Brushless Motor and Driver Package
BLE Series

Features

Speed Control Range of 100~4000 r/min (Speed ratio 40:1)
Compared with conventional products, the speed control range is greatly expanded. Use in high-speed applications even at a maximum speed of 4000 r/min is possible.

![Comparison Using 120 W (1/6 HP) Output Model]

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 Product]
- Load: −1%
- Voltage: ±1%
- Temperature: ±1%

[BLE Series]
- Load: ±0.5%
- Voltage: ±0.5%
- Temperature: ±0.5%

Compact yet Powerful
High power is achieved with a slim body, efficient gearhead and a compact design allowing for additional space savings.

![Dimensions](Image)

Energy Savings
Brushless motors use permanent magnets in the rotor. In comparison with inverter-controlled motors, they are high-efficiency with little loss, which means that energy savings is possible.

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 the operation command signal. When the power is turned OFF, such as during a blackout, the motor stops instantaneously to hold the load in place.

Additional Performance and Function
Functionality and performance can be improved by using in combination with the control module OPX-2A or the data setting software MEXE02.
Speed Control Range Expanded to 80～4000 r/min
The digital speed setting function expands the speed control range to cover 80～4000 r/min (speed ratio 50:1).

Improved Speed Regulation

- **[BLE Series]**
  - Load: ±0.5%
  - Voltage: ±0.5%
  - Temperature: ±0.5%

- **[When using digital speed setting]**
  - Load: ±0.2%
  - Voltage: ±0.2%
  - Temperature: ±0.2%

Multistep Speed-Change Operation up to 16 Speeds is Possible
Multistep speed-change operation up to 16 speeds is possible using the **OPX-2A** or **MEXE02**. Speed setting in 1 r/min units as well as separate setting of the acceleration and deceleration time are possible.

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

Various Digital Indications are Possible (Control module **OPX-2A**)
Speed, load factor, alarm code, etc. can be displayed digitally.
- The speed can be displayed as the speed of the gearhead output shaft.

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 product.

Space Saving is Achieved with a Hollow Shaft Flat Gearhead
Direct connection to the drive shaft is possible without using a coupling, which will enable space saving.

Cable Length and Flexible Extension Cable Can be Selected
- **The Included Cable is 3 m (9.8 ft.)**
  Comes with a cable that is 3 m (9.8 ft.) in length for connecting the motor to the driver.

- **Cables up to 20 m (65.6 ft.) are Available (Sold separately)**
  When the distance between the motor and the driver is 5 m (16.4 ft.) or longer, an accessory connection cable (sold separately) must be used. The distance between the motor and the driver can be extended up to 20 m (65.6 ft.).
  @ Connection Cables ➜ Page D-183

- **Flexible Extension Cables are Also Available (Sold separately)**
  Use the flexible connection cable in applications where the cable is bent and flexed.
  @ Flexible Connection Cables ➜ Page D-183

Product Line
2 different types are available based on the system requirements.
- **Standard Type**
- **RS-485 Communication Type**
- **Motor Types**
Connecting to a Wide Variety of Industrial Networks and Host Systems

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

### RS-485 Communication Type

<table>
<thead>
<tr>
<th>Control Type</th>
<th>I/O Control</th>
<th>Serial Communication Control</th>
<th>Control from a Computer or Touch Panel</th>
<th>FA Network Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>RS-485 Type</td>
<td>Power Supply Module</td>
<td>CPU Module</td>
<td>Serial Communication Module</td>
<td>Touch-Panal/Touch-Screen Panel/ Computer</td>
</tr>
<tr>
<td>FLEX Type</td>
<td>Power Supply Module</td>
<td>CPU Module</td>
<td>Serial Communication Module</td>
<td>Touch-Panal/Touch-Screen Panel/ Computer</td>
</tr>
</tbody>
</table>

Connection with the host system and control (configuration, operation, output signal indication) are performed via either ① I/O, ② Modbus (RTU)/RS-485, or ③ FA network.

Settings can also be performed easily using the following options.

- **Various Settings**
  - Control Module (Sold separately)
  - Data Setting Software

- **Speed Setting**
  - External Speed Potentiometer (Included)
  - External DC Voltage (Not supplied)

- **RS-485 Communication Type**
  - RS-485 communication can be used to set operating data and parameters, as well as input operation commands.
  - Up to 31 drivers can be connected to 1 serial communication parameters, as well as input operation commands.

- **FA Network Type**
  - By using a network converter (sold separately), CC-link communication, MECHATROLINK communication or EtherCAT communication is possible. All of these can be used to set operating data and parameters, as well as 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 controlling with a touch-screen or panel computer, load factor and other output signals can be monitored.

### RS-485 Communication Type

- **Settings, operation, and monitoring can be managed collectively by the master control system without going through PLC.**
- **Various output signals, such as load factor, can be monitored.**

<table>
<thead>
<tr>
<th>Input</th>
<th>Operation Commands Speed Selection Input</th>
</tr>
</thead>
<tbody>
<tr>
<td>Setting</td>
<td>Speed Torque Limit Motor Rotation Direction Acceleration and Deceleration Time Other Settings</td>
</tr>
<tr>
<td>Output</td>
<td>RS-485 Communication Type</td>
</tr>
</tbody>
</table>

- **Speed**
  - Outputs the motor speed, gear shaft speed, etc.
- **Alarm**
  - Generated when overload, overvoltage, overcurrent, etc. occur.
- **Load Factor**
  - Outputs the torque generated by the motor as a percentage with 100% as the rated torque.
- **Warning**
  - Generated when overload, communication error, etc. occur.
- **Torque Limit**
  - Outputs the setting value when limiting the torque.

- The motor can be controlled directly from the host system such as a touch-screen or touch-screen PLC.

- The motor outputs its operating status such as motor speed and load factor to the host system to help improve equipment reliability.

### Standard Type

- Motor control is performed through a PLC.
- For settings and monitoring, a separate accessory is required.

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<tr>
<td>Setting</td>
<td>Various Settings</td>
</tr>
<tr>
<td>Output</td>
<td>Standard Type</td>
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</table>

- The motor can be controlled through inputs received from a switch box, PLC, or the like.

- Motor speed, alarm, and other signals are output to the master control system.