Orientalmotor

Brushless Motors

BLH Series

Improved DC Input drivers with greater functionality and performance

Excellent performance just as it is.

The **BLH** Series DC input type brushless motor has been updated.

Performance has been improved, while the motor and driver remain the same size.

Using the support software with the digital setting type allows a range of useful functions to be utilized.

The **BLH** Series has been updated with a range of new Features.

- **High torque at high speeds**
- Speed range **80 to 3000 r/min***
- **Decelerate stop** according to the set deceleration rate*
- Quieter: **13 dB quieter than before**
- Set operation data **from your computer***
- Monitor operating status **in real time***
- **Torque adjustment***
- **8** data setting points*
  (Conventional product: 2 points)

*When using the **MEXE02** support software and digital setting type driver.

2 Driver Types to Choose From

Motor

Common

- Output power
  15 W / 30 W / 50 W / 100 W
- Types:
  Parallel Shaft Gearhead / Hollow Shaft Flat Gearhead / Round Shaft

+

Driver

Analog Setting Type

- Installation and functional compatibility with current products
- Increased performance (Higher torque, reduced audible noise)
- For output power 15 W / 30 W / 50 W / 100 W

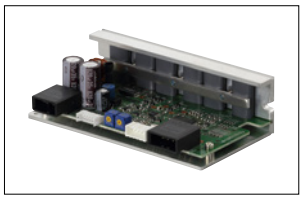
Digital Setting Type

- Installation compatibility with current products
- Increased performance (Higher torque, reduced audible noise)
- Increased functionality with the support software **MEXE02**
- For output power 15 W / 30 W / 50 W

Compact, Lightweight Drivers

Compact, lightweight drivers that are smaller than a business card.

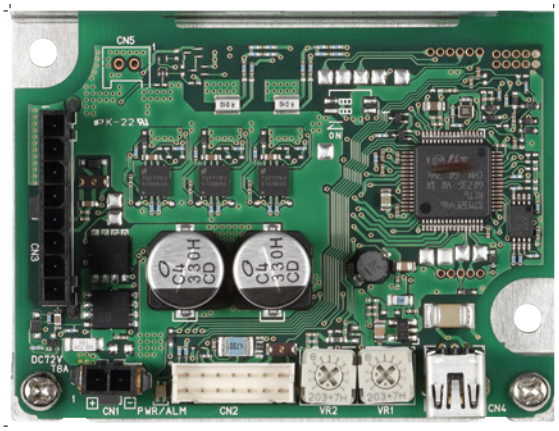
100 W Driver



Actual Size

72 mm

55 mm

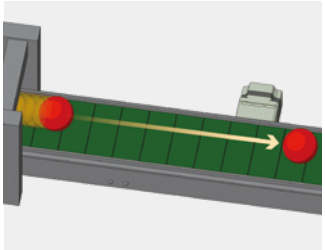


Mass 46 g

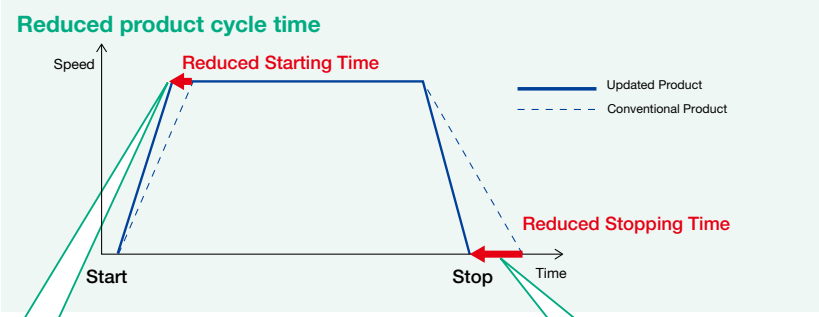
- Pictured is a 15 W / 30 W / 50 W driver.

Increased performance and value with new drivers.

Reduced product cycle time



- Faster starting time with increased torque
- Stop at the set rate with deceleration stop (Digital setting type)

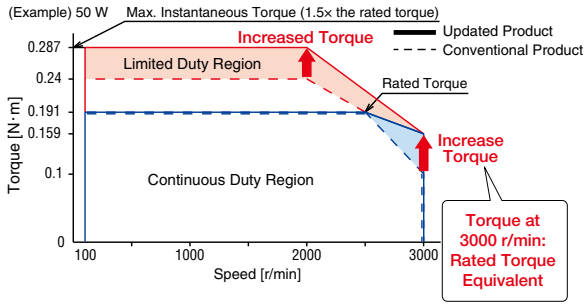


▶ Increased Torque (30 W, 50 W)

Max. instantaneous torque: 1.5× the rated torque

The continuous duty region expands, making it ideal for applications that require high torques in high speed areas. The machine's product cycle time can be shortened by applying the maximum instantaneous torque 1.25 to 1.5 times higher than the conventional model.

Speed range:
100 to 3000 r/min (Analog setting)
80 to 3000 r/min (Digital setting)



▶ Deceleration Stop (Digital setting type)

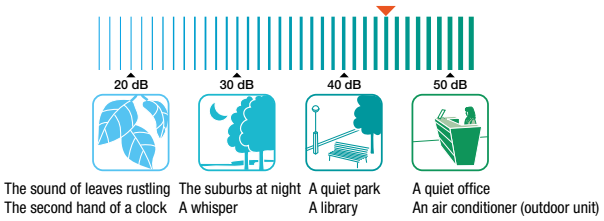
With the digital setting type, a brake is applied when the deceleration stop has been selected, actively stopping the motor at the rate set. This facilitates a shorter product cycle time compared to a conventional stop function, where the motor comes to a passive stop.

Suitable for Applications in Quiet Environments

▶ Reduced Audible Noise

Noise is approx. half that of conventional products
- 30 W with parallel shaft gearhead
  Gear ratio of **5**
- Measurement of noise:
  OA value

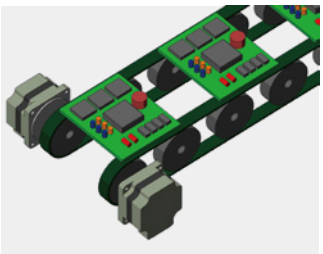
Noise value approx. 44 dB
(Reduced by approx. 13 dB)



The **BLH** Series uses a sinusoidal drive method. With little torque ripple and smooth, stable rotation even at low speeds, the motor's audible volume is reduced.

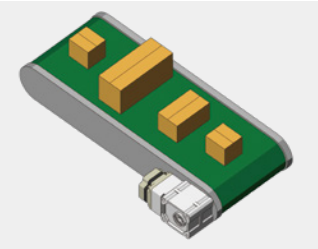
Synchronized Operation and Operation with Little Speed Fluctuation

▶ Synchronized Operation



- With digital settings, speeds can be set at 1 rpm increments. The speed accuracy is improved, and synchronized operations are made possible.

▶ Speed Stability



- Speed remains stable even if the weight of the load changes (Speed regulation ±0.2 % max.)

- Speed Regulation

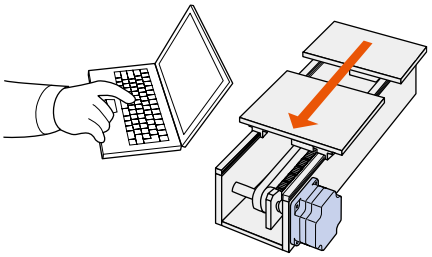
Speed Setting Method \ Driver Type	Analog Setting Type	Digital Setting Type
Analog Setting	±0.5% max.	
Digital Setting	—	**±0.2% max.**
PWM Input Setting	—	±0.5% max.

This is a demo of an Automated Guided Vehicle (AGV) using the **BLH** Series. You can see the synchronization and high level of response.

Startup and maintenance with digital settings + support software.

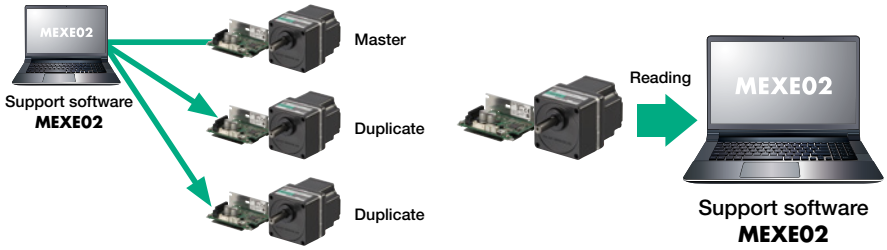
Equipment Startup Assistance

▶ Teaching and Remote Operation



Operation data can be set up on your computer. This makes it possible to create the motion profile without being connected to the machine's motion control system, then save the operation data in place.

▶ Operating Data Copy Reading



When using multiple units, the operation data used in the first unit can be treated as a master file, and duplicated into subsequent units. Helping to reduce setup time.

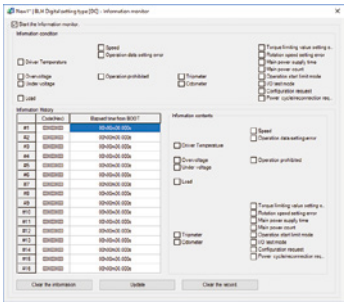
Predictive Maintenance with Visualization

What is predictive maintenance? **By constantly monitoring the status of the motor and performing maintenance when signs of change are observed, machine down time can be avoided.**

▶ Status Monitoring

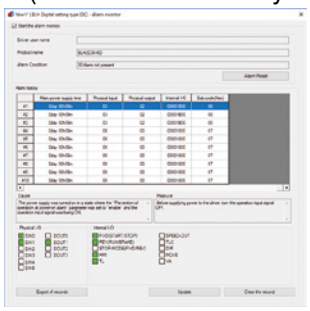
The load factor, driver temperature, and other conditions can be constantly checked.

▶ Information Monitoring



Output signals can be set to trigger at preset thresholds, showing that periodic maintenance is now due.

▶ Alarm Monitoring
(When an abnormality occurs)

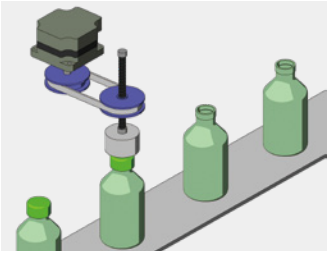


Alarm information can also be monitored.
The cause of the alarm is listed, with suggested solutions to resolve the problem. There is also a history record of any previous alarms.

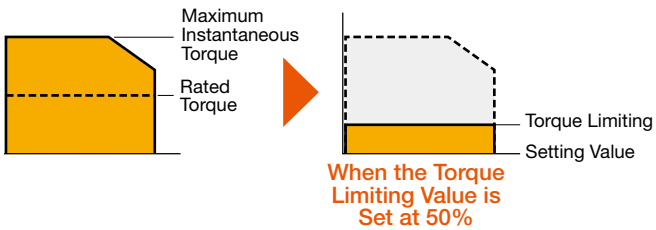
Torque Adjustment

▶ Torque Limiting Function

What is torque limiting? **It is a limiting function that suppresses the motor's torque by limiting the current to the motor.**



- Adjustment of tightening force, etc.
- Damage prevention (Low thrust)
- Load factor monitoring is possible



As well as tightening applications, torque limiting can also be used as a safety measure. By showing operational status outside the norm, such as pinching, or wear, damage can be prevented. The max. instantaneous torque range can be set between 0 and 200% by assuming the rated torque to be 100%.

Operating Data Setting

With the digital settings type, you can set up to 8 different types of driving data (Rotational speed, torque limit value, acceleration time, deceleration time).

Setting Method

Setting Method / Setting Item		Digital Setting	External Analog Potentiometer		Internal Potentiometer (Driver)		PWM Input
		Support software **MEXE02**	External speed potentiometer	External DC Voltage (0~5 VDC 1 mA min.)	VR1	VR2	PWM signal
Speed	Analog setting type	–	●	●	●	–	–
	Digital setting type	●	●	●	●	●	●
Acceleration / Deceleration Time	Analog setting type	–	–	–	–	●	–
	Digital setting type	●	–	–	●	●	–
Torque Limiting	Analog setting type	–	–	–	–	–	–
	Digital setting type	●	●	●	●	●	●

Functions List

	Function	Analog Setting Type	Digital Setting Type
①	Digital Speed Indicator	▲ Pulse signals can be converted to an external device	● Monitoring function for the **MEXE02** support software
②	Instantaneous Stop	●	●
③	Acceleration / Deceleration Time Setting	● 0.1 to 12.0 seconds*1	● 0.1 to 15.0 seconds (Individual settings)
④	Multistep Speed-Change Operation	●	●
⑤	Parallel-Motor Operation	●	●
⑥	Protective Function	●	●
⑦	Torque Limiting	–	●
⑧	Speed Upper and Lower Limit Setting	–	●
⑨	Shock Alleviation Filter	–	●
⑩	I/O Signal Assignment	–	●
⑪	I/O Signal Operation Selection	–	●
⑫	Overload Alarm Detection Time Setting	– Fixed at 10.0 seconds*2	● 0.1 to 10.0 seconds
⑬	Prevention of Operation at Power-on Alarm	–	●
⑭	Various Information Detection	–	●

• For ⑦ to ⑭, when using the **MEXE02** support software and digital setting type driver.
*1 0.5 to 10.0 seconds for 100 W
*2 Fixed at 5.0 seconds for 100 W

Product Line

Motor, driver, connection cables (Flexible connection cables), and cable sets (Power supply cable, I/O signals cable) sold separately.

Motor

Type	Output / Frame Size	Gear Ratio
Parallel Shaft Gearhead **GFS** Gear*1 	15 W / □42 mm 30 W / □60 mm 50 W / □80 mm 100 W / □90 mm	**5**, **10**, **15** **20**, **30**, **50** **100**, **200** •15 W does not have a gear ratio of **200**
Hollow Shaft Flat Gearhead **FR** Gear*2 		
Round Shaft 		–

+

Driver

Type	Voltage / Output
Analog Setting Type 	24 VDC • 15 W 30 W 50 W 100 W
Digital Setting Type 	24 VDC • 15 W 30 W 50 W

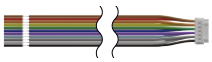
+

Connection Cables / Flexible Connection Cables

Type
Connection Cable (1.5 m) 
Flexible Connection Cable (1.5 m) 

+

Cable Sets

Power Supply Cable Cable for I/O Signals
Power Supply Cable (300 mm) 
Cable for I/O Signals (300 mm) 

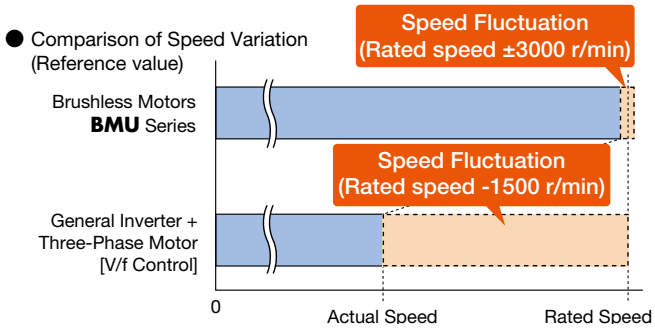
*1 The 15 W geared motor has an integrated motor and gearhead.
*2 Excluding 15 W.
*3 Power supply cable and I/O signal cable are included with the 100 W driver.

Features of Brushless Motors

Brushless motors have slim bodies and provide high output and high efficiency due to the built-in permanent magnets. The built-in sensor (Hall IC) constantly monitors the motor's speed. No matter the load conditions, feedback control is carried out at all times so that the command speed and actual speed remain consistent.

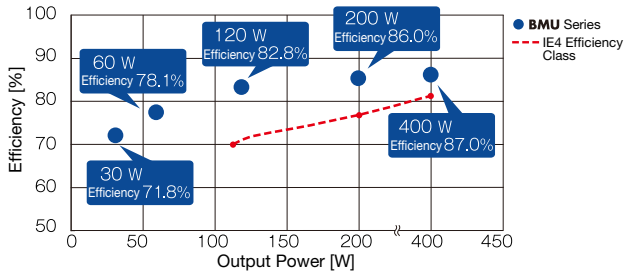
Speed stability with feedback control

Brushless motors compare the setting speed with the speed feedback signals from the motor at all times and adjust the motor's applied voltage. Speed is kept stable over the entire speed range from low to high even when the load fluctuates.



IE4-equivalent* high-efficiency and energy-saving motor

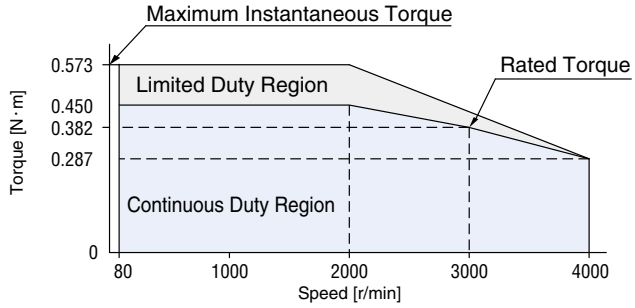
Brushless motors are higher efficiency than three-phase motors (Induction motors). For example, with the **BMU** Series 200 W, motor and driver efficiency is increased by 86%, and the IE4 standard is increased 75.8%, thus giving consideration to energy-saving requirements.



*Induction motors 120 W and higher are subject to the efficiency classes under the international standard IEC 60034-30-1.
*IE4 efficiency values are at 50 Hz and 1500 r/min, while brushless motor efficiency values are at rated speed.

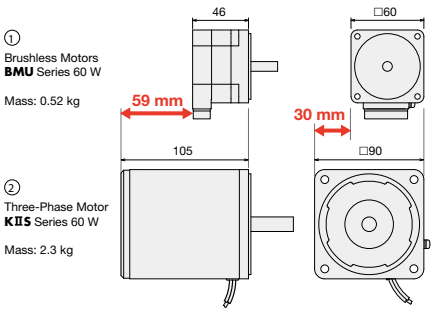
Broad speed control range and even torque

Rated torque is consistent over the entire speed range from low to high. Sufficient torque is obtained without limiting the applied torque at low speeds, in the same way as three-phase AC motors when driven with an inverter.



Compact, lightweight, and high power

Since these are brushless motors with built-in permanent magnets, they offer high output even though they are compact.
Installation is easy, and both equipment weight and space can be reduced.

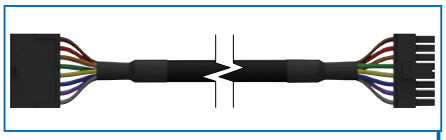


System Configuration

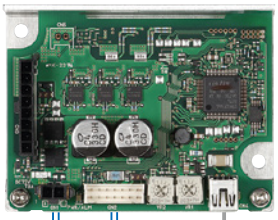
◉ Required for operation
○ Optional accessories

◉ Motor

○ Connection Cable / Flexible Connection Cable



◉ Driver (Digital Setting Type)



Max. Extension Length: 2 m (Including 0.5 m motor cable)

◉ Cable Set (Power Supply Cable, I/O Signal Cable)*

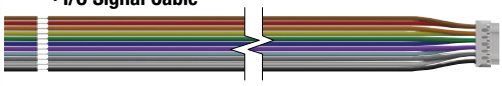
Not supplied

24 VDC Power Supply (Main Power Supply)

Host Controller

• Power Supply Cable

• I/O Signal Cable



● When Using Digital Setting Type

Support Software
MEXE02

To USB Port

Not supplied
USB Cable

● The support software **MEXE02** can be downloaded from the Oriental Motor Website Download Page.

○ Motor Accessories

Motor / Gearhead Mounting Brackets

Flexible Couplings

○ Driver Accessories

External Speed Potentiometer

DIN Rail Mounting Plates

✻ A power supply cable and an I/O signal cable are included with the 100 W driver.

● Example of System Configuration Pricing

Motor		Driver		Cables			Accessories		
				Connection Cable	Cable Set		Motor / Gearhead Mounting Bracket	Flexible Coupling	Din Rail Mounting Plate
BLHM230KC-5	+	**BLH2D30-KD**	+	**CC02BLH**	**LHS003CD**	+	**SOL2M4**	**MCL301010**	**MADP01**
227.00 €		104.00 €		47.00 €	8.00 €		24.00 €	36.00 €	7.00 €
◉		◉		○	◉		○	○	○

● The system configuration shown above is an example. Other combinations are also available.

Product Number

Motor

BLHM 4 50 K C - 5 FR

① ② ③ ④ ⑤ ⑥ ⑦

①	Motor Type	**BLHM**: Brushless Motor
②	Frame Size	**0**: 42 mm **2**: 60 mm **4**: 80 mm **5**: 90 mm
③	Output Power	(Example) **50**: 50 W
④	Power Supply Voltage	**K**: 24 VDC
⑤	**C**: Cable Type	
⑥	Gear Ratio/ Shaft Configuration	Number: Gear Ratio for Gearhead Gear Ratio for Geared Motor **A**: Round Shaft Type
⑦	Blank: Parallel Shaft Gearhead **GFS** Gear **FR**: Hollow Shaft Flat Gearhead **FR** Gear	

Driver

BLH2D 50 - K D

① ② ③ ④

①	Driver Type	**BLH2D**: **BLH** Series Driver (15 W, 30 W, 50 W) **BLHD**: **BLH** Series Driver (100 W)
②	Output Power	(Example) **50**: 50 W
③	Power Supply Voltage	**-K**: 24 VDC (15 W, 30 W, 50 W) **K**: 24 VDC (100 W)
④	Blank: Analog Setting Type	**D**: Digital Setting Type

Connection Cable, Flexible Connection Cable

CC 02 BLH R

① ② ③ ④

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

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	Cable Type	**LH**: Cable
②	**S**: Set	
③	Length	**003**: 0.3 m
④	**C**: Cable	
⑤	Applicable Type	**C**: Analog Setting Type **D**: Digital Setting Type

Product Line

Motors, drivers, and connection cables are sold separately.

Motor

◇ Parallel Shaft Gearhead **GFS** Gear

Output Power	Product Name	Gear Ratio	List Price
15 W	**BLHM015K-□***	**5, 10, 15, 20**	187.00 €
		30, 50, 100	193.00 €
30 W	**BLHM230KC-□**	**5, 10, 15, 20**	227.00 €
		30, 50, 100	234.00 €
		200	241.00 €
50 W	**BLHM450KC-□**	**5, 10, 15, 20**	248.00 €
		30, 50, 100	254.00 €
		200	261.00 €
100 W	**BLHM5100KC-□**	**5, 10, 15, 20**	300.00 €
		30, 50, 100	309.00 €
		200	317.00 €

*The geared type has an integrated motor and gearhead.
The combination of motor and gearhead cannot be changed.
●A number indicating the gear ratio is specified where the box □ is located within the product name.

◇ Hollow Shaft Flat Gearhead FR Gear

Output Power	Product Name	Gear Ratio	List Price
30 W	**BLHM230KC-□FR**	**5, 10, 15, 20**	271.00 €
		30, 50, 100	280.00 €
		200	289.00 €
50 W	**BLHM450KC-□FR**	**5, 10, 15, 20**	317.00 €
		30, 50, 100	326.00 €
		200	335.00 €
100 W	**BLHM5100KC-□FR**	**5, 10, 15, 20**	378.00 €
		30, 50, 100	387.00 €
		200	396.00 €

●A number indicating the gear ratio is specified where the box □ is located within the product name.

◇ Round Shaft Type

Output Power	Product Name	List Price
15 W	**BLHM015K-A**	114.00 €
30 W	**BLHM230KC-A**	132.00 €
50 W	**BLHM450KC-A**	141.00 €
100 W	**BLHM5100KC-A**	166.00 €

Driver

◇ Analog Setting Type

Output Power	Product Name	List Price
15 W	**BLH2D15-K**	83.00 €
30 W	**BLH2D30-K**	83.00 €
50 W	**BLH2D50-K**	92.00 €
100 W	**BLHD100K**	120.00 €

◇ Digital Setting Type

Output Power	Product Name	List Price
15 W	**BLH2D15-KD**	104.00 €
30 W	**BLH2D30-KD**	104.00 €
50 W	**BLH2D50-KD**	113.00 €

Connection Cable, Flexible Connection Cable

These cables are used when extending the wiring distance between the motor and the driver to 2 m.

◇ For 15 W, 30 W, 50 W

Type	Length	Product Name	List Price
Connection Cable	1.5 m	**CC02BLH**	47.00 €
Flexible Connection Cable		**CC02BLHR**	85.00 €

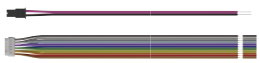
◇ For 100 W

Type	Length	Product Name	List Price
Connection Cable	1.5 m	**CC02AXH2**	42.00 €
Flexible Connection Cable		**CC02BLH2R**	90.00 €

Power Supply Cable and I/O Signal Cable Set

(For 15 W, 30 W, 50 W)

Cables come as a set of power supply cable and I/O signal cable.



Setting Type	Length	Product Name	List Price
Analog Setting Type	0.3 m	**LHS003CC**	6.50 €
Digital Setting Type		**LHS003CD**	8.00 €

Included

Motor

Geared Type	Parallel Key	Safety Cover	Installation Screws	Operating Manual
Geared Motor	–	–	–	1 Copy
Parallel Shaft Gearhead **GFS** Gear	1 pc.	–	1 Set	
Hollow Shaft Flat Gearhead **FR** Gear	1 pc.	1 Set	1 Set	
Round Shaft Type	–	–	–	

Driver

Output Power	Power Supply Cable	I/O Signal Cable	Operating Manual
15 W 30 W 50 W	–	–	1 Copy
100 W	1 pc.	1 pc.	1 Copy

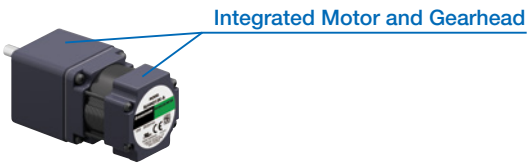
About the Gearheads

● Parallel Shaft Gearhead **GFS** Gear
● Hollow Shaft Flat Gearhead **FR** Gear

Motor and gearhead are delivered pre-assembled.
The combination of motors and gearheads can be changed.

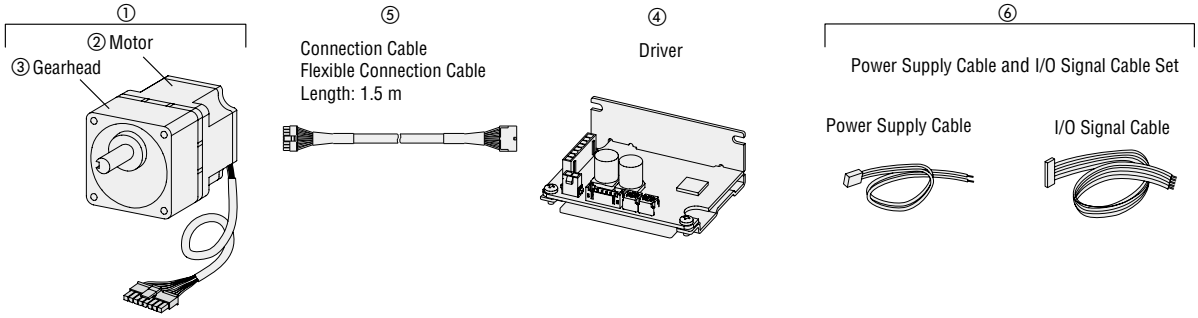
● Geared Motor

The geared motor has an integrated motor and gearhead.
Motor and gearhead combinations cannot be changed.



Combination List

15 W, 30 W, 50 W



- The motor cable can also be connected directly to the driver without using a connection cable (Or a flexible connection cable).
- The maximum extension length between the motor and driver is 2 m (Including 0.5 m motor cable).

Analog Setting Type

Output Power	Type	Brushless Motor			Driver	Connection Cable Flexible Connection Cable	Power Supply Cable and I/O Signal
		Product Name	Component Product Name		Product Name	Product Name	Product Name
		①	②	③	④	⑤	⑥
15 W	Geared Type*	**BLHM015K-□**	—	—	**BLH2D15-K**	**CC02BLH CC02BLHR**	**LHS003CC**
	Round Shaft Type	**BLHM015K-A**	—	—			
30 W	Parallel Shaft Gearhead **GFS** Gear	**BLHM230KC-□**	BLHM230KC-GFS	GFS2G□	**BLH2D30-K**	**CC02BLH CC02BLHR**	**LHS003CC**
	Hollow Shaft Flat Gearhead **FR** Gear	**BLHM230KC-□FR**	BLHM230KC-GFS	GFS2G□FR			
	Round Shaft Type	**BLHM230KC-A**	—	—			
50 W	Parallel Shaft Gearhead **GFS** Gear	**BLHM450KC-□**	BLHM450KC-GFS	GFS4G□	**BLH2D50-K**	**CC02BLH CC02BLHR**	**LHS003CC**
	Hollow Shaft Flat Gearhead **FR** Gear	**BLHM450KC-□FR**	BLHM450KC-GFS	GFS4G□FR			
	Round Shaft Type	**BLHM450KC-A**	—	—			

*The geared type has an integrated motor and gearhead. The combination of motor and gearhead cannot be changed.

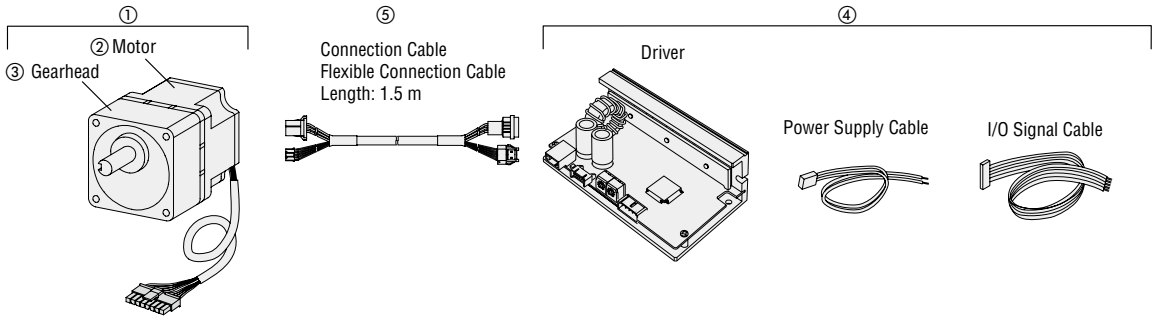
Digital Setting Type

Output Power	Type	Brushless Motor			Driver	Connection Cable Flexible Connection Cable	Power Supply Cable and I/O Signal
		Product Name	Component Product Name		Product Name	Product Name	Product Name
		①	②	③	④	⑤	⑥
15 W	Geared Type*	**BLHM015K-□**	—	—	**BLH2D15-KD**	**CC02BLH CC02BLHR**	**LHS003CD**
	Round Shaft Type	**BLHM015K-A**	—	—			
30 W	Parallel Shaft Gearhead **GFS** Gear	**BLHM230KC-□**	BLHM230KC-GFS	GFS2G□	**BLH2D30-KD**	**CC02BLH CC02BLHR**	**LHS003CD**
	Hollow Shaft Flat Gearhead **FR** Gear	**BLHM230KC-□FR**	BLHM230KC-GFS	GFS2G□FR			
	Round Shaft Type	**BLHM230KC-A**	—	—			
50 W	Parallel Shaft Gearhead **GFS** Gear	**BLHM450KC-□**	BLHM450KC-GFS	GFS4G□	**BLH2D50-KD**	**CC02BLH CC02BLHR**	**LHS003CD**
	Hollow Shaft Flat Gearhead **FR** Gear	**BLHM450KC-□FR**	BLHM450KC-GFS	GFS4G□FR			
	Round Shaft Type	**BLHM450KC-A**	—	—			

*The geared type has an integrated motor and gearhead. The combination of motor and gearhead cannot be changed.

- A number indicating the gear ratio is specified where the box □ is located within the product name.

100 W



- The motor cable can also be connected directly to the driver without using a connection cable (Or a flexible connection cable).
- The maximum extension length between the motor and driver is 2 m (Including 0.5 m motor cable).

Analog Setting Type

Output Power	Type	Brushless Motor			Driver	Connection Cable Flexible Connection Cable
		Product Name	Component Product Name		Product Name	Product Name
		①	②	③	④	⑤
100 W	Parallel Shaft Gearhead **GFS** Gear	**BLHM5100KC-□**	BLHM5100KC-GFS	GFS5G□	**BLHD100K**	**CC02AXH2** **CC02BLH2R**
	Hollow Shaft Flat Gearhead **FR** Gear	**BLHM5100KC-□FR**	BLHM5100KC-GFS	GFS5G□FR		
	Round Shaft Type	**BLHM5100KC-A**	—	—		

- A number indicating the gear ratio is specified where the box □ is located within the product name.

Orientalmotor

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

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