

***Orientalmotor***

**Contributes to Energy Saving**

# ***Brushless Motor***

***Brushless Motors***

Power Saving Achieved with the  
Use of a Brushless Motor



# Good News for Customers Who Use AC Motors

IE4-equivalent  
Energy Saving Performance

Smaller and More High-Powered  
Compared to Three-Phase Motors

## Energy Savings When an AC Motor is Replaced with a Brushless Motor

### Annual Power Consumption (Comparison at 60 W output)

	Power consumption (kWh/year)	CO <sub>2</sub> emissions (kg/year)	Electric utility rate (€/year)
AC Motors	439.2	228	117.00
Brushless Motors	273.6	142	72.89

\*Calculated with a daily drive time of 12 hours, 300 operating days per year, a power-CO<sub>2</sub> emission conversion coefficient of 0.519 kg-CO<sub>2</sub>/kWh, and an electric utility rate of 26.64 €/kWh

[AC motor]

When used with output 60 W, single-phase 200 VAC, 60 Hz

[Brushless motor]

BMU Series, with output 60 W



Power Consumption **165.6** Reduction in kWh/year

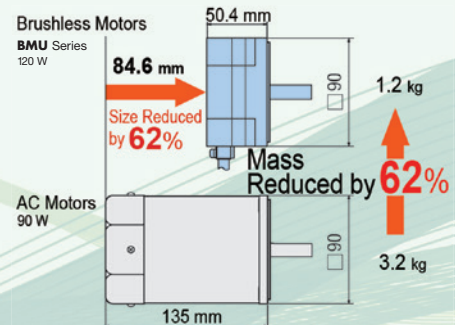
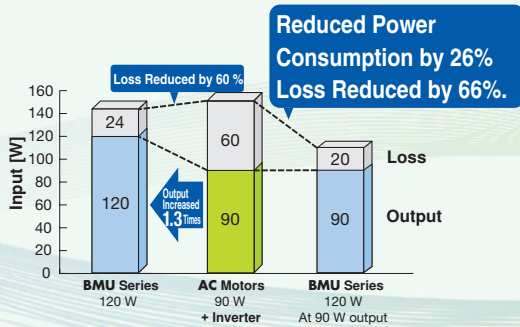
CO<sub>2</sub> Emissions **86** Reduction in kg/year

CO<sub>2</sub> emissions

**37% reduction**

### Higher Efficiency than Inverter Control

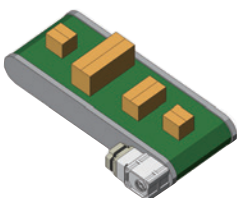
### Compact, Lightweight Motor Contributes to Conservation of Natural Resources



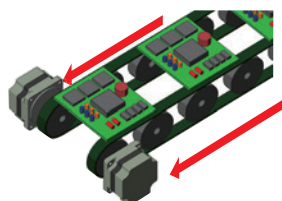
## Brushless Motors are Useful for These Applications

### Conveyor / Transportation

- Transport multiple works of different weights
- Stable speed even if the load fluctuates
  - Flat torque from low to high speed
  - Little variation in stop position

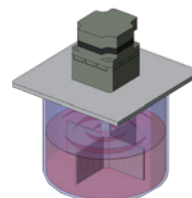


- Dual axis parallel speed synchronization
- Simple synchronization of two conveyors
  - Simple synchronization of conveyor merging lines



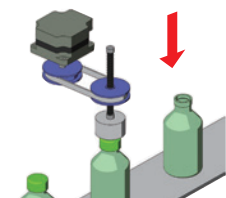
### Agitators/pumps/dispensers

- Stable speed even if the viscosity (load) changes
- Space saving thanks to small motor
- Energy saving, low heat generation
- Instantaneous bi-direction



### Torque Limiting\*

- Damage prevention with torque limiting
  - Load factor monitoring
- \*Limited to products that can use the torque limiting function.



# Energy Saving with Brushless Motors

Stable at Both Low and High Speed  
Broad Speed Control

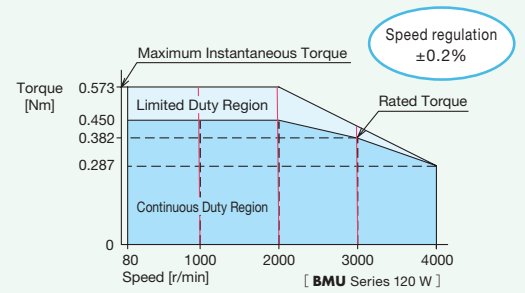
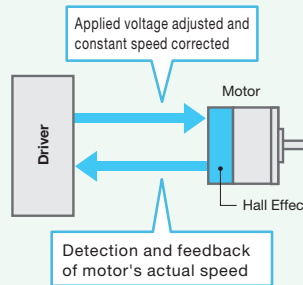
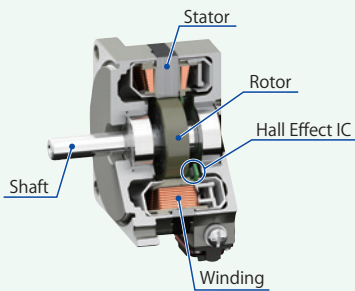
Full Product Line to Suit a  
Variety of Applications

## What is a Brushless Motor?

These compact, lightweight motors have a built-in internal sensor for speed control. They follow the commands of a dedicated circuit (driver) that performs feedback control, operating at the set speed.

**Structure** High efficiency is achieved with a highly magnetic permanent magnet in the rotor.

**Control Method** High speed stability is achieved by applying a voltage adapted to the setting speed and load size.

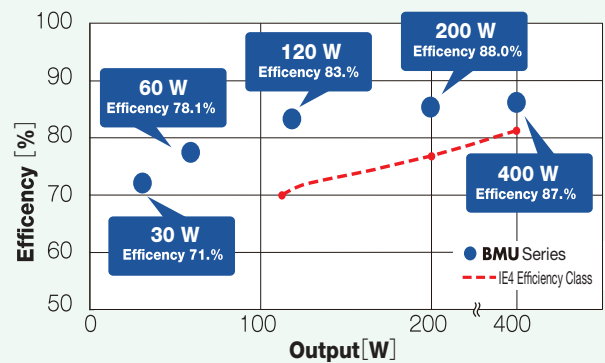


## IE4-equivalent\* High-efficiency, Energy-saving Motor

Brushless motors with a built-in permanent magnet are more efficient than three-phase motors (induction motors). For example, the **BMU Series 200 W** increases motor and driver efficiency by 86% and the IE4 standard value by 75.8%, meeting energy saving requirements.

\*The efficiency class stipulated in the international standard IEC60034-30-1, to which 120 W and higher induction motors are subject.

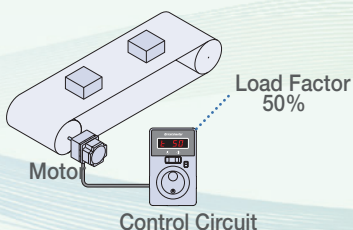
\*The IE4 efficiency value is the value at the rated output power of a 50 Hz, four-pole device. The efficiency value of a brushless motor is the value at rated torque at rated speed.



## Provides Timely Information on Motor Condition, Changes and Power Consumption. (Varies by Driver Type)

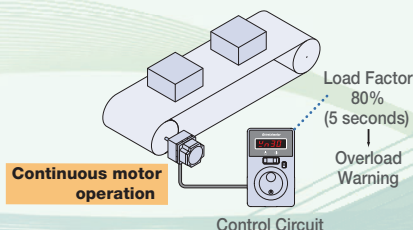
### Monitoring

The status of the motor and driver (load, speed, temperature, etc.) is displayed on the panel, and the values are output on the host end.



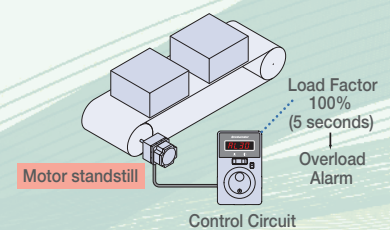
### Warnings / information

If a set value, such as load or speed, is exceeded, a signal is output before an alarm is generated.



### Alarms



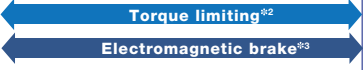
If there is an abnormality with the motor or driver, an alarm is output and the motor stops.





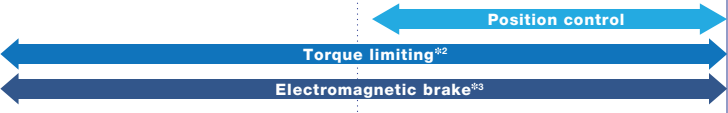


# Product Line of Brushless Motors

## AC Input

Features	Simple operation	Multifunction type with different setting methods
Series	<b>BMU Series</b>	<b>BLE2 Series</b>
		
Output Power	30 - 400W	
Number of Speed Setting Points	4 speeds	16 speeds
Speed Setting Method	Setting dial	Setting dial External speed potentiometer External DC voltage Data setting software
Speed Control Range	80 - 4000 r/min Speed regulation $\pm 0.2\%$ (load)	
Additional Function		

## DC Input

Features	Small board type	Battery-operable compact driver
Series	<b>BLH Series</b> Analog Setting Type Digital Setting Type RS-485 Communication Type	<b>BLV Series R Type</b>
		 FA Network Compatible Modbus (RTU) CANopen
Output	15 - 100W* <sup>4</sup>	100 W, 200 W
Speed Control Range	80 - 3000 r/min* <sup>5</sup>	1 - 4000 r/min
Additional Function		

\*1 30 - 4000 rpm at analog setting.

\*2 Analog setting type excluded from **BLH** Series.

\*3 300 W and 400 W excluded from **BLE2** Series. 15 W excluded from **BLH** Series.

\*4 100 W in analog setting type only.

\*5 100 - 3000 r/min for analog setting type. \*6 Varies depending on setting method and output.

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www.orientalmotor.eu



Customer Service Center (German & English)  
Free Hotline 00800-22 55 66 22 - info@orientalmotor.de

These products are manufactured at plants certified with the international standards ISO 9001 (for quality assurance) and ISO 14001 (for systems of environmental management).