

Orientalmotor

Brushless Motor and Driver Package

BLE2 Series

Newly Refurbished.

Advanced Models That Support High Functionality
And Usability At The Same Time.

NEW

High power 400 W motor

Hypoid right-angle hollow shaft gear
and various gearhead

Gearheads supporting food machinery
grease H1



Further Advanced Brushless Motors

New Release of the **BLE2** Series

We have added a high power 400 W motor and various gearhead* including the Hypoid Right-angle Hollow Shaft **JH** gear to the **BLE2** Series. The **BLE2** Series can be used for wider purposes.

*Some gearheads support food machinery grease H1



NexBL is Oriental Motor's new brushless motor, having redesigned the entire structure for maximizing the performance required for motors. NexBL is more compact with higher output and efficiency than ever before.



200 W



NEW 400 W



30 W



60 W



120 W

Main Features

Enriched performance and functions

- Speed Control Range 80~4000 r/min
- Speed Regulation $\pm 0.2\%$ ※Digital setting
- Enabled torque control
- Multiple speed operation Up to 16 speed
- Output shaft is held when stopped (up to 50% of the rated torque)
- Degree of Protection IP66 ※Motor only
- Highly resistant to rust and corrosion by the stainless steel shaft
- Monitoring and testing functions effective for equipment activation and prevention

Usability and reasonable prices

- The main body of the driver allows for digital settings and operation
- The new driver is compact and thin, and multiple drivers can be closely attached with each other
- Speed can be set through PC operation or external signal
- Two cable directions can be selected
- The motor can directly be connected to the driver Up to 20 m
- Lineup 30 W~400 W

Introduction of the NEW Lineup

High Power 400 W Motor

A 400 W motor is newly added to the parallel shaft **GFV** gearhead and round shaft type motors.

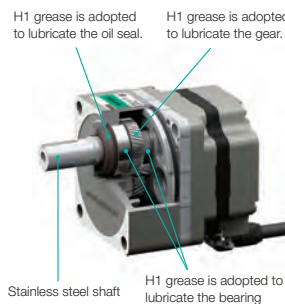


- Frame size 110 mm
- Length of the motor gear 134 mm
- Motor mass 5.2 kg
- Permissible torque 5.7 N·m

※When the parallel shaft **GFV** gear (gear ratio: 1/5) motor, the driver, and the 1 m connection cable are combined together.

Supports Food Machinery Grease H1

Food machinery grease H1 is used for gear lubrication.



● **What is food machinery Grease H1?**
It is a grease categorized by the NSF as "a lubricant with incidental food contact for use in and around food processing areas" categorized by the NSF.

What is the NSF (NSF International)?
It is an international third-party certifier headquartered in the U.S. which provides global services regarding public health and the environment, including standard development, product certification, audits, education, and risk management.

● **The rated life of the gearhead is 5,000 hours**

4 Types of Gearheads Available for Selection



Hypoid Right-Angle Hollow Shaft **JH** Gear
60 W, 120 W, 200 W

Space saving
Cost saving
Stainless steel shaft

IP66



Legged Gearhead **JB** Gear
200 W

Legged all-in-one gear
High gear ratio 1/1200

IP44



Parallel Shaft Gearhead **GFV** Gear
30 W, 60 W, 120 W
200 W, 400 W **NEW**

Long-life gearhead
(rated life 10,000 hours)
Stainless steel shaft

IP66



Parallel Shaft Gearhead **JV** Gear
200 W

High gear ratio 1/450
Stainless steel shaft

IP66

● Compact, Lightweight, High Power, Energy/Space-Saving

Comparison with general 200 W motors

Motor length only	1/3
Motor and Driver Efficiency	85.2%

Mass **4.6 kg**

61.6 mm

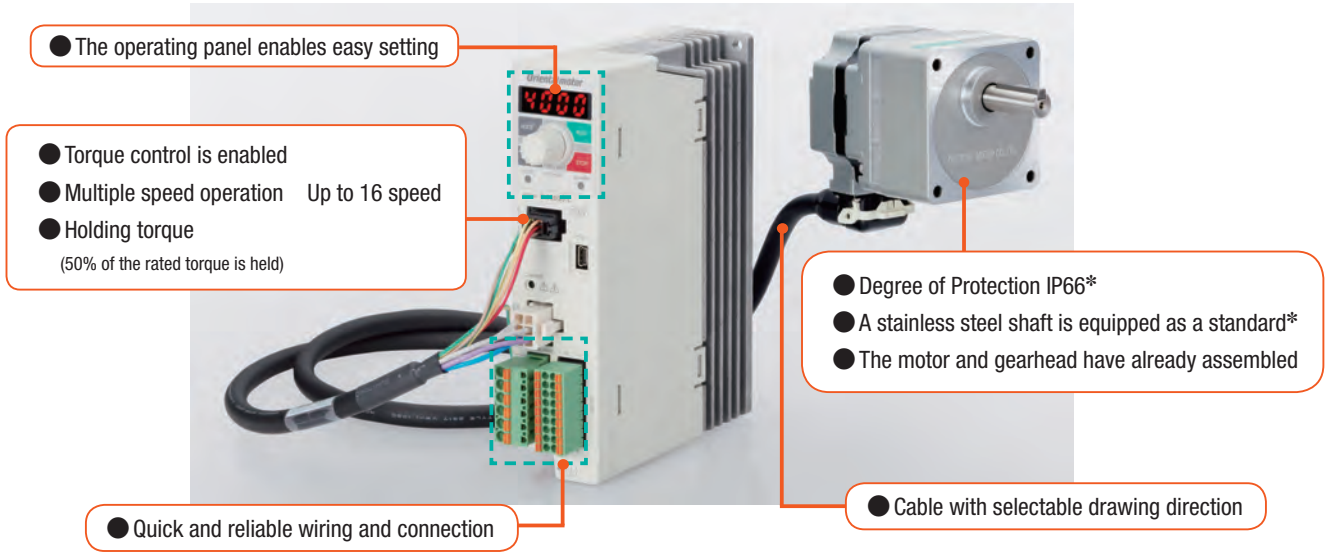
Compact, Lightweight High Power Energy/Space-Saving

※ For the legged gearhead **JB** gear 200 W with 1/5 gear ratio.

Features

Overview of BLE2 Series

The mechanism of the motor is renewed, resulting in compact, high power, and highly efficiency motor. The driver employing the digital display panel allows you to easily set the speed with the knob.



*The protection rating and the output shaft material depend on the gearhead used. See the Product Line table for details. → Pages 8~9

The Operating Panel Enables Easy Setting

The operating panel is installed in front. While checking the digital display, you can set the operation data or parameters with the operation keys or the setting dial.



- Speed Setting Range 80~4000 r/min*
*Depends on the gearhead.
- Speed Regulation ±0.2%*
*Digital setting

● The operating panel cannot be detached from the driver.

Quick and Reliable Wiring and Connection

The connector enables quick and reliable connection.



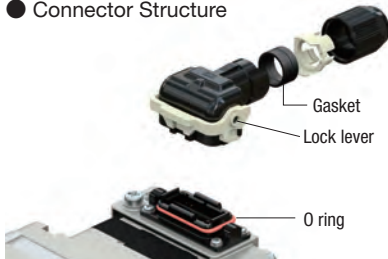
Degree of Protection IP66*

The connector is new and specially developed for compact motors. It connects the motor and the driver directly. In addition to the motor mechanism, it improves dustproof and waterproof performance that allows the motor to obtain a Degree of Protection IP66*.

New connector

The built-in gasket and the O-ring contributes to improve waterproof performance. The locking lever makes connection easy, eliminating the trouble to fix screws.

● Connector Structure



● How to Install



Stainless steel shaft equipped as a standard*

Highly rustproof, anti-corrosive stainless steel is used for the shaft. Stainless steel is also used for the parallel key and the installation screws.



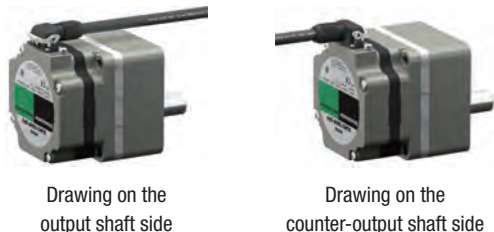
*The protection rating and the output shaft material depend on the gearhead used. For details, refer to the Lineup chart. → Pages 8~9

Cable with Selectable Drawing Direction

Two types of connection cables are available to choose from, depending on the direction to draw out. For direct connections between the motor and the driver, one connection cable can extend up to 20 m, eliminating the need for a relay.

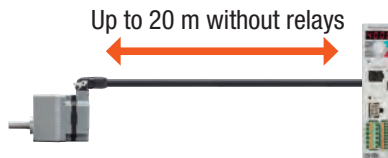
Selectable cable direction

Two types are available to choose from depending on the direction to draw out the motor cable.
(The round shaft type draws only from the counter-output shaft side.)



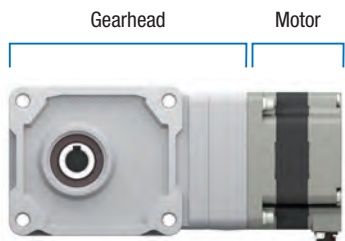
Connects the motor and the driver directly

One cable can extend up to 20 m without a relay, eliminating the need for relays. Only this one cable is required for the power, signals and grounding, reducing wiring efforts.

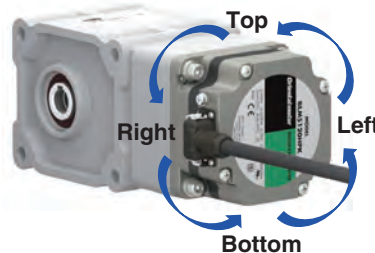
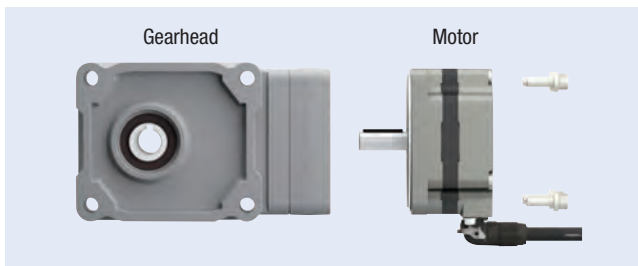


Assembled Motor and Gearhead

The motor and gearhead comes pre-assembled. This reduces assembly time and allows immediate installation of the unit to equipment.



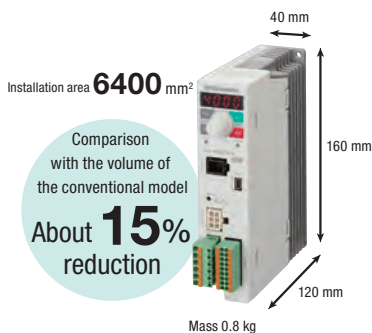
You can remove the gearhead and change the mounting angle by 90-degree intervals. You can change the connector position depending on the equipment.



Effective use of the Installation Space

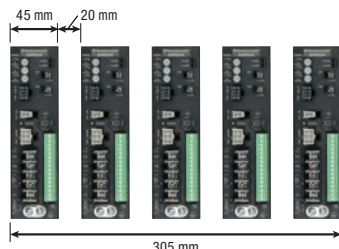
The optimum arrangement of the components in the driver has compact the size of the driver and made it thinner. Since multiple drivers can be closely attached with each other, the installation space can be reduced, or the number of drivers that can be installed in a certain space can be increased.

Compact and thin driver

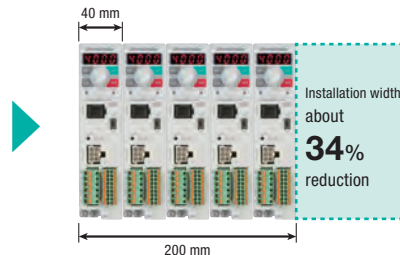


Multiple drivers that can be closely attached with each other

Conventional model BLE Series drivers



BLE2 Series drivers



Conditions for closely attaching multiple drivers with each other

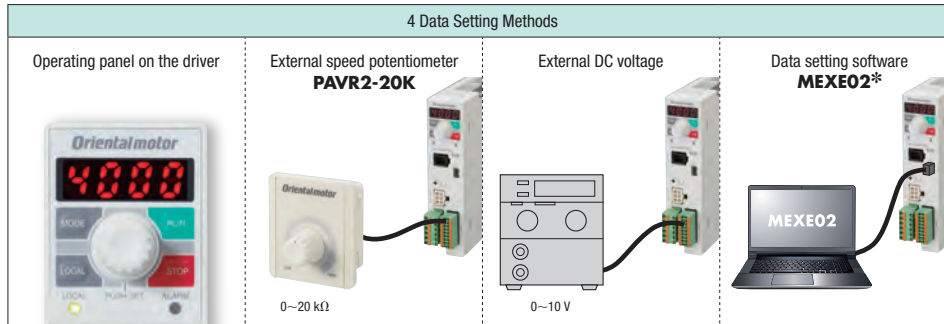
- Ambient temperature 0~+50°C (200 W only 0~+40°C)
- Install the multiple drivers to a heat sink (Material: Aluminum, 350×350×2 mm equivalent).

Supporting Customers with Enhanced Functions

The motor unit supports 4 data setting methods and provides various functions that can be used depending on purposes. The use of data setting software are made easily use, allows checking of the startup and operating conditions of the equipment.

Operating method

- Local operation: Operation with the operating panel. Can be applied to test operation.
- Remote operation: Operation with external signals or data setting software **MEXE02**.



*When using data setting software **MEXE02**, you can connect the driver to the PC with a commercially available USB cable.

Possible settings

The motor unit provides functions that match the conditions of use by the customer.

Setting	Purpose/Objective	Parameter	Setting Method			
			Operating Panel	External Speed Potentiometer PAVR2-20K	External DC Voltage	Data Setting Software MEXE02
Speed	Can be operated at any rotation speed.	80~4000 r/min	●	●	●	●
Torque Limit	The maximum output torque of the motor can be controlled for safety or restricted in accordance with the load.	0~300%	●	●	●	●
Acceleration/Deceleration Time	Acceleration time or deceleration time can be set to prevent load or impact on the unit during its startup or stop.	0~15.0 sec.	●	—	—	●
Multiple Speed Operation	Can be operated in second or higher gear.	Up to 16 speed	●	—	—	●
Multi-Motor Control	Multiple motors can be operated at the same speed.	Up to 20 motor units (when a potentiometer is used)	—	●	●	—

Main useful functions

The table below shows the main functions that are provided through the operating panel or data setting software **MEXE02**.

Functions	Purpose/Objective	Description
Display of the Load Factor	To check the torque that the motor generates.	This shows the load factor on the assumption that the rated torque of the motor is 100%. (Display range: 0~300%)
Gear Ratio	To allow the conveyor transport speed or the speed reduced by the gearhead to be displayed.	Setting the gear ratio allows the converted rotation speed to be displayed.
Setting the Upper and Lower Limits of the Rotation Speed	To operate the motor unit at a speed which is within the set speed control range.	The upper and lower limits of the rotation speed can be set.
Teaching of the Speed	To change the speed during motor movement.	During motor movement, the monitor mode allows the change of the rotation speed.
Simple Holding Torque	To simply hold the torque during a motor stop.	Electrical holding torque can be generated during a motor stop. (Up to 50% of the rated torque can be held.) Note When power supply to the driver is cut, holding torque disappears. Therefore, it cannot be used for fall prevention when stopped.
Shock-absorbing Filter	To reduce the shock during a startup and stop.	This function allows slow acceleration after a startup and slow stop before the completion of the stop to prevent the transported load from moving.
Alarm	To check the contents of the trouble.	This function allows the identification of the trouble cause such as overload, poor connection, incorrect operation, etc. to enable you to swiftly deal with the cause.
Information	To use information for operation check or periodic maintenance.	Information is output before the output of an alarm. Inputting an appropriate value to the parameter of each information item will be helpful to the maintenance of the equipment.
Editing Lock	To protect the set data.	This function prevents you from editing or deleting data or parameters through the operating panel and disables local operation.

Useful Functions Enabled by Data Setting Software MEXE02

The data setting software can be downloaded from the Oriental Motor website.



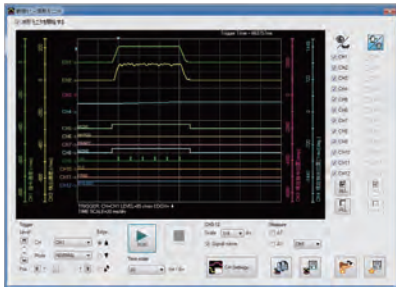
Monitor Functions

The software contains various monitor functions that enable checking of conditions such as motor operating conditions. Using functions suitable for each condition may shorten the time for starting up or adjusting the equipment or lead to effective maintenance.

● Waveform Monitoring

During a startup

Like an oscilloscope, the monitor allows you to check motor drive conditions and output signal status. Use this during the startup or adjustment of the attachment.



● Alarm Monitor

During operation

For maintenance

If an error occurs, you can check the error details, operation conditions at the time of error occurrence, and measures to be taken. The checking of the measures facilitates response to the error.



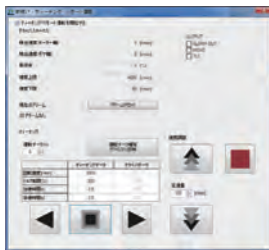
Test Functions

These functions allow the motor to independently operate or you to check the connection with the host system. Using the functions at the startup of the equipment can save time.

● Speed can be Adjusted During Test Operation (teaching of the speed)

During a startup

This test function allows changes of speed data during test operation before connection with the host system. Since the changed speed data is set and saved as is, the time required for the startup of the equipment can be shortened.



● I/O Monitor

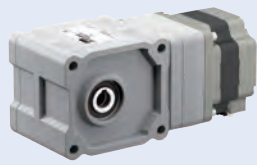
During a startup

During operation

The monitor allows the testing of the input/output signals of direct I/O. You can monitor input signals as well as external DC voltage and the output signals. This function is convenient for checking connection with the host system.



Right-Angle Shaft Gearhead

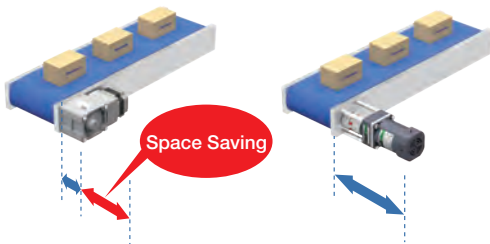


IP66

Hypoid Right-Angle Hollow Shaft **JH** Gear

Space Saving

Placing the motor at right angles saves space.



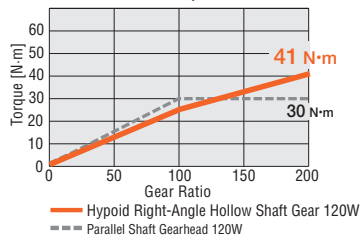
Cost Saving

Reduced couplings, belts, pulleys, and other parts contribute towards reduced parts costs and assembling steps.



Unsaturated Permissible Torque

The permissible torque is not saturated even at high gear ratio. Therefore, the benefit of the motor torque can be maximized.



[At 3000 r/min]

High Strength

Comparison with parallel shaft gearhead










[1/200 at 3000 r/min]

Lineup

Motor

Driver

Connection Cable

Type/Material of the Output Shaft			Output Power [W]	Gear Ratio	Degree of Protection	Output Power [W]	Power Supply Voltage [VAC]	Cable	
Parallel Shaft Gearhead	GFV Gear Stainless Steel Shaft		30	5, 10, 15, 20, 30, 50, 100, 200	IP66	30	Single-Phase 100-120		
			60			60	Single-Phase/ Three-Phase 200-240		
			120			120	Single-Phase/ Three-Phase 200-240		
			200			200	Single-Phase/ Three-Phase 200-240		
	NEW GFV Gear Supports Food Machinery Grease H1 Stainless Steel Shaft		NEW 400	5, 10, 15, 20, 30, 50		NEW 400	Three-Phase 200-240		
			30	5, 10, 15, 20, 30, 50, 100, 200		30	Single-Phase 100-120		
			60			60	Single-Phase/ Three-Phase 200-240		
	JV Gear Stainless Steel Shaft		200	300, 450		200	Single-Phase/ Three-Phase 200-240		
			Legged Gearhead JB Gear Iron Shaft			200	5, 10, 20, 30, 50, 100, 200, 300, 450, 60, 1200		IP44
	Hypoid Right-Angle Hollow Shaft JH Gear Stainless Steel Shaft		NEW 60	10, 15, 20, 30, 50, 100, 200		IP66	60		Single-Phase 100-120
120			120		Single-Phase/ Three-Phase 200-240				
200			5, 10, 15, 20, 30, 50, 100, 200	200	Single-Phase/ Three-Phase 200-240				
Round Shaft Type*1 Stainless Steel Shaft		30	-	IP66	30	Single-Phase 100-120			
		60			60	Single-Phase/ Three-Phase 200-240			
		120			120	Single-Phase/ Three-Phase 200-240			
		200			200	Single-Phase/ Three-Phase 200-240			
		NEW 400			NEW 400	Three-Phase 200-240			

*1 Some round shaft types have a milling cut shaft.

*2 The round shaft type can connect only the connection cable drawing from the counter-output shaft.

Features of Brushless Motor

Because our brushless motor do not have brushes, which is the DC motor demerit, they produce less noise and are maintenance-free. The use of permanent magnets allows for compact, high output, and highly efficient motors.

Wide Speed Control Range

The brushless motor has a broader speed control range compared to AC speed control motors and inverters. They are ideal for applications that require a constant torque for all speeds, low to high.

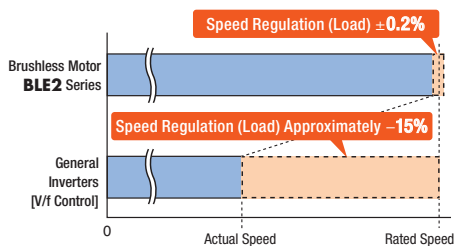
Product Group	Speed Control Range*	Speed Ratio
Brushless Motor BLE2 Series	80~4000 r/min	1:50
Inverter-Controlled Three-Phase Induction Motor	200~2400 r/min	1:12
AC Speed Control Motor	50Hz: 90~1400 r/min	1:15
	60Hz: 90~1600 r/min	1:17

*The speed control range varies depending on the model.

Stable Speed Control

The brushless motors always monitor feedback signals from the motor and compare them with the set speed to adjust the applied voltage. For this reason, even if the load changes, stable rotation is performed from low speed to high speed.

Speed Regulation Comparison (Reference values)



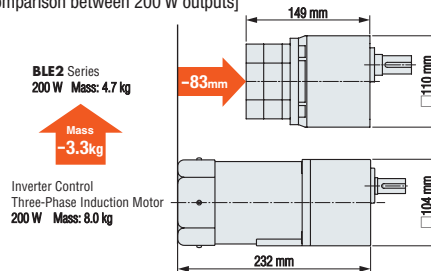
The table below shows the speed regulation (load) of each model. It shows how much the rotational speed varies by changing the load between 0 to rated torques.

Model	Speed Regulation with Varying Loads	
	Speed Regulation	Condition
BLE2 Series	$\pm 0.2\%$	0 ~ rated torque at rated speed
BMU Series	$\pm 0.2\%$	
BLE Series	$\pm 0.5\%$	
BX II Series	$\pm 0.05\%$	
BLH Series	$\pm 0.5\%$	

Thin, Lightweight and High Power

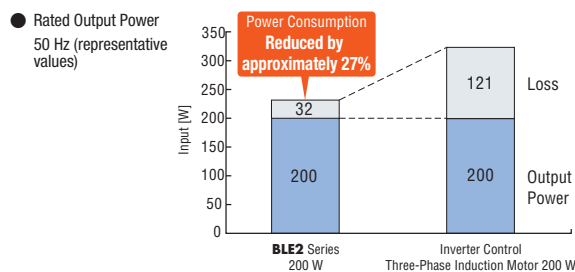
The brushless motors use permanent magnets so that they are thin and lightweight but yet have high power. These contribute to the downsizing of equipment.

[Example of comparison between 200 W outputs]



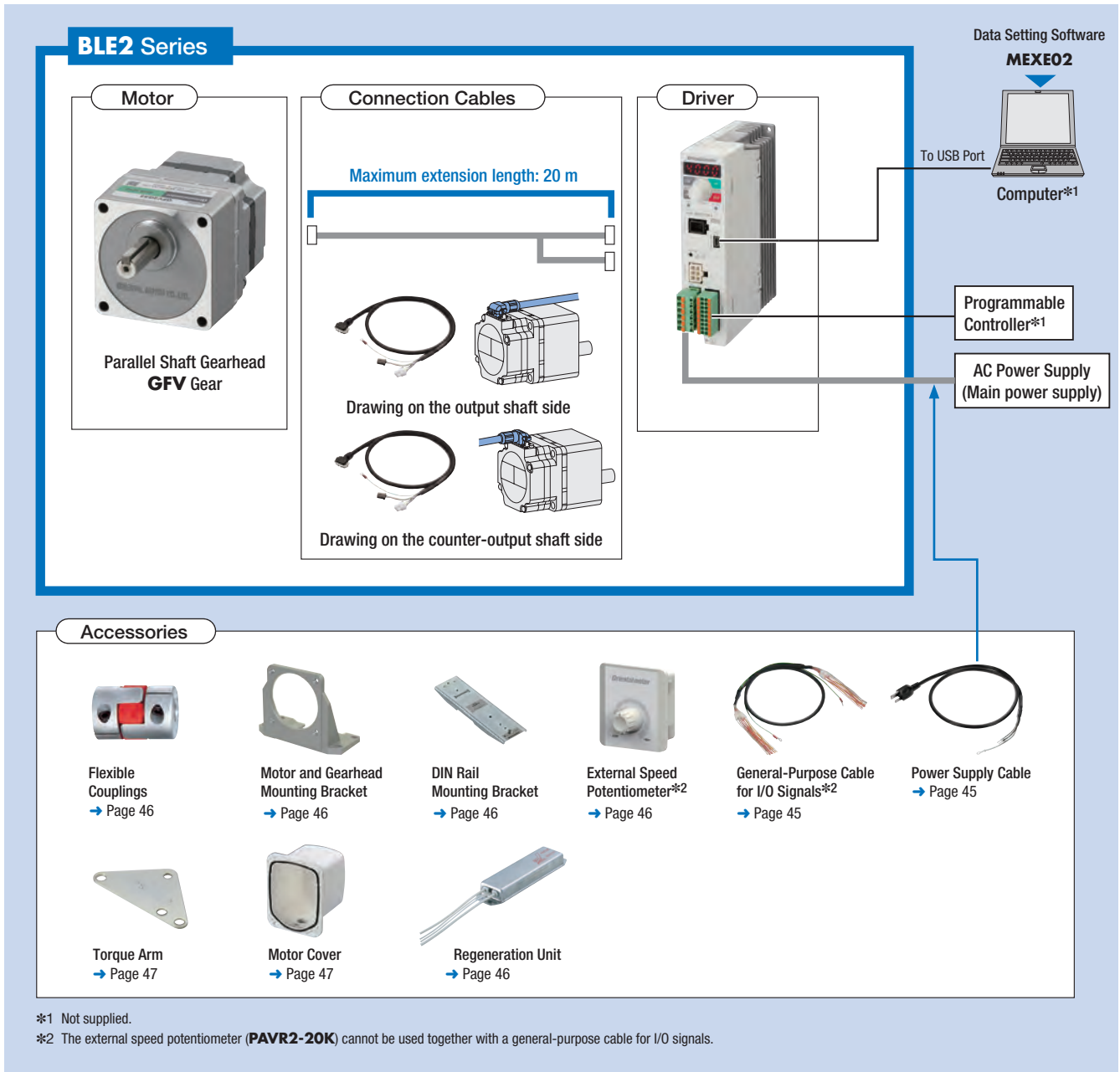
Contributes to Energy Savings

The brushless motors use permanent magnets in the rotor, reducing secondary loss and power consumption. This contributes to energy savings with the equipment.



System Configuration

The motor, driver, and connection cables need to purchase separately.



System Configuration Example

BLE2 Series			Accessories		
Motor Parallel Shaft Gearhead GFV Gear	Driver	Connection Cable (3 m)	Mounting Bracket	Flexible Coupling	DIN Rail Mounting Bracket
BLM230HP-10S	BLE2D30-A	CC030HBLF	SOL2M4F	MCL301010	MADP02

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

Product Number Code

Motor

◇ Parallel Shaft Gearhead **GFV** Gear/Round Shaft Type

BLM 4 60 S H P - 50 S F

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

①	Motor Type	BLM : Brushless Motor
②	Frame Size	2 : 60 mm 4 : 80 mm 5 : 90 mm 6 : 104 mm (110 mm for gearhead)
③	Output Power	30 : 30 W 60 : 60 W 120 : 120 W 200 : 200 W 400 : 400 W
④	Identification Part Number	S
⑤	Motor Connection Method	H : Connector Type
⑥	Motor Degree of Protection	P : IP66 Specification
⑦	Gear Ratio/Shaft Shape	Number: Gear Ratio of the Gearhead A : Round Shaft Type AC : Round Shaft Type (With milling cut)
⑧	Material of the Output Shaft	S : Stainless Steel
⑨		F : Supports Food Machinery Grease H1

◇ Hypoid Right-Angle Hollow Shaft **JH** Gear, Legged Gearhead **JB** Gear, Parallel Shaft Gearhead **JV** 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 Product Name		Gearhead Product Name		
Motor Product Name	①	Motor Type	BLM : Brushless Motor	
	②	Frame Size	4 : 80 mm 5 : 90 mm	
	③	Output Power	60 : 60 W 120 : 120 W 200 : 200 W	
	④	Identification Part Number	S	
	⑤	Motor Connection Method	H : Connector Type	
	⑥	Motor Degree of Protection	P : IP66	
	⑦	Combination Type Motor	K : Round Shaft Type (With key)	
Gearhead Product Name	⑧	Combination Type Motor Frame Size	4 : 80 mm 5 : 90 mm	
	⑨	Gearhead Size	Code (Example) C For the codes of the gearhead size, see ■ Specifications (→ Pages 19 and 22).	
	⑩	Gearhead Type	H : JH Gear B : JB Gear V : JV Gear	
		⑪	Gear Ratio	Number: Gear Ratio of the Gearhead
		⑫	Material of the Output Shaft	S : Stainless Steel B : Iron
	⑬	Connector Position	None: Below -L : Left	

Driver

BLE2D 60 - A

① ② ③

①	Driver Type	BLE2D : BLE2 Series Driver
②	Output Power	30 : 30 W 60 : 60 W 120 : 120 W 200 : 200 W 400 : 400 W
③	Power Supply Voltage	A : Single-Phase 100-120 VAC C : Single-Phase, Three-Phase 200-240 VAC S : Three-Phase 200-240 VAC

Connection Cable

CC 010 H BL F

① ② ③ ④ ⑤

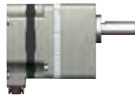
①	Cable Type	CC : Connection Cable
②	Length	005 : 0.5 m 010 : 1 m 015 : 1.5 m
		020 : 2 m 025 : 2.5 m 030 : 3 m
		040 : 4 m 050 : 5 m 070 : 7 m
		100 : 10 m 150 : 15 m 200 : 20 m
③	Motor Connection Method	H : Connector Type
④	Applied Model	BL : Brushless Motor
⑤	Cable Drawing Direction	F : Drawing on the Output Shaft Side
		B : Drawing on the Counter-output Shaft Side

Product Line

A motor, driver, connection cable need to be purchase separately.

Motor

◇ Parallel Shaft Gearhead **GFV** Gear



Output Power	Product Name	Gear Ratio
30 W	BLM230HP-□S	5, 10, 15, 20
		30, 50, 100
		200
60 W	BLM460SHP-□S	5, 10, 15, 20
		30, 50, 100
		200
120 W	BLM5120HP-□S	5, 10, 15, 20
		30, 50, 100
		200
200 W	BLM6200SHP-□S	5, 10, 15, 20
		30, 50
		100, 200
400 W	NEW BLM6400SHP-□S	5, 10, 15, 20
		30, 50

◇ Parallel Shaft Gearhead **GFV** Gear Supports Food Machinery Grease H1



Output Power	Product Name	Gear Ratio
30 W	NEW BLM230HP-□SF	5, 10, 15, 20
		30, 50, 100
		200
60 W	NEW BLM460SHP-□SF	5, 10, 15, 20
		30, 50, 100
		200
120 W	NEW BLM5120HP-□SF	5, 10, 15, 20
		30, 50, 100
		200

◇ Parallel Shaft Gearhead **JV** Gear



Output Power	Product Name	Gear Ratio
200 W	BLM5200HPK-5KV□S	300, 450

● Lineup of Other Products

Round Shaft Type Milling Cut Output Shaft
Connector Position 4-direction

● For details, contact your nearest Oriental Motor sales office.

◇ Legged Gearhead **JB** Gear



Output Power	Product Name	Gear Ratio
200 W	BLM5200HPK-5AB□B-L	5, 10, 20
	BLM5200HPK-5CB□B-L	30, 50
	BLM5200HPK-5EB□B-L	100, 200
	BLM5200HPK-5KB□B-L	300, 450
	BLM5200HPK-5SB□B-L	600, 1200

◇ Hypoid Right-Angle Hollow Shaft **JH** Gear



Output Power	Product Name	Gear Ratio
60 W	NEW BLM460SHPK-4H□S	10, 15, 20
		30, 50, 100
		200
120 W	BLM5120HPK-5H□S	10, 15, 20
		30, 50, 100
		200
200 W	BLM5200HPK-5XH□S	5, 10, 15, 20
		30
		50
		100
	BLM5200HPK-5YH□S	200

◇ Round Shaft Type



Output Power	Product Name
30 W	BLM230HP-AS
60 W	BLM260HP-AS
120 W	BLM5120HP-AS
200 W	BLM5200HP-AS
400 W	NEW BLM5400HP-AS

● A number in the box □ in the product name indicates the gear ratio.



Driver

Output Power	Power Supply Voltage	Product Name
30 W	Single-Phase 100-120 VAC	BLE2D30-A
	Single-Phase/Three-Phase 200-240 VAC	BLE2D30-C
60 W	Single-Phase 100-120 VAC	BLE2D60-A
	Single-Phase/Three-Phase 200-240 VAC	BLE2D60-C
120 W	Single-Phase 100-120 VAC	BLE2D120-A
	Single-Phase/Three-Phase 200-240 VAC	BLE2D120-C
200 W	Single-Phase/Three-Phase 200-240 VAC	BLE2D200-C
400 W	Three-Phase 200-240 VAC	NEW BLE2D400-S



Connection Cables

Length	Product Name	Length	Product Name
0.5 m	CC005HBL ■	4 m	CC040HBL ■
1 m	CC010HBL ■	5 m	CC050HBL ■
1.5 m	CC015HBL ■	7 m	CC070HBL ■
2 m	CC020HBL ■	10 m	CC100HBL ■
2.5 m	CC025HBL ■	15 m	CC150HBL ■
3 m	CC030HBL ■	20 m	CC200HBL ■

● The ■ symbol in the product is replaced with **F** or **B** that represents the cable drawing direction.

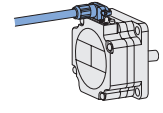
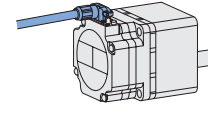
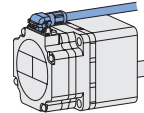
Two types of connection cables for different cable drawing directions are provided.

Note

● The cable for the round shaft type draws only from the counter-output shaft side.

F: Drawing on the output shaft side

B: Drawing on the counter-output shaft side



Accessories

Motor

Type	Parallel Key	Safety Cover	Installation Screws	Operating Manual
GFV Gear	1 pc.	—	1 set	1 copy
JV Gear	—	—	—	
JB Gear	—	—	—	
JH Gear	1 pc.	1 pc.	1 set	
Round Shaft	—	—	—	

Driver

Startup Guide	Operating Manual
1 copy	1 copy

Parallel Shaft Gearhead GFV Gear 30 W, 60 W, 120 W



Specifications

Product Name	Motor Driver	BLM230HP-□S / BLM230HP-□SF		BLM460SHP-□S / BLM460SHP-□SF		BLM5120HP-□S / BLM5120HP-□SF		
		BLE2D30-A	BLE2D30-C	BLE2D60-A	BLE2D60-C	BLE2D120-A	BLE2D120-C	
Rated Output Power (Continuous)	W	30		60		120		
Power Supply Input	Rated Voltage	VAC	Single-Phase 100-120	Single-Phase 200-240/ Three-Phase 200-240	Single-Phase 100-120	Single-Phase 200-240/ Three-Phase 200-240	Single-Phase 100-120	Single-Phase 200-240/ Three-Phase 200-240
	Permissible Voltage Range		-15~+10%		-15~+10%		-15~+10%	
	Frequency	Hz	50/60		50/60		50/60	
	Permissible Frequency Range		±5%		±5%		±5%	
	Rated Input Current	A	1.1	Single-Phase: 0.67/Three-Phase: 0.39	1.7	Single-Phase: 1.0/Three-Phase: 0.61	2.7	Single-Phase: 1.7/Three-Phase: 1.02
	Maximum Input Current	A	3.3	Single-Phase: 2.2/Three-Phase: 1.2	5.4	Single-Phase: 3.5/Three-Phase: 2.0	7.4	Single-Phase: 4.8/Three-Phase: 3.3
Rated Speed	r/min	3000						
Speed Control Range		80~4000 r/min (Speed ratio 1:50)						
Speed Regulation*	Load	±0.2% (±0.5%) or less: Conditions 0 to rated torque, rated speed, rated voltage, normal temperature						
	Voltage	±0.2% (±0.5%) or less: Conditions Rated voltage -15~+10%, rated speed, no load, normal temperature						
	Temperature	±0.2% (±0.5%) or less: Conditions Operating ambient temperature 0~+50°C, rated speed, no load, rated voltage						

* () The number in the parentheses is the specified value for the analog setting.

● The values correspond to each specification and characteristic of a stand-alone motor.

Gear Ratio		5	10	15	20	30	50	100	200		
Rotation Direction		Same direction as the motor				Opposite direction to the motor			Same direction as the motor		
Output Shaft Rotation Speed [r/min]*1	80 r/min	16	8	5.3	4	2.7	1.6	0.8	0.4		
Permissible Torque [N·m]	30 W	4000 r/min	800	400	267	200	133	80	40	20	
		At 80~2500 r/min	0.54	1.1	1.6	2.2	3.1	5.2	6	6	
		At 3000 r/min	0.43	0.86	1.3	1.7	2.5	4.1	6	6	
		At 4000 r/min	0.32	0.65	0.97	1.3	1.9	3.1	5.4	5.4	
		At 80~2000 r/min	0.9	1.8	2.7	3.6	5.2	8.6	16	16	
		At 3000 r/min	0.86	1.7	2.6	3.4	4.9	8.2	16	16	
	60 W	At 4000 r/min	0.65	1.3	1.9	2.6	3.7	6.2	12.4	14	
		At 80~2000 r/min	2.0	4.1	6.1	8.1	11.6	19.4	30	30	
		At 3000 r/min	1.7	3.4	5.2	6.9	9.9	16.4	30	30	
		At 4000 r/min	1.3	2.6	3.9	5.2	7.4	12.3	24.7	27	
		30 W	At 80~3000 r/min	100		150			200		
			At 4000 r/min	90		130			180		
60 W	At 80~3000 r/min	200		300			450				
	At 4000 r/min	180		270			420				
Permissible Radial Load [N]	10 mm from output shaft end*2	30 W									
		60 W									
	120 W	At 80~3000 r/min	300		400			500			
		At 4000 r/min	230		370			450			
	20 mm from output shaft end*2	30 W									
		60 W									
120 W		At 80~3000 r/min	400		500			650			
		At 4000 r/min	300		430			550			
Permissible Axial Load [N]	30 W					40					
	60 W					100					
	120 W					150					
Permissible Load Inertia J [$\times 10^{-4}$ kg·m ²]	30 W	12	50	110	200	370	920	2500	5000		
	60 W	22	95	220	350	800	2200	6200	12000		
	120 W	45	190	420	700	1600	4500	12000	25000		
	At instantaneous stop, instantaneous bi-directional operation*3	30 W	1.55	6.2	14	24.8	55.8		155		
		60 W	5.5	22	49.5	88	198		550		
		120 W	25	100	225	400	900		2500		

*1 The rotational speed of the output shaft is the value of the rotational speed divided by the gear ratio.

*2 About Load Position → Page 17

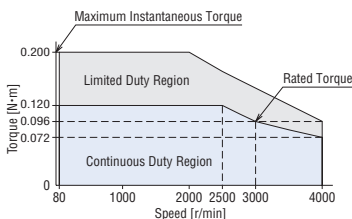
*3 It is also applicable when digitally setting the deceleration time to below 0.1 second.

Speed – Torque Characteristics

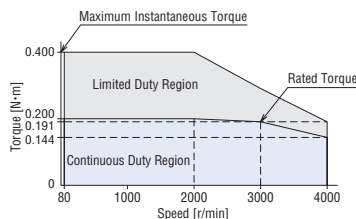
Continuous Duty Region: Continuous operation is possible in this region.

Limited Duty Region: This region is used primarily when accelerating.

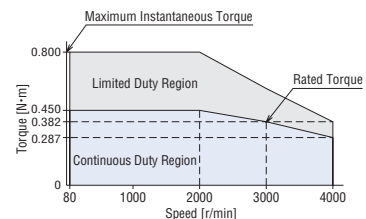
30 W



60 W



120 W



● The values correspond to each specification and characteristic of a stand-alone motor. The speed-torque characteristics shows the values when rated voltage is applied.

● A number in the box □ in the product name indicates the gear ratio.

Parallel Shaft Gearhead GFV Gear 200 W, 400 W



Specifications

Product Name	Motor	BLM6200SHP-□S		BLM6400SHP-□S		
	Driver	BLE2D200-C		BLE2D400-S		
Rated Output Power (Continuous)	W	200		400		
Power Supply Input	Rated Voltage	Single-Phase 200-240/Three-Phase 200-240		Three-Phase 200-240		
	Permissible Voltage Range	-15~+10%		-15~+10%		
	Frequency	50/60		50/60		
	Permissible Frequency Range	±5%		±5%		
	Rated Input Current	A	Single-Phase: 2.4/Three-Phase: 1.4		2.3	
	Maximum Input Current	A	Single-Phase: 6.5/Three-Phase: 4.3		6.1	
Rated Speed	r/min	3000				
Speed Control Range		80~4000 r/min (Speed ratio 1:50)				
Speed Regulation*2	Load	±0.2% (±0.5%) or less: Conditions		0 to rated torque, rated speed, rated voltage, normal temperature		
	Voltage	±0.2% (±0.5%) or less: Conditions		Rated voltage -15~+10%, rated speed, no load, normal temperature		
	Temperature	±0.2% (±0.5%) or less: Conditions		Operating ambient temperature 0~+50°C, rated speed, no load, rated voltage		

*1 400 W type: The certification of the UL/CSA standards has been applied for. For details, refer to the Oriental Motor website.

*2 () The number in the parentheses is the specified value for the analog setting.

● The values correspond to each specification and characteristic of a stand-alone motor.

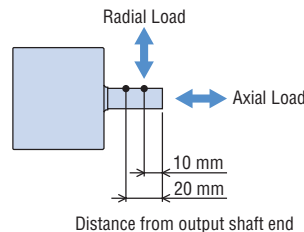
Gear Ratio	5		10		15		20		30		50		100*1	200*1				
	Rotation Direction	Same direction as the motor						Opposite direction to the motor		Same direction as the motor								
Output Shaft Rotation Speed [r/min]*2	80 r/min		16		8		5.3		4		2.7		1.6		0.8	0.4		
	4000 r/min		800		400		267		200		133		80		40	20		
Permissible Torque [N·m]	200 W	At 80~3000 r/min		2.9		5.7		8.6		11.5		16.4		27.4		51.6	70	
		At 4000 r/min		2.2		4.3		6.5		8.6		12.4		20.6		38.9	63	
	400 W	At 80~3000 r/min		5.7		11.4		17.1		22.9		32.8		54.6		—	—	
		At 4000 r/min		4.3		8.6		12.9		17.2		24.6		41.1		—	—	
Permissible Radial Load [N]	10 mm from output shaft end		At 80~3000 r/min		550		1000		1400		1200		1700		1400			
	20 mm from output shaft end		At 80~3000 r/min		500		900		1250		1700		1400		1200			
	At 4000 r/min		800		700		1100		1400		1700		1400		1200			
	At 4000 r/min		700		1100		1400		1700		1400		1200		1000			
Permissible Axial Load [N]		200		300		400		500		600		700		800		900		
Permissible Load Inertia J [$\times 10^{-4}$ kg·m ²]		At instantaneous stop, instantaneous bi-directional operation*3		100		460		1000		1700		3900		9300		18000		37000
				50		200		450		800		1800		5000				

*1 For 200 W output only.

*2 The rotational speed of the output shaft is the value of the rotational speed divided by the gear ratio.

*3 It is also applicable when digitally setting the deceleration time to below 0.1 second.

◇ About Load Position

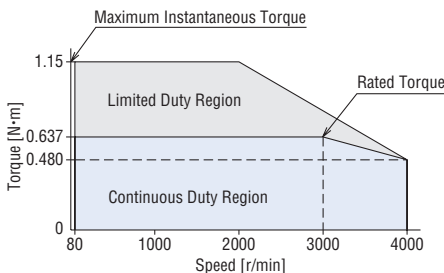


Speed – Torque Characteristics

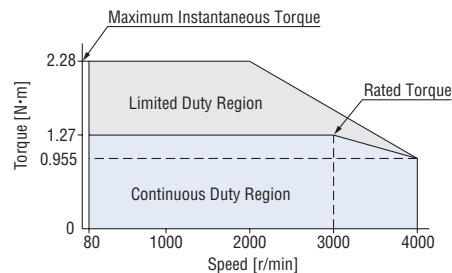
Continuous Duty Region: Continuous operation is possible in this region.

Limited Duty Region: This region is used primarily when accelerating.

● 200 W



● 400 W



● The values correspond to each specification and characteristic of a stand-alone motor. The speed-torque characteristics shows the values when rated voltage is applied.

● A number in the box □ in the product name indicates the gear ratio.

Parallel Shaft Gearhead JV Gear 200 W



Specifications

Product Name	Motor Driver	BLM5200HPK-5KV□S BLE2D200-C	
Rated Output Power (Continuous)	W	200	
Power Supply Input	Rated Voltage	VAC	Single-Phase 200-240/Three-Phase 200-240
	Permissible Voltage Range		-15~+10%
	Frequency	Hz	50/60
	Permissible Frequency Range		±5%
	Rated Input Current	A	Single-Phase: 2.4/Three-Phase: 1.4
	Maximum Input Current	A	Single-Phase: 6.5/Three-Phase: 4.3
Rated Speed	r/min	3000	
Speed Control Range		80~3600 r/min (Speed ratio 1:45)	
Speed Regulation*	Load	±0.2% (±0.5%) or less: Conditions	0 to rated torque, rated speed, rated voltage, normal temperature
	Voltage	±0.2% (±0.5%) or less: Conditions	Rated voltage -15~+10%, rated speed, no load, normal temperature
	Temperature	±0.2% (±0.5%) or less: Conditions	Operating ambient temperature 0~+50°C, rated speed, no load, rated voltage

* () The number in the parentheses is the specified value for the analog setting.

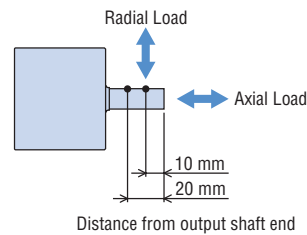
● The values correspond to each specification and characteristic of a stand-alone motor.

Gear Ratio		300	450	
(Actual gear ratio)		(300.5)	(450.8)	
Rotation Direction		Same direction as the motor		
Output Shaft Rotation Speed [r/min]*1		80 r/min	0.27	
		3600 r/min	12	
Permissible Torque [N·m]		At 80~3000 r/min	132	
		At 3600 r/min	92.3	
			138	
Permissible Radial Load [N]	10 mm from output shaft end	At 80~1500 r/min	4461	
		At 3000 r/min	3123	
		At 3600 r/min	2231	
	20 mm from output shaft end	At 80~1500 r/min	5174	
		At 3000 r/min	3622	
		At 3600 r/min	2587	
Permissible Axial Load [N]		At 80~1500 r/min	686	
		At 3000 r/min	480	
		At 3600 r/min	343	
Permissible Load Inertia J [$\times 10^{-4}$ kg·m ²]		At 80~1500 r/min	900000	
		At 3000 r/min	324000	
		At 3600 r/min	182250	
	At instantaneous stop, instantaneous bi-directional operation*2	At 80~1500 r/min	300000	675000
		At 3000 r/min	108000	243000
		At 3600 r/min	60750	136688

*1 The rotational speed of the output shaft is the value of the rotational speed divided by the gear ratio.

*2 It is also applicable when digitally setting the deceleration time to below 0.1 second.

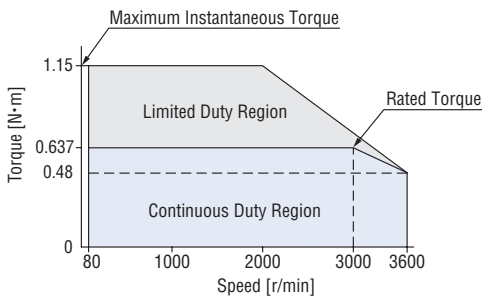
◇ About Load Position



Speed – Torque Characteristics

Continuous Duty Region: Continuous operation is possible in this region.

Limited Duty Region: This region is used primarily when accelerating.



● The values correspond to each specification and characteristic of a stand-alone motor. The speed-torque characteristics shows the values when rated voltage is applied.

● A number in the box □ in the product name indicates the gear ratio.

Legged Gearhead JB Gear 200 W



Specifications

Product Name	Motor Driver	BLM5200HPK-5 <input type="checkbox"/> B <input type="checkbox"/> B-L BLE2D200-C	
Rated Output Power (Continuous)	W	200	
Power Supply Input	Rated Voltage	VAC	
	Permissible Voltage Range	Single-Phase 200-240/Three-Phase 200-240	
	Frequency	Hz	
	Permissible Frequency Range	-15~+10%	
	Rated Input Current	A	
	Maximum Input Current	A	
Rated Speed	r/min	3000	
Speed Control Range		80~3600 r/min (Speed ratio 1:45)	
Speed Regulation*	Load	±0.2% (±0.5%) or less: Conditions	0 to rated torque, rated speed, rated voltage, normal temperature
	Voltage	±0.2% (±0.5%) or less: Conditions	Rated voltage -15~+10%, rated speed, no load, normal temperature
	Temperature	±0.2% (±0.5%) or less: Conditions	Operating ambient temperature 0~+50°C, rated speed, no load, rated voltage

* () The number in the parentheses is the specified value for the analog setting.

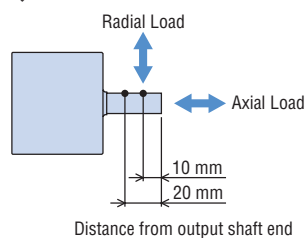
● The values correspond to each specification and characteristic of a stand-alone motor.

Gear Ratio		5	10	20	30	50	100	200	300	450	600	1200	
(Actual gear ratio)		(4.97)	(10.12)	(20.08)	(30.86)	(49.09)	(104.1)	(196.4)	(300.5)	(450.8)	(588.9)	(1178)	
Gearhead Size Code		A			C			E		K		S	
Rotation Direction		Same direction as the motor				Opposite direction to the motor			Same direction as the motor				
Output Shaft Rotation Speed [r/min]*1	80 r/min	16	8	4	2.7	1.6	0.8	0.4	0.27	0.18	0.13	0.07	
	3600 r/min	720	360	180	120	72	36	18	12	8	6	3	
Permissible Torque [N·m]	At 80~3000 r/min	2.4	4.9	9.7	13.0	22.5	48.4	91.3	132	198	259	518	
	At 3600 r/min	1.7	3.4	6.8	8.2	15.6	32.0	60.3	92.3	138	181	362	
Permissible Radial Load [N]	10 mm from output shaft end	At 80~1500 r/min	521	977	1243	1824	2032	2888	3483	4461		5245	
		At 3000 r/min	365	684	870	1277	1422	2022	2438	3123		3672	
		At 3600 r/min	261	489	622	912	1016	1444	1742	2231		2623	
	20 mm from output shaft end	At 80~1500 r/min	663	1244	1582	2280	2540	3496	4216	5174		5921	
		At 3000 r/min	464	871	1107	1596	1778	2447	2951	3622		4145	
		At 3600 r/min	332	622	791	1140	1270	1748	2108	2587		2961	
Permissible Axial Load [N]	At 80~1500 r/min	39	88	177	255	275	422	461	686		824		
	At 3000 r/min	27.3	61.6	124	179	193	295	323	480		577		
	At 3600 r/min	19.5	44	88.5	128	138	211	231	343		412		
Permissible Load Inertia J [$\times 10^{-4}$ kg·m ²]	At 80~1500 r/min	At 80~1500 r/min	250	1000	4000	9000	25000	100000	400000	900000	2025000	3600000	14400000
		At 3000 r/min	90	360	1440	3240	9000	36000	144000	324000	729000	1296000	5184000
		At 3600 r/min	50.6	203	810	1823	5063	20250	81000	182250	410063	729000	2916000
	At instantaneous stop, instantaneous bi-directional operation*2	At 80~1500 r/min	83.3	333	1333	3000	8333	33333	133333	300000	675000	1200000	4800000
		At 3000 r/min	30	120	480	1080	3000	12000	48000	108000	243000	432000	1728000
		At 3600 r/min	16.9	67.5	270	608	1688	6750	27000	60750	136688	243000	972000

*1 The rotational speed of the output shaft is the value of the rotational speed divided by the gear ratio.

*2 It is also applicable when digitally setting the deceleration time to below 0.1 second.

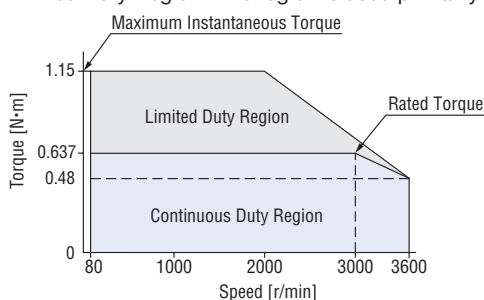
◇ About Load Position



Speed – Torque Characteristics

Continuous Duty Region: Continuous operation is possible in this region.

Limited Duty Region: This region is used primarily when accelerating.



● The values correspond to each specification and characteristic of a stand-alone motor. The speed-torque characteristics shows the values when rated voltage is applied.

● The box in a product name is replaced with the code (**A**, **C**, **E**, **K**, **S**) that represents the gearhead size.

A number in the box in the product name indicates the gear ratio.

Hypoid Right-Angle Hollow Shaft JH Gear 60 W, 120 W



Specifications



Product Name	Motor Driver	BLM460SHPK-4H□S		BLM5120HPK-5H□S		
		BLE2D60-A	BLE2D60-C	BLE2D120-A	BLE2D120-C	
Rated Output Power (Continuous)	W	60		120		
Power Supply Input	Rated Voltage	VAC	Single-Phase 100-120	Single-Phase 200-240 / Three-Phase 200-240	Single-Phase 100-120	Single-Phase 200-240 / Three-Phase 200-240
	Permissible Voltage Range		-15~+10%		-15~+10%	
	Frequency	Hz	50/60		50/60	
	Permissible Frequency Range		±5%		±5%	
	Rated Input Current	A	1.7	Single-Phase: 1.0 / Three-Phase: 0.61	2.7	Single-Phase: 1.7/Three-Phase: 1.02
	Maximum Input Current	A	5.4	Single-Phase: 3.5 / Three-Phase: 2.0	7.4	Single-Phase: 4.8/Three-Phase: 3.3
Rated Speed	r/min	3000				
Speed Control Range		80~3600 r/min (Speed ratio 1:45)				
Speed Regulation*	Load	±0.2% (±0.5%) or less: Conditions		0 to rated torque, rated speed, rated voltage, normal temperature		
	Voltage	±0.2% (±0.5%) or less: Conditions		Rated voltage -15~+10%, rated speed, no load, normal temperature		
	Temperature	±0.2% (±0.5%) or less: Conditions		Operating ambient temperature 0~+50°C, rated speed, no load, rated voltage		

* () The number in the parentheses is the specified value for the analog setting.

● The values correspond to each specification and characteristic of a stand-alone motor.

Gear Ratio		10	15	20	30	50	100	200		
(Actual gear ratio)		(10.25)	(15.38)	(20.50)	(30.75)	(51.25)	(102.5)	(205.0)		
Rotation Direction*1		Same direction as the motor						Opposite direction to the motor		
Output Shaft Rotation Speed [r/min]*2	80 r/min	8	5.3	4	2.7	1.6	0.8	0.4		
	3600 r/min	360	240	180	120	72	36	18		
Permissible Torque [N·m]	60 W	At 80~1500 r/min	1.2	1.8	2.7	4.0	6.7	13.3	20.6	
		At 3000 r/min	1.2	1.8	2.5	3.8	6.4	12.7	15.6	
		At 3600 r/min	0.74	1.1	1.8	2.7	4.4	8.9	11.5	
	120 W	At 80~1500 r/min	3.2	4.8	6.5	9.7	16.0	32.3	53.9	
		At 3000 r/min	2.5	3.8	5.1	7.6	12.7	25.5	41.0	
		At 3600 r/min	1.8	2.6	3.5	5.3	8.8	17.7	30.2	
Permissible Radial Load [N]*3	60 W	At 80~1500 r/min	265	341	417	531	682	758	836	
		At 3000 r/min	201	259	317	404	518	576	635	
		At 3600 r/min	148	191	234	297	382	424	468	
	120 W	At 80~1500 r/min	363	484	605	806	971	1045	1127	
		At 3000 r/min	276	368	460	613	738	794	857	
		At 3600 r/min	203	271	339	451	544	585	631	
Permissible Axial Load [N]	60 W	At 80~1500 r/min	88	108	137	177	226	245	275	
		At 3000 r/min	67	82	104	135	172	186	209	
		At 3600 r/min	49	60	77	99	127	137	154	
	120 W	At 80~1500 r/min	108	147	186	245	294	324	343	
		At 3000 r/min	82	112	141	186	223	246	261	
		At 3600 r/min	60	82	104	137	165	181	192	
Permissible Load Inertia J [$\times 10^{-4}$ kg·m ²]	60 W	At 80~1500 r/min	100	225	400	900	2500	10000	40000	
		At 3000 r/min	36	81	144	324	900	3600	14400	
		At 3600 r/min	20.3	45.6	81	182	506	2025	8100	
		120 W	At 80~1500 r/min	200	450	800	1800	5000	20000	80000
			At 3000 r/min	72	162	288	648	1800	7200	28800
			At 3600 r/min	40.5	91.1	162	365	1013	4050	16200
	At instantaneous stop, instantaneous bi-directional operation*4	60 W	At 80~1500 r/min	33.3	75	133	300	833	3333	13333
			At 3000 r/min	12	27	48	108	300	1200	4800
			At 3600 r/min	6.8	15.2	27	60.8	169	675	2700
		120 W	At 80~1500 r/min	66.7	150	267	600	1667	6667	26667
			At 3000 r/min	24	54	96	216	600	2400	9600
			At 3600 r/min	13.5	30.4	54	122	338	1350	5400

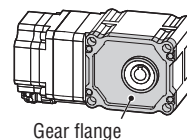
*1 The rotational direction is viewed from the gear flange surface (Figure on the right).

*2 The rotational speed of the output shaft is the value of the rotational speed divided by the gear ratio.

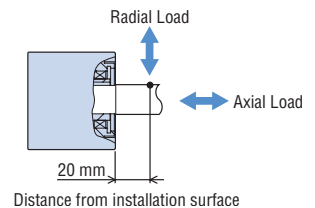
*3 The radial load at each distance can also be calculated with a formula. → Page 44

*4 It is also applicable when digitally setting the deceleration time to below 0.1 second.

◇ Gear Flange Position



◇ About Load Position



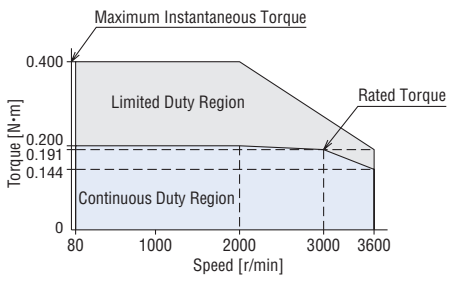
● A number in the box □ in the product name indicates the gear ratio.

Speed – Torque Characteristics

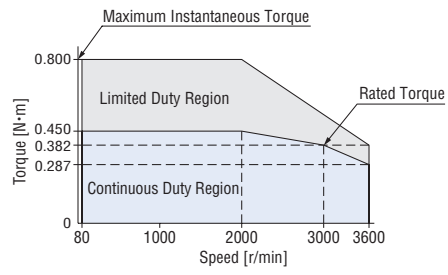
Continuous Duty Region: Continuous operation is possible in this region.

Limited Duty Region: This region is used primarily when accelerating.

60 W



120 W



The values correspond to each specification and characteristic of a stand-alone motor. The speed-torque characteristics shows the values when rated voltage is applied.

Hypoid Right-Angle Hollow Shaft JH Gear 200 W



Specifications



Product Name	Motor Driver	BLM5200HPK-5 H S	
		BLE2D200-C	
Rated Output Power (Continuous)	W	200	
Power Supply Input	Rated Voltage	VAC	
	Permissible Voltage Range	Single-Phase 200-240/Three-Phase 200-240	
	Frequency	Hz	
	Permissible Frequency Range	-15~+10%	
	Rated Input Current	A	
	Maximum Input Current	A	
Rated Speed	r/min	3000	
Speed Control Range		80~3600 r/min (Speed ratio 1:45)	
Speed Regulation*	Load	±0.2% (±0.5%) or less: Conditions	0 to rated torque, rated speed, rated voltage, normal temperature
	Voltage	±0.2% (±0.5%) or less: Conditions	Rated voltage -15~+10%, rated speed, no load, normal temperature
	Temperature	±0.2% (±0.5%) or less: Conditions	Operating ambient temperature 0~+50°C, rated speed, no load, rated voltage

* () The number in the parentheses is the specified value for the analog setting.

● The values correspond to each specification and characteristic of a stand-alone motor.

Gear Ratio		5	10	15	20	30	50	100	200	
(Actual gear ratio)		(5)	(10)	(15)	(20)	(30)	(50)	(98.95)	(200)	
Gearhead Size Code		X							Y	
Rotation Direction*1		Same direction as the motor							Opposite direction to the motor	
Output Shaft Rotation Speed [r/min]*2	80 r/min	16	8	5.3	4	2.7	1.6	0.8	0.4	
	3600 r/min	720	360	240	180	120	72	36	18	
Permissible Torque [N·m]	At 80~3000 r/min	2.1	4.1	6.2	8.3	13.4	22.3	41.0	82.8	
	At 3600 r/min	1.3	2.6	4.0	5.3	9.4	15.6	28.5	57.6	
Permissible Radial Load [N]*3	20 mm from installation surface	At 80~1500 r/min	1346	1663	1882	2035	2309	2681	3436	
		At 3000 r/min	942	1164	1317	1425	1616	1877	2405	
		At 3600 r/min	673	832	941	1018	1155	1341	1718	
Permissible Axial Load [N]		At 80~1500 r/min	307	380	429	466	527	613	785	
		At 3000 r/min	215	266	300	326	369	429	550	
		At 3600 r/min	154	190	215	233	264	307	393	
Permissible Load Inertia J [$\times 10^{-4}$ kg·m ²]	At instantaneous stop, instantaneous bi-directional operation*4	At 80~1500 r/min	250	1000	2250	4000	9000	25000	100000	400000
		At 3000 r/min	90	360	810	1440	3240	9000	36000	144000
		At 3600 r/min	50.6	203	456	810	1823	5063	20250	81000
		At 80~1500 r/min	83.3	333	750	1333	3000	8333	33333	133333
		At 3000 r/min	30	120	270	480	1080	3000	12000	48000
At 3600 r/min	16.9	67.5	152	270	608	1688	6750	27000		

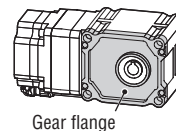
*1 The rotational direction is viewed from the gear flange side (Figure on the right).

*2 The rotational speed of the output shaft is the value of the rotational speed divided by the gear ratio.

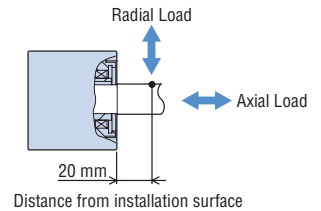
*3 The radial load at each distance can also be calculated with a formula. → Page 44

*4 It is also applicable when digitally setting the deceleration time to below 0.1 second.

◇ Gear Flange Position



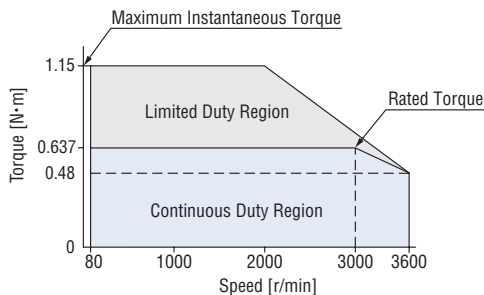
◇ About Load Position



Speed – Torque Characteristics

Continuous Duty Region: Continuous operation is possible in this region.

Limited Duty Region: This region is used primarily when accelerating.

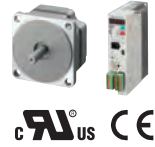


● The values correspond to each specification and characteristic of a stand-alone motor. The speed-torque characteristics shows the values when rated voltage is applied.

● The box in a product name is replaced with the code (**X**, **Y**) that represents the gearhead size.

A number in the box in the product name indicates the gear ratio.

Round Shaft 30 W, 60 W, 120 W

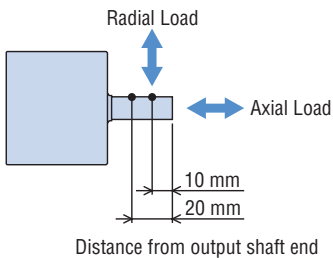


Specifications

Product Name	Motor Driver	BLM230HP-AS		BLM260HP-AS		BLM5120HP-AS		
		BLE2D30-A	BLE2D30-C	BLE2D60-A	BLE2D60-C	BLE2D120-A	BLE2D120-C	
Rated Output Power (Continuous)	W	30		60		120		
Power Supply Input	Rated Voltage	VAC	Single-Phase 100-120	Single-Phase 200-240/ Three-Phase 200-240	Single-Phase 100-120	Single-Phase 200-240/ Three-Phase 200-240	Single-Phase 100-120	Single-Phase 200-240/ Three-Phase 200-240
	Permissible Voltage Range		-15~+10%		-15~+10%		-15~+10%	
	Frequency	Hz	50/60		50/60		50/60	
	Permissible Frequency Range		±5%		±5%		±5%	
	Rated Input Current	A	1.1	Single-Phase: 0.67/ Three-Phase: 0.39	1.7	Single-Phase: 1.0/ Three-Phase: 0.61	2.7	Single-Phase: 1.7/ Three-Phase: 1.02
	Maximum Input Current	A	3.3	Single-Phase: 2.2/ Three-Phase: 1.2	5.4	Single-Phase: 3.5/ Three-Phase: 2.0	7.4	Single-Phase: 4.8/ Three-Phase: 3.3
Rated Speed	r/min	3000						
Speed Control Range		80~4000 r/min (Speed ratio 1:50)						
Rated Torque	N·m	0.096		0.191		0.382		
Maximum Instantaneous Torque	N·m	0.2		0.4		0.8		
Permissible Radial Load	10 mm from output shaft end	N	80	80	80	150		
	20 mm from output shaft end	N	100	100	100	170		
Permissible Axial Load		Half of motor mass or less						
Rotor Inertia J	$\times 10^{-4} \text{kg}\cdot\text{m}^2$	0.042		0.082		0.23		
Permissible Load Inertia J	$\times 10^{-4} \text{kg}\cdot\text{m}^2$	1.8		3.75		5.6		
Speed Regulation*	Load	±0.2% (±0.5%) or less: Conditions 0 to rated torque, rated speed, rated voltage, normal temperature						
	Voltage	±0.2% (±0.5%) or less: Conditions Rated voltage -15~+10%, rated speed, no load, normal temperature						
	Temperature	±0.2% (±0.5%) or less: Conditions Operating ambient temperature 0~+50°C, rated speed, no load, rated voltage						

* () The number in the parentheses is the specified value for the analog setting.

◇ About Load Position

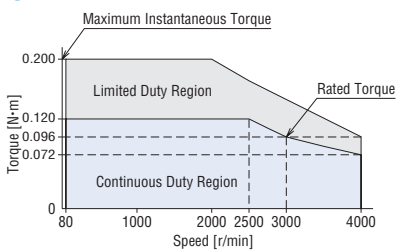


Speed – Torque Characteristics

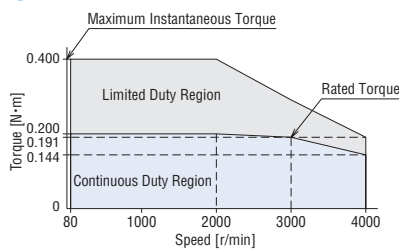
Continuous Duty Region: Continuous operation is possible in this region.

Limited Duty Region: This region is used primarily when accelerating.

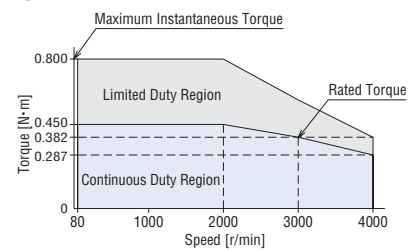
● 30 W



● 60 W



● 120 W



● The speed-torque characteristics shows the values when rated voltage is applied.

Round Shaft 200 W, 400 W



Specifications

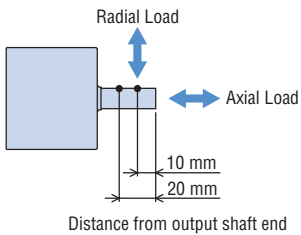
Product Name	Motor	BLM5200HP-AS	BLM5400HP-AS
	Driver	BLE2D200-C	BLE2D400-S
Rated Output Power (Continuous)	W	200	400
Power Supply Input	Rated Voltage	VAC	Single-Phase 200-240/Three-Phase 200-240
	Permissible Voltage Range		-15~+10%
	Frequency	Hz	50/60
	Permissible Frequency Range		±5%
	Rated Input Current	A	Single-Phase: 2.4/Three-Phase: 1.4
	Maximum Input Current	A	Single-Phase: 6.5/Three-Phase: 4.3
Rated Speed	r/min	3000	
Speed Control Range		80~4000 r/min (Speed ratio 1:50)	
Rated Torque	N·m	0.637	1.27
Maximum Instantaneous Torque	N·m	1.15	2.28
Permissible Radial Load	10 mm from output shaft end	N	150
	20 mm from output shaft end	N	170
Permissible Axial Load		Half of motor mass or less	
Rotor Inertia J	$\times 10^{-4} \text{kg}\cdot\text{m}^2$	0.454	0.67
Permissible Load Inertia J*2	$\times 10^{-4} \text{kg}\cdot\text{m}^2$	8.75	15
Speed Regulation*3	Load	±0.2% (±0.5%) or less: Conditions 0 to rated torque, rated speed, rated voltage, normal temperature	
	Voltage	±0.2% (±0.5%) or less: Conditions Rated voltage -15~+10%, rated speed, no load, normal temperature	
	Temperature	±0.2% (±0.5%) or less: Conditions Operating ambient temperature 0~+50°C, rated speed, no load, rated voltage	

*1 400 W type: The certification of the UL/CSA standards has been applied for. For details, refer to the Oriental Motor website.

*2 When operating the round shaft 400 W type under inertial load, use an optional (separately sold) regeneration unit **RGB100**. Regeneration Unit → Page 46

*3 () The number in the parentheses is the specified value for the analog setting.

◇ About Load Position

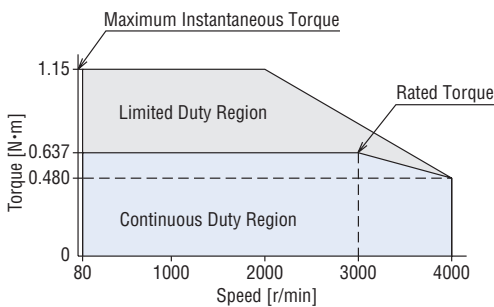


Speed – Torque Characteristics

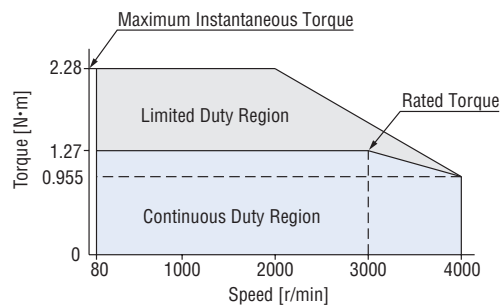
Continuous Duty Region: Continuous operation is possible in this region.

Limited Duty Region: This region is used primarily when accelerating.

● 200 W



● 400 W



● The speed-torque characteristics shows the values when rated voltage is applied.

Common Specifications

Items	Specifications
Speed Setting Methods	Digital Setting <ul style="list-style-type: none"> Operating panel Data setting software MEXE02
	Analog Setting <ul style="list-style-type: none"> Setting by the external speed potentiometer PAVR2-20K (Sold separately): 0~20 kΩ, 0.05 W or more Setting by an external DC voltage: 0~10 VDC, 1 mA or more (Factory setting: 0~5 VDC)
Acceleration/Deceleration Time	Setting Range <ul style="list-style-type: none"> 0.0~15.0 s (Factory setting: 0.5 s)
	Setting Method <ul style="list-style-type: none"> Operating panel Data setting software MEXE02
Torque Limit*1	Setting Range <ul style="list-style-type: none"> 0~300% (Factory setting: 300%)
	Digital Setting <ul style="list-style-type: none"> Operating panel Data setting software MEXE02
Number of Operation Data Settings	Analog Setting <ul style="list-style-type: none"> Setting by the external speed potentiometer PAVR2-20K (Sold separately): 0~20 kΩ, 0.05 W or more Setting by an external DC voltage: 0~10 VDC, 1 mA or more (Factory setting: 0~5 VDC)
	Up to 16 points (Factory setting: 4 points)
Input Signals	Photocoupler input Input resistance: 6.6 kΩ Connectable external DC power supply: 24 VDC -15~+20% 100 mA or more Sink input/Source input Supplied through external wiring
	Signals can be assigned randomly to IN0~IN6 Input (7 points) []: Initial setting [FWD], [REV], [STOP-MODE], [M0], [M1], [ALARM-RESET], [Not used], M2, M3, H-FREE, TL, INFO-CLR, HMI, EXT-ERROR, START/STOP*2, RUN/BRAKE*2, CW/CCW*2
Output Signals	Photocoupler and open collector output (Power ON: Up to 1.6 V) External power supply: 4.5~30 VDC 100 mA or less (SPEED-OUT output, 5 mA or more) Sink output/Source output Supplied through external wiring
	Arbitrary signal assignment to OUT0, OUT1 (2 points) []: Initial setting [SPEED-OUT], [ALARM-OUT], MOVE, INFO, TLC, VA, DIR
Protective Functions	When the following protective functions are activated, ALARM-OUT output turns OFF and the motor will undergo a coasting stop. At the same time, an alarm code displays with the ALARM LED blinking in red. Overcurrent, main circuit overheating, overvoltage, undervoltage, sensor error, main circuit output error, overload, overspeed, EEPROM error, initial sensor error, initial operation inhibition, regeneration unit overheat, external stop
Information	When information occurs, the INFO output turns to ON and the ALARM LED blinking in orange. The motor keeps operating.
Maximum Extension Distance	Motor and driver distance 20.5 m [When using an optional connection cable (for relay)]
Time Rating	Continuous

*1 Up to about ±10% of an error occurs between the set value and the generated torque (At rated torque and rated speed) due to the set speed, power supply voltage, and motor cable extension distance.

*2 This is available when 3-wire input method is selected.

General Specifications

Items	Motor	Driver
Insulation Resistance	The measured value is 100 MΩ or more when a 500 VDC megger is applied between the windings and the case after continuous operation under normal ambient temperature and humidity.	The measured value is 100 MΩ or more when 500 VDC megger is applied between the power supply terminal and the protective earth terminal, and between the power supply terminal and the I/O signal terminal after continuous operation under normal ambient temperature and humidity.
Dielectric Strength Voltage	No abnormality is judged even with application of 1.5 kVAC at 50 Hz between the windings and the case for 1 minute after continuous operation under normal ambient temperature and humidity.	No abnormality is judged even with application of 1.5 kVAC at 50 Hz between the power supply terminal and the protective earth terminal, and with application of 1.5 kVAC at 50 Hz between the power supply terminal and the I/O signal terminal, for 1 minute after continuous operation under normal ambient temperature and humidity.
Temperature Rise	Temperature rise of the windings is 50°C or less and that of the case is 40°C or less*1, measured by the thermocouple method after rated continuous operation under normal ambient temperature and humidity.	Temperature rise of the heat sink is 50°C or less measured by the thermocouple method after rated continuous operation under normal ambient temperature and humidity.
Operating Environment*2	Ambient Temperature	0~+40°C (Non-freezing)
	Ambient Humidity	85% or less (Non-condensing)
	Altitude	Up to 1000 m above sea level
	Atmosphere	No corrosive gases or dust. The product should not be exposed to oil. Cannot be used in a radioactive area, magnetic field, vacuum, or other special environments.
Storage Condition*4	Vibration	Not subject to continuous vibration or excessive shock Conforms to JIS C 60068-2-6 "Sine-wave vibration test method" Frequency range: 10~55 Hz, Pulsating amplitude: 0.15 mm Sweep direction: 3 directions (X, Y, Z) Number of sweeps: 20 times
	Ambient Temperature	-20~+70°C (-10~+60°C for JV Gear, JB Gear, JH Gear) (Non-freezing)
	Ambient Humidity	85% or less (Non-condensing)
	Altitude	Up to 3000 m above sea level (Up to 1000 m above sea level for JV Gear, JB Gear, JH Gear)
Atmosphere	No corrosive gases or dust. The product should not be exposed to water or oil. Cannot be used in a radioactive area, magnetic field, vacuum, or other special environments.	
Heat-resistant Class	UL/CSA Standards: 105 (A), EN Standards: 120 (E)	-
Degree of Protection*5	GFV Gear, JH Gear, JV Gear, Round shaft: IP66 (Excluding the mounting surface of the round shaft type) JB Gear: IP44 (Except the connector for driver connection when a cable is connected)	IP20

*1 For round shaft types, attach to a heat sink (material: aluminum) of one of the following sizes to keep the motor case surface temperature from exceeding 90°C.

30 W type: 115×115 mm Thickness 5 mm, 60 W type: 135×135 mm Thickness 5 mm

120 W type: 165×165 mm Thickness 5 mm, 200 W type: 200×200 mm Thickness 5 mm, 400 W type: 250×250 mm Thickness 6 mm

*2 Install the driver in the location that has the same heat radiation capability as an aluminum metal plate.

Unit installation 200×200 mm Thickness 2 mm, Contact installation 350×350 mm Thickness 2 mm

*3 For contact installation (200 W and 400 W only) and DIN rail installation, 0~+40°C.

*4 The storage condition applies to short periods such as the period during transportation.

*5 The IP indication representing the dust-proof and waterproof performances are defined in IEC 60529 and IEC 60034-5.

Note




● Do not measure insulation resistance or perform a dielectric strength test while the motor and driver are connected.

Materials and Surface Treatment of IP66 Specifications (Motors/Gearheads)

· Materials Case: Aluminum, Output shaft: Stainless steel, Screw: Stainless steel (Externally exposed portion only, except for the protective earth terminal)

· Surface treatment Case: Coated (except for the installation surfaces of the **GFV** gears and round shaft types)





Dimensions (Unit = mm)

- The dimensions drawing of the motor is an example where a separately sold connection cable ( portion in the figure) is connected.
The described mass does not include the connection cable. Cable Dimensions and Mass → Page 37
- "Mounting screws" are included. Dimensions of installation screws → Page 38
- A number in the box  in the product name indicates the gear ratio.
The  in a product name is replaced with the code that represents the gearhead size.

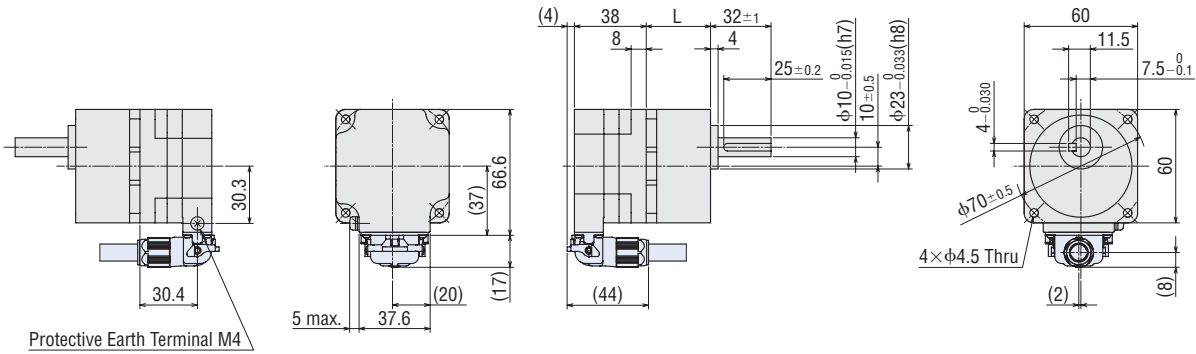
● Motor

◇ Parallel Shaft Gearhead **GFV** Gear · 30 W

2D & 3D CAD

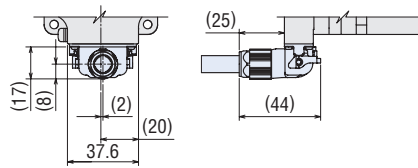
Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg	2D CAD	
						Connection cable drawing from the output shaft side is connected	Connection cable drawing from the counter-output shaft side is connected
BLM230HP-S BLM230HP-SF	BLM230HP-GFV	GFV2G  S GFV2G  SF	5~20	34	0.63	A1465A	A1466A
			30~100	38	0.68	A1465B	A1466B
			200	43	0.73	A1465C	A1466C

- When connecting the connection cable drawing from the output shaft side



- At the time of shipment, the parallel key is fixed in the key slot of the gearhead shaft.

- When connecting the connection cable drawing from the counter-output shaft side

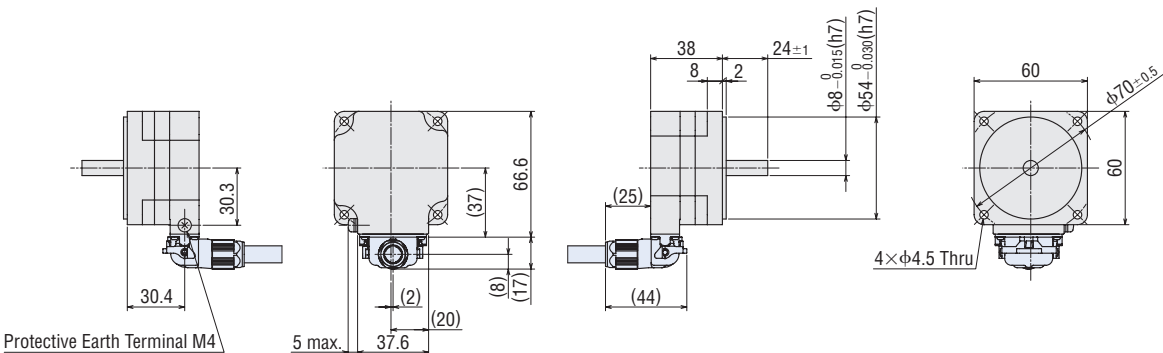


◇ Round Shaft Type · 30 W

BLM230HP-AS

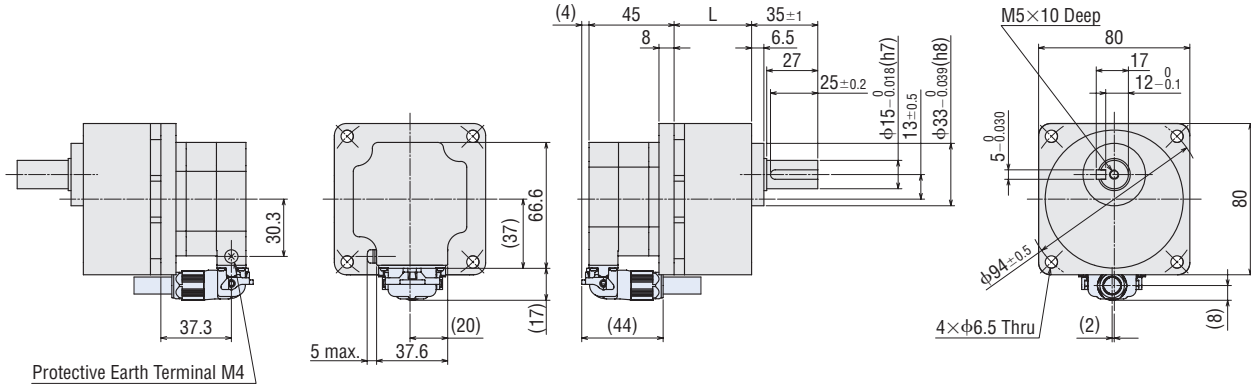
Mass: 0.35 kg

2D CAD A1475 3D CAD



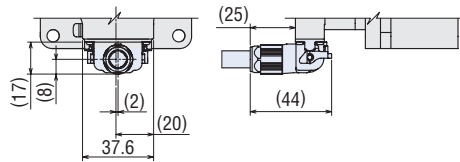
Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg	2D CAD	
						Connection cable drawing from the output shaft side is connected	Connection cable drawing from the counter-output shaft side is connected
BLM460SHP-□S BLM460SHP-□SF	BLM460SHP-GFV	GFV4G□S GFV4G□SF	5~20	41	1.3	A1467A	A1468A
			30~100	46	1.4	A1467B	A1468B
			200	51	1.5	A1467C	A1468C

•When connecting the connection cable drawing from the output shaft side



● At the time of shipment, the parallel key is fixed in the key slot of the gearhead shaft.

•When connecting the connection cable drawing from the counter-output shaft side

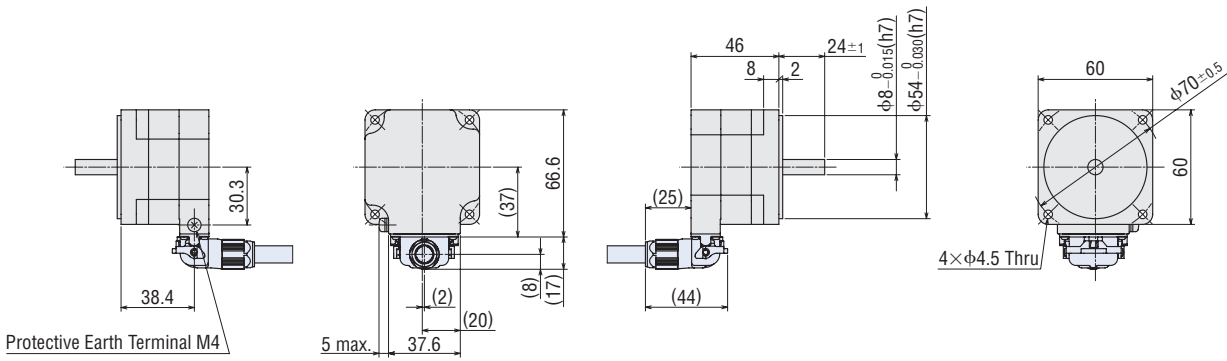


◇ Round Shaft Type · 60 W

BLM260HP-AS

Mass: 0.52 kg

2D CAD A1477 3D CAD

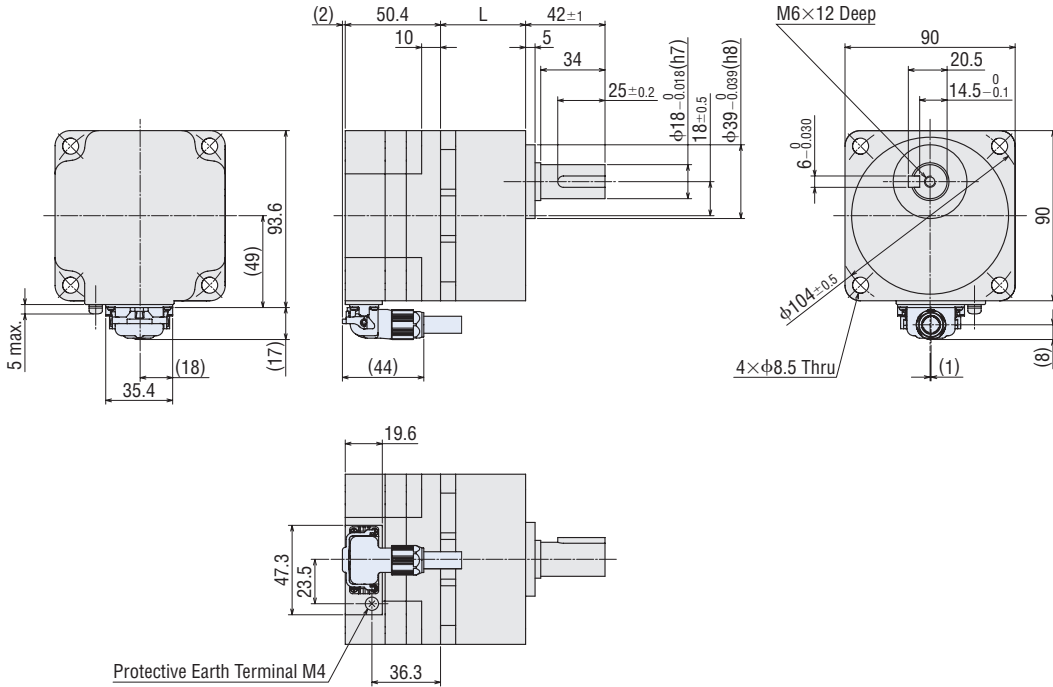


◇ Parallel Shaft Gearhead **GFV Gear · 120 W**

2D & 3D CAD

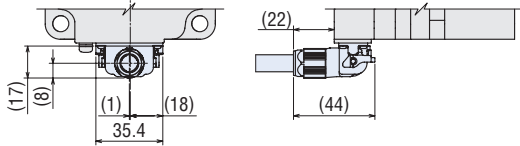
Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg	2D CAD	
						Connection cable drawing from the output shaft side is connected	Connection cable drawing from the counter-output shaft side is connected
BLM5120HP-□S BLM5120HP-□SF	BLM5120HP-GFV	GFV5G□S GFV5G□SF	5~20	45	2.1	A1469A	A1470A
			30~100	58	2.4	A1469B	A1470B
			200	64	2.5	A1469C	A1470C

● When connecting the connection cable drawing from the output shaft side



● At the time of shipment, the parallel key is fixed in the key slot of the gearhead shaft.

● When connecting the connection cable drawing from the counter-output shaft side

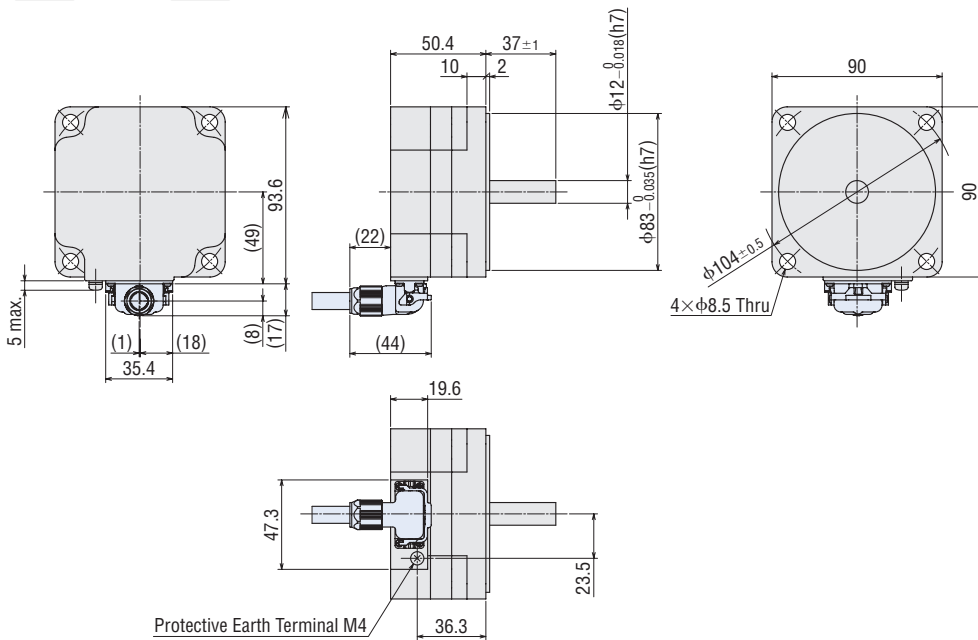


◇ Round Shaft Type · 120 W

BLM5120HP-AS

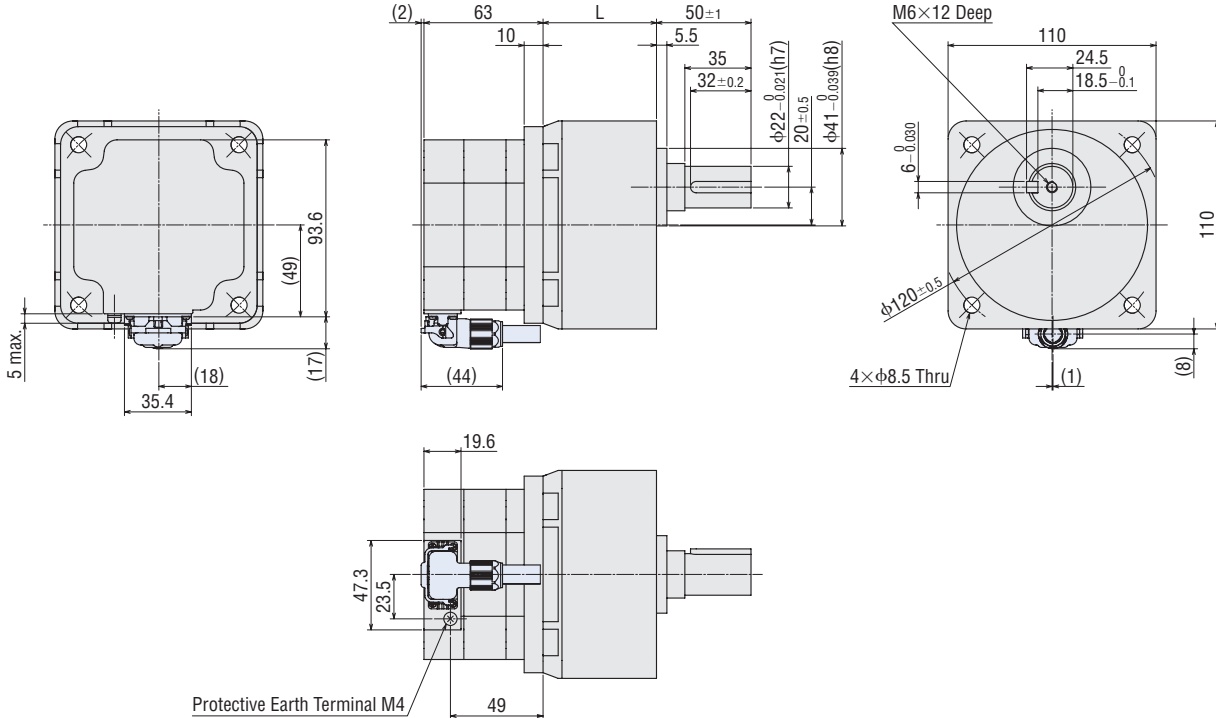
Mass: 1.1 kg

2D CAD A1479 3D CAD



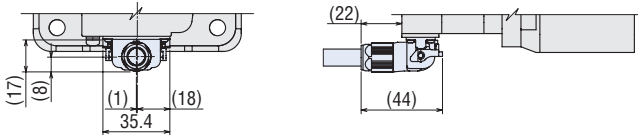
Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg	2D CAD	
						Connection cable drawing from the output shaft side is connected	Connection cable drawing from the counter-output shaft side is connected
BLM6200SHP-□S	BLM6200SHP-GFV	GFV6G□S	5~20	60	4.7	A1471A	A1472A
			30, 50	72		A1471B	A1472B
			100, 200	86		A1471C	A1472C

● When connecting the connection cable drawing from the output shaft side



● At the time of shipment, the parallel key is fixed in the key slot of the gearhead shaft.

● When connecting the connection cable drawing from the counter-output shaft side

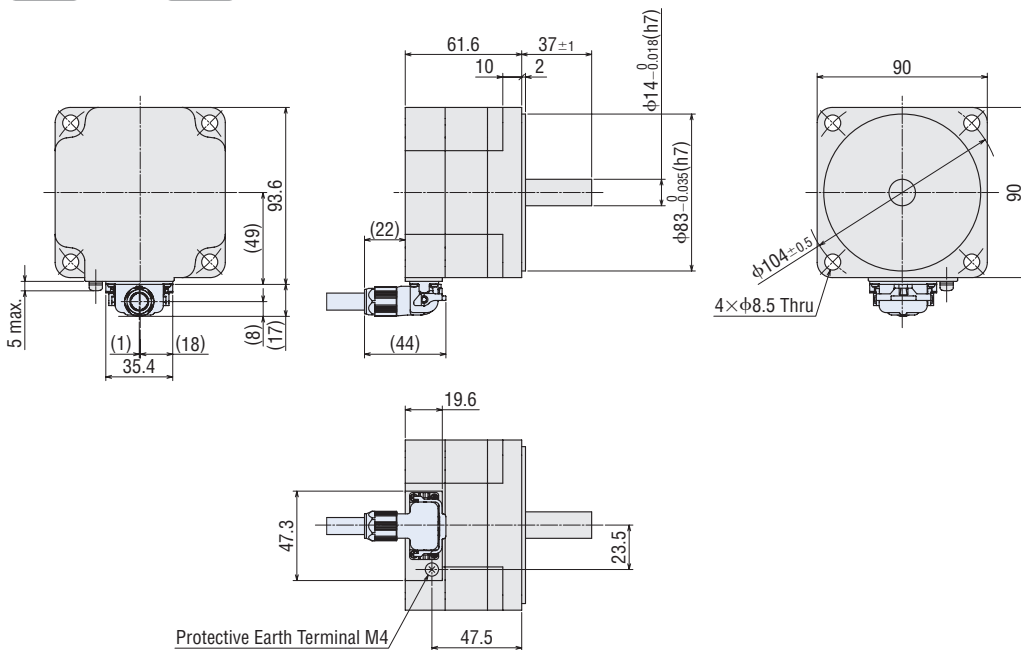


◇ Round Shaft Type · 200 W

BLM5200HP-AS

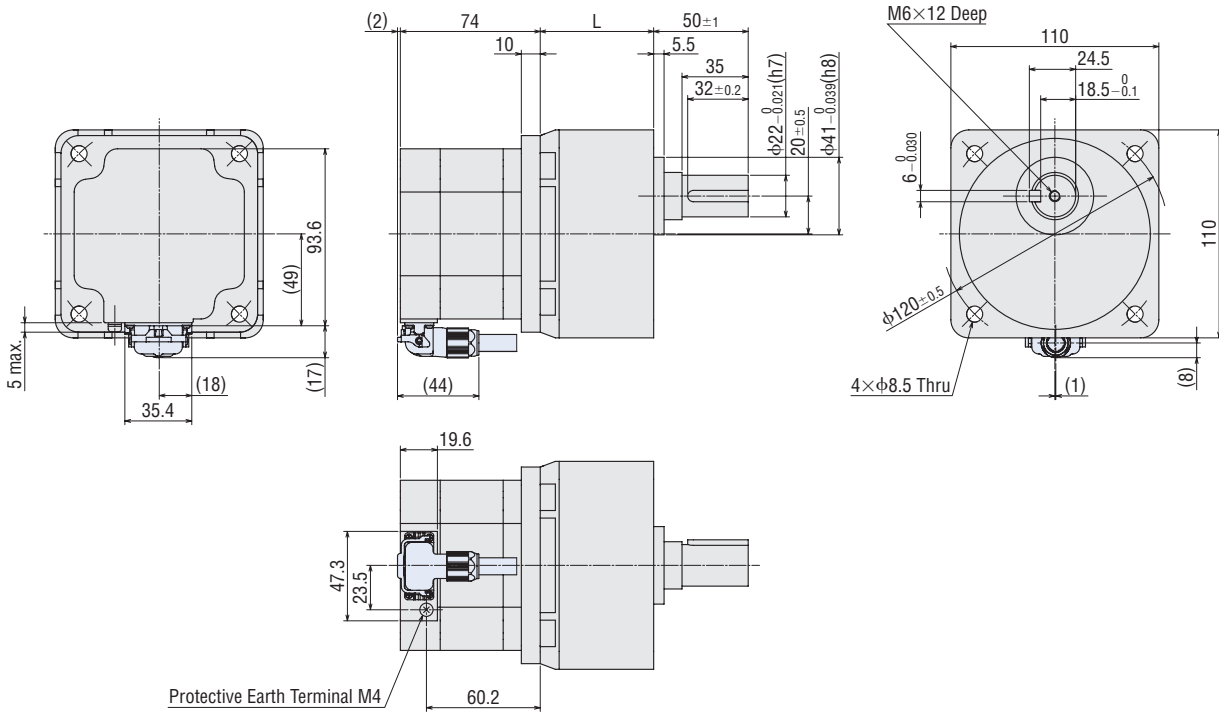
Mass: 1.6 kg

2D CAD A1481 3D CAD



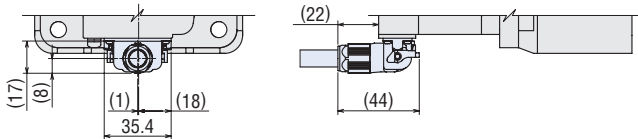
Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg	2D CAD	
						Connection cable drawing from the output shaft side is connected	Connection cable drawing from the counter-output shaft side is connected
BLM6400SHP-□S	BLM6400SHP-GFV	GFV6G□S	5~20	60	5.2	A1473A	A1474A
			30, 50	72		A1473B	A1474B

● When connecting the connection cable drawing from the output shaft side



● At the time of shipment, the parallel key is fixed in the key slot of the gearhead shaft.

● When connecting the connection cable drawing from the counter-output shaft side

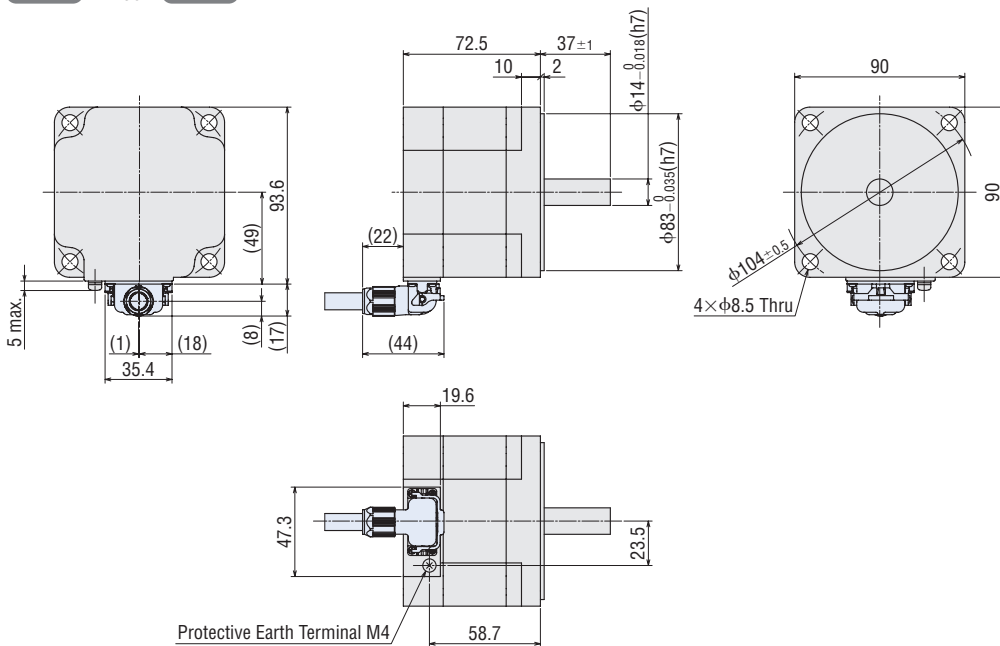


◇ Round Shaft Type · 400 W

BLM5400HP-AS

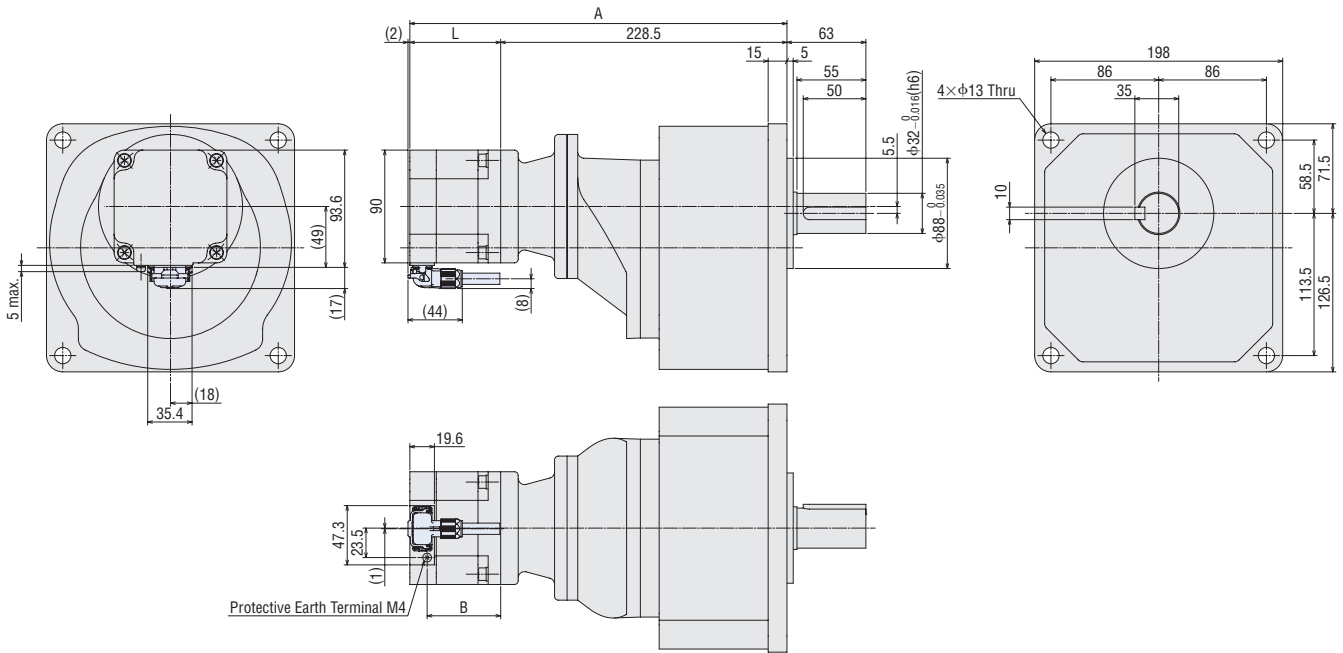
Mass: 2.1 kg

2D CAD A1483 3D CAD

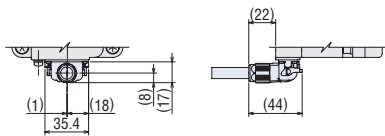


Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	Dimensions			Mass kg	2D CAD	
				A	L	B		Connection cable drawing from the output shaft side is connected	Connection cable drawing from the counter-output shaft side is connected
BLM5200HPK-5KV□S	BLM5200HPK	5KV□S	300,450	(290.1)	61.6	47.5	12.1	A1557	A1558

•When connecting the connection cable drawing from the output shaft side



•When connecting the connection cable drawing from the counter-output shaft side

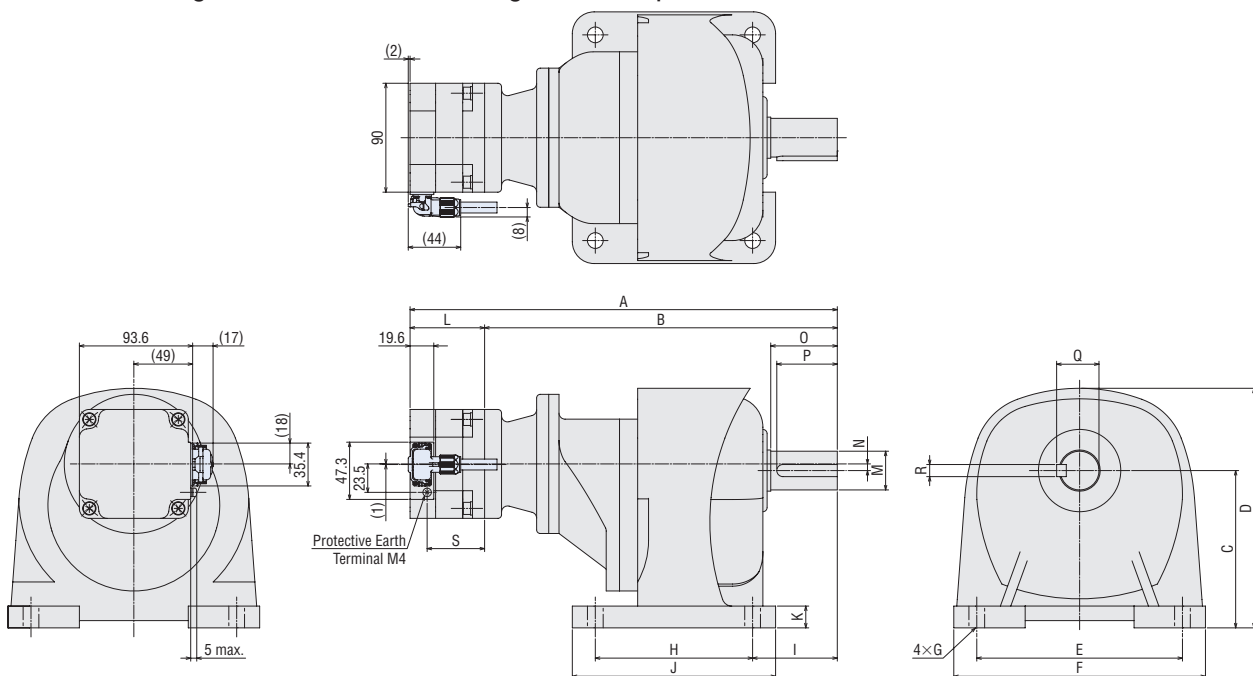


Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	Dimensions No.	L	Mass kg	2D CAD	
							Connection cable drawing from the output shaft side is connected	Connection cable drawing from the counter-output shaft side is connected
BLM5200HPK-5 ■B□B-L	BLM5200HPK	5■B□B	5, 10, 20	①	61.6	4.6	A1537	A1538
			30, 50	②		5.6	A1539	A1540
			100, 200	③		7.6	A1541	A1542
			300, 450	④		11.6	A1543	A1544
			600, 1200	⑤		18.1	A1545	A1546

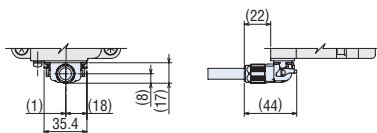
Dimensions No.	Total Length	Gearhead Dimensions										Output Shaft Dimensions						S
		A	B	C	D	E	F	G	H	I	J	K	M	N	O	P	Q	
①	(219.1)	157.5	85±0.2	131	110	134	φ9	40	45	64	10	φ18 _{-0.011} (h6)	16.5*	30	27	20.5	6	47.5
②	(245.1)	183.5	90±0.2	139	130	154	φ11	65	55	90	12	φ22 _{-0.013} (h6)	19*	40	35	24.5	6	
③	(258.1)	196.5	110±0.2	167	140	175	φ11	90	65	125	15	φ28 _{-0.013} (h6)	23.5*	45	40	31	8	
④	(353.1)	291.5	130±0.2	198	170	208	φ13	130	70	168	18	φ32 _{-0.016} (h6)	5.5	55	50	35	10	
⑤	(375.1)	313.5	150±0.2	230	210	254	φ15	150	90	196	20	φ40 _{-0.016} (h6)	0	65	60	43	12	

*The center position of the gearhead output shaft is offset in an upper position than the motor's center position.

•When connecting the connection cable drawing from the output shaft side

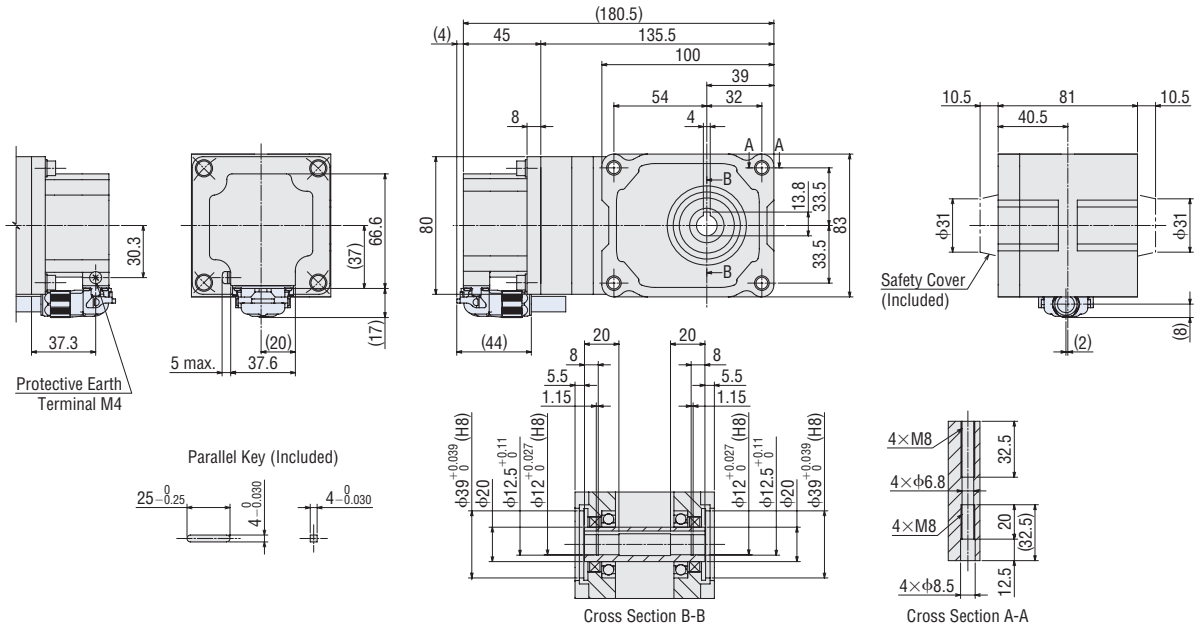


•When connecting the connection cable drawing from the counter-output shaft side

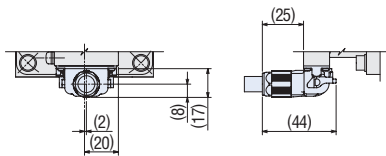


Product Name	Motor Product Name	Gearhead Product Name	Mass kg	2D CAD	
				Connection cable drawing from the output shaft side is connected	Connection cable drawing from the counter-output shaft side is connected
BLM460SHPK-4H□S	BLM460SHPK	4H□S	2.6	A1604	A1605

• When connecting the connection cable drawing from the output shaft side

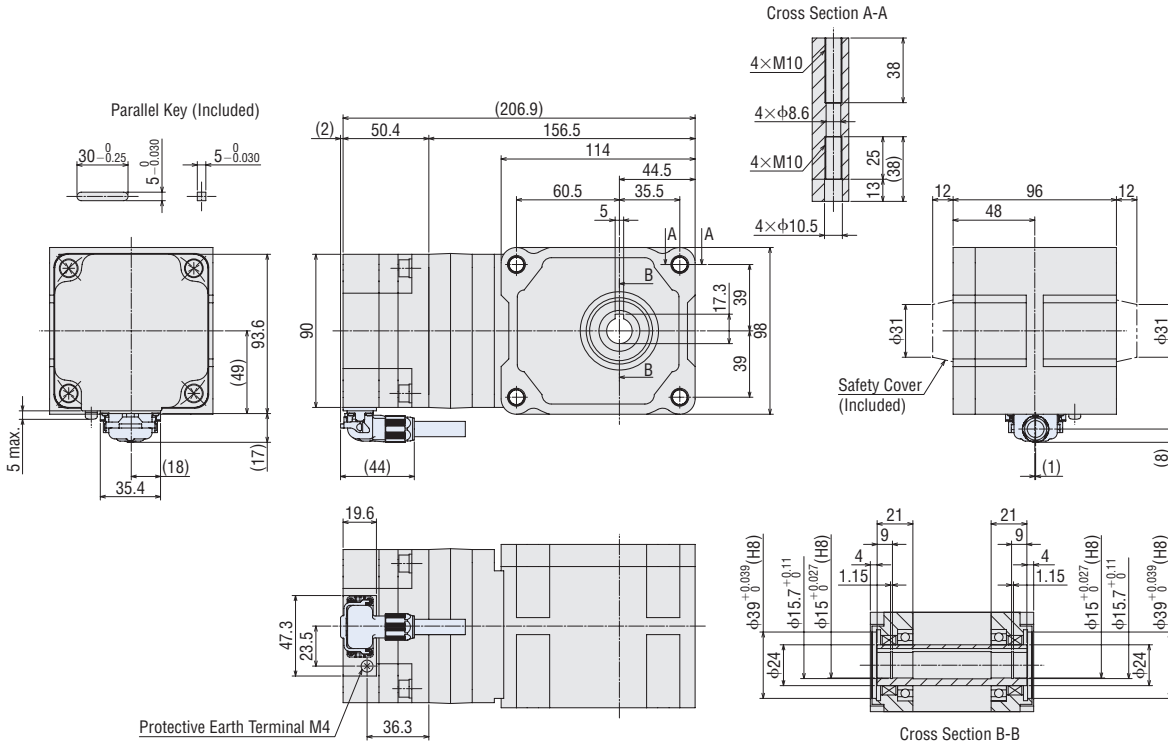


• When connecting the connection cable drawing from the counter-output shaft side

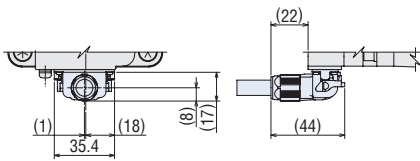


Product Name	Motor Product Name	Gearhead Product Name	Mass kg	2D CAD	
				Connection cable drawing from the output shaft side is connected	Connection cable drawing from the counter-output shaft side is connected
BLM5120HPK-5H□S	BLM5120HPK	5H□S	4.1	A1535	A1536

•When connecting the connection cable drawing from the output shaft side



•When connecting the connection cable drawing from the counter-output shaft side

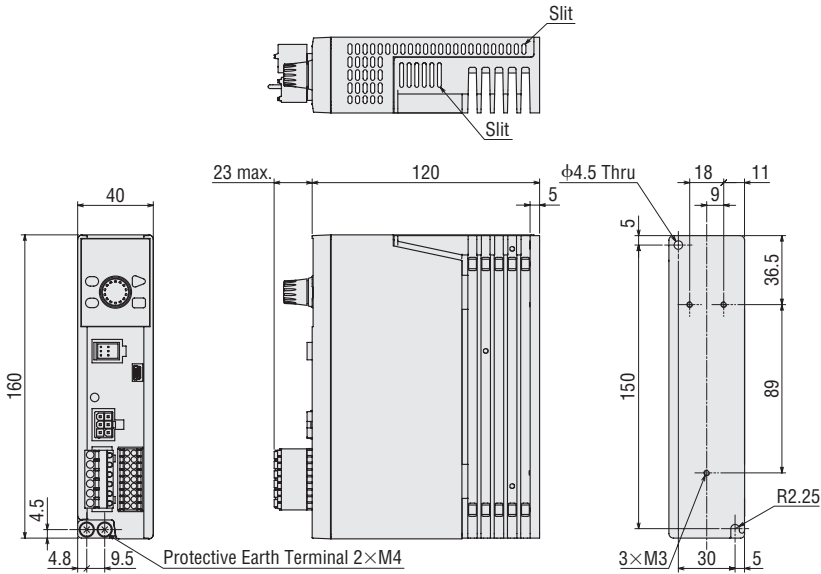


● Driver

BLE2D30-A, BLE2D30-C, BLE2D60-A, BLE2D60-C, BLE2D120-A, BLE2D120-C, BLE2D200-C, BLE2D400-S

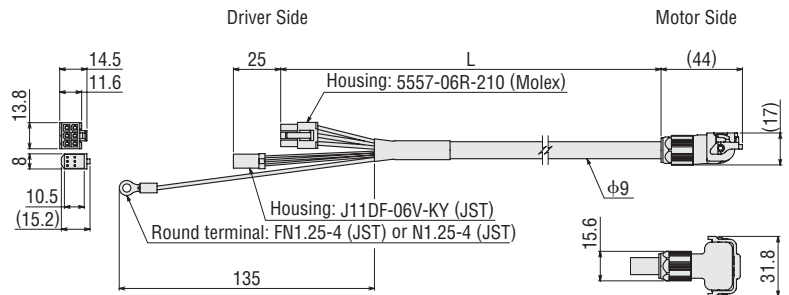
Mass: 0.8 kg

2D CAD A1461 3D CAD



● Connection Cables

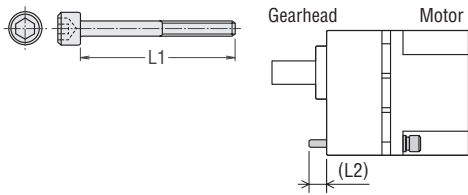
Length L (m)	Product Name		Mass (kg)
	Drawing on the Output Shaft Side	Drawing on the Counter-output Shaft Side	
0.5	CC005HBLF	CC005HBLB	0.08
1	CC010HBLF	CC010HBLB	0.12
1.5	CC015HBLF	CC015HBLB	0.2
2	CC020HBLF	CC020HBLB	0.25
2.5	CC025HBLF	CC025HBLB	0.32
3	CC030HBLF	CC030HBLB	0.38
4	CC040HBLF	CC040HBLB	0.49
5	CC050HBLF	CC050HBLB	0.62
7	CC070HBLF	CC070HBLB	0.86
10	CC100HBLF	CC100HBLB	1.2
15	CC150HBLF	CC150HBLB	1.9
20	CC200HBLF	CC200HBLB	2.5



Dimensions of Installation Screws

L2 represents the length when the plain washer and the spring washer are installed on the screw head.

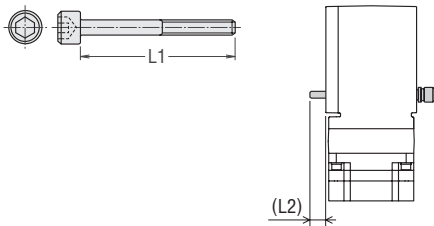
Parallel Shaft Gearhead



Product Name	Gear Ratio	Installation Screws		L2 (mm)
		Screw Size	L1 (mm)	
GFV2G□S (F)	5~20	M4	50	6
	30~100		55	7
	200		60	7
GFV4G□S (F)	5~20	M6	60	8
	30~100		65	8
	200		70	8
GFV5G□S (F)	5~20	M8	70	11.5
	30~100		85	13.5
	200		90	12.5
GFV6G□S	5~20	M8	85	11
	30, 50		100	14
	100, 200		110	10

● Installation screw: Includes 4 plain washers and 4 spring washers each.
The installation screw material is stainless steel.

Hypoid Right-Angle Hollow Shaft



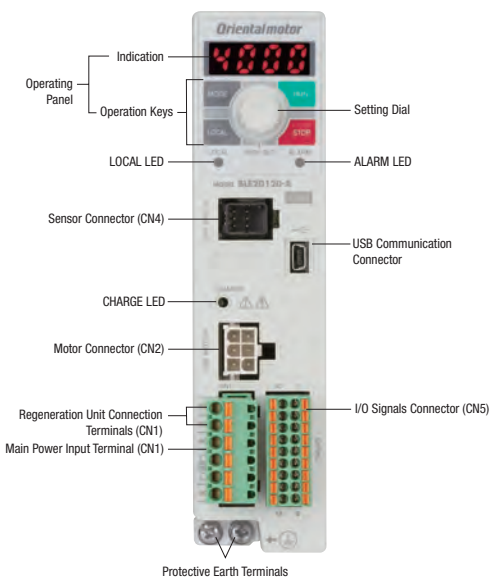
Product Name	Gear Ratio	Installation Screws		L2 (mm)
		Screw Size	L1 (mm)	
4H□S	10~200	M6	95	11
5H□S	10~200	M8	110	10
5XH□S	5~50	M8	120	16
5YH□S	100, 200	M10	130	19.5

● Installation screw: Includes 4 plain washers and 4 spring washers each.
The installation screw material is stainless steel.

● A number in the box □ in the product name indicates the gear ratio.

Connection and Operation

Names and Functions of Driver Parts



Name	Indication	Description
Operating Panel	—	Indication: Displaying information such as monitored content, setting screens, and alarms.
	MODE LOCAL RUN STOP	Operation keys: Changing operation modes and parameters During local operation, press the RUN key or STOP key to operate or stop the motor.
	PUSH-SET	Setting dial: Rotate it to set the parameter value or change the screen. Press to finalize (SET) the setting.
LOCAL LED	LOCAL	Illuminates in green during local operation.
ALARM LED	ALARM	Blinking in red during alarm generation. Blinking in orange during information generation.
CHARGE LED	CHARGE	Illuminates in red while the main power supply is turned on. Goes out after the main power supply is turned off and residual voltage in the motor drops to a safe level.
Main Power Input Terminal (CN1)	—	Connect the main power supply.
	L, N, NC	Single-Phase 100-120 VAC: Connect 100-120 VAC to L and N. NC is not used.
	L1, L2, NC L1, L2, L3	Single-Phase 200-240 VAC: Connect 200-240 VAC to L and N. NC is not used. Three-Phase 200-240 VAC: Connect Three-Phase 200-240 VAC to L1, L2, and L3.
	L1, L2, L3	Three-Phase 200-240 VAC: Connect Three-Phase 200-240 VAC to L1, L2, and L3.
Regeneration Unit Connection Terminals (CN1)	RG1, RG2	Regeneration unit is connected.
Motor Connector (CN2)	MOTOR	Connect the power connector (white) of the connection cable.
Sensor Connector (CN4)	HALL-S	Connect the sensor connector (black) of the connection cable.
USB Communication Connector		Connect the computer in which data setting software MEXE02 is installed.
I/O Signals Connector (CN5)	I/O	Connect an input signal.
		Connect an optional (sold separately) external speed potentiometer or external DC power supply.
		Connect an output signal.
Protective Earth Terminals		Connect the protective earth terminal and earth wire of the connection cable.

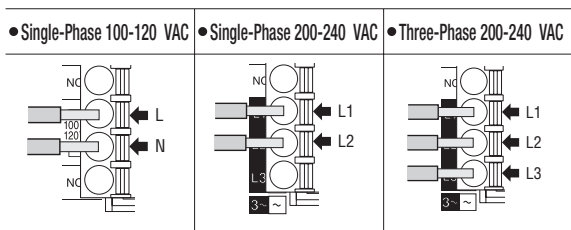
◇ Operation Keys

The **BLE2** Series is equipped with 4 operation modes.

Operating Mode	Description	Setting Items
Monitoring Mode	Displayed when power is applied.	Rotation speed, load factor, operation data no., alarm, information, I/O monitor
Data Mode	Allows the setting of operation data items up to 16 speed.	Rotation speed, torque limit values, acceleration/deceleration time, reset
Parameter Mode	Allows the setting of various parameters.	Basic configuration parameters, parameters for adjusting speed or torque limits, parameters for setting alarm information, operation setting parameters, I/O operation parameters, I/O function selection parameters, I/F function parameters, reset, configuration
Test Mode	Allows the checking of connection with I/O signals.	

◇ Main Power Input Terminal (CN1)

Connects to the main power supply. Connect a power supply that matches with the power supply voltage to be used.



• Applicable Lead Wire Size
AWG18~14 (0.75~2.0 mm²)

◇ USB Cable Connections

Use a USB cable of the following specifications.

Specifications	USB2.0 (Full speed)
Cable	Length: 3 m or less
	Shape: A - mini-B

● Operation with the Operating Panel

◇ Selecting the Operation

Pressing the "LOCAL" key activates the illumination of the LOCAL LED, allowing the operation of the operating panel.

◇ Selecting the Rotation Direction

Pressing the "MODE" key changes the rotation direction.

◇ Motor Startup/Stop

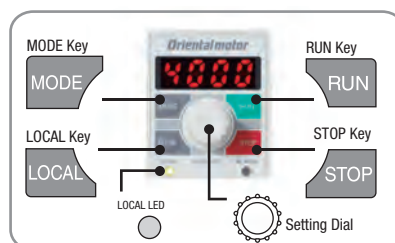
Pressing the "RUN" key activates the rotation of the motor.
Pressing the "STOP" key stops the motor.

◇ Speed Setting Method

Pressing the "Setting Dial" makes the displayed content flash, and turning the dial to the right increases the speed.

Turning "Setting Dial" to the left decreases the speed. Pressing it finalizes the rotation speed.

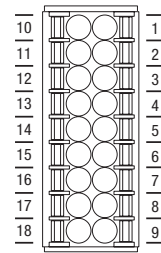
● Operating Panel



● Operation by External Signals

◇ I/O Signals Connector (CN5)

Pin No.	Signal Type	Signal Name	Functions*	Description
1	Input	IN-COM0	Input signal common (for external power supply)	Connect for external power supplies.
2		IN0	FWD	Turning ON the FWD input or REV input activates the rotation of the motor. Turning OFF the FWD input or REV input stops the motor.
3		IN1	REV	
4		IN2	STOP-MODE	Select the method for stopping the motor.
5		IN3	M0	Selecting ON/OFF of the M0 or M1 input selects an operation data No.
6		IN4	M1	
7		IN5	ALARM-RESET	Alarms are reset.
8		IN6	Not used	Various functions can be allocated.
9		IN-COM1	0 V (for internal power supply)	Connect for internal power supply.
10		Input	TH	TH
12	VH		Input of external analog settings	Connect to these pins when setting rotation speed or a torque limitation value from the outside by using an external speed potentiometer or external DC voltage.
13	VM			
14	VL			
15	Output	OUT0+	SPEED-OUT	For every rotation of the motor output shaft, 30 pulses are output.
16		OUT0-		
17		OUT1+	ALARM-OUT	The generation of an alarm activates an output. (Normally closed)
18		OUT1-		



● Applicable Lead Wire Size
AWG24~18
(0.2~0.75 mm²)

*The [] indicates the functions assigned in the factory. For pins No. 2~8 and 15~18, the allocated functions can be changed. 7 pins are allocated to 12 types of input signals, and 2 pins are allocated to 7 types of output signals.

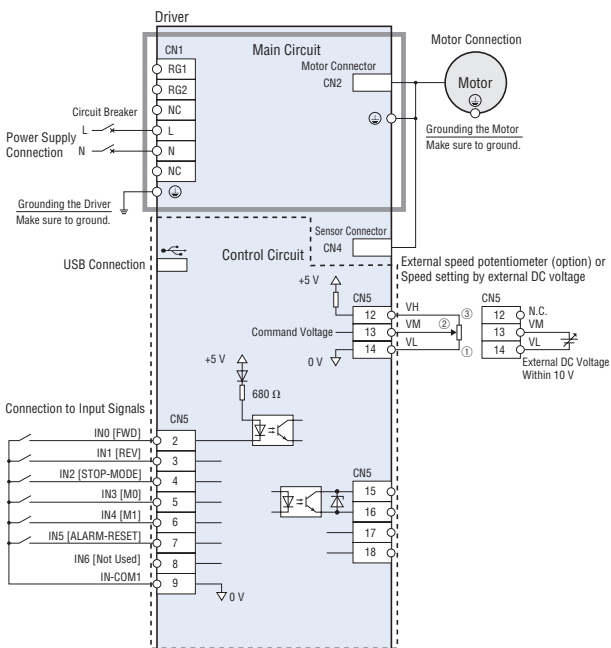
◇ Signals for which allocation can be changed

Signal Type	Functions	Description
Input	START/STOP	When the START/STOP input and RUN/BRAKE input are turned ON, the motor rotates. Turning OFF the START/STOP input reduces motor speed to stop the motor.
	RUN/BRAKE	Turning OFF the RUN/BRAKE input immediately stops the motor.
	CW/CCW	Signal for changing the rotation direction of the motor.
	M2	Signals for selecting operation data No.
	M3	
	H-FREE	Signal for selecting the activation/deactivation of the simple holding function.
	TL	Signal for toggling, through an external measure, between the activation and deactivation of torque limitation.
	INFO-CLR	Signal for resetting the information that is being generated.
HMI	Signal for restricting operation via the operating panel or data setting software MEXE02 .	
Output	EXT-ERROR	Signal for forcibly stopping the motor from the outside.
	MOVE	Signal which is output when the operation input is turned ON and the motor is rotating.
	INFO	Signal which is output when information is generated.
	TLC	Signal which is output when the output torque of the motor reaches the torque limit value.
	VA	Signal which is output when the motor detection speed reaches the set speed \pm VA detection range.
DIR	Signal that outputs the rotation direction of the motor.	

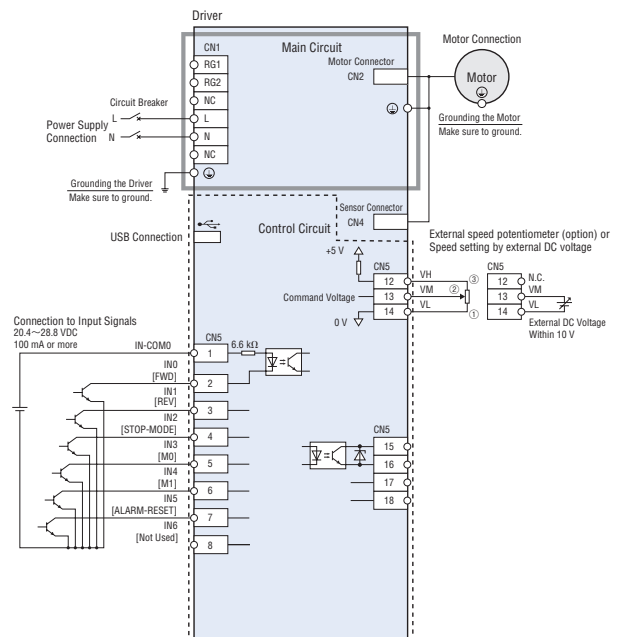
● Connection Diagram

The diagrams shown below are the connection examples for when Single-Phase 100-120 VAC is applied and the rotation speed is set from the outside. (Sink Logic) I/O signals specified in [] are factory set signals.

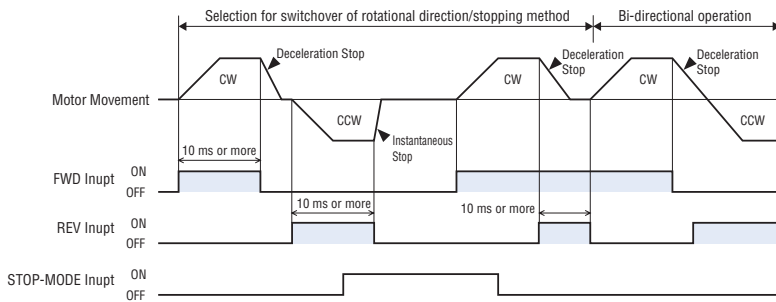
◇ When Using the Built-in Power Supply



◇ When Using External Power Supply



● Timing Chart (2 wire input method)



● FWD input or REV input

Turning ON the FWD input rotates the motor to the CW (clockwise) direction. Turning it OFF decelerates the motor to a stop.

Turning ON the REV input rotates the motor to the CCW (counter-clockwise) direction. Turning it OFF decelerates the motor to a stop.

● STOP-MODE input

Select the motor stop method for when the FWD input or REV input is turned OFF.

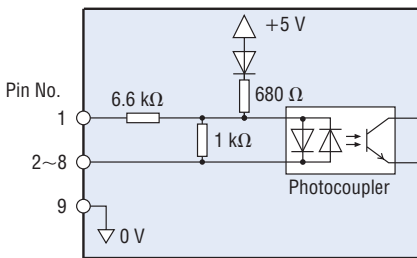
When the STOP-MODE input is turned OFF, a deceleration stop is performed according to the deceleration stop of the operation data No.

When the STOP-MODE is turned ON, the motor stops in the shortest time (instantaneous stop).

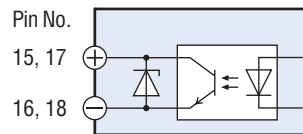
● I/O Signal Circuits

Change the wiring of the sink logic and the source logic in accordance with the external control equipment that you will use.

◇ Input Circuit



◇ Output Circuit



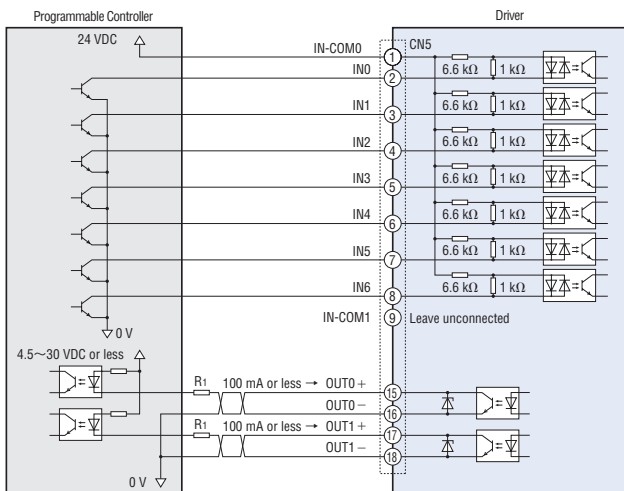
◇ When an external control equipment with a built-in clamp diode is used

With external control equipment with built-in clamping diodes connected, if the power of the external control equipment is turned off with the driver turned on, the motor may rotate due to current flowing around. The motor may also rotate even if the driver and the external control equipment are simultaneously turned ON/OFF because these two devices have different current capacities.

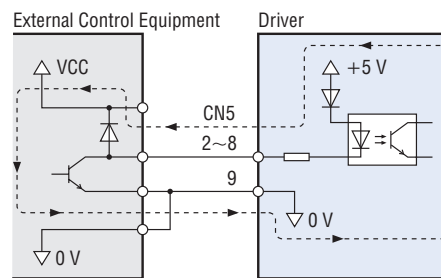
To turn off the power, first turn off the driver and then the external control equipment. To turn on the power, first turn on the external control equipment and then the driver.

◇ Examples of Connections to Host Controllers

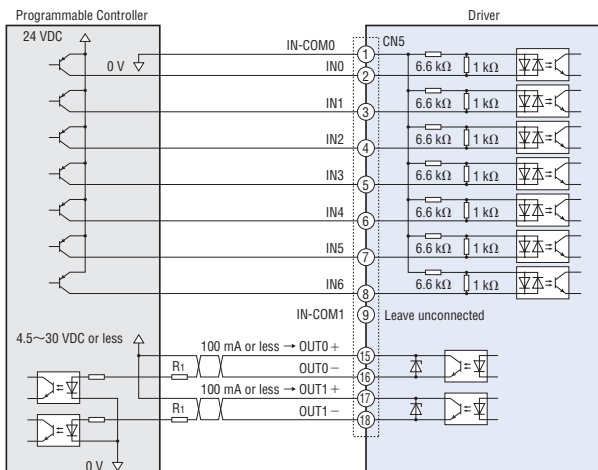
● Sink Logic



● Sink logic example



● Source Logic



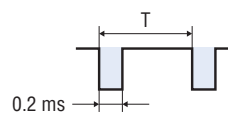
◇ SPEED-OUT Output

Synchronized with motor operation, the motor emits a 30 pulse signal (the pulse width of which is 0.2 ms) per rotation of the motor output shaft.

The measurement of the frequency of the speed output enables the calculation of approximate rotation speed of the motor.

$$\text{SPEED-OUT Frequency [Hz]} = \frac{1}{T[\text{s}]}$$

$$\text{Motor Shaft Speed [r/min]} = \frac{\text{SPEED-OUT Frequency [Hz]}}{30} \times 60$$



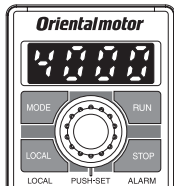
◇ ALARM-OUT Output

An activation of the driver's protective function turns OFF the output, causing the ALARM LED to flash. An alarm code is displayed on the operating panel, and the motor naturally stops. (The motor instantaneously stops when it is stopped by an external signal.)

● Speed Setting Methods

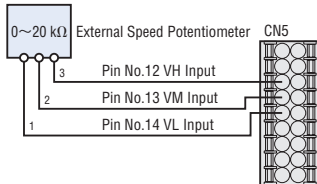
Rotation speed can be set by any of the 4 methods described below.

◇ Setting using the Operating Panel

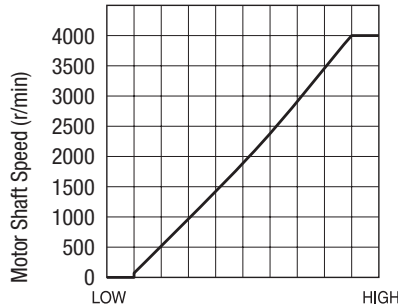


◇ Setting with External Speed Potentiometer

Connect the external speed potentiometer to the I/O signal connector (CN5) of the driver.



• External Speed Potentiometer —
Speed Characteristics (Representative values)

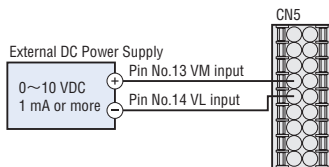


Note

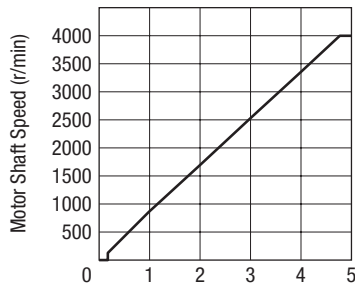
● The values correspond to the speed of a stand-alone motor. The rotational speed of the gear output shaft is the value of the rotational speed divided by the gear ratio.

◇ Setting by an External DC Voltage

Connect the external voltage to the I/O signal connector (CN5) of the driver.



• External Speed Potentiometer —
Speed Characteristics (Representative values)
Example: For 0~5 VDC

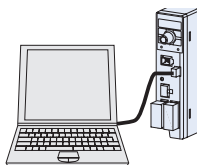


Note

● Settings can be made at a voltage of 0~10 VDC.
● The values correspond to the speed of a stand-alone motor. The rotational speed of the gear output shaft is the value of the rotational speed divided by the gear ratio.

◇ Settings with Data Setting Software (MEXE02)

Personal computer in which data setting software (MEXE02) is installed.



● Multiple Speed Operation (Up to 16 speed)

Select the operation data No. based on the combination of ON/OFF of M0~M3.

Operation Data No.	M3	M2	M1	M0
0	OFF	OFF	OFF	OFF
1	OFF	OFF	OFF	ON
2	OFF	OFF	ON	OFF
3	OFF	OFF	ON	ON
4	OFF	ON	OFF	OFF
5	OFF	ON	OFF	ON
6	OFF	ON	ON	OFF
7	OFF	ON	ON	ON
8	ON	OFF	OFF	OFF
9	ON	OFF	OFF	ON
10	ON	OFF	ON	OFF
11	ON	OFF	ON	ON
12	ON	ON	OFF	OFF
13	ON	ON	OFF	ON
14	ON	ON	ON	OFF
15	ON	ON	ON	ON

● Multi-Motor Control

By using a potentiometer or external DC voltage, you can operate multiple motors at the same speed.

The figure below is an example in which a Single-Phase power supply is employed. For Three-Phase specifications, use a Three-Phase power supply for the power line. The motor and operation control section are omitted from the figure.

◇ When a Potentiometer is used

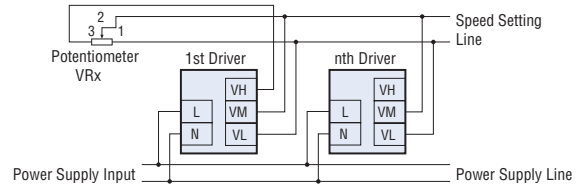
When using a variable resistor (VRx), operate at 20 or less.

Resistance value derived when the No. of drivers is n: $VRx = 20/n$ (kΩ), $n/4$ (W)

Example: When 2 drivers are used

$$VRx = 20/2 = 10 \text{ (k}\Omega\text{)}, 2/4 = 1/2 \text{ (W)}$$

The resistance value is 10 kΩ, 1/2 W.



◇ Using External DC Voltage

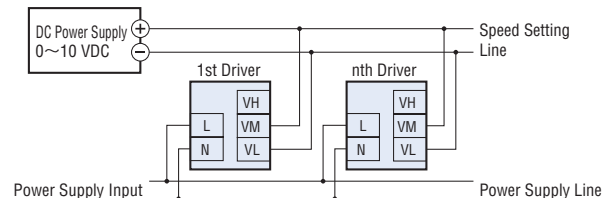
Calculate the power supply capacity of the external DC voltage based on the formula below.

Power supply capacity derived when the No. of drivers is n: $I = 1 \times n$ (mA)

Example: When 2 drivers are used

$$I = 1 \times 2 = 2 \text{ (mA)}$$

Therefore, the power supply capacity is at least 2 mA.



Installation of Hollow Shaft Load

Example of Load Shaft Installation Method

The load installation method differs depending on the shape of the load shaft. See the figures below.

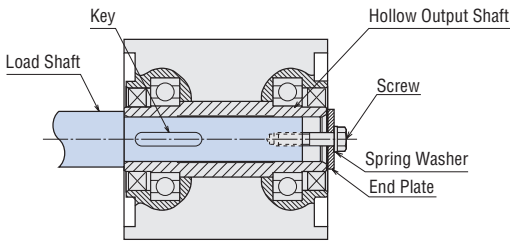
- The hollow output shaft is processed to a tolerance of the inner diameter H8, and incorporates a key slot for load shaft installation.
- The recommended tolerance of the load shaft is h7.

Note

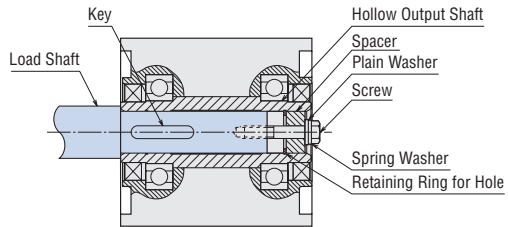
- To prevent sticking, apply a coat of grease on the exterior surface of the load shaft and interior surface of the hollow output shaft.

◇ Stepped Load Shaft

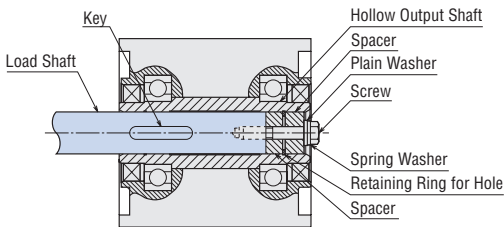
• Fixing Method Using the End Plate



• Fixing Method Using the Retaining Ring for Hole



◇ For Non-Stepped Load Shaft



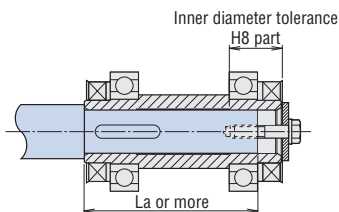
◇ Recommended Load Shaft Installation Method

Unit: mm

Output Power	60 W	120 W	200 W	
Gear Ratio	10~200	10~200	5~50	100, 200
Inner Diameter of Hollow Output Shaft (H8)	$\phi 12^{+0.027}_0$	$\phi 15^{+0.027}_0$	$\phi 25^{+0.033}_0$	$\phi 30^{+0.033}_0$
Recommended Tolerance of Load Shaft (h7)	$\phi 12^0_{-0.018}$	$\phi 15^0_{-0.018}$	$\phi 25^0_{-0.021}$	$\phi 30^0_{-0.021}$
Screw Size	M5	M6	M6	M8
Spacer Dimensions	Outer Diameter	$\phi 11.5$	$\phi 14.5$	$\phi 24.5$
	Inner Diameter	$\phi 6$	$\phi 7$	$\phi 7$
	Width	3	3	4
Nominal Hole Diameter of Retaining Ring (C type retaining ring)	$\phi 12$	$\phi 15$	$\phi 25$	$\phi 30$
End Plate Thickness	3	3	4	5
Stepped Shaft La length	55	72	96	96

- Retaining rings for holes, spacers, screws or other parts used to install the load shaft are not supplied.

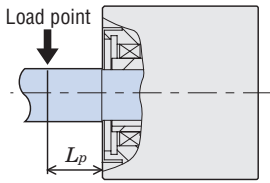
◇ Recommended Load Shaft Length



● Permissible Radial Load Calculation of the Hollow Shaft Type

Formulas to calculate permissible radial loads vary depending on the mechanism.

◇ When One End of the Load Shaft is Not Supported by a Bearing Unit



• 60 W

$$\text{Permissible Radial Load } W \text{ [N]} = \frac{68.5}{48.5 + L_p} \times F_0$$

• 120 W

$$\text{Permissible Radial Load } W \text{ [N]} = \frac{79}{59 + L_p} \times F_0$$

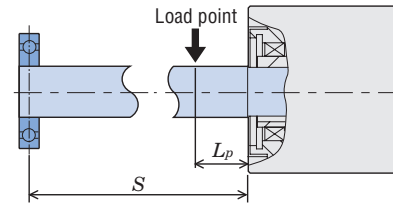
• 200 W (Gear ratio **5~50**)

$$\text{Permissible Radial Load } W \text{ [N]} = \frac{95.5}{75.5 + L_p} \times F_0$$

• 200 W (Gear ratio **100, 200**)

$$\text{Permissible Radial Load } W \text{ [N]} = \frac{102}{82 + L_p} \times F_0$$

◇ When One End of the Load Shaft is Supported by a Bearing Unit



• 60 W

$$\text{Permissible Radial Load } W \text{ [N]} = \frac{68.5 (S + 5.5)}{53 (S - L_p)} \times F_0$$

• 120 W

$$\text{Permissible Radial Load } W \text{ [N]} = \frac{79 (S + 4)}{65 (S - L_p)} \times F_0$$

• 200 W (Gear ratio **5~50**)

$$\text{Permissible Radial Load } W \text{ [N]} = \frac{95.5 (S - 9)}{104.5 (S - L_p)} \times F_0$$

• 200 W (Gear ratio **100, 200**)

$$\text{Permissible Radial Load } W \text{ [N]} = \frac{102 (S - 9)}{111 (S - L_p)} \times F_0$$

F_0 [N]: Permissible radial load when the reference point is at 20 mm from the installation surface

L_p [mm]: Distance from the installation surface to the load point

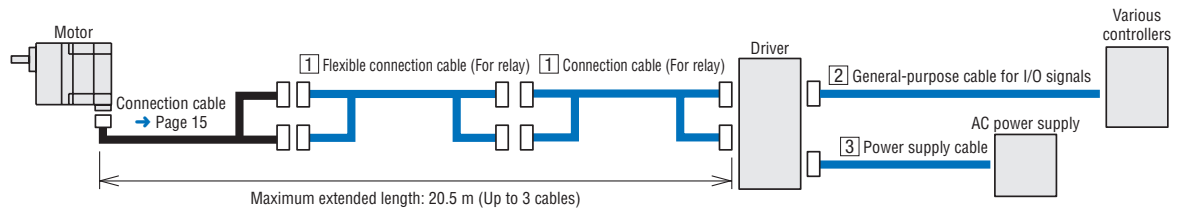
S [mm]: Distance from the installation surface to the bearing unit

● For details on the permissible radial load when the reference position is 20 mm away from the flange installation surface, see the specifications table. → Pages 20 and 22

Accessories (Sold Separately)

Cables

Cable System Configuration



1 Connection Cables (For relay), Flexible Connection Cables (For relay)

For the extension with additional connection cables (for relay) and/or flexible connection cables (for relay), the total length of the cable must be 20.5 m or less (up to 3 cables).

Product Line

◇ Connection Cables

Product Name	Length L (m)
CC01BL2	1
CC02BL2	2
CC03BL2	3
CC05BL2	5
CC07BL2	7
CC10BL2	10



◇ Flexible Connection Cables

Product Name	Length L (m)
CC01BL2R	1
CC02BL2R	2
CC03BL2R	3
CC05BL2R	5
CC07BL2R	7
CC10BL2R	10



2 General-Purpose Cable for I/O Signals

This cable is used for connecting the driver and the programmable controller.



Product Line

Product Name	Length L (m)	Number of Lead Line Cores	Outer Diameter D (mm)	AWG
CC06D005B-1	0.5	6	φ5.4	24
CC06D010B-1	1			
CC06D015B-1	1.5			
CC06D020B-1	2	10	φ6.7	
CC10D005B-1	0.5			
CC10D010B-1	1			
CC10D015B-1	1.5			
CC10D020B-1	2	12	φ7.5	
CC12D005B-1	0.5			
CC12D010B-1	1			
CC12D015B-1	1.5	16	φ7.5	
CC12D020B-1	2			
CC16D005B-1	0.5			
CC16D010B-1	1			
CC16D015B-1	1.5			
CC16D020B-1	2			

Note

● The general-purpose cable for I/O signals cannot be used together with the external speed potentiometer (PAVR2-20K).

3 Power Supply Cables

This cable used for connecting the driver and the AC power supply comes with or without a power supply plug.



Plug included

Product Line

Product Name	Type	Power Supply Voltage	Length L (m)
CC01AC03P	Plug included	Single-Phase 100-120 VAC	1
CC02AC03P			2
CC03AC03P			3
CC01AC03N	Plug not included	Single-Phase 100-120 VAC Single-Phase 200-240 VAC	1
CC02AC03N			2
CC03AC03N			3
CC01AC04N	Plug not included	Three-Phase 200-240 VAC	1
CC02AC04N			2
CC03AC04N			3

For details, check the Oriental Motor website or contact the Oriental Motor sales office.

<http://www.orientalmotor.com.sg/>

Flexible Couplings

These are clamp type couplings for connecting the motor/gearhead shaft with the driven shaft.

Couplings usable for the parallel shaft gearhead **GFV** gear and the round shaft type are available.

- Couplings can also be used with round shaft types.
Select a coupling with the same inner diameter size as the motor shaft diameter.



Product Line

Applicable Product	Load Type	Coupling Type
BLM230	Uniform Load	MCL30 Type
	Shock Load	
BLM460	Uniform Load	MCL40 Type
	Shock Load	MCL55 Type
BLM5120	Uniform Load	MCL55 Type
	Shock Load	
BLM6200 BLM6400	Uniform Load	MCL65 Type
	Shock Load	

External Speed Potentiometer

Features

- Potentiometer which allows the adjustment of rotation speed and torque.
- Easy installation
Simply insert the potentiometer into the mounting hole. No tools are required. It can be removed.
- Easy wiring
A terminal block is employed. Lead wire connection or soldering is not required. The efficiency of wiring is improved.



(Front)



(Back)

Product Line

Product Name
PAVR2-20K

The following items are included in each product.
External speed potentiometer, operating manual

Note

- The external speed setter (**PAVR2-20K**) cannot be used together with a general-purpose cable for I/O signals.

Specifications

Resistance: 0~20 k Ω
Rate power: 0.05 W
Resistance change characteristics: B curve

•Applicable Lead Wire Size*

AWG22~18 (0.3~0.75 mm²)

*When combined with the **BLE2** Series

Motor and Gearhead Mounting Bracket

This is a convenient, dedicated mounting bracket for mounting or fixing the parallel shaft gearhead **GFV** gear and the round shaft type.



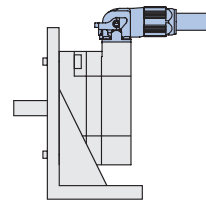
Product Line

Product Name	Applicable Product
SOL2M4F	BLM230, BLM260 (Round Shaft Type)
SOL4M6F	BLM460 (GFV Gear)
SOL5M8F	BLM5120, BLM5200, BLM5400 (Round Shaft Type)
SOL6M8F	BLM6200, BLM6400 (GFV Gear)

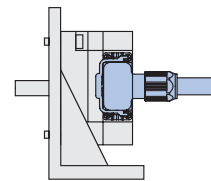
Note

When mounting the motor on the mounting bracket, place the motor connector on the top or on the side.

If the connector is placed on the bottom, it interferes with the bracket or the installation surface and therefore is not recommended.



Connector on the Top



Connector on the Side

DIN Rail Mounting Bracket

Use the mounting bracket to install the driver to the DIN rail.



Product Line

Product Name
MADP02

Regeneration Unit

Use the regeneration unit to operate the round shaft type (400 W) under inertial load.



Product Line

Product Name
RGB100

Specifications

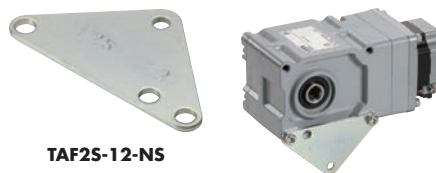
Continuous Regenerative Power	70 W
Instantaneous Regenerative Power	720 W
Resistance Value	150 Ω
Thermostat Operating Temperature	Operation: Open at 150 \pm 7 $^{\circ}$ C Reset: Closed at 145 \pm 12 $^{\circ}$ C (Normally closed)

For details, check the Oriental Motor website or contact the Oriental Motor sales office.

<http://www.orientalmotor.com.sg/>

Torque Arms NEW

Prevents the gearhead from spinning due to reaction force from the driven shaft when a hypoid right-angle hollow shaft **JH** gear is installed.



<<Application example>>

Product Line

Product Name	Applicable Product	Main Specifications
TAF2S-12-NS	BLM460SHPK-4H □	Materials: SS400 Surface treatment: Trivalent chromate
TAF2S-15-NS	BLM5120HPK-5H □	
TAF3S-25-2-NS	BLM5200HPK-5XH □	
TAF3S-30-3-NS	BLM5200HPK-5YH □	

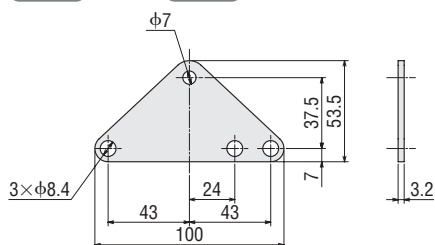
● The □ in the applicable product is replaced with a number that represents the gear ratio and a code that represents the output shaft specification.

Dimensions (Unit = mm)

◇ TAF2S-12-NS

Mass: 75 g

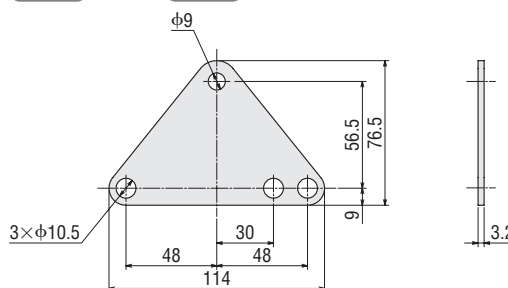
2D CAD A1608 **3D CAD**



◇ TAF2S-15-NS

Mass: 125 g

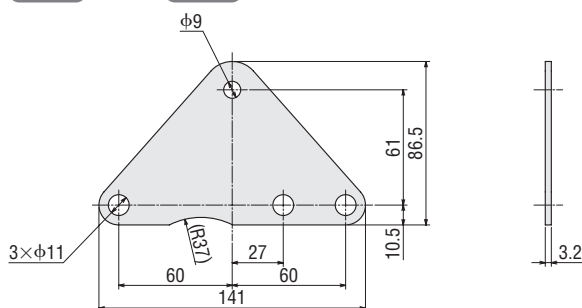
2D CAD A1609 **3D CAD**



◇ TAF3S-25-2-NS

Mass: 200 g

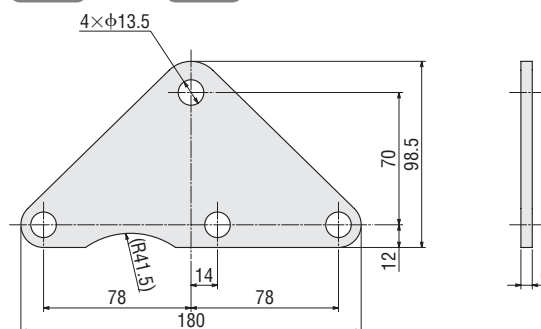
2D CAD A1610 **3D CAD**



◇ TAF3S-30-3-NS

Mass: 400 g

2D CAD A1611 **3D CAD**



Motor Cover

Protects the motor. The cover is designed with IP66 protection to ensure use in environments where water or dust disperses.

Product Line

◇ Motor Cover

Product Name
PCM5
PCM5-C

◇ Replacement Gaskets

Ideally replace the gaskets after 1 year use.



Product Name	Set Details
PCMP5	2 gaskets

Applicable Product

Output Power	Motor	Cable Drawing Direction
30 W 60 W 120 W	Parallel Shaft Gearhead GFV Gear*	Drawing on the output shaft side
	Round Shaft Type	Drawing on the counter-output shaft side

*The gear type cannot be drawn to the counter-output shaft side.



With a blind cap
PCM5

With a cable gland
PCM5-C

For details, check the Oriental Motor website or contact the Oriental Motor sales office.

<http://www.orientalmotor.com.sg/>



Safety Precautions

- To ensure correct operation, carefully read the Operating Manual before using it.
- The products listed in this catalogue are for industrial use and for built-in component. Do not use for any other applications.

- The factories which manufacture the products listed in this catalogue have obtained Quality Management Systems ISO9001 and Environment Management Systems ISO14001.
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Orientalmotor

ORIENTAL MOTOR ASIA PACIFIC PTE. LTD.

2 Kaki Bukit Avenue 1, #05-06,
Singapore 417938
TEL: +65-6745-7344 FAX: +65-6745-9405
<http://www.orientalmotor.com.sg/>

ORIENTAL MOTOR (THAILAND) CO., LTD.

Headquarters & Bangkok Office

900, 8th Floor Zone C, Tonson Tower, Ploenchit Road,
Lumpini, Pathumwan, Bangkok 10330 Thailand
TEL: +66-2-251-1871 FAX: +66-2-251-1872

Lamphun Office

238/4 Moo 4, Tambol Ban-Klang,
Amphur Muang, Lamphun 51000 Thailand
TEL: +66-(0)53-582-074 FAX: +66-(0)53-582-076
<http://www.orientalmotor.co.th/>

ORIENTAL MOTOR (INDIA) PVT. LTD.

No.810, 8th Floor, Prestige Meridian-1 No.29,
M.G.Road, Bangalore, 560001, India
TEL: +91-80-41125586 FAX: +91-80-41125588
<http://www.orientalmotor.co.in/>

ORIENTAL MOTOR (MALAYSIA) SDN. BHD.

Headquarters & Kuala Lumpur Office

A-13-1, North Point Offices, Mid Valley City,
No.1 Medan Syed Putra Utara 59200
Kuala Lumpur, Malaysia
TEL: +60-3-22875778 FAX: +60-3-22875528

Penang Office

1-4-14 Krystal Point II, Lebu Bukit Kecil 6, Bayan Lepas,
11900 Penang, Malaysia
TEL: +60-4-6423788 FAX: +60-4-6425788

Customer Support Centre

TEL: For Singapore: 1800-8420280 (Toll Free)
For Malaysia: 1800-806161 (Toll Free)
For Thailand: 1800-888881 (Toll Free)
For India: 1800-1201995 (Toll Free)
For Other Countries: +65-6842-0280

Mail to: support@orientalmotor.com.sg

Japanese Customer Support Centre

TEL: +65-6745-3008
Mail to: j-support@orientalmotor.com.sg

For more information please contact: