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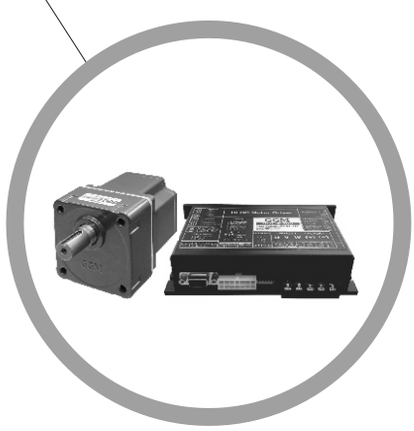
# GGM

## BRUSHLESS DC MOTOR UNIT



# [BLDC MOTOR MODEL CODING SYSTEM]

| K | 8 | B | H | 60 | N | C | – | B |
|---|---|---|---|---|---|---|---|---|

| SERIES |
|---|
| K SERIES |

| FLANGE | |
|---|---|
| 6 | □60 |
| 8 | □80 |
| 9 | □90 |
| 10 | □104 |

| BLDC MOTOR | |
|---|---|
| B | AC Input |
| F | |
| X | DC Input |

| SHAFT | |
|---|---|
| S | STRAIGHT |
| H | HIGH STRENGTH |

| OUTPUT | |
|---|---|
| 30 | 30W |
| 50 | 50W |
| 60 | 60W |
| 90 | 90W |
| 100 | 100W |
| 150 | 150W |
| 200 | 200W |
| 400 | 400W |

| COOLING | |
|---|---|
| F | COOLING FAN |
| N | NON FAN |

| VOLTAGE | |
|---|---|
| U | 1Ø100V 50/60Hz |
| | 1Ø 110V 60Hz |
| | 1Ø 115V 60Hz |
| C | 1Ø 200V 50/60Hz |
| | 1Ø 220V 50/60Hz |
| | 1Ø 230V 50/60Hz |
| 2 | DC 24V |
| 9 | DC 48V |

| ADDITIONAL | |
|---|---|
| B | BRAKE |
| E | ENCODER |
| BE | BRAKE ENCODER |

# [SPEED CONTROL UNIT MODEL CODING SYSTEM]

| G | U | B | – | C | – | 60 |
|---|---|---|---|---|---|---|

| SERIES |
|---|
| G SERIES |

| CONTROLLER TYPE | |
|---|---|
| U | UNIT TYPE |

| 적용 BLDC MOTOR | |
|---|---|
| B | AC Input |
| F | |
| X | DC Input |

| SHAFT | |
|---|---|
| U | 1Ø 100V 50/60Hz |
| | 1Ø 110V 60Hz |
| | 1Ø 115V 60Hz |
| C | 1Ø 200V 50/60Hz |
| | 1Ø 220V 50/60Hz |
| | 1Ø 230V 50/60Hz |
| 2 | DC 24V |
| 9 | DC 48V |

| OUTPUT | |
|---|---|
| 30 | 30W |
| 50 | 50W |
| 60 | 60W |
| 90 | 90W |
| 100 | 100W |
| 150 | 150W |
| 200 | 200W |
| 400 | 400W |

GGM GGM CO., LTD.

# [TRANSVERSE AXIS HOLLOW GEARHEAD MODEL CODING SYSTEM]

| K | 8 | H | 100 | B | TH |
|---|---|---|---|---|---|

| SERIES |
|---|
| K SERIES |

| FLANGE TYPE | |
|---|---|
| 6 | 60 x 120.5 |
| 8 | 80 x 160.5 |
| 9 | 90 x 180 |
| 10 | 104 x 218 |

| GEAR TYPE | |
|---|---|
| H | HIGH STRENGTH |

| RATIO | |
|---|---|
| 5 | 1/5 |
| : | : |
| 200 | 1/200 |

| BEARING | |
|---|---|
| B | BALL BEARING |

| SHAFT TYPE | |
|---|---|
| TH | TRANSVERS AXIS HOLLOW |

## List of functions

| Series | Output | | | | Input voltage | | | |
|---|---|---|---|---|---|---|---|---|
| | 60mm | 80mm | 90mm | 104mm | single phase 100~115V | single phase 200~230V | DC 24V | DC 48V |
| B SERIES (AC Input type) | 30W | | | | ● | ● | | |
| | | 60W | | | ● | ● | | |
| | | | 90W | | ● | ● | | |
| | | | 150W | | | ● | | |
| F SERIES (AC Input type) | 30W | | | | | ● | | |
| | | 60W | | | | ● | | |
| | | | 150W | | | ● | | |
| | | | | 200W | | ● | | |
| | | | | 400W | | ● | | |
| X SERIES (DC Input type) | 30W | | | | | | ● | |
| | | 50W | | | | | ● | |
| | | | 100W | | | | ● | |
| | | | | 200W | | | ● | |
| | | | | 400W | | | | ● |

| Series | Speed control range [r/min] | Speed ratio [W] | Speed change ratio | Funtions | | |
|---|---|---|---|---|---|---|
| | | | | Multi-step rotation | Acceleraion/ deceleration rotation | Alarm ouput |
| B SERIES (AC Input type) | 100~3000 | 30,60,90,150 | ±1% below | | ● | ● |
| F SERIES (AC Input type) | 100~4000 | 30,60,150 200,400 | ±0.5% below | 8 stage | ● | ● |
| X SERIES (DC Input type) | 100~3000 | 30,50,100 | ±1% below | | ● | ● |
| | 100~4000 | 200,400 | | | | |

# [ Summary of brushless DC motor ]

## 1. Easy contact, simple manipulation

Motor and wire get easily connected by just connecting speed control unit connector. In case of B Series, the rotation speed can easily be manipulated with the volume on the front.

## 2. Excellent speed stability

Electricity flowing through the motor is controlled by comparing the feedback signal from the motor and the set speed. This stabilizes the speed. Even if the load fluctuates, the speed can be controlled safely from the low to high speeds.
The rate of speed change for B Series is ±1.0%.
The rate of speed change for F Series is ±0.5%.
The rate of speed change for X Series ±1.0% .

## 3. Wider range of speed change

Speed can be controlled throughout a wide range by using feedback control.
In case of B Series, the speed is controlled from 100 to 3000r/min and F Series speed is controlled from 100 to 4000r/min and.
In case of X Series, the speed is controlled from 100 to 3000r/min(30W,50W,100W), from 100 to 4000 r/min (200W, 400W).

## 4. Slow start · slow stop funtions

Motor starts at the set acceleration time and stops at the set deceleration time. This acceleration and deceleration times can be set within 0.5~10 seconds.

## 5. Equipped with various control function

Correspond to various operation method and available with slow start/slow stop function effective to delication work transportation.

## 6. Compact size and high output

It is made more compact and high output by using rotor with permanent magnet.

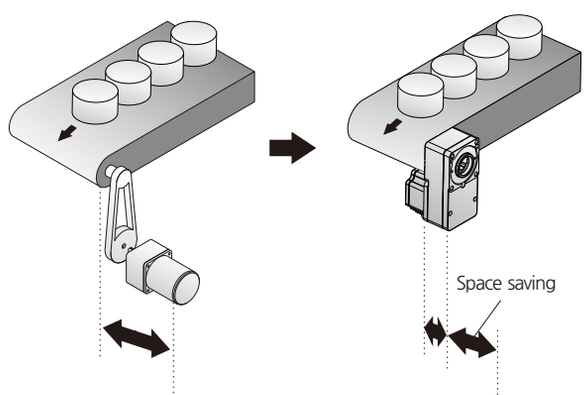
## 7. Energy saving

Brushless DC motor has almost no second loss by using rotor with permanent magnet. In case of 90W, energy consumption is reduced by 50% by comparing with inverter control AC motor and contributes to FA energy saving.

## 8. High streghth · gearhead

Applied gear's optimum design, new structure design of case and supplement, bearing structure strength.

◇ TRANSVERSE AXIS HOLLOW GEARHEAD
Execute device's space save because it doesn't use coupling and directly connect to running shaft.




◇ **High stregth · gearhead**(Flat type gearhead)
The parallel shaft gearhead for high-strength gearhead 150W can cope with high rotation and achieves a maximum permissible torque of 68Nm.
The rated lifecycle is 5000 hours.

## 9. Low noise

We made it quieter by applying new structure and planning skills for motor. Gear head is implemented with active noise control by gear processing techniques, and assembly techniques to reduce noise.

## 10. Others

- The structure of the motor unit is designed as IP65, so it is safe even if water drops on the product.
(It cannot be used in a place where it is in constant contact with water.)
- B series and F series is between motor and control unit is extendable max 10m and X series is extendable max 2m.(if option cable is applied)

## BRUSHLESS DC MOTOR UNIT

# B Series

Brushless DC motor is for AC input speed control and unit is for panel installation driver.

- Output : 30W, 60W, 90W, 150W
- Speed control range : 100~3000 r/min
- Speed change ratio : less than or equal to ±1%
  (Condition: Rated torque, rated rotation speed, rated voltage)

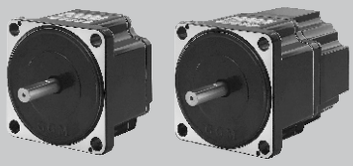

# F Series

- Output : 30W, 60W, 150W, 200W, 400W
- Speed control range : 100~4000 r/min
- Speed change ratio : less than or equal to ±0.5%
  (Condition: Rated torque, rated rotation speed, rated voltage)

# BRUSHLESS DC MOTOR UNIT - B Series

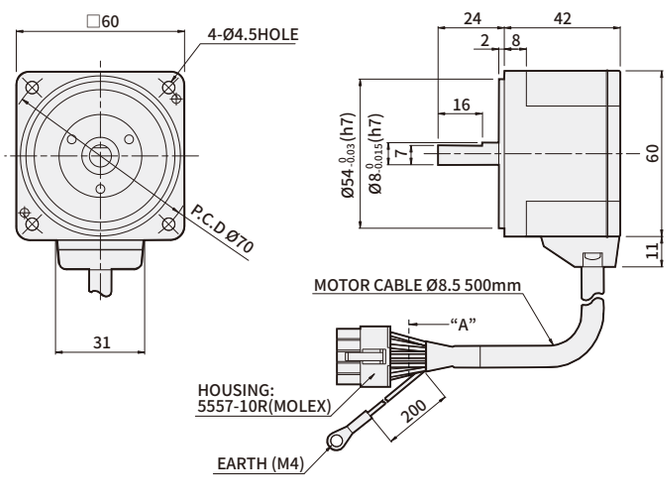
## 30W

## □60mm
AC voltage input

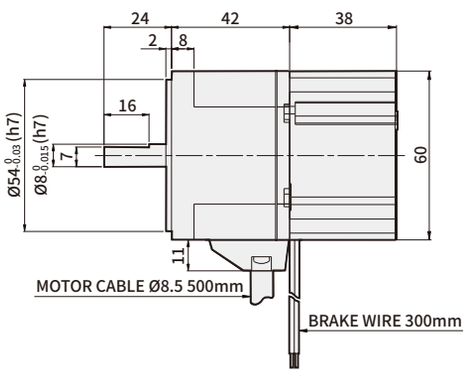


## DIMENSIONS

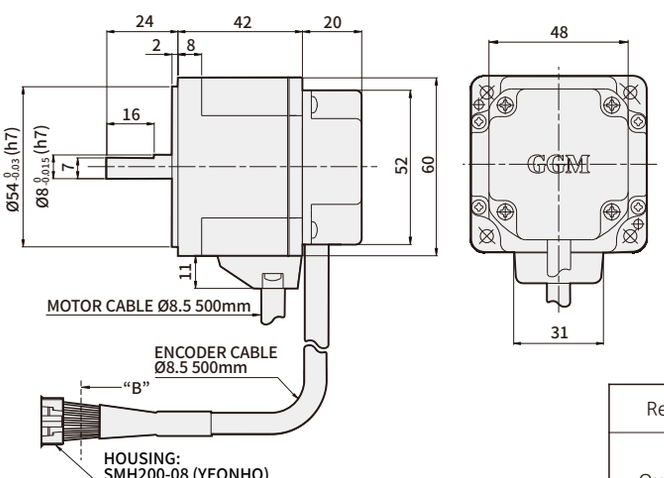
### K6BS30N■
Weight : 0.5Kg



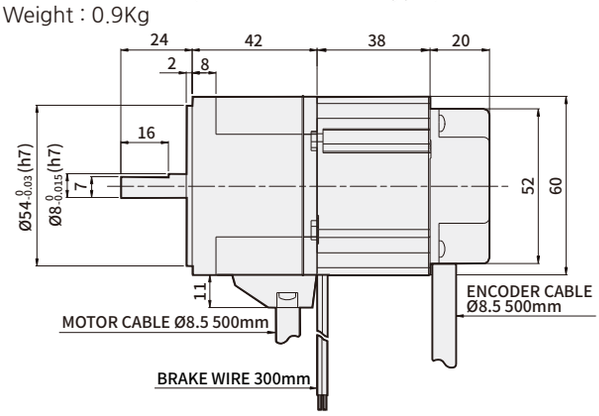

### K6BS30N■-B (Brake type)
Weight : 0.8Kg




### K6BS30N■-E (Encoder type)
Weight : 0.6Kg

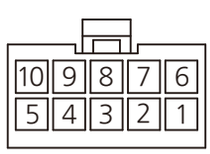
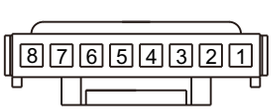



### K6BS30N■-BE (Brake Encoder type)
Weight : 0.9Kg




| Resolution | 1,000PPR | | Timing diagram CW |
|---|---|---|---|
| Output Type | Output Form | Power Supply | A, B, Z |
| | Line Driver | +5Vdc ±10% 150mA below | |

※Please refer to gearhead assembly page C-1, C-2.

| CONNECTOR HOUSING | |
|---|---|
| MOTOR VIEW "A" | ENCODER VIEW "B" |
|  |  |



| ENCODER PIN MAP | | |
|---|---|---|
| PIN No. | COLOR | SIGNAL |
| 1 | BLUE | Vcc(5Vdc) |
| 2 | BROWN | A |
| 3 | WHITE | /A |
| 4 | ORANGE | B |
| 5 | YELLOW | /B |
| 6 | GREEN | Z |
| 7 | PURPLE | /Z |
| 8 | GRAY | Ground |

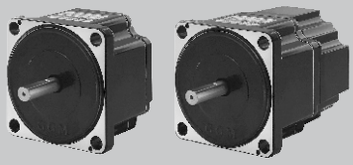
| MOTOR PIN MAP | | |
|---|---|---|
| PIN No. | COLOR | SIGNAL |
| 1 | BLUE | U |
| 2 | - | - |
| 3 | GREEN | Ground |
| 4 | YELLOW | Vcc |
| 5 | ORANGE | Hw |
| 6 | PURPLE | V |
| 7 | GRAY | W |
| 8 | | (Drain) |
| 9 | BROWN | Hu |
| 10 | WHITE | Hv |

※ In ■ of the model name voltage U (single-phase 100~115V), C (single-phase 200~230V) will be shown.
※ 30NC which are in end of the model name is UL certified ones. UL FILE NO. E504659

# BRUSHLESS DC MOTOR UNIT - F Series

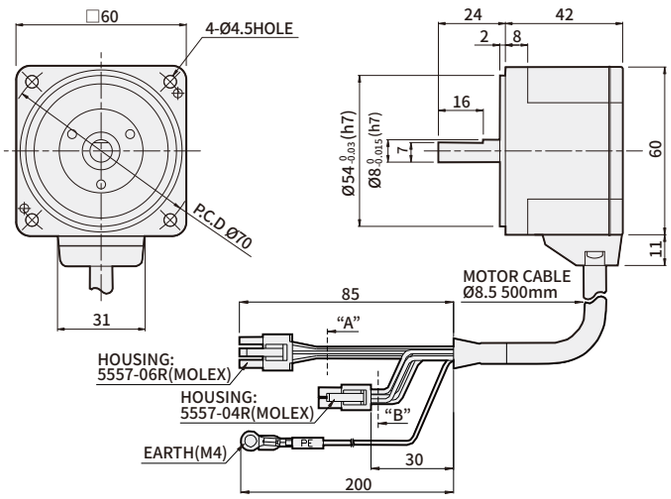
## 30W

## □60mm
AC voltage input

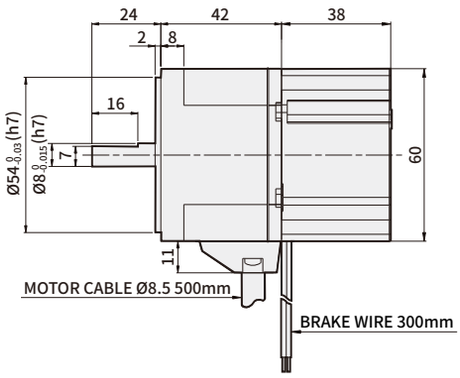


## DIMENSIONS

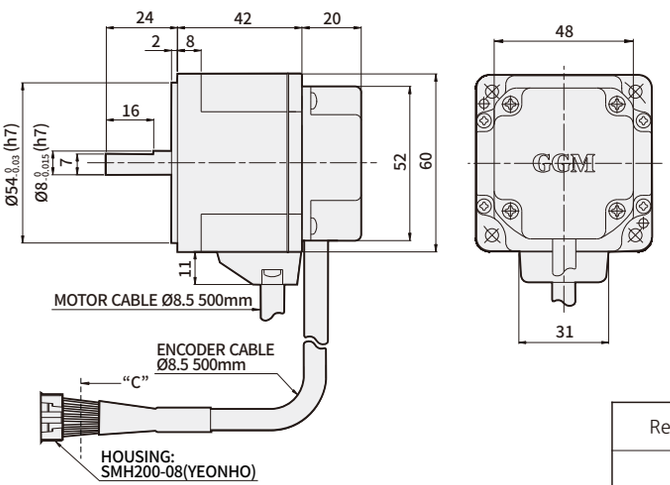
### K6FS30NC
Weight : 0.5Kg



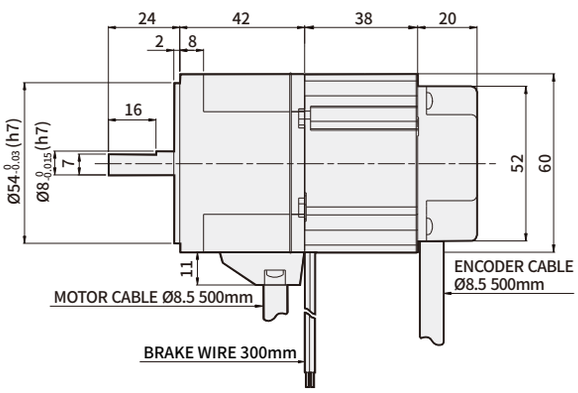

### K6FS30NC-B (Brake type)
Weight : 0.8Kg




### K6FS30NC-E (Encoder type)
Weight : 0.6Kg



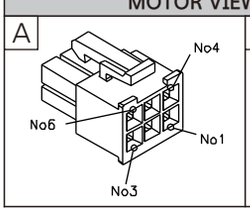

### K6FS30NC-BE (Brake Encoder type)
Weight : 0.9Kg

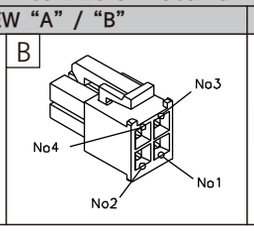



| Resolution | 1,000PPR | | Timing diagram CW |
|---|---|---|---|
| Output Type | Output Form | Power Supply | A, B, Z |
| | Line Driver | +5Vdc ±10% 150mA below | |

※Please refer to gearhead assembly page C-1, C-2.

| CONNECTOR HOUSING | |
|---|---|
| MOTOR VIEW "A" / "B" | ENCODER VIEW "C" |





| ENCODER PIN MAP | | |
|---|---|---|
| PIN No. | COLOR | SIGNAL |
| 1 | BLUE | Vcc(5Vdc) |
| 2 | BROWN | A |
| 3 | WHITE | /A |
| 4 | ORANGE | B |
| 5 | YELLOW | /B |
| 6 | GREEN | Z |
| 7 | PURPLE | /Z |
| 8 | GRAY | Ground |

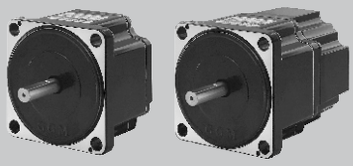
| MOTOR PIN MAP | | |
|---|---|---|
| 5557-06R | | |
| PIN No. | COLOR | SIGNAL |
| 1 | YELLOW | VCC |
| 2 | BLACK | DRAIN |
| 3 | GREEN | Ground |
| 4 | BROWN | Hu |
| 5 | WHITE | Hv |
| 6 | ORANGE | Hw |
| 5557-04R | | |
| 1 | — | NC |
| 2 | BLUE | U |
| 3 | GRAY | W |
| 4 | PURPLE | V |

※ 30NC which are in end of the model name is UL certified ones. UL FILE NO. E504659

# BRUSHLESS DC MOTOR UNIT - B Series

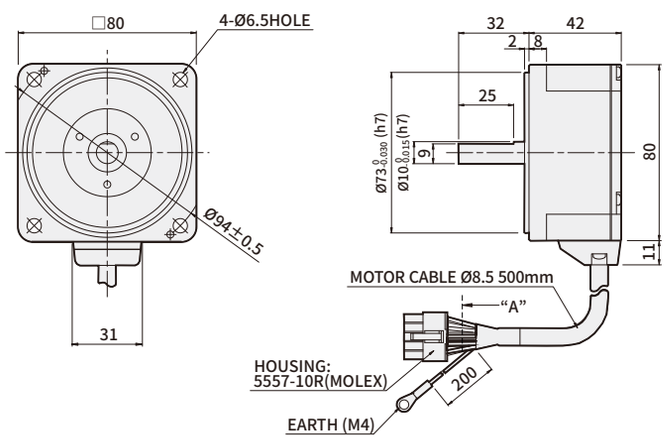
## 60W

## □80mm
AC voltage input

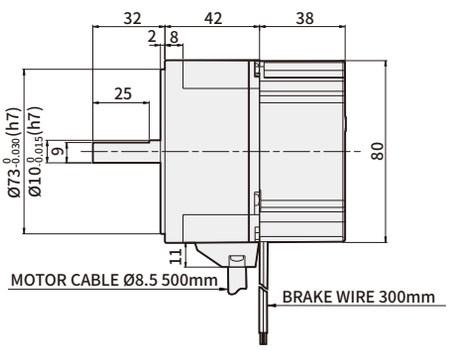


## DIMENSIONS

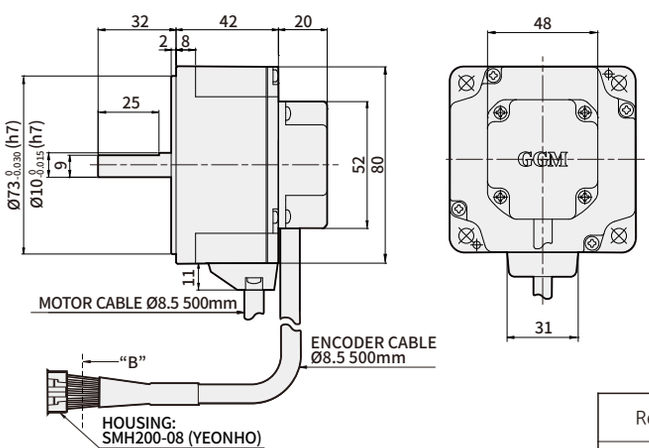
**K8BS60N■**
Weight : 0.8Kg



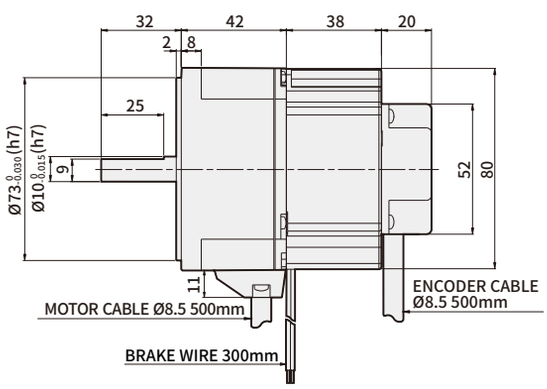

**K8BS60N■-B** (Brake type)
Weight : 1.3Kg




**K8BS60N■-E** (Encoder type)
Weight : 0.9Kg

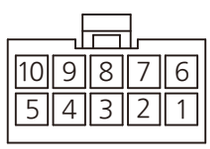
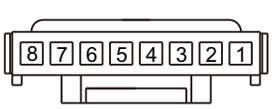



**K8BS60N■-BE** (Brake Encoder type)
Weight : 1.4Kg




| | | | |
|---|---|---|---|
| Resolution | 1,000PPR | | Timing diagram CW |
| Output Type | Output Form | Power Supply | A B Z |
| | Line Driver | +5Vdc ±10% 150mA below | |

※Please refer to gearhead assembly page C-3, C-4.

| CONNECTOR HOUSING | |
|---|---|
| MOTOR VIEW "A" | ENCODER VIEW "B" |
|  |  |



| ENCODER PIN MAP | | |
|---|---|---|
| PIN No. | COLOR | SIGNAL |
| 1 | BLUE | Vcc(5Vdc) |
| 2 | BROWN | A |
| 3 | WHITE | /A |
| 4 | ORANGE | B |
| 5 | YELLOW | /B |
| 6 | GREEN | Z |
| 7 | PURPLE | /Z |
| 8 | GRAY | Ground |

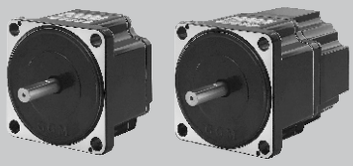
| MOTOR PIN MAP | | |
|---|---|---|
| PIN No. | COLOR | SIGNAL |
| 1 | BLUE | U |
| 2 | - | - |
| 3 | GREEN | Ground |
| 4 | YELLOW | Vcc |
| 5 | ORANGE | Hw |
| 6 | PURPLE | V |
| 7 | GRAY | W |
| 8 | | (Drain) |
| 9 | BROWN | Hu |
| 10 | WHITE | Hv |

※ In ■ of the model name voltage U (single-phase 100~115V), C (single-phase 200~230V) will be shown.
※ 60NC which are in end of the model name is UL certified ones. UL FILE NO. E504659

# BRUSHLESS DC MOTOR UNIT - F Series

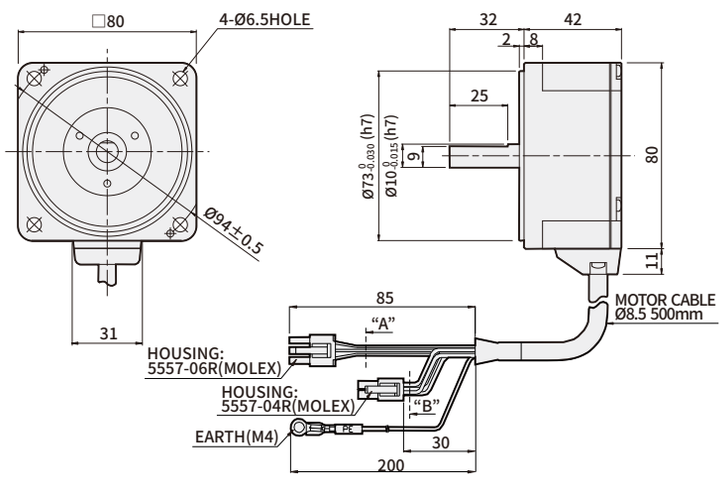
## 60W

## □80mm
AC voltage input

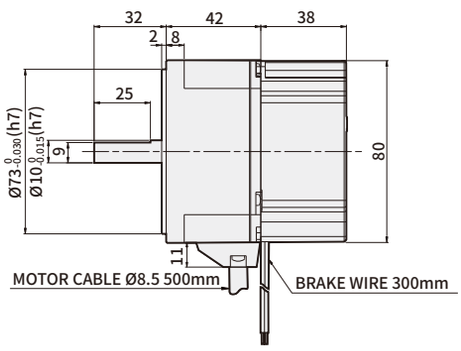


## DIMENSIONS

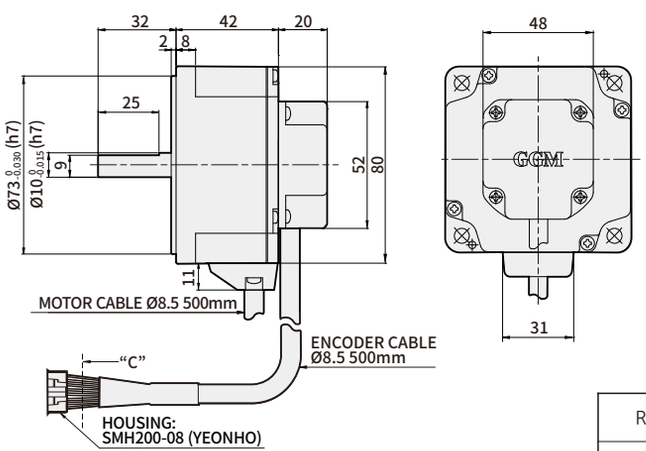
### K8FS60NC
Weight : 0.8Kg



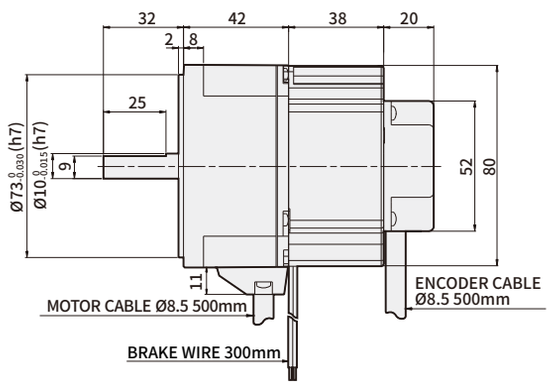

### K8FS60NC-B (Brake type)
Weight : 1.3Kg




### K8FS60NC-E (Encoder type)
Weight : 0.9Kg



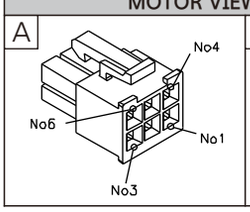

### K8FS60NC-BE (Brake Encoder type)
Weight : 1.4Kg

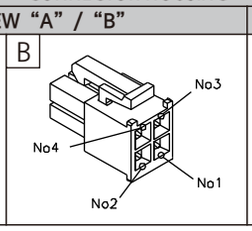


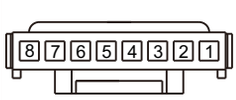

| | | | |
|---|---|---|---|
| Resolution | 1,000PPR | | Timing diagram CW |
| Output Type | Output Form | Power Supply | A, B, Z |
| | Line Driver | +5Vdc ±10% 150mA below | |

※Please refer to gearhead assembly page C-3, C-4.

| CONNECTOR HOUSING | |
|---|---|
| MOTOR VIEW "A" / "B" | ENCODER VIEW "C" |




| ENCODER PIN MAP | | |
|---|---|---|
| PIN No. | COLOR | SIGNAL |
| 1 | BLUE | Vcc(5Vdc) |
| 2 | BROWN | A |
| 3 | WHITE | /A |
| 4 | ORANGE | B |
| 5 | YELLOW | /B |
| 6 | GREEN | Z |
| 7 | PURPLE | /Z |
| 8 | GRAY | Ground |

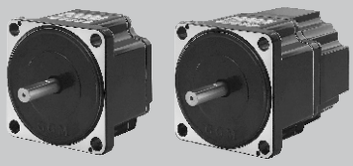
| MOTOR PIN MAP | | |
|---|---|---|
| 5557-06R | | |
| PIN No. | COLOR | SIGNAL |
| 1 | YELLOW | VCC |
| 2 | BLACK | DRAIN |
| 3 | GREEN | Ground |
| 4 | BROWN | Hu |
| 5 | WHITE | Hv |
| 6 | ORANGE | Hw |
| 5557-04R | | |
| 1 | — | NC |
| 2 | BLUE | U |
| 3 | GRAY | W |
| 4 | PURPLE | V |

※ 60NC which are in end of the model name is UL certified ones. UL FILE NO. E504659

# BRUSHLESS DC MOTOR UNIT - B Series

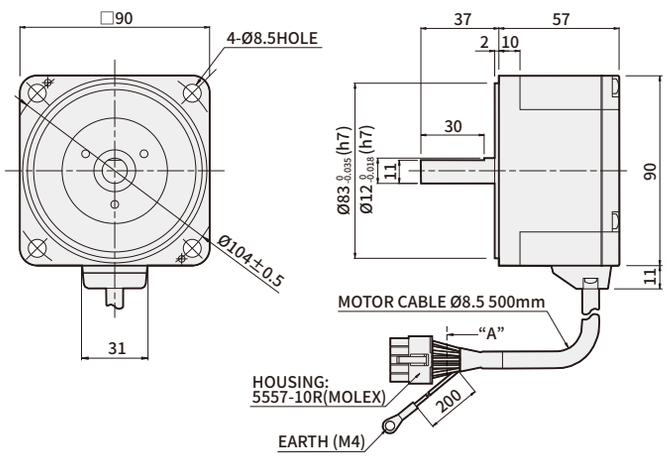
**90W**
**150W**

## □90mm
AC voltage input

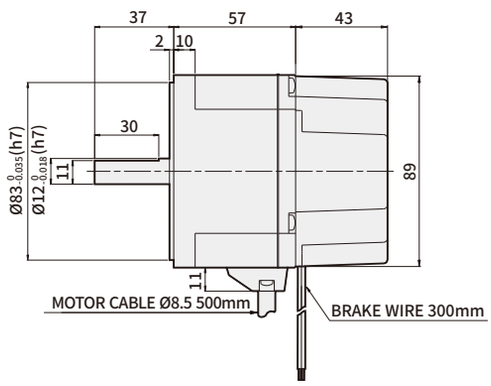


## DIMENSIONS

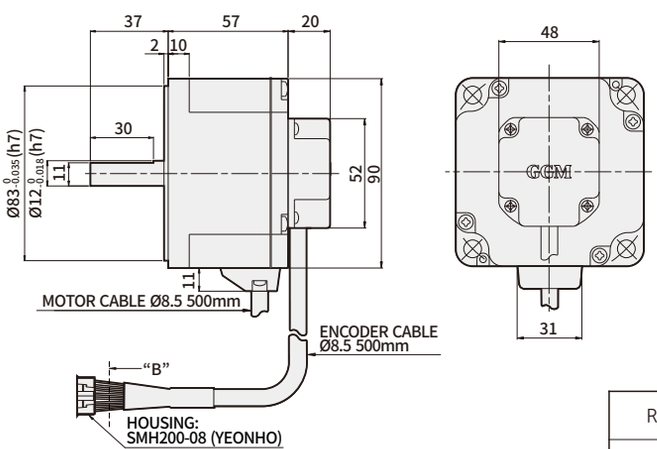
**K9BS90N■**
**K9BS150NC**
Weight : 1.3Kg



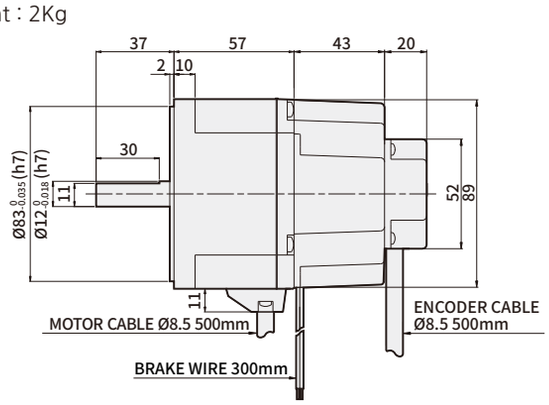

**K9BS90N■-B** (Brake type)
**K9BS150NC-B**
Weight : 1.9Kg




**K9BS90N■-E** (Encoder type)
**K9BS150NC-E**
Weight : 1.4Kg

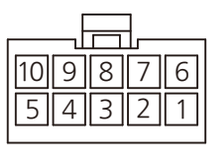
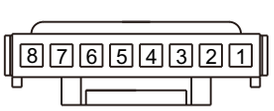



**K9BS90N■-BE** (Brake Encoder type)
**K9BS150NC-BE**
Weight : 2Kg




| | | | |
|---|---|---|---|
| Resolution | 1,000PPR | | Timing diagram CW |
| Output Type | Output Form | Power Supply | A / B / Z |
| | Line Driver | +5Vdc ±10% 150mA below | |

※Please refer to gearhead assembly page C-5, C-6.

| CONNECTOR HOUSING | |
|---|---|
| MOTOR VIEW "A" | ENCODER VIEW "B" |
|  |  |





| ENCODER PIN MAP | | |
|---|---|---|
| PIN No. | COLOR | SIGNAL |
| 1 | BLUE | Vcc(5Vdc) |
| 2 | BROWN | A |
| 3 | WHITE | /A |
| 4 | ORANGE | B |
| 5 | YELLOW | /B |
| 6 | GREEN | Z |
| 7 | PURPLE | /Z |
| 8 | GRAY | Ground |

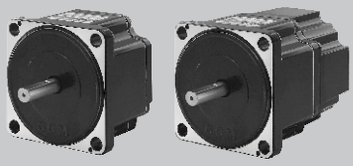
| MOTOR PIN MAP | | |
|---|---|---|
| PIN No. | COLOR | SIGNAL |
| 1 | BLUE | U |
| 2 | - | - |
| 3 | GREEN | Ground |
| 4 | YELLOW | Vcc |
| 5 | ORANGE | Hw |
| 6 | PURPLE | V |
| 7 | GRAY | W |
| 8 | | (Drain) |
| 9 | BROWN | Hu |
| 10 | WHITE | Hv |

※ In ■ of the model name voltage U (single-phase 100~115V), C (single-phase 200~230V) will be shown.
※ 90NU, 90NC, 150NC which are in end of the model name is UL certified ones. UL FILE NO. E504659

# BRUSHLESS DC MOTOR UNIT - F Series

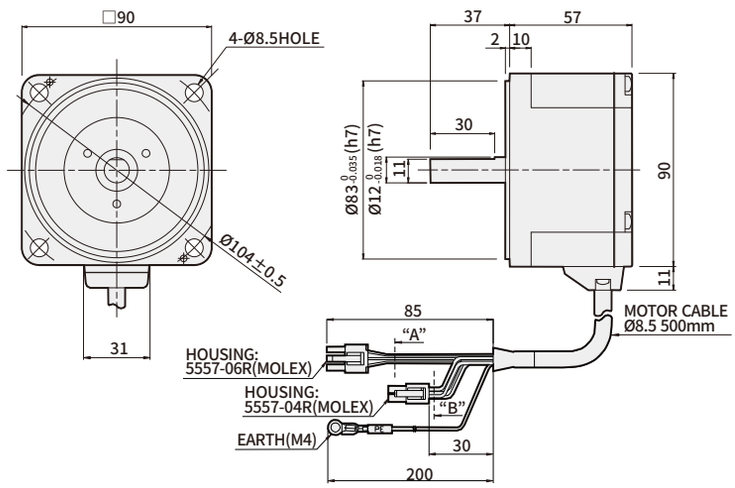
## 150W

## □90mm
AC voltage input

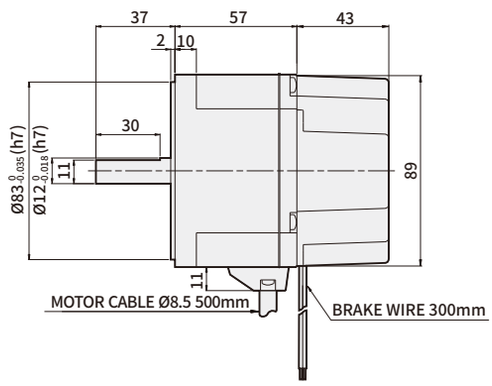


## DIMENSIONS

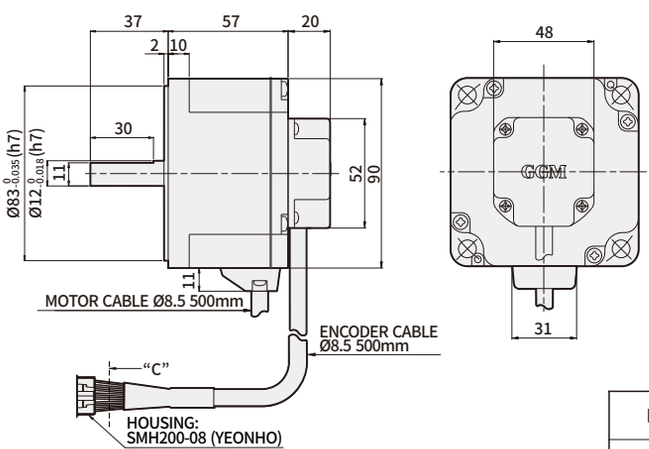
### K9FS150NC
Weight : 1.3Kg



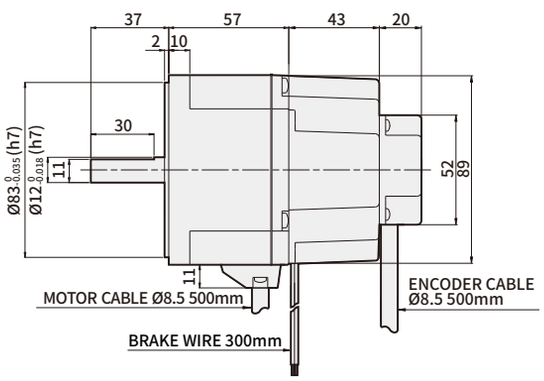

### K9FS150NC-B (Brake type)
Weight : 1.9Kg




### K9FS150NC-E (Encoder type)
Weight : 1.4Kg



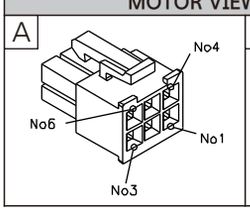

### K9FS150NC-BE (Brake Encoder type)
Weight : 2Kg

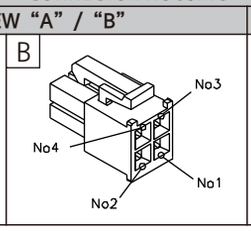



| Resolution | 1,000PPR | | Timing diagram CW |
|---|---|---|---|
| Output Type | Output Form | Power Supply | A, B, Z |
| | Line Driver | +5Vdc ±10% 150mA below | |

※Please refer to gearhead assembly page C-5, C-6.

| CONNECTOR HOUSING | |
|---|---|
| MOTOR VIEW "A" / "B" | ENCODER VIEW "C" |





| ENCODER PIN MAP | | |
|---|---|---|
| PIN No. | COLOR | SIGNAL |
| 1 | BLUE | Vcc(5Vdc) |
| 2 | BROWN | A |
| 3 | WHITE | /A |
| 4 | ORANGE | B |
| 5 | YELLOW | /B |
| 6 | GREEN | Z |
| 7 | PURPLE | /Z |
| 8 | GRAY | Ground |

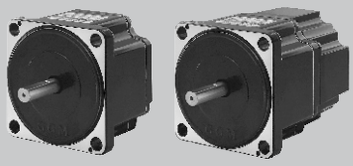
| MOTOR PIN MAP | | |
|---|---|---|
| 5557-06R | | |
| PIN No. | COLOR | SIGNAL |
| 1 | YELLOW | VCC |
| 2 | BLACK | DRAIN |
| 3 | GREEN | Ground |
| 4 | BROWN | Hu |
| 5 | WHITE | Hv |
| 6 | ORANGE | Hw |
| 5557-04R | | |
| 1 | — | NC |
| 2 | BLUE | U |
| 3 | GRAY | W |
| 4 | PURPLE | V |

※ 150NC which are in end of the model name is UL certified ones. UL FILE NO. E504659

# BRUSHLESS DC MOTOR UNIT - F Series

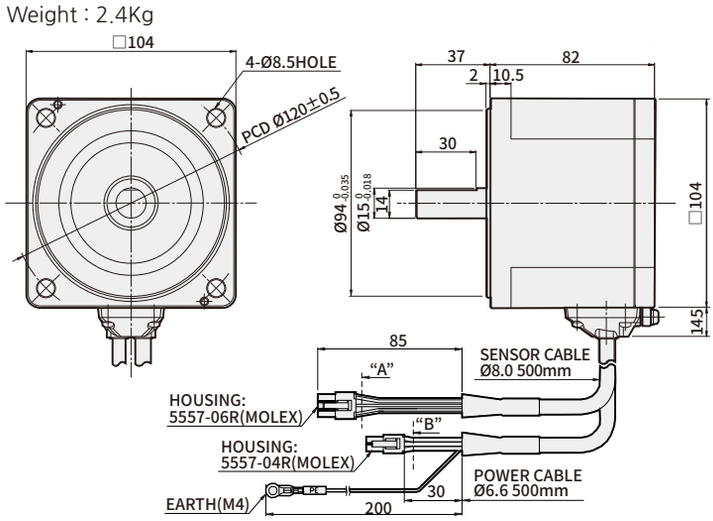
**200W**
**400W**

## □104mm
AC voltage input

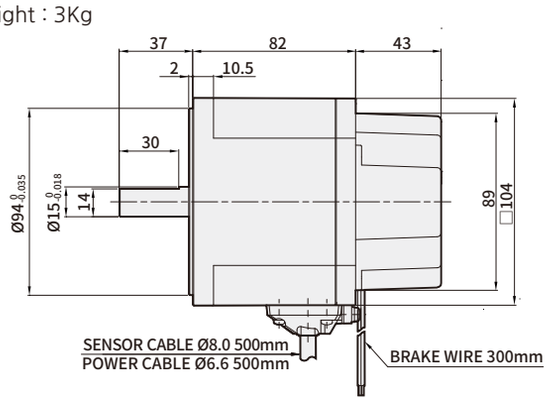


## DIMENSIONS

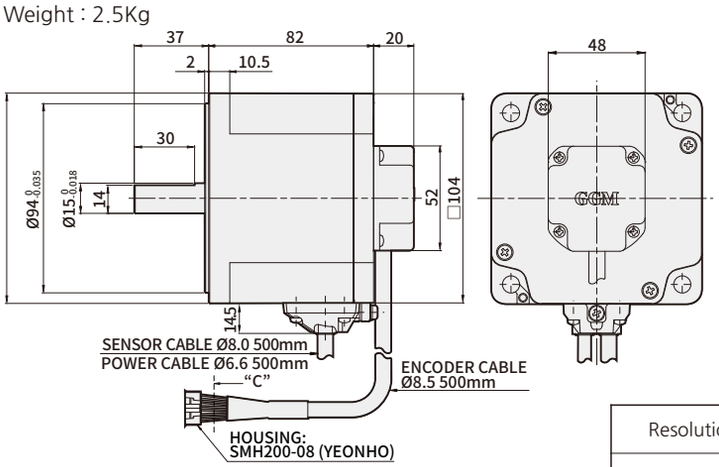
**K10FS200NC**
**K10FS400NC**
Weight : 2.4Kg



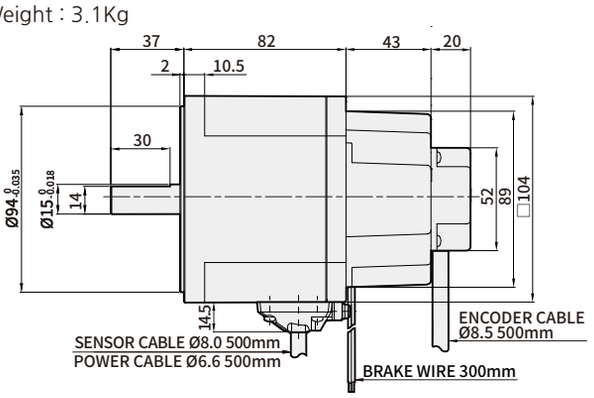

**K10FS200NC-B** (Brake type)
**K10FS400NC-B**
Weight : 3Kg




**K10FS200NC-E** (Encoder type)
**K10FS400NC-E**
Weight : 2.5Kg



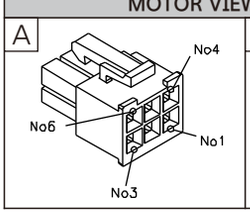

**K10FS200NC-BE** (Brake Encoder type)
**K10FS400NC-BE**
Weight : 3.1Kg

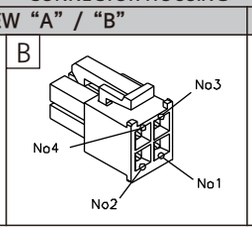


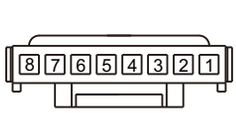

| Resolution | 1,000PPR | | Timing diagram CW |
|---|---|---|---|
| Output Type | Output Form | Power Supply | A, B, Z |
| | Line Driver | +5Vdc ±10% 150mA below | |

※Please refer to gearhead assembly page C-7, C-8.

| CONNECTOR HOUSING | |
|---|---|
| MOTOR VIEW "A" / "B" | ENCODER VIEW "C" |




| ENCODER PIN MAP | | |
|---|---|---|
| PIN No. | COLOR | SIGNAL |
| 1 | BLUE | Vcc(5Vdc) |
| 2 | BROWN | A |
| 3 | WHITE | /A |
| 4 | ORANGE | B |
| 5 | YELLOW | /B |
| 6 | GREEN | Z |
| 7 | PURPLE | /Z |
| 8 | GRAY | Ground |

| MOTOR PIN MAP | | |
|---|---|---|
| 5557-06R | | |
| PIN No. | COLOR | SIGNAL |
| 1 | YELLOW | VCC |
| 2 | BLACK | DRAIN |
| 3 | GREEN | Ground |
| 4 | BROWN | Hu |
| 5 | WHITE | Hv |
| 6 | ORANGE | Hw |
| 5557-04R | | |
| 1 | — | NC |
| 2 | BLUE | U |
| 3 | GRAY | W |
| 4 | PURPLE | V |

※ 200NC, 400NC which are in end of the model name is UL certified ones. UL FILE NO. E504659

## B-Series Specification

| Product name | GEAR TYPE | K6BH30NU | K6BH30NC | K8BH60NU | K8BH60NC | K9BH90NU | K9BH90NC | K9BH150NC |
|---|---|---|---|---|---|---|---|---|
| | D-CUT TYPE | K6BS30NU | K6BS30NC | K8BS60NU | K8BS60NC | K9BS90NU | K9BS90NC | K9BS150NC |
| Rating output (continuous) W | | 30 | | 60 | | 90 | | 150 |
| Power input | Voltage(single-phase) V | 100~115 | 200~230 | 100~115 | 200~230 | 100~115 | 200~230 | 200~230 |
| | Frequency Hz | 50/60 | | | | | | |
| | Rating input current A | 1.0 | 0.6 | 1.5 | 1.0 | 2.5 | 1.5 | 1.8 |
| | Maximum input current A | 2.5 | 2.0 | 3.5 | 3.0 | 5.0 | 4 | 5 |
| Rating torque N·m | | 0.1 | | 0.2 | | 0.3 | | 0.49 |
| Starting torque N·m | | 0.15 | | 0.3 | | 0.5 | | 0.6 |
| Rating rotation speed r/min | | 3,000 | | | | | | |
| Speed control range r/min | | 100 ~ 3,000 | | | | | | |

※ -B (BRAKE), -E (ENCODER) or -BE (BRAKE+ENCODER) can be added to end of the motor model name.

## F-Series Specification

| Product name | GEAR TYPE | K6FH30NC | K8FH60NC | K9FH150NC | K10FH200NC | K10FH400NC |
|---|---|---|---|---|---|---|
| | D-CUT TYPE | K6FS30NC | K8FS60NC | K9FS150NC | K10FS200NC | K10FS400NC |
| Rating output (continuous) W | | 30 | 60 | 150 | 200 | 400 |
| Power input | Voltage(single-phase) V | single-phase 200~240V / three-phase 200~240V (Allowable range ±10%) | | | | |
| | Frequency Hz | 50/60 | | | | |
| | Rating input current A | single-phase : 0.8 | single-phase : 1.0 | single-phase : 2.0 | single-phase : 2.5 | single-phase : 4.0 |
| | | three-phase : 0.5 | three-phase : 0.7 | three-phase : 1.2 | three-phase : 1.8 | three-phase : 3.0 |
| | Maximum input current A | single-phase : 1.9 | single-phase : 2.8 | single-phase : 4.5 | single-phase : 5.5 | single-phase : 7.8 |
| | | three-phase : 1.1 | three-phase : 1.7 | three-phase : 2.6 | three-phase : 3.2 | three-phase : 5.0 |
| Rated output current A | | 0.17 | 0.43 | 0.95 | 1.60 | 2.30 |
| Rating torque N·m | | 0.1 | 0.2 | 0.49 | 0.65 | 1.30 |
| Starting torque N·m | | 0.15 | 0.3 | 0.60 | 1.15 | 1.80 |
| Rating rotation speed r/min | | 3000 | | | | |
| Speed control range r/min | | 100~4000 | | | | |

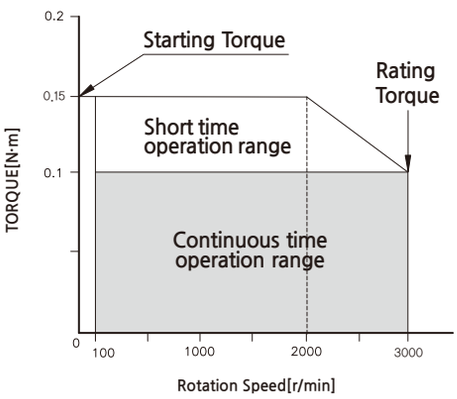
※ -B (BRAKE), -E (ENCODER) or -BE (BRAKE+ENCODER) can be added to end of the motor model name.

## Common Specification

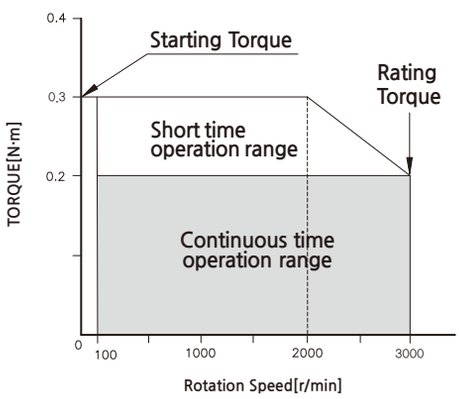
| Items | | Motor | Control unit |
|---|---|---|---|
| Insulation Resistance | | After continuously operating at room temperature and humidity, it should begreater than 100㏁ between coil and case when measured with DC 500V MEGA TESTER | Protection ground terminal and power input should be greater than 100㏁ when measure with DC 500V MEGA TESTER |
| Dielectric Strength | | After continuously operating at room temperature and humidity, there shouldn't be any problem if 60㎐, 1500V is applied for more than 1 minute between coil and case | There shouldn't be nay problem if 60㎐, 1500V is applied for more than 1 minute between protection ground terminal and power input |
| Temperature rise | | After operating continuously at room temperature and humidity, the temperature increase should be less than 60℃ and less than 50℃ of temperature increase on the case surface when measure with thermo couple | |
| Used environment | Used Ambient temperature / Humidity | 0℃~+50℃ (There should not be any freeze) / less than 85% (no dew condensation) | |
| | Ambient environment | No corrosive gas or dusts | |
| Conservation environment | Ambient temperature / Humidity | -25 ~ +70℃ (There should not be any freeze) / less than 85% (no dew) | |
| Insulation class | | UL, CSA Standard A Type(105℃), EN Standard E Type(120℃) | |
| Protection class | | IP65(Except for the mounting part on the output part) | IP10 |
| Motor insulation class | | E TYPE(120℃) | |

## Rotation speed - torque characteristic

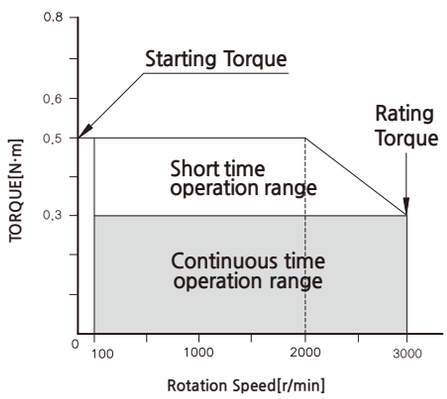
### K6BS30N■ / K6BH30N■



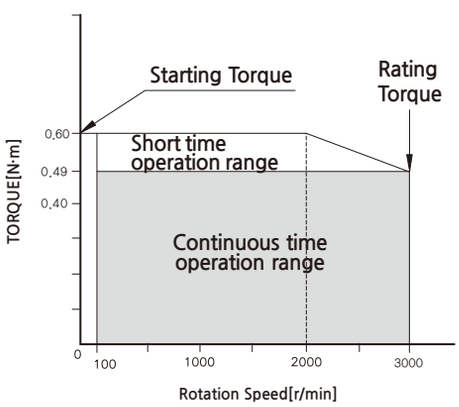

### K8BS60N■ / K8BH60N■



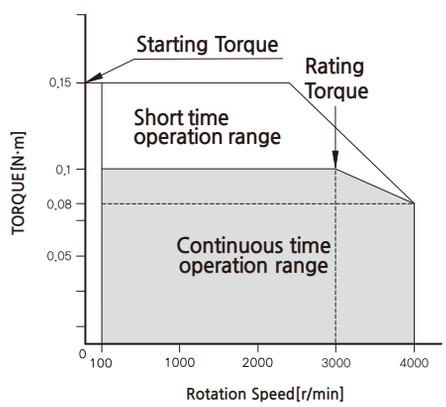

### K9BS90N■ / K9BH90N■



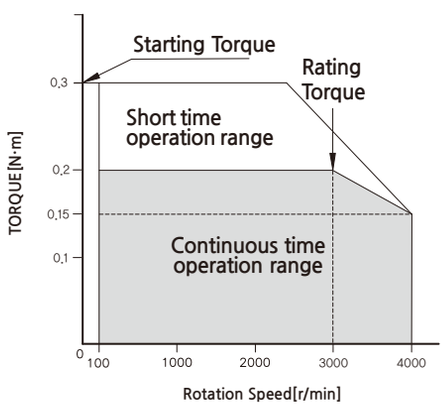

### K9BS150NC / K9BH150NC



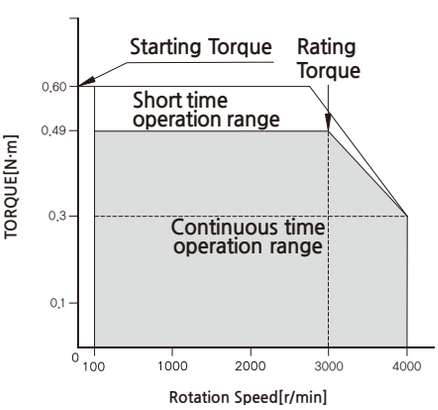

### K6FS30NC / K6FH30NC



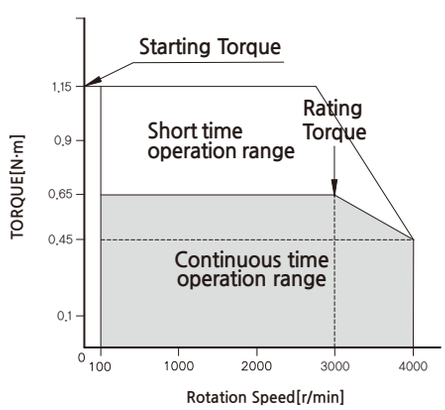

### K8FS60NC / K8FH60NC



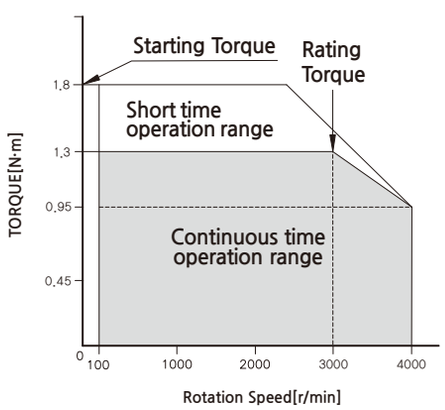

### K9FS150NC / K9FH150NC




### K10FS200NC / K10FH200NC




### K10FS400NC / K10FH400NC




※ -B (BRAKE), -E (ENCODER) or -BE (BRAKE+ENCODER) can be added to end of the motor model name.
※ In ■ of the model name voltage U (single-phase 100~115V), C (single-phase 200~230V) will be shown.

# BLDC SPEED CONTROL UNIT

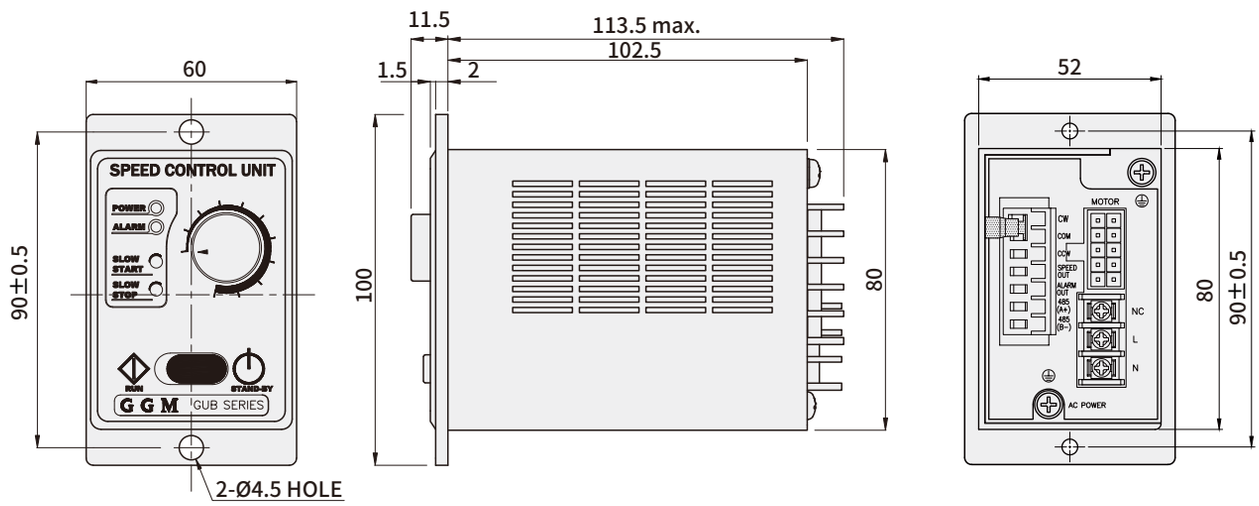
**GUB**

GUB-C-30
GUB-C-60
GUB-C-90
GUB-C-150

GUB-U-30
GUB-U-60
GUB-U-90

B Series motor applied product

## Product appearance and characteristics




- Easy connection, easy manipulation

  Motor and wire get easily connected by just connecting speed control unit connector.
  Volume in front face can simply set up motor rotation speed.

- External control function

  On/off, change of rotation direction and instant stop can be controlled through outside signal(sequencer or relay signal).
  Also, separate volume and direct power can be accessed from outside and speed setting is possible by external signal.

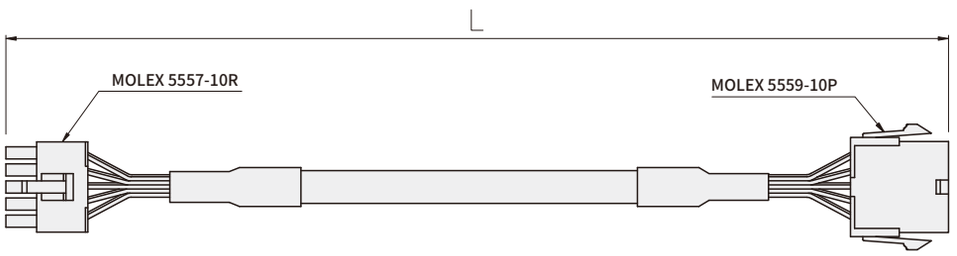
- Slow start, slow down functions

  Motor is maneuvered at the set accleration time and stopped at the set deceleration time.
  This acceleration and deceleration times can be controlled within 0.5~10 seconds.

■ Extension cable

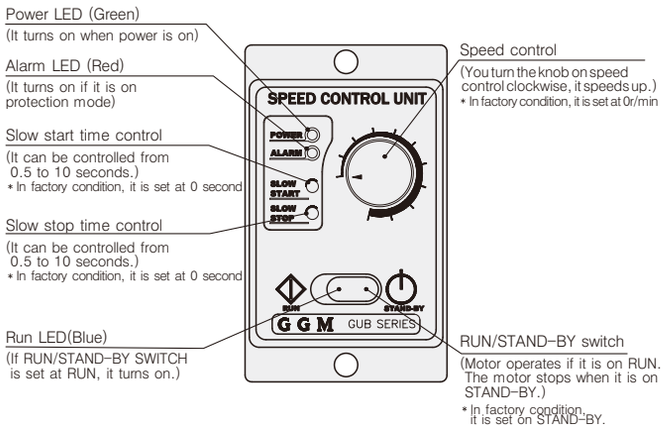
Buy extension cable to additionally extend between motor and control(optional)

-DIMENSION

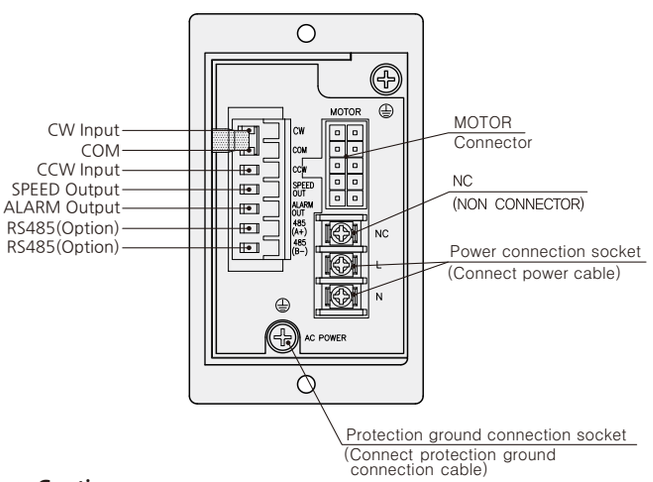



| MODEL | L (extension cable length) |
|---|---|
| KBEW-1 | 1m |
| KBEW-2 | 2m |
| KBEW-3 | 3m |
| KBEW-5 | 5m |
| KBEW-10 | 10m |

## Name and functions of each part




### Input/output signal connection socket



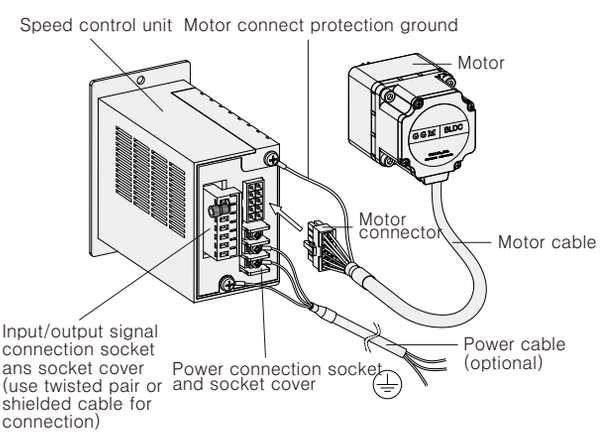

### ※ Caution

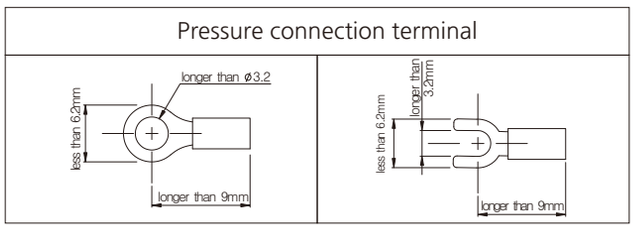
· RUN/STAND-BY SWITCH is not power switch.
· When you are stopping motor for a long time, turn the control unit off.

### Access motor and control unit

■ **Access motor and control unit**

Connect connector of motor cable to control unit. Push in until clicks. Do not manipulate extension cable(optional) when you are extending motor and control unit. Do not peel off cable cover or ground and touch shield wire.



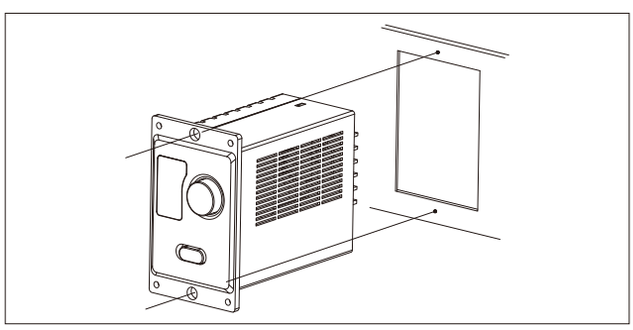

■ **Power access**

Connect accessory power cable to the control unit contact socket. If you are not usingt accessory power cable, use a cable that is bigger than AWG22(0.34mm$^2$). When connecting, use insulation attached round type crimp terminal.

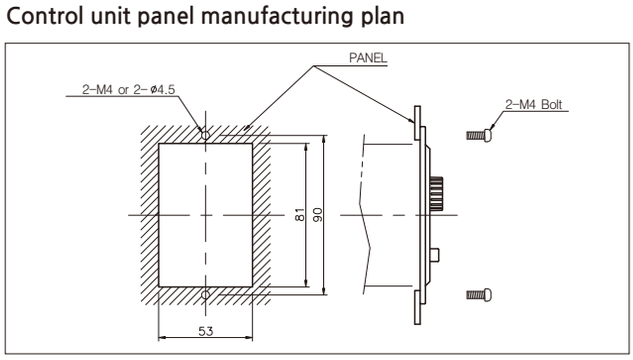
■ **Ground**

Use a cable bigger than AWG18(0.75mm$^2$) for protection ground connection cable.

· Attach control unit to a vibration-resistant flat metal plate.
· When you are using mounting hole of control unit, tighten with M4 screws and nuts.
· When installing control unit, let one of the vents face downwards.
· Control unit should installed more than 25mm away from the mounting box and other equipment in the mounting box horizontally and 50mm away from them vertically.



### Control unit panel manufacturing plan




### ※ Caution

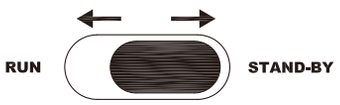
· Keep the torque of fixing screw less than 10kgf·cm. If it is fixed with more than 10kgf·cm torque, the control unit might break.

## Operation

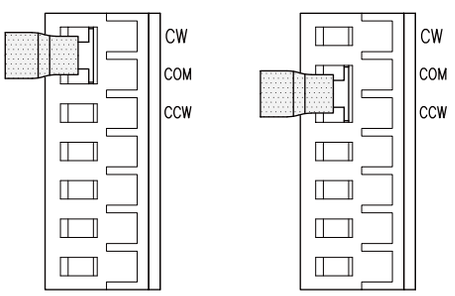
■ Rotation direction is when you look at it from output axis of motor. CW is clockwise and CCW is counterclockwise.

## When only operating with the main part

■ If you turn RUN/STANDY-BY SWITCH to RUN, then the motor rotates. If you turn RUN/STANDY-BY SWITCH to STAND-BY,then the motor stop.




■ The rotation direction is determined by the short bar connection status on the back of the control unit. connect accessory short bar between CW-COM and CCW-COM. Do not use short bar for other purposes.




## Controller of transister output type

■ Use small size connection TYPE relay to open and close DC 12V, 5mA

■ CW(clockwise)operation :
If it is set at CW and on, then the motor rotates clockwise, If CW input is off, then the motor stops.

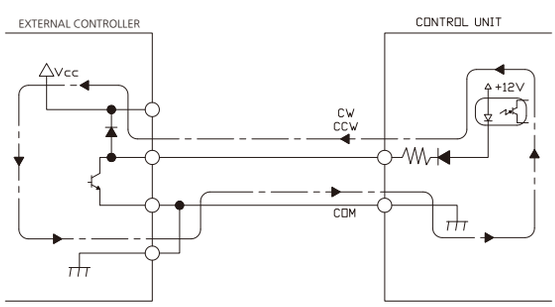
■ CCW(counterclockwise)operation :
If it is set at CCW and on, then the motor rotates counterclockwise. If CCW input is off, then the motor stops.

■ If CW and CCW are put in at the same time and on, then the motor stops instantly. At then moment, instant reverse operation is not possible.

■ Give more than 20msec of time interval between CW signal and CCW signal inputs.

■ Do not use SSR(SOLID STATE RELAY) on power ON/OFF Motor control unit may break.

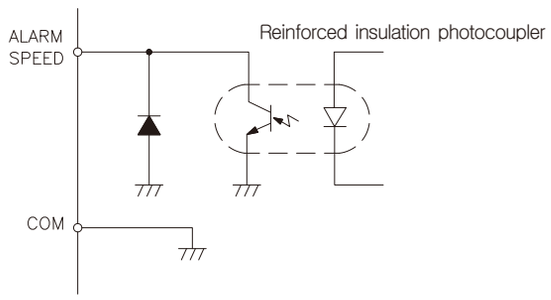
■ **If you are using controller with clamp cliode installed, be careful of power on/off order.**
- Power ON : CONTROLLER ON → CONTROL UNIT ON
- Power OFF : CONTROL UNIT OFF → CONTROLLER OFF



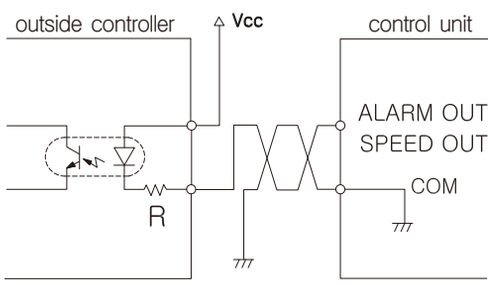

When you connect like the diagram above, if you turn the control unit power on first or if you turn the controller off while control unit is on, then the electricity flows and motor rotates.
There is a chance that motor might rotate due to power capacity difference even if you turn the power on and off at the same time. Controller should be turned on first and control unit is off first in case of power.

## Signal output circuit

### Output circuit




### Example of output circuit connection




■ Signal output is open collector output.

■ Use power of less than DC26.4V to connect restricted resistance with less than 10㎃.

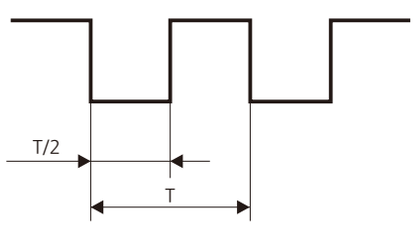
## SPEED OUT

If synchronizes with motor operation that it creates 30 pulses signal per 1 rotation of motor output axis. Measure speed out frequency to calculate motor rotation speed.

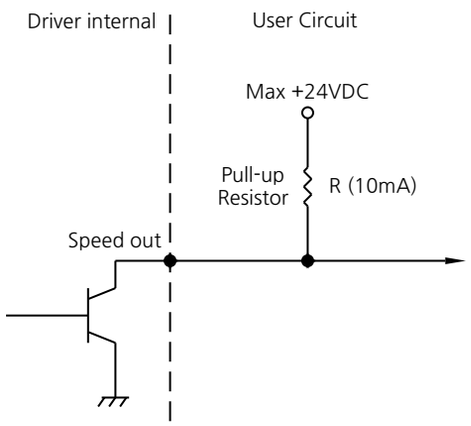
■ Motor Rotation speed [RPM] = $\frac{\text{SPEED OUT Frequency(Hz)}}{15} \times 60$

■ SPEED OUT Frequency(Hz) = $\frac{1}{T}$

■ **SPEED OUT TERMINAL are on the controller back.**



■ Motor speed pulse output




※ I/O #12 outputs signal pulse while motor rotation.
(outputs 15 pulses of signal per 1 motor rotation)

## ALARM OUTPUT

In the following case, control unit protection function gets turned on and alarm out gets also turned on (L-LEVEL). Then, the motor stops. In this case, it is shown with LED light on or off. Check the protection details.

**※ When you are providing power, if the LED light turns on instantaneously, that is not a sign of malfunctioning.**

### LED flickering

■ If torque that is greater that the rating is applied to the motor for motor for more than 5 seconds or if the motor rotation direction changes quickly or turns on/off.

### LED on

■ If there is a problem with motor feedback signal due to motor cable disconnection and connector connection problem

■ If load is being carried downwards or too much load is operated on

When you access by following the direction above, alarm output will be off when control unit is (H-LEVEL) and on when control unit is(L-LEVEL), stop the motor and turn off the control unit.
If there is no problem with motor cable, check other use conditions (load torque, operation pattern and power voltage) Remove the reasons of protection mode and reapply power to reset alarm output

■ When you extend input/output signal cable, do it for less than 2m. Try to make it as short as possible to minimize noise.

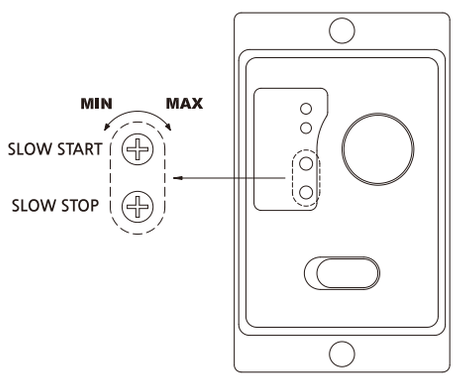
■ input/output signal cable should be separated from power cable and motor cable.

## SLOW START

Motor response speed can be set between 0.5~10 seconds (at 2000rpm)

## SLOW STOP

If you are stopping motor from outside, you can set the motor stopping time time at 0.5-10 seconds (at 2000rpm)




■ If you turn it clockwise, the time gets longer.

■ When you are changing the setting, use accurate cross screwdriver.

■ In factory condition, it is set at the shortet time possible.

# BLDC SPEED CONTROL UNIT

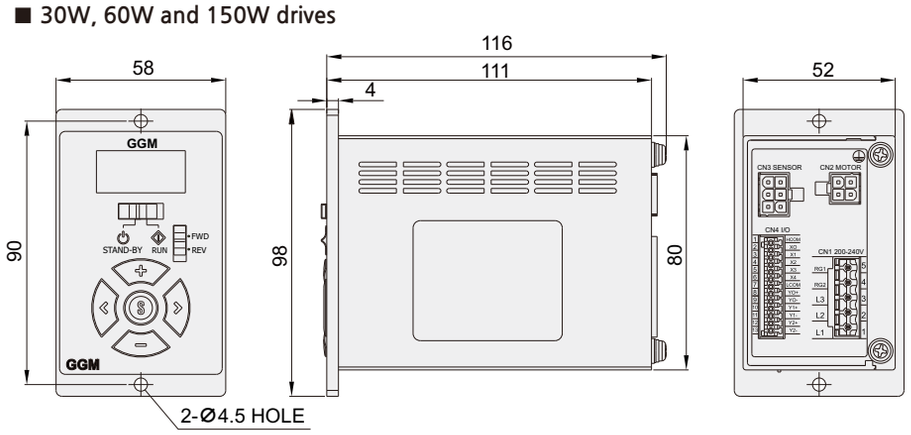
## GUF

GUF-C-30, GUF-C-60
GUF-C-150, GUF-C-200
GUF-C-400

F Series motor applied product

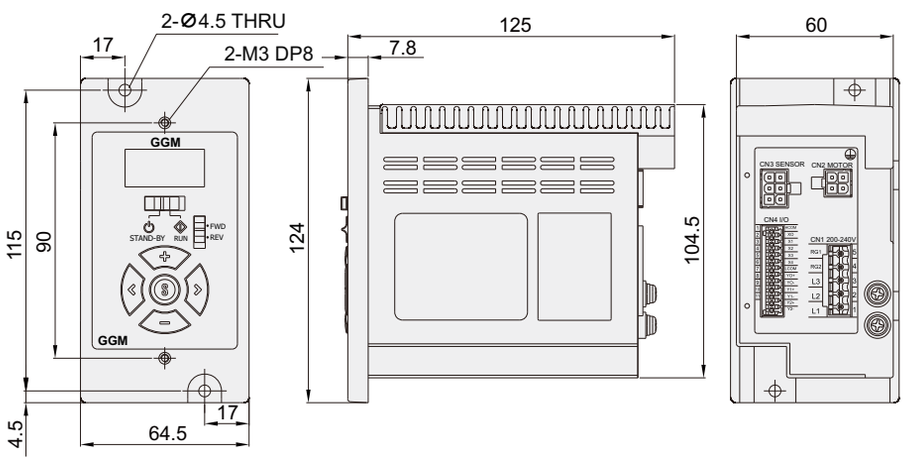
## Product appearance and characteristics

■ 30W, 60W and 150W drives





■ 200W and 400W drives

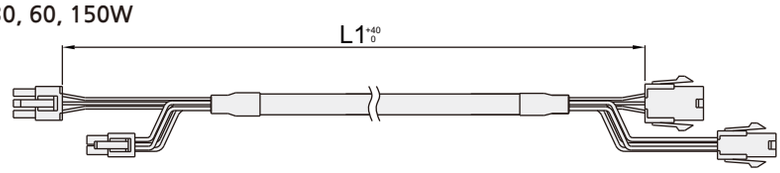




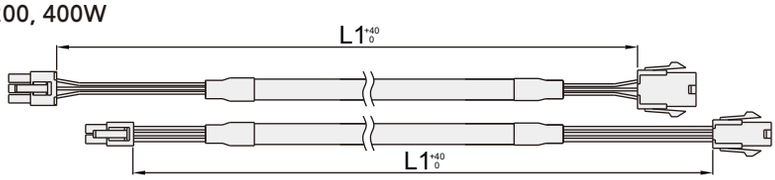
■ Extension cable ( sold separately )

- This add-on can be purchased separately and used to further extend the cable between the motor and the control (Maximum extension up to 10 m).
- Using an extension cable other than the exclusive extension cable may cause a malfunction. Be sure to use the exclusive extension cable.

-30, 60, 150W




-200, 400W




| MODEL | | L (length of extension cable) |
|---|---|---|
| 30,60,150W | 200,400W | |
| KFEW-01 | K10FEW-01 | 1m |
| KFEW-02 | K10FEW-02 | 2m |
| KFEW-03 | K10FEW-03 | 3m |
| KFEW-05 | K10FEW-05 | 5m |
| KFEW-07 | K10FEW-07 | 7m |
| KFEW-10 | K10FEW-10 | 10m |

## Specifications

| Item name | | | GUF-C-30 | GUF-C-60 | GUF-C-150 | GUF-C-200 | GUF-C-400 |
|---|---|---|---|---|---|---|---|
| Rated output | | W | 30 | 60 | 150 | 200 | 400 |
| Power input | Rated voltage | V | Single-phase : 200~240V / three-phase : 200~240V ( Permissible range ±10 % ) | | | | |
| | Rated frequency | Hz | 50 / 60 Hz ( Permissible range ±5 % ) | | | | |
| | Rated input current | A | Single-phase : 0.8 | Single-phase : 1.0 | Single-phase : 2.0 | Single-phase : 2.5 | Single-phase : 4.0 |
| | | | three-phase : 0.5 | three-phase : 0.7 | three-phase : 1.2 | three-phase : 1.8 | three-phase : 3.0 |
| | Maximum input current | A | Single-phase : 1.9 | Single-phase : 2.8 | Single-phase : 4.5 | Single-phase : 5.5 | Single-phase : 7.8 |
| | | | three-phase : 1.1 | three-phase : 1.7 | three-phase : 2.6 | three-phase : 3.2 | three-phase : 5.0 |
| Rated output current | | A | 0.17 | 0.43 | 0.95 | 1.60 | 2.30 |
| Rated torque | | N·m | 0.1 | 0.2 | 0.49 | 0.65 | 1.30 |
| Maximum instantaneous torque | | N·m | 0.15 | 0.3 | 0.60 | 1.15 | 1.80 |
| Rated rotation speed | | r/min | 3,000 | | | | |
| Speed control range | | r/min | 100~4000 | | | | |
| Speed regulation | | | 0.5% or less / Condition: 0~Rated torque, rated rotation speed, rated voltage, room temperature | | | | |
| Environment | Ambient temperature | | Use: 0℃ ~ 40℃ (no freezing should occur), Storage: -20℃ ~ 70℃ (no freezing should occur) | | | | |
| | Ambient humidity | | Use: 85% or less (no dew condensation should occur), Storage: 85% (no dew condensation should occur) | | | | |
| | Surrounding environments | | There should be no corrosive gas or dust particles. | | | | |
| Input Output | Input signal function | | 5 user inputs (Photocoupler) | | | | |
| | Output signal function | | 3 user outputs (Photocoupler) | | | | |

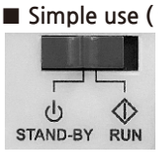
## Product characteristics

■ **Stable speed control ( Speed ripple: 0.5% )**
The product adjusts the current applied to the motor through vector control by constantly comparing the set speed with the speed feedback signal from the motor, enabling stable rotation speed from low speed to high speed even if the load changes.

■ **Wide speed control range**
Speed : 100 ~ 4000 r/min

■ **Simple connection**
- The motor connector can be wired simply.
- Connect the lead wire to the power connector using the screwdriver.
- Connect the lead wire to the I/O connector by pressing the button.

■ **Simple use ( front panel )**




a. Run and stand-by control
Operate the product simply by using the operation switch.


b. Rotational direction control
Change the rotational direction of the motor using the rotational direction switch.

c. Speed control
The speed can be easily controlled and various functions executed using the speed control buttons.

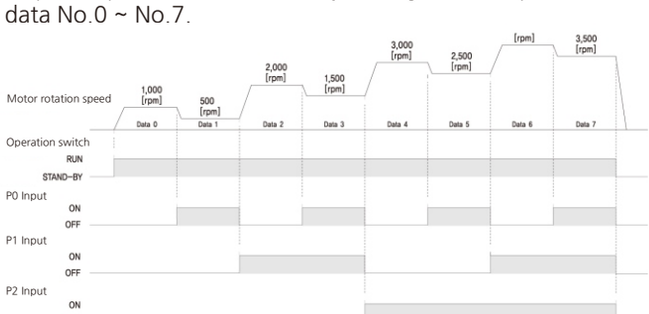
■ **Operation by external I/O ( PLC, etc. )**
Start/Stop, change of rotational direction, multi-level speed operation by external I/O, etc.

■ **Display indication (load ratio, actual speed, etc.)**


Display of load ratio (100%)


Display of actual speed (1500)

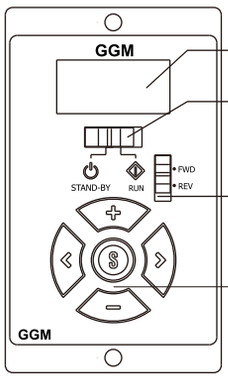
■ **Multi-level speed operation ( 8 speeds )**
8-speed operation is available by setting data to operation data No.0 ~ No.7.




■ **Setting/operation lock ( Prevents speed or data changes )**
- Set the Lock function: Press and hold down the (S) button for 5 seconds or longer.
- Cancel the Lock function: Press and hold down the (S) button for 5 seconds or longer.

■ **Protection function**
The product is equipped with a function that enables it to detect abnormal status such as overload and overvoltage. If an abnormality is detected, operation will stop and an alarm will occur.

## Name and function of each part

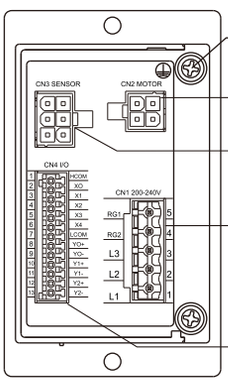



Display unit
[Displays the rotation speed and parameters]

Operation switch
[When you toggle the operation switch to RUN, the motor rotates; when you toggle the operation switch to STAND-BY, the motor stops.]

Rotational direction switch
[Changes the rotational direction of the motor]

Setting button
[Changes the rotation speed and parameters]




Protection ground terminal
[Connects the protection ground wire.]

Motor power connector CN2
[Connects the motor power connector.]

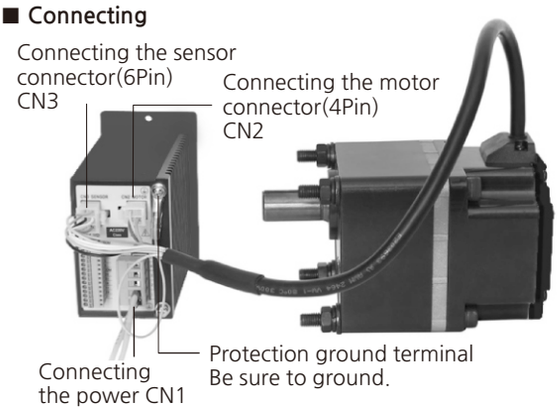
Motor sensor connector CN3
[Connects the motor sensor connector.]

Power connector CN1
[Connects the AC power supply (single-phase/three-phase).]

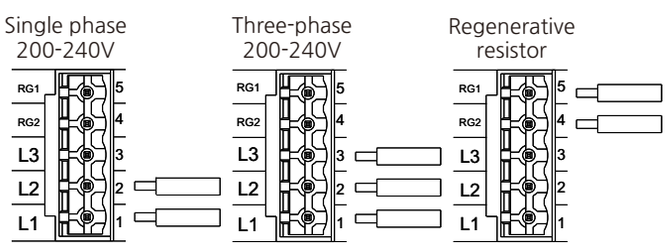
I/O connector CN4
[Connects I/O signals.]

## Setting and operation

### ■ Connecting




### ■ Connecting the power supply: Connect AC power supply to CN1 according to the input power supply.




· Applied lead wire - AWG 18~14 ( 0.75~2.0mm²)
· when reduction time is short or big inertias operated, use restoration resistance.(100W/400Ω J)

### ■ Operating the product using the drive

After connecting the motor and supplying the power, operate the product in the following manner.

① Operating
When you set the operation switch to RUN, the motor will operate.

② Adjusting the speed
Pressing the (+) button increases the speed by 1 rpm, and
Pressing the (-) button decreases the speed by 1 rpm.
Pressing and holding down the ( + ) or ( - ) button increases or decreases the speed by 1pm->10rpm->100rpm, in that order.

③ Finalizing and locking the speed
Pressing the ( S ) button finalizes the rotation speed.
While the display unit is flashing, the rotation speed will not be finalized.
You can lock the operation to prevent the finalized rotation speed from being changed by pressing and holding the (S) button for 5 seconds or longer in STAND-BY mode.

④ Stopping the product
When you set the operation switch to STAND-BY, the motor will decelerate and stop.

⑤ Changing the rotational direction
The rotational direction of the motor can be changed by using the rotational direction switch, and the direction can also be changed while the motor is rotating.
For the reducer type, the rotational direction of the motor output shaft and the rotational direction of the reducer output shaft vary according to the reduction gear ratio.

### ■ Operating the product using I/O signals

You can connect to the CN4 external I/O signal connector and operate the motor using the external signal.
You can use the product after connecting the I/O connector according to the connector No.
Set the "Control setting by external I/O" parameter to ON to controlusing I/O signals. For detailed information, refer to the manual.
You can perform data operations in 8 steps using the external I/O signal.

| Pin | Function | Input Output | Basic function | Description |
|---|---|---|---|---|
| 1 | HCOM | Common | - | Common signa l: + 24V for sync logic and 0V (GND) for source logic |
| 2 | X0 | input | [FWD] | The motor rotates forward while this signal is "ON". |
| 3 | X1 | input | [REV] | The motor rotates in reverse while this signal is "ON". |
| 4 | X2 | input | [P0] | This signal is used for selecting operation data. |
| 5 | X3 | input | [P1] | This signal is used for selecting operation data. |
| 6 | X4 | input | [A.rst] | This signal is used for resetting the alarm. |
| 7 | LCOM | Common | - | Common signal |
| 8 | YO+ | output | [SPD] | 30 pulses are output per one rotation of the motor output shaft. |
| 9 | YO- | output | | |
| 10 | Y1+ | output | [AL.on] | This signal is turned off when an alarm occurs. (Closed normally). |
| 11 | Y1- | output | | |
| 12 | Y2+ | output | [MovE] | This signal is turned on when the motor rotates. (Open normally). |
| 13 | Y2- | output | | |

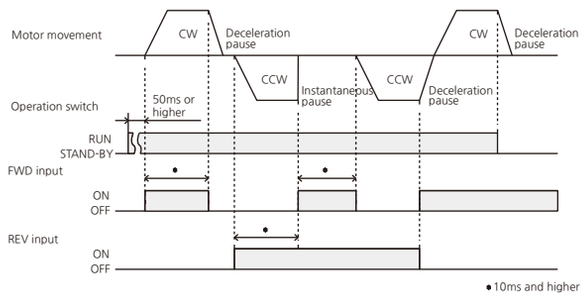
Applied lead wire - AWG 26~20 ( 0.14~0.5mm² )

※ A function in [ ] is the function allocated at the time of shipping.
※ You can allocate the signal required from among the following signals to 5 input signal terminals (X0~X4) and 3 output signal terminals (Y0~Y2).

• Input signals: Fwd (Forward), rEv (Reverse), P0/P1/P2 (Operation data 0/1/2), A.rst (Alarm reset), E.Err (External alarm)
• Output signals: Spd (Speed output), AL.on (Alarm output), AL.ov (Overvoltage), Ovld (Overload), MovE (Motor operation)

• Timing Chart

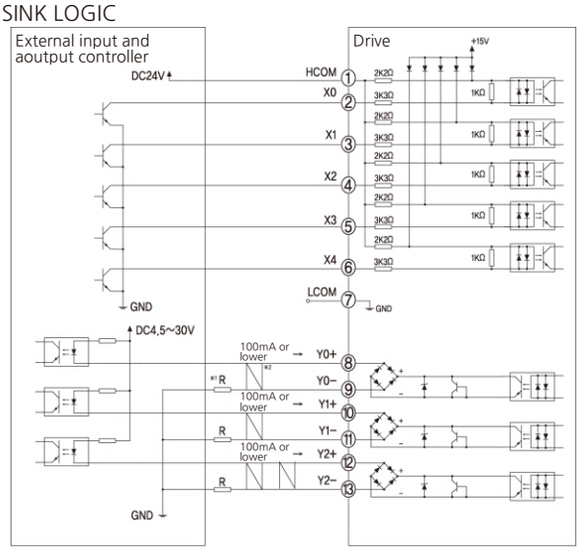
If the "Control setting by external I/O" parameter is set to "ON" and the rotational direction switch is set to "FWD"




When you set either FWD input or REV input to ON, the motor rotates. When you set both FWD input and REV input to ON at the same time, the motor will pause instantaneously.

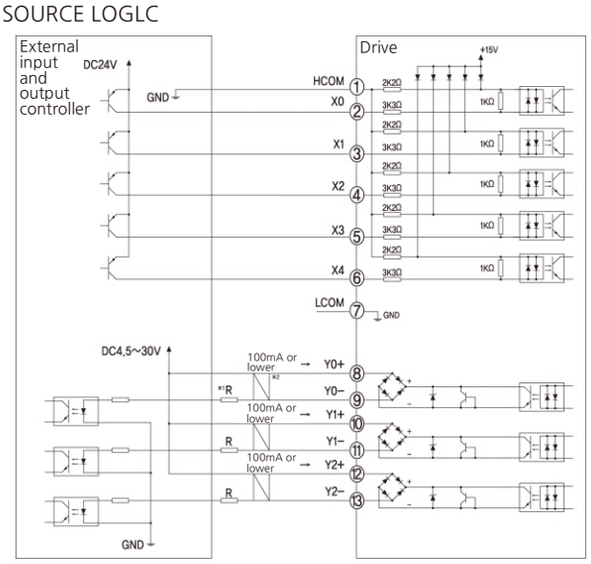
• Example of connection between the I/O signals and the high-level controller

SINK LOGIC




• Example of connection for operating the motor using the transistor output type high level controller

SOURCE LOGLC




**※1) Limited resistance**

**In case of DC24V : 680Ω~2.7kΩ(2W)**

**In case of DC5V : 150Ω~560kΩ(0.5W)**

**※2) Twisted Pair Shield Cable**

Caution) Be sure to lower the current value to 100mA or less for Y0, Y1 and Y2.
If this current value is exceeded, connect the limited resistance R.

## ■ Display of monitor mode status

| Item | Indication | Contents |
|---|---|---|
| Display of set speed and speed adjustment [RPM] | 100 | Displays the current rotational speed of the motor. |
| Actual speed [RPM] | 0 | Displays the actual speed of the motor. Monitors the rotation speed of the gear output shaft or the conveyor where the "reduction gear ratio" parameter setting is applied. |
| Load ratio[%] | L. 0 | Allows you to check the generated motor torque. The current load factor is displayed based on 100% of the rated torque. |
| Display and reset of alarm records | AL.rc | Displays the alarm record. Allows you to check and delete an alarm record. |
| Display and reset of warning records | Wn.rc | Displays the warning record. Allows you to check and delete a warning record. |
| Operation data No. | oP.d- | Displays the selected operation data No. |
| Input/output status | io | Allows you to check the ON/OFF status of the drive I/O signal. When the signal is ON, the corresponding LED turns on; when the signal is OFF, the corresponding LED turns off. |

## ■ Contents of protection function and measures

| Indication | Name of alarm | Cause | Measure |
|---|---|---|---|
| [AL.--] | Delete alarm history. | — | — |
| [AL.UV.] | Under voltage | • Supplied power is below approximately 60% of the rated voltage. | • Check the voltage of the power supply unit.<br>• Check the wiring of the power supply cable. |
| [AL.oV.] | Overvoltage | • Supplied power exceeds approximately 120% of the rated voltage.<br>• When vertical operation is carried out or load exceeding the permissible load inertia is operated | • Check the voltage of the power supply unit..<br>• If an alarm occurs during the operation, reduce the load or set a longer acceleration/reduction time. |
| [AL.oT.] | Overheating | • The temperature inside the drive exceeds the alarm detection temperature. | • Check the ambient temperature again. |
| [AL.oC] | Overcurrent | • Excessive current flows due to a ground fault. | • Check the wiring between the drive and the motor for damage. |
| [AL.SF] | Speed feedback | • The actual speed is different from the set speed. | • Check the voltage of the power supply unit.<br>• Check the motor load. |
| [AL.SS] | Speed sensor error | • When the motor sensor signal line is open during the operation, or the motor sensor connector is disconnected | • Check the wiring between the drive and the motor. |
| [AL.oS] | Over speed | • The rotation speed of the motor output shaft exceeds approximately 4800rpm. | • Reduce the load.<br>• Check the operation patterns including acceleration and reduction times again. |
| [AL.oL] | Overload | • A load exceeding the continuous duty area has been applied to the motor for a longer time than the set period in the parameter. | |
| [AL.oP] | Operation at the time of power supply | • The power is turned on when the "external operation signal input" is set to OFF parameter and the operation switch is toggled to "RUN". | • Toggle the operation switch from "RUN" to "STAND-BY". Next, clear the alarm using the "S" button. |
| | | • The power is turned on when "external operation signal input" parameter is set to ON and the FWD input or the REV input is switched to ON. | • Toggle the operation switch from "RUN" to "STAND-BY".<br>• Switch the FWD input or the REV input from ON to OFF. |
| [AL.Et] | External error | • The motor pauses instantaneously when an external error (pause) signal is input. | • Check EXT-ERROR input. Change the status from Enable to Disable. |

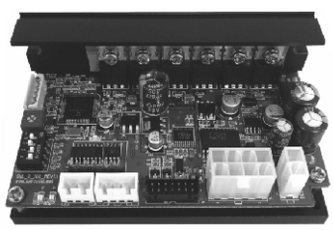
## BRUSHLESS DC MOTOR UNIT

# X Series

BLDC Motor and driver unit for
DC24, DC48V input speed control

- Input : DC24V
- Output : 30W, 50W, 100W
- Speed control range : 100~3000 r/min
- Speed change ratio : less than or equal to ±1%
  (Condition: Rated torque, rated rotation speed, rated voltage)

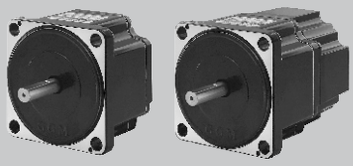
- Input : DC24~48V
- Output : 200W(DC24V), 400W(DC48V)
- Speed control range : 100~4000 r/min
- Speed change ratio : less than or equal to ±1%
  (Condition: Rated torque, rated rotation speed, rated voltage)



# BRUSHLESS DC MOTOR UNIT - X Series

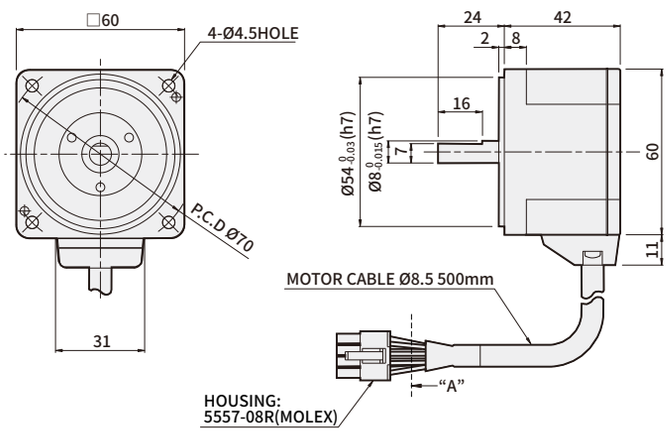
## 30W

## □60mm
DC 24V Input

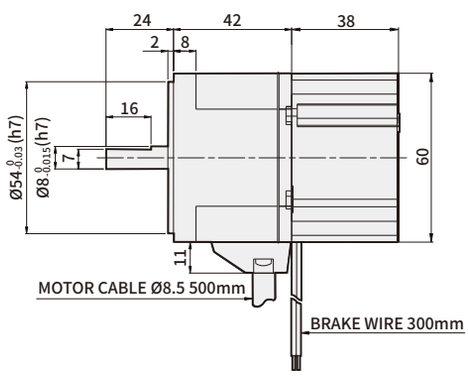


## DIMENSIONS

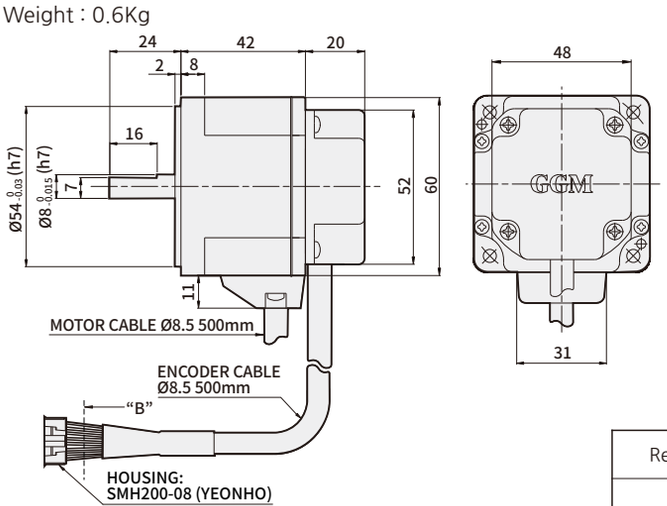
### K6XS30N2
Weight : 0.5Kg



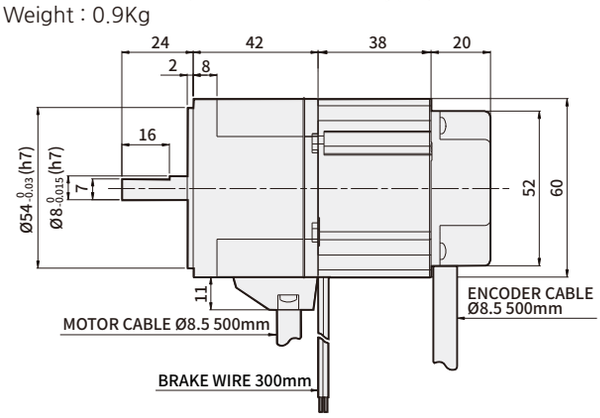

### K6XS30N2-B (Brake type)
Weight : 0.8Kg




### K6XS30N2-E (Encoder type)
Weight : 0.6Kg

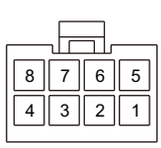
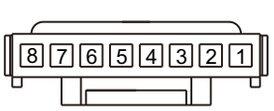



### K6XS30N2-BE (Brake Encoder type)
Weight : 0.9Kg




| | | | |
|---|---|---|---|
| Resolution | 1,000PPR | | Timing diagram CW |
| Output Type | Output Form | Power Supply | A, B, Z |
| | Line Driver | +5Vdc ±10% 150mA below | |

※Please refer to gearhead assembly page C-1, C-2.

| CONNECTOR HOUSING | |
|---|---|
| MOTOR VIEW "A" | ENCODER VIEW "B" |
|  |  |





| ENCODER PIN MAP | | |
|---|---|---|
| PIN No. | COLOR | SIGNAL |
| 1 | BLUE | Vcc(5Vdc) |
| 2 | BROWN | A |
| 3 | WHITE | /A |
| 4 | ORANGE | B |
| 5 | YELLOW | /B |
| 6 | GREEN | Z |
| 7 | PURPLE | /Z |
| 8 | GRAY | Ground |

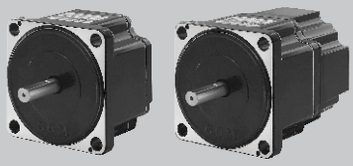
| MOTOR PIN MAP | | |
|---|---|---|
| PIN No. | COLOR | SIGNAL |
| 1 | YELLOW | Vcc |
| 2 | BLUE | U |
| 3 | PURPLE | V |
| 4 | GRAY | W |
| 5 | GREEN | Ground |
| 6 | ORANGE | Hw |
| 7 | WHITE | Hv |
| 8 | BROWN | Hu |

※ 30NC which are in end of the model name is UL certified ones. UL FILE NO. E504659

# BRUSHLESS DC MOTOR UNIT - X Series

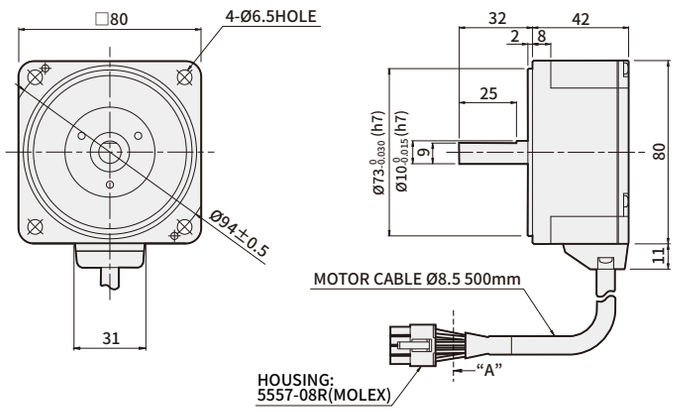
**50W**

## □80mm
DC 24V Input

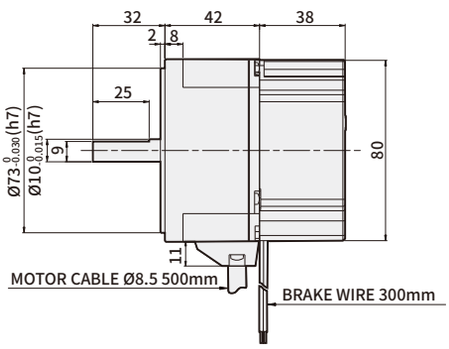


## DIMENSIONS

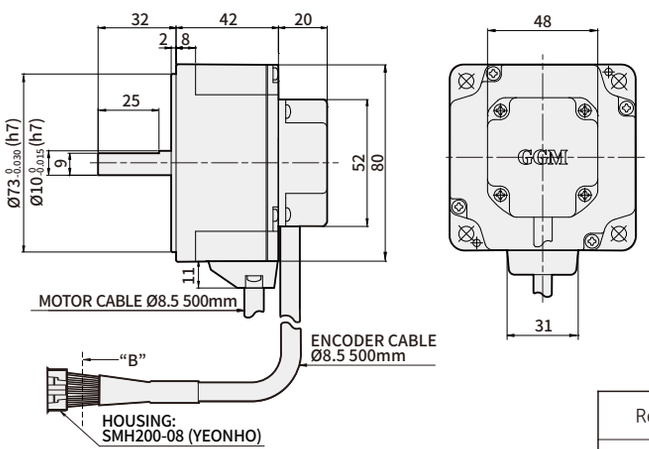
### K8XS50N2
Weight : 0.8Kg



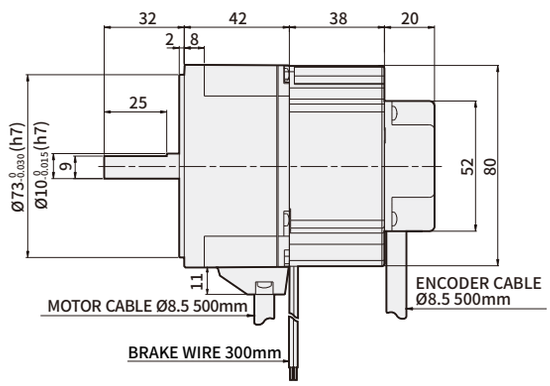

### K8XS50N2-B (Brake type)
Weight : 1.3Kg




### K8XS50N2-E (Encoder type)
Weight : 0.9Kg




### K8XS50N2-BE (Brake Encoder type)
Weight : 1.4Kg




| | | | |
|---|---|---|---|
| Resolution | 1,000PPR | | Timing diagram CW |
| Output Type | Output Form | Power Supply | A, B, Z |
| | Line Driver | +5Vdc ±10% 150mA below | |

※Please refer to gearhead assembly page C-3, C-4.

| CONNECTOR HOUSING | |
|---|---|
| MOTOR VIEW "A" | ENCODER VIEW "B" |
| 8 7 6 5 / 4 3 2 1 | 8 7 6 5 4 3 2 1 |

| ENCODER PIN MAP | | |
|---|---|---|
| PIN No. | COLOR | SIGNAL |
| 1 | BLUE | Vcc(5Vdc) |
| 2 | BROWN | A |
| 3 | WHITE | /A |
| 4 | ORANGE | B |
| 5 | YELLOW | /B |
| 6 | GREEN | Z |
| 7 | PURPLE | /Z |
| 8 | GRAY | Ground |

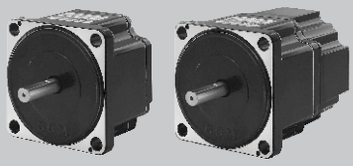
| MOTOR PIN MAP | | |
|---|---|---|
| PIN No. | COLOR | SIGNAL |
| 1 | YELLOW | Vcc |
| 2 | BLUE | U |
| 3 | PURPLE | V |
| 4 | GRAY | W |
| 5 | GREEN | Ground |
| 6 | ORANGE | Hw |
| 7 | WHITE | Hv |
| 8 | BROWN | Hu |

※ 50N2 which are in end of the model name is UL certified ones. UL FILE NO. E504659

# BRUSHLESS DC MOTOR UNIT - X Series

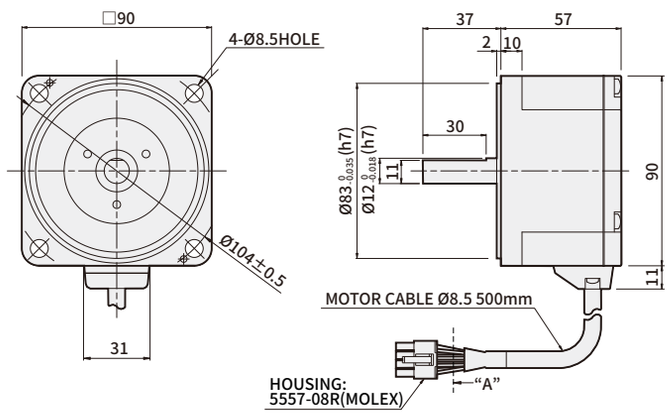
**100W**

## □90mm
DC 24V Input

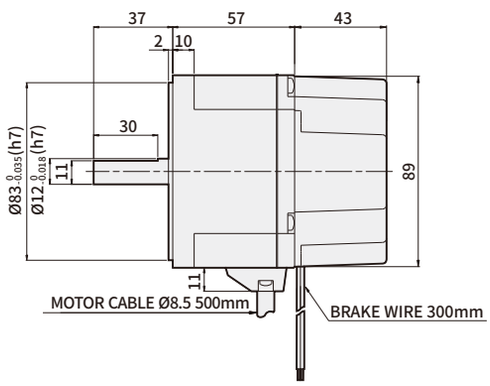


## DIMENSIONS

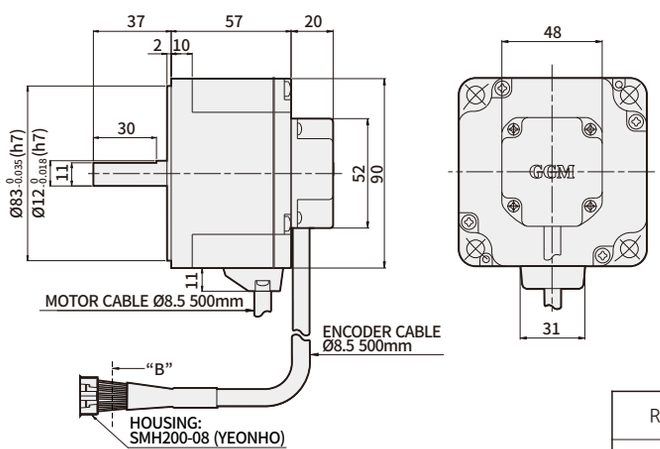
### K9XS100N2
Weight : 1.3Kg



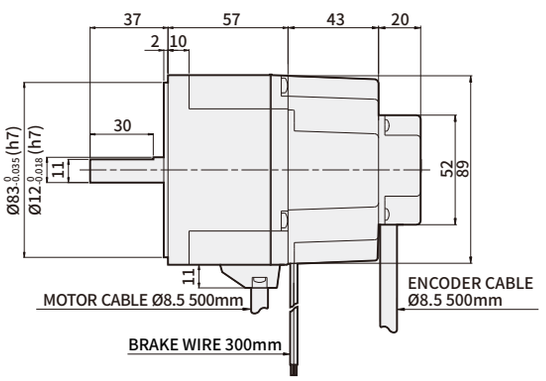

### K9XS100N2-B (Brake type)
Weight : 1.9Kg




### K9XS100N2-E (Encoder type)
Weight : 1.4Kg




### K9XS100N2-BE (Brake Encoder type)
Weight : 2.0Kg




| | | | |
|---|---|---|---|
| Resolution | 1,000PPR | | Timing diagram CW |
| Output Type | Output Form | Power Supply | A, B, Z |
| | Line Driver | +5Vdc ±10% 150mA below | |

※Please refer to gearhead assembly page C-5, C-6.

| CONNECTOR HOUSING | |
|---|---|
| MOTOR VIEW "A" | ENCODER VIEW "B" |
| 8 7 6 5 / 4 3 2 1 | 8 7 6 5 4 3 2 1 |

| ENCODER PIN MAP | | |
|---|---|---|
| PIN No. | COLOR | SIGNAL |
| 1 | BLUE | Vcc(5Vdc) |
| 2 | BROWN | A |
| 3 | WHITE | /A |
| 4 | ORANGE | B |
| 5 | YELLOW | /B |
| 6 | GREEN | Z |
| 7 | PURPLE | /Z |
| 8 | GRAY | Ground |

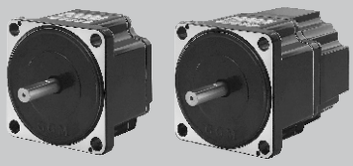
| MOTOR PIN MAP | | |
|---|---|---|
| PIN No. | COLOR | SIGNAL |
| 1 | YELLOW | Vcc |
| 2 | BLUE | U |
| 3 | PURPLE | V |
| 4 | GRAY | W |
| 5 | GREEN | Ground |
| 6 | ORANGE | Hw |
| 7 | WHITE | Hv |
| 8 | BROWN | Hu |

※ 100N2 which are in end of the model name is UL certified ones. UL FILE NO. E504659

# BRUSHLESS DC MOTOR UNIT - X Series

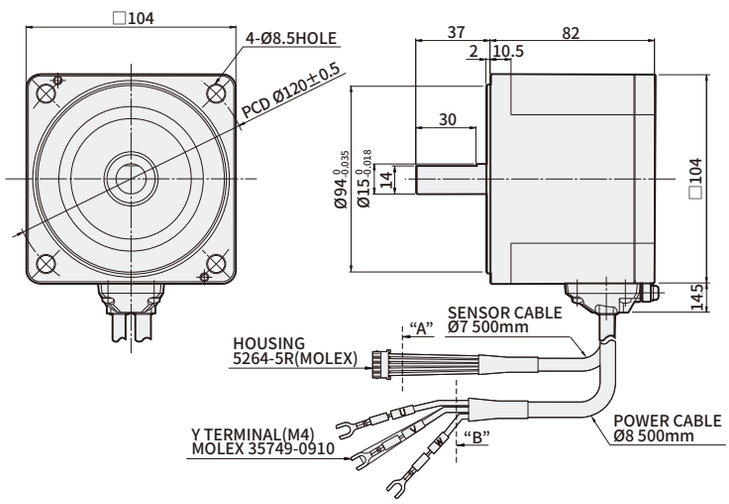
**200W**
**400W**

## □104mm
DC 24V, 48V Input

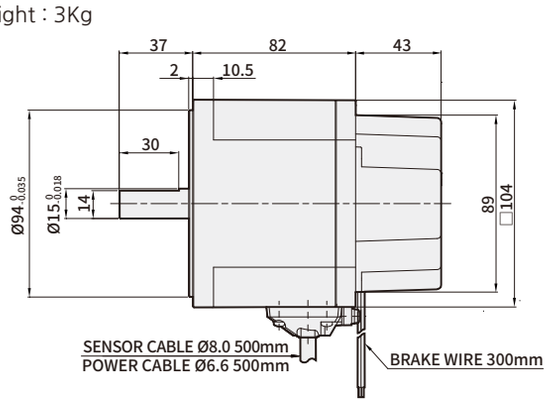


## DIMENSIONS

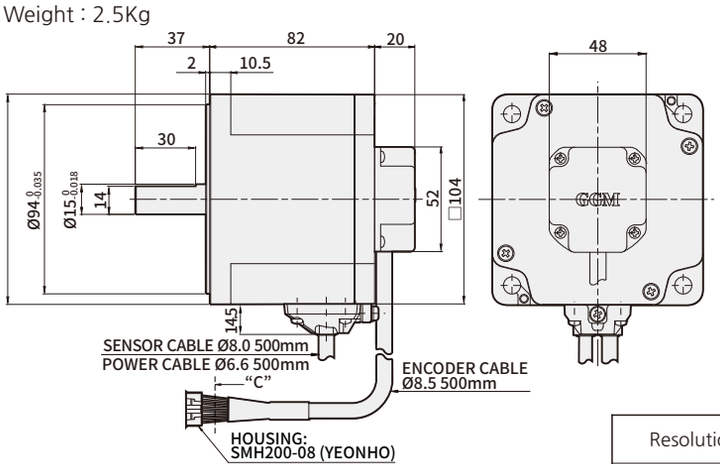
**K10XS200N2 (24V)**
**K10XS400N9 (48V)**
Weight : 2.4Kg



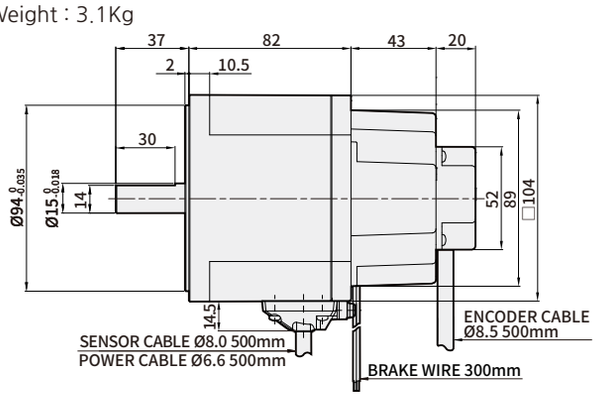

**K10XS200N2-B** (Brake type)
**K10XS400N9-B**
Weight : 3Kg




**K10XS200N2-E** (Encoder type)
**K10XS400N9-E**
Weight : 2.5Kg




**K10XS200N2-BE** (Brake Encoder type)
**K10XS400N9-BE**
Weight : 3.1Kg




| | | | |
|---|---|---|---|
| Resolution | 1,000PPR | | Timing diagram CW |
| Output Type | Output Form | Power Supply | A, B, Z |
| | Line Driver | +5Vdc ±10% 150mA below | |

※Please refer to gearhead assembly page C-7, C-8.

| CONNECTOR HOUSING | | |
|---|---|---|
| MOTOR VIEW "A" / "B" | | ENCODER VIEW "C" |
| A: 5 4 3 2 1 | B: W V U | 8 7 6 5 4 3 2 1 |

| ENCODER PIN MAP | | |
|---|---|---|
| PIN No. | COLOR | SIGNAL |
| 1 | BLUE | Vcc(5Vdc) |
| 2 | BROWN | A |
| 3 | WHITE | /A |
| 4 | ORANGE | B |
| 5 | YELLOW | /B |
| 6 | GREEN | Z |
| 7 | PURPLE | /Z |
| 8 | GRAY | Ground |

| MOTOR PIN MAP | | |
|---|---|---|
| PIN No. | COLOR | SIGNAL |
| 1 | BROWN | Hu |
| 2 | WHITE | Hv |
| 3 | ORANGE | Hw |
| 4 | GREEN | Ground |
| 5 | YELLOW | Vcc |
| - | BLUE | U |
| - | PURPLE | V |
| - | GRAY | W |

※ 200N2, 400N9 which are in end of the model name is UL certified ones. UL FILE NO. E504659

## Specification

| Product name | | | K6XH30N2 | K8XH50N2 | K9XH100N2 | K10XH200N2 | K10XH400N9 |
|---|---|---|---|---|---|---|---|
| | GEAR TYPE | | | | | | |
| | STRAIGHT TYPE | | K6XS30N2 | K8XS50N2 | K9XS100N2 | K10XS200N2 | K10XS400N9 |
| Rating output (continuous) | | W | 30 | 50 | 100 | 200 | 400 |
| Power input | Rating voltage | V | DC24 | | | | DC 48 |
| | Rating voltage allowance | | ±10% | | | | |
| | Rating input current | A | 2.1 | 3.1 | 6 | 13 | 11 |
| | Maximum input current | A | 3.7 | 5.4 | 9.8 | 25 | 18 |
| Rating torque | | N·m(kgf·cm) | 0.12 | 0.2 | 0.4 | 0.65 | 1.3 |
| Starting torque | | N·m(kgf·cm) | 0.15 | 0.24 | 0.5 | 1.15 | 1.8 |
| Rating rotation speed | | r/min | 2500 | | | 3000 | |
| Speed control range | | r/min | 100~3000 | | | 100~4000 | |
| Allowed inertia load moment of round shaft type | | $J\times10^{-4}$ kg·m$^2$ | 1.8 | 3.3 | 5.6 | 8.75 | 15 |
| Rotor inertia moment | | $J\times10^{-4}$ kg·m$^2$ | 0.086 | 0.234 | 0.61 | 0.61 | 0.66 |
| Speed change rate | Load | | Less than or equal to ±1% : condition 0-rated torque, rated rotation speed, rated voltage, room temperature | | | | |
| | Voltage | | Less than or equal to ±1% : condition rating voltage ±10%, rating rotation speed, no load, room temperature | | | | |
| | Temperature | | Less than or equal to ±1% : condition surrounding temperature 0~+40℃, rating rotation speed, no load, rating voltage | | | | |

※ -B (BRAKE), -E (ENCODER) or -BE (BRAKE+ENCODER) can be added to end of the motor model name.
※ The usage duration for starting torque is within 5 seconds at less than 2000 r/min.
※ Each specification value is the characteristic of motor by itself.

## Common specifications

| Product name | Specification |
|---|---|
| Rotation speed setting method | ● Set up by external potentiometer<br>● Set up by external DC 0~5V |
| Acceleration time deceleration time | 0.5~10 seconds : set at 2000 r/min when there is no load (it may change depending on the size of the load)<br>Accleration time and deceleration control equipment to control at the same time |
| Input signal | Internal full-up input method, external input voltage read as greater than 2v high(off) same at all input ports |
| Protection function | If the following protection mode comes on, cotrol unit alarm signal is shown. Motor stops automatically.<br>● Overload protection mode : If torque that is greater than the rating is applied to the motor for more than 5 seconds<br>● Overvoltage protection : If voltage applied to the control unit goes over the upper bound of the rating allowance<br>● Open phase protection : If cable sensor line gets disconnected during motor operation<br>● Undervoltage protection : If voltage applied to the control unit is less than the lower bound of th rating voltage allowance<br>● Over speed protection : If motor rotation speed is faster than 2500 r/min |
| Motor insulation class | E TYPE(120℃) |
| Maximum extension distance | MOTOR - CONTROL UNIT 2m |
| Rated time | Continuous |

※ Like weight carried being downwards, X SERIES cannot control motor speed through weight.
Motor gets stopped automatically through overvoltage protection of load is being carried downwards or it is heavier than allowed load inertia.

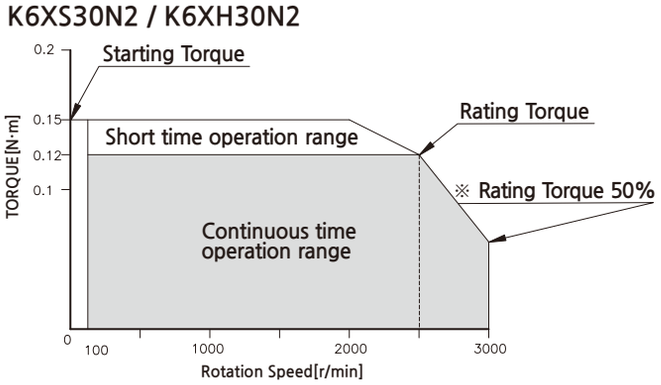
## Normal specifications

| Items | | Motor | Control unit |
|---|---|---|---|
| Insulation Resistance | | After being operated continuously at room temperature and humidity, the value measured between coil and vase by DC 500V MEGA is greater than or equal to 100㏁ | After being operated continuously at room temperature and humidity, the value measured between heatproof plate and power input is greater than or equal to 100㏁ |
| Dielectric Strength | | After being operated continuously at room temperature and humidity, there shouldn't be any problem between coil and case even when AC 0.5kV is applied for 1 minute | No problem when 50Hz, AC 0.5kV is applied for one minute<br>No problem when AC 0.5kV is applied for one minute |
| Used environment | Used Ambient temperature | 0℃~+50℃ (should not freeze) | |
| | Used Ambient Humidity | less than or equal to 85% (not from dews) | |
| | Vibration | Altitude less than 1000m | |
| | Ambient environment | Cannot be used under special circumstances such as withcorrosive gas, dust, radioactive material, magnetic and vacuum | |
| | Vibration | Should not apply constant vibration or huge impact according to the JIS C 60068-2-6 sine wave vibration test method<br>Frequency range : 10~55Hz, peak amplitude : 0.15mm,<br>sweet direction : 3 direction(X,Y,Z), number of sweeps : 20 times | |
| Conservation environment | Ambient temperature | -25 ~ +70℃ (should not freeze) | |
| | Ambient Humidity | less than or equal to 85% (not form dews ) | |
| | Altitude | Altitude less than 3000m | |
| Insulation class | | UL, CSA STANDARD A TYPE(105℃),<br>EN STANDARD E TYPE(120℃) | |
| Protection class | | IP65 | IP00 |

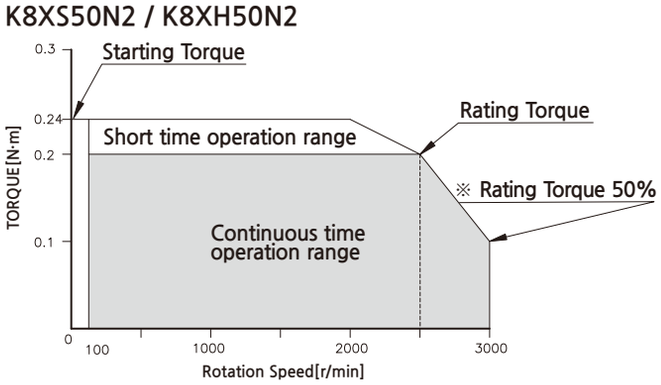
※ Preservation environment is a short-term value, which includes transportation.
※ Do not measure insulation resistance and pressure resistance while motor and driver are connected.

## Rotation speed- torque characteristic

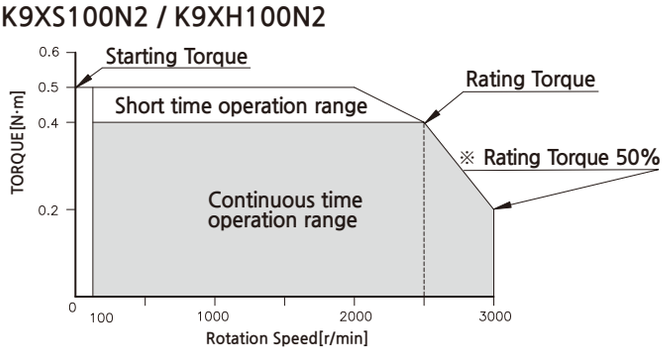
### K6XS30N2 / K6XH30N2



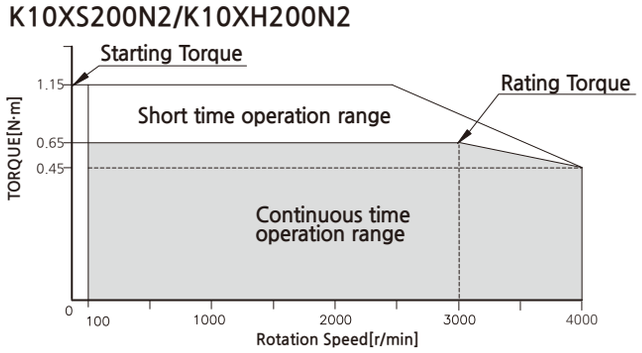

### K8XS50N2 / K8XH50N2



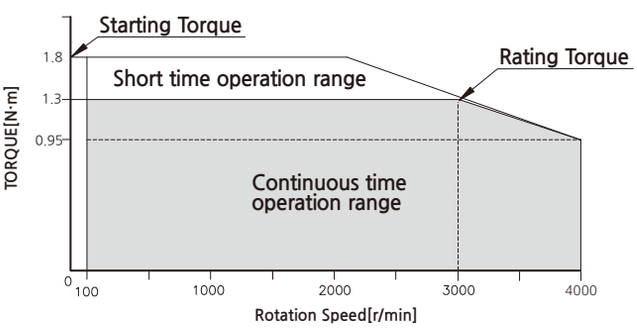

### K9XS100N2 / K9XH100N2




### K10XS200N2/K10XH200N2




### K10XS400N9/K10XH400N9




※ -B (BRAKE), -E (ENCODER) or -BE (BRAKE+ENCODER) can be added to end of the motor model name.
※ DC24V is the value without cable extension.

# BLDC SPEED CONTROL UNIT

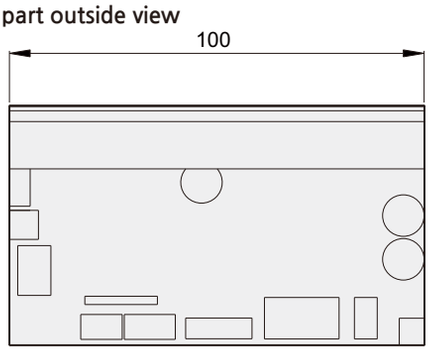
## GUX

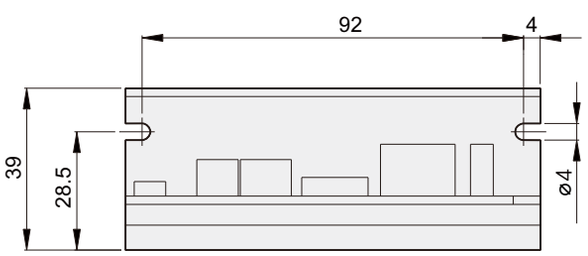
GUX-2-30
GUX-2-50
GUX-2-100

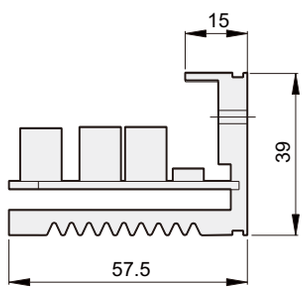
X Series motor applied product

## Product appearance

■ Driver main part outside view

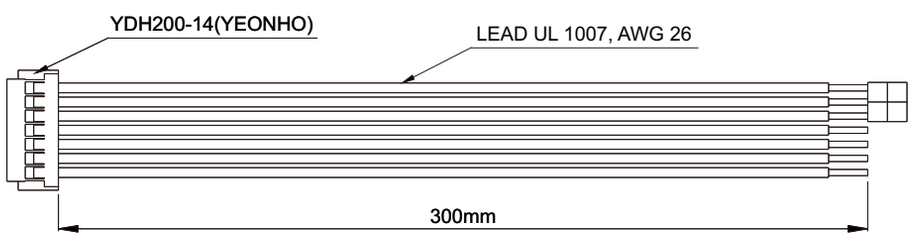


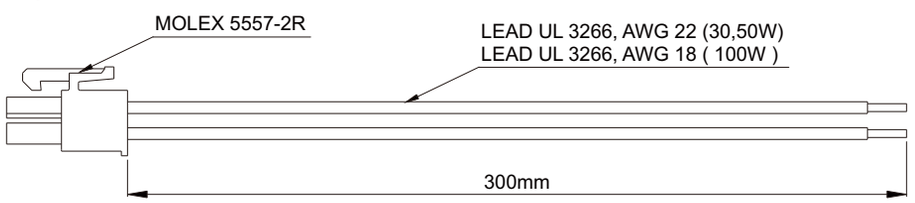




[ Accessory ]

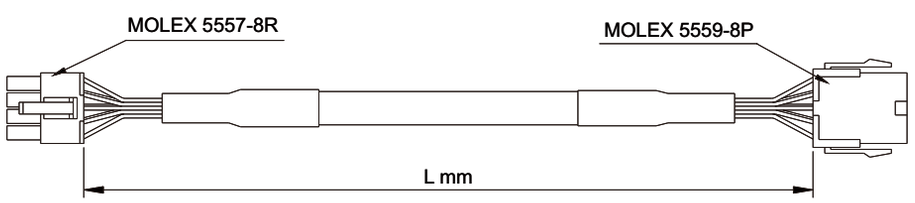
■ Driver input signal cable, External volume




■ Driver power cable

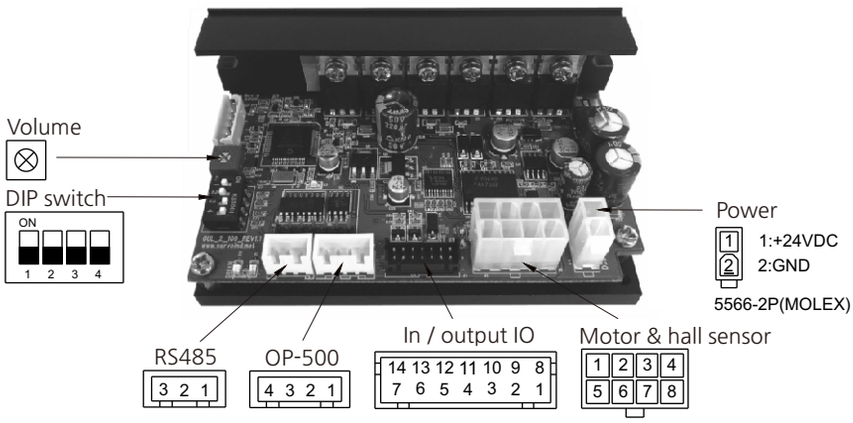



■ Extension cable (Option)




| MODEL | L(extension cable length) |
|---|---|
| KXEW-1 | 1m |
| KXEW-1.5 | 1.5m |
| KXEW-2 | 2m |

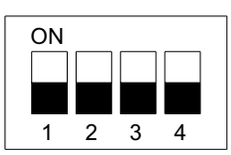
## Name and functions of each part




### 1. Specifications

| Item | Spec | | | Note |
|---|---|---|---|---|
| Rated output | 30W | 50W | 100W | |
| Input power | DC24V (±10%) | | | |
| Rated current | 2.1 | 3.1 | 6 | |
| Max current | 3.7 | 5.4 | 9.8 | |
| External size (mm) | 100 X 58 X 37 | | | |
| Communication | RS485 (optional) | | | |
| Velocity control range | 100~3,000r/min (Velocity variation±1% or under) | | | |

### 2. DIP switch & internal volume specifications

| Item | Pin no. | Spec | | Note |
|---|---|---|---|---|
| DIP switch   | 1 | 30W/50W | OFF : 50W, ON : 30W | |
| | | 100W | 100W fixed | |
| | 2 | OFF : square wave, ON : sine wave | | |
| | 3 | OFF : Close, ON : OPEN | | |
| | 4 | OFF : I/O control, ON : Communication control | | Communication optional |
| Internal volume | | Ac/deceleration adjustment / Velocity Adjustment of SPEED INT | | |

### 3. LED specifications

| Item | LED sign | Note |
|---|---|---|
| Hall sensor alarm | Flickering once at intervals of 6 seconds (Red) | Motor stop |
| Low voltage alarm | Flickering twice at intervals of 6 seconds (Red) | |
| Over load alarm | Flickering 3 times at intervals of 6 seconds (Red) | |
| Parameter alarm | Flickering 4 times at intervals of 6 seconds (Red) | |
| Over heat alarm | Flickering 5 times at intervals of 6 seconds (Red) | |
| Over voltage alarm | Flickering 6 times at intervals of 6 seconds (Red) | |
| Over speed alarm | Flickering 7 times at intervals of 6 seconds (Red) | |
| Over current alarm | Flickering 8 times at intervals of 6 seconds (Red) | |
| Normality | Control ON:green light on<br>Control OFF:green light off | |

## 4. Serialcommunication

| Item | Pin no. | Description | Note |
|---|---|---|---|
| RS485<br>3 2 1<br>(YEONHO, SM AW 250-03) | 1 | A+ (RS-485) | Communication optional |
| | 2 | B- (RS-485) | |
| | 3 | GND | |
| OP-500<br>4 3 2 1<br>(YEONHO, SM AW 250-04) | 1 | +5VDC | Available separately |
| | 2 | RX (RS-232) | |
| | 3 | TX (RS-232) | |
| | 4 | GND | |

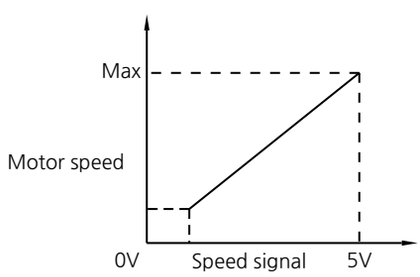
## 5. Input/output specifications (YEONHO, YDH200-14)

| Pin No | Signal | COLOR | Description |
|---|---|---|---|
| 1 | SPEED_+5V | Red | DC power (+5V) to set speed. The power is supplied to outside for power input of adjustable resistance for speed input. Any usage other than this is prohibited. In the event of using external adjustable resistance, the value of 10KΩ (1/4W or over) is applied. |
| 2 | SPEED_IN | Orange | DCpowerinput to set speed. Motor speed is changed up to the max speed in proportion to (0~5VDC). |
| 3 | SPEED_GND | Black | GND |
| 4 | CW / CCW | Yellow | Determine motor direction. If input is “Low" (GND connected), CW direction if “High" (GND not connected), CCW direction. |
| 5 | START | White | If input is “Low" (GND connected), motor control function is activated. (ready for motor rotation)<br>If input is “High" (GND not connected) while motor rotation, the motor stops naturally. |
| 6 | STOP | Blue | If input is “Low" (GND connected) while motor rotation, motor deceleration brake stops it. |
| 7 | SPEED_IN | Brown | Brown If input is “Low" (GND connected), useinternal volume to set speed.<br>If input is “High" (GND not connected), use external volume to set speed. |
| 8 | GND | Black | power grounding |
| 9 | N.C | Green | - |
| 10 | GND | Black | power grounding |
| 11 | Alarm Reset | Grey | Function to remove the cause of alarm and reset alarm forcibly.<br>If input is “Low" (GND connected), alarm is reset. |
| 12 | SPEED_OUT | Pink | Motor speed pulseoutput (Open Collector) _ 15 pulseoutput a rotation |
| 13 | Alarm Out | Purple | In the event of an alarm by alarm signal output (Open Collector), output changes to “Low" (0V). |
| 14 | N.C | | |

## 6. Features

■ Speed control

If I/O #7inputis"High" (5V), motor speed changes up to the max speed in proportion to the external volume (I/O#2) input voltage (0~5VDC).
In the event of utilizing external adjustable resistance, use the value of 10KΩ (1/4W or over).
If I/O #7input is "Low" (GND), motor speed changes up to the max speed in proportion to the internal volume input voltage (0~3.3VDC)



■ **Motor direction control**

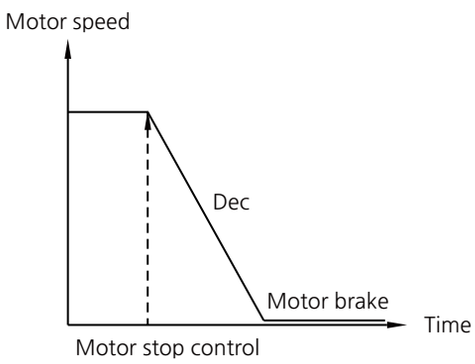
If I/O #4input is "Low" (GND connected), the motor rotates toward CW (to motor axis).
If I/O #4input is "High" (GND not connected), the motor rotates toward CCW (to motor axis).

■ **Controller ON/OFF control**

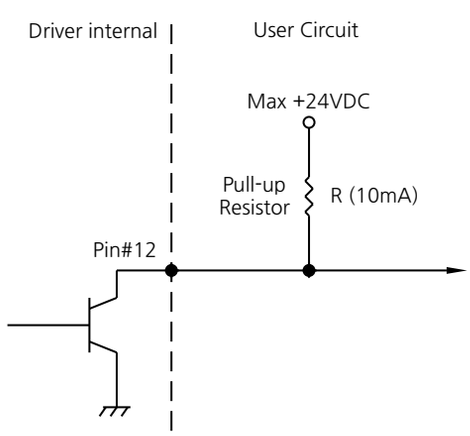
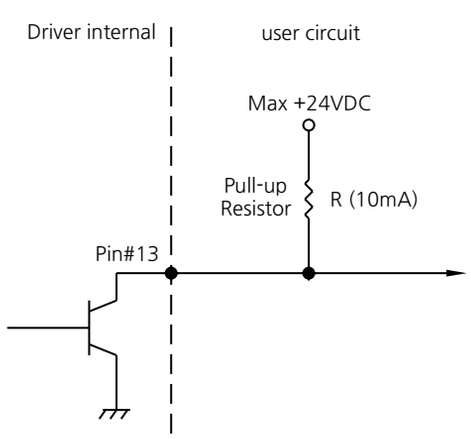
If I/O#5input is"Low" (GND connected), motor control function is activated. (green LED light on)
(ready for motor rotation)
Motor operation starts according to an external volume input value. If input is "High" (GND not connected) while motor rotation, the motor stops naturally.

■ **Motor stop control**

If I/O#6inputis "Low" (GND connected) while motor rotation, the motor stops. [deceleration - brake (no maintaining)]




■ **Output signal**

| Motor speed pulse output | Alarmsignoutput |
|---|---|
|  |  |
| I/O #12 outputs signal pulse while motor rotation. (outputs 15 pulses of signal per 1 motor rotation) | In the event of an alarm, I/O #13output changes to "Low" (0V). |

# BLDC SPEED CONTROL UNIT

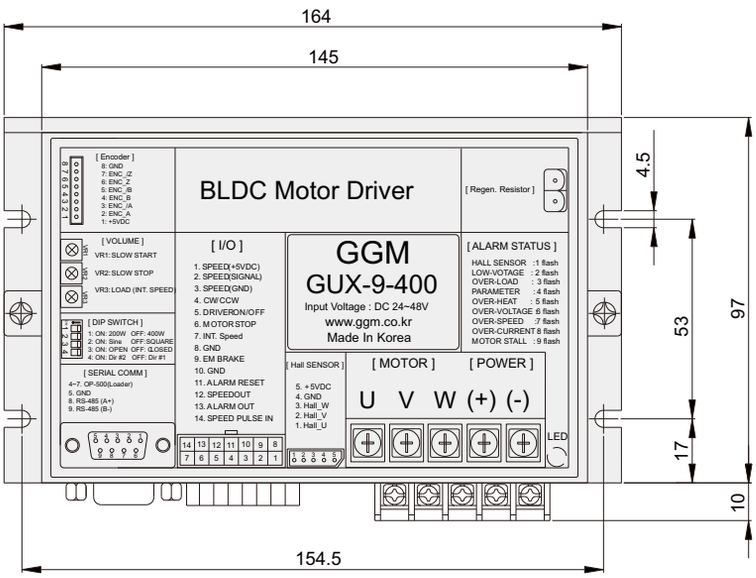
## GUX

GUX-9-400

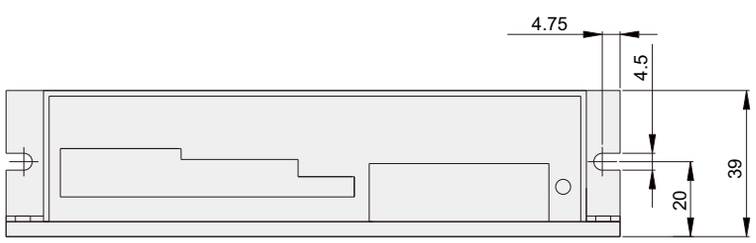
X Series motor applied product

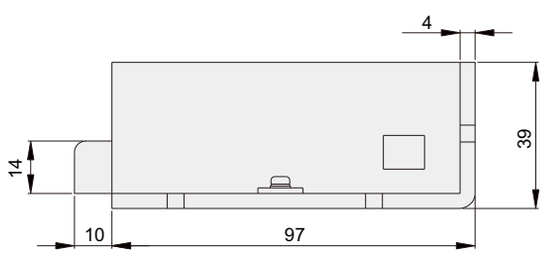
## Product appearance

■ Driver main part outside view



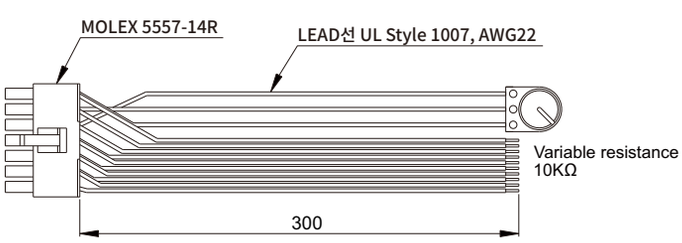




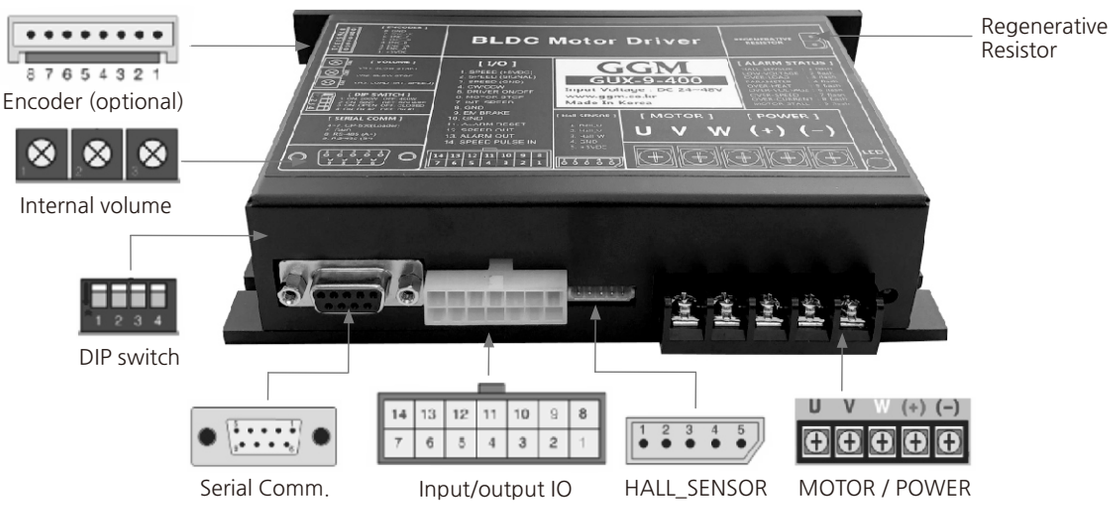




## [ Accessory ]

■ Driver input signal cable, External volume



## Name and functions of each part




| Internal volume setting | |
|---|---|
| 1 | SLOW START |
| 2 | SLOW STOP |
| 3 | LOAD (INT. SPEED) |

| Serial communication | |
|---|---|
| 1,2,3 | Not Used |
| 4 | OP-500 (+5VDC) |
| 5 | OP-500 (GND) |
| 6 | OP-500 (RX) |
| 7 | OP-500 (TX) |
| 8 | RS-485 (A+) |
| 9 | RS-485 (B-) |

| Hall sensor | |
|---|---|
| 1 | Hall_U (BROWN) |
| 2 | Hall_V (WHITE) |
| 3 | Hall_W (ORANGE) |
| 4 | GND (GREEN) |
| 5 | +5VDC (YELLOW) |

| Motor and power | |
|---|---|
| U | MOTOR_U (BLUE) |
| V | MOTOR_V (PURPLE) |
| W | MOTOR_W (GRAY) |
| + | V+ (200W-DC24V/400W-DC48V) |
| - | GND |

| DIP switch | |
|---|---|
| 1 | ON:200W, OFF:400W |
| 2 | ON:Sine wave<br>OFF:Square wave |
| 3 | ON:OPEN, OFF:CLOSE |
| 4 | ON:Communication control<br>OFF:I/O Control |

### 1.Specifications

| Item | Contents | | Note |
|---|---|---|---|
| Rated output | 200W | 400W | |
| Input power | DC 24V (±10%) | DC 48V (±10%) | |
| Rated current | 13Arms | 11Arms | |
| Maximum current | 25Arms | 18Arms | |
| External dimensions (mm) | 164 X 97 X 39 | | |
| Communication | RS485 | | |
| Range of speed control | 100 ~ 4,000 r/min (Speed regulation less than ±1%) | | |

## 2. LED specifications

| Item | LED indication | Note |
|---|---|---|
| Hall sensor alarm | Flashes once every 6 seconds (red) | |
| Low voltage alarm | Flashes twice every 6 seconds (red) | |
| Overload alarm | Flashes 3 times every 6 seconds (red) | |
| Parameter alarm | Flashes 4 times every 6 seconds (red) | |
| Overheating alarm | Flashes 5 times every 6 seconds (red)) | |
| Overvoltage alarm | Flashes 6 times every 6 seconds (red) | |
| Overspeed alarm | Flashes 7 times every 6 seconds (red) | |
| Overcurrent alarm | Flashes 8 times every 6 seconds (red) | |
| Stall alarm | Flashes 9 times every 6 seconds (red) | |
| Normal | Control ON status: Green ON<br>Control OFF status: OFF<br>Motor operation status: Blue ON | |

## 3. Specifications for DIP switch and internal volume

| Item | Pin No. | Contents | Note |
|---|---|---|---|
| DIP switch | 1 | ON : 200W, OFF: 400W | |
| | 2 | ON : Sine wave, OFF: Square wave | |
| | 3 | ON : OPEN (Output in proportion to the input voltage value without controlling speed feedback)<br>OFF : CLOSE (Output in proportion to the speed reference voltage value using the speed feedback control) | Default setting<br>OFF |
| | 4 | ON : Communication control<br>OFF : I / O control | Default setting<br>OFF |
| Internal volume | 1 | Adjust acceleration time | |
| | 2 | Adjust deceleration time | |
| | 3 | Adjust load factor / Adjust speed at the time of initializing the speed(SPEED INI) | |

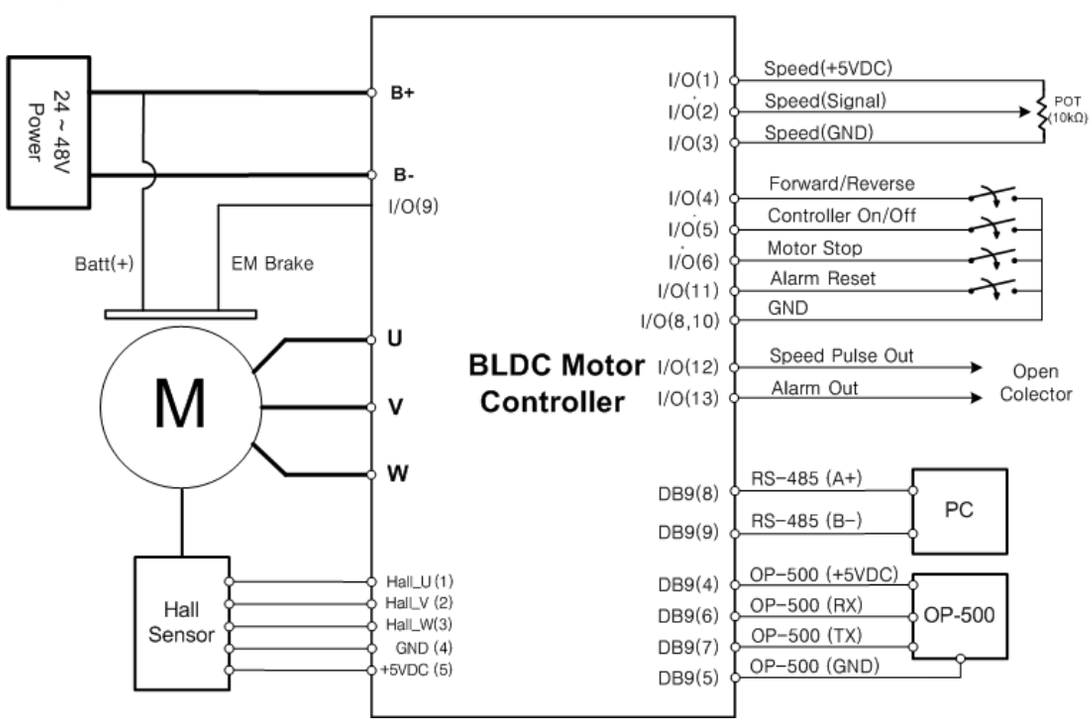
## 4. Specifications for motor and other connectors

| Specifications for connectors | Pin No. | Symbol | Contents | Note |
|---|---|---|---|---|
| MOTOR/POWER [BR-900MB-5] | 1~3 | U, V, W | Motor power line | |
| | 4 | V+ | 24V, 48V | |
| | 5 | GND | Ground | |
| HALL_SENSOR [LAB0640-5] | 1~3 | Hu,Hv,Hw | Hall sensor signal | |
| | 4,5 | Gnd, 5V | Hall sensor power | |
| Input/output I/O [LAD1140-14] | 1~14 | - | Refer to the details of input/output signals | |
| Serial Comm. [DB9 (Female)] | 1~3 | - | Not USED | |
| | 4,5 | Power | OP-500(+),OP-500(-) | OP option |
| | 6,7 | RS-232 | Packet reception<br>packet transmission | |
| | 8,9 | RS-485 | T/R+, T/R- | |
| Encoder [SMAW200-8] | 1,8 | +5,GND | Encoder power | Option YEONHO |
| | 2~7 | | Encoder signal | |
| Regenerative Resistor [ TB39R-02P ] | | | | |
| Input/output I/O [LAD1140-14] | | Input and output control signal line<br>Refer to the attached specifications in the details | | |

## 5. Input and output I/O specification

| Pin No. | Name of signal | Color | Contents |
|---|---|---|---|
| 1 | +5V | Red | Direct current power for speed setting (+5V) / This is used as the power input of variable resistance for receiving this power supply from the external source and entering the speed, and it is prohibited to use it for any other purpose.<br>10KΩ (1/4W or higher) is used when the external variable resistance is used. |
| 2 | SPEED IN | Orange | Direct current power input for speed setting/ Change the motor speed up to the maximum speed in proportion to (0~5VDC). |
| 3 | GND | Black | GND |
| 4 | CW/CCW | Yellow | Decides the motor direction. CW direction if the input is “Low" (GND connection).<br>CCW direction if the input is “High" (no GND connection). |
| 5 | START | White | If the input is “Low" (GND connection), the motor control function is enabled(Motor rotation ready).<br>If the input is “High" (no GND connection) during motor rotation, the motor will stop automatically. |
| 6 | STOP | Blue | If the input is “Low" (GND connection) during motor rotation, the motor is stopped by the deceleration brake. |
| 7 | INT_SPEED | Brown | If the input is “Low" (GND connection), the speed is set using the internal volume (#3).<br>If the input is “High" (no GND connection), the speed is set using the external volume. |
| 8 | GND | Black | GND |
| 9 | EM BRAKE | Green | Electromagnetic brake operation port |
| 10 | GND | Black | GND |
| 11 | ALARM Reset | Gray | This eliminates the cause of an alarm and forcibly resets the alarm.<br>If the input is “Low" (GND connection), the alarm is reset. |
| 12 | SPEED_OUT | Pink | Outputs a signal pulse when the motor rotates.<br>(Outputs 15 signal pulses per one motor rotation.) |
| 13 | ALARM_OUT | Purple | When an alarm occurs, the output is changed to “Low"(0V).<br>Normal operation status is “High". |

## 6. Wiring diagram



## 7. Function

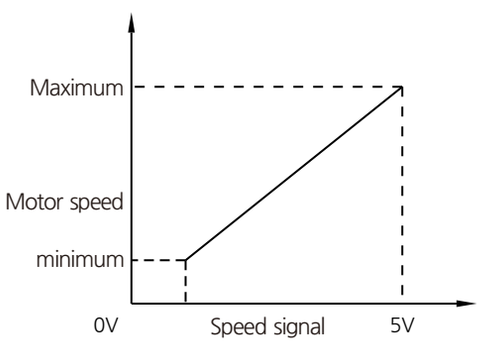
### ■ Input voltage

200W motor : DC 24V (±10%)
400W motor : DC 48V (±10%)

### ■ Speed control

IIf I/O No. #7 input is "High" (5V), the motor speed is changed up to the maximum speed in proportion to the external volume (I/O#2) input voltage (0~5VDC).
10KΩ (1/4W or higher) is used when the external variable resistance is used.

If I/O No. #7 input is “Low" (GND connection), the motor speed is changed up to the maximum speed in proportion to input volume (Vol#3) input voltage (0~3.3VDC).
(Apply after changing the I/O No. #7 setting and resetting Power On )




### ■ Motor direction control

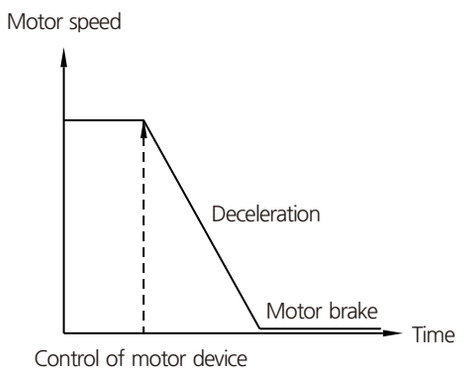
If I/O No. #4 input is “Low" (GND connection), the motor rotates in the direction of CW (motor shaft direction).
If I/O No. #4 input is “High" (no GND connection), the motor rotates in the direction of CCW (motor shaft direction).

### ■ Controller ON/OFF control

If I/O No. #5 input is “Low" (GND connection), the motor control function is enabled. (LED Green ON)
(Motor rotation ready)
Motor operation begins according to the external volume input value. If the input is “High" (no GND connection) during motor rotation, the motor stops automatically.

### ■ Motor stop control

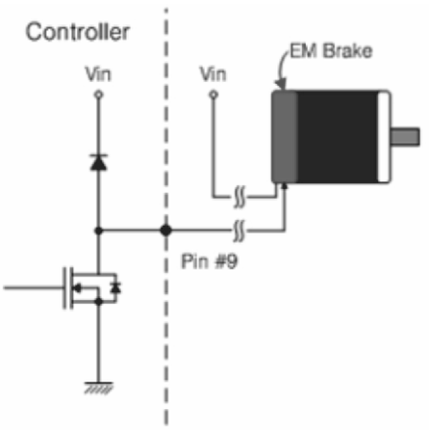
If I/O No. #6 input is "Low" (GND connection) during motor rotation, the motor stops (deceleration brake is not maintained).



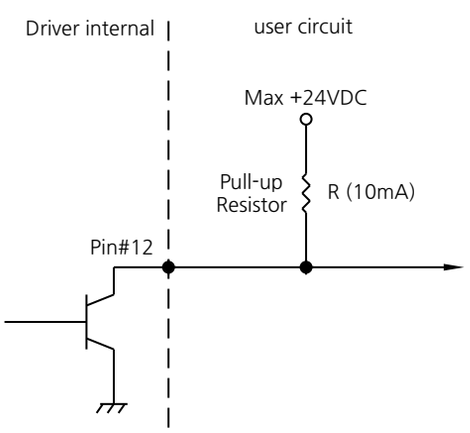
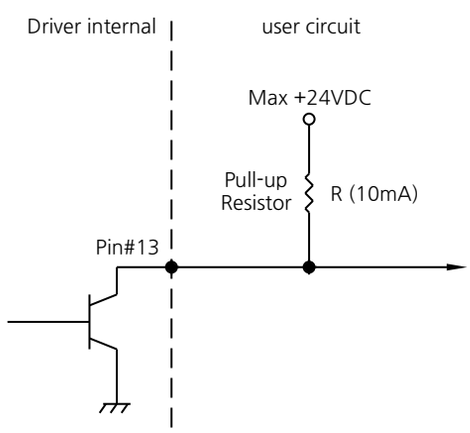

[Deceleration - brake]

## ■ Electromagnetic brake control

- Electromagnetic brake wiring
  (Connect the power supply lineto the control power (+) and the other line to I/O No. #9. )
- When the motor operates after Control ON, the electromagnetic brake is activated.
- When the motor stop operates after Control OFF, the electromagnetic brake is turned off.




## ■ Output signal

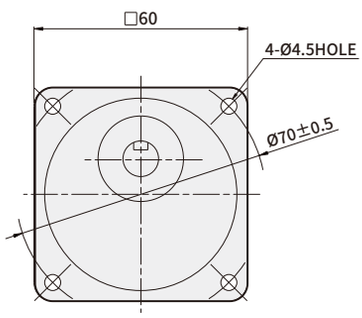
| Output of motor speed pulse | Output of alarm signal |
|---|---|
|  |  |
| I/O #12 outputs a signal pulse when the motor rotates. (Outputs 15 signal pulses per motor rotation.) | When an alarm occurs, the I/O #13 output is changed to “Low"(0V). |

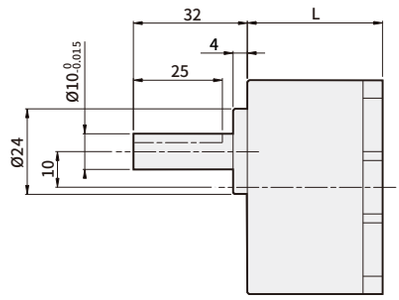
# BRUSHLESS AC/DC MOTOR UNIT - Gearhead

## DIMENSIONS

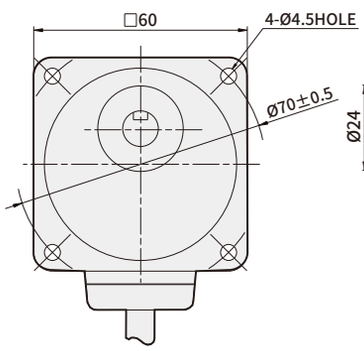
## GEARHEAD K6H□B

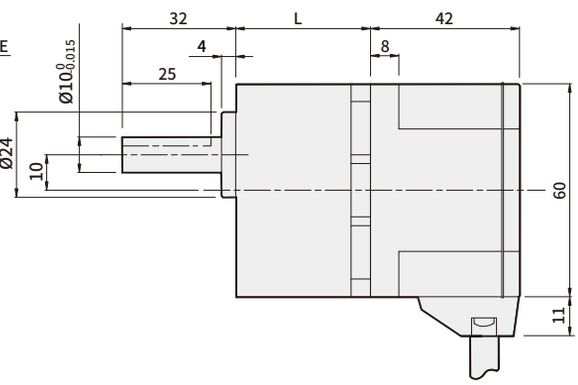
**K6H□B**
Weight : 0.4Kg



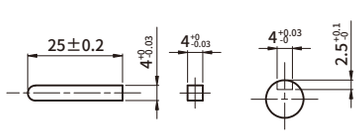




**K6BH30N■ + K6H□B**
**K6FH30NC + K6H□B**
**K6XH30N2 + K6H□B**
Weight : 0.9Kg




**KEY · KEY GROOVE(ACCESSORY)**



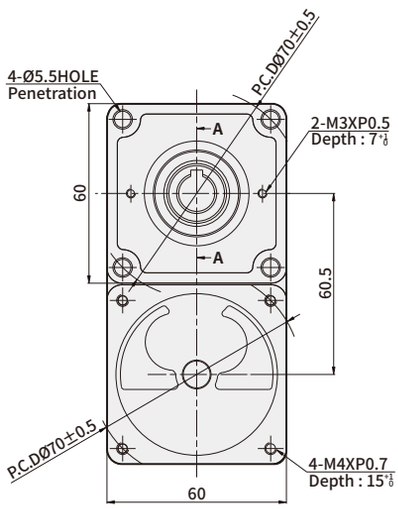

**DIMENSION TABLE**

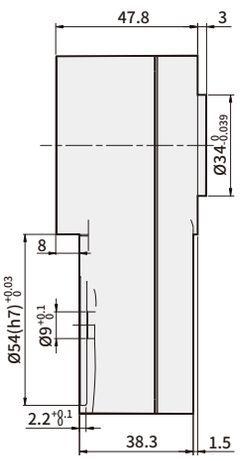
| GEARHEAD PRODUCT NAME | DECELERATION RATIO | L | FIXING BOLT |
|---|---|---|---|
| K6H□B | 5,10,15,20 | 34 | M4 P0.7×50 |
| | 30,50,100 | 38 | M4 P0.7×55 |
| | 200 | 43 | M4 P0.7×60 |

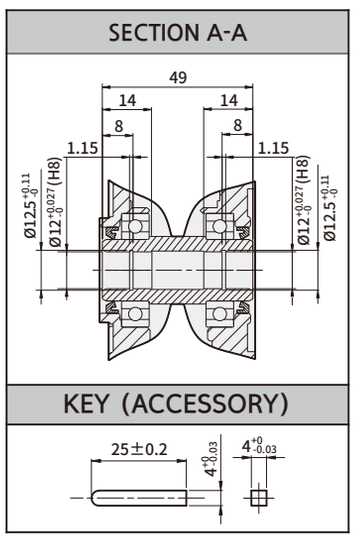
※ -B (BRAKE), -E (ENCODER) or -BE (BRAKE+ENCODER) can be added to end of the motor model name.
※ In ■ of the model name voltage U (single-phase 100~115V), C (single-phase 200~230V) will be shown.
※ In □ of name, it represents a deceleration ratio.
※ Geared motor is included with fixing blolt set. (flat washer, spring washer, hexagonal nut 4pcs each)

# GEARHEAD K6H□BTH

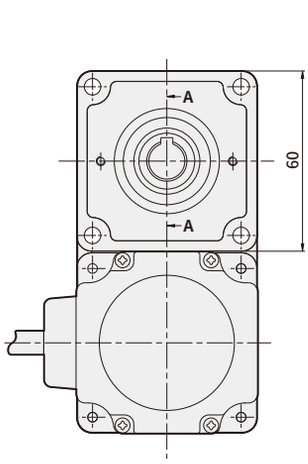
**K6H□BTH**
Weight : 0.7Kg

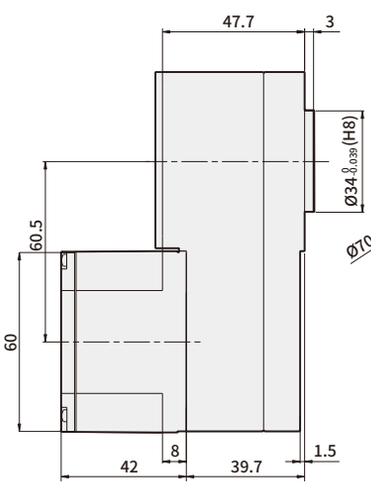


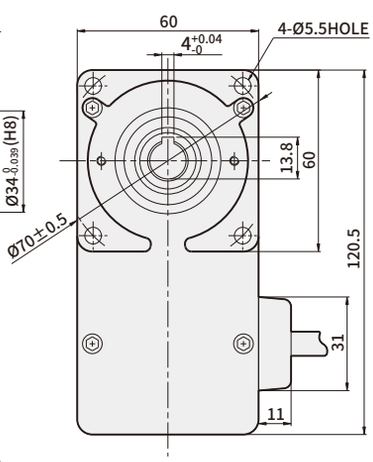




**K6BH30N■ + K6H□BTH**
**K6FH30NC + K6H□BTH**
**K6XH30N2 + K6H□BTH**
Weight : 1.2Kg



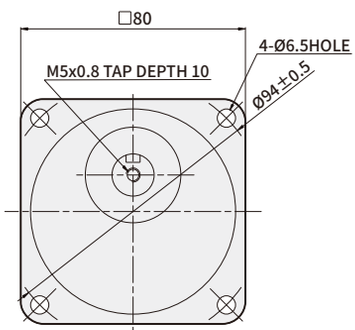

**DIMENSION TABLE**

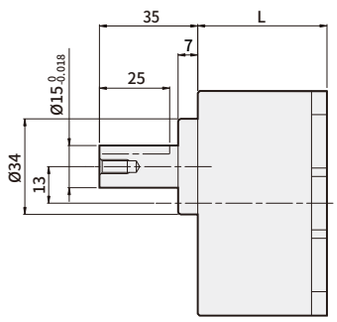
| GEARHEAD PRODUCT NAME | DECELERATION RATIO | FIXING BOLT |
|---|---|---|
| K6H□BTH | 5, 10, 15, 20, 30<br>50, 100, 200 | M5 P0.8×65 |

※ -B (BRAKE), -E (ENCODER) or -BE (BRAKE+ENCODER) can be added to end of the motor model name.
※ In ■ of the model name voltage U (single-phase 100~115V), C (single-phase 200~230V) will be shown.
※ In □ of name, it represents a deceleration ratio.
※ Geared motor is included with fixing blolt set. (flat washer, spring washer, hexagonal nut 4pcs each)

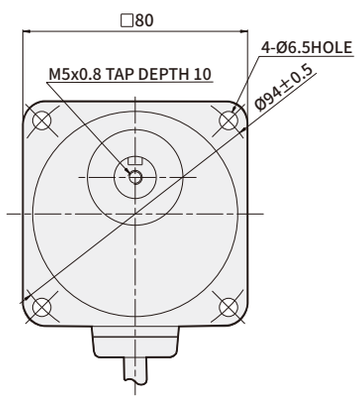
# GEARHEAD K8H□B

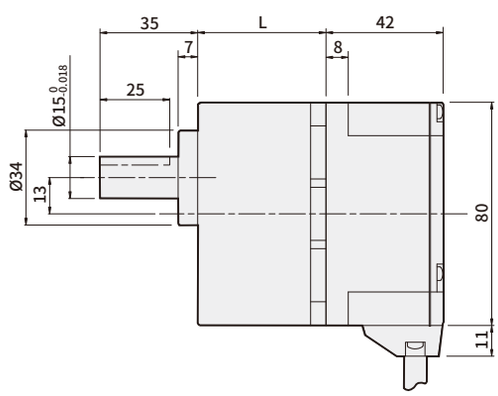
**K8H□B**
Weight : 0.9Kg



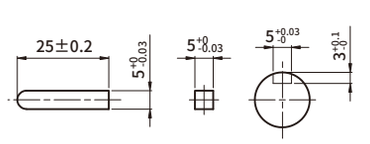




**K8BH60N■ + K8H□B**
**K8FH60NC + K8H□B**
**K8XH50N2 + K8H□B**
Weight : 1.7Kg




KEY · KEY GROOVE(ACCESSORY)



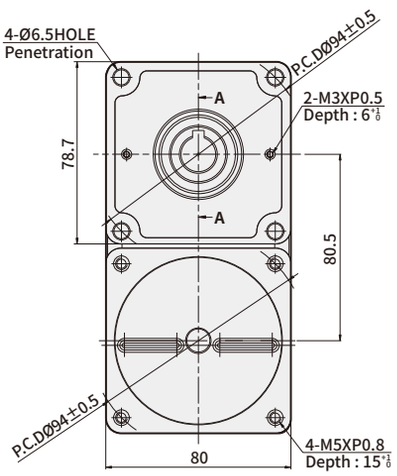

DIMENSION TABLE

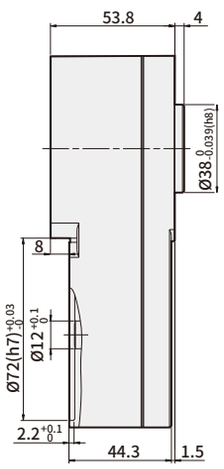
| GEARHEAD PRODUCT NAME | DECELERATION RATIO | L | FIXING BOLT |
|---|---|---|---|
| K8H□B | 5,10,15,20 | 41 | M6 P1.0×65 |
| | 30,50,100 | 46 | M6 P1.0×70 |
| | 200 | 51 | M6 P1.0×75 |

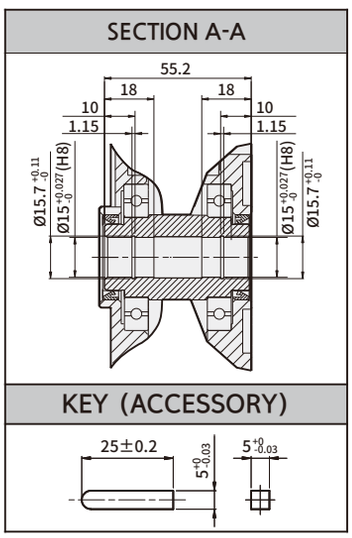
※ -B (BRAKE), -E (ENCODER) or -BE (BRAKE+ENCODER) can be added to end of the motor model name.
※ In ■ of the model name voltage U (single-phase 100~115V), C (single-phase 200~230V) will be shown.
※ In □ of name, it represents a deceleration ratio.
※ Geared motor is included with fixing blolt set. (flat washer, spring washer, hexagonal nut 4pcs each)

# GEARHEAD K8H□BTH

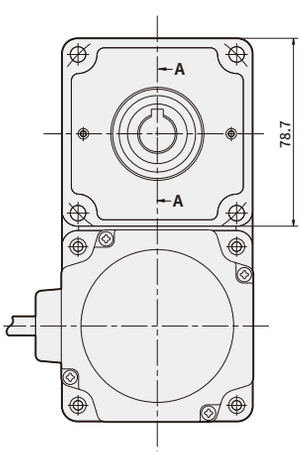
**K8H□BTH**
Weight : 1.5Kg

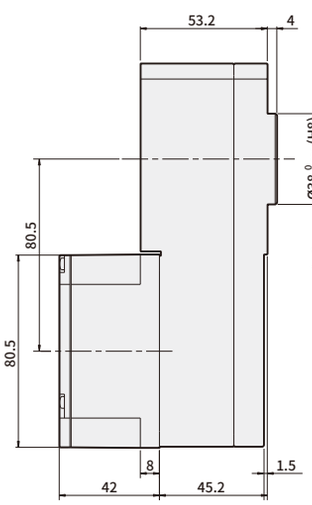


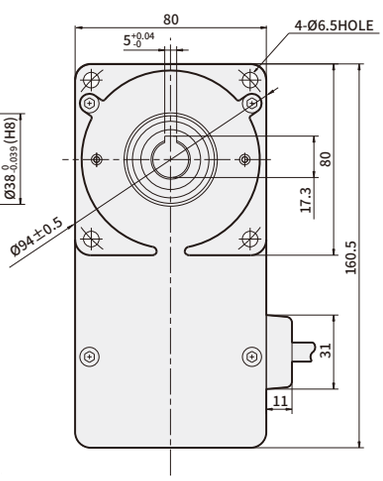




**K8BH60N■ + K8H□BTH**
**K8FH60NC + K8H□BTH**
**K8XH50N2 + K8H□BTH**
Weight : 2.3Kg




**DIMENSION TABLE**

| GEARHEAD PRODUCT NAME | DECELERATION RATIO | FIXING BOLT |
|---|---|---|
| K8H□BTH | 5, 10, 15, 20, 30<br>50, 100, 200 | M6 P1.0×70 |

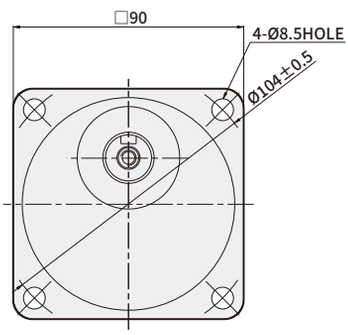
※ -B (BRAKE), -E (ENCODER) or -BE (BRAKE+ENCODER) can be added to end of the motor model name.
※ In ■ of the model name voltage U (single-phase 100~115V), C (single-phase 200~230V) will be shown.
※ In □ of name, it represents a deceleration ratio.
※ Geared motor is included with fixing blolt set. (flat washer, spring washer, hexagonal nut 4pcs each)

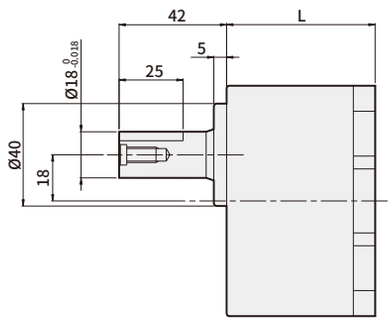
# BRUSHLESS AC/DC MOTOR UNIT - Gearhead

## DIMENSIONS

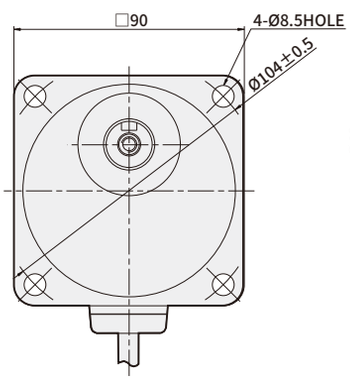
## GEARHEAD K9H□B

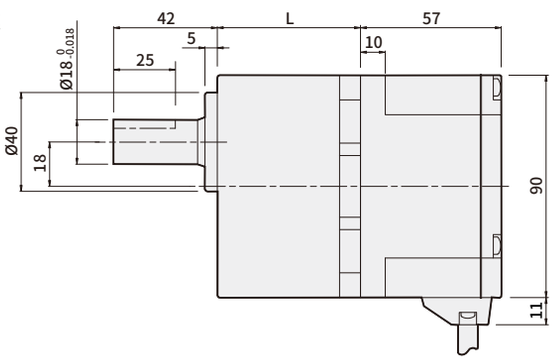
**K9H□B**
Weight : 1.3Kg



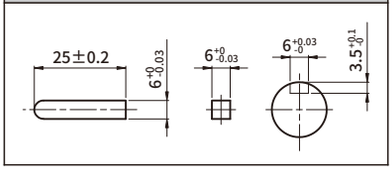




**K9BH90N■ + K9H□B**
**K9BH150NC + K9H□B**
**K9FH150NC + K9H□B**
**K9XH100N2 + K9H□B**
Weight : 2.6Kg




**KEY · KEY GROOVE(ACCESSORY)**



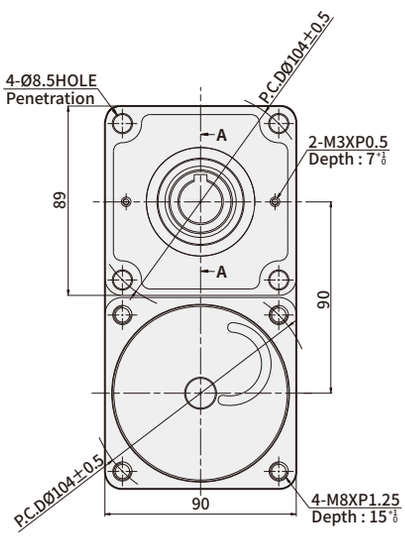

### DIMENSION TABLE

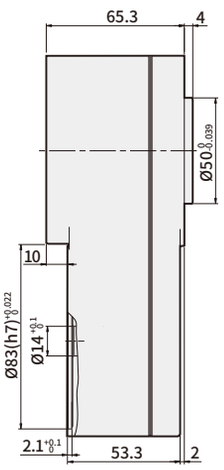
| GEARHEAD PRODUCT NAME | DECELERATION RATIO | L | FIXING BOLT |
|---|---|---|---|
| K9H□B | 5,10,15,20 | 45 | M8 P1.25×75 |
| | 30,50,100 | 58 | M8 P1.25×90 |
| | 200 | 64 | M8 P1.25×95 |

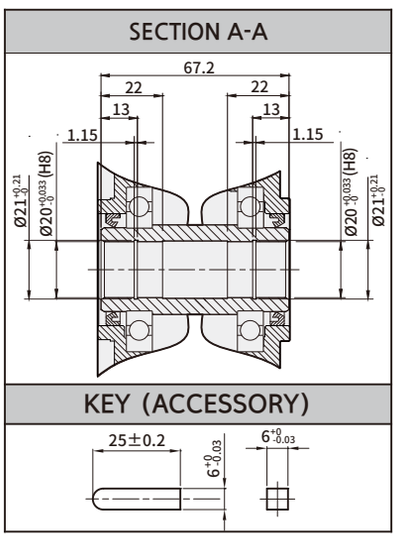
※ -B (BRAKE), -E (ENCODER) or -BE (BRAKE+ENCODER) can be added to end of the motor model name.
※ In ■ of the model name voltage U (single-phase 100~115V), C (single-phase 200~230V) will be shown.
※ In □ of name, it represents a deceleration ratio.
※ Geared motor is included with fixing blolt set. (flat washer, spring washer, hexagonal nut 4pcs each)

# GEARHEAD K9H□BTH

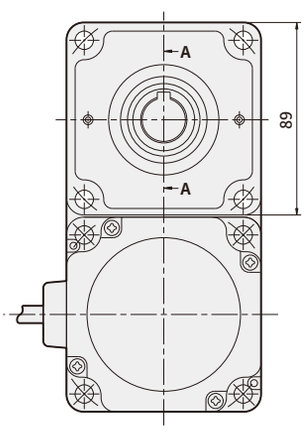
**K9H□BTH**
Weight : 2.1Kg

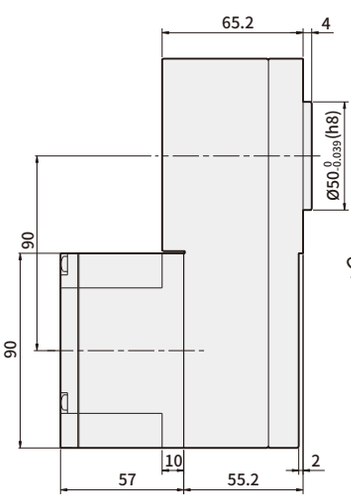


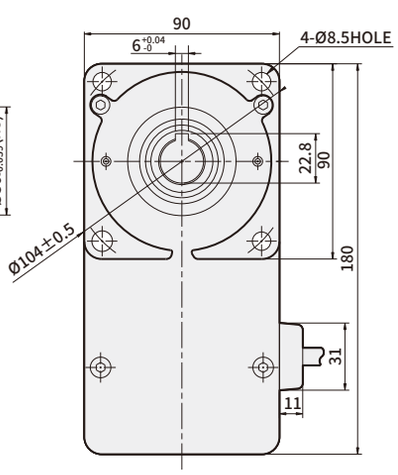




**K9BH90N■ + K9H□BTH**
**K9BH150NC + K9H□BTH**
**K9FH150NC + K9H□BTH**
**K9XH100N2 + K9H□BTH**
Weight : 3.4Kg



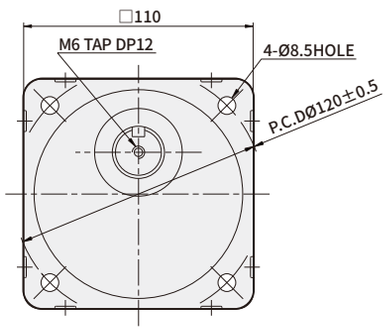

**DIMENSION TABLE**

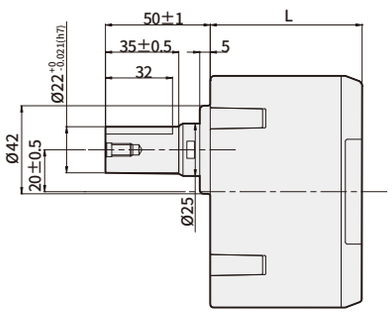
| GEARHEAD PRODUCT NAME | DECELERATION RATIO | FIXING BOLT |
|---|---|---|
| K9H□BTH | 5, 10, 15, 20, 30<br>50, 100, 200 | M8 P1.25×90 |

※ -B (BRAKE), -E (ENCODER) or -BE (BRAKE+ENCODER) can be added to end of the motor model name.
※ In ■ of the model name voltage U (single-phase 100~115V), C (single-phase 200~230V) will be shown.
※ In □ of name, it represents a deceleration ratio.
※ Geared motor is included with fixing blolt set. (flat washer, spring washer, hexagonal nut 4pcs each)

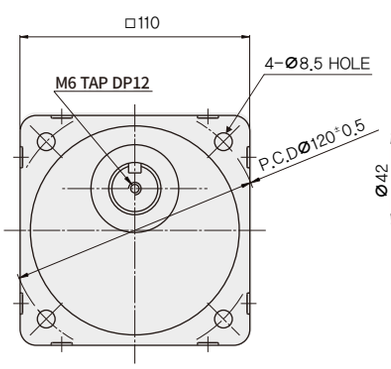
# GEARHEAD K10H□B

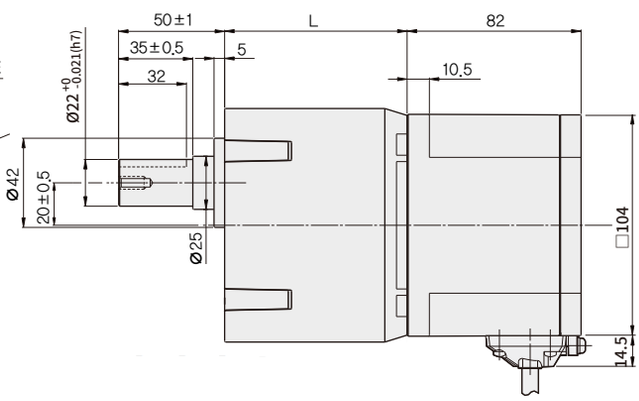
**K10H□BU**
Weight : 3Kg



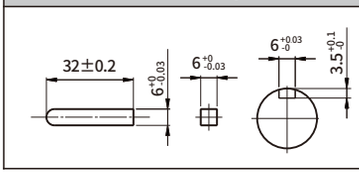




**K10FH200NC + K10H□BU**
**K10FH400NC + K10H□BU**
**K10XH200N2 + K10H□BU**
**K10XH400N9 + K10H□BU**
Weight : 5.4Kg




**KEY · KEY GROOVE(ACCESSORY)**



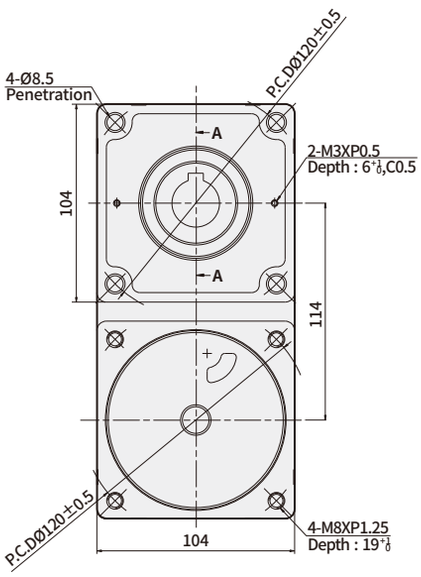

**DIMENSION TABLE**

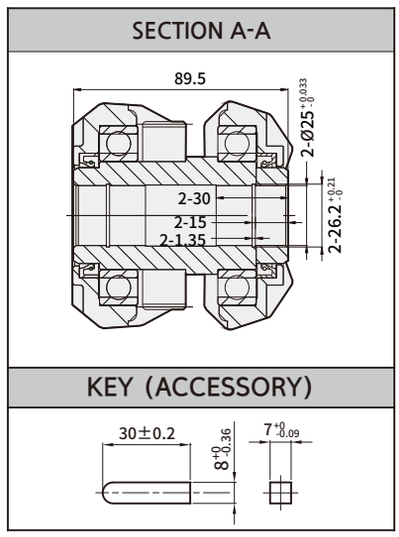
| GEARHEAD PRODUCT NAME | DECELERATION RATIO | L | FIXING BOLT |
|---|---|---|---|
| K10H□BU | 5,10,15,20 | 60 | M8 P1.25×95 |
| | 30,50 | 72 | M8 P1.25×110 |
| | 100,200 | 86 | M8 P1.25×120 |

※ -B (BRAKE), -E (ENCODER) or -BE (BRAKE+ENCODER) can be added to end of the motor model name.
※ In □ of name, it represents a deceleration ratio.
※ Geared motor is included with fixing blolt set. (flat washer, spring washer, hexagonal nut 4pcs each)

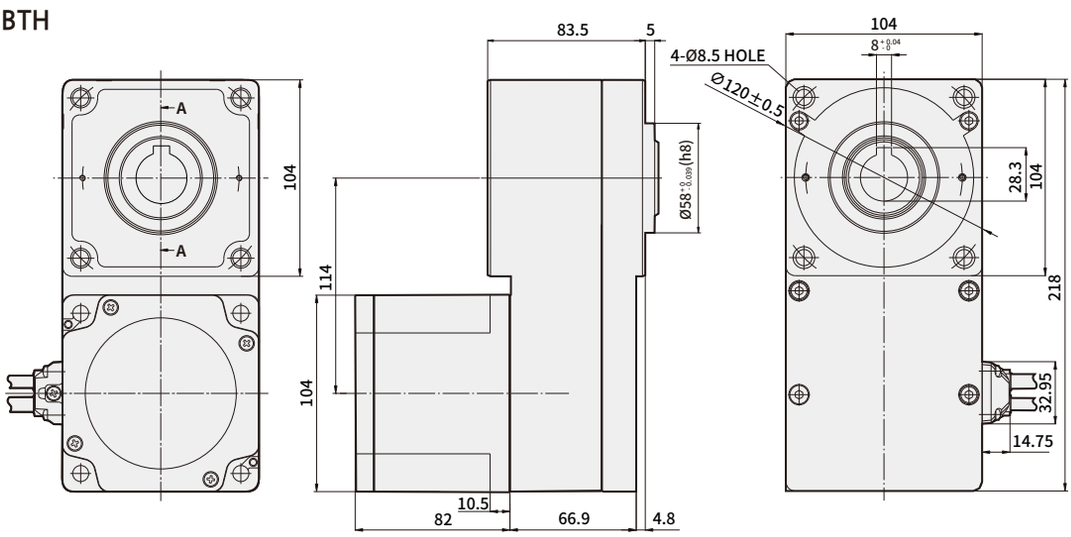
# GEARHEAD K10H□BTH

**K10H□BTH**
Weight : 4.9Kg




**K10FH200NC + K10H□BTH**
**K10FH400NC + K10H□BTH**
**K10XH200N2 + K10H□BTH**
**K10XH400N9 + K10H□BTH**
Weight : 7.3Kg




**DIMENSION TABLE**

| GEARHEAD PRODUCT NAME | DECELERATION RATIO | FIXING BOLT |
|---|---|---|
| K10H□BTH | 5, 10, 15, 20, 30<br>50, 100 | M8 P1.25×100 |

※ -B (BRAKE), -E (ENCODER) or -BE (BRAKE+ENCODER) can be added to end of the motor model name.
※ In □ of name, it represents a deceleration ratio.
※ Geared motor is included with fixing blolt set. (flat washer, spring washer, hexagonal nut 4pcs each)

## Delivery effciency of gearhead

| Product name | Deceleration ratio | 5 | 10 | 15 | 20 | 30 | 50 | 100 | 200 |
|---|---|---|---|---|---|---|---|---|---|
| | K6H□B | 90% | | | | 86% | | | 81% |
| | K8H□B | 90% | | | | 86% | | | 81% |
| | K9H□B | 90% | | | | 86% | | | 81% |
| | K10H□BU | 90% | | | | 86% | | 81% | |
| | K6H□BTH | 80% | 85% | | | | | | |
| | K8H□BTH | 85% | | | | | | | |
| | K9H□BTH | 85% | | | | | | | |
| | K10H□BTH | 85% | | | | | | | |

## Allowed torque of AC Motor + Gearhead

Unit = N·m

| Product name | Deceleration ratio | | 5 | 10 | 15 | 20 | 30 | 50 | 100 | 200 |
|---|---|---|---|---|---|---|---|---|---|---|
| | Speed control range[r/min] | | 20~600 | 10~300 | 6.7~200 | 5~150 | 3.3~100 | 2~60 | 1~30 | 0.5~15 |
| K6BH30N■ + K6H□B | | 100~3000 | 0.45 | 0.9 | 1.4 | 1.8 | 2.6 | 4.3 | 6 | 6 |
| K8BH60N■ + K8H□B | | | 0.9 | 1.8 | 2.7 | 3.6 | 5.2 | 8.6 | 16 | 16 |
| K9BH90N■ + K9H□B | | | 1.35 | 2.7 | 4.1 | 5.4 | 7.7 | 12.9 | 25.8 | 30 |
| K9BH150NC + K9H□B | | | 2.2 | 4.4 | 6.6 | 8.8 | 12.6 | 21.1 | 30 | 30 |
| K6BH30N■ + K6H□BTH | | | 0.4 | 0.85 | 1.3 | 1.7 | 2.6 | 4.3 | 8.5 | 17 |
| K8BH60N■ + K8H□BTH | | | 0.85 | 1.7 | 2.6 | 3.4 | 5.1 | 8.5 | 17 | 34 |
| K9BH90N■ + K9H□BTH | | | 1.9 | 3.8 | 5.7 | 7.7 | 11.5 | 19.1 | 38.3 | 68 |
| K9BH150NC + K9H□BTH | | | 2.1 | 4.2 | 6.2 | 8.3 | 12.5 | 21 | 42 | 68 |
| Product name | Deceleration ratio | | 5 | 10 | 15 | 20 | 30 | 50 | 100 | 200 |
| | Speed control range[r/min] | | 20~800 | 10~400 | 6.7~266 | 5~200 | 3.3~133 | 2~80 | 1~40 | 0.5~20 |
| K6FH30NC+K6H□B | | 100~3000 | 0.45 | 0.9 | 1.4 | 1.8 | 2.6 | 4.3 | 6 | 6 |
| | | 4000 | 0.36 | 0.72 | 1.08 | 1.4 | 2.1 | 3.4 | 5.4 | 5.4 |
| K8FH60NC+K8H□B | | 100~3000 | 0.9 | 1.8 | 2.7 | 3.6 | 5.2 | 8.6 | 16 | 16 |
| | | 4000 | 0.68 | 1.4 | 2.0 | 2.7 | 3.9 | 6.5 | 12.9 | 14 |
| K9FH150NC+K9H□B | | 100~3000 | 2.2 | 4.4 | 6.6 | 8.8 | 12.6 | 21.1 | 30 | 30 |
| | | 4000 | 1.4 | 2.7 | 4.1 | 5.4 | 7.7 | 12.9 | 25.8 | 27 |
| K10FH200NC+K10H□BU | | 100~3000 | 2.9 | 5.9 | 8.8 | 11.7 | 16.8 | 28 | 52.7 | 70 |
| | | 4000 | 2 | 4.1 | 6.1 | 8.1 | 11.6 | 19.4 | 36.5 | 63 |
| K10FH400NC+K10H□BU | | 100~3000 | 5.9 | 11.7 | 17.6 | 23.4 | 33.5 | 55.9 | 70 | 70 |
| | | 4000 | 4.3 | 8.6 | 12.8 | 17.1 | 24.5 | 40.9 | 63 | 63 |
| K6FH30NC+K6H□BTH | | 100~3000 | 0.4 | 0.85 | 1.3 | 1.7 | 2.6 | 4.3 | 8.5 | 17 |
| | | 4000 | 0.30 | 0.64 | 0.96 | 1.3 | 1.9 | 3.2 | 6.4 | 12.8 |
| K8FH60NC+K8H□BTH | | 100~3000 | 0.85 | 1.7 | 2.6 | 3.4 | 5.1 | 8.5 | 17 | 34 |
| | | 4000 | 0.64 | 1.3 | 1.9 | 2.6 | 3.8 | 6.4 | 12.8 | 25.5 |
| K9FH150NC+K9H□BTH | | 100~3000 | 2.1 | 4.2 | 6.2 | 8.3 | 12.5 | 21 | 42 | 68 |
| | | 4000 | 1.3 | 2.6 | 3.8 | 5.1 | 7.7 | 12.8 | 25.5 | 51 |
| K10FH200NC+K10H□BTH | | 100~3000 | 2.8 | 5.5 | 8.3 | 11.1 | 16.6 | 27.6 | 55.3 | — |
| | | 4000 | 1.9 | 3.8 | 5.7 | 7.7 | 11.5 | 19.1 | 38.3 | — |
| K10FH400NC+K10H□BTH | | 100~3000 | 5.5 | 11.1 | 16.6 | 22.1 | 33.2 | 55.3 | 110 | — |
| | | 4000 | 4.0 | 8.1 | 12.1 | 16.2 | 24.2 | 40.4 | 80.8 | — |

※ -B (BRAKE), -E (ENCODER) or -BE (BRAKE+ENCODER) can be added to end of the motor model name.
※ In ■ of the model name voltage U (single-phase 100~115V), C (single-phase 200~230V) will be shown.
※ In □ of name, it represents a deceleration ratio.
※ Rotation direction shows the same [ ] color as the motor. In other cases, it's the opposite.
※ Flat Gearbox viewed from front side is opposite rotation direction with motor.
※ Flat Gearbox viewed from back side is same rotation direction with motor.

## Allowed torque of DC Motor + Gearhead

Unit = N·m

| Product name | Deceleration ratio | 5 | 10 | 15 | 20 | 30 | 50 | 100 | 200 |
|---|---|---|---|---|---|---|---|---|---|
| | Speed control range[r/min] | 20~600 | 10~300 | 6.7~200 | 5~150 | 3.3~100 | 2~60 | 1~30 | 0.5~15 |
| K6XH30N2 + K6H□B | 100~2500 | 0.54 | 1.1 | 1.6 | 2.2 | 3.1 | 5.2 | 6 | 6 |
| | 3000 | 0.3 | 0.54 | 0.81 | 1.1 | 1.5 | 2.6 | 5.2 | 6 |
| K8XH50N2 + K8H□B | 100~2500 | 0.9 | 1.8 | 2.7 | 3.6 | 5.2 | 8.6 | 16 | 16 |
| | 3000 | 0.45 | 0.9 | 1.4 | 1.8 | 2.6 | 4.3 | 8.6 | 16 |
| K9XH100N2 + K9H□B | 100~2500 | 1.8 | 3.6 | 5.4 | 7.2 | 10.3 | 17.2 | 30 | 30 |
| | 3000 | 0.9 | 1.8 | 2.7 | 3.6 | 5.2 | 8.6 | 17.2 | 30 |
| K6XH30N2 + K6H□BTH | 100~2500 | 0.48 | 1 | 1.5 | 2 | 3.1 | 5.1 | 10.2 | 17 |
| | 3000 | 0.2 | 0.51 | 0.77 | 1 | 1.5 | 2.6 | 5.1 | 10.2 |
| K8XH50N2 + K8H□BTH | 100~2500 | 0.85 | 1.7 | 2.6 | 3.4 | 5.1 | 8.5 | 17 | 34 |
| | 3000 | 0.43 | 0.85 | 1.3 | 1.7 | 2.6 | 4.3 | 8.5 | 17 |
| K9XH100N2 + K9H□BTH | 100~2500 | 1.7 | 3.4 | 5.1 | 6.8 | 10.2 | 17 | 34 | 68 |
| | 3000 | 0.85 | 1.7 | 2.6 | 3.4 | 5.1 | 8.5 | 17 | 34 |
| Product name | Deceleration ratio | 5 | 10 | 15 | 20 | 30 | 50 | 100 | 200 |
| | Speed control range[r/min] | 20~800 | 10~400 | 6.7~267 | 5~200 | 3.3~133 | 2~80 | 1~40 | 0.5~20 |
| K10XH200N2 + K10H□BU | 100~3000 | 2.9 | 5.9 | 8.8 | 11.7 | 16.8 | 28 | 52.7 | 70 |
| | 4000 | 2.0 | 4.1 | 6.1 | 8.1 | 11.6 | 19.4 | 36.5 | 63 |
| K10XH400N9 + K10H□BU | 100~3000 | 5.9 | 11.7 | 17.6 | 23.4 | 33.5 | 55.9 | 70 | 70 |
| | 4000 | 4.3 | 8.6 | 12.8 | 17.1 | 24.5 | 40.9 | 63 | 63 |
| K10XH200N2 + K10H□BTH | 100~3000 | 2.8 | 5.5 | 8.3 | 11.1 | 16.6 | 27.6 | 55.3 | — |
| | 4000 | 1.9 | 3.8 | 5.7 | 7.7 | 11.5 | 19.1 | 38.3 | — |
| K10XH400N9 + K10H□BTH | 100~3000 | 5.5 | 11.1 | 16.6 | 22.1 | 33.2 | 55.3 | 110 | — |
| | 4000 | 4.0 | 8.1 | 12.1 | 16.2 | 24.2 | 40.4 | 80.8 | — |

※ -B (BRAKE), -E (ENCODER) or -BE (BRAKE+ENCODER) can be added to end of the motor model name.
※ In □ of name, it represents a deceleration ratio.
※ Rotation direction shows the same ☐ color as the motor. In other cases, it's the opposite.
※ Flat Gearbox viewed from front side is opposite rotation direction with motor. Flat Gearbox viewed from back side is same rotation direction with motor.

## Allowed overhang load and allowed thrust

| Product name | | Deceleration ratio | Allowed overhand load | | | | Allowed thrust load | |
|---|---|---|---|---|---|---|---|---|
| | | | From the end of output part 10mm | | From the end of output part 20mm | | | |
| | | | N | kgf | N | kgf | N | kgf |
| GEARHEAD | K6H□B | 5 | 100 | 10 | 150 | 15 | 40 | 4 |
| | | 10,15,20 | 150 | 15 | 200 | 20 | | |
| | | 30,50,100,200 | 200 | 20 | 300 | 30 | | |
| | K8H□B | 5 | 200 | 20 | 250 | 25 | 100 | 10 |
| | | 10,15,20 | 300 | 30 | 350 | 35 | | |
| | | 30,50,100,200 | 450 | 45 | 550 | 55 | | |
| | K9H□B | 5 | 300 | 30 | 400 | 40 | 150 | 15 |
| | | 10,15,20 | 400 | 40 | 500 | 50 | | |
| | | 30,50,100,200 | 500 | 50 | 650 | 65 | | |
| | K10H□BU | 5,10,15,20 | 550 | 55 | 800 | 80 | 200 | 20 |
| | | 30,50 | 1000 | 100 | 1250 | 125 | 300 | 30 |
| | | 100,200 | 1400 | 140 | 1700 | 170 | 400 | 40 |
| | K6H□BTH | 5,10 | 450 | 45 | 370 | 37 | 200 | 20 |
| | | 15~200 | 500 | 50 | 400 | 40 | | |
| | K8H□BTH | 5,10 | 800 | 80 | 660 | 66 | 400 | 40 |
| | | 15~200 | 1200 | 120 | 1000 | 100 | | |
| | K9H□BTH | 5,10 | 900 | 90 | 770 | 77 | 500 | 50 |
| | | 15,20 | 1300 | 130 | 1110 | 111 | | |
| | | 30,50,100,200 | 1500 | 150 | 1280 | 128 | | |
| | K10H□BTH | 5,10 | 1230 | 123 | 1070 | 107 | 800 | 80 |
| | | 15,20 | 1680 | 168 | 1470 | 147 | | |
| | | 30,50,100 | 2040 | 204 | 1780 | 178 | | |
| MOTOR | K6BS30N■,K6FS30NC K6XS30N2 | | 70 | 7 | 100 | 10 | · Do not apply THRUST load Please. If you can't help it, 50% or less. | |
| | K8BS60N■,K8FS60NC K8XS50N2 | | 120 | 12 | 140 | 14 | | |
| | K9BS90N■,K9BS150NC K9FS150NC,K9XS100N2 | | 160 | 16 | 170 | 17 | | |
| | K10FS200NC,K10FS400NC K10XS200N2,K10XS400N9 | | 197 | 19.7 | 220 | 22 | | |

※ -B (BRAKE), -E (ENCODER) or -BE (BRAKE+ENCODER) can be added to end of the motor model name.
※ In ■ of the model name voltage U (single-phase 100~115V), C (single-phase 200~230V) will be shown.
※ In □ of name, it represents a deceleration ratio.
※ Permissible overhang load can be withdrawn by calculation.

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