

# B1-G

Brushless Motor

Compatible with PANATERM® for BL

# B1G

Speed Control

# series

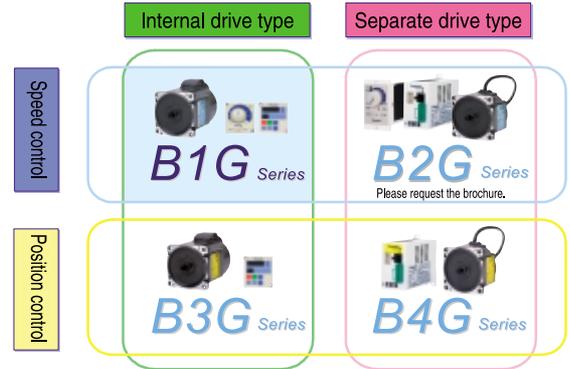


### Features

#### Great space saver

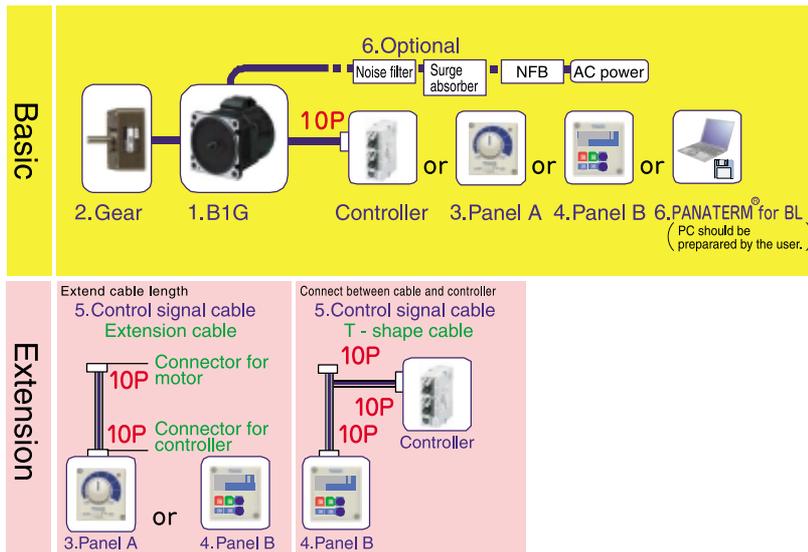
- ✓ **Space saving with internal drive**
- ✓ **Wide speed control range with stable torque**  
(30 to 3000 rpm)
- ✓ **Smooth run with sine wave drive**  
(Low noise, Low vibration)
- ✓ **Fitting face is same as our geared motor**
- ✓ **Compatible with setup support software PANATERM® for BL**  
For operation monitoring by graphic waveform displays and setting/editing of parameters (e.g. acceleration/deceleration time)
- ✓ **Power voltage : Single phase 100-120 & 200-240V**
- ✓ **CE/UL rated & IP65 rated**

#### Product positioning (B1G)

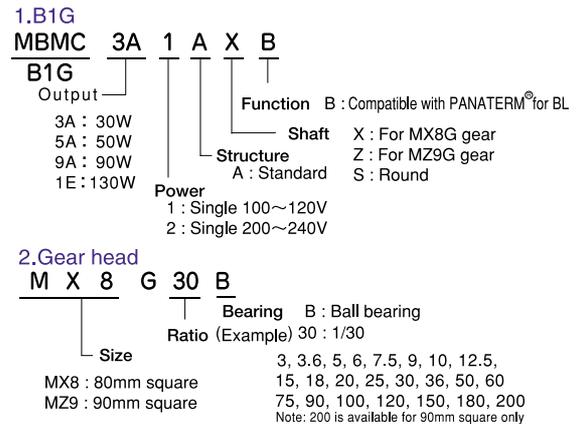


### System configuration

#### 1. System configuration



#### 2. Model number



**3.Panel A**  
DV0P3500

**4.Panel B**  
DV0P3510

#### 5. Control signal cable

**Extension cable**

DV0P35910 : 1m 10 Pins  
DV0P35930 : 3m 10 Pins  
DV0P35950 : 5m 10 Pins

**T - shape cable**

DV0P37505 : 0.5m 10 Pins to 10 Pins, 10 Pins

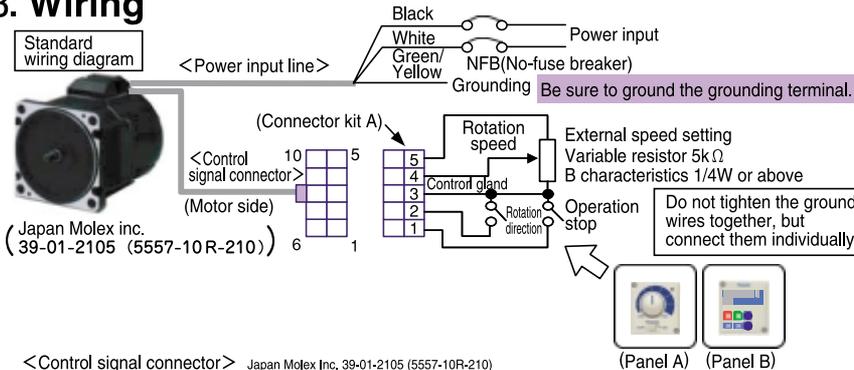
#### connector kit

DV0P3600 : Motor 10 Pins  
DV0P3610 : Connector 10 Pins

#### 6. Optional

DV0P4150 : PANATERM® for BL (communication software): Japanese version  
DV0P4270 : PANATERM® for BL (communication software): English version  
DV0P4386 : PANATERM® for BL (communication software): European version (except UK)  
DV0P4140 : 1.5m PC connection cable  
DV0P1450 : Surge absorber  
DV0P3611-5 : Noise filter

#### 3. Wiring



<Control signal connector> Japan Molex Inc. 39-01-2105 (5557-10R-210)

| Terminal number | Terminal symbol | Terminal name                       | Description of function  | Wire color    |
|-----------------|-----------------|-------------------------------------|--|---------------|
| 1               | I1 ※1           | Operation instruction input         | Motor runs when "I1" and "GND" are shorted, and stops when they are opened.  | Brown         |
| 2               | I2 ※1           | Rotation speed changeover input     | CW operation when "I2" and "GND" are shorted, and CCW operation when they are opened. ※2   | Red           |
| 3               | GND             | Control ground                      | Common ground terminal for control signal. ※3  | Orange        |
| 4               | FIN             | Analog speed command input          | Speed can be by applying voltage DC0-5V. Input impedance 100kΩ.  | Yellow        |
| 5               | +5V             | External speed setting power supply | Power output dedicated when connecting an external variable resistor (5kΩ, B characteristics) to FIN input (Cannot be used for any other purpose.) | Green         |
| 6               | O1 ※1           | Trip output                         | Trip signal output. ※1 "L" in trip (Contact ON) Open collector Vce max : DC30V, Ic max : 50mA  | Blue          |
| 7               | SCK             | Digital key pad I/F                 | Interface for digital key pad  | Purple (Pink) |
| 8               | SIN             |                                     |  | Gray          |
| 9               | SOT             |                                     |  | White         |
| 10              | (N/A)           | -                                   | (Do not connect anything.)   | Black         |

- ※1 Function of input/output can be changed by the Digital key pad. Default is shown.
  - ※2 Rotation direction is that on motor shaft. When gear head is incorporated, the rotation direction of motor and that of gear output shaft are reversed for some gear reduction ratio. See the allowable shaft torque table on page 8. (CW: Rotation clockwise when seen from the motor shaft, CCW: Rotation counterclockwise when see from the motor shaft)
  - ※3 When resistor, and control GND are disconnected in use of external variable resistor, 5V is input to FIN irrespective of setting of variable resistor, and upper speed limit is directed; therefore use caution enough for connecting GND.
- See the optional connector kit A (DV0P3600) for compatible connector.  
In extending the control signal wire, keep it below 5m long, and use wire rod above AWG26 (0.12mm<sup>2</sup>).

# ● Specification

## ● Specification

| Model number |             | Output (W) | Input power    |           |        |             | Rated torque (N·m) | Start torque (N·m) | Rated speed (r/min) |
|--------------|-------------|------------|----------------|-----------|--------|-------------|--------------------|--------------------|---------------------|
| Geared shaft | Round shaft |            | Voltage AC (V) | Error (%) | f (Hz) | Current (A) |                    |                    |                     |
| MBMC3A1AXB   | MBMC3A1ASB  | 30         | Single 100~120 | ±10       | 50/60  | 1.0         | 0.095              | 0.14               | 3000                |
| MBMC3A2AXB   | MBMC3A2ASB  |            | Single 200~240 |           |        | 0.6         |                    |                    |                     |
| MBMC5A1AXB   | MBMC5A1ASB  | 50         | Single 100~120 |           |        | 1.5         | 0.16               | 0.24               |                     |
| MBMC5A2AXB   | MBMC5A2ASB  |            | Single 200~240 |           |        | 0.7         |                    |                    |                     |
| MBMC9A1AZB   | MBMC9A1ASB  | 90         | Single 100~120 |           |        | 2.0         | 0.29               | 0.43               |                     |
| MBMC9A2AZB   | MBMC9A2ASB  |            | Single 200~240 |           |        | 1.1         |                    |                    |                     |
| MBMC1E2AZB   | MBMC1E2ASB  | 130        | Single 200~240 | 1.5       | 0.41   | 0.62        |                    |                    |                     |

## ● Common specification

| Item                            | Description  |   |            |   |
|---------------------------------|--|---|------------|---|
| Model number                    | MBMC3A****   | MBMC5A****  | MBMC9A**** | MBMC1E****                              |
| Rated output(W)                 | 30   | 50  | 90         | 130                                     |
| Control speed                   | 30~3000 r/min (Speed ratio 1:100)  |   |            |   |
| Speed fluctuation               | Load   | ±1% or less (Rated speed & 0 to rated torque)         |            |   |
|                                 | Voltage  | ±1% or less (Power source voltage ±10% & Rated speed) |            |   |
|                                 | Temperature  | ±1% or less (-10~40°C & Rated speed)                  |            |   |
| Accel/Decel time                | 0.3 seconds (Time from to 1000 r/min)※   |   |            |   |
| Stop method                     | Free run & Stop※   |   |            |   |
| Speed setting                   | 0~3000 r/min (Analogue voltage (0~5V), Set by Panel A or Panel B)  |   |            |   |
| Accuracy of set speed (At 20°C) | Analogue : ±3% or less of upper limit speed (±90 r/min or less when upper limit is 3000r/min)<br>[Digital : 1% or less of upper limit speed]   |   |            |   |
| Protective function             | Under-voltage warning※ (Under-voltage protection※), Over-load, Over-current, Regenerative over-voltage, Parameter error, CPU error, Over-speed, Sensor error, Over-heat  |   |            |   |
| Insulation level                | 1 3 0 (B) (UL certified 1 0 5 (A))   |   |            |   |
| Rated time                      | Continuous   |   |            | 30 minutes or Continuous at 80% loading |
|                                 | (Do not run motor continuously with force from outside such as winding it down; No continuous regenerative operation.)   |   |            |   |
| Overload warning level          | 100%   |   |            | 80%                                     |
| Time limit at overload          | 60 seconds at 150% loading   |   |            |   |
| IP rating                       | Motor is IP65 rated, excluding foot of shaft and end of lead wires EN standard(EN60529,EN60034-5)<br>Not suitable to application where motor is exposed to or in water for long.<br>Panel A and Panel B is IP20 rated. |   |            |   |
| Mass (kg)                       | 1.1  | 1.3   | 2.3        | 2.3                                     |

※ Can be set by Panel B.

## ● Acceptable torque with gear (N·m)

| Model#               | ratio | 3    | 3.6  | 5    | 6    | 7.5  | 9    | 10   | 12.5 | 15   | 18   | 20   | 25   | 30   | 36   | 50   | 60   | 75   | 90   | 100  | 120  | 150  | 180  | 200  |
|----------------------|-------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| MBMC3A□AXB<br>MX8G□B |       | 0.23 | 0.28 | 0.38 | 0.46 | 0.58 | 0.69 | 0.77 | 0.96 | 1.15 | 1.39 | 1.55 | 1.93 | 2.16 | 2.60 | 3.55 | 4.36 | 5.43 | 6.45 | 6.99 | 7.84 | 7.84 | 7.84 | —    |
| MBMC5A□AXB<br>MX8G□B |       | 0.39 | 0.46 | 0.64 | 0.77 | 0.96 | 1.16 | 1.29 | 1.61 | 1.92 | 2.33 | 2.59 | 3.23 | 3.61 | 4.33 | 5.93 | 7.29 | 7.84 | 7.84 | 7.84 | 7.84 | 7.84 | 7.84 | —    |
| MBMC9A□AZB<br>MZ9G□B |       | 0.67 | 0.81 | 1.12 | 1.34 | 1.69 | 2.02 | 2.28 | 2.54 | 3.06 | 3.72 | 4.11 | 5.27 | 6.22 | 6.96 | 9.81 | 11.7 | 14.7 | 17.3 | 19.0 | 19.6 | 19.6 | 19.6 | 19.6 |
| MBMC1E□AZB<br>MZ9G□B |       | 1.01 | 1.21 | 1.69 | 2.02 | 2.54 | 3.04 | 3.42 | 3.82 | 4.59 | 5.58 | 6.17 | 7.91 | 9.34 | 10.5 | 14.7 | 17.5 | 19.6 | 19.6 | 19.6 | 19.6 | 19.6 | 19.6 | 19.6 |

※ At □, shaft of gear head runs in same way as motor runs.

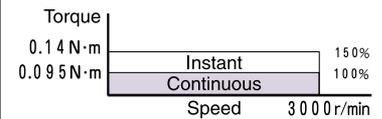
## ● Acceptable load inertia moment (×10<sup>-4</sup>kg·m<sup>2</sup>)

Acceleration/Deceleration time is 0.3 seconds.

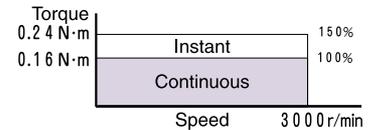
| Model#                             | ratio | 3    | 3.6  | 5    | 6    | 7.5  | 9    | 10   | 12.5 | 15   | 18   | 20   | 25   | 30  | 36  | 50   | 60   | 75   | 90   | 100  | 120  | 150  | 180  | 200  | No gear |
|------------------------------------|-------|------|------|------|------|------|------|------|------|------|------|------|------|-----|-----|------|------|------|------|------|------|------|------|------|---------|
| MBMC3A□AXB<br>MBMC5A□AXB<br>MX8G□B |       | 1.25 | 1.79 | 3.42 | 4.90 | 7.72 | 11.2 | 13.8 | 21.6 | 30.6 | 45.2 | 55.8 | 86.9 | 127 | 183 | 342  | 342  | 342  | 342  | 342  | 342  | 342  | 342  | —    | 2.5     |
| MBMC9A□AZB<br>MBMC1E□AZB<br>MZ9G□B |       | 5.93 | 8.47 | 16.4 | 23.6 | 37.3 | 53.4 | 67.6 | 98.3 | 142  | 211  | 257  | 423  | 589 | 847 | 1684 | 1684 | 1684 | 1684 | 1684 | 1684 | 1684 | 1684 | 1684 | 5.6     |

## ● Speed-Torque

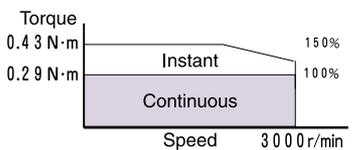
MBMC3A1AXB/MBMC3A1ASB  
MBMC3A2AXB/MBMC3A2ASB



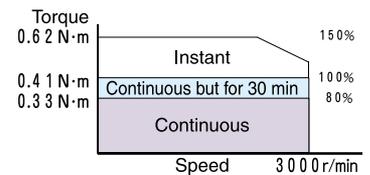
MBMC5A1AXB/MBMC5A1ASB  
MBMC5A2AXB/MBMC5A2ASB



MBMC9A1AZB/MBMC9A1ASB  
MBMC9A2AZB/MBMC9A2ASB



MBMC1E2AZB/MBMC1E2ASB



## ● Life time

-Motor alone

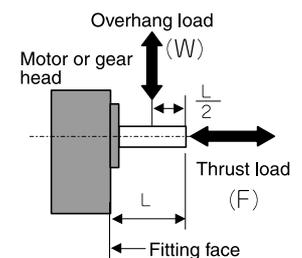
10,000 hours

-Motor with gear head

5,000 hours

(Oil seal performance is 5,000 hours long.)

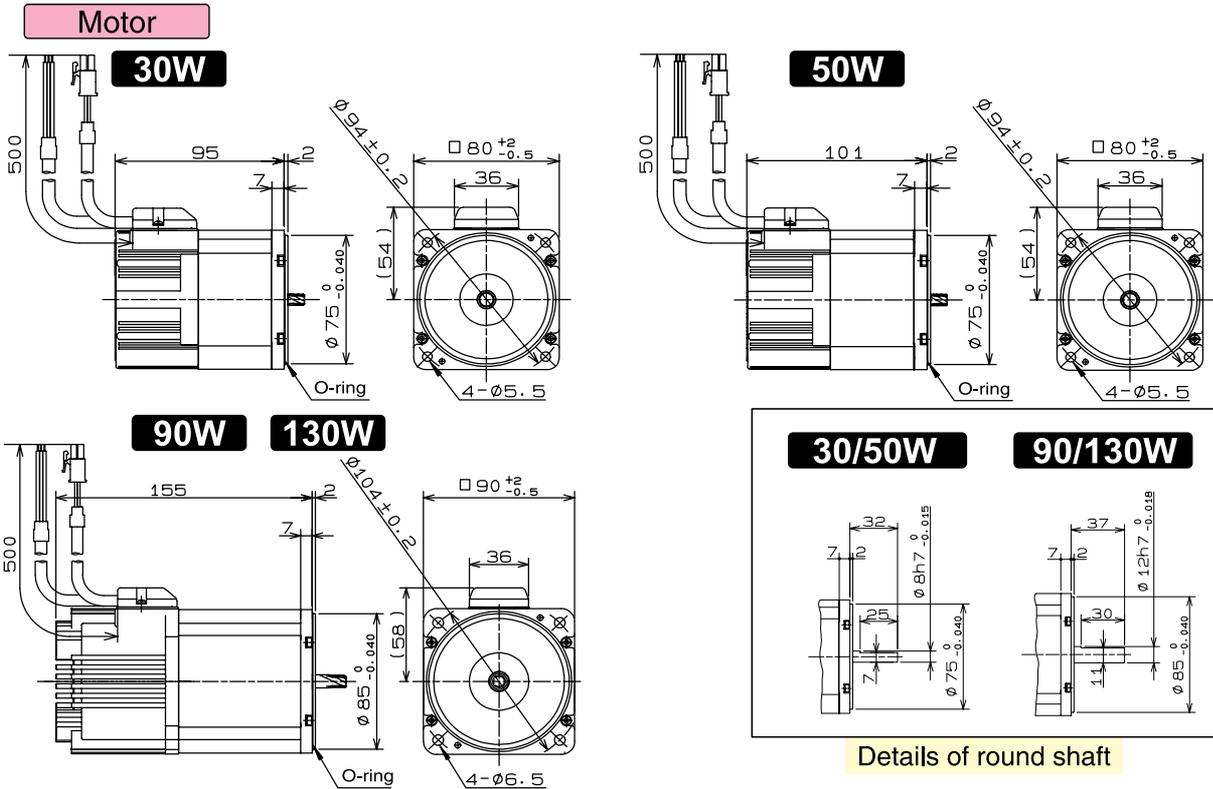
## ● Acceptable load on shaft



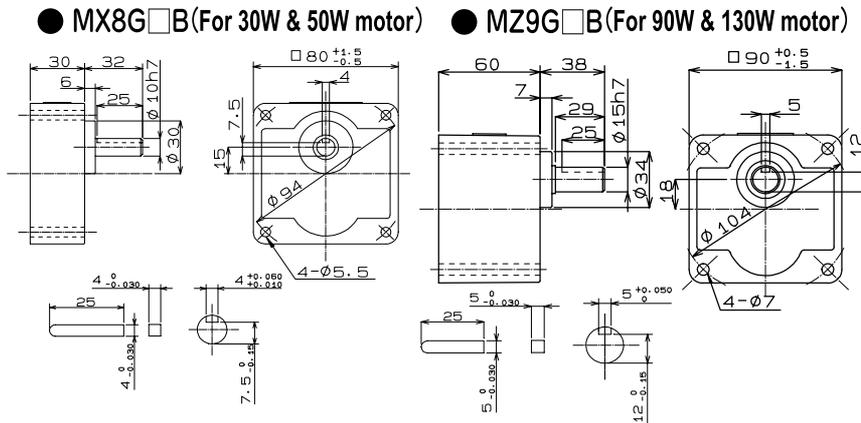
|            | Output (W) | Overhang (W) | Thrust (F) |
|------------|------------|--------------|------------|
| Motor only | 3 0 W      | 100N         | 10N        |
|            | 5 0 W      | 100N         | 10N        |
|            | 9 0 W      | 150N         | 20N        |
|            | 13 0 W     | 150N         | 20N        |
| Gear head  | MX8G       | 294N         | 49N        |
|            | MZ9G       | 588N         | 147N       |

# ● Drawing

(Unit : mm)

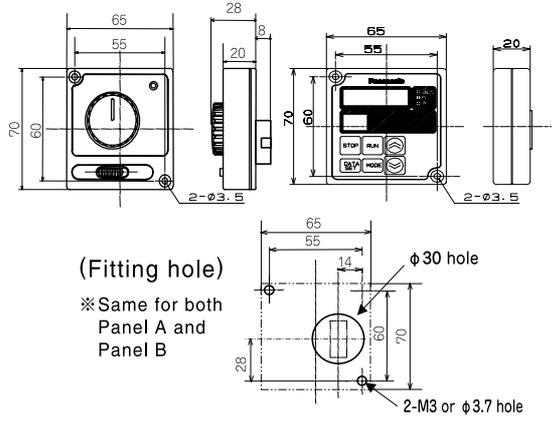


## Gear head



## Panel A

## Panel B



### Cautions for Proper Use

- This product is intended to be used with a general industrial product, but not designed or manufactured to be used in a machine or system that may cause personal death when it is failed.
- Install a safety equipments or apparatus in your application, when a serious accident or loss of property is expected due to the failure of this product.
- Consult us if the application of this product is under such special conditions and environments as nuclear energy control, aerospace, transportation, medical equipment, various safety equipments or equipments which require a least air contamination.
- We have been making the best effort to ensure the highest quality of the products, however, application of exceptionally larger, external noise disturbance and static electricity, or failure in input power, wiring and components may result in unexpected action. It is highly recommended that you make a fail-safe design and secure the safety in the operative range.
- If the motor shaft is not electrically grounded, it may cause an electrolytic corrosion to the bearing, depending on the condition of the machine and its mounting environment, and may result in the bearing noise. Checking and verification by customer is required.
- Failure of this product depending on its content, may generate smoke of about one cigarette. Take this into consideration when the application of the machine is clean room related.
- Please be careful when using in an environment with high concentrations of sulphur or sulphuric gases, as sulphuration can lead to disconnection from the chip resistor or a poor contact connection.
- Take care to avoid inputting a supply voltage which significantly exceeds the rated range to the power supply of this product. Failure to heed this caution may result in damage to the internal parts, causing smoking and/or a fire and other trouble.
- Read and observe the instruction manual without fail for proper usage of the products.

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