inexpensive and features small size, light weight and compactness.

High Torque in the High Speed
Achieves high speed and high torque that the **AZ** Series cannot exert. They has superior torque in the high speed range, while the **AZ** Series has superior torque in the low speed range.

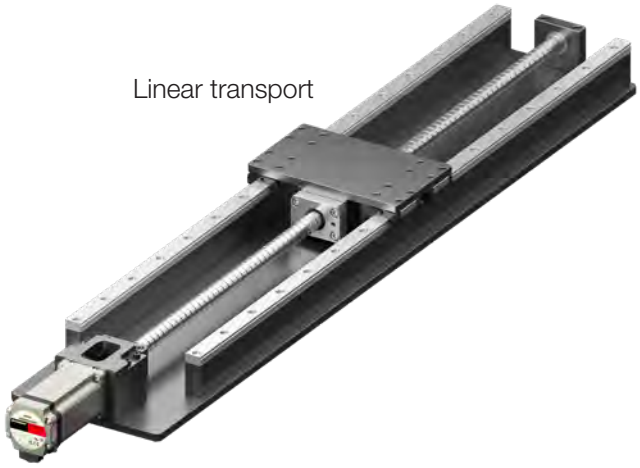
Same usability as AZ Series
Provides the equivalent usability as the **AZ** Series.

APPLICATIONS

Disc transport

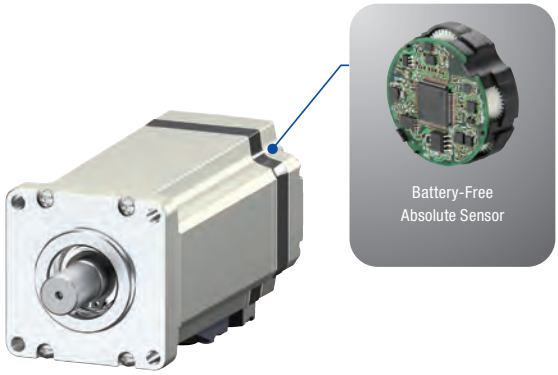


Linear transport



BATTERY-FREE ABSOLUTE SENSOR EQUIPPED

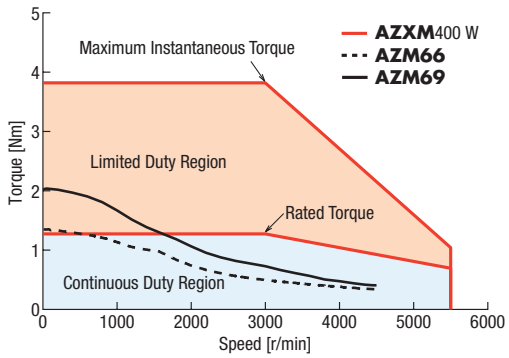
The servo motor equipped with the **ABZO** Sensor. Thanks to the absolute system, a home sensor or external sensor is not required. No battery is necessary for a mechanical-type sensor. Positioning information is managed mechanically by the **ABZO** Sensor.



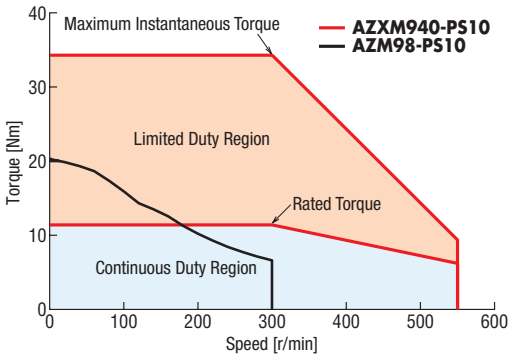
HIGH OUTPUT POWER, HIGH-SPEED CHARACTERISTICS

The **AZX** Series achieves high torque in the high speed range.
It is suitable for positioning applications with a large amount of travel (e.g.: ball screw driving).

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.

THE BASIC OPERATIONS ARE THE SAME AS THE **AZ** SERIES

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

AZX Series

Wiring	Signal system wiring
Setting	Switch and parameter functions, setting method (**MEXE02** used)
Control	Parameter ID when controlling over a network
Operation Functions	Built-in positioning operation function, etc. in the driver

Same Operating Method

AZ Series

Output Power
400 - 600 W

Output Shaft Rotation Speed
0 - 5500 r/min

Rated Torque
1.27 - 25.7 Nm

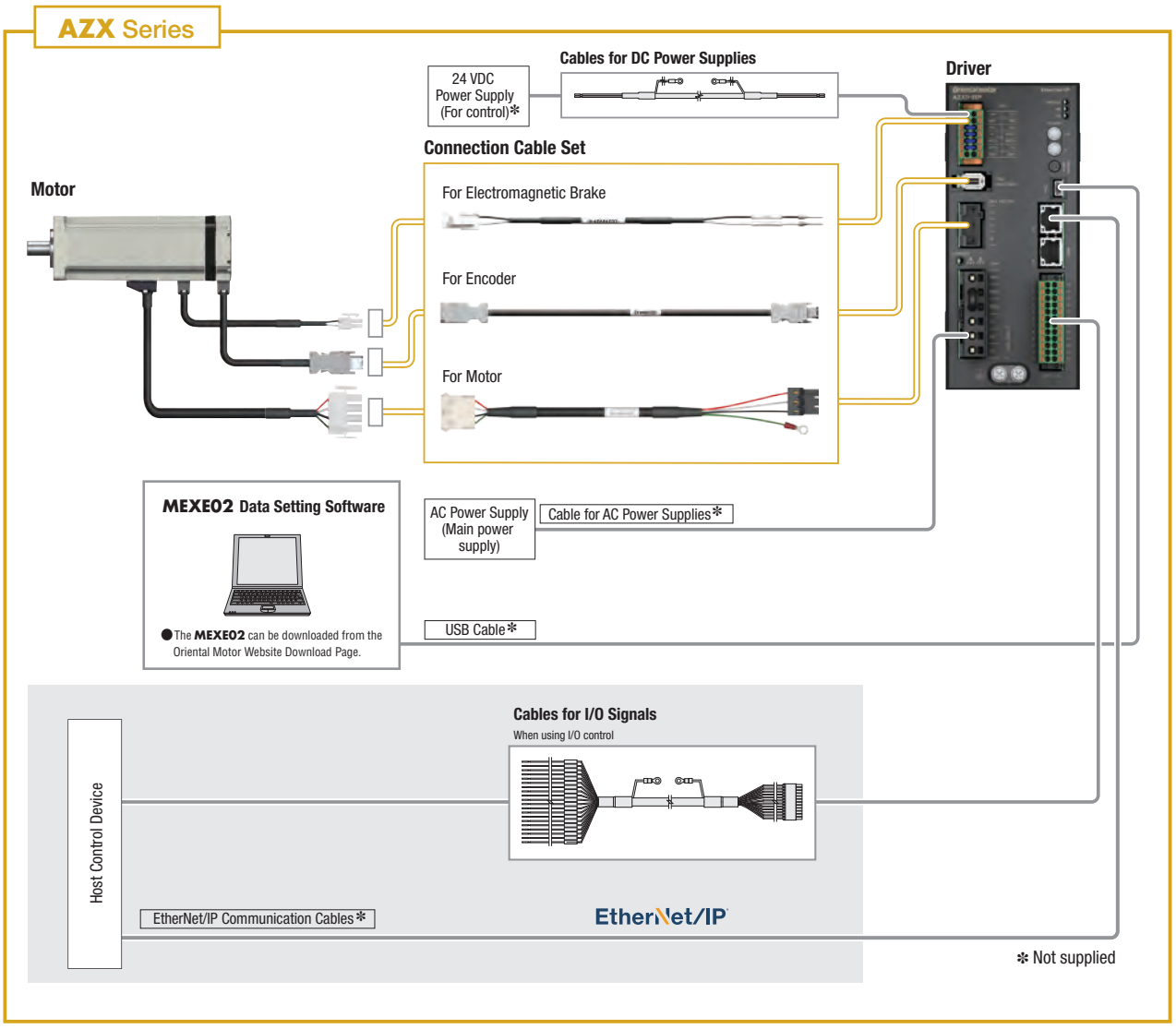
- Absolute sensor, position control
- Same Operating Method as the **AZ** Series
- High Torque in the High Speed Range
- EtherCAT EtherNet/IP

Further information

Characteristics Table

Output Power [W]	Rated Torque [Nm]	Maximum Instantaneous Torque [Nm]	Options
400	1.27 / 25.7	3.82 / 77.2	Electromagnetic brake, Planetary gearhead
600	1.91 / 8.6	3.82 / 32.2	Electromagnetic brake, Planetary gearhead

Configuration Overview



Product Number

●Motor, Standard

AZXM 6 40 A C

① ② ③ ④ ⑤

①	Motor Type	**AZXM**: **AZX** Series Motor
②	Motor Frame Size	**6**: 60 mm **9**: 85 mm
③	Output Power	**40**: 400 W **60**: 600 W
④	Output Shaft Type	**A**: Single Shaft **M**: Type with Electromagnetic Brake
⑤	Motor Type	**C**: AC Input Specification

◇**PS** Geared Type

AZXM 9 40 A C-PS 10

① ② ③ ④ ⑤ ⑥ ⑦

①	Motor Type	**AZXM**: **AZX** Series Motor
②	Motor Frame Size	**9**: 90 mm
③	Output Power	**40**: 400 W **60**: 600 W
④	Output Shaft Type	**A**: Single Shaft **M**: Type with Electromagnetic Brake
⑤	Motor Type	**C**: AC Input Specification
⑥	Geared Type	**PS**: **PS** Geared Type
⑦	Gear Ratio	

●Driver

AZXD-S ED

① ② ③

①	Driver Type	**AZXD**: **AZX** Series Driver
②	Power Supply Input	**S**: Single-Phase/Three-Phase 200-240 VAC
③	Product Line	**ED**: EtherCAT-Compatible **EP**: EtherNet/IP-Compatible

●Connection Cable Sets / Flexible Connection Cable Sets

CC 010 V X F B

① ② ③ ④ ⑤ ⑥

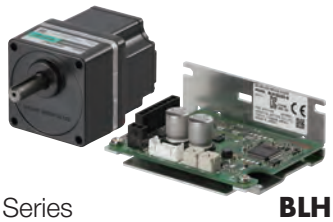
①		**CC**: Cable
②	Length	**010**: 1 m **020**: 2 m **030**: 3 m **050**: 5 m **070**: 7 m **100**: 10 m **150**: 15 m **200**: 20 m
③	Reference Number	
④	Applicable Model	**X**: For **AZX** Series
⑤	Cable Type	**F**: Connection Cable Set **R**: Flexible Connection Cable Set
⑥	Description	Blank: For Type without Electromagnetic Brake **B**: For Type with Electromagnetic Brake

For detailed information please refer to the **AZX** Series catalogue on our website:
www.orientalmotor.eu

BRUSHLESS DC MOTORS

High-efficiency brushless DC Motors achieve high output in a compact body while delivering high-speed operation, a wide speed control range and constant torque characteristics from low speed to high speed. AC input and DC input types are available.

BLE2 Series



BLH Series

FEATURES

Speed Stability

Speed remains stable even if the weight of the load changes. This is also known as "Speed Regulation".

Alarm Function

Various protective functions such as overload/overvoltage protective functions are equipped. An alarm is an output when a protective function activates.

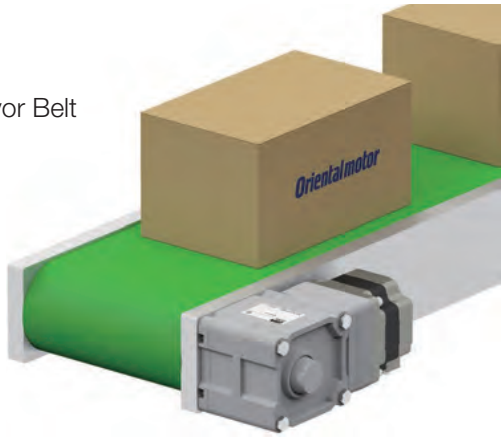
Speed Control

Speed control refers to the ability to manipulate the rotational speed of the motor. Typically, a speed feedback device is needed together with a speed controller.

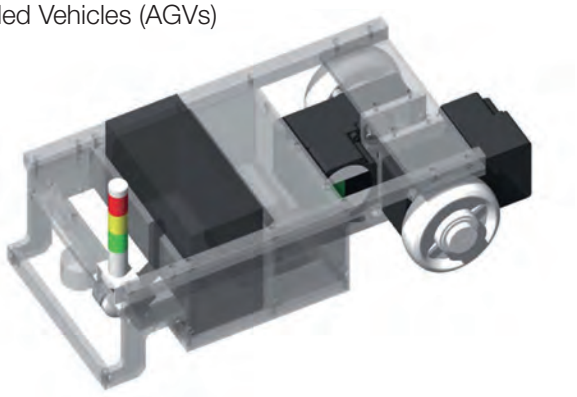
APPLICATIONS

Mixing Machine

Conveyor Belt

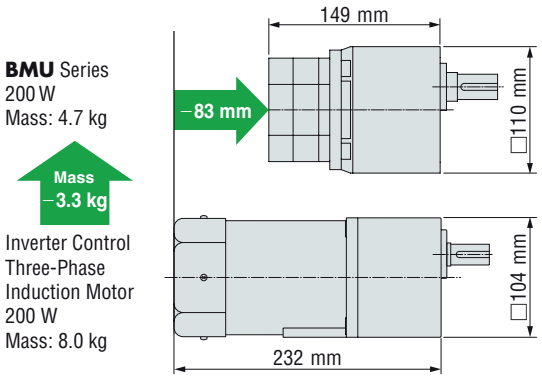


Automated Guided Vehicles (AGVs)



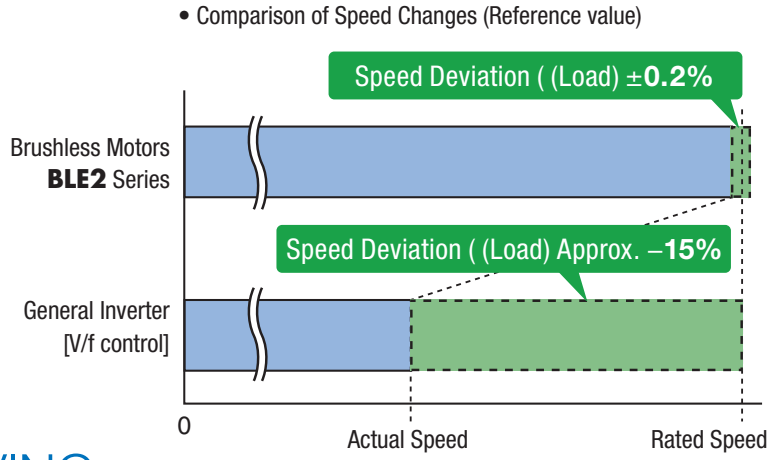
SLIM, LIGHT, HIGH POWER

Brushless DC motors are slim, lightweight, and high power because permanent magnets are used in the rotor portion. This contributes to the downsizing of equipment.
[Comparison Example at 200 W Output Power]



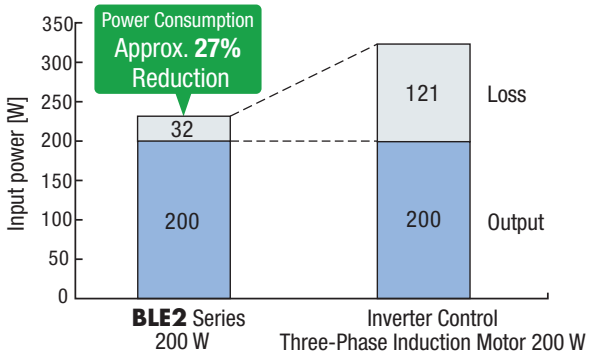
±0.2 % SPEED STABILITY

Brushless DC motor drivers constantly monitor feedback signals from the motor and compare the actual speed against the set speed, adjusting the applied voltage where needed to maintain the set speed. This allows the motor to rotate at a stable speed from low to high speeds even when the load fluctuates.



ENERGY SAVING

Brushless DC motors significantly reduce power consumption as the use of permanent magnets in the rotor portion prevents secondary losses from the rotor. This helps the equipment to save energy.



BLE2 SERIES BRUSHLESS DC DRIVER/MOTOR WITH **AC** INPUT

Output Power
30 - 300 W

Speed Range
80 - 4000 r/min

Frame Size
60 - 110 mm

- 16 programmable speeds
- Vertical movement possible
- Torque Limit Function
- Up to IP67

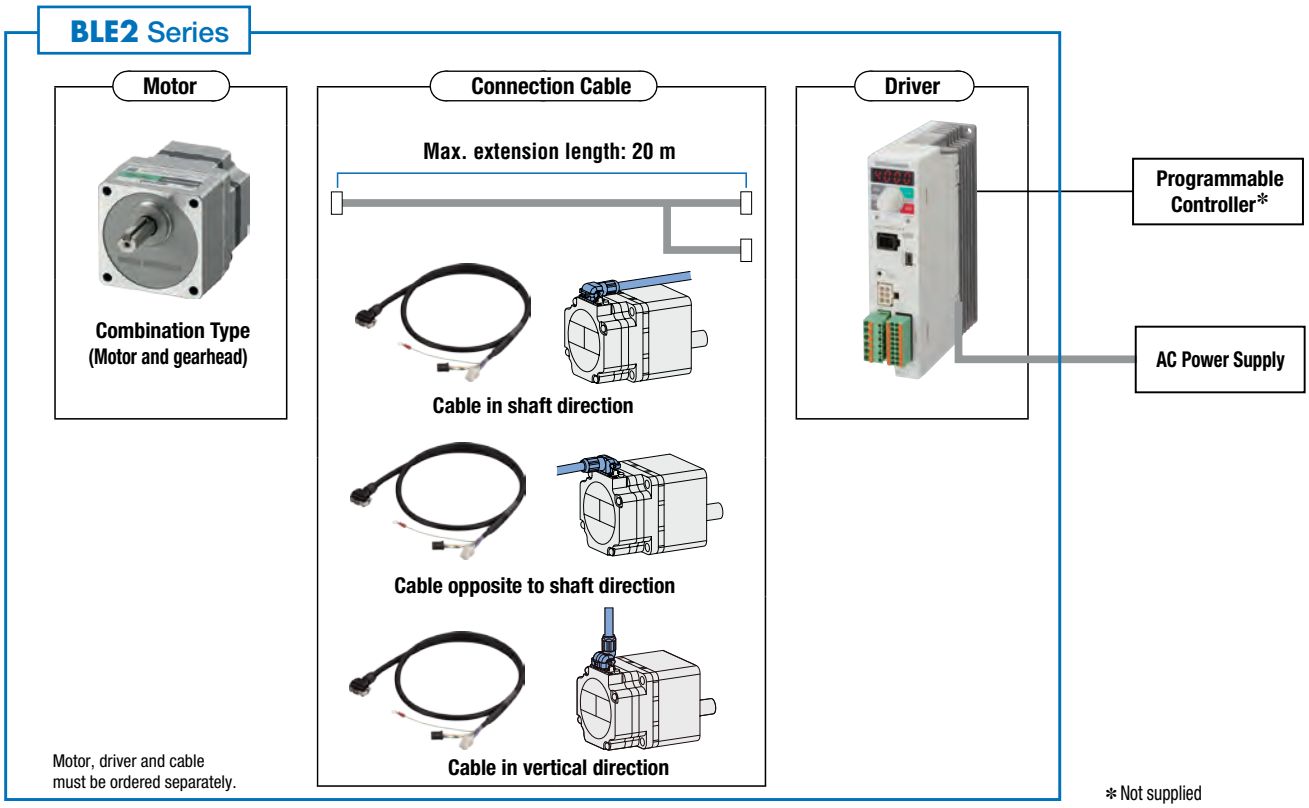
Further information

Characteristics Table

Output Power [W]	Speed Range with Gear [r/min]	Max. Permissible Torque [Nm]	Options
30	0.4 - 800	0.2 / 0.54 - 6*	Parallel Shaft Gearhead, Electromagnetic Brake
60	0.4 - 800	0.4 / 0.9 - 16	
120	0.067 - 800	0.8 / 2 - 53.9	Parallel Shaft Gearhead, Hollow Shaft Flat Gearhead, Electromagnetic Brake
200	0.067 - 800	1.15 / 2.9 - 518*	Parallel Shaft Gearhead, Hollow Shaft Flat Gearhead, Foot Mount Gearhead, Electromagnetic Brake
300	0.133 - 800	1.72 / 4.3 - 583*	Parallel Shaft Gearhead, Foot Mount Gearhead

*Depending on reduction ratio and design.

Configuration Overview



Product Number

●Motor (motor with and without parallel shaft type)

BLM 4 60 S H P M - 50 S

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

①	Motor	**BLM**: Brushless DC Motor
②	Frame Size	**2**: 60 mm **4**: 80 mm **5**: 90 mm **6**: 104 mm (Gear: 110 mm)
③	Output Power	**30**: 30 W **60**: 60 W **120**: 120 W **200**: 200 W **300**: 300 W
④	Reference Letter	**S**
⑤	Motor Connection Method	**H**: Connector
⑥	Motor Degree of Protection	**P**: IP66
⑦	Configuration	**M**: With electromagnetic brake
⑧	Version	Number: Gear ratio of combination type **A**: Round Shaft Type **AC**: Round Shaft Type (Shaft Flat)
⑨	Output Shaft Material	**S**: Stainless Steel

●Motor (motor with and without parallel shaft type, IP67)

BLM 7 200 H W - 5 S

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

①	Motor	**BLM**: Brushless DC Motor
②	Frame Size	**7**: 110 mm
③	Output Power	**200**: 200 W
④	Motor Connection Method	**H**: Connector
⑤	Motor Degree of Protection	**W**: IP67
⑥	Version	Number: Gear ratio of combination type
⑦	Output Shaft Material	**S**: Stainless Steel
⑧	Mounting Screw Set	Blank: Included **N**: Not included

●Motor (with gear)

BLM 5 200 H P K - 5 C B 50 B - L

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬

Motor	①	Motor	**BLM**: Brushless DC Motor
	②	Frame Size (Motor)	**4**: 80 mm **5**: 90 mm
	③	Output Power	**60**: 60 W **120**: 120 W **200**: 200 W **300**: 300 W
	④	Reference Letter	**S**
	⑤	Motor Connection Method	**H**: Connector
	⑥	Motor Degree of Protection	**P**: IP66
Gearhead	⑦	Version	**K**: Round Shaft Type
	⑧	Frame Size (to the Motor)	**4**: 80 mm **5**: 90 mm
	⑨	Reference Letter	
	⑩	Gear	**H**: **JH** Hypoid Hollow Shaft Gear **B**: **JB** Foot Mount Gearhead **V**: **JV** Parallel Shaft Gearhead
	⑪	Version	Number: Gear Ratio of Gearhead
	⑫	Output Shaft Material	**S**: Stainless Steel **B**: Iron
	⑬	Connector Position	**U**: Up **R**: Right **L**: Left None: Bottom

●Driver

BLE2D 60 - C M

① ② ③ ④

①	Driver	**BLE2D**: **BLE2** Series
②	Output Power	**30**: 30 W **60**: 60 W **120**: 120 W **200**: 200 W **300**: 300 W
③	Power Supply Voltage	**A**: Single-Phase 100-120 VAC **C**: Single-Phase, Three-Phase 200-240 VAC*
④	Configuration	**M**: For motors with electromagnetic brake

*WARNING: The **BLE2** Series is not suitable for operation on 3 × 400 VAC.

●Connection Cable

CC 010 KH BL F

① ② ③ ④ ⑤

①		**CC**: Connection Cable
②	Length	**005**: 0.5 m **010**: 1 m **015**: 1.5 m **020**: 2 m **025**: 2.5 m **030**: 3 m **040**: 4 m **050**: 5 m **070**: 7 m **100**: 10 m **150**: 15 m **200**: 20 m
③	Motor Connection Method	**KH**: Made of metal **H**: Made of plastic
④	Appropriate Products	**BL**: Brushless Motor
⑤	Cable pull-out direction	**F**: Output shaft direction **B**: Opposite to output shaft direction **V**: Vertical direction

*NOTE: If you are interested in flexible extension cables, please contact your nearest Oriental Motor sales office.

For detailed information please refer to the **BLE2** Series catalogue on our website:
www.orientalmotor.eu

BRUSHLESS DC DRIVER/MOTOR WITH **AC** INPUT

Output Power
30 - 300 W

Speed Range
80 - 4000 r/min

Frame Size
60 - 110 mm

- 4 programmable speeds
- Digital setting/display
- Easy handling
- Load factor display
- Up to IP67

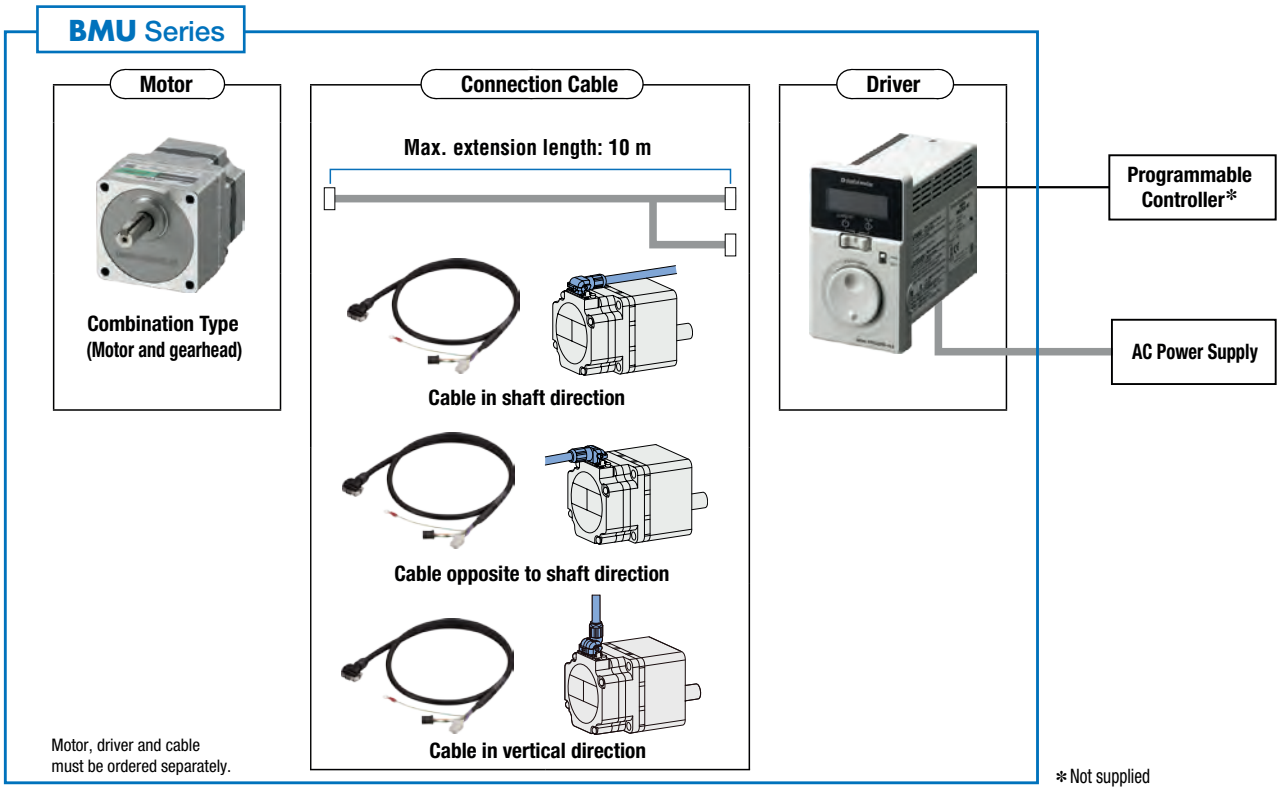
Further information

Characteristics Table

Output Power [W]	Speed Range with Gear [r/min]	Max. Permissible Torque [Nm]	Options
30	0.4 - 800	0.2 / 0.54 - 6	Parallel shaft gearhead
60	0.4 - 800	0.4 / 0.9 - 16	Parallel Shaft Gearhead, Hollow Shaft Gear
120	0.067 - 800	0.8 / 2 - 53.9	Parallel Shaft Gearhead, Hollow Shaft Gear
200	0.067 - 800	1.15 / 2.9 - 518*	Parallel Shaft Gearhead, Hollow Shaft Gear, Foot Mount Gearhead
300	0.133 - 800	1.72 / 4.3 - 583*	Parallel Shaft Gearhead, Hollow Shaft Gear, Foot Mount Gearhead

*Depending on reduction ratio and design.

Configuration Overview



Product Number

●Motor (with and without Parallel Shaft Gearhead)

BLM 4 60 S H P - 50 S

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

①	Motor	**BLM**: Brushless DC Motor
②	Frame Size	**2**: 60 mm **4**: 80 mm **5**: 90 mm **6**: 104 mm (Gear: 110 mm)
③	Output Power	**30**: 30 W **60**: 60 W **120**: 120 W **200**: 200 W **300**: 300 W
④	Reference Letter	**S**
⑤	Motor Connection Method	**H**: Connector
⑥	Motor Degree of Protection	**P**: IP66
⑦	Version	Number: Gear ratio of combination type **A**: Round Shaft Type **AC**: Round Shaft Type (Shaft Flat)
⑧	Output Shaft Material	**S**: Stainless Steel

●Motor (with Parallel Shaft Gearhead, IP67)

BLM 7 200 H W - 5 S

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

①	Motor	**BLM**: Brushless DC Motor
②	Frame Size	**7**: 110 mm
③	Output Power	**200**: 200 W
④	Motor Connection Method	**H**: Connector
⑤	Motor Degree of Protection	**W**: IP67
⑥	Version	Number: Gear ratio of combination type
⑦	Output Shaft Material	**S**: Stainless Steel
⑧	Mounting Screw Set	Blank: Included **N**: Not included

●Motor (with Gearhead)

BLM 5 200 H P K - 5 C B 50 B - L

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬

Motor	①	Motor	**BLM**: Brushless DC Motor
	②	Frame Size	**4**: 80 mm **5**: 90 mm
	③	Output Power	**60**: 60 W **120**: 120 W **200**: 200 W **300**: 300 W
	④	Reference Letter	**S**
	⑤	Motor Connection Method	**H**: Connector
	⑥	Motor Degree of Protection	**P**: IP66
Gearhead	⑦	Version	**K**: Round Shaft Type
	⑧	Frame Size (to the Motor)	**4**: 80 mm **5**: 90 mm
	⑨	Reference Letter	
	⑩	Gear	**H**: **JH** Hypoid Hollow Shaft Gear **B**: **JB** Foot Mount Gearhead **V**: **JV** Parallel Shaft Gearhead
	⑪	Version	Number: Gear Ratio of Gearhead
	⑫	Output Shaft Material	**S**: Stainless Steel **B**: Iron
	⑬	Connector Position	**U**: Up **R**: Right **L**: Left None: Bottom

●Driver

BMUD 60 - C 2

① ② ③ ④

①	Driver	**BMUD**: **BMU** Series
②	Output Power	**30**: 30 W **60**: 60 W **120**: 120 W **200**: 200 W **300**: 300 W
③	Power Supply Voltage	**A**: Single-Phase 100-120 VAC **C**: Single-Phase, Three-Phase 200-240 VAC*
④	Reference Number	

*WARNING: The **BMU** Series is not suitable for operation on 3 × 400 VAC.

●Connection Cable

CC 010 KH BL F

① ② ③ ④ ⑤

①		**CC**: Connection Cable
②	Length	**005**: 0.5 m **010**: 1 m **015**: 1.5 m **020**: 2 m **025**: 2.5 m **030**: 3 m **040**: 4 m **050**: 5 m **070**: 7 m **100**: 10 m
③	Motor Connection Method	**KH**: Made of metal **H**: Made of plastic
④	Appropriate Products	**BL**: Brushless Motor
⑤	Cable pull-out direction	**F**: Output shaft direction **B**: Opposite to output shaft direction **V**: Vertical direction

*NOTE: If you are interested in flexible extension cables, please contact your nearest Oriental Motor sales office.

For detailed information please refer to the **BMU** Series catalogue on our website:
www.orientalmotor.eu

BRUSHLESS DC DRIVER/MOTOR WITH **DC** INPUT

Output Power
15 - 100 W

Speed Range
80 - 3000 r/min

Frame Size
42 - 90 mm

- 8 programmable speeds
- High torque at low speeds
- Torque limiting
- Modbus RTU

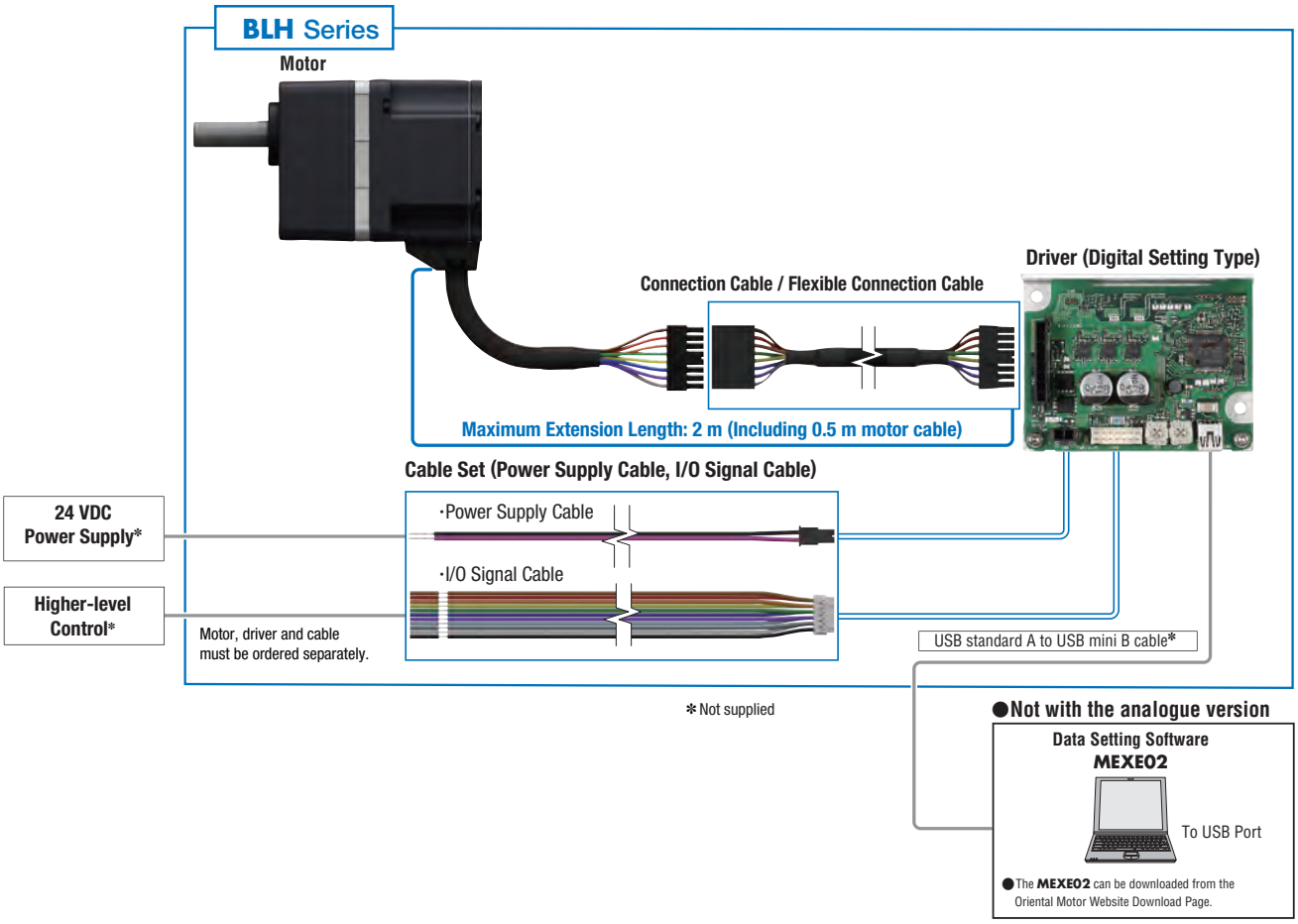
Further information

Characteristics Table

Output Power [W]	Speed Range with Gear [r/min]	Max. Permissible Torque [Nm]	Options
15	0.4 - 600	0.07 / 2*	Parallel Shaft Gearhead
30		0.17 / 17* 0.28 / 32.5* 0.5 / 68*	Parallel Shaft Gearhead Hollow Shaft Flat Gearhead Electromagnetic Brake
50			
100			

*Depending on reduction ratio and design.

Configuration Overview



Product Number

●Motor (with and without Gear)

BLHM 4 50 K C M - 5 FR

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

①	Motor	**BLHM**: Brushless DC Motor
②	Frame Size	**0**: 42 mm **2**: 60 mm **4**: 80 mm **5**: 90 mm
③	Output Power	**15**: 15 W **30**: 30 W **50**: 50 W **100**: 100 W
④	Power Supply	**K**: 24 VDC
⑤	Connection Type of the Motor	**C**: Cable
⑥	Configuration	**M**: Electromagnetic Brake Motor
⑦	Version	Number: Gear ratio for combination types **A**: Round Shaft Type
⑧	Gear	Blank: **GFS** Parallel Shaft Gearhead **FR**: **FR** Hollow Shaft Flat Gearhead

●Driver

BLH2D 50 - K D

① ② ③ ④

①	Driver	**BLH2D**: **BLH** Series Driver (15 W, 30 W, 50 W) **BLHD**: **BLH** Series Driver (100 W)
②	Output Power	**15**: 15 W **30**: 30 W **50**: 50 W **100**: 100 W
③	Power Supply Voltage	**-K**: 24 VDC (15 W, 30 W, 50 W) **K**: 24 VDC (100 W)
④	Driver Classification	Blank: Analogue Setting **D**: Digital Setting **R**: RS-485 Communication

●Connection Cable, Flexible Connection Cable

CC 02 BLH R

① ② ③ ④

①		**CC**: Extension Cable
②	Length	**02**: 1.5 m
③	Applicable Motors	**BLH**: Brushless Motor (15 W, 30 W, 50 W) **AXH2**, **BLH2**: Brushless Motor (100 W)
④	Cable	Blank: Standard **R**: Flexible

●Power Supply Cable and I/O Signal Cable Set (For 15 W, 30 W, 50 W)

LH S 003 C D

① ② ③ ④ ⑤

①		**LH**: Cable
②		**S**: Set
③	Length	**003**: 0.3 m **010**: 1 m
④		**C**: Cable
⑤	Applicable Drivers	**C**: Analogue Setting Type, RS-485 Communication Type **D**: Digital Setting Type

For detailed information please refer to the **BLH** Series catalogue on our website:
www.orientalmotor.eu

BLV-R SERIES

DRIVERS FOR **DC** POWER SUPPLY AND BRUSHLESS DC MOTORS

Output Power
60 - 400 W

Speed Range
1 - 4000 r/min

Frame Size
60 - 110 mm

- Compact and lightweight
- Positioning operation
- Modbus RTU CANopen

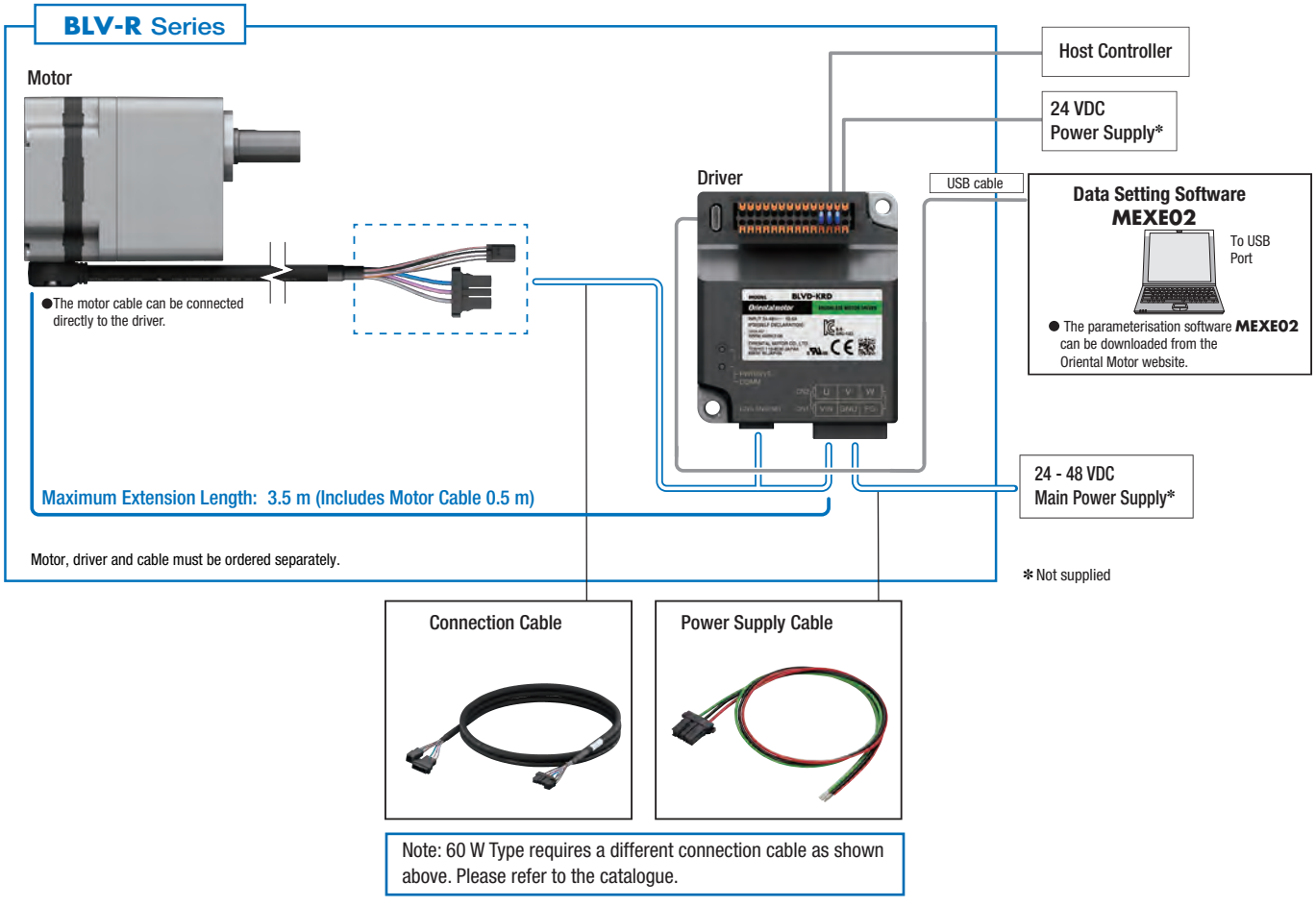
Further information

Characteristics Table

Output Power [W]	Speed Range with Gear [r/min]	Max. Permissible Torque [Nm]	Options
60	0.005 - 800	0.382 / 1.6-51*	Parallel shaft gearhead, Hollow shaft flat gearhead, **CS** gearhead
100	0.005 - 400	0.704 / 2.7 - 85*	Parallel shaft gearhead, Hollow shaft flat gearhead, Electromagnetic brake
200	0.01 - 400	1.34 / 5.4 - 108*	
400	0.01 - 400	2.54 / 21.6-167*	

*Depending on reduction ratio and design.

Configuration Overview



Product Number

●Motor (with and without Gear)

BLMR 6 200 S□ K M - 10 FR - F

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩

①	Motor	**BLMR**: Brushless DC Motor
②	Frame Size	**2**: 60 mm **4**: 80 mm **5**: 90 mm **6**: 104 mm (With gearhead part is 110 mm)
③	Output Power	**60**: 60 W **100**: 100 W **200**: 200 W **400**: 400 W
④	Reference Letter	**S**
⑤	Motor Connection Method	**H**: Connector Type
⑥	Power Supply	**K**: DC Input
⑦	Configuration	**M**: Electromagnetic Brake Motor
⑧	Version	Number: Gear Ratio for Gearhead **A**: Round Shaft Type
⑨	Gear	Blank: Parallel Shaft Gearhead **FR**: Hollow Shaft Flat Gearhead **CS**: **CS** Geared Motor
⑩	Direction of Cable Outlet	**F**: Output shaft direction **B**: Opposite to output shaft direction

●Driver

BLVD - K R D

① ② ③ ④

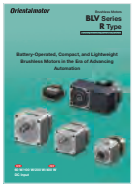
①	Driver	**BLVD**: **BLV-R** Series
②	Power Supply Voltage	**K**: 24 - 48 VDC
③	Driver Classification	**R**: Version with RS-485 and CANopen interface
④	Reference Letter	**D**

●Connection Cable

CCM 010 B1AA F

① ② ③ ④

①		**CCM**: Connection Cable
②	Length	**003**: 0.3 m **010**: 1 m **020**: 2 m **030**: 3 m
③	Cable Classification	**B1AA, B1AB**
④	Cable	**F**: Connection Cable **R**: Flexible Connection Cable

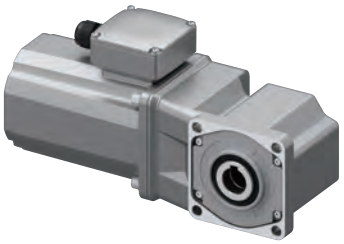


For detailed information please refer to the **BLV-R** Series catalogue on our website:
www.orientalmotor.eu

STANDARD AC MOTORS

Standard AC motors are generally utilised as a power source for automated equipment, as these motors can be easily operated by connecting the motors directly to an AC power supply. Oriental Motor offers standard AC motors incorporating various operating functions.

WORLD K Series



KIIS Series

FPW Series

FEATURES

Easy Operation
Simply connect directly to an AC power supply. Models available for all common international mains voltages.

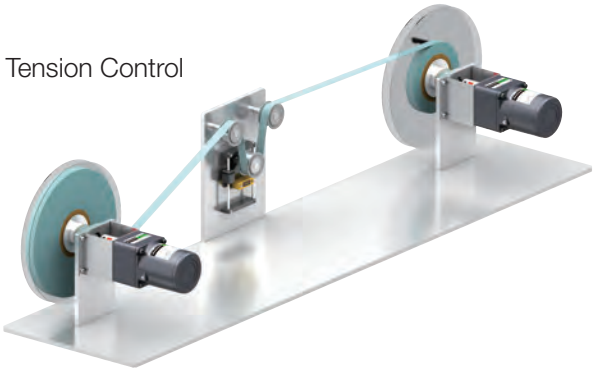
Speed Control Operation
Using a three-phase motor in combination with an inverter enables speed control operation.

Watertight, Dust-Resistant Motors
AC motors which are watertight, dust- resistant and conform to the IEC Standard IP67 are available.

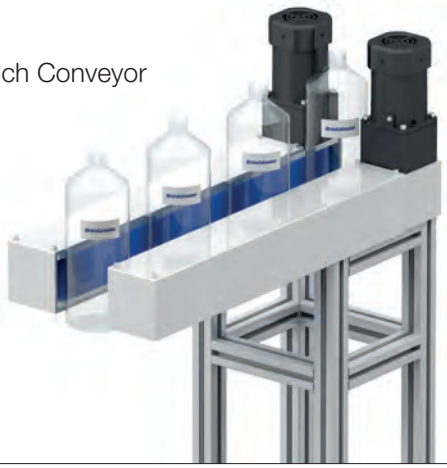
APPLICATIONS

Belt Conveyor

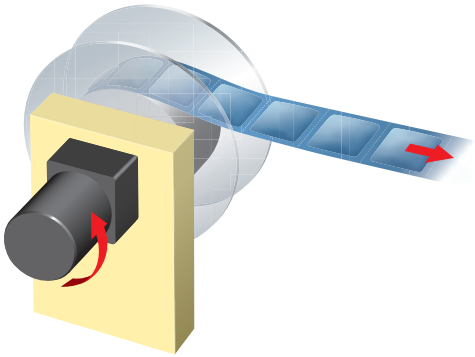
Tension Control



Pinch Conveyor

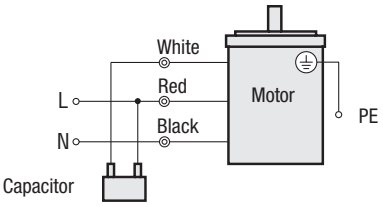


Packing System

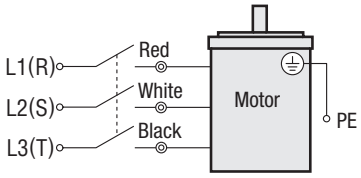


EASY OPERATION

Standard AC motors include three-phase motors for use with a three-phase power supply and single-phase motors for use with a single-phase power supply. A single-phase motor can be operated simply by connecting it to a single-phase power supply via the supplied capacitor. A three-phase motor does not require a capacitor, simply connect the motor directly to a three-phase power supply.



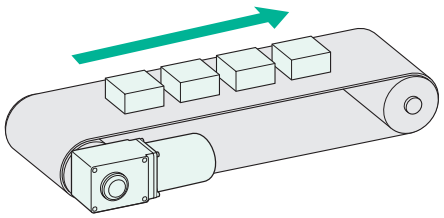
Induction Motors: Connection example for single-phase power supply input type



Induction Motors: Connection example for three-phase power supply input type

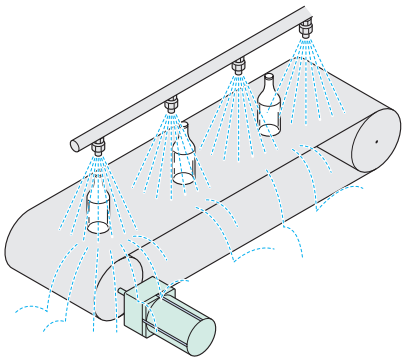
SPEED CONTROL OPERATION

A wide speed control range is possible, with high-torque available even at low speeds. These high-performance motors see little speed reduction even under large loads, ensuring that stable speed control is possible.



WATERTIGHT AND DUST-RESISTANT IP67 PERFORMANCE

Watertight, dust-resistant geared induction motors which conform to the IEC standard IP67 are available. Suitable for use in washdown environments.



CONSTANT SPEED MOTORS, INDUCTION MOTORS, REVERSIBLE MOTORS

Output Power
6 - 90 W

Speed Range
1150 - 1650 r/min

Frame Size
60 - 90 mm

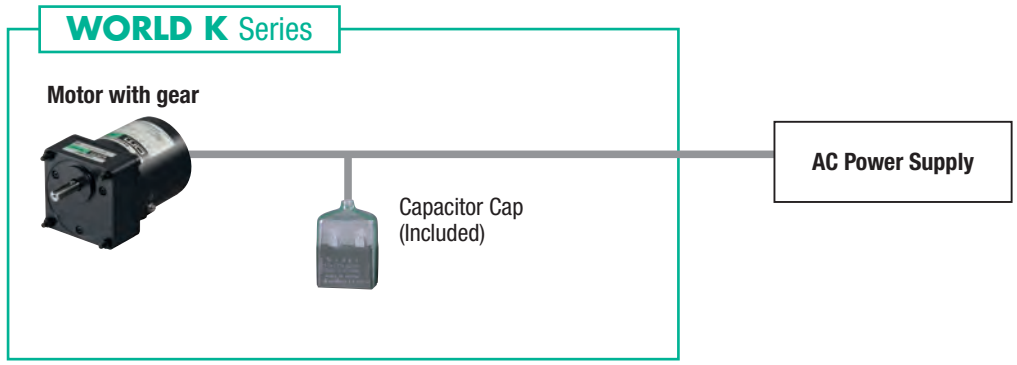
- For continuous operation
- Compact construction
- Simple connection & operation

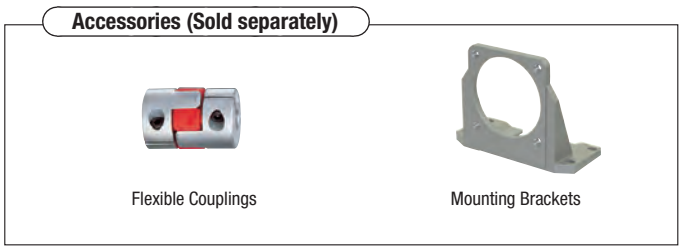
Further information

Characteristics Table

Frame Size [mm]	Output Power [W]	Rated Speed [r/min]	Options
60	6	1150 - 1500	Terminal box (IP65), Parallel Shaft Gearhead, electromagnetic brake
70	15	1200 - 1650	Parallel Shaft Gearhead, electromagnetic brake
80	25 - 60	1200 - 1600	Terminal box (IP54), Parallel Shaft Gearhead, Right-angled gearhead, electromagnetic brake
90	40 - 90	1200 - 1600	Terminal box (IP54), Parallel Shaft Gearhead, Right-angled gearhead, electromagnetic brake

Configuration Overview





Product Number

Motor

5 I K 40 GN - CW 2 T E

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

①	Frame Size	**2**: 60 mm **3**: 70 mm **4**: 80 mm **5**: 90 mm
②	Version	**I**: Induction Motor **R**: Reversible Induction Motor
③	Motor	**K**: **World K** Series
④	Output Power	**6**: 6 W **15**: 15 W **25**: 25 W **40**: 40 W **60**: 60 W **90**: 90 W
⑤	Motor Shaft Type	**A**: Round **GE**: **GE** Pinion **GN**: **GN** Pinion
⑥	Power Supply	**AW**: Single-Phase 100 VAC, 110/115 VAC **CCW**: Single-Phase 200 VAC, 220/230 VAC **SW**: Three-Phase 200/220/230 VAC **UW**: Three-Phase 400 VAC*1
⑦		**2**, **3**: RoHS-Compliant
⑧		**T**, **T2**, **B**: With Terminal Box **M**: With electromagnetic brake
⑨	Enclosed Capacitor*2	Blank: No capacitor is required for motors for three-phase connection **J**: For Single-Phase 100 VAC, 200 VAC **U**: For Single-Phase 110/115 VAC **E**: For Single-Phase 220/230 VAC

*1 WARNING: Version **UW** is not suitable for operation with a frequency inverter.

*2 The **J**, **U** and **E** at the end of the model name indicate that the unit includes a capacitor. These letters are not listed on the motor nameplate. When the motor is approved under various safety standards, the model name on the nameplate is the approved model name.
(Example) Model: **5IK40GN-CW2E** → Motor nameplate and product approved under various safety standards: **5IK40GN-CW2**

Gear

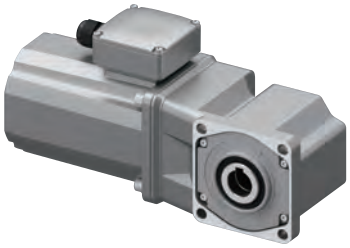
5 GN 50 S

① ② ③ ④

①	Frame Size	**2**: 60 mm **3**: 70 mm **4**: 80 mm **5**: 90 mm
②	Gear	**GE**: For motors with **GE** PinionI **GN**: For motors with **GN** Pinion
③	Version	Number: Gear reduction **10X**: Intermediate Gear 10:1
④	Gear Classification	**S**: Parallel Shaft Gearhead **RH**: **RH** Hollow Shaft Right Angle Gear **RA**: **RA** Solid Shaft Angle Gear

For detailed information please refer to the **WORLD K** Series on our website: **www.orientalmotor.eu**

HIGH OUTPUT MOTORS



Output Power
200 W

Speed Range
1420 - 1700 r/min

Frame Size
110 mm

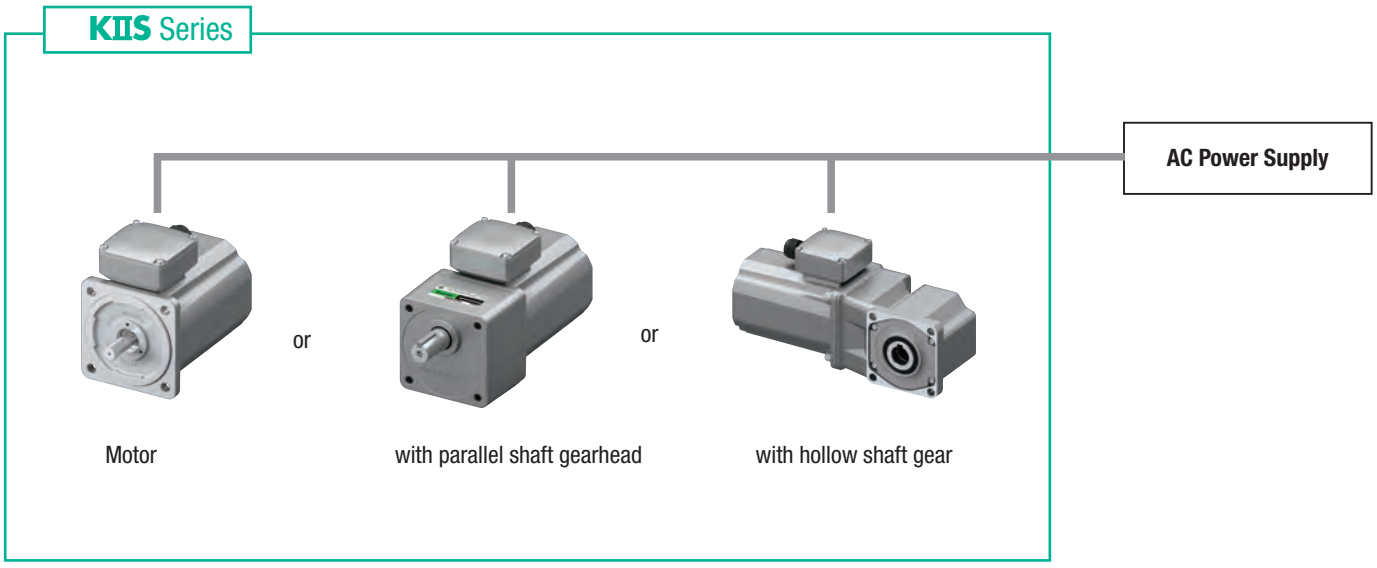
- High permissible torque
- Energy-saving
- Low noise
- IP66

Further information

Characteristics Table

Frame Size [mm]	Output Power [W]	Rated Speed [r/min]	Motor Options
110	200	1420 - 1700	Parallel shaft gearhead, Hollow shaft gear

Configuration Overview



Accessories (Sold separately)

Torque Arms
Right-Angle Geared Type, Hollow Shaft Type

Mounting Brackets
For motors without gear
For motors with parallel shaft gearhead

Flexible Couplings

CR circuit for Surge Suppression

Product Number

Motor

7	I	K	200	V	A	S	-	ES	3	T2
①	②	③	④	⑤	⑨	⑪		⑥	⑦	⑧

Motor with Gear

7	I	K	200	V	ES	3	T2	-	15		S
①	②	③	④	⑤	⑥	⑦	⑧		⑨	⑩	⑪

①	Frame Size	**7**: 110 mm
②	Version	**I**: Induction Motor
③	Motor	**K**: **KII** Series
④	Output Power	**200**: 200 W
⑤	Reference Letter	**V**
⑥	Power Supply Voltage	**ES**: Three-Phase 220/230/240 VAC **EU**: Three-Phase 380/400/415 VAC
⑦	Identification Number	
⑧		**T2**: Terminal Box Type
⑨	Version	Number: Gear Ratio **A**: Round Shaft Type
⑩	Gear Classification	Blank: Parallel Shaft Gearhead **RH**: Right-Angle Hollow Shaft Hypoid Gear
⑪	Output Shaft Material	**S**: Stainless steel

For detailed information please refer to the **KIIS** Series catalogue on our website:
www.orientalmotor.eu

FPW SERIES WATERTIGHT, DUST-RESISTANT INDUCTION MOTORS

Output Power
25 - 90 W

Rated Speed
1200 - 1600 r/min

Frame Size
80 - 104 mm

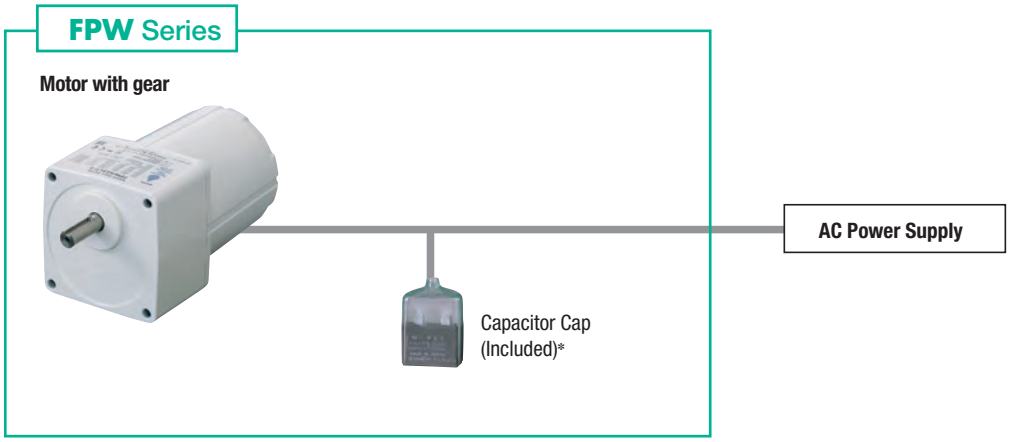
- Watertight
- Dust-resistant
- Corrosion-resistant
- IP67

Further information

Characteristics Table

Frame Size [mm]	Output Power [W]	Rated Speed [r/min]	Permissible Torque [Nm]
80	25	1200 - 1600	0.29 - 8
90	40 - 60	1250 - 1600	0.49 - 15
104	90	1250 - 1600	0.97 - 30

Configuration Overview



Accessories (Sold separately)

Watertight Power Relay Box

Watertight Extension Cables

Mounting Brackets

✻ A capacitor is included single-phase motors. The capacitors for the motors are neither watertight nor dust-resistant.

Product Number

● Motor with Gear

FPW 4 25 C 2 - 15 E

① ② ③ ④ ⑤ ⑥ ⑦

①	Motor	**FPW**: **FPW** Series
②	Frame Size	**4**: 80 mm **5**: 90 mm **6**: 104 mm
③	Output Power	**25**: 25 W **40**: 40 W **60**: 60 W **90**: 90 W
④	Power Supply Voltage	**A**: Single-Phase 100 VAC, 110/115 VAC **C**: Single-Phase 200 VAC, 220/230 VAC **S**: Three-Phase 200/220/230 VAC
⑤		**2**: RoHS Directive-Compliant
⑥	Version	Number: Gear ratio
⑦	Included Capacitor*	**J**: For Single-Phase 100 VAC, 200 VAC **U**: For Single-Phase 110/115 VAC **E**: For Single-Phase 220/230 VAC

*The **J**, **U** and **E** at the end of the model name indicate that the unit includes a capacitor. These letters are not listed on the motor nameplate. When the motor is approved under various standards, the model name on the nameplate is the approved model name.
(Example) Product Name: **FPW425C2-15E**
➜ Motor nameplate and product approved under various safety standards: **FPW425C2-15**

For detailed information please refer to the **FPW** Series on our website: **www.orientalmotor.eu**

TM SERIES TORQUE MOTOR AND POWER CONTROLLER PACKAGE

Output Power
3 - 20 W

Speed at max. output power continuous operation
750 - 900 r/min

Frame Size
60 - 90 mm

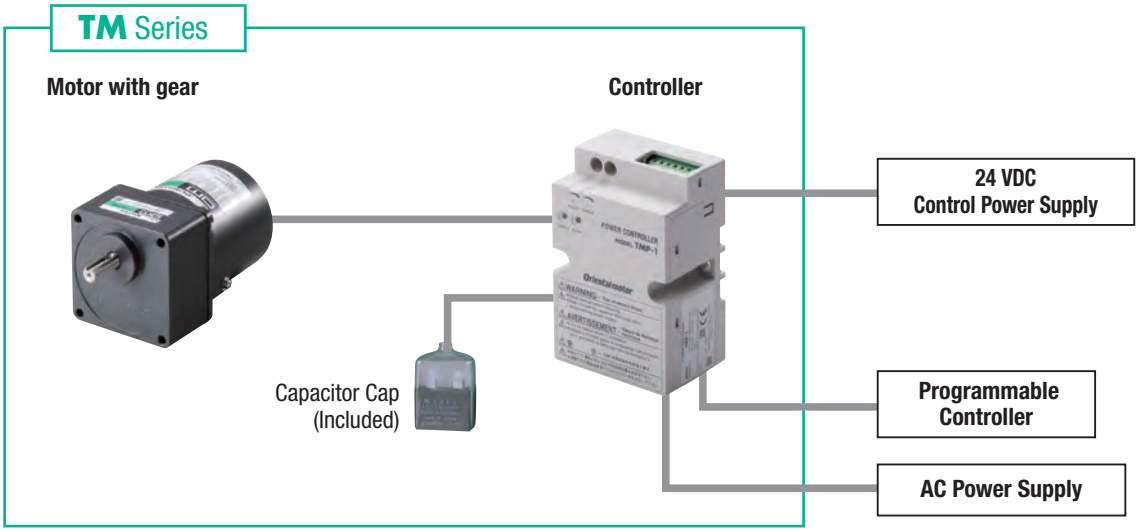
- High starting torque
- Torque regulation
- Winding application
- Web tension regulator

Further information

Characteristics Table

Frame Size [mm]	Output Power [W]	Torque Setting Voltage [VDC]	Starting Torque [mNm]
60	3	0 - 5	18 - 70
70	6		45 - 140
80	10		65 - 220
90	20		85 - 350

Configuration Overview



Accessories (Sold separately)

External potentiometer for torque adjustment

Mounting Brackets

Flexible Couplings

Not supplied

Product Number

TM 2 03 C - 18 S E

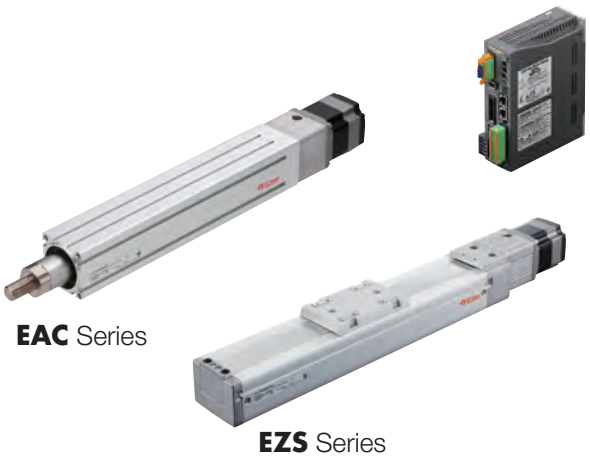
① ② ③ ④ ⑤ ⑥ ⑦

①		**TM**: **TM** Series
②	Frame Sizes	**2**: 60 mm **3**: 70 mm **4**: 80 mm **5**: 90 mm
③	Output Power	**03**: 3 W **06**: 6 W **10**: 10 W **20**: 20 W
④	Power Supply Voltage	**C**: Single-Phase 200/220/230 VAC **A**: Single-Phase 100/110/115 VAC
⑤	Version	Number: Gear Ratio of Combination Type **A**: Round Shaft
⑥	Gear Classification	**S**: Parallel Shaft Gearhead
⑦	Included Capacitor	**E**: Capacitor for Single-Phase 220/230 VAC **U**: Capacitor for Single-Phase 110/115 VAC **J**: Capacitor for Single-Phase 100/200 VAC

For detailed information please refer to the **TM** Series catalogue on our website:
www.orientalmotor.eu

LINEAR SLIDES AND CYLINDERS

Able to operate from low speed to high speed, or with light loads or heavy loads, these electric linear slides and cylinders are easy to use and offer high performance regardless of demanding operating conditions.



EAC Series

EZS Series

APPLICATIONS

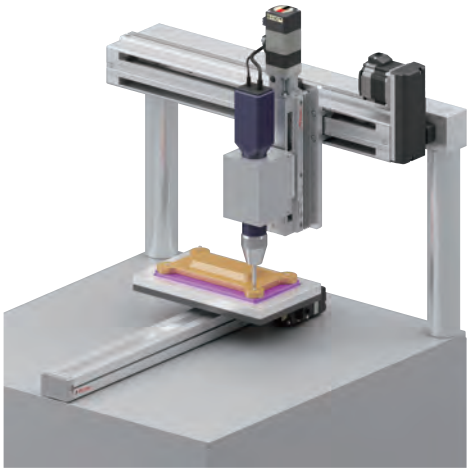
Excellent Synchronization, High-Response Operation
The high response of the closed loop motor and drive system provides superior short-distance positioning.

Stability at Low Speeds
Thanks to the smooth drive function, resolution can be improved without a mechanical element. As a result, speed fluctuation is minimal even at low speeds, leading to improved stability.

Shorter Production Time, Higher Quality
The linear slides and cylinders are guaranteed to provide the specified operating performance. Using them reduces adjustment work and ensures uniform quality.

APPLICATIONS

Screw Tightening

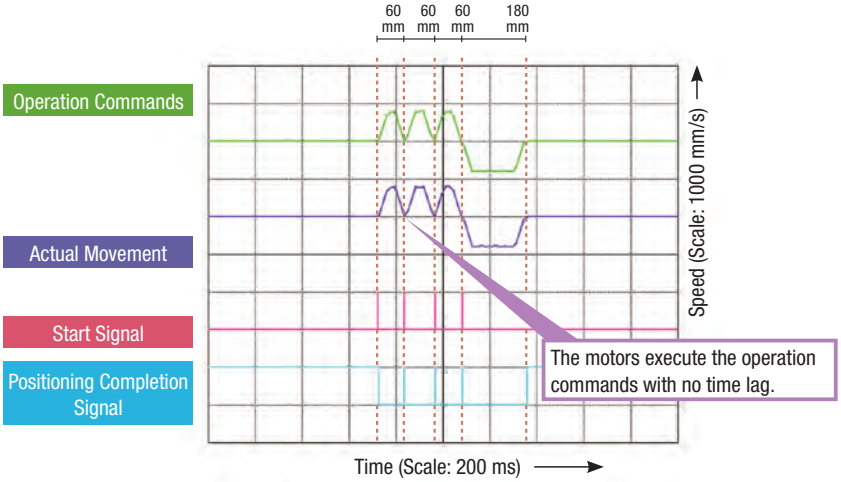


Endurance Testing

SYNCHRONISATION, HIGH RESPONSE

The linear slides and cylinders operate synchronously with pulse commands, generate high torque with a compact body, and offer excellent acceleration performance and response. They are ideal for applications requiring frequent starting and stopping.

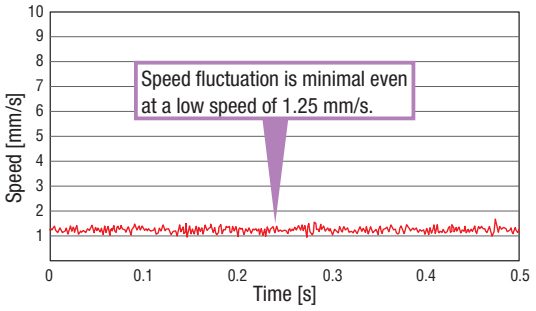
Actual movement of the electric linear slide in relation to operation commands



STABILITY AT LOW SPEEDS

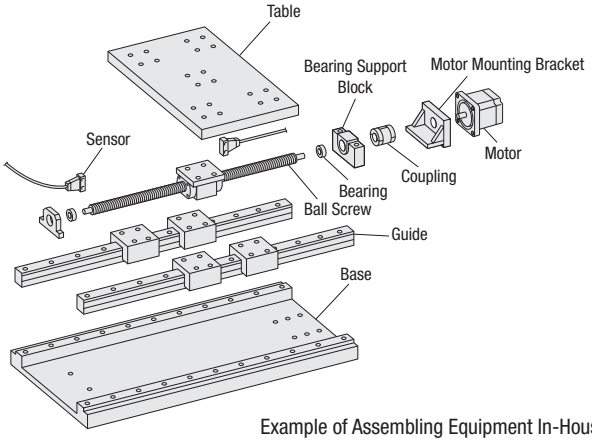
Speed fluctuations are minimal even at low speed.

Actual Slide Table Speed in Relation to Operation Commands (1.25 mm/s)



SHORTER PRODUCTION TIME, HIGHER QUALITY

When building equipment in-house by assembling a motor and mechanical components, the quality of assembly affects the traveling resistance and position accuracy. Therefore, adjustment will be needed. In comparison, Oriental Motor actuators come in one unit shortening the production time and ensuring uniform quality.



Example of Assembling Equipment In-House

AC AND DC INPUT ELECTRIC CYLINDERS WITH ABSOLUTE SENSOR

Stroke
50 - 300 mm

Transportable Mass
2.5 - 60 kg

Product Size
28x28 - 60x156 mm

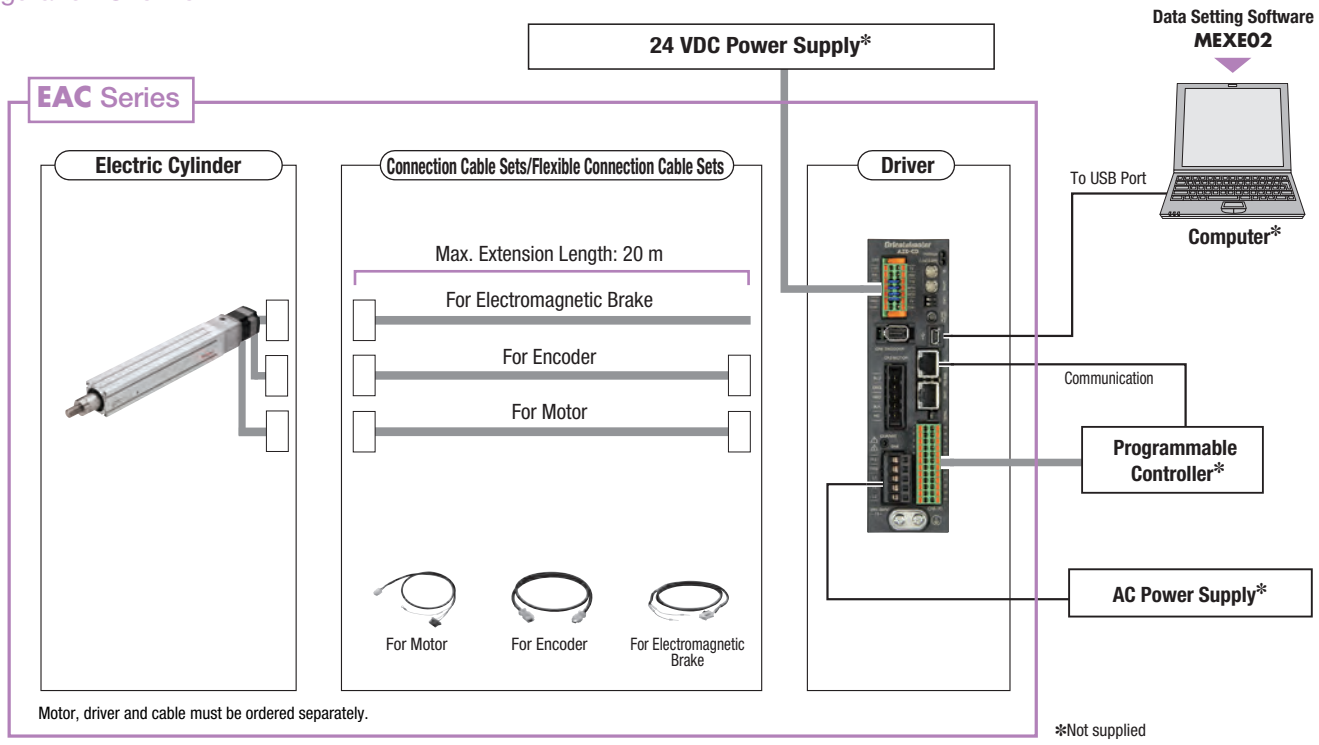
- Battery-free absolute sensor
- No external sensors necessary
- Low heat development
- EtherCAT EtherNet/IP PROFINET Modbus RTU

Further information

Characteristics Table

Product Size [mm]	Stroke [mm]	Max. Transportable Mass [kg]	Options
28 x 28 (without shaft guide)	50 - 150	7.5 - 15 horizontal, 2.5 - 5 vertical	-
28 x 86 (with shaft guide)		7.5 -15 horizontal, 2.0 - 4.5 vertical	
42 x 42 (without shaft guide)	50 - 300	15 - 30 horizontal, 7 - 14 vertical	Electromagnetic brake
42 x 42 (Side mounted motor, with shaft guide)		15 - 30 horizontal, 7-12.5 vertical	
42 x 114 (with shaft guide)		15 - 30 horizontal, 6 - 13 vertical	Guide cover, Electromagnetic brake
42 x 114 (Side mounted motor, with shaft guide)		15 - 30 horizontal, 6 - 11.5 vertical	
60 x 60 (without shaft guide)		30 - 60 horizontal, 15 - 30 vertical	Electromagnetic brake
60 x 156 (with shaft guide)		30 - 60 horizontal, 13 - 28 vertical	Side mounted motor, Guide cover, Electromagnetic brake

Configuration Overview



Product Number

●Actuator

EACM 4 R W D 25 AZ M K

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

①	Actuator	**EACM**: **EAC** Series
②	Frame Sizes	**2**: 28 mm × 28 mm (without shaft guide) 28 mm × 86 mm (with shaft guide) **4**: 42 mm × 42 mm (without shaft guide) 42 mm × 114 mm (with shaft guide) **6**: 60 mm × 60 mm (without shaft guide) 60 mm × 156 mm (with shaft guide)
③	Cable Outlet Direction	Blank: Straight Type **R**: Reversed Motor Type (Right Side)
④	Guide	Blank: Without **W**: With
⑤	Lead Screw Pitch	**D**: 12 mm **E**: 6 mm **F**: 3 mm
⑥	Stroke	**005**: 50 mm **010**: 100 mm **015**: 150 mm **020**: 200 mm **025**: 250 mm **030**: 300 mm
⑦	Motor	**AZ**: **AZ** Series
⑧	Configuration	**A**: Standard **M**: with Electromagnetic Brake
⑨	Winding Version	**C**: Single-Phase 200 - 240 VAC **K**: 24 VDC/48 VDC*

*__EAS2__ only accepts 24 VDC.

●Driver

AZD - C D

① ② ③

①	Driver	**AZD**: **AZ** Series
②	Power Supply Input	**A**: Single-phase 100 - 120 VAC **C**: Single-phase, three-phase 200 - 240 VAC* **K**: 24/48 VDC
③	Driver Classification	Blank: Pulse Input **D**: Built-in Controller **X**: Pulse Input with RS-485 Communication **ED**: With EtherCAT interface **EP**: With Ethernet/IP interface **PN**: With PROFINET interface

*WARNING: The **AZ** Series is not suitable for operation on 3 × 400 VAC.

●Connection Cable/Flexible Connection Cable

CC 050 V Z □ F B 2

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

①		**CC**: Cable
②	Length	**005**: 0.5 m **010**: 1 m **015**: 1.5 m **020**: 2 m **025**: 2.5 m **030**: 3 m **040**: 4 m **050**: 5 m **070**: 7 m **100**: 10 m **150**: 15 m **200**: 20 m
③	Reference Number	
④	Suitable Products	**Z**: **AZ** Series Motor
⑤	Reference Number	Blank: Frame size 42 to 85 mm **2**: Frame size 20 mm, 28 mm
⑥	Cable	**F**: Standard **R**: Flexible
⑦	Electromagnetic Brake	Blank: Without Electromagnetic Brake **B**: With Electromagnetic Brake
⑧	Cable Classification	Blank: AC Power Supply Input **2**: DC Power Supply Input

For detailed information please refer to the **EAC** Series catalogue on our website:
www.orientalmotor.eu

EZS SERIES

AC AND DC INPUT ELECTRIC LINEAR SLIDES WITH HIGH RIGIDITY AND WITH ABSOLUTE SENSOR

Stroke
50 - 850 mm

Transportable Mass
3.5 - 60 kg

Frame Size
54 - 66.5 mm

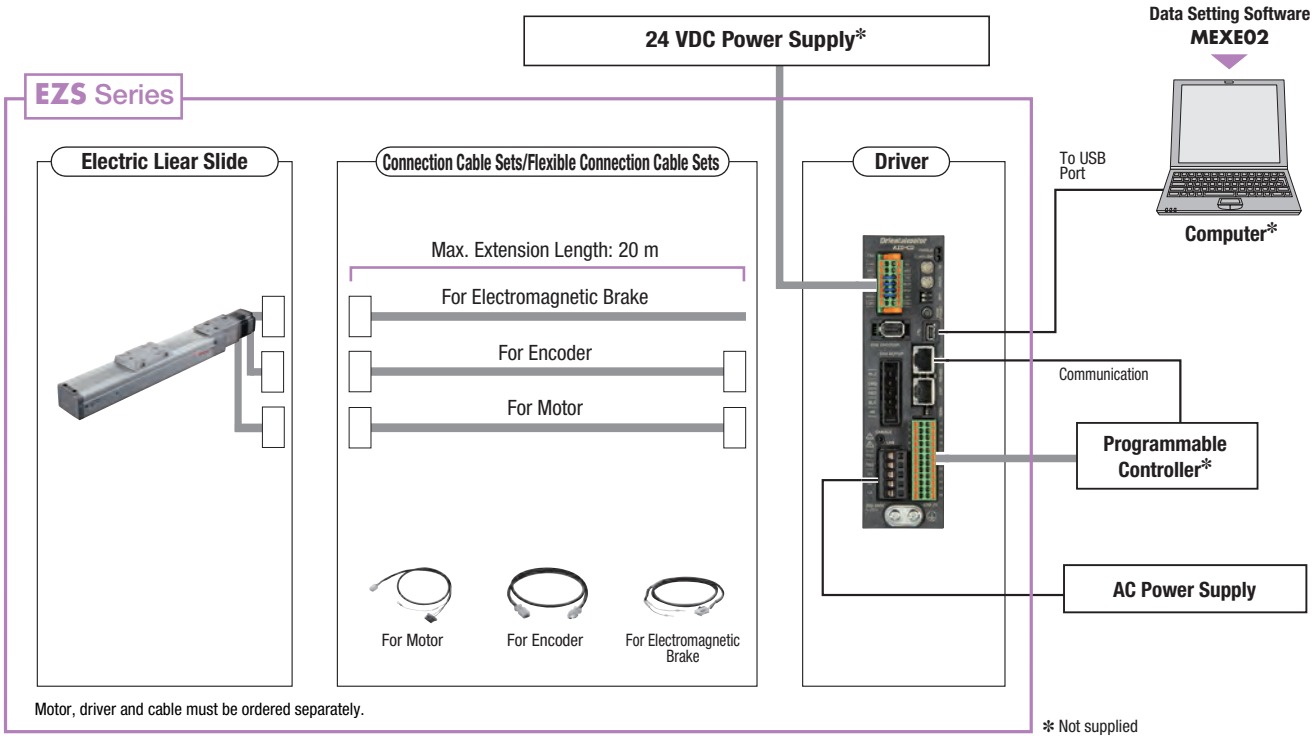
- Battery-free absolute sensor
- No external sensors necessary
- Low heat development
- High rigidity
- EtherCAT, EtherNet/IP, PROFINET, Modbus RTU

Further information

Characteristics Table

Frame Size [mm]	Stroke [mm]	Max. Transportable Mass [kg]	Options
54 x 50	50 - 700	7.5 - 15 horizontal, 3.5 - 7 vertical	Side mounted motor, Electromagnetic brake
74 x 50	50 - 700	15 - 30 horizontal, 3.5 - 7 vertical	
74 x 66.5	50 - 850	30 - 60 horizontal, 3.5 - 7 vertical	

Configuration Overview



Product Number

●Actuator

EZSM 4 R D 025 AZ M K

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

①	Actuator	**EZSM**: **EZS** Series
②	Frame Sizes	**3**: 54 mm × 50 mm **4**: 74 mm × 50 mm **6**: 74 mm × 66.5 mm
③	Cable Outlet Direction	Blank: Straight Type **L**: Reversed Motor Type (Left Side) **R**: Reversed Motor Type (Right Side)
④	Lead Screw Pitch	**D**: 12 mm **E**: 6 mm
⑤	Stroke	**005**: 50 mm **010**: 100 mm **015**: 150 mm **020**: 200 mm **025**: 250 mm **030**: 300 mm **035**: 350 mm **040:** 400 mm **045**: 450 mm **050**: 500 mm **055**: 550 mm **060**: 600 mm **065**: 650 mm **070**: 700 mm **075**: 750 mm **080**: 800 mm **085**: 850 mm
⑥	Motor	**AZ**: **AZ** Series
⑦	Configuration	**A**: Standard **M**: with Electromagnetic Brake
⑧	Winding Version	**C**: Single-Phase 200-240 VAC **A**: Single-Phase 100-120 VAC

●Driver

AZD - C D

① ② ③

①	Driver	**AZD**: **AZ** Series
②	Power Supply Input	**A**: Single-phase 100 - 120 VAC **C**: Single-phase, three-phase 200 - 240 VAC* **K**: 24/48 VDC
③	Driver Classification	Blank: Pulse Input **D**: Built-in Controller **X**: Pulse Input with RS-485 Communication **ED**: With EtherCAT interface **EP**: With Ethernet/IP interface **PN**: With PROFINET interface

*WARNING: The **AZ** Series is not suitable for operation on 3 × 400 VAC.

●Connection Cable/Flexible Connection Cable

CC 050 V Z F B 2

① ② ③ ④ ⑤ ⑥ ⑦

①		**CC**: Cable
②	Length	**005**: 0.5 m **010**: 1 m **015**: 1.5 m **020**: 2 m **025**: 2.5 m **030**: 3 m **040**: 4 m **050**: 5 m **070**: 7 m **100**: 10 m **150**: 15 m **200**: 20 m
③	Reference Number	
④	Suitable Products	**Z**: **AZ** Series Motor
⑤	Reference Number	Blank: Frame size 42 to 85 mm **2**: Frame size 20 mm, 28 mm
⑤	Cable	**F**: Standard **R**: Flexible
⑥	Electromagnetic Brake	Blank: Without Electromagnetic Brake **B**: With Electromagnetic Brake
⑦	Cable Classification	Blank: AC Power Supply Input **2**: DC Power Supply Input

For detailed information please refer to the **EZS** Series catalogue on our website:
www.orientalmotor.eu

ROTARY AND LINEAR ACTUATORS

Rotary actuators and linear actuators are a combination of a stepper motor with a hollow rotary table (rotary actuators) and a ball screw (linear actuators). Both actuator types are driven by an **AZ** Series motor with absolute sensor.

DGII Series **DR** Series

FEATURES

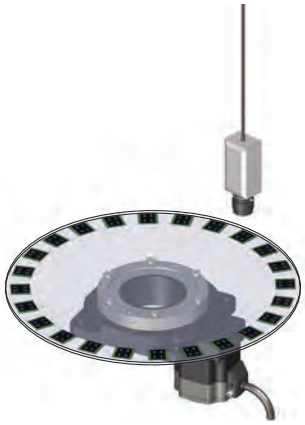
Reduced Installation Time
Compared to in-house construction, both actuators are solutions which are easy and fast to install without the need for adjustment.

Simple Home Position Setting
Thanks to the absolute system no home sensors are required. This simplifies the wiring and reduces costs.

Flexible Installation Orientations
The actuators can be installed in various orientations, making them suitable for a wide range of applications.

APPLICATIONS

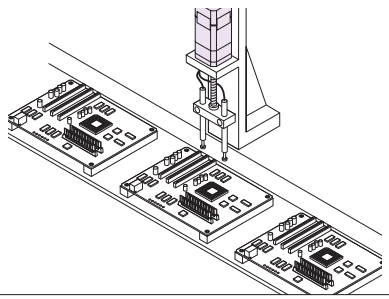
Image inspection



Liquid Dosing

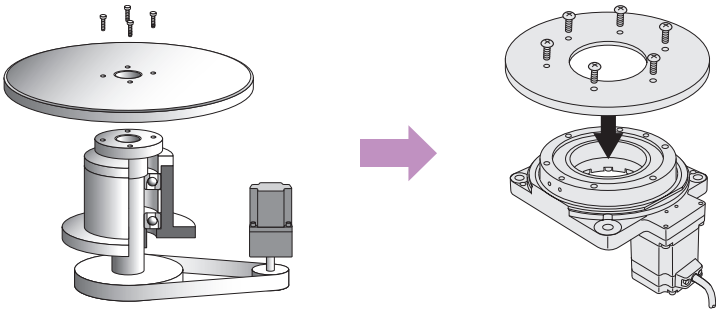
Disc manufacturing

Vertical Positionining of Probes



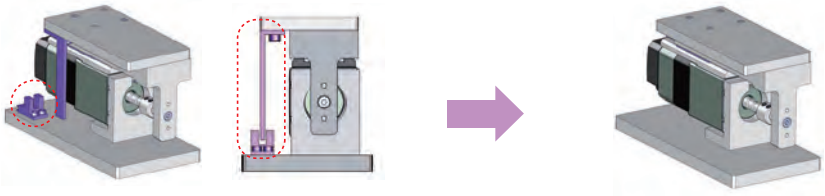
REDUCED INSTALLATION TIME

When using these actuators no additional parts are required. The time necessary for design, component selection, and assembly can be reduced.



SIMPLE HOME POSITION SETTING

Both the rotary and linear actuators are driven by absolute sensor equipped **AZ** Series motors that eliminate the need for reference sensors or limit switches. This reduces costs, simplifies wiring, and removes the need for maintenance.

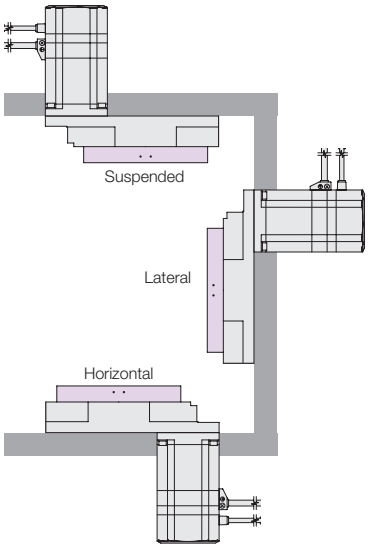


With home sensor

Without home sensor

FLEXIBLE INSTALLATION ORIENTATION

The rotary actuators can be installed horizontally, ceiling-mounted, or wall-mounted. The linear actuators offer front or rear mounting, lateral mounting, and flange and base mounting.



AC AND DC INPUT HOLLOW ROTARY ACTUATORS WITH ABSOLUTE SENSOR

Maximum Speed
600 - 1800 Grad/s

Permissible Moment
2 - 100 Nm

Frame Size
60 - 200 mm

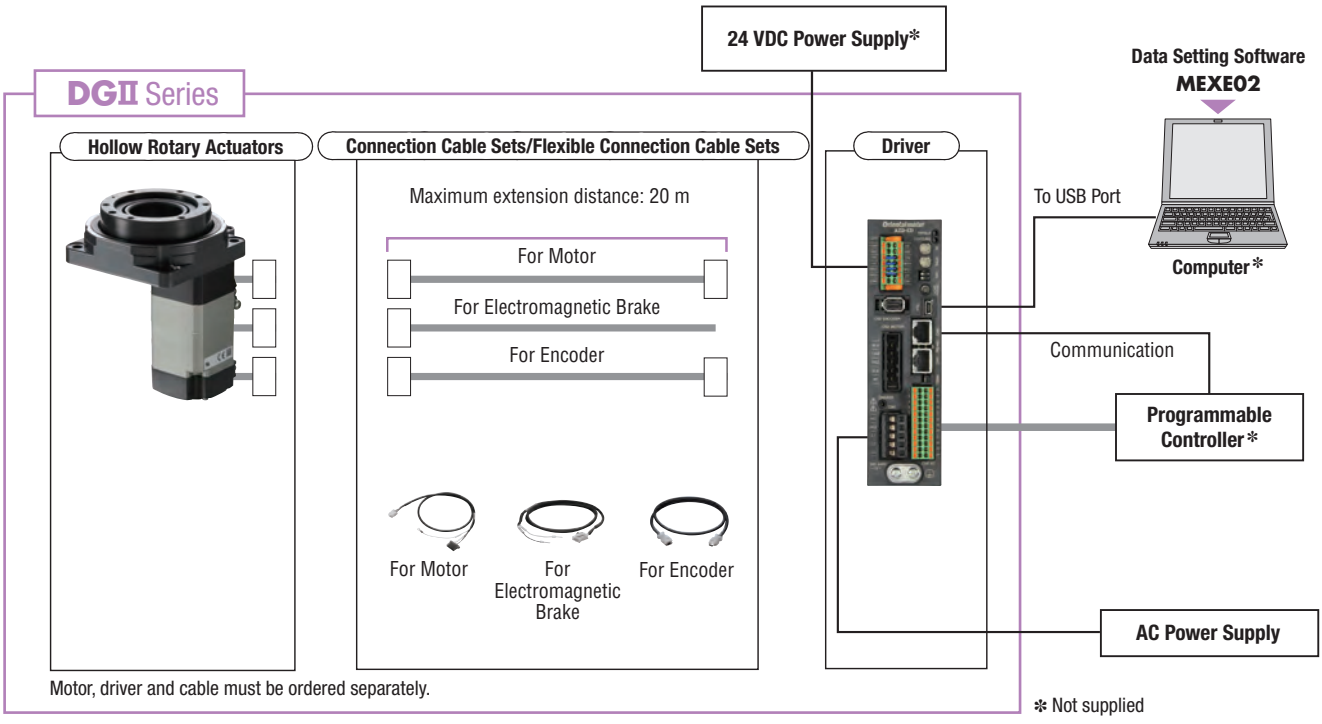
- Battery-free absolute sensor
- No external sensors necessary
- High power, high stiffness
- Large hollow shaft diameter
- EtherCAT EtherNet/IP PROFINET Modbus RTU

Further information

Characteristics Table

Frame Size [mm]	Permissible Torque [Nm]	Permissible Thrust Load [N]	Options
60	0.9	100	-
85	3 - 9	500	Electromagnetic brake
130	12	2000	Cable outlet, Electromagnetic brake
200	50	4000	

Configuration Overview

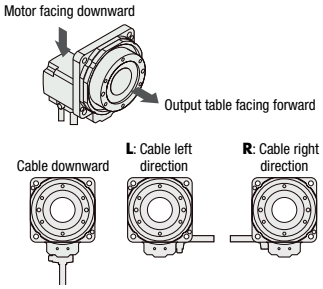


Product Number

Vertically Mounted Motor

DGM 130 R - AZ A C R

① ② ③ ④ ⑤ ⑥ ⑦

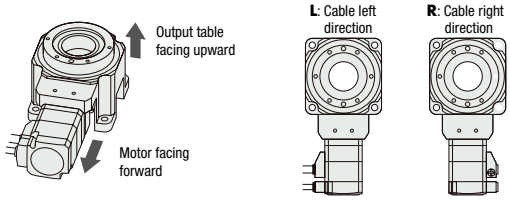


①	Actuator	**DGM**: **DGII** Series
②	Frame Size	**60**: 60 mm **130**: 130 mm **85**: 85 mm **200**: 200 mm
③	Bearing Type	Blank: Deep-Groove Ball Bearing **R**: Cross-Roller Bearing
④	Motor	**AZ**: **AZ** Series
⑤	Configuration	**A**: Single Shaft **M**: With Electromagnetic Brake
⑥	Winding Version	**C**: Single-Phase 200-240 VAC **K**: 24 VDC/48 VDC
⑦	Cable Withdrawing Direction	Blank: Downward Direction **R**: Right Direction **L**: Left Direction

Horizontally Mounted Motor

DGB 85 R 12 - AZ A C R

① ② ③ ④ ⑤ ⑥ ⑦ ⑧



①	Actuator	**DGM**: **DGII** Series
②	Frame Size	**85**: 85 mm
③	Bearing	Blank: Deep groove ball bearing **R**: Cross-Roller Bearing
④	Gear Ratio	
⑤	Motor	**AZ**: **AZ** Series
⑥	Configuration	**A**: Single Shaft **M**: With Electromagnetic Brake
⑦	Winding Version	**C**: Single-Phase 200-240 VAC **K**: 24 VDC/48 VDC
⑧	Cable Withdrawing Direction	**R**: Right Direction **L**: Left Direction

Driver

AZD - C D

① ② ③

①	Driver	**AZD**: **AZ** Series
②	Power Supply Input	**A**: Single-phase 100 - 120 VAC **C**: Single-phase, Three-phase 200 - 240 VAC* **K**: 24/48 VDC
③	Driver Classification	Blank: Pulse Input **D**: Built-in Controller **X**: Pulse Input with RS-485 Communication **ED**: With EtherCAT interface **EP**: With Ethernet/IP interface **PN**: With PROFINET interface

*WARNING: The **AZ** Series is not suitable for operation on 3 × 400 VAC.

Connection Cable Set/Flexible Connection Cable Set

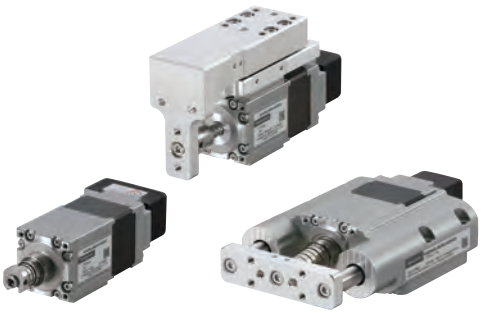
CC 050 V Z □ F B 2

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

①		**CC**: Cable
②	Length	**005**: 0.5 m **010**: 1 m **015**: 1.5 m **020**: 2 m **025**: 2.5 m **030**: 3 m **040**: 4 m **050**: 5 m **070**: 7 m **100**: 10 m **150**: 15 m **200**: 20 m
③	Reference Number	
④	Suitable Products	**Z**: **AZ** Series Motor
⑤	Reference Number	Blank: Frame size 42 to 85 mm **2**: Frame size 20 mm, 28 mm
⑤	Cable	**F**: Standard **R**: Flexible
⑥	Electromagnetic Brake	Blank: Without Electromagnetic Brake **B**: With Electromagnetic Brake
⑦	Cable Classification	Blank: AC Power Supply Input **2**: DC Power Supply Input

For detailed information please refer to the **DGII** Series catalogue on our website:
www.orientalmotor.eu

DC INPUT LINEAR ACTUATORS WITH ABSOLUTE SENSOR



Maximum Speed
40 - 100 mm/s

Push Force
50 N

Frame Size
28x28 - 66x28.5 mm

- Battery-free absolute sensor
- No external sensors necessary
- Compact and lightweight
- EtherCAT EtherNet/IP PROFINET Modbus RTU

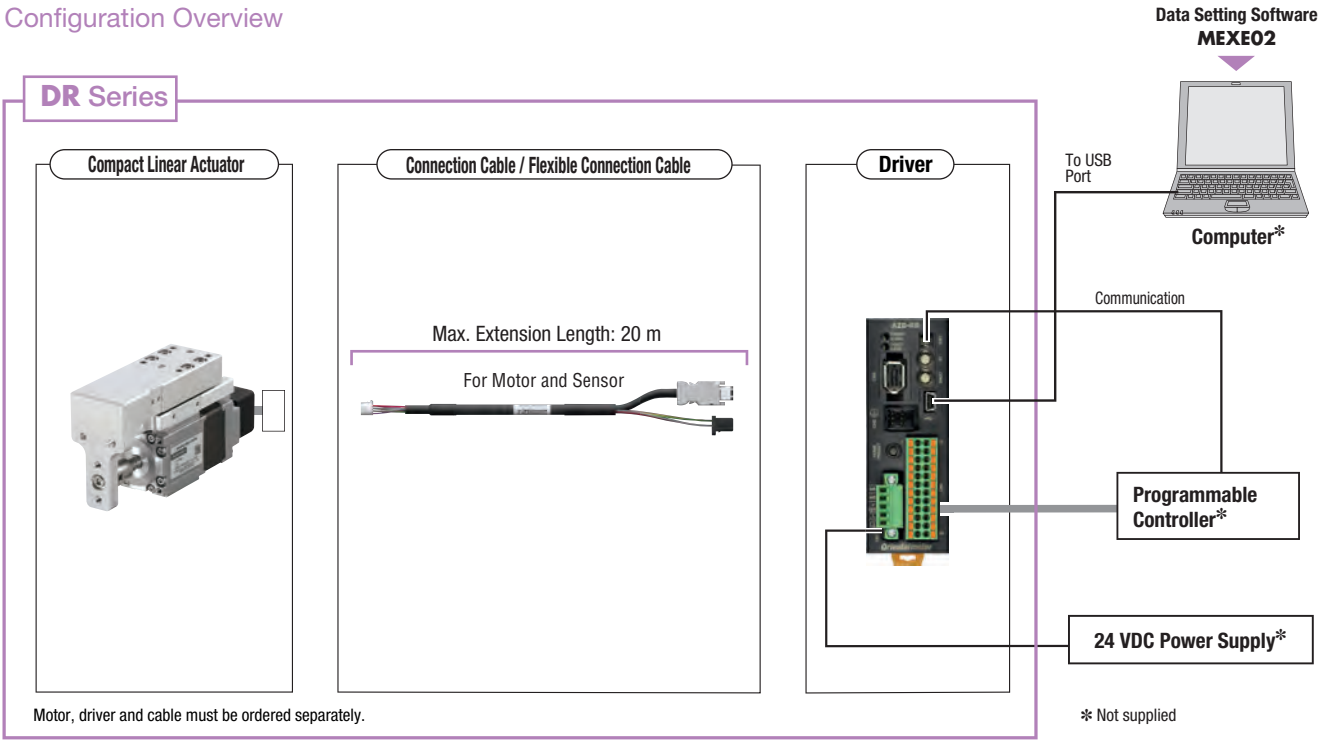
Further information

Characteristics Table

Configuration	Frame Size [mm]	Thrust [N]	Max. Transportable Mass [kg]	Options
Standard	28 x 28	20 - 40	0 (4)* horizontal, 2 - 4 vertical	Spindle guard, mounting flange, mounting foot
With linear table	28 x 55		4 horizontal, 2 - 4 vertical	
With side guide	66 x 28.5		0.2 (4)* horizontal, 2 - 4 vertical	

*In brackets are the specifications when using an external linear guide.

Configuration Overview



Product Number

Actuator

DR 28 T 2.5 BC 03 - AZ A K R - P

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪

①	Actuator	**DR**: **DR** Series
②	Frame Sizes	**28**: 28 mm
③	Version	**T**: Table Type **G**: Rod Type with Guide **R**: Rod Type
④	Ball Screw Lead	**1**: 1 mm **2.5**: 2.5 mm
⑤	Ball Screw Type	**B**: Precision Ball Screw **BC**: Precision Ball Screw with Cover
⑥	Hub	**03**: 30 mm
⑦	Motor	**AZ**: **AZ** Series
⑧	Configuration	**A**: Single shaft
⑨	Power Supply Input	**K**: DC Power Supply Input
⑩	Cable Outlet Direction	**U**: Upper Side **D**: Downward Side **R**: Right Side **L**: Left Side
⑪	Mounting Plate	Blank: without Mounting Plate **F**: with Flange **P**: with Foot

Driver

AZD - K D

① ② ③

①	Driver	**AZD**: **AZ** Series
②	Power Supply Input	**K**: 24 VDC
③	Driver Classification	Blank: Pulse Input **D**: Built-in Controller **X**: Pulse Input with RS-485 Communication **ED**: With EtherCAT interface **EP**: With Ethernet/IP interface **PN**: With PROFINET interface

Connection Cable/Flexible Connection Cable

CC 050 V Z 2 F 2

① ② ③ ④ ⑤ ⑥ ⑦

①		**CC**: Cable
②	Length	**005**: 0.5 m **010**: 1 m **015**: 1.5 m **020**: 2 m **025**: 2.5 m **030**: 3 m **040**: 4 m **050**: 5 m **070**: 7 m **100**: 10 m **150**: 15 m **200**: 20 m
③	Reference Number	
④	Suitable Products	**Z**: **AZ** Series Motor
⑤	Reference Number	**2**: For motors with Frame Size 20 mm, 28 mm
⑥	Cable	**F**: Standard **R**: Flexible
⑦	Cable Classification	**2**: For drivers with DC power supply

For detailed information please refer to the **DR** Series catalogue on our website:
www.orientalmotor.eu

ACTUATORS - ELECTRIC GRIPPER

The **EH** Series electric gripper is a combination of an **AZ** Series motor with a rack-and-pinion gripping mechanism. It is ideal for gripping, manipulating, and dimension measuring operations.

EH Series

FEATURES

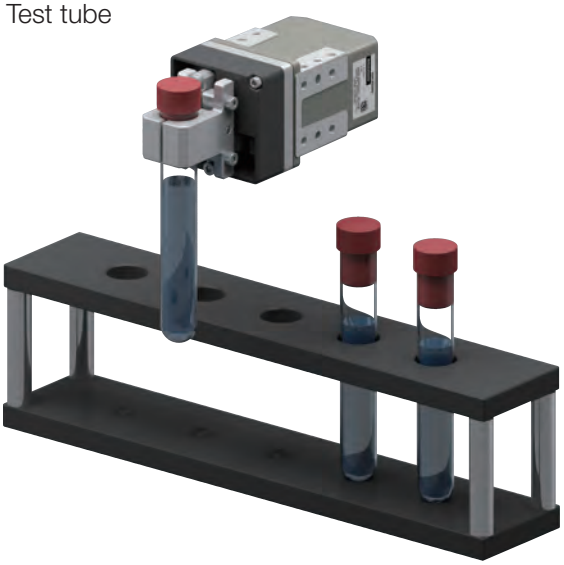
Delicate Grip
A delicate grip is achieved by fine-tuning the grip force in 1 % operating current increments, and implementing a slow approach to the load.

Small and Lightweight
The combination of a 42 mm frame size motor and the rack-and-pinion mechanism results in a compact size. The gripper measures 91 x 46 x 48.5 mm and weights 380 g.

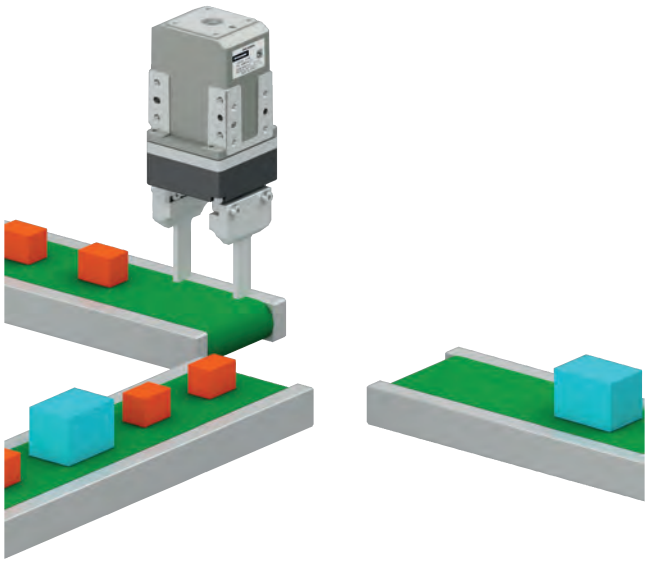
Multi-Surface Installation
The design allows for multi-surface installation, making the gripper ideal for installation on robotic arms, etc.

APPLICATIONS

Test tube

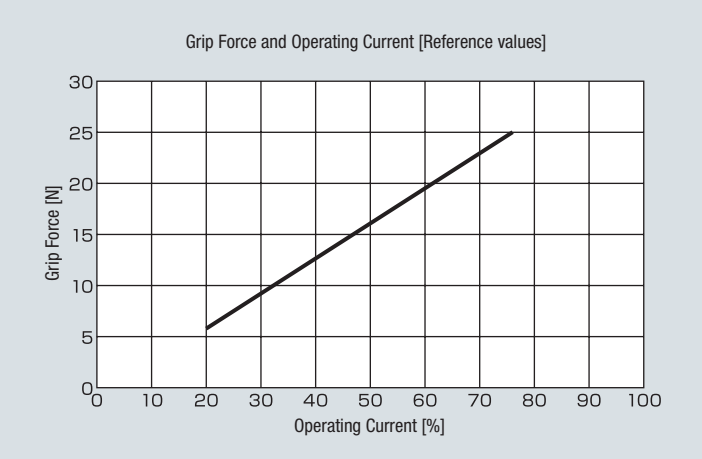


Sorter



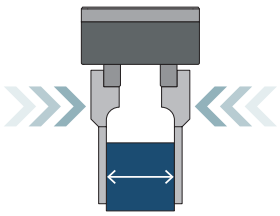
ADJUSTABLE GRIP FORCE

The movement of the electric gripper works by utilizing push-motion operation of the drive motor. The push force (grip force) is set by the operating current of the motor. This allows different gripping movements such as quick approach/slow grip, or low grip force first and gradually increasing grip force thereafter.

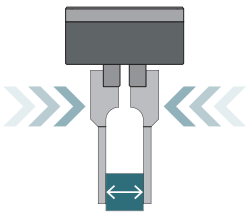


COORDINATION OF LOAD POSITION AND DIRECTION

The minimum travel distance between the pincers attached to the base jaws is 0.02 mm. The direction and position of components can be coordinated by gripping them according to their size.



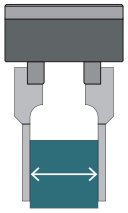
Large load



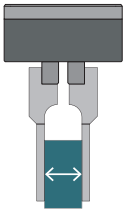
Small load

MEASUREMENT WITHOUT EXTERNAL SENSORS

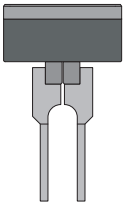
The operational range of the pincer is confirmed by the output signal (TLC output, AREA output) from the driver, allowing the size and presence of a load to be determined.



① OK
(within tolerance)



② NG
(out of tolerance)



③ NG
(no load present)

DC INPUT ELECTRIC GRIPPER ABSOLUTE SENSOR

Max. Grip Force
50 N

Stroke
15 mm/Ø23.9 mm

Frame Size
36 x 36, 46 x 46 mm

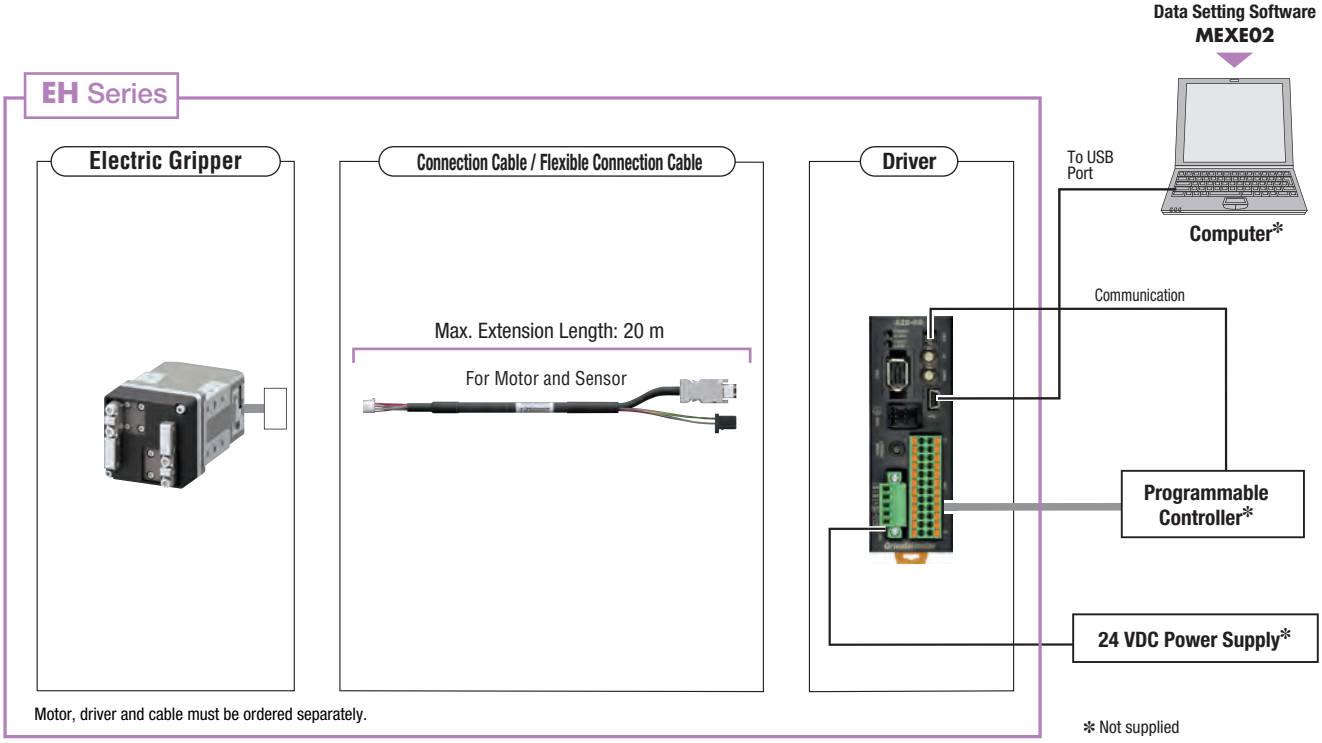
- Battery-free absolute sensor
- No external sensors necessary
- Gripping, arranging, distance measuring
- Low heat development
- EtherNet/IP EtherCAT PROFINET Modbus RTU

Further information

Characteristics Table

Type	Product	Stroke [mm]	Maximum Speed [mm/s]	Maximum Grip Force [N]	Options
2-Finger	EH3	15	156	7	Installation Flange for Robots
		each side 7.5	each side 78		
	EH4	25	156	25	
		each side 12.5	each side 78		
3-Finger	EH4	Ø23.9	1200 [r/min]	50	

Configuration Overview



Product Number

Electric Gripper

EH 4 T - AZ A K H

① ② ③ ④ ⑤ ⑥ ⑦

①	Electric Gripper	**EH**: **EH** Series
②	Frame Size	**3**: 36 mm (W)×36 mm (H) (Finger side) **4**: 46 mm (W)×46 mm (H) (Finger side)
③	Finger Type	None: 2-Finger Type **T**: 3-Finger Type
④	Motor	**AZ**: **AZ** Series
⑤	Configuration	**A**: Without Additional Function
⑥	Winding Version	**K**: DC Power Supply Input
⑦	Configuration	**H**: With installation cover None: No installation cover

Driver

AZD - K D

① ② ③

①	Driver	**AZD**: **AZ** Series Driver
②	Power Supply Input	**K**: 24 VDC
③	Driver Classification	Blank: Pulse Input **D**: Built-in Controller **X**: Pulse Input with RS-485 Communication **ED**: EtherCAT **EP**: EtherNET/IP **PN**: PROFINET

Connection Cable/Flexible Connection Cable

CC 050 V Z 2 F 2

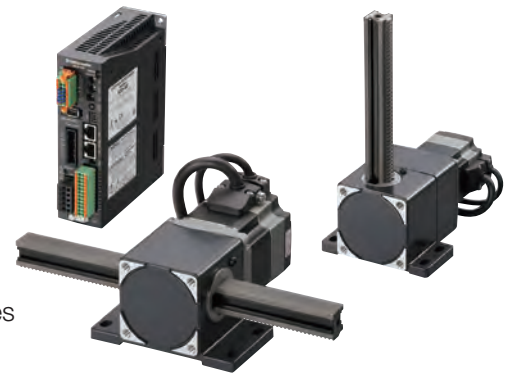
① ② ③ ④ ⑤ ⑥ ⑦

①		**CC**: Cable
②	Length	**005**: 0.5 m **010**: 1 m **015**: 1.5 m **020**: 2 m **025**: 2.5 m **030**: 3 m **040**: 4 m **050**: 5 m **070**: 7 m **100**: 10 m **150**: 15 m **200**: 20 m
③	Reference Number	
④	Suitable Products	**Z**: **AZ** Series Motor
⑤	Reference Number	**2**: For motors with Frame Size 20 mm, 28 mm
⑥	Cable	**F**: Standard **R**: Flexible
⑦	Cable Classification	**2**: For drivers with DC power supply

For detailed information please refer to the **EH** Series catalogue on our website:
www.orientalmotor.eu

RACK-AND-PINION SYSTEMS

The **L** Series is a linear actuator in which a rack-and-pinion mechanism and a motor have been combined. The series facilitates high positioning accuracy and the transport of high loads up to 100 kg.



L Series

FEATURES

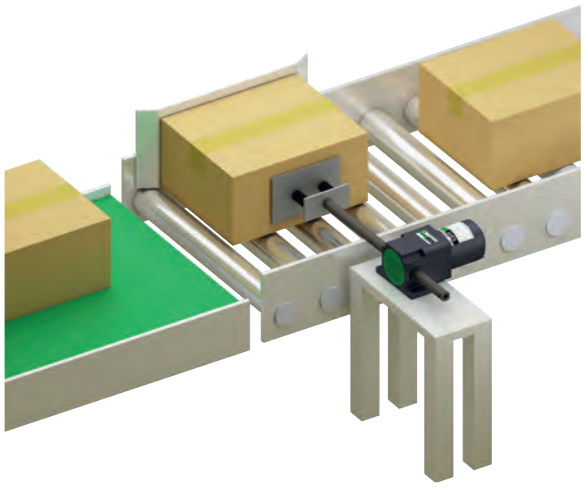
Reduced Design and Assembly Time
The rack-and-pinion system can reduce the number of parts used, and it can also significantly reduce the time spent on design and assembly.

No Home Sensor Required
Return-to-home operation is possible without a home sensor thanks to the absolute system.

Loop Function-Assisted Operation
Loop function operations can be realised even without using a PLC.

APPLICATIONS

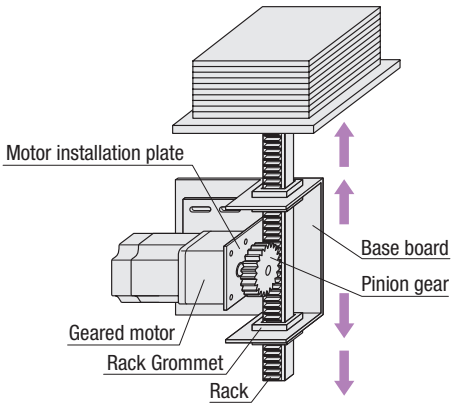
Roller Conveyor



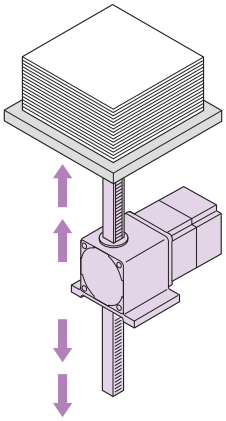
Magazining Printed Circuit Boards

REDUCED DESIGN AND ASSEMBLY TIME

If all the components of a rack-and-pinion drive are purchased separately, design and assembly can take an excessive amount of time. With the **L** Series no complicated assembly is necessary.



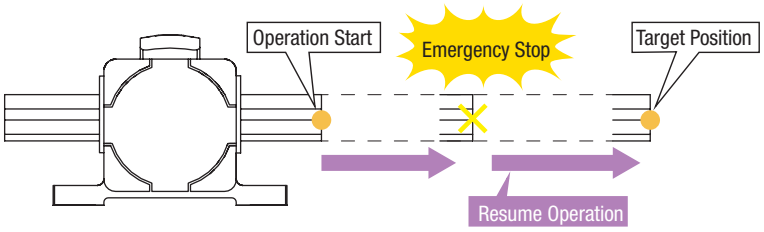
If Parts are Purchased Separately



With Rack and Pinion Systems

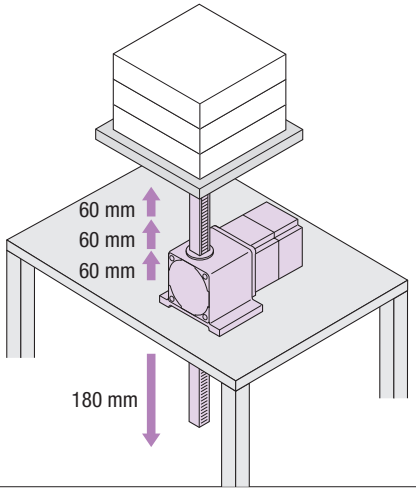
NO HOME SENSOR REQUIRED

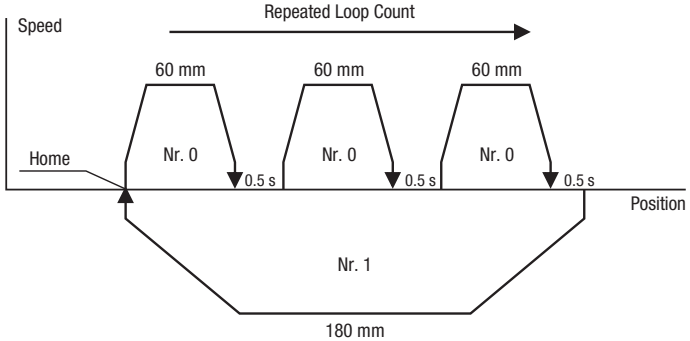
The **L** Series offers an absolute system which eliminates the need for a home sensor. Return-to-home can be performed at high speed without the need to take sensor sensitivity and response time into account, allowing for a shortened machine cycle.



LOOP-FUNCTION

A loop function is where the linked operation data number is repeated to a set number of times. With the **L** Series this is possible even without the use of a PLC.





RACK AND PINION SYSTEM WITH ABSOLUTE SENSOR

Stroke
100 - 1000 mm

Max. Air Flow
0 - 500 mm/s

Frame Size
60 - 80 mm

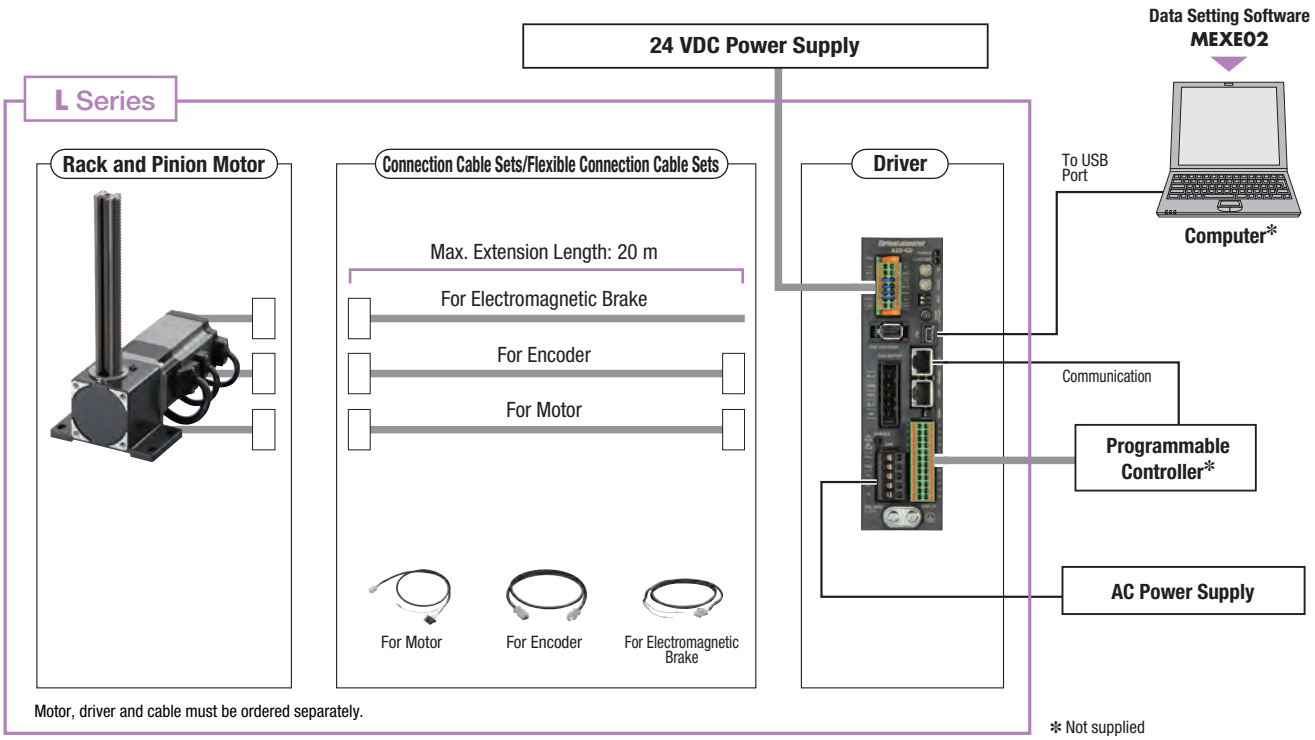
- Battery-free absolute sensor
- No external sensors necessary
- Compact with high strength
- EtherCAT, EtherNet/IP, PROFINET, Modbus RTU

Further information

Characteristics Table

Frame Size [mm]	Stroke [mm]	Max. Transportable Mass [kg]	Options
60	100 - 800	7 - 30	Vertical/Horizontal rack direction, Electromagnetic brake
80	100 - 1000	7 - 100	

Configuration Overview



Product Number

Actuator

LM 4 F 500 AZ M C - 1

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

①	Actuator	**LM**: **L** Series Rack and Pinion Motor
②	Frame sizes	**2**: 60 mm **4**: 80 mm
③	Moving Direction of Rack	**F**: Vertical to Mounting Foot Surface **B**: Horizontal to Mounting Foot Surface
④	Rack Maximum Speed	**40**: 40 mm/s **90**: 90 mm/s **500**: 500 mm/s
⑤	Motor	**AZ**: **AZ** Series
⑥	Configuration	**A**: Standard **M**: with Electromagnetic Brake
⑦	Winding Version	**C**: AC Power Supply Input Specifications
⑧	Stroke	**1**: 100 mm **2**: 200 mm **3**: 300 mm **4**: 400 mm **5**: 500 mm **6**: 600 mm **7**: 700 mm **8**: 800 mm **9**: 900 mm **10**: 1000 mm

Driver

AZD - C D

① ② ③

①	Driver	**AZD**: **AZ** Series Driver
②	Power Supply Input	**A**: Single-Phase 100-120 VAC **C**: Single-Phase 200-240 VAC
③	Driver Classification	Blank: Pulse Input **D**: Built-in Controller **X**: Pulse Input with RS-485 Communication **ED**: With EtherCAT interface **EP**: With Ethernet/IP interface **PN**: With PROFINET interface

✻WARNING: The **AZ** Series is not suitable for operation on 3 × 400 VAC.

Connection Cable Set/Flexible Connection Cable Set

CC 050 V Z F B

① ② ③ ④ ⑤ ⑥

①		**CC**: Cable
②	Length	**005**: 0.5 m **010**: 1 m **015**: 1.5 m **020**: 2 m **025**: 2.5 m **030**: 3 m **040**: 4 m **050**: 5 m **070**: 7 m **100**: 10 m **150**: 15 m **200**: 20 m
③	Reference Number	
④	Applicable Model	**Z**: **AZ** Series
⑤	Cable Type	**F**: Standard **R**: Flexible
⑥	Electromagnetic Brake	Blank: without Electromagnetic Brake **B**: with Electromagnetic Brake

For detailed information please refer to the **L** Series catalogue on our website:
www.orientalmotor.eu

COOLING FANS

Axial flow fans use a propeller to generate air flow in the direction of the axis of rotation. Capable of generating a large air flow, axial flow fans are suited for applications requiring ventilation cooling.

MU Series

MD Series

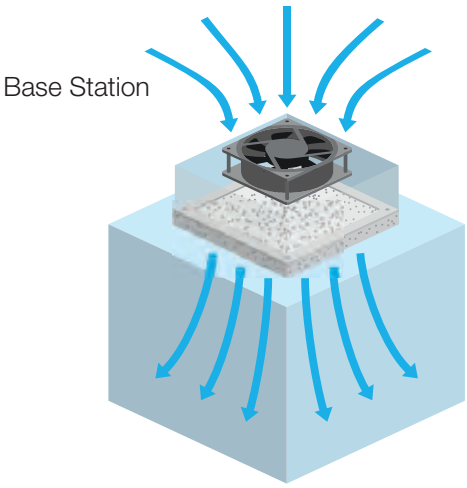
FEATURES

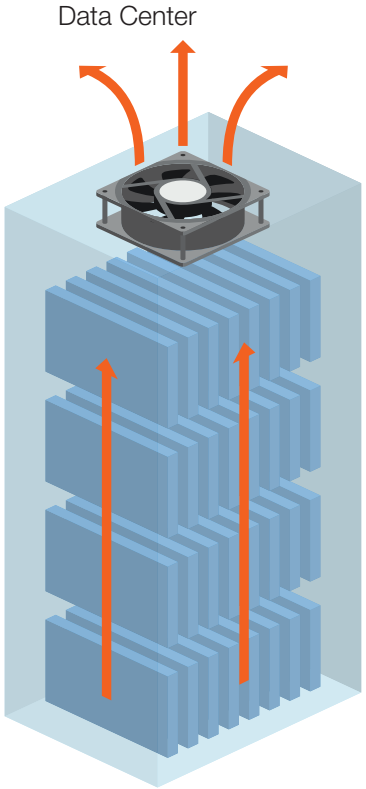
Low noise and power saving
By adjusting the air volume according to the conditions, noise reduction and power saving are possible.

Ideal for Hard to Service Environments
Equipment that is continuously operational and cannot be stopped.

Long life
These axial fans have an expected life of 100,000 hours (approximately 11 years).

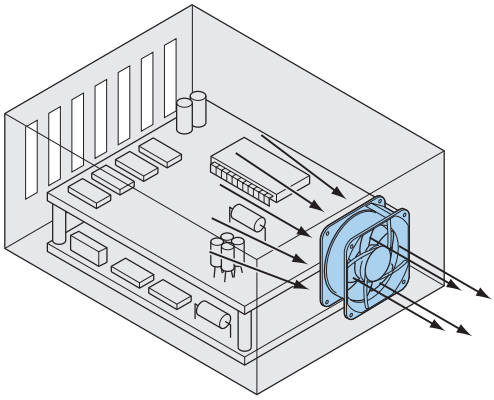
APPLICATIONS





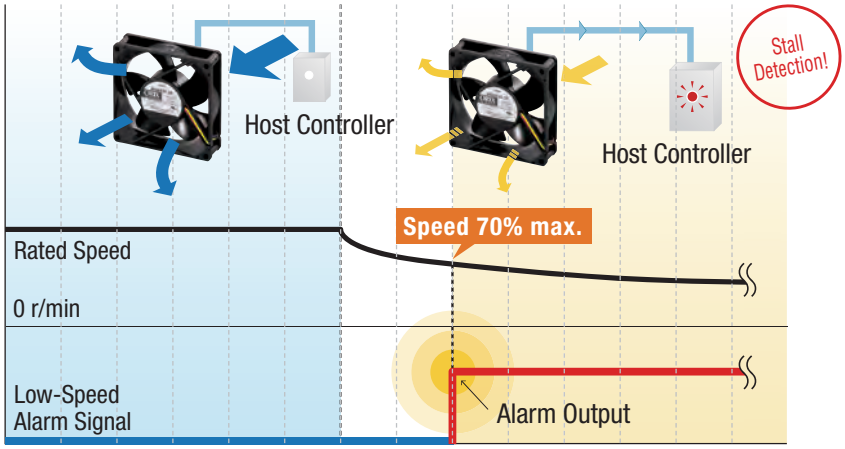
DEVICE VENTILATION AND COOLING

The large air flow of axial flow fans is suitable for ventilation and cooling inside electronic devices.



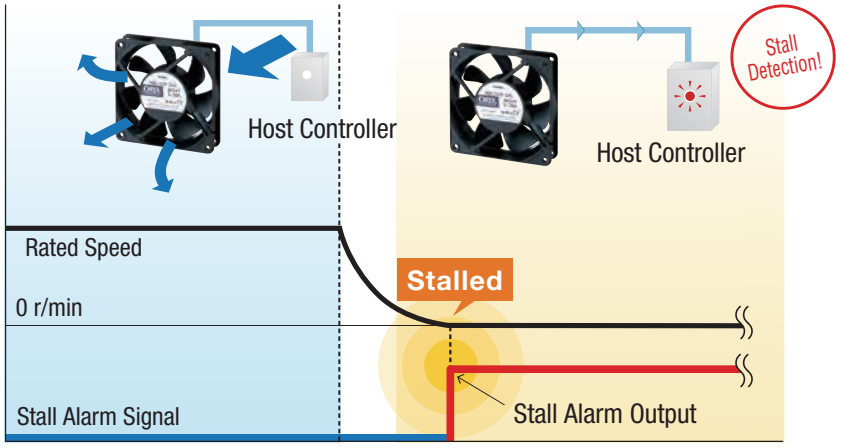
LOW SPEED ALARM TYPES

An alarm is output when the fan speed drops due to the service life of the fan or the ingress of foreign objects.



STALL ALARM TYPE

Outputs an alarm when the cooling fan stops. Quickly stalling tops to allow the cooling fan to be replaced.



MD SERIES AXIAL FLOW FANS FOR **DC** INPUT

Frame Size
42 - 172 mm

Max. Air Flow
0.13 - 6 m^3/min

Noise Level
18 - 46 dB(A)

- High airflow
- Stall/Low speed alarm types
- Long-life types

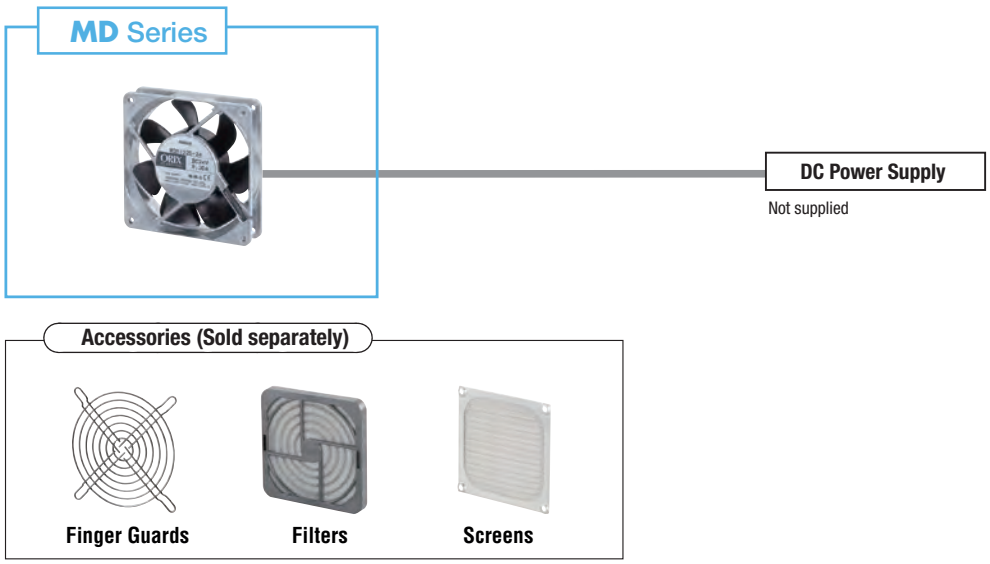
Further information

Characteristics Table

Frame Size [mm]	Max. Air Flow [m^3/min]	Max. Static Pressure [Pa]	Noise Level [dB(A)]
42x42x10	0.13 - 0.18	47 - 86	25 - 34
52x52x10	0.2 - 0.27	32 - 54	30 - 36
62x62x25	0.37 - 0.5	27 - 49	20 - 30
80x80x25	0.55 - 1.0	16 - 49	18 - 35
92x92x25	0.9 - 1.3	22 - 49	25 - 36
119x119x25	2.5 - 2.7	43 - 70	45 - 46
140x140x51	5.8	130	49
Ø 172	6	137	47

✻NOTE: Please contact your nearest Oriental Motor sales office.

Configuration Overview



Product Number

●Fan

MD 9 25 A - 12 L

① ② ③ ④ ⑤ ⑥ ⑦

①	Series Name	**MD**: **MD** Series
②	Type	**S**: **S** No Alarm **A**: **A** With Alarm **E**: **E** Long-life
③	Frame Size	**4**: 42 mm, **5**: 52 mm, **6**: 62 mm, **8**: 80 mm, **9**: 92 mm, **12**: 119 mm, **14**: 140 mm, **17**: ϕ172 mm
④	Frame Thickness	**10**: 10 mm **25**: 25 mm **51**: 51 mm
⑤	Speed Type	Blank, **A**, **B**: Standard Speed **M**, **AM**, **BM**: Middle Speed **AL**, **BL**: Low Speed
⑥	Power Supply Voltage	**5**: 5 VDC, **12**: 12 VDC, **24**: 24 VDC, **48**: 48 VDC
⑦	Additional Function	**L**: Stall Alarm, Electronic Alarm Type Blank: No additional functions

For detailed information please refer to the **MD** Series on our website: **www.orientalmotor.eu**

AXIAL FLOW FANS FOR **AC** INPUT

Frame Size
80 - 140 mm

Max. Air Flow
0.45 - 3.0 m³/min

Noise Level
28 - 46 dB(A)

- AC axial flow fan
- Large air flow
- High static pressure

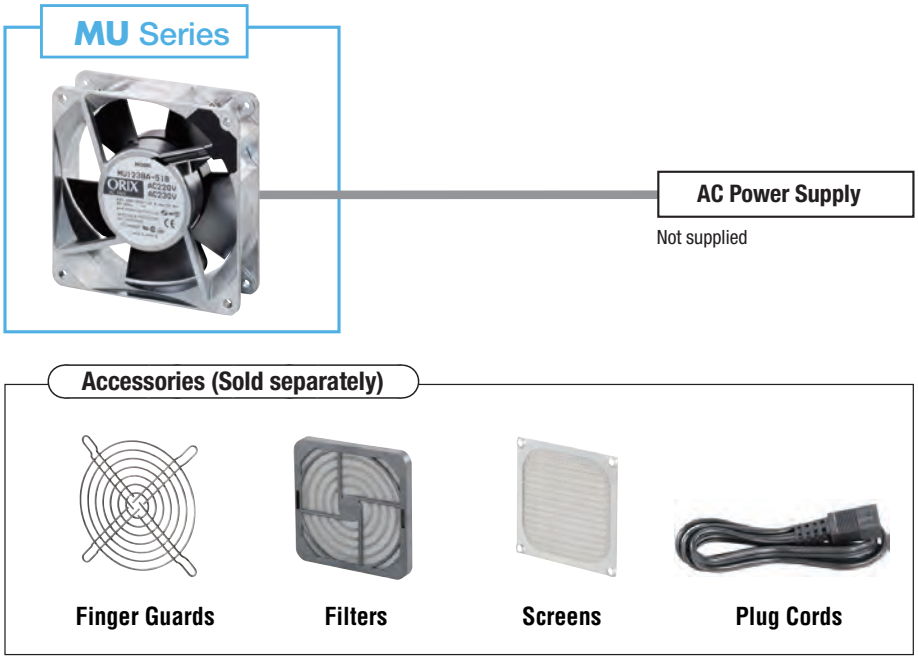
Further information

Characteristics Table

Frame Size [mm]	Max. Air Flow [m³/min]	Max. Static Pressure [Pa]	Noise Level [dB(A)]
80x80x25	0.45 - 0.55	34 - 49	28 - 35
92x92x25	0.85 - 1.1	34 - 59	31 - 39
104x104x25	1.2 - 1.4	39 - 44	35 - 39
119x119x25	1.4 - 1.9	31 - 49	33 - 40
119x119x38	1.85 - 3.0	29 - 81	33 - 46
140x140x28	2.4 - 2.7	34 - 45	44 - 46

✻NOTE: Please contact your nearest Oriental Motor sales office.

Configuration Overview



Product Number

● Fan

MU 12 38 A - 5 1 B

① ② ③ ④ ⑤ ⑥ ⑦

①	Series	**MU**: **MU** Series
②	Frame Size	**8**: 80 mm **9**: 92 mm **10**: 104 mm **12**: 119 mm **14**: 140 mm
③	Frame Thickness	**25**: 25 mm **28**: 28 mm **38**: 38 mm
④	Speed Type	**A**, **S**: Standard Speed **M**, **B**: Middle Speed **L**: Low Speed
⑤	Power Supply Voltage	**5**: Single-Phase 220/230 VAC
⑥	Power Connection	**1**: 2-Terminal **3**: Lead Wire Type
⑦	Reference Number	

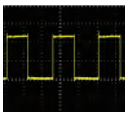
For detailed information please refer to the **MU** Series on our website: **www.orientalmotor.eu**

Striving to Find Solutions to the Needs of Society Through Our Technologies and Products

Product Technology

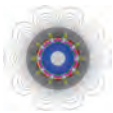
Fundamentals

- Electrical / Electronic Engineering
- Control Engineering
- Mechanical Engineering



Design

- Magnetic Fields
- Circuits
- Construction
- Software
- Heat Transfer



Analysis/ Assembly

- Materials
- Vibration
- Sound
- Fluid
- Heat
- Insulation

Analysis / Measurement

- SEM
- Spectrum Analysis
- 3D Measurement
- Radioscopic X-Ray
- EMC

Related Technologies

- Networking
- Sensors
- Tribology
- 3DCAD

Production Technology

Assembly

- Windings
- Adhesives
- Connections

Processing

- Cutting
- Heat Treatment
- High-Precision Gear Cutting
- Painting

Moulds

- Press
- Die-Casting
- Resin Moulding

Mounting

- Surface Mounting
- Image Testing
- Lead-Free Soldering

High Power - High Efficiency - High Accuracy - Space Saving - Safety - Reliability - Long Life Design - Low vibration - Easy Operation - Low Noise - Standardisation - Low Heat Generation

Motors

Electric Actuators / Gears

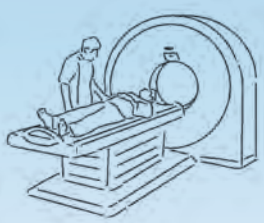
Drivers

Fans

The requirements of motion technologies continue to change and evolve with the times. Oriental Motor has built a high-tech system with the ability to focus on everything from elemental technology to advanced production engineering. All of our engineers are equipped with detailed knowledge and understanding of product technologies in a wide range of fields, allowing us to precisely meet the needs of modern automation. Providing solutions to challenging problems, while creating value in people's lives, manufacturing sites, and various areas of society.

Medical Equipment / Analytical Instruments

- CT Scanner
- MRI Scanner
- Denture Manufacturing Equipment
- Blood Analyzer
- Electron Microscope
- Pharmaceutical Packaging Machine
- X-Ray Equipment



Bank and Ticket Machines

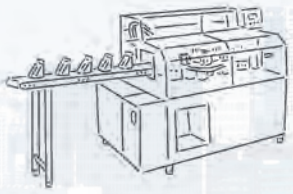
- ATM
- ETC Gate
- Counting Machine
- Automatic Ticket Gate
- Automatic Ticket Machine
- Train Seat Rotation Device
- Automatic Doors

In Our Daily Lives

- Interactive Exhibition Machines for Amusement Parks, Recreational Facilities, and Museums
- High Speed Sushi Restaurant Conveyor Belt
- CCTV Camera
- Service Robot
- Security Gate
- Solar Power Generation (Power Conditioner)
- Charging Station for Electric Cars
- Wind Turbine
- Planetarium

Food Machinery

- Checkweigher
- Food Processing Equipment
- Sorting Machine
- Seeding Machine
- Packaging Machine
- Foreign Object Inspection Equipment
- Plant Factory
- Kitchen Instrument



Factory Automation

- Testing Equipment
- Industrial Robot
- Molding Machine
- Washing Machine
- Electronic Component Manufacturing Equipment
- Conveyor Equipment
- Semiconductor Manufacturing Equipment
- Automatic Guided Vehicle (AGV, AMR)
- Cooling Equipment

Solutions for Society

- Automation
- Improved Productivity
- Scientific Development
- Safety / Security
- Energy Saving / Resource Saving

Making “Motion” Scenes More Eco-Friendly

We strive to reduce environmental burdens through products with low environmental impact, while making improvements on energy efficiency as well as conducting appropriate waste management.
In this brochure, we introduce some of our environmental activities that we have been conducting while challenging ourselves to explore new technologies and applications.

Products Contributing to the Global Environment

In order to contribute to the reduction of environmental impact, we utilise the latest technology in our motors and other products to support environmental factors, such as reducing CO_2 through high energy efficiency, and saving resources through compact designs.

Contributing to Reducing CO_2 Emissions Compatible with EU's Ecodesign Directive

The ecodesign directive, which was established by the EU in efforts to achieve the Kyoto Protocol early, is a protocol that imposes a framework of environmental friendliness for all energy-relevant products. Motor-related products are also required to be highly energy efficient. Oriental Motor's induction motors with an output of 120 W and above, along with the cooling fan **MRE** Series (frame size 250 mm), are compatible with the ecodesign directive.

Contributing to Resource-Saving by Achieving Compact Body and High Torque

Reducing the size and weight of products improves resource efficiency (resource-saving), resulting in reduced environmental impact. By reducing the size of the motor, which is the power source, and making it high torque, Oriental Motor contributes greatly to resource-saving by offering resource efficient products.
Furthermore, we support many customers to achieve their resource saving goals by promoting simplified wiring compatible with FA networks.

Standard AC Motor
Three-Phase High-Efficiency Induction Motor

KIIS Series

- Motor achieves energy-saving and high-efficiency through optimal magnetic design and exclusive components.
- Accomplishing an efficiency level of IE4 (200 V type).
  *International standards IEC 60034-30-1
- Fan-less structure
- Degree of protection IP66

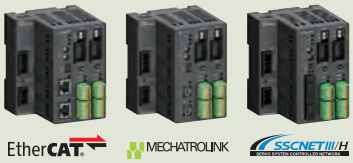
KIIS Series

αSTEP **AZ** Series

Multi-Axis Driver 2-Axis Type
DC Input

- Achieves downsizing* and reducing material usage with dedicated design.
- Contributing to simplified wiring with a driver equipped with consolidated connections to programmable networks and power supply.

* Achieved reducing motor length by approx. 45 % and mass by approx. 38 % compared with a conventional multi-axis driver 2-axis type.



EtherCAT® MECHATROLINK SSCNETIII/H

* EtherCAT® is a patented technology and is a registered trademark of and licensed by Beckhoff Automation GmbH (Germany).
* MECHATROLINK is a registered trademark of MECHATROLINK Members Association.
* SSCNETIII/H is a registered trademark of Mitsubishi Electric.

AC Long Life Axial Flow Fans

MRE Series

Frame Size 250 mm

- Achieves higher efficiency with a winding design compatible with power supply specifications in each country, and enabling temperature rise suppression in of the cooling fan motor. Realising the longest product life in the motor industry.
- Expected life of 100,000 hours
- Large air flow

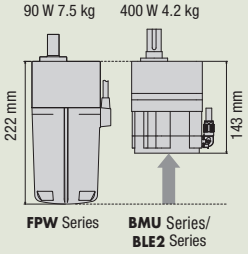
MRE Series

Brushless DC Motor

BMU Series / **BLE2** Series

Dust-Resistant / Watertight

- High-efficiency motor incorporating high-energy density permanent magnets. Achieving compact body yet higher output power compared with a conventional watertight, dustresistant induction motor **FPW** Series.
- Contributing to equipment design with high watertight, dust resistant performance while conforming to the IP67 degree of protection.



BMU Series / **BLE2** Series

ORIENTAL MOTOR
WE ARE YOUR SPECIALIST

WE ARE THERE FOR YOU! FULL-SERVICE

Webinar & Seminar

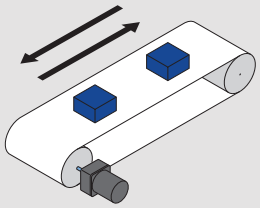
Technical webinars & seminars are also part of Oriental Motor's customer service.

New Motion

This is where we keep you up to date about matters of the moment.

Motor Selection

We support you selecting the drive.



YouTube - The Highlights

This is where we keep you up to date about our products.

YouTube

CORPORATE OVERVIEW

HEADQUARTERS DUSSELDORF

SALES NETWORK

Our european headquarters.

DUSSELDORF - GERMANY
MILAN - ITALY
PARIS - FRANCE
LONDON - U.K.
ZURICH - SWITZERLAND

TAKAMATSU-KOKUBUNJI FACTORY

PRODUCTION NETWORK

Our factories in Japan.

KASHIWA Factory
KOFU Factory
SOMA Factory
TAKAMATSU-KOZAI Factory
TSUCHIURA Factory
TSUKUBA Factory
TSURUOKA MIDDLE Factory
TSURUOKA WEST Factory

Company ORIENTAL MOTOR CO., LTD
Head office Taito-ku, Tokio
Founded 1885
Established 1950
10 R&D Center and Factories in Japan

ISO 9001 • ISO 14001

Note

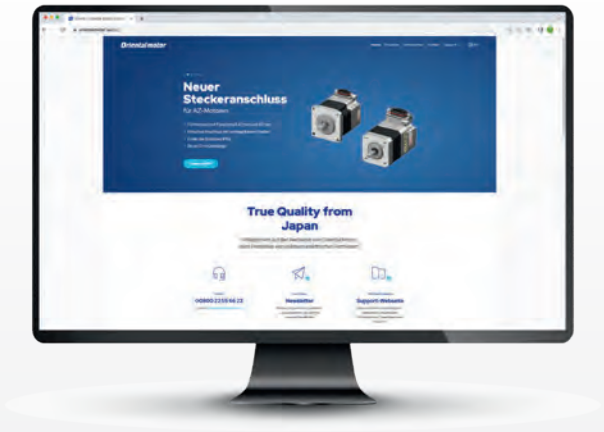
Orientalmotor

Made in Japan

Development, manufacture and sale of small precision
motors and electronic circuits for motion control.

Free Call Europe Customer Service Center:

00800 22 55 66 22



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