BLE FLEX

New Release of the **BLE** Series **RS-485** Communication Type
Connecting to various Host Systems

A **RS-485** Communication Type has been added to the Standard Brushless Motor **BLE** Series. It can be connected to various host systems contributing to a smooth system configuration. It can be controlled entirely from a host system because operation, configuration, and monitoring are fed back to the host system.

■ Features of the Brushless Motor **BLE** Series

- ■ Brushless Motor – Basic Features
  - Wide Speed Control Range from Low to High Speed
  - Compact yet Powerful
  - Excellent Speed Stability
  - Contributes to Energy Savings
- ■ Special Functions and Features of the **BLE** Series

FLEX ■ Features of the Flex **RS-485** Communication Type

- ■ Flexible Connection with the Host System
  - I/O Control
  - Modbus Control
  - Industrial Network Control (via Network Converter)
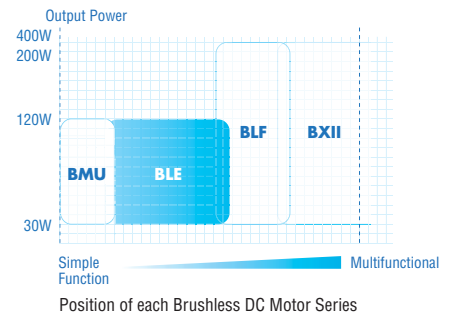- ■ Advantages of the RS-485 Communication Type

FLEX What is FLEX?

FLEX is a collective name for products that support Industrial Network control via I/O control, Modbus (RTU) control, and network converters. These products enable simple connection and simple control, shortening the total lead time for system configuration.
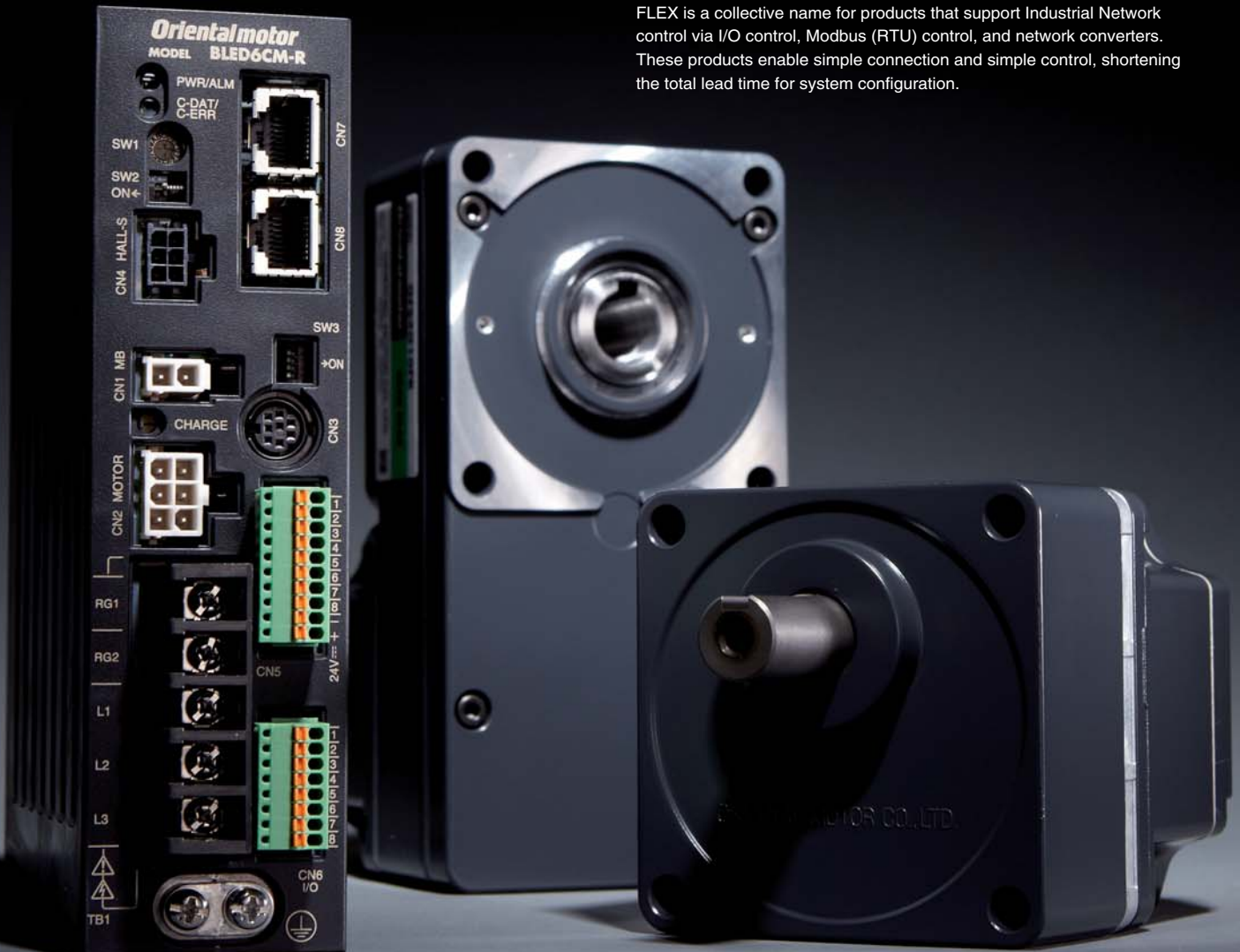
The brushless DC motor series have various output powers and functions. The **BLE** Series has a speed control range of 100~4000 r/min and sets a new standard for the Oriental Motor brushless DC motors.

It provides easy-to-use speed control, high output power, geared types and accessories.
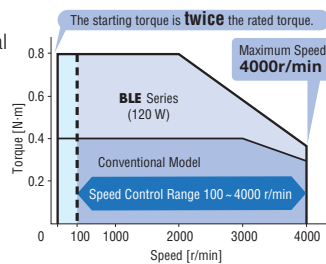
Output Power
400W
200W
120W

BLF

BXII

BMU

BLE

30W

Simple Function ———— Multifunctional

Position of each Brushless DC Motor Series

Features of Brushless DC Motors - **BLE** Series

Features of standard Brushless DC Motors

### Speed Control Range of 100 to 4000 r/min and Speed Ratio of 1:40

Compared with the conventional model, the speed control range is greatly expanded.
Use in high-speed applications even at the maximum speed of 4000 r/min is possible.

The starting torque is **twice** the rated torque.

Maximum Speed **4000r/min**

BLE Series (120 W)

Conventional Model

Speed Control Range 100 ~ 4000 r/min

Torque [N·m]

Speed [r/min]

Speed Control Range | **BLE** Series: 100 to 4000 r/min (speed ratio 1:40)
Conventional Model: 300 to 3000 r/min (speed ratio 1:10)

Compact yet Powerful

Brushless motors have slim bodies and provide high power due to permanent magnets being used in the rotor. For example, the overall length is 75 mm shorter and the output power is 1.3 times higher than that of three-phase induction motors with a frame size of 90 mm. Using brushless motors can contribute to downsizing of equipment.

BLE Series 120W **−75mm**

Output 1.3 times

Inverter-Controlled Three-Phase Induction Motors 90 W

60

□90

□90

135
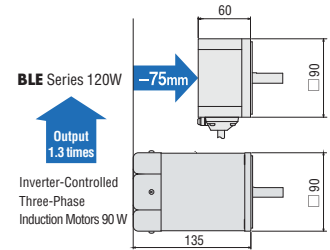
Excellent Speed Stability

The speed regulation (load) is ±0.5%. For this reason, this mechanism ensures that the motor drives at a stable speed over its entire speed range from low to high, even when the load condition fluctuates.
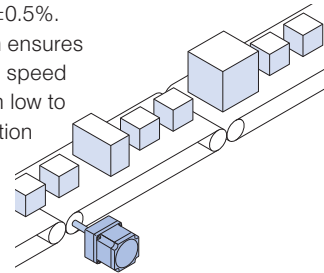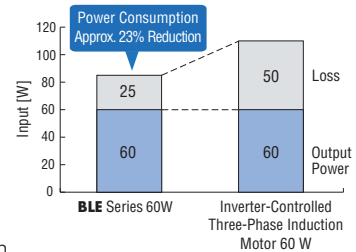
Conventional Model
Load   -1%
Voltage   ±1%
Temperature ±1%

BLE Series*
Load   ±0.5%
Voltage   ±0.5%
Temperature ±0.5%
*During Analog Setting

Contributes to Energy Savings

Brushless motors, which incorporates permanent magnets in the rotor, generate little secondary loss from the rotor. This allows for power consumption to be reduced by approximately 23% compared with inverter-controlled threephase induction motors*. This contributes to energy savings with equipment.

* When output power is 60 W

Power Consumption Approx. 23% Reduction

Input [W]

25 | 50 Loss
60 | 60 Output Power

BLE Series 60W | Inverter-Controlled Three-Phase Induction Motor 60 W

Functions and features of the **BLE** Series

Speed Control During Vertical Operation is Possible

The electromagnetic brake type motor enables stable speed control even during vertical operation (gravitational operation).
The electromagnetic brake is automatically controlled via the driver in accordance with ON/OFF of the operation command signal. When the power supply is turned off (or when a power failure occurs), the motor stops instantly to hold the load in place.

Load

W
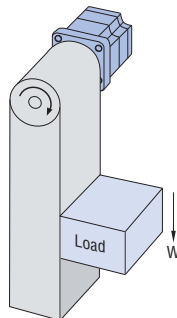
Limiting the Motor Output Torque

The motor output torque can be suppressed in accordance with the application and use condition.

Brake to Produce Tension

Tension

Press Applications, etc.
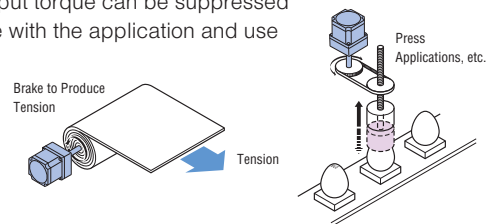
Long Life Gearhead Rated Life of **10000** Hours

The rated life of the parallel shaft gearhead and hollow shaft flat gearhead is 10000 hours. The parallel shaft gearhead has a long life that is twice as long as that of a conventional model.

BLE FLEX

FLEX Compatible – Connect to Various Host Systems

In addition to the conventional I/O control, Industrial Network control is now possible using Modbus (RTU) or network converters.

▮ RS-485 Communication Type FLEX

When controlled with I/O

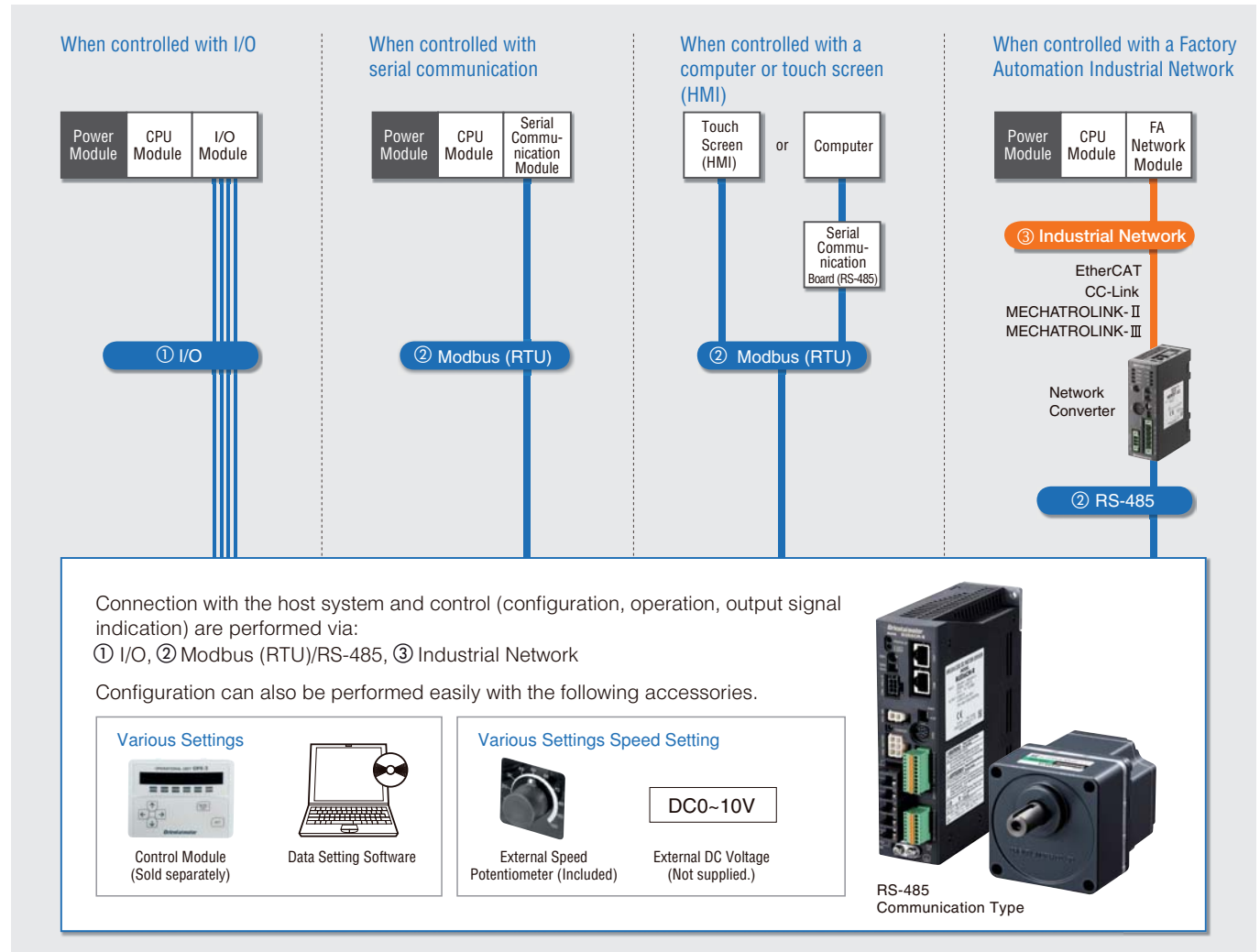| Power Module | CPU Module | I/O Module |

① I/O

When controlled with serial communication

| Power Module | CPU Module | Serial Communication Module |

② Modbus (RTU)

When controlled with a computer or touch screen (HMI)

| Touch Screen (HMI) | or | Computer |

Serial Communication Board (RS-485)

② Modbus (RTU)

When controlled with a Factory Automation Industrial Network

| Power Module | CPU Module | FA Network Module |

③ Industrial Network

EtherCAT
CC-Link
MECHATROLINK-Ⅱ
MECHATROLINK-Ⅲ

Network Converter

② RS-485

Connection with the host system and control (configuration, operation, output signal indication) are performed via:
① I/O, ② Modbus (RTU)/RS-485, ③ Industrial Network

Configuration can also be performed easily with the following accessories.

Various Settings

Control Module (Sold separately) | Data Setting Software

Various Settings Speed Setting

External Speed Potentiometer (Included)

DC0~10V

External DC Voltage (Not supplied.)

RS-485 Communication Type

---

① I/O

Connect directly to a switch box or PLC to construct an operation system controlled via I/O communication.

② Modbus (RTU)/RS-485

RS-485 communication can be used to set operating data and parameters and input operation commands.
Up to 31 drivers can be connected to a serial communication unit. The motor has a function that enables multiple shafts to be started simultaneously.
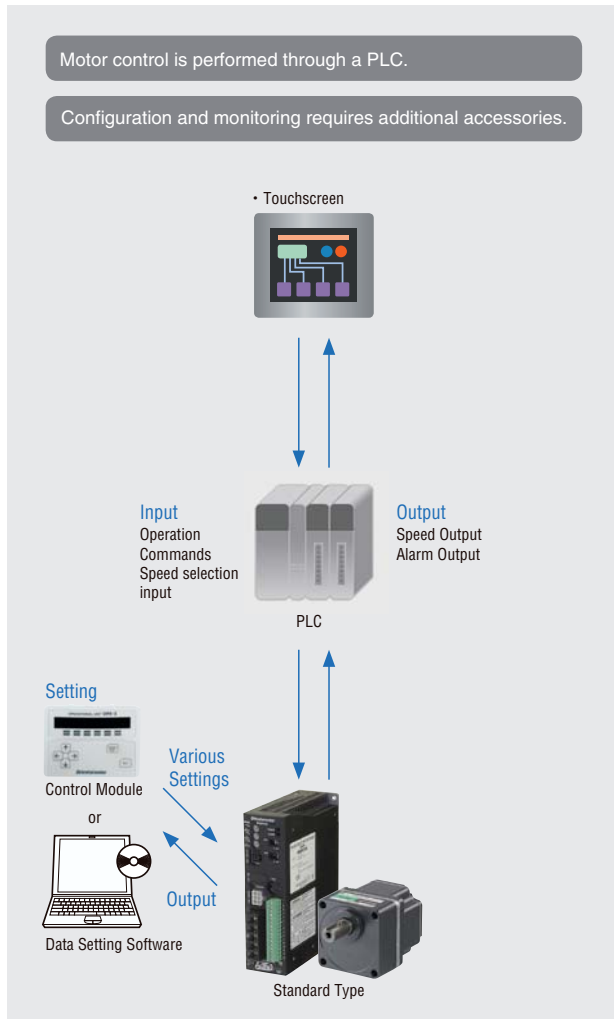The Modbus (RTU) protocol is supported and can be used to connect to panel computers and PCs.

③ Industrial Network

Using a network converter (sold separately) enables support with EtherCAT communication, CC-Link communication and MECHATROLINK communication. These can be used to set operating data and parameters and input operation commands.

Advantages of the RS-485 Communication Type

The **BLE** Series FLEX RS-485 Communication Type can be controlled entirely from a host system because operation, configuration, and monitoring are fed back to the host system. When the control of touchscreen or touch-screen panel computer is used, load factor and other various output signals can be monitored.

Standard Type

Motor control is performed through a PLC.

Configuration and monitoring requires additional accessories.

• Touchscreen

Input
Operation Commands
Speed selection input

Output
Speed Output
Alarm Output

PLC

Setting

Control Module

or

Data Setting Software

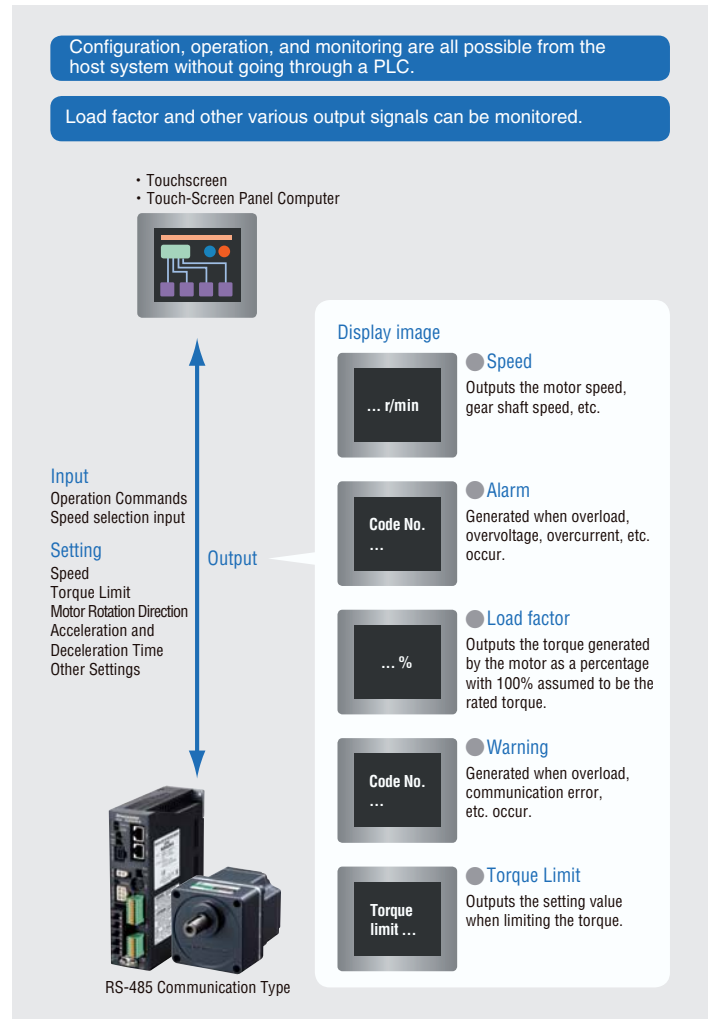**Various Settings**

Output

Standard Type

The motor is controlled through inputs received from a switch box, PLC, or the like.
The motor outputs motor speed, alarm, and other signals to the host system.

RS-485 Communicacion Type

Configuration, operation, and monitoring are all possible from the host system without going through a PLC.

Load factor and other various output signals can be monitored.

• Touchscreen
• Touch-Screen Panel Computer

Input
Operation Commands
Speed selection input

Setting
Speed
Torque Limit
Motor Rotation Direction
Acceleration and Deceleration Time
Other Settings

Output

Display image

… r/min
● Speed
Outputs the motor speed, gear shaft speed, etc.

Code No. …
● Alarm
Generated when overload, overvoltage, overcurrent, etc. occur.

… %
● Load factor
Outputs the torque generated by the motor as a percentage with 100% assumed to be the rated torque.

Code No. …
● Warning
Generated when overload, communication error, etc. occur.

Torque limit …
● Torque Limit
Outputs the setting value when limiting the torque.

RS-485 Communication Type

The motor can be controlled directly from the host system such as a touchscreen or touch-screen panel computer.
The motor outputs its operating status such as motor speed and load factor to the host system to help improve equipment reliability.

Lineup of the **BLE** Series

You can select a product that best suits your equipment from the following three types.

● Standard Type

● FLEX RS-485 Communication Type

NEW

● Motor Types

Combination Type and Parallel Shaft Gearhead

Combination Type - Hollow Shaft Flat Gearhead

Round Shaft Type

Standard or with electromagnetic brake

Frame size · Output Power: □60 mm · 30 W, □80 mm · 60 W, □90 mm · 120 W

5