

Panasonic
ideas for life

Brushless Motor
with internal drive

October
2003

B3
-G

Brushless Motor

Position Control

B3G series



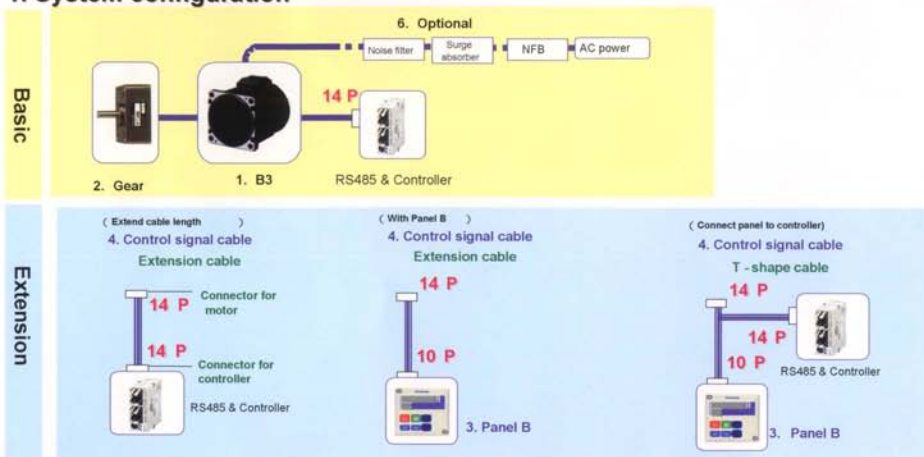
● Features

Positioning brushless motor

- ✓ No need for PLC for internal numerical control.
- ✓ Continuous positioning of up to 4 points
- ✓ Positioning by commutation sensor
- ✓ Easy check of motor status & parameters
with operation panel or RS485 communication
- ✓ CE/UL rated & IP65 rated
- ✓ Power voltage: Single-phase 100-120 & 200-240V

● System configuration

1. System configuration



2. Model number

1. B3G

MBMP	3A	1	E	B	C
B3G					
Output				Function	
3A: 30W				Shaft	
5A: 50W				Structure	
9A: 90W					
1E: 130W					
		Power	E: Standard		
		1: Single 100V~120V			
		2: Single 200V~240V			
				C: Communication	
				B: For gear head	
				S: Round	

2. Gear head

MB8	G	30	BV
			Bearing BV: Ball bearing
		Ratio (Example) 30: 1/30	
		5, 10, 15, 20, 30, 50	
	Size		
	MB8: 80 mm square		
	MB9: 90 mm square		

3. Panel B

DV0P3510

4. Control signal cable

Extension cable

DV0P38510	: 1m 14 pins
DV0P38530	: 3m 14 pins
DV0P38550	: 5m 14 pins

Conversion cable

DV0P38605	: 0.5m 14 to 10 pins
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T-shape cable

DV0P38805	: 0.5m 14 to 14 & 10 pins
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Connector kit

DV0P3890	: To motor 14 pins
DV0P3900	: To controller 14 pins
DV0P3610	: To panel B 10 pins

5. Optional

DV0P1450	: Surge absorber
DV0P3611-5	: Noise filter
DV0P4270	: PANATERM software
DV0P4140	: 1.5m long cable to PC

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 (V)	Error (%)	f (Hz)	Current (A)			
MBMP3A1EBC	MBMP3A1ESC	30	Single 100-120	± 10	50/60	1.0	0.095	0.14	3000
MBMP3A2EBC	MBMP3A2ESC		Single 200-240			0.6			
MBMP5A1EBC	MBMP5A1ESC	50	Single 100-120			1.5	0.16	0.24	
MBMP5A2EBC	MBMP5A2ESC		Single 200-240			0.7			
MBMP9A1EBC	MBMP9A1ESC	90	Single 100-120			2.0	0.29	0.43	
MBMP9A2EBC	MBMP9A2ESC		Single 200-240			1.1			
MBMP1E2EBC	MBMP1E2ESC	130	Single 200-240			1.5	0.41	0.62	

● Common specification

Item	Description			
Model number	MBMP3A****	MBMP5A****	MBMP9A****	MBMP1E****
Rated output (W)	30	50	90	130
Rated speed	3000 r/min			
Control method	Position control with commutation sensor signal PWM sine wave drive			
Points to position	4 points (Set distance, speed, acceleration, absolute/relative for each point)			
Positioning resolution	288 pulses/rotation (Accuracy : ±5° or less at 20°C)			
Input signal	4 inputs			
Output signal	2 outputs (Open collector)			
Protective function	Over-load, Over-current, Over-voltage, Under-voltage, System error, Over-speed, Sensor error, Over-heat, Position error, Externally enforced trip, Over-flow of error counter, RS485 error, Motion execution error, Homing error, Hardware limit error, Operation panel B error, User parameter error, System parameter error			
RS232C communication	Set parameters or monitor motor status with operation panel B or PC.			
RS485 communication	Set parameters or monitor motor status with controller.			
Insulation level	130(B) (UL certified 105(A))			
Rated time	Continuous			30 minutes or Continuous at 80% loading
Over-load warning level	100%			80%
Time limit at over-load	60 seconds at 150% loading			
Start torque	150%			
IP rating	Motor is IP65 rated, excluding the foot of shaft and end of lead wires EN standard (EN60529, EN60034-5)			
	IP20 rated of Operation Panel B			
Mass (kg)	1.1	1.3	2.3	2.3

● Acceptable torque fit with gear head (N·m)

Model #	Ratio	5	10	15	20	30	50
MBMP3A□EBC MB8G□BV		0.43	0.86	1.3	1.8	2.5	4.1
MBMP5A□EBC MB8G□BV		0.71	1.4	2.2	2.8	4.0	6.8
MBMP9A□EBC MB9G□BV		1.2	2.5	3.6	4.9	7.0	11.6
MBMP1E□EBC MB9G□BV		1.9	3.7	5.6	7.4	10.7	17.7

※ At , the shaft from gear head rotates in same direction as motor.

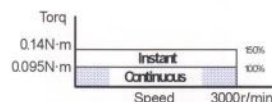
● Acceptable load inertia moment ($\times 10^{-4} \text{ kg} \cdot \text{m}^2$)

Model #	Ratio	5	10	15	20	30	50	No gear
MBMP3A□EBC MBMP5A□EBC MB8G□BV		3.42	13.8	30.6	55.8	127	342	0.87
MBMP9A□EBC MBMP1E□EBC MB9G□BV		16.4	67.6	142	257	589	1684	1.54

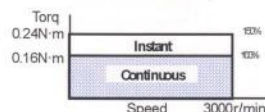
※ On condition that it decelerates from 3000 to 0 r/min in 1 second.

● Speed - Torque

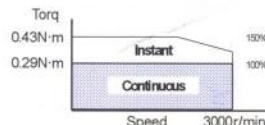
MBMP3A1EBC / MBMP3A1ESC
MBMP3A2EBC / MBMP3A2ESC



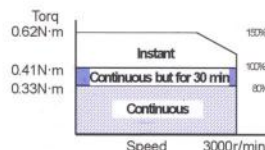
MBMP5A1EBC / MBMP5A1ESC
MBMP5A2EBC / MBMP5A2ESC



MBMP9A1EBC / MBMP9A1ESC
MBMP9A2EBC / MBMP9A2ESC



MBMP1E2EBC / MBMP1E2ESC

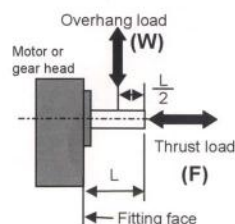


● Life time

10,000 hours

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

● Acceptable load on shaft

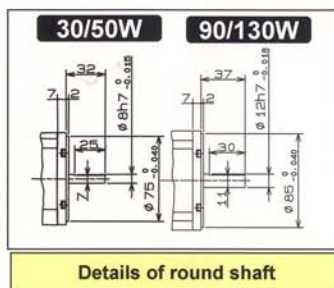
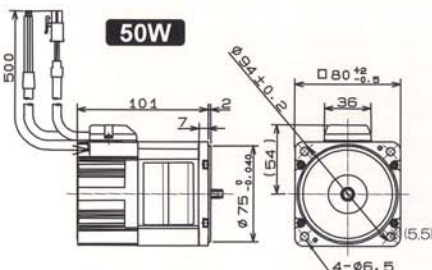
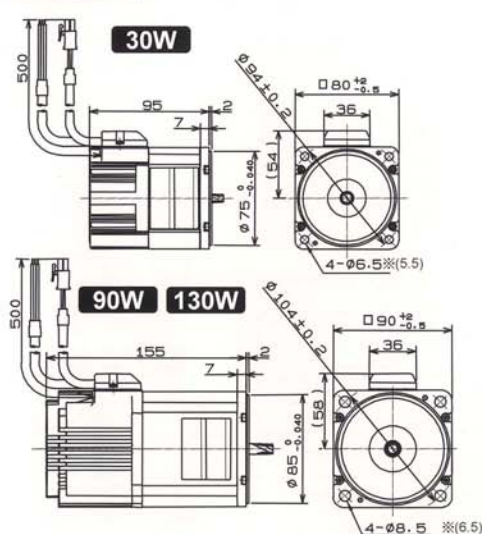


	Model #	Overhang (W)	Thrust (F)
Motor only	MBMP3A□ESC	100N	10N
	MBMP5A□ESC	100N	10N
	MBMP9A□ESC	150N	20N
	MBMP1E□ESC	150N	20N
Gear head	MB8G5BV	245N	98N
	MB8G10BV, 15BV, 20BV	343N	
	MB8G30BV, 50BV	539N	
	MB9G5BV	294N	147N
	MB9G10BV, 15BV, 20BV	490N	
	MB9G30BV, 50BV	637N	

● Drawing

(Unit:mm)

Motor

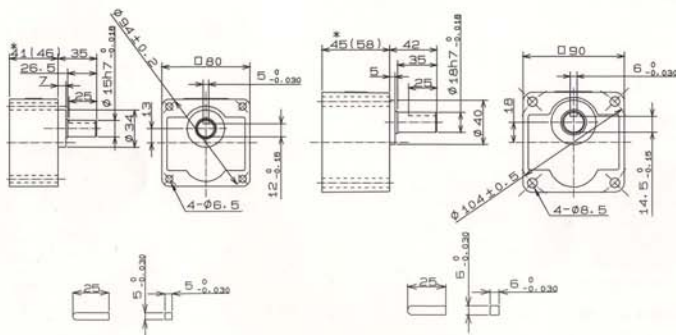


Details of round shaft

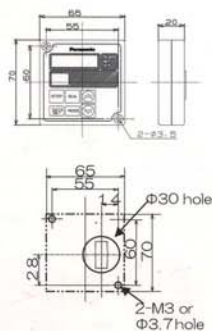
Gear head

● MB8G_BV
(For 30W & 50W motor)

● MB9G_BV
(For 90W & 130W motor)



Panel B



(Back of panel)

*Figure at () is for gear head with ratio being 30 or more.