

MINAS-BL **GV** Series

Speed Control Type 50 W to 130 W

GV series



•□90 mm 130 W

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Check the model number

<Motor>

MBMU

Type

● **Motor rated output**

5A: 50 W
9A: 90 W
1E: 130 W

5A

● **Input power supply**

1: 100 V
2: 200 V
Z: 100/200 V

Z

A

● **Function**

A: Standard

X

● **Shape of shaft**

X: For gear head MX8G
Z: For gear head MZ9G/MY9G
S: Round shaft

<Gear head>

M

X

8

Gear head

● **Size**

8: 80 mm sq.
9: 90 mm sq.

G

30

● **Reduction ratio**

(Example) 30: Reduction ratio of 1/30
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)
* 1/200 only for 90mm sq.

B

● **Bearing**

B: Ball bearing

● **Motor rated output**

X: 50 W
Z: 90 W, 130W
Y: 90 W, 130W

Brushless motor specifications

Item	Specifications				
	80 mm sq.	90 mm sq.			
Motor model No. ^{*1}	MBMU5AZA ○	MBMU9A1A ○	MBMU9A2A ○	MBMU1E1A ○	MBMU1E2A ○
Motor rated output (W)	50	90		130	
Voltage	for 100 V/200 V	for 100 V	for 200 V	for 100 V	for 200 V
Rated torque (N·m)	0.16	0.29		0.41	
Starting torque ^{*2} (N·m)	0.24	0.43		0.62	
Rated input current (A(rms))	0.53	1.00	0.50	1.30	0.72
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	0.12	0.27		0.36	
Rating	Continuous				
Rated rotation speed ^{*3} (r/min)	3000				
Speed control range (r/min)	30 to 4000				
Ambient temperature	-10 °C to +40 °C (free from freezing) * Ambient temperature is measured at a distance of 5 cm from the motor.				
Ambient humidity	20% to 85% RH (free from condensation)				
Altitude	Lower than 1000 m				
Vibration	4.9 m/s ² or less X, Y, Z				
Motor insulation class	130(B) (UL certified 105 (A))				
Protection structure	IP65 ^{*4,*5}				
Number of poles	8				
Motor mass (kg)	0.7	1.0		1.2	

*1 Suffix of "○" in the motor model represents shape of shaft.

*2 Representative value

*3 Motor shaft speed: to be multiplied by the reduction ratio when the gear head is used.

*4 Excluding the shaft pass-through section and cable end connector.

*5 These motors conform to the test conditions specified in EN standards (EN60529, EN60034-5).

Do not use these motors in application where water proof performance is required such as continuous wash-down operation.

<Brushless amplifier>

MBEG

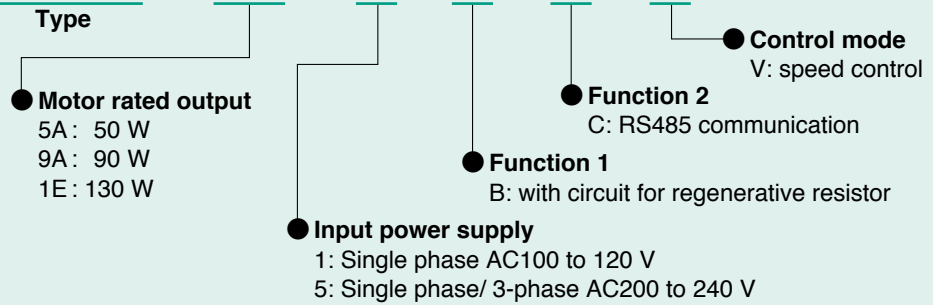
5A

5

B

C

V



Brushless amplifier specifications (GV series)

Item	Specifications								
	MBEG5A1BCV	MBEG5A5BCV		MBEG9A1BCV	MBEG9A5BCV		MBEG1E1BCV	MBEG1E5BCV	
Amplifier model No.	MBEG5A1BCV	MBEG5A5BCV		MBEG9A1BCV	MBEG9A5BCV		MBEG1E1BCV	MBEG1E5BCV	
Applicable Motor ^{*1}	MBMU5AZA○			MBMU9A1A○	MBMU9A2A○		MBMU1E1A○	MBMU1E2A○	
Motor rated output (W)	50			90			130		
Input power supply voltage (V)	Single phase 100 to 120	Single phase	3-phase	Single phase 100 to 120	Single phase	3-phase	Single phase 100 to 120	Single phase	3-phase
		200 to 240			200 to 240			200 to 240	
Frequency (Hz)	50/60								
Rated input current (A)	1.5	0.7	0.35	2.2	1.1	0.5	2.8	1.5	0.7
Voltage tolerance	±10%								
Control method	Speed control by CS signal, PWM sine wave driving system								
Ambient temperature	0 °C to +50 °C (free from freezing) * Ambient temperature is measured at a distance of 5 cm from the amplifier.								
Ambient humidity	20% to 85% RH (free from condensation)								
Location	Indoor (No corrosive gas, A place without garbage, and dust)								
Altitude	Lower than 1000 m								
Vibration	5.9 m/s ² or less (10 to 60 Hz)								
Protection structure/ Cooling system	Equivalent to IP20/ Self cooling								
Storage temperature	Normal temperature * Temperature which is acceptable for a short time, such as during transportation is -20 °C to 60 °C (free from freezing)								
Storage humidity	Normal humidity								
Rated rotation speed	3000 r/min								
Speed control range	30 to 4000 r/min (Speed ratio 1:133)								
Speed fluctuation factor	With load	±0.5% or below (at 0 to Rated torque, Rated rotation speed)							
	With voltage	±0.5% or below (at supply voltage ±10%, rated rotation speed)							
	With temperature	±0.5% or below (at 0 to 50 °C, rated rotation speed)							
Acceleration/ Deceleration time	0.01 to 300 sec (time for changing 1000 r/min) ^{*2}								
Stopping procedure	Slowdown stop/ Free-run stop ^{*2}								
Speed setting	0 to 4000 r/min (analogue voltage (0 to 5 V), console A), 0 to 4000 r/min (Setting selection by parameter on Digital key pad)								
Speed setting resolution	Analog: approx. 1/200 of upper speed limit Digital: 1 r/min								
Speed setting precision (at 20 °C)	Analogue: ±3% or below of upper speed limit (±90 r/min or below at upper speed limit 3000 r/min) [Digital: 1% or below of upper speed limit]								
Operation mode	8 speed								
Signal input	5 inputs ^{*2} (run/ stop, CW run/ CCW run, multi function 3bit)								
Signal output	2 outputs (Open collector) ^{*2} (Trip output etc)								
Communication function	RS485	Max 31 units. Setting of parameter, monitoring of control condition. Communication speed: Choose from 2400 bps/ 4800 bps/ 9600 bps							
	RS232	Setting of parameter and monitoring of control condition are enabled with commercial PC. ^{*3}							
Digital key pad	Setting of parameter, monitoring of control condition. ^{*4}								
Protective function	Warning : Undervoltage ^{*2} , Overload warning, setting change warning Protect : Undervoltage ^{*2} , Overload, Overcurrent, Overvoltage, Overheat, Overspeed, Sensor error, RS485 communication error, External forced trip error, User parameter error, CPU error								
Regenerating brake	Regenerative braking resistor can be externally connected. ^{*5} Instantaneous braking torque 150%, Continuous regenerative power 10 W (Regenerative operation with which motor shaft is rotated by load, e.g. load lowering operation, should not be continued.)								
Protection level	Overload protection: 115%, Time characteristics: 150% 60 sec								
Amplifier mass (kg)	0.37								

*1 Suffix of "○" in the motor model represents shape of shaft. *2 Can be changed from PANATERM for BL or Digital key pad.

*3 PANATERM for BL (Download from our web site.), PC connection cable (DV0P4140), Digital key pad connection cable (DV0P383*0) is required. If your PC does not have RS232 port, use RS232-USB converter.

*4 Digital key pad connection cable (DV0P383*0) is required. *5 Use optional external regenerative resistor (sold separately).

System configuration

Power supply	Rated rotation speed (r/min)	output (W)	Motor	Gear head (Note 1)	Brushless amplifier	Brushless amplifier (supplied with power cable) (Note 2)	Optional parts			
							External regenerative resistor	Noise filter	Surge absorber	Reactor
							Reference page	p. 74	p. 71	p. 67
Single phase 100 V	3000	50	MBMU5AZAX	MX8G□B	MBEG5A1BCV	MBEG5A1BCVC	for 100 V DV0P2890	for single phase power supply DV0P4170	for single phase power supply DV0P4190	for single phase power supply DV0P227
			MBMU5AZAS	—						
		90	MBMU9A1AZ	MZ9G□B MY9G□B	MBEG9A1BCV	MBEG9A1BCVC				
			MBMU9A1AS	—						
		130	MBMU1E1AZ	MZ9G□B MY9G□B	MBEG1E1BCV	MBEG1E1BCVC				
			MBMU1E1AS	—						
Single/ 3-phase 200 V	3000	50	MBMU5AZAX	MX8G□B	MBEG5A5BCV	MBEG5A5BCVC	for 200 V DV0PM20068	for single phase power supply DV0P4170 for 3-phase power supply DV0PM20042	for single phase power supply DV0P4190	for 3-phase power supply DV0P1450
			MBMU5AZAS	—						
		90	MBMU9A2AZ	MZ9G□B MY9G□B	MBEG9A5BCV	MBEG9A5BCVC				
			MBMU9A2AS	—						
		130	MBMU1E2AZ	MZ9G□B MY9G□B	MBEG1E5BCV	MBEG1E5BCVC				
			MBMU1E2AS	—						

(Note 1) A figure representing reduction ration in □ .

(Note 2) Refer to p. 74 for a power supply connecting cable.

This part number is the ordering part number for the amplifier and power cable, not for ordering amplifier only.

* When installing the reactor, refer to p. 73.

*** Be sure to use a set of matched components (series, power source, capacity, output, etc.)**

*** This motor is not provided with a holding brake. If it is used to drive a vertical shaft, the movable section may fall down by its own weight as power is turned off.**

Options

Optional parts	Parts number	Reference page	Optional parts	Parts number	Reference page	
Motor extension cable	1 m	DV0PQ1000110	Digital key pad connection cable	1 m	DV0P38310	
	3 m	DV0PQ1000130		3 m	DV0P38330	
	5 m	DV0PQ1000150		5 m	DV0P38350	
	10 m	DV0PQ10001A1		External speed setter	DV0PM20078	P.71
Power supply connector kit	DV0P2870	P.70	Control signal cable	2 m	DV0PM20076	P.70
Console A ^{*1}	DV0P3500	P.68	I/O connector kit	DV0PM20070	P.71	
Console A connection cable	1 m	DV0PM2006910	Panel connector kit	DV0P3610	P.71	
	3 m	DV0PM2006930	PC connection cable ^{*3}	1.5 m	DV0P4140	P.70
	5 m	DV0PM2006950	Noise filter for signal line	DV0P1460	P.67	
Digital key pad ^{*2}	DV0P3510	P.68	DIN rail mounting unit	DV0P3811	P.72	

* For details of cable, refer to p. 68 to 70.

*1 When using Console A, the Console A connection cable (DV0PM20069*0) is required.

*2 When using Digital key pad, the Digital key pad connection cable (DV0P383*0) is required.

*3 When connecting PC, the PC connection cable (DV0P4140) and the Digital key pad connection cable (DV0P383*0) are required.

Wiring equipment

Selection of circuit breaker (MCCB), magnetic contactor and electric wire. (To check conformity with international standards, refer to p. 93 Conformity with international safety standards.)

Voltage	Power capacity	MCCB Rated current	Magnetic contactor Rated Current (Contact composition)	Core of electric wire (mm ²)	
				Main circuit, Grounding	Control circuit
Single phase 100 V	50 to 130 W	5 A	20 A (3P+1a)	0.5 (AWG20)	0.13 (AWG26)
Single phase 200 V					
3-phase 200 V					

Be sure to connect the earth terminal to ground.

In wiring to power supply (outside of equipment) from MCCB, use an electric wire of 1.6 mm diameter (2.0 mm²) or more both for main circuit and grounding. Apply grounding class D (100 Ω or below) for grounding.

Selection of relay

A relay used in a control circuit, e.g. at the control input terminal should be small signal relay (Min. guaranteed current 1 mA or less) for positive contact.

Example: Panasonic: DS, NK or HC series, OMRON: G2A series

Selection of control circuit switch

When using a switch in place of relay, select a switch rated at minute electric current, to assure positive contact.

Example: Nihon Kaiheiki Ind.: M-2012J-G

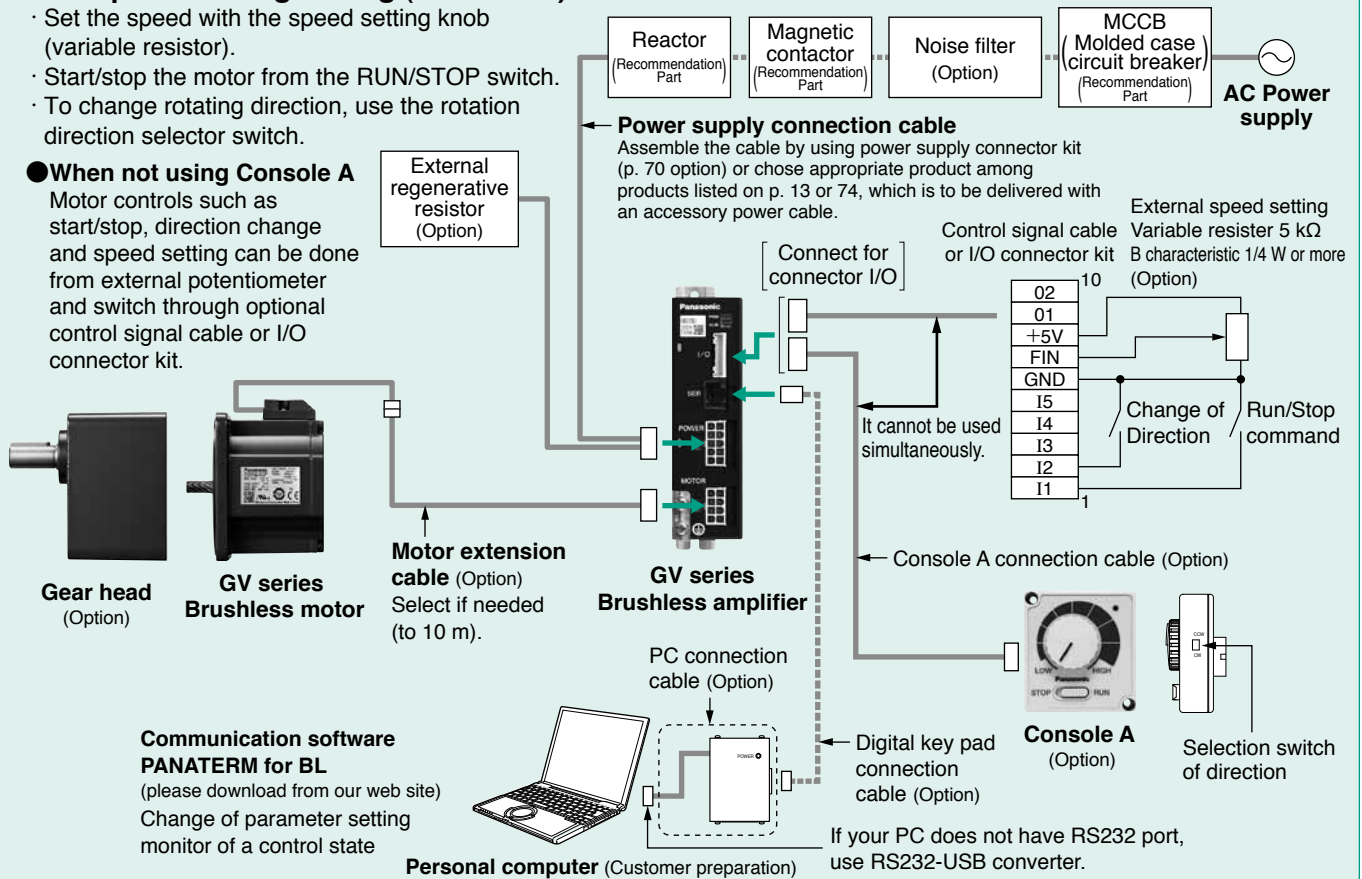
System configuration diagram

● Example of analog setting (Console A)

- Set the speed with the speed setting knob (variable resistor).
- Start/stop the motor from the RUN/STOP switch.
- To change rotating direction, use the rotation direction selector switch.

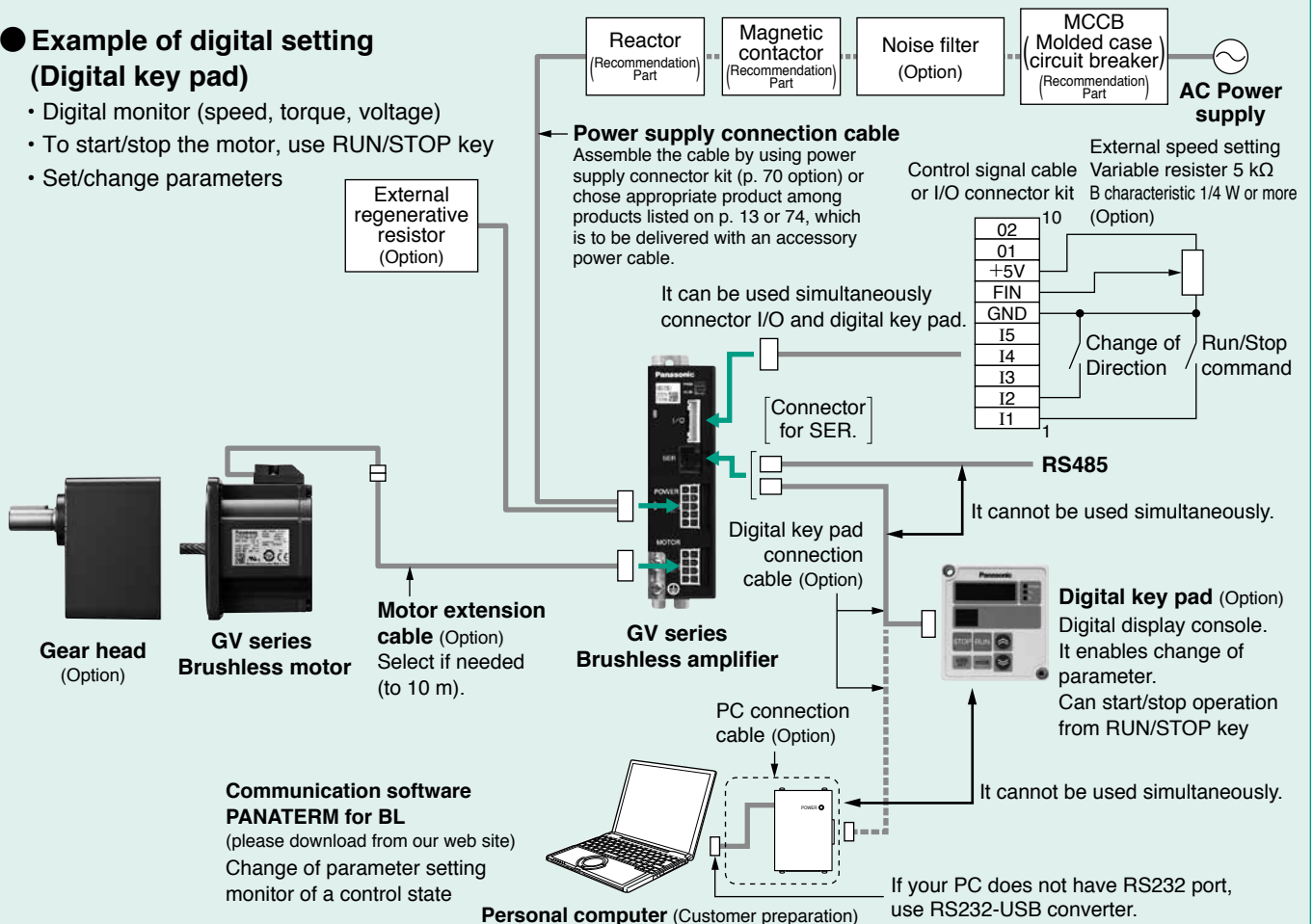
● When not using Console A

Motor controls such as start/stop, direction change and speed setting can be done from external potentiometer and switch through optional control signal cable or I/O connector kit.

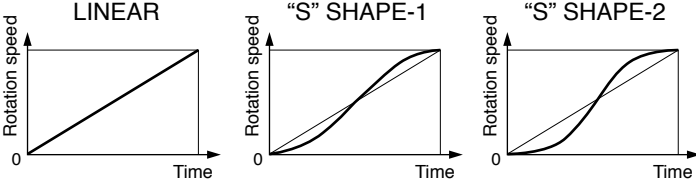
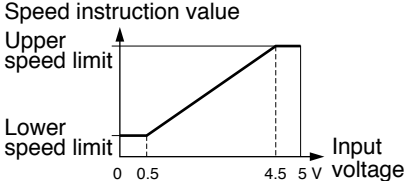


● Example of digital setting (Digital key pad)

- Digital monitor (speed, torque, voltage)
- To start/stop the motor, use RUN/STOP key
- Set/change parameters



Parameter list of brushless amplifier

Parameter No.	Parameter name	Explanation	Setting range																												
00	Internal speed (0-th speed)	Desired running speed can be set with the Digital key pad.	0 to Upper speed limit [Minimum unit 1 r/min]																												
01 to 07	1st speed to 7th speed	Speed in multi-speed running can be set.	0 to Upper speed limit [Minimum unit 1 r/min]																												
10 11	1st acceleration time 2nd acceleration time	The change factor of output speed in acceleration can be determined. Set by time for changing 1000 r/min.	0.01 to 300 sec to 3 sec: Incremented by 0.01 second 3 to 30 sec: Incremented by 0.1 second 30 to 300 sec: Incremented by 1 second																												
12 13	1st deceleration time 2nd deceleration time	The change factor of output speed in deceleration can be determined. Set by time for changing 1000 r/min.																													
14 15	Acceleration mode selection Deceleration mode selection	Straight line acceleration/deceleration and curve (S-shape) acceleration and deceleration can be chosen individually for acceleration and deceleration. 	Select S-shape when "31 Speed command selection" is PnL.																												
16	Stop mode selection	You can select how to stop the motor when stop command is input: free-run stop or stop after deceleration.																													
17	Free-run waiting time	When the stop mode is set to deceleration stop, the zero speed (servo lock time) after deceleration can be adjusted.	0.0 to 10.0 sec [Minimum unit 0.1 sec]																												
1A	Velocity loop proportional gain	Enables setting of proportional gain of velocity amplifier.	0 to 10000 [Minimum unit 0.1]																												
1b	Velocity loop integration gain	Enables setting of integration gain of velocity amplifier.	0 to 10000 [Minimum unit 0.1]																												
30	Run command selection	Run command can be applied through: Digital key pad, input terminal "I1", "I2" or RS485 communication, whichever selected.																													
31	Speed command selection	You can choose whether to use "00 Internal speed (0-th speed)" or analog input terminal for speed command.																													
32	Operation mode selection	Parameter for choosing operation mode <table border="1" data-bbox="446 1321 1141 1646"> <thead> <tr> <th rowspan="2">Setting</th> <th rowspan="2">Operation mode</th> <th colspan="3">Function of signal input</th> </tr> <tr> <th>I3</th> <th>I4</th> <th>I5</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>1st speed operation mode</td> <td></td> <td colspan="2">Free-run stop External forced trip</td> </tr> <tr> <td>2</td> <td>2nd speed operation mode</td> <td>Speed setting</td> <td colspan="2">2nd acceleration/ deceleration time Trip reset</td> </tr> <tr> <td>4</td> <td>4th speed operation mode</td> <td>Speed setting</td> <td>Speed setting</td> <td></td> </tr> <tr> <td>8</td> <td>8th speed operation mode</td> <td>Speed setting</td> <td>Speed setting</td> <td>Speed setting</td> </tr> </tbody> </table>	Setting	Operation mode	Function of signal input			I3	I4	I5	1	1st speed operation mode		Free-run stop External forced trip		2	2nd speed operation mode	Speed setting	2nd acceleration/ deceleration time Trip reset		4	4th speed operation mode	Speed setting	Speed setting		8	8th speed operation mode	Speed setting	Speed setting	Speed setting	
Setting	Operation mode	Function of signal input																													
		I3	I4	I5																											
1	1st speed operation mode		Free-run stop External forced trip																												
2	2nd speed operation mode	Speed setting	2nd acceleration/ deceleration time Trip reset																												
4	4th speed operation mode	Speed setting	Speed setting																												
8	8th speed operation mode	Speed setting	Speed setting	Speed setting																											
33 34 35 36	I1/I2 function selection I3 function selection I4 function selection I5 function selection	Signal input functions I1 to I5 can be individually selected.	Free-run stop External forced trip 2nd acceleration/deceleration time Trip reset																												
3A	Lower speed limit	When speed command selection is set to analog, set the motor speed at 0 V input. 	0 to Upper speed limit [Minimum unit 1 r/min]																												
3b	Upper speed limit	Upper limit of motor command speed.	0 to 4000 r/min [Minimum unit 1 r/min]																												

Parameter No.	Parameter name	Explanation	Setting range
3C	Torque limit	Upper limit of motor output torque is set.	50 to 150% [Minimum unit 1%]
40 41	O1 function selection O2 function selection	The type of signals from output terminals "O1" and "O2" can be selected.	Trip: ON, Speed is reached to a command value: ON, Running: ON, Free run: ON, CCW run: ON, CW run: ON, Load exceeds 100%: ON, Speed pulse signal
42 43	O1 output polarity selection O2 output polarity selection	This is a function for inverting the polarity of signal output terminal O1 and O2.	
44	Speed matching range	"Matching range" of arriving signal can be adjusted.	20 to Upper speed limit [Minimum unit 1 r/min]
45	Output pulse count selection	Set the number of pulses to be output to output terminals "O1" and "O2". * Select 12 or less, when you need exceeding 3000 r/min.	1, 2, 3, 4, 6, 8, 12, 24
46	Monitor mode selection	You can choose description to be displayed on 5-digit LED when turning on power.	Rotation speed, Speed command, Internal DC voltage, Load factor, Torque
47 48	Numerator of display magnification factor Denominator of display magnification factor	By setting the multiplying factor of a value displayed on 5-digit LED, the rotation speed of gear output shaft and conveyor speed can be displayed.	
4A	Trip history clear	Trip history can be cleared.	
4b to 4F	Trip history 1 to Trip history 5	Trip history for 5 times in the past is stored.	
50	Undervoltage trip selection	You can select whether tripping occurs upon detection of undervoltage.	
51	Retrial selection	Automatic reset in trip (trip retrial) can be set here.	
52	Retrial start time	You can set waiting time until retrial operation is performed after tripping is found.	1 to 120 sec [Minimum unit 1 r/min]
54	Parameter initializing	Parameters can be initialized to the factory default.	
57	Parameter copy	Parameters can be copied.	
5A	RS485 device number	Set the device number of Amplifier in communication (Amplifier ID)	
5b	RS485 communication speed	Set the communication speed of RS485 communication.	
5C	RS485 communication standard	Set the communication standard of RS485 communication.	
5d	RS485 communication response time	You can set the shortest time necessary to set the RS485 bus to transmission mode to response upon receiving communication data.	
5E	RS485 retry times of communication	Set the retry times of RS485 communication.	
5F	RS485 protocol timeout	You can set the permissible time interval between successively received character codes.	

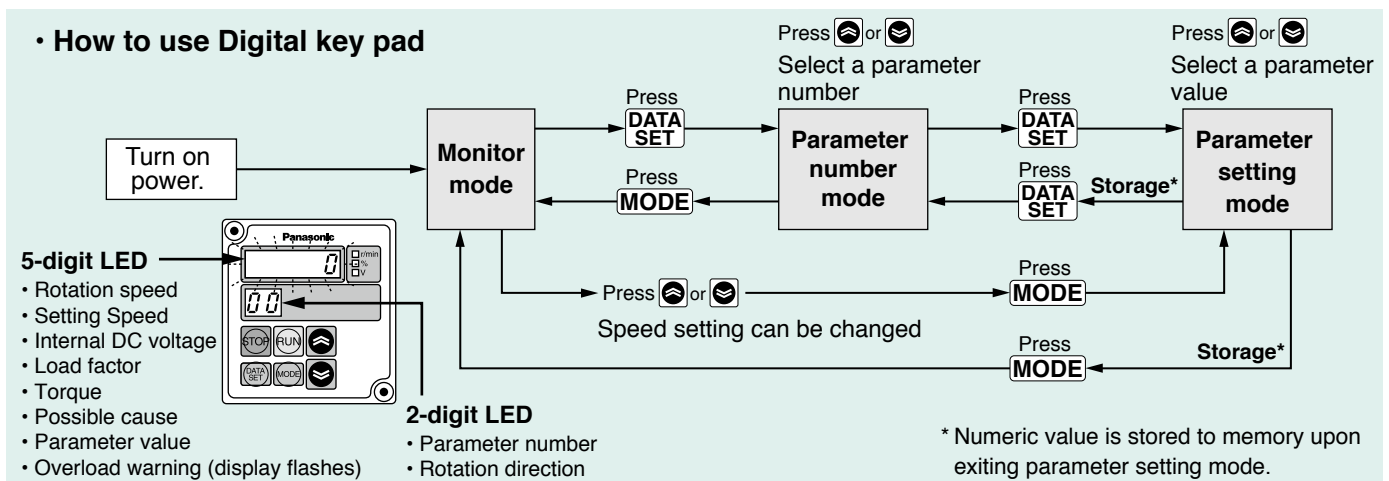
GV series

KV series

GP series

Options

Information



MINAS-BL GV series

Specification (For Common specification, see p. 11, 12)

Size	Model No. / Amplifier and Motor		Rated output (W)	Input power supply for Amplifier			Rated torque (N·m)	Starting torque (N·m)	Rated speed (r/min)	Maximum rotation speed (r/min)	
	Brushless Amplifier	Motor		Voltage AC (V)	Allowed range (%)	Frequency (Hz)					Rated input current (A)
80 mm sq.	MBEG5A1BCV	MBMU5AZA○	50	Single phase 100 to 120	±10	50/60	1.5	0.16	0.24	3000	4000
	MBEG5A5BCV	MBMU5AZA○		Single phase 200 to 240			Single phase 0.7				

* Suffix of "○" in the motor model No. represents shape of shaft.

* Starting torque: Representative value

Permissible torque at output shaft of gear head (N·m)

Applicable Gear head	Reduction ratio	Reduction 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		
MX8G□B	motor rotation speed (r/min)	3000 or less	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						
		3000 to 4000	0.29	0.35	0.48	0.58	0.72	0.87	0.97	1.21	1.44	1.75	1.94	2.42	2.71	3.25	4.45	5.47	6.84	7.84					
	Rotational direction		Same as motor rotational direction												Reverse to motor rotational direction										

Permissible load inertia moment (×10⁻⁴kg·m²)

Reduction 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	
Applicable Gear head																							
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								

Permissible shaft load

		Overhung load (W)	Thrust load (F)
Motor shaft (Round shaft)	Output	100 N	10 N
	50 W		
Applicable Gear head	MX8G□B	294 N	49 N

Wiring diagram

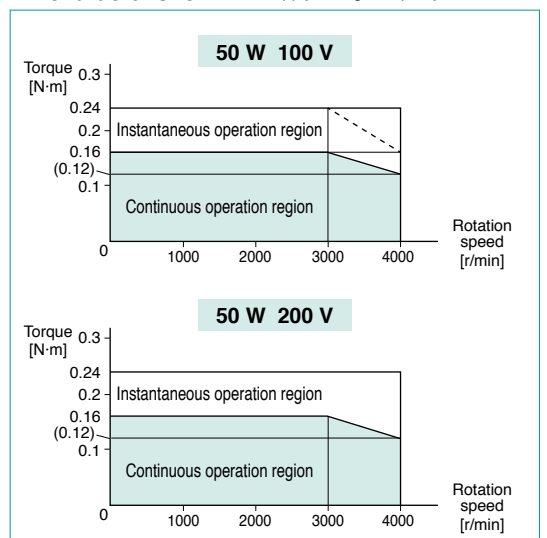
• In Case of 3-Phase 200 V

*When you use single phase, connect the main power between L1 and L2 terminals.

Be sure to ground the grounding terminal.

In wiring to power supply (outside of equipment) from MCCB, use an electric wire of 1.6 mm diameter (2.0 mm²) or more both for main circuit and grounding. Apply grounding class D (100 Ω or below) for grounding. Do not tighten the ground wires together, but connect them individually.

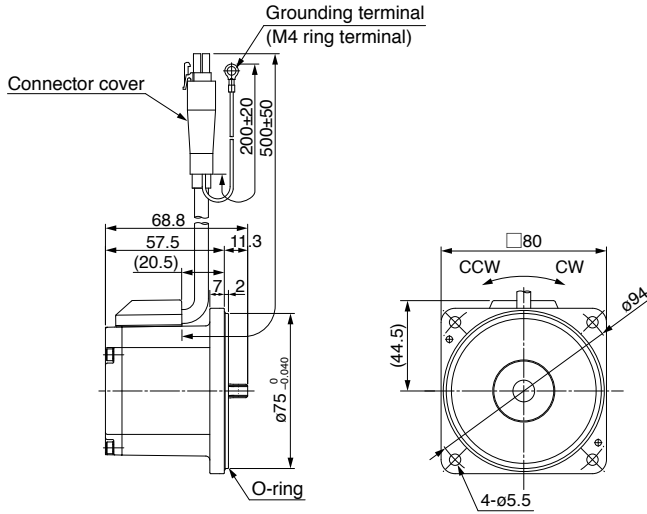
Speed-torque characteristic (Dotted line shows a characteristic curve when supply voltage drops by 10%.)



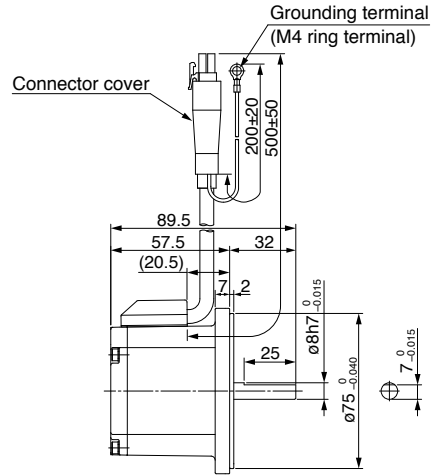
* Before using, be sure to read "Instruction manual" to check precautions and correct procedure.

Motor (dimensions)

Unit mm



<Round shaft type>



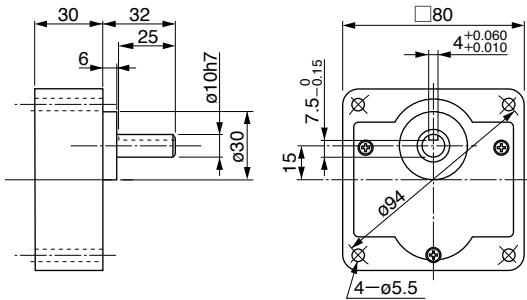
mass
0.7 kg

Gear head (dimensions)

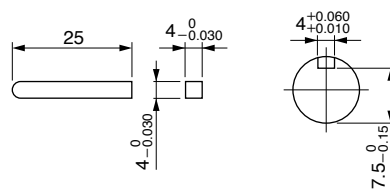
Unit mm

MX8G□B

mass
0.6 kg



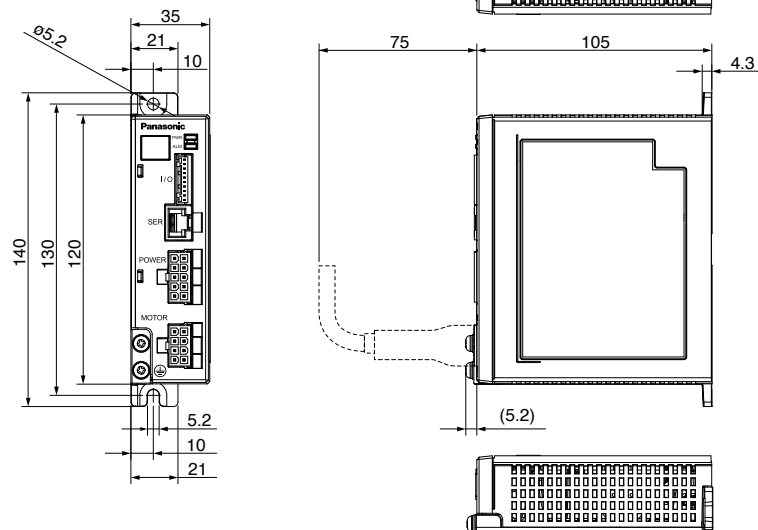
<Key and keyway [attachment]>



Brushless amplifier (dimensions)

Unit mm

mass
0.37 kg



<Cautions> Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

MINAS-BL GV series

Specification (For Common specification, see p. 11, 12)

Size	Model No. / Amplifier and Motor		Rated output (W)	Input power supply for Amplifier			Rated torque (N·m)	Starting torque (N·m)	Rated speed (r/min)	Maximum rotation speed (r/min)
	Brushless Amplifier	Motor		Voltage AC (V)	Allowed range (%)	Frequency (Hz)				
90 mm sq.	MBEG9A1BCV	MBMU9A1A○	90	Single phase 100 to 120	±10	50/60	0.29	0.43	3000	4000
	MBEG9A5BCV	MBMU9A2A○		Single phase / 3-phase 200 to 240						

* Suffix of "○" in the motor model No. represents shape of shaft.

* Starting torque: Representative value

Permissible torque at output shaft of gear head (N·m)

Applicable Gear head	Reduction ratio	Reduction 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		
MZ9G□B MY9G□B	motor rotation speed (r/min)	3000 or less	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				
	3000 to 4000	0.50	0.61	0.84	1.01	1.27	1.52	1.71	1.91	2.30	2.79	3.08	3.95	4.67	5.22	7.36	8.78	11.0	13.0	14.3	17.0	19.6				
Rotational direction		Same as motor rotational direction										Reverse to motor rotational direction					Same as motor rotational direction									

Permissible load inertia moment (×10⁻⁴kg·m²)

Reduction 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	
Applicable Gear head																								
MZ9G□B / MY9G□B	5.93	8.47	16.4	23.6	37.3	53.4	67.6	98.3	142	211	257	423	589	847	1684									

Permissible shaft load

Motor and Gear head

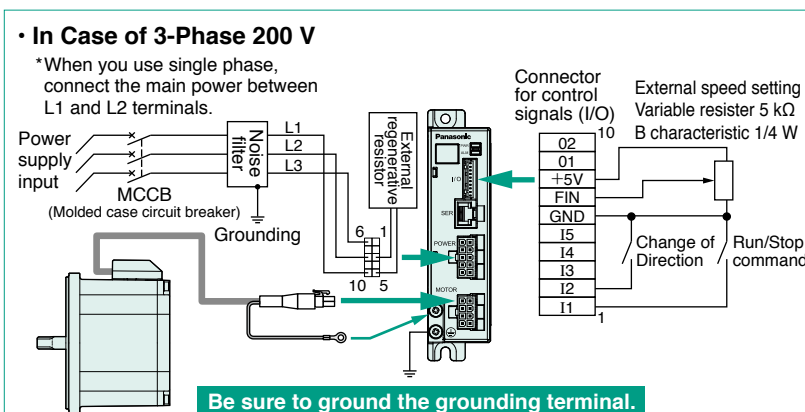
Overhung load (W)

Thrust load (F)

Attachment side

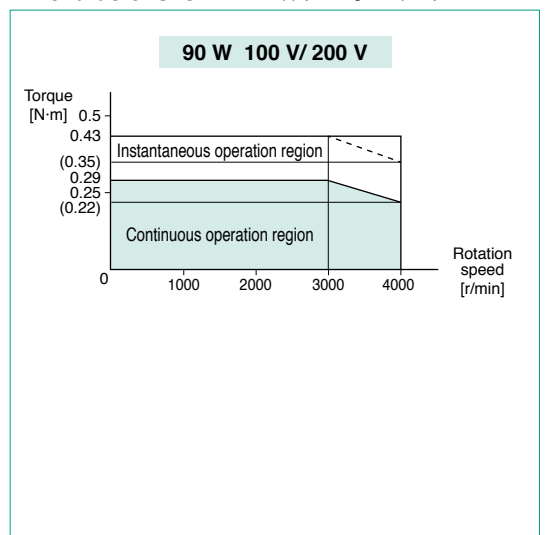
		Overhung load (W)	Thrust load (F)
Motor shaft (Round shaft)	Output	150 N	20 N
	90 W		
Applicable Gear head	MZ9G□B MY9G□B	588 N	147 N

Wiring diagram



In wiring to power supply (outside of equipment) from MCCB, use an electric wire of 1.6 mm diameter (2.0 mm²) or more both for main circuit and grounding. Apply grounding class D (100 Ω or below) for grounding. Do not tighten the ground wires together, but connect them individually.

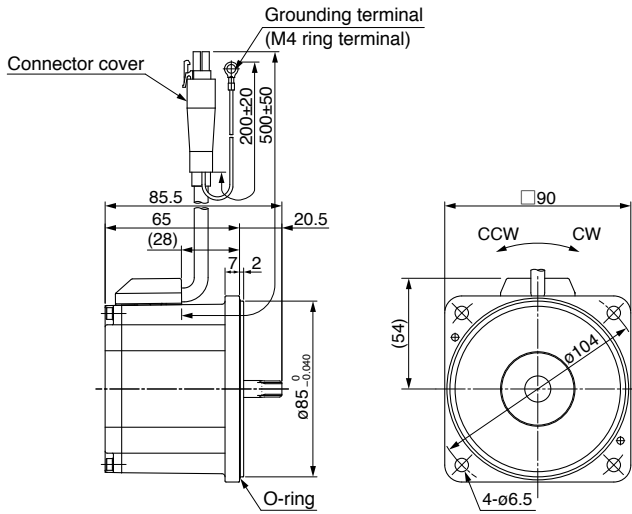
Speed-torque characteristic (Dotted line shows a characteristic curve when supply voltage drops by 10%.)



* Before using, be sure to read "Instruction manual" to check precautions and correct procedure.

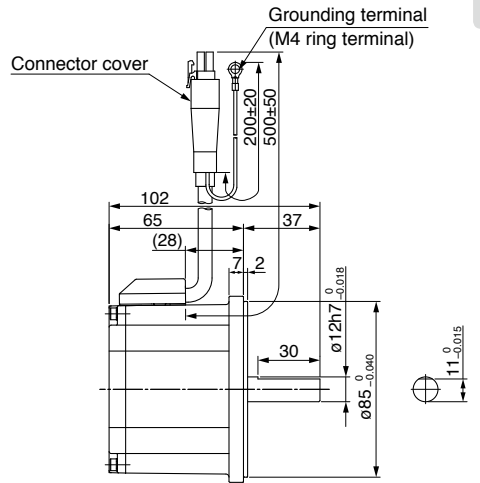
Motor (dimensions)

Unit mm



<Round shaft type>

mass
1.0 kg

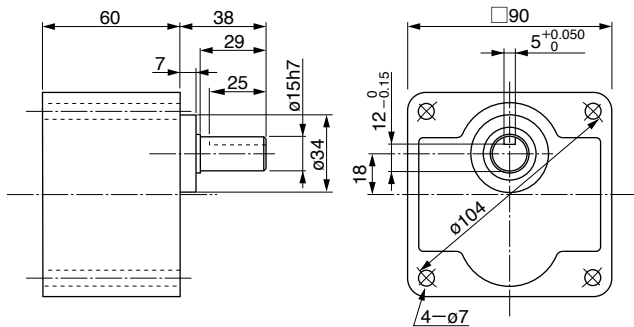


Gear head (dimensions)

Unit mm

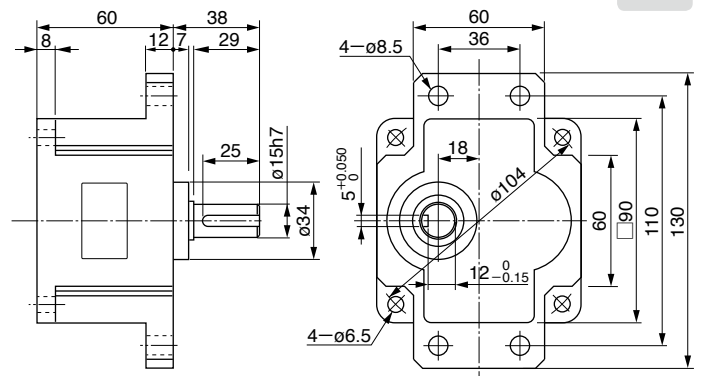
MZ9G□B (Ball bearing/Hinge not attached)

mass
1.4 kg



MY9G□B (Ball bearing/Hinge attached)

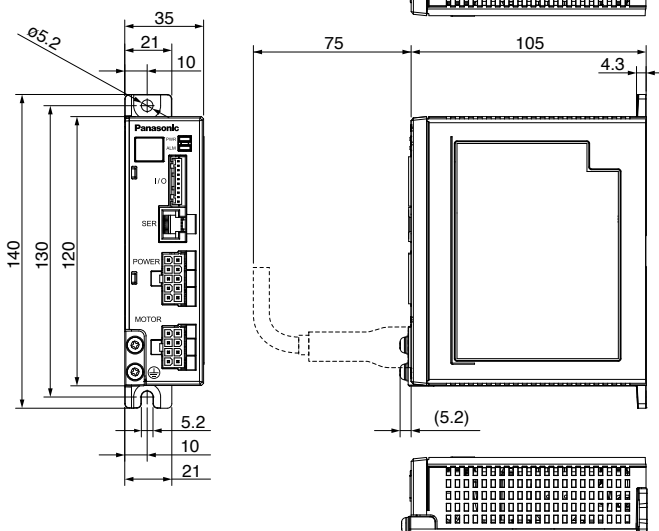
mass
1.4 kg



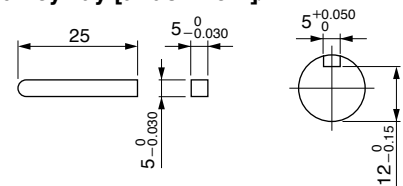
Brushless amplifie (dimensions)

Unit mm

mass
0.37 kg



<Key and keyway [attachment]>



<Cautions> Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

MINAS-BL GV series

Specification (For Common specification, see p. 11, 12)

Size	Model No. / Amplifier and Motor		Rated output (W)	Input power supply for Amplifier			Rated torque (N·m)	Starting torque (N·m)	Rated speed (r/min)	Maximum rotation speed (r/min)	
	Brushless Amplifier	Motor		Voltage AC (V)	Allowed range (%)	Frequency (Hz)					Rated input current (A)
90 mm sq.	MBEG1E1BCV	MBMU1E1A○	130	Single phase 100 to 120	±10	50/60	2.8	0.41	0.62	3000	4000
	MBEG1E5BCV	MBMU1E2A○		Single phase 200 to 240 /3-phase			Single phase 1.5 3-phase 0.7				

* Suffix of "○" in the motor model No. represents shape of shaft.

* Starting torque: Representative value

Permissible torque at output shaft of gear head (N·m)

Applicable Gear head	Reduction ratio	Reduction 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			
MZ9G□B MY9G□B	motor rotation speed (r/min)	3000 or less	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								
		3000 to 4000	100 V	0.59	0.71	0.99	1.18	1.49	1.78	2.00	2.24	2.69	3.27	3.61	4.63	5.47	6.15	8.60	10.2	12.9	15.4	17.2	19.6				
	200 V		0.76	0.91	1.27	1.52	1.91	2.28	2.57	2.87	3.44	4.19	4.63	5.93	7.01	7.88	11.0	13.1	16.5	19.6							
	Rotational direction		Same as motor rotational direction										Reverse to motor rotational direction					Same as motor rotational direction									

Permissible load inertia moment (×10⁻⁴kg·m²)

Reduction 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
Applicable Gear head																							
MZ9G□B / MY9G□B	5.93	8.47	16.4	23.6	37.3	53.4	67.6	98.3	142	211	257	423	589	847	1684								

Permissible shaft load

		Overhung load (W)	Thrust load (F)
Motor shaft (Round shaft)	Output	150 N	20 N
	130 W		
Applicable Gear head	MZ9G□B MY9G□B	588 N	147 N

Wiring diagram

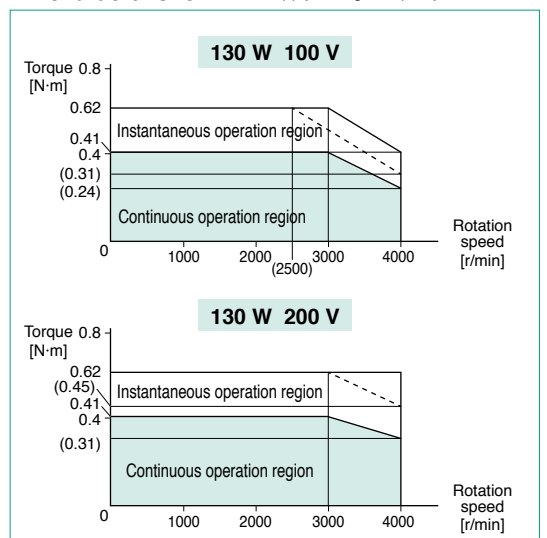
In Case of 3-Phase 200 V

*When you use single phase, connect the main power between L1 and L2 terminals.

Be sure to ground the grounding terminal.

In wiring to power supply (outside of equipment) from MCCB, use an electric wire of 1.6 mm diameter (2.0 mm²) or more both for main circuit and grounding. Apply grounding class D (100 Ω or below) for grounding. Do not tighten the ground wires together, but connect them individually.

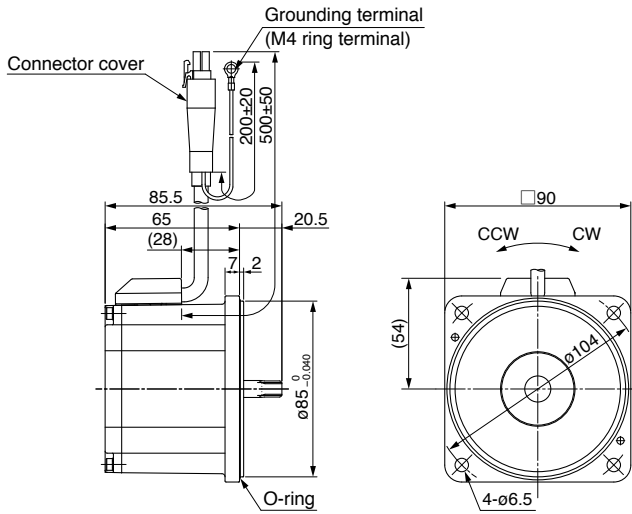
Speed-torque characteristic (Dotted line shows a characteristic curve when supply voltage drops by 10%.)



* Before using, be sure to read "Instruction manual" to check precautions and correct procedure.

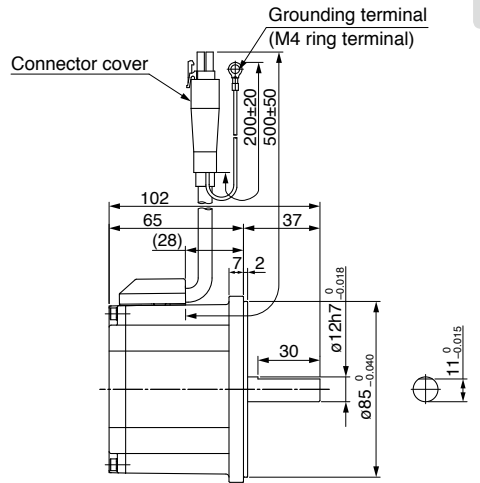
Motor (dimensions)

Unit mm



<Round shaft type>

mass
1.2 kg

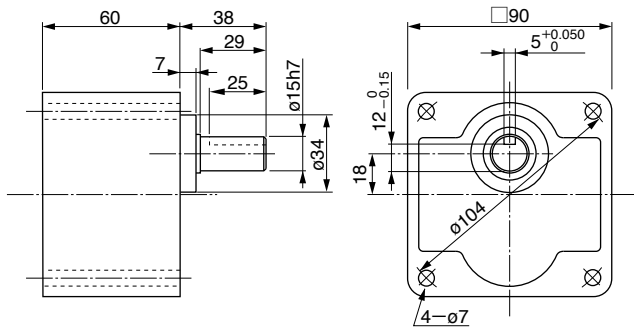


Gear head (dimensions)

Unit mm

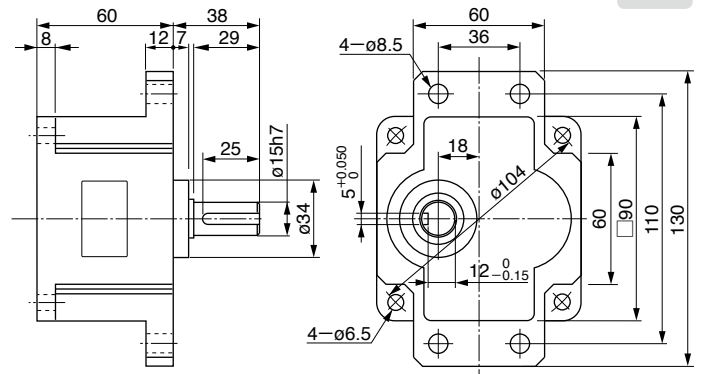
MZ9G□B (Ball bearing/Hinge not attached)

mass
1.4 kg



MY9G□B (Ball bearing/Hinge attached)

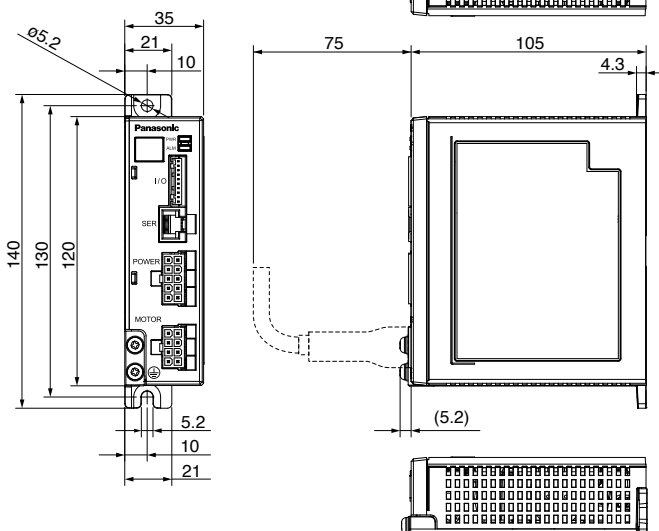
mass
1.4 kg



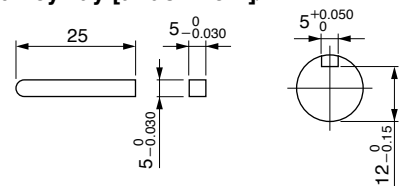
Brushless amplifier (dimensions)

Unit mm

mass
0.37 kg



<Key and keyway [attachment]>



<Cautions> Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

Gear head

Outline of gear head

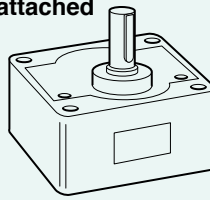
Reduction ratio

• 22 reduction ratios from 1/3 to 1/180 are available for the X type; 23 reduction ratios from 1/3 to 1/200 are available for the Y and Z types.

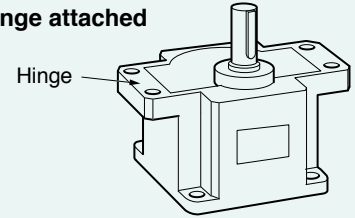
Gear type

X: 50 W
 Z: 90 W, 130 W (Hinge not attached)
 Y: 90 W, 130 W (Hinge attached)

• Hinge not attached



• Hinge attached



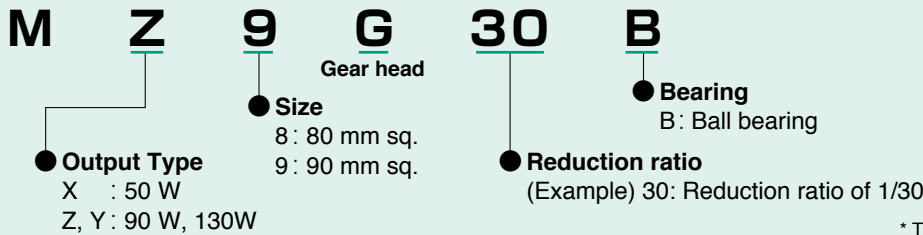
Backlash

Less than 2 ° (design value)

Type of gear head and reduction ratio

Gear type	Motor capacity	Reduction ratio																							
		1/3	1/3.6	1/5	1/6	1/7.5	1/9	1/10	1/12.5	1/15	1/18	1/20	1/25	1/30	1/36	1/50	1/60	1/75	1/90	1/100	1/120	1/150	1/180	1/200	
X	50 W	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Z, Y	90 W, 130 W	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

Check the Model number



* The motor and gear are sold separately.

Calculation of torque at output shaft of gear head

Standard gear head only

$$N_G = \frac{N_M}{i}$$

N_G : Speed of gear head [r/min]

T_G : Output torque of gear head [N·m]

$$T_G = T_M \times i \times \eta$$

N_M : Motor speed [r/min]

T_M : Motor torque [N·m]

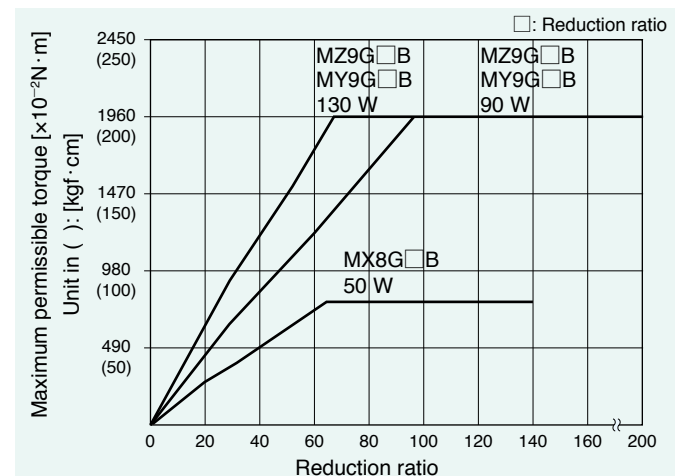
i : Reduction ratio of gear head

η : Gear head efficiency

Maximum permissible torque

There is a limit to the strength of a gear due to its material and construction. The usable load torque determined based on this limit is called permissible torque. As can be seen from the above-mentioned formula, the load becomes larger when the reduction ratio is increased. If the gear head is used with the load exceeding the permissible torque, its life expectancy will be shortened significantly. Refer to the right graph and the permissible torque for each model and use the gear head at an appropriate load.

Maximum permissible torque



Nominal reduction ratio and actual reduction ratio

Note that there is a difference between the nominal reduction ratio and actual reduction ratio of each gear head. Refer to the table right.

■ Gear head

Nominal reduction ratio	Actual reduction ratio	
	MX8G□	MZ9G□, MY9G□
1/3	1/3.01	1/3.02
1/3.6	1/3.60	1/3.61
1/5	1/4.98	1/5.03
1/6	1/5.96	1/6.02
1/7.5	1/7.48	1/7.58
1/9	1/9.00	1/9.06
1/10	1/9.99	1/10.2
1/12.5	1/12.5	1/12.3
1/15	1/14.9	1/14.8
1/18	1/18.1	1/18.0
1/20	1/20.1	1/19.9
1/25	1/25.1	1/25.5
1/30	1/30.3	1/30.1
1/36	1/36.4	1/36.1
1/50	1/49.8	1/50.9
1/60	1/61.2	1/60.5
1/75	1/76.2	1/76.0
1/90	1/90.5	1/89.8
1/100	1/98.0	1/98.6
1/120	1/122.5	1/121.2
1/150	1/148.9	1/150.4
1/180	1/183.5	1/182.1
1/200	—	1/202.1

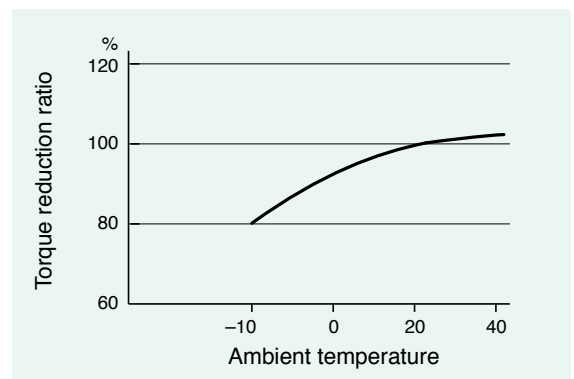
* 1/200: only 90 mm sq. size

Gear head efficiency

Model No.	Reduction 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	
MX8G□B						81%												75%						—
MZ9G□B MY9G□B			81%							75%								70%						

Gear head efficiency and ambient temperature

Calculate the actual gear head efficiency by multiplying the above-shown gear head efficiency at room temperature by the torque reduction ratio shown right.



<Important>

The gear heads MB8G□BV and MB9G□BV are designed for use with GP series, and MX8G□B, MZ9G□B and MY9G□B are designed for use with GV series, respectively, and they are not compatible with gear heads of different series.

Gear head

Model list of gear head

Gear head

Ball bearing

Size	Reduction ratio	Model No.	Hinge
80 mm sq. (50 W)	1/3, 1/3.6, 1/5, 1/6, 1/7.5, 1/9, 1/10, 1/12.5, 1/15, 1/18	MX8G3B to MX8G18B	
	1/20, 1/25, 1/30, 1/36	MX8G20B to MX8G36B	
	1/50, 1/60, 1/75, 1/90, 1/100, 1/120, 1/150, 1/180	MX8G50B to MX8G180B	
90 mm sq. (90 W · 130 W) (Common use)	1/3, 1/3.6, 1/5, 1/6, 1/7.5, 1/9	MZ9G3B to MZ9G9B	
	1/10, 1/12.5, 1/15, 1/18	MZ9G10B to MZ9G18B	
	1/20, 1/25, 1/30, 1/36, 1/50, 1/60	MZ9G20B to MZ9G60B	
	1/75, 1/90, 1/100, 1/120, 1/150, 1/180, 1/200	MZ9G75B to MZ9G200B	
	1/3, 1/3.6, 1/5, 1/6, 1/7.5, 1/9	MY9G3B to MY9G9B	○
	1/10, 1/12.5, 1/15, 1/18	MY9G10B to MY9G18B	○
	1/20, 1/25, 1/30, 1/36, 1/50, 1/60	MY9G20B to MY9G60B	○
	1/75, 1/90, 1/100, 1/120, 1/150, 1/180, 1/200	MY9G75B to MY9G200B	○

* For the specifications for each item, refer to the page of the motor to which it can be applied.

Gear head accessory

Ball bearing

Size	Reduction ratio	Model No.	Accessory			
			Screw (mm)	Flat washer	Hexagon nut	Key
80 mm sq.	1/3 to 1/180	MX8G3B to MX8G180B	M5 × 55 pan head screw : 4	for M5: 4	M5 : 4	4×4×25 one-end round : 1
90 mm sq.	1/3 to 1/200	MZ9G3B to MZ9G200B	M6 × 85 hexagon socket head bolt : 4	for M6: 4	M6 : 4	5×5×25 one-end round : 1
	1/3 to 1/200	MY9G3B to MY9G200B	M6 × 25 hexagon socket head bolt : 4	for M6: 4	M6 : 4	5×5×25 one-end round : 1