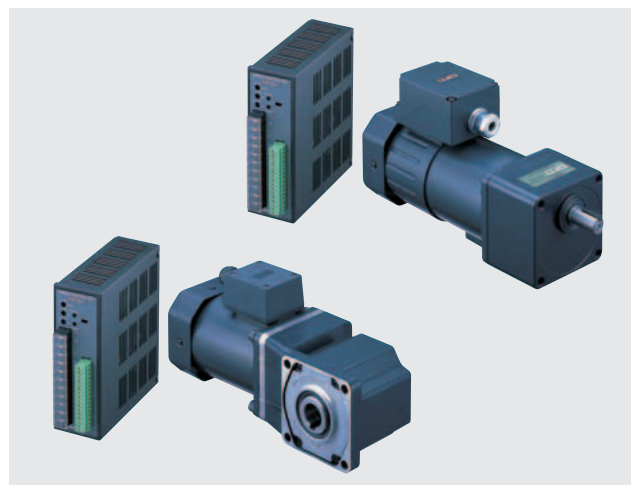


The **BHF** Series consists of a high-power output 200 W AC motor and inverter packages. Each motor comes as a combination type with a gearhead preassembled.

The dedicated inverter has been selected to match the motor specification, so superior speed control can be performed easily. The electromagnetic brake type is also available to provide a perfect unit for vertical operation.



● For detailed product safety standard information including standards, file number and certification body, please visit www.orientalmotor.eu.



Features

● Excellent Speed Stability

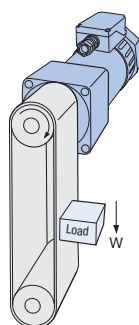
The combination of a dedicated inverter with a motor achieves excellent speed stability with a speed regulation of only $\pm 3\%$. The dedicated inverter has been selected to match the motor specification, so superior speed control can be performed easily without detail adjustments.

● Vertical Operation (Gravitational operation) is Possible

The electromagnetic brake motor enables stable speed control even during vertical operation (gravitational operation). The electromagnetic brake is also automatically controlled by the inverter.

Note

● Regenerated energy generates during vertical operation. Be sure to use a regeneration unit (sold separately).
 Regeneration unit → Page D-168



● Automatic Control of Electromagnetic Brake

The speed control motor and inverter package with an electromagnetic brake allows automatic ON–OFF control of the electromagnetic brake (power off activated type) on the inverter side. There is no need to prepare a separate power supply or program a control sequence.

● Smallest Frame Size among 200 W Class

The **BHF** Series achieves an output of 200 W, the highest power among Oriental Motor's standard AC motors, with the smallest frame size (104 mm square) in that class. This allows for a reduction in the size of your equipment.

● Maximum Extension of 50 m

The wiring distance between the motor and inverter can be extended to a maximum of 50 m. (Please prepare the appropriate cable separately.)

● Full-Range Functionality

Variety of functions such as alarm output, speed monitor output and individual acceleration/deceleration setting. The inverter also has a built-in I/O power supply.

● Wide Product Variations

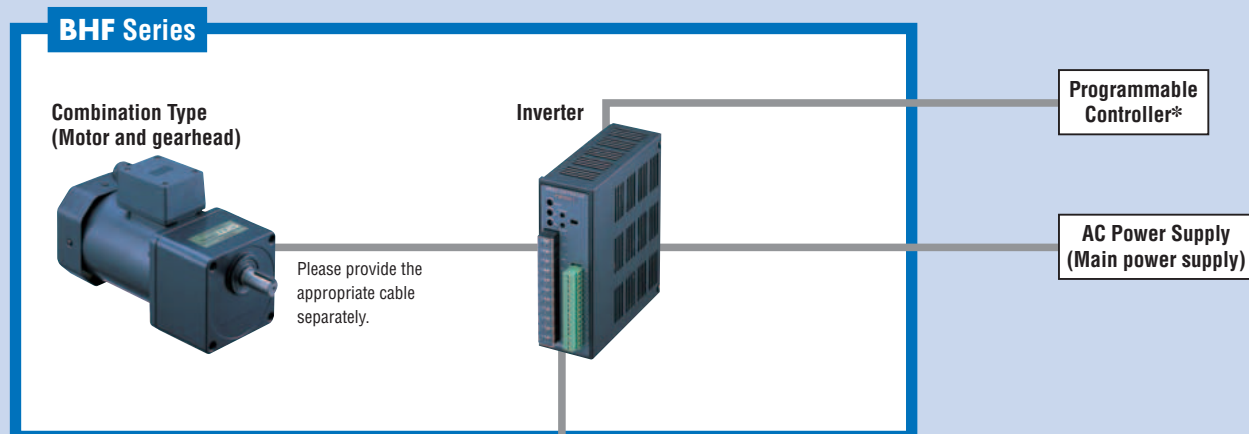
The combination type, which comes with a pre-assembled gearmotor, is available in a right-angle shaft type equipped with a hypoid gear (hollow shaft, solid shaft) and a parallel shaft type. A wide range of gear ratios are available. An electromagnetic brake type is also available.

● Conform to Safety Standards


All packages conform to the UL/CSA Standards, the China Compulsory Certification System (CCC System) and they also have the CE Marking under the Low Voltage Directive and EMC Directive.

System Configuration


*Not supplied




Accessories (Sold separately)




① External Speed Potentiometer
(→ Page D-167)




② DIN Rail Mounting Plate
(→ Page D-168)



③ Regeneration Unit
(→ Page D-168)



④ Mounting Brackets
(→ Page C-240)



⑤ Flexible Couplings
(→ Page C-245)

Number	Name	Overview
①	External Speed Potentiometer	Used to set and adjust the speed of the speed control motor (PAVR-20KZ).
②	DIN Rail Mounting Plate	Use this mounting plate when installing the inverter to a DIN rail (PADPO1).
③	Regeneration Unit	Used to perform vertical operation or drive a large inertia load with an electromagnetic brake type motor (EPRC-400P).
④	Mounting Brackets	Dedicated mounting bracket for the motor and gearhead.
⑤	Flexible Couplings	Clamp type coupling for connecting the motor/gearhead shaft with the driven shaft.

System Configuration Example

BHF Series Combination Type - Parallel Shaft BHF62CT-30	+	Sold Separately			
		External Speed Potentiometer PAVR-20KZ	DIN Rail Mounting Plate PADPO1	Mounting Bracket SOL6M8	Flexible Coupling MCL551818

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

Product Number Code

BHF 6 2 C M T - 100 RH

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

①	Series Name	BHF: BHF Series
②	Motor Frame Size	6: 104 mm
③	Output Power (W)	2: 200 W
④	Power Supply Voltage	A: Single-Phase 100-115 VAC
		C: Single-Phase 200-230 VAC
		S: Three-Phase 200-230 VAC
⑤	Blank: Without Electromagnetic Brake M: Electromagnetic Brake Type	
⑥	T: Terminal Box Type	
⑦	Gear Ratio and Motor Shaft Type	Number: Gear Ratio (Combination type)
		A : Round Shaft Type
⑧	Gearhead Type (Combination type only)	Blank: Parallel Shaft
		RH : Right-Angle Shaft, Hollow Shaft Type
		RA : Right-Angle Shaft, Solid Shaft Type

Product Line

For the single-phase 100-115 VAC and three-phase 200-230 VAC models, please contact the nearest Oriental Motor sales office.

● **Speed Control Motor and Inverter Package (RoHS)**

◇ **Combination Type**

Type	Power Supply Voltage	Product Name	Gear Ratio
Combination Type Right-Angle, Hollow Shaft	Single-Phase 100-115 VAC	BHF62AT-□RH	5, 9, 15, 30, 50, 100, 180
	Single-Phase 200-230 VAC	BHF62CT-□RH	5, 9, 15, 30, 50, 100, 180
	Three-Phase 200-230 VAC	BHF62ST-□RH	5, 9, 15, 30, 50, 100, 180
Combination Type Right-Angle, Solid Shaft	Single-Phase 100-115 VAC	BHF62AT-□RA	5, 9, 15, 30, 50, 100, 180
	Single-Phase 200-230 VAC	BHF62CT-□RA	5, 9, 15, 30, 50, 100, 180
	Three-Phase 200-230 V	BHF62ST-□RA	5, 9, 15, 30, 50, 100, 180
Combination Type Parallel Shaft	Single-Phase 100-115 VAC	BHF62AT-□	3, 5, 9, 15, 30, 50, 100, 180
	Single-Phase 200-230 VAC	BHF62CT-□	3, 5, 9, 15, 30, 50, 100, 180
	Three-Phase 200-230 VAC	BHF62ST-□	3, 5, 9, 15, 30, 50, 100, 180

The following items are included in each product.

Motor, Inverter, Gearhead, Mounting Brackets for Inverter (with screws), Mounting Screws*, Parallel Key, Operating Manual
*Combination type - parallel shaft only

◇ **Round Shaft Type**

Power Supply Voltage	Product Name
Single-Phase 100-115 VAC	BHF62AT-A
Single-Phase 200-230 VAC	BHF62CT-A
Three-Phase 200-230 VAC	BHF62ST-A

The following items are included in each product.

Motor, Inverter, Mounting Brackets for Inverter (with screws), Operating Manual

● **Speed Control Motor with Electromagnetic Brake and Inverter Packages (RoHS)**

◇ **Combination Type**

Type	Power Supply Voltage	Product Name	Gear Ratio
Combination Type Right-Angle, Hollow Shaft	Single-Phase 100-115 VAC	BHF62AMT-□RH	5, 9, 15, 30, 50, 100, 180
	Single-Phase 200-230 VAC	BHF62CMT-□RH	5, 9, 15, 30, 50, 100, 180
	Three-Phase 200-230 VAC	BHF62SMT-□RH	5, 9, 15, 30, 50, 100, 180
Combination Type Right-Angle, Solid Shaft	Single-Phase 100-115 VAC	BHF62AMT-□RA	5, 9, 15, 30, 50, 100, 180
	Single-Phase 200-230 VAC	BHF62CMT-□RA	5, 9, 15, 30, 50, 100, 180
	Three-Phase 200-230 VAC	BHF62SMT-□RA	5, 9, 15, 30, 50, 100, 180
Combination Type Parallel Shaft	Single-Phase 100-115 VAC	BHF62AMT-□	3, 5, 9, 15, 30, 50, 100, 180
	Single-Phase 200-230 VAC	BHF62CMT-□	3, 5, 9, 15, 30, 50, 100, 180
	Three-Phase 200-230 VAC	BHF62SMT-□	3, 5, 9, 15, 30, 50, 100, 180

The following items are included in each product.

Motor, Inverter, Gearhead, Mounting Brackets for Inverter (with screws), Mounting Screws*, Parallel Key, Operating Manual
*Combination type - parallel shaft only

◇ **Round Shaft Type**

Power Supply Voltage	Product Name
Single-Phase 100-115 VAC	BHF62AMT-A
Single-Phase 200-230 VAC	BHF62CMT-A
Three-Phase 200-230 VAC	BHF62SMT-A

The following items are included in each product.

Motor, Inverter, Mounting Brackets for Inverter (with screws), Operating Manual

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

Specifications

Speed Control Motor and Inverter Packages (RoHS)



Product Name	Combination Type		BHF62CT-□RH BHF62CT-□RA BHF62CT-□
	Round Shaft Type		BHF62CT-A
Rated Output Power	W		200
Power Supply Input	Voltage	VAC	Single-Phase 200-230±10%
	Frequency	Hz	50/60
	Rated Current	A	3.1
	Maximum Input Current	A	4.9
Rated Speed	r/min		1500
Rated Torque	N·m		1.27
Starting Torque	N·m		1.27
Permissible Torque	N·m		100~1500 r/min: 1.27, 1800 r/min: 1.07, 2400 r/min: 0.6
Round Shaft Type	J×10 ⁻⁴ kg·m ²		8
Permissible Load Inertia			
Speed Control Range	r/min		100~2400
Speed Regulation	Load		±3% max. (0~Rated Torque, at 1500 r/min)
	Voltage		±3% max. (Power supply voltage ±10%, at 1500 r/min no load)
	Temperature		±3% max. (0~+50°C, at 1500 r/min no load)

- The values for each specification apply to the motor only.
- The motor contains a built-in thermal protector (automatic return type).

Speed Control Motor with Electromagnetic Brake and Inverter Packages (RoHS)



Product Name	Combination Type		BHF62CMT-□RH BHF62CMT-□RA BHF62CMT-□
	Round Shaft Type		BHF62CMT-A
Rated Output Power	W		200
Power Supply Input	Voltage	VAC	Single-Phase 200-230±10%
	Frequency	Hz	50/60
	Rated Current	A	3.1
	Maximum Input Current	A	4.9
Rated Speed	r/min		1500
Rated Torque	N·m		1.27
Starting Torque	N·m		1.27
Permissible Torque	N·m		100~1500 r/min: 1.27, 1800 r/min: 1.07, 2400 r/min: 0.6
Round Shaft Type	J×10 ⁻⁴ kg·m ²		8
Permissible Load Inertia			
Speed Control Range	r/min		100~2400
Speed Regulation	Load		±3% max. (0~Rated Torque, at 1500 r/min)
	Voltage		±3% max. (Power supply voltage ±10%, at 1500 r/min no load)
	Temperature		±3% max. (0~+50°C, at 1500 r/min no load)
Electromagnetic Brake Static Friction Torque	N·m		1.5
Regeneration Operation	Connecting the Regeneration Unit (Accessory), Maximum Output Power 100 W (5 minutes rating)		

- The values for each specification apply to the motor only.
- The motor contains a built-in thermal protector (automatic return type).

Common Specifications

Item	Specifications
Acceleration/Deceleration Time	Approx. 0.1~25 seconds (at 1000 r/min)
Speed Setting Methods	Select one of the following methods. · Internal Speed Potentiometer (1 Piece) · External Speed Potentiometer (20 kΩ 1/4 W) · DC Voltage Control (0~5 VDC)
Input Signals	Photocoupler Input Method Input Resistance 2.3 kΩ Operated with 12 VDC Internal Power Supply Common to CW/CCW, Speed Setting Mode Selection, Deceleration and Alarm reset
Output Signals	Open-Collector Output Method External Use Condition 26.4 VDC 10 mA max. Speed Monitor Output (12 P/R), Alarm Output
Protective Functions	When the following protective functions are activated, the alarm signal output will be OFF and the alarm LED (Red) will blink, then the motor will coast to a stop. · Overload Protection: Activated when the motor load exceeded rated torque for 5 seconds min. · Overvoltage Protection: When gravitational operation is performed or regenerative ability exceeds the permissible value. Activated when the voltage applied to the inverter exceeds 115 VAC or 230 VAC by approximately 30% or more. · Overcurrent Protection: Activated when an excessive current flows through the inverter. · Undervoltage Protection: Activated when the voltage applied to the inverter falls below 100 VAC or 200 VAC by approximately 15% or more. · Circuit Overheat Protection: Activated when the temperature of components inside of the inverter exceeds their reference level. · Motor Disconnect Protection: Activated when the motor cable is improperly connected or disconnected. Activated when the built-in thermal protector of the motor is activated. · EEPROM Data Error: Activated when abnormality was detected in the EEPROM.
Maximum Extension Distance	Distance between Motor and Inverter 50 m
Time Rating	Continuous

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

General Specifications

Item	Motor	Inverter
Insulation Resistance	The measured value is 100 MΩ min. when a 500 VDC megger is applied between the winding and the case after rated operation under normal ambient temperature and humidity.	The measured value is 100 MΩ min. when a 500 VDC megger is applied between power supply input terminal and the protective earth terminal, and between the power supply input terminal and I/O terminal after rated operation under normal ambient temperature and humidity.
Dielectric Strength	No abnormality is judged even with application of 1.5 kVAC at 50 Hz or 60 Hz between the windings and the case for 1 minute after rated 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 input terminal and the protective earth terminal and with application of 3 kVAC at 50 Hz and 60 Hz between the power supply terminal and the I/O terminal for 1 minute after rated operation under normal ambient temperature and humidity.
Temperature Rise	A gearhead or heat radiation plate* is connected and the winding temperature rise is measured at 70°C max. using the resistance change method after rated operation under normal ambient temperature and humidity.	—
Operating Temperature Range	-10~+40°C (non-freezing)	0~+50°C (non-freezing)
Operating Humidity Range	85% max. (non-condensing)	85% max. (non-condensing)
Thermal Class	130 (B)	—
Degree of Protection	IP54 (Excluding the installation surface of the round shaft type)	IP10

*Heat Radiation Plate Size: 230×230 mm, 5 mm thick (Material: Aluminum)

Gearmotor – Torque Table of Combination Type

Right-Angle Shaft

Unit = N·m

Product Name	Gear Ratio	5	9	15	30	50	100	180
		Motor Speed [r/min]	100 r/min	20	11	6.7	3.3	2
BHF62CT-□RH/RA, BHF62CMT-□RH/RA	1500 r/min	300	167	100	50	30	15	8.3
	1800 r/min	360	200	120	60	36	18	10
	2400 r/min	480	267	160	80	48	24	13
	At 100~1500 r/min	4.6	8.3	13.9	27.8	40.0	54.5	60
BHF62CT-□, BHF62CMT-□	At 1800 r/min	3.9	7.0	11.7	23.4	37.0	50.5	60
	At 2400 r/min	2.2	3.9	6.6	13.1	21.9	43.8	56

● The rotation direction on the output shaft of gearhead is the opposite of the motor shaft rotation.

Parallel Shaft

Unit = N·m

Product Name	Gear Ratio	3	5	9	15	30	50	100	180
		Motor Speed [r/min]	100 r/min	33	20	11	6.7	3.3	2
BHF62CT-□, BHF62CMT-□	1500 r/min	500	300	167	100	50	30	15	8.3
	1800 r/min	600	360	200	120	60	36	18	10
	2400 r/min	800	480	267	160	80	48	24	13
	At 100~1500 r/min	3.4	5.7	10.3	16.4	32.8	40	40	40
BHF62CT-□, BHF62CMT-□	At 1800 r/min	2.9	4.8	8.7	13.8	27.6	40	40	40
	At 2400 r/min	1.6	2.7	4.9	7.7	15.5	24.3	40	40

● A colored background indicates gearhead output shaft rotation in the same direction as the motor. Others indicate the opposite direction.

Permissible Overhung Load and Permissible Thrust Load for the Combination Type

Product Name	Gear Ratio	Permissible Overhung Load*		Permissible Thrust Load N
		10 mm from Shaft End N	20 mm from Shaft End N	
BHF62CT-□RH BHF62CMT-□RH	5~30 50~180	1200* 2200*	1100* 2000*	300
BHF62CT-□RA BHF62CMT-□RA	5~30 50~180	900 1700	1000 1850	300
BHF62CT-□ BHF62CMT-□	3~30 50~180	550 650	800 1000	200

*With the hollow shaft type, the permissible overhung load depends on the distance measured from the flange-installation surface.

● Permissible overhung load and permissible thrust load of round shaft type → Page C-16

Permissible Load Inertia: J of Combination Type

Unit = ×10⁻⁴ kg·m²

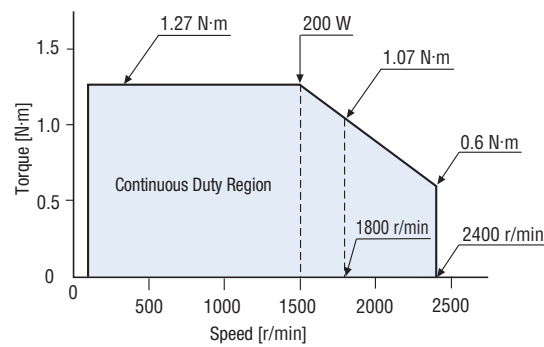
Product Name	Gear Ratio	3	5	9	15	30	50	100	180
BHF62CT-□RH, -□RA BHF62CMT-□RH, -□RA	—	50	162	450	1800	5000	5000	5000	5000
BHF62CT-□ BHF62CMT-□	18	50	162	450	1800	5000	5000	5000	5000

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

Speed – Torque Characteristics

The characteristics are applicable for the motors only.
 Continuous Duty Region: This refers to the region where a motor can be operated continuously.

Common to All Types



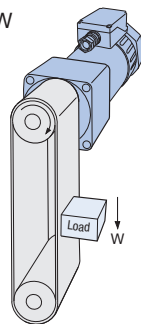
Vertical Operation (Gravitational operation)

The **BHF** Series achieves stable speed control during gravitational operation.

During vertical drive (gravitational operation) shown in the figure below, normally an external force causes the motor to rotate and function as a power generator. If this energy is applied to the inverter, an abnormality will occur.

The accessory regeneration unit (sold separately) can convert regenerative energy into thermal energy for dissipation. Use the regeneration unit **EPRC-400P** (accessory, sold separately) when using the motor for vertical drive applications or when braking a big inertial load quickly. **EPRC-400P** → Page D-168

Regenerative Power 100 W (Continuous 5 minutes rating)
 Instantaneous Regenerative Power 300 W



Regenerative Power

The regenerative power can be estimated using the formula below.
 Use the calculated value as a guideline.

$$\text{Regenerative Power (W)} = 0.1047 \times T_L \text{ [N·m]} \times N \text{ [r/min]}$$

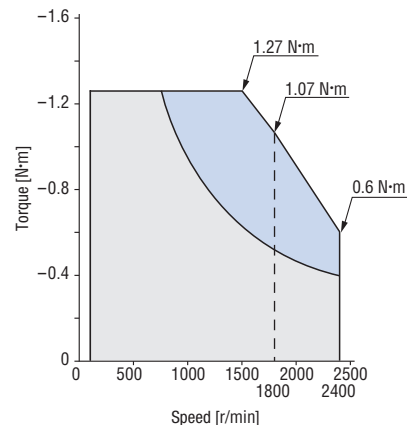
T_L : Load Torque N : Speed

● Use the electromagnetic brake type for gravitational operation.

Mounting Method for Right Angle, Hollow Shaft Types

→ Page C-220

Gravitational Operation Capability



Use the time shown below as a guideline when performing continuous gravitational operation:

Light Blue: Operating area in which regenerative power is 100 W max.
 Allowable Time for Continuous Gravitational Operation: 1 minute, 30% ED*

Dark Blue: Operating area in which regenerative power exceeds 100 W

Allowable Time for Continuous Gravitational Operation: 1 minute, 20% ED*
 *30% ED and 20% ED indicate the percentage of the gravitational operation time and stopping time.

Example: 1 minute 30% ED

Operation: 1 minute, Stop: 2 minutes 20 seconds

Dimensions (Unit = mm)

- Mounting screws are included with the combination type - parallel shaft. Dimensions for mounting screws → Page C-254
- A number indicating the gear ratio is entered where the box □ is located within the product name.

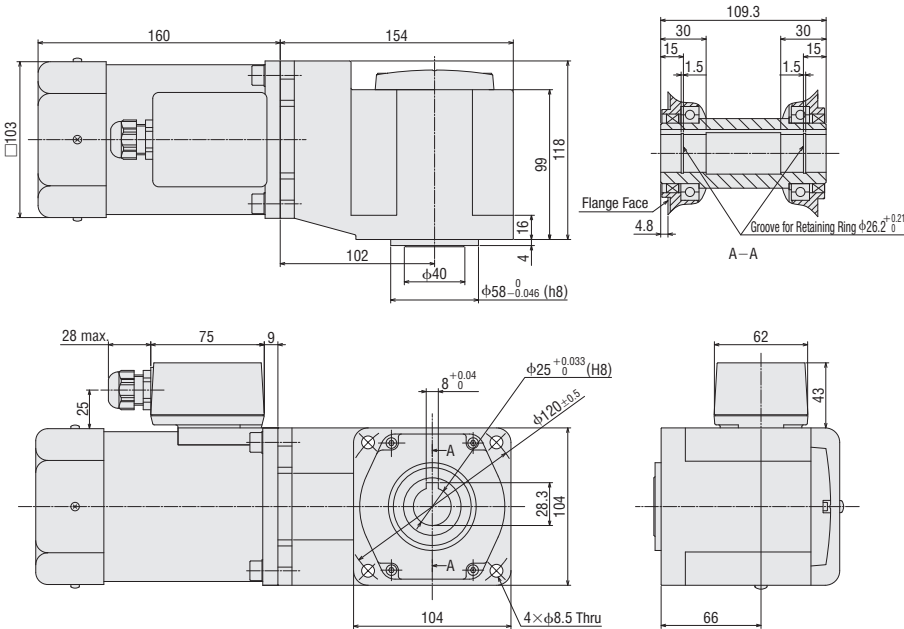
● Speed Control Motor and Inverter Package

◇ Combination Type – Right-Angle Shaft, Hollow Shaft

BHF62CT-□RH

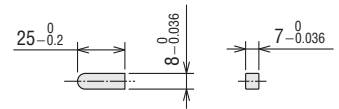
Motor: BHM62T-G2 Gearhead: BH6G2-□RH

Mass: 10.0 kg



- Applicable cable diameter is φ6 to φ12.
- Details of terminal box → Page C-255

◇ Key (Included)

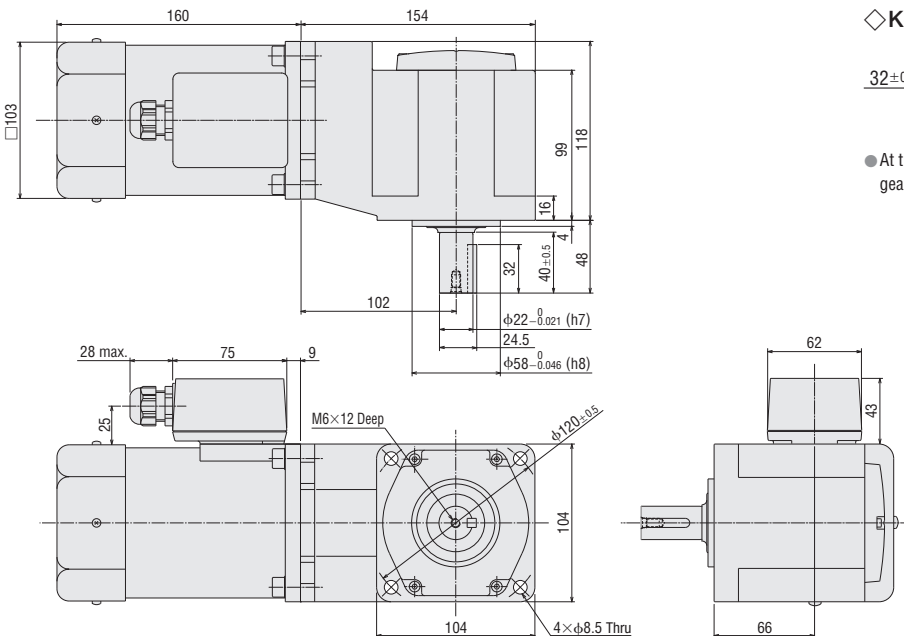


◇ Combination Type – Right-Angle Shaft, Solid Shaft

BHF62CT-□RA

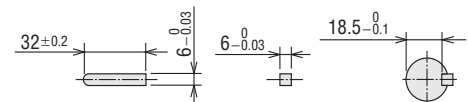
Motor: BHM62T-G2 Gearhead: BH6G2-□RA

Mass: 10.0 kg



- Applicable cable diameter is φ6 to φ12.
- Details of terminal box → Page C-255

◇ Key and Key Slot (Included)



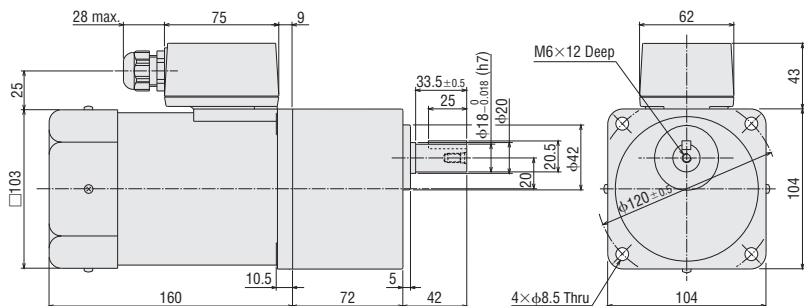
- At the time of shipment, a key is inserted on the key slot of the gearhead shaft.

◇ Combination Type – Parallel Shaft

BHF62CT-□

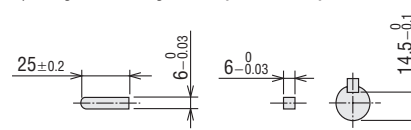
Motor: BHM62T-G2 Gearhead: BH6G2-□

Mass: 8.0 kg



- Applicable cable diameter is $\phi 6$ to $\phi 12$.
- Details of terminal box → Page C-255

◇ Key and Key Slot (Included)



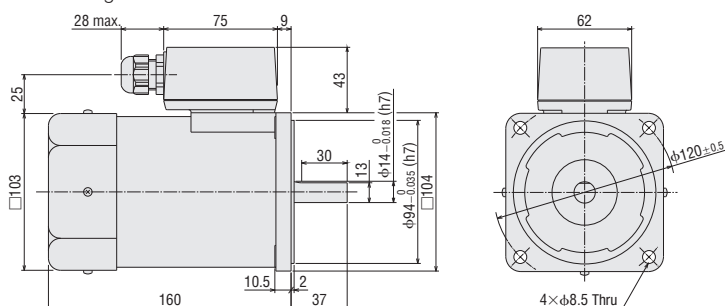
- At the time of shipment, a key is inserted on the key slot of the gearhead shaft.

◇ Round Shaft Type

BHF62CT-A

Motor: BHM62T-A

Mass: 5.0 kg



- Applicable cable diameter is $\phi 6$ to $\phi 12$.
- Details of terminal box → Page C-255

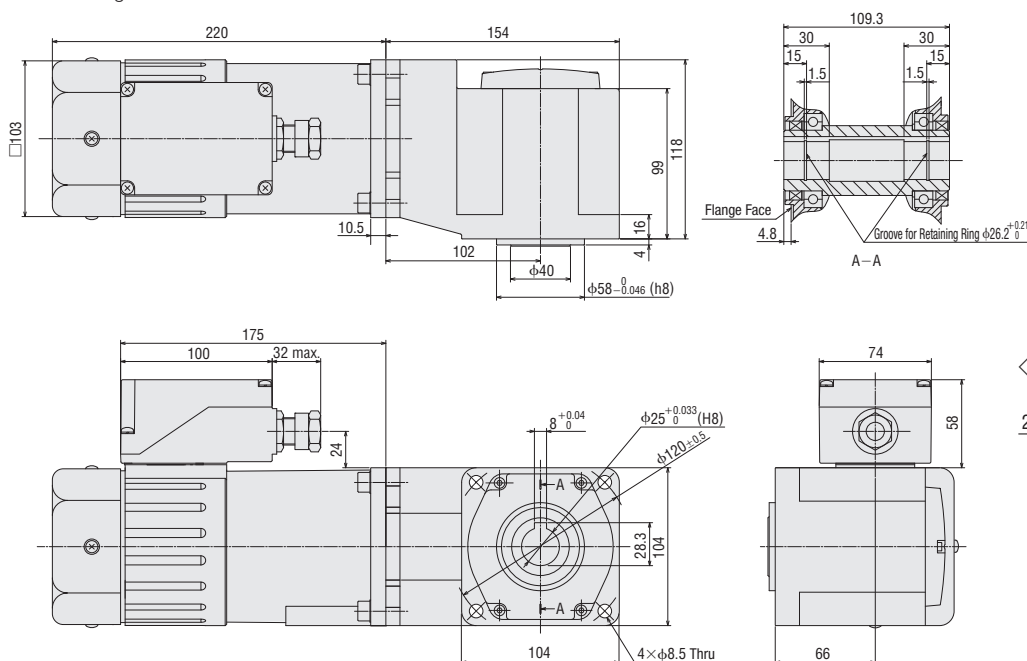
● Electromagnetic Brake Speed Control Motor and Inverter Package

◇ Combination Type – Right-Angle Shaft, Hollow Shaft

BHF62CMT-□RH

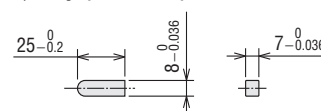
Motor: BHM62MT-G2 Gearhead: BH6G2-□RH

Mass: 11.5 kg



- Applicable cable diameter is $\phi 8$ to $\phi 12$ mm.
- Details of terminal box → Page C-255

◇ Key (Included)

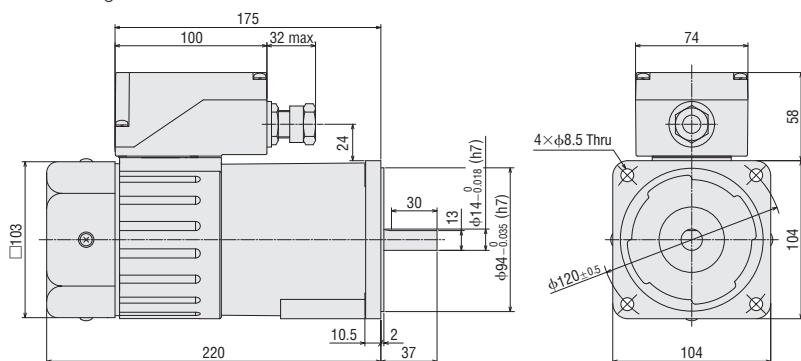


◇ Round Shaft Type

BHF62CMT-A

Motor: BHM62MT-A

Mass: 6.5 kg

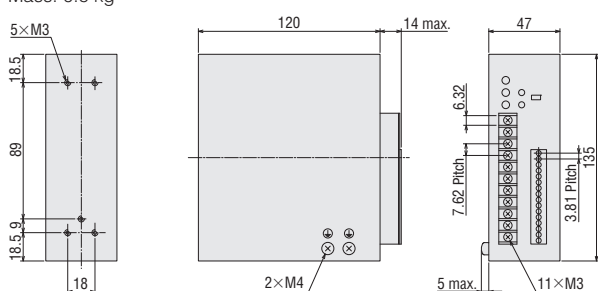


- Applicable cable diameter is φ8 to φ12 mm.
- Details of terminal box → Page C-255

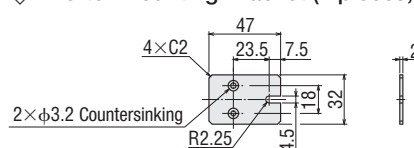
◇ Inverter

FSP200-2

Mass: 0.6 kg

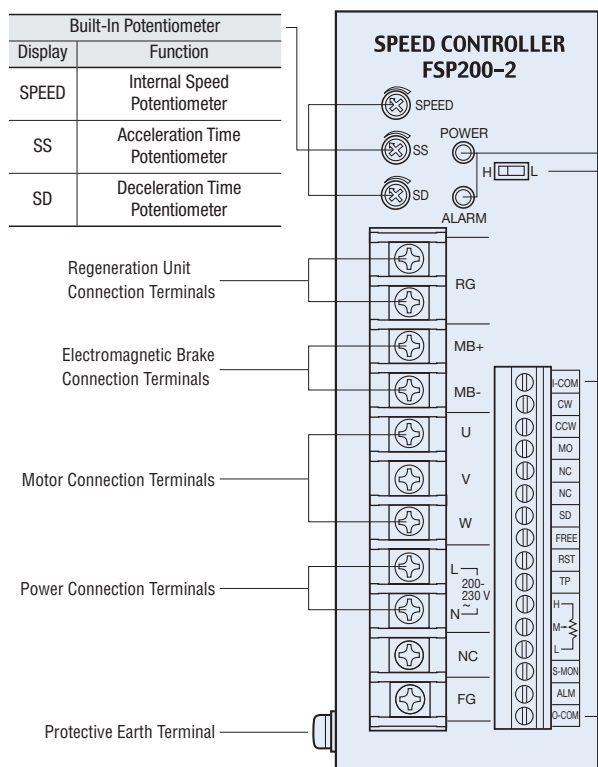


◇ Inverter Mounting Bracket (2 pieces, included)



■ Connection and Operation

● Names and Functions of Inverter Parts



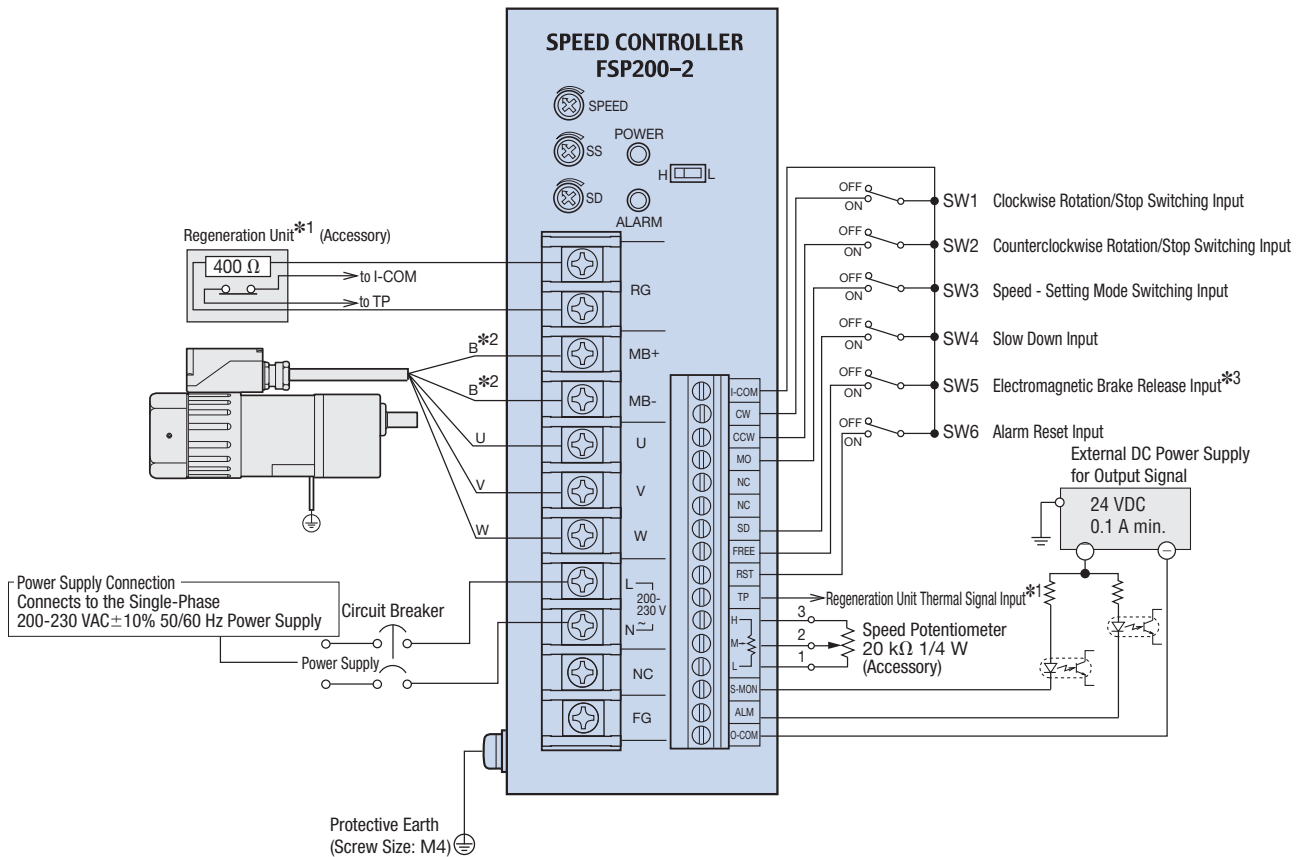
LED Indicator		
Display	Function	Lighting Condition
POWER	Power Input Indicator	When the power supply is input
ALARM	Alarm Output Indicator	When protective function is activated

Switch
Set the switch to "H" if the cable between the motor and inverter is 10 m or less in length. Set it to "L" if the cable length is 10 m or more.

I/O Signal Terminals		
Name	Signal Name	Function and Application
I-COM	Ground Terminal for Input Signals	Ground terminal for input signals
CW	Clockwise Rotation Input	Clockwise direction/stop switching input signal
CCW	Counterclockwise Rotation Input	Counterclockwise rotation/stop input signal
MO	Speed Potentiometer Switching Input	Switching input signal of internal/external speed potentiometer
NC	—	No connection
NC	—	No connection
SD	Slow Down Input	Instantaneous stop/deceleration stop selection input
FREE	Electromagnetic Brake Release Input	Electromagnetic brake releases/locks switching input signal
RST	Alarm-Reset Input	This input functions as the Alarm-Reset input when a speed controller protective function is activated.
TP	Regeneration Unit Thermal Signal Input	This input is used to connect the lead wire of the regeneration unit's built-in thermal protector.
H, M, L	Speed Setting Input	Used when setting the speed by an external speed potentiometer or external DC voltage without internal speed potentiometer.
S-MON	Speed Monitor Output	Used when monitoring the motor speed. 12 pulses are output per each motor rotation of the motor shaft.
ALM	Alarm Output	This signal outputs "OFF" when a protective function has been activated and the motor is stopped.
O-COM	Ground Terminal for Output Signals	Ground terminal for output signals

● Connection Diagrams

◇ Single-Phase 200-230 VAC



- *1 This should be connected only when using a regeneration unit.
- *2 This should be connected only for speed control motor and inverter packages with an electromagnetic brake.
- *3 The electromagnetic brake release input can be used only with speed control motor and inverter packages with an electromagnetic brake.

Note

- When wiring the motor and the inverter, keep a distance of 50 m or less. If the wiring between the motor and inverter needs to be extended by 10 m or more, use a PE (polyethylene) insulated electric wire of AWG16 (1.25 mm²) or more. Do not connect more than one cable or allow the overall wiring length to reach 50 m or more. This may cause a malfunction.
- With the electromagnetic brake type, setting the extension length too long causes the operation time lag of the electromagnetic brake (by approx. 100 ms at an extension length of 50 m). To minimize the delay time, use separate cables for the electromagnetic brake cable and motor cable.
- Signal wires and motor cable should be kept away from noise-generating devices, power cables and other sources of magnetic noise.
- Place the terminal cover after connecting each cable to the terminal block.

◇ Connecting the Motor and Inverter

A motor cable is not supplied with the product. Please provide the appropriate cable.

● Motor Connection

[Applicable Lead Wire]

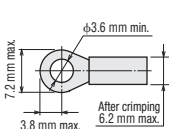
AWG18 (0.75 mm²) min.

[Applicable Crimp Terminals]

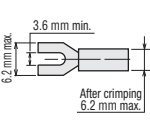
Use a crimp terminal for the electromagnetic brake type.

● Terminal Block

Insulated Round Terminal

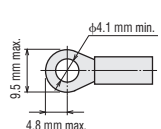


Insulated Fork Terminal



● Protective Earth Terminal

Insulated Round Terminal



● Inverter Connection

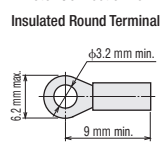
[Applicable Lead Wire]

AWG18 (0.75 mm²) min.

[Applicable Crimp Terminal]

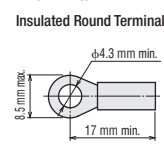
● Power-Supply Input Terminal, Motor Connection Terminal

Insulated Round Terminal



● Protective Earth Terminal

Insulated Round Terminal



I/O Signal Terminal

Use the terminals specified below for connection using crimp terminals.

[Manufacturer: PHOENIX CONTACT GmbH & Co. KG]

AI 0.25-6

Applicable Wire Size: AWG24 (0.2 mm²)

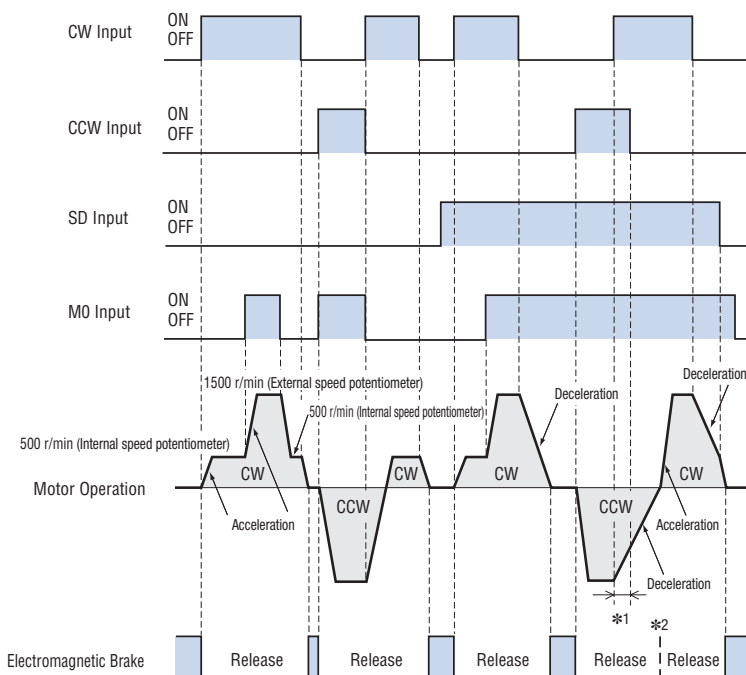
AI 0.34-6

Applicable Wire Size: AWG22 (0.3 mm²)

AI 0.5-6

Applicable Wire Size: AWG20 (0.5 mm²)

Timing Chart



- *1 If the CW input and CCW input are turned "ON" simultaneously, the motor will stop.
- *2 The electromagnetic brake may be left released when the motor runs and/or stops in a short cycle or a shorter time is set for the acceleration/deceleration time.

- The CW input signal, CCW input signal, M0 input signal and SD input signal can be used to control all motor operations, such as run, stop, rotation direction switching, and speed switching.
- When the CW input is turned ON, the motor rotates in the clockwise direction as viewed from the output shaft of the motor. Switching each signal OFF will stop the motor. When the CCW input is turned ON, the motor rotates in the counterclockwise direction as viewed from the output shaft of the motor. Switching each signal OFF will stop the motor. The motor will start at the rise time corresponding to the time set on the acceleration time potentiometer.
- Switching the M0 input ON selects the speed set on the external speed potentiometer. Switching the M0 input OFF will cause the motor to operate at the setting speed on the internal speed potentiometer. The timing chart shown on the left is based on an internal speed potentiometer setting of 500 r/min and an external speed potentiometer setting of 1500 r/min.
- If the motor is stopped with the SD input switched ON, the motor stops at the time set by the deceleration time potentiometer.
- To release the electromagnetic brake when the motor is stopped, turn the FREE (electromagnetic brake release) input ON. This releases the electromagnetic brake and allows the output shaft of the motor to turn freely (only for speed control motor and inverter packages with electromagnetic brakes).

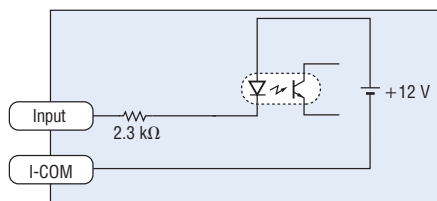
Note

- Ensure that the motor case temperature is 90°C or less.

I/O Signal Circuits

Input Signal Circuit

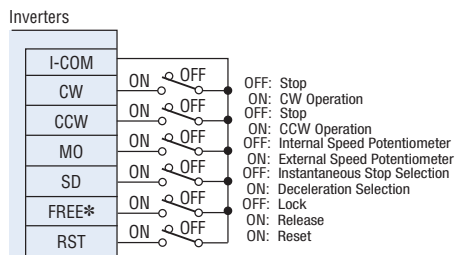
Common to CW, CCW, SLOW DOWN, FREE* and RST inputs.



- *The FREE function is available only for the speed control motor and inverter packages with an electromagnetic brake.

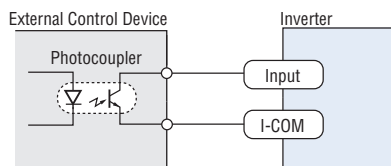
Connection Examples for Input Signals

Controlled by Small Capacity Relays



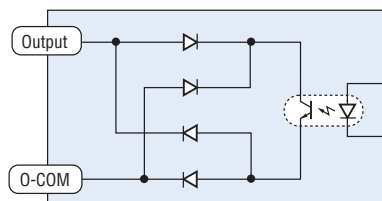
- Use a small capacity contact point type relay capable of switching 24 VDC, 5 mA.
- *The FREE function is available only for the speed control motor and inverter packages with an electromagnetic brake.

Electronic Input Control

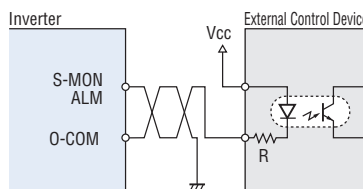


Output Signal Circuit

Common to S-MON and ALM outputs



Connection Example for Output Signals



Since the output signal is open-collector output, an external power supply (Vcc) is required. Use an external power supply of 26.4 VDC or less and connect a limiting resistor (R) so that the output current does not exceed 10 mA. When using neither the speed monitor output function nor the alarm output function, this connection is not required.

Speed Monitor Output: Pulse signals are output at a rate of 12 pulses per 1 rotation (50% pulse duty) of the motor shaft. (The commands supplied to the motor from the inverter will be output. The motor shaft speed is not output.)

$$\text{Motor Speed} = \frac{\text{Speed Output Frequency [Hz]}}{12} \times 60 \text{ [r/min]}$$

Alarm Output: This signal is output when a protective function for overload, circuit overheat, overvoltage, undervoltage, overcurrent, motor disconnection or EEPROM data error has been activated. When an alarm signal is output, this output is turned to OFF between the ALARM OUT – GND terminals.

● Methods of Speed Setting and Connections

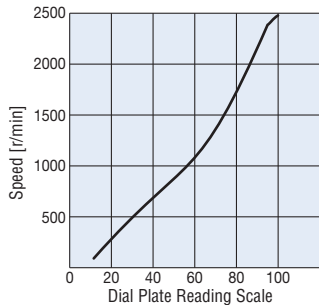
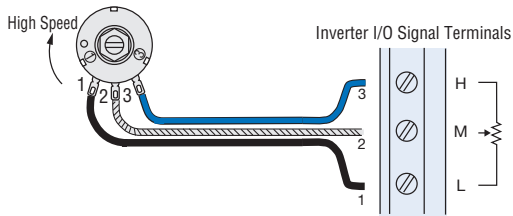
◇ Internal Speed Potentiometer

The internal speed potentiometer is selected when the M0 (speed setting switching input) is set to OFF. Turning the internal speed potentiometer clockwise sets a faster speed, while turning it counterclockwise brings the motor to a stop.

◇ External Speed Potentiometer (Sold separately)

The external speed potentiometer can be used when the M0 (speed setting switching input) is set to ON. When the accessory external speed potentiometer is used, connect it as illustrated below. Turning the external speed potentiometer clockwise sets a faster speed.

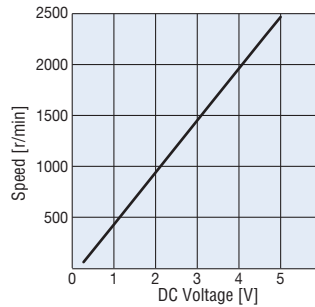
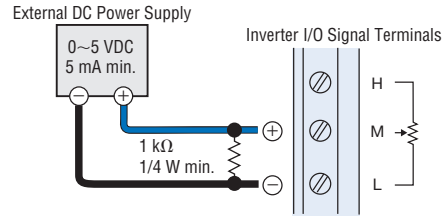
External Speed Potentiometer



External Speed Potentiometer Scale - Speed Characteristics (Representative values)

◇ External DC Voltage

External DC voltage can be used when the M0 (speed setting switching input) is set to ON. When setting the motor speed with an external DC voltage, connect the DC power supply as follows. Raising the DC voltage sets a faster speed.



DC voltage - Speed Characteristics (Representative values)

■ Motor and Inverter Combinations

Product names for motor, gearhead and inverter combinations are shown below.

● Speed Control Motor and Inverter Packages

◇ Combination Types

Product Name	Motor Product Name	Gearhead Product Name	Inverter Product Name
BHF62CT-□RH	BHM62T-G2	BH6G2-□RH	FSP200-2
BHF62CT-□RA		BH6G2-□RA	
BHF62CT-□		BH6G2-□	

◇ Round Shaft Types

Product Name	Motor Product Name	Inverter Product Name
BHF62CT-A	BHM62T-A	FSP200-2

● Electromagnetic Brake Speed Control Motor and Inverter Packages

◇ Combination Types

Product Name	Motor Product Name	Gearhead Product Name	Inverter Product Name
BHF62CMT-□RH	BHM62MT-G2	BH6G2-□RH	FSP200-2
BHF62CMT-□RA		BH6G2-□RA	
BHF62CMT-□		BH6G2-□	

◇ Round Shaft Types

Product Name	Motor Product Name	Inverter Product Name
BHF62CMT-A	BHM62MT-A	FSP200-2

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