

# BLDC SPEED CONTROL UNIT

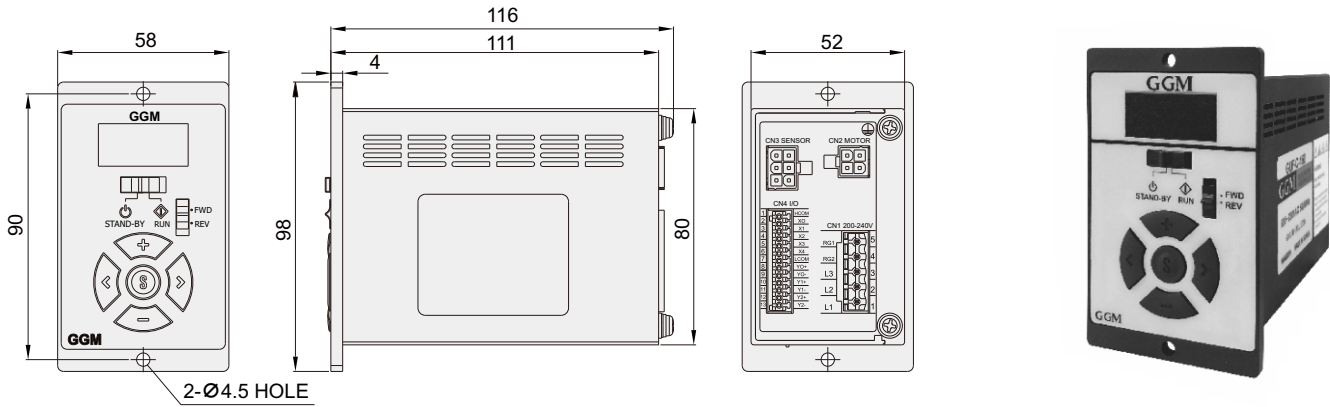


GUF-C-30, GUF-C-60  
 GUF-C-150, GUF-C-200  
 GUF-C-400

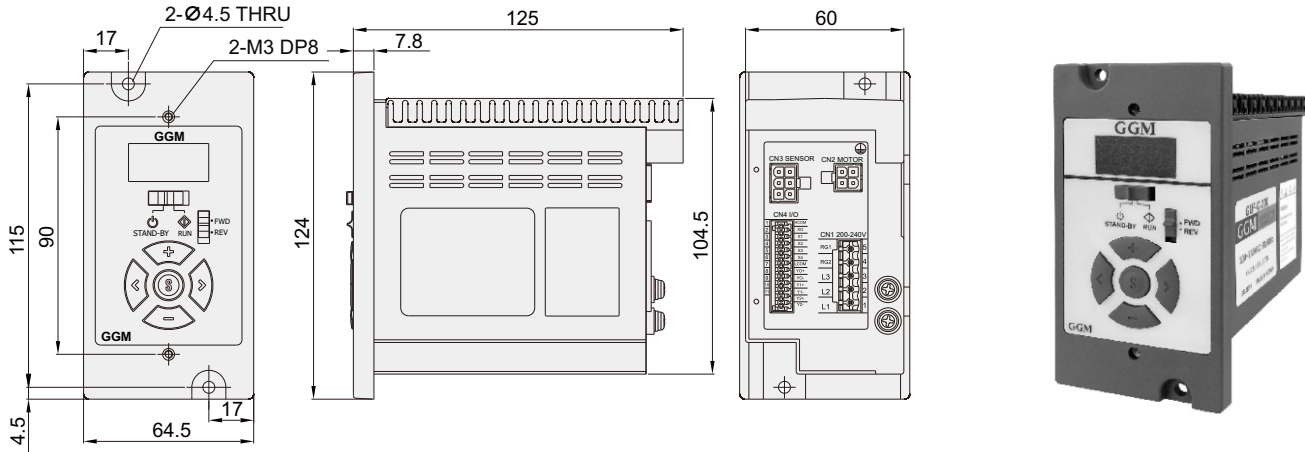
F Series motor applied product

## Product appearance and characteristics

■ 30W, 60W and 150W drives



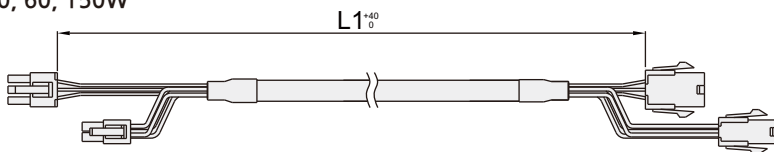
■ 200W and 400W drives



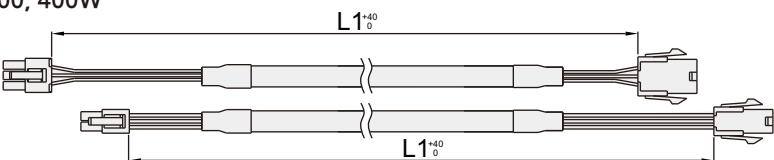
■ Extension cable ( sold separately )

- 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	Single-phase : 200~240V / three-phase : 200~240V ( Permissible range $\pm 10\%$ )				
	Rated frequency	50 / 60 Hz ( Permissible range $\pm 5\%$ )				
	Rated input current	Single-phase : 0.8 three-phase : 0.5	Single-phase : 1.0 three-phase : 0.7	Single-phase : 2.0 three-phase : 1.2	Single-phase : 2.5 three-phase : 1.8	Single-phase : 4.0 three-phase : 3.0
	Maximum input current	Single-phase : 1.9 three-phase : 1.1	Single-phase : 2.8 three-phase : 1.7	Single-phase : 4.5 three-phase : 2.6	Single-phase : 5.5 three-phase : 3.2	Single-phase : 7.8 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°C ~ 40°C (no freezing should occur), Storage: -20°C ~ 70°C (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

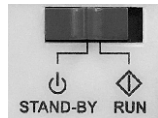
Speed : 100 ~ 4000 r/min

### ■ 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.



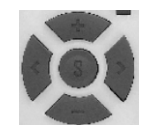
### ■ Simple use ( front panel )



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.)



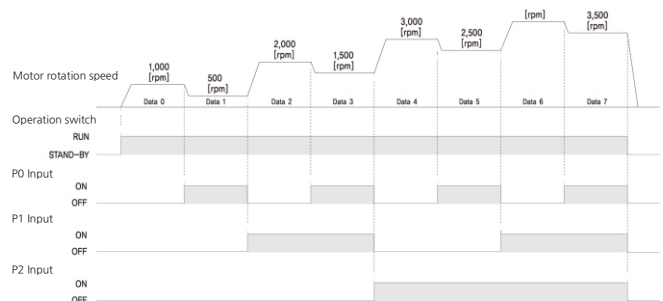
Display of load ratio  
(100%)



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.



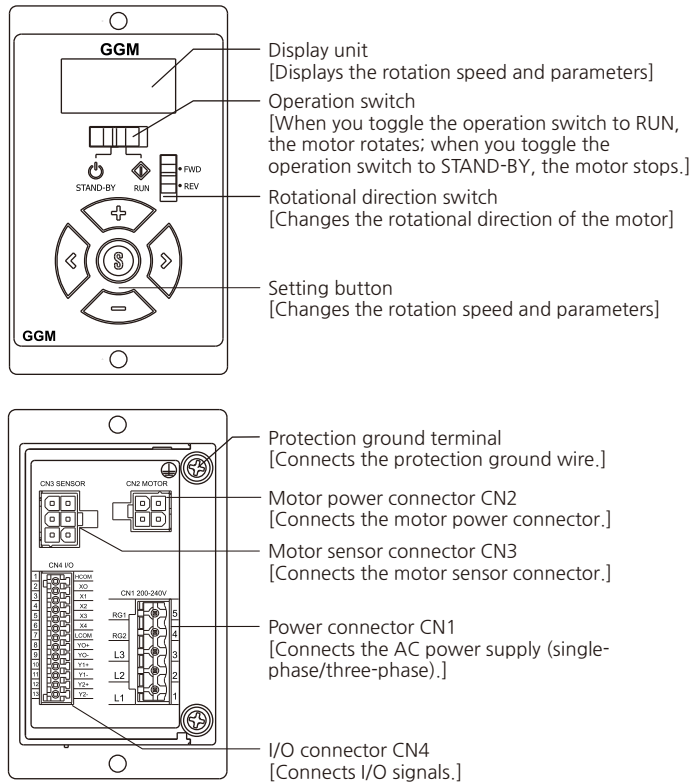
### ■ Setting/operation lock ( Prevents speed or data changes )

- 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

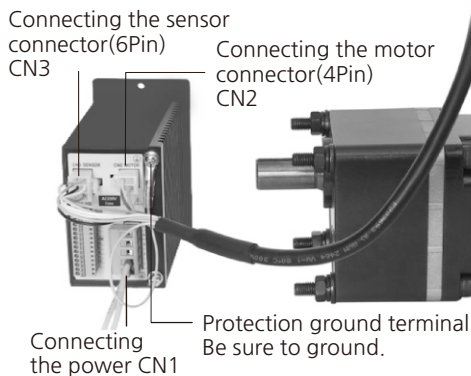
The product is equipped with a function that enables it to detect abnormal status such as overload and overvoltage. If an abnormality is detected, operation will stop and an alarm will occur.

## → Name and function of each part

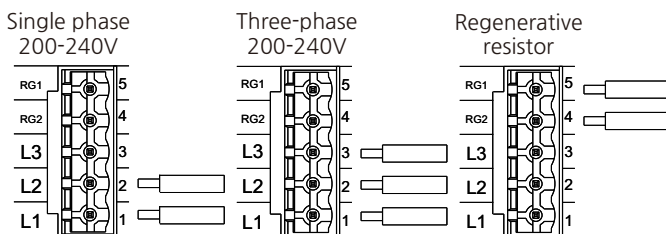


## → Setting and operation

### ■ Connecting



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



- Applied lead wire - AWG 18~14 (0.75~2.0mm<sup>2</sup>)
- when reduction time is short or big inertias operated, use restoration resistance.(100W/400Ω)

### ■ Operating the product using the drive

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

- Operating**  
When you set the operation switch to RUN, the motor will operate.
- 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 1rpm->10rpm->100rpm, in that order.
- 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.
- Stopping the product**  
When you set the operation switch to STAND-BY, the motor will decelerate and stop.
- 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 control using 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 signal I: + 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		

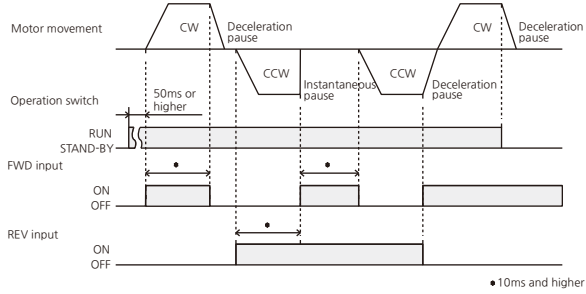
Applied lead wire - AWG 26~20 (0.14~0.5mm<sup>2</sup>)

※ 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 (YO~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

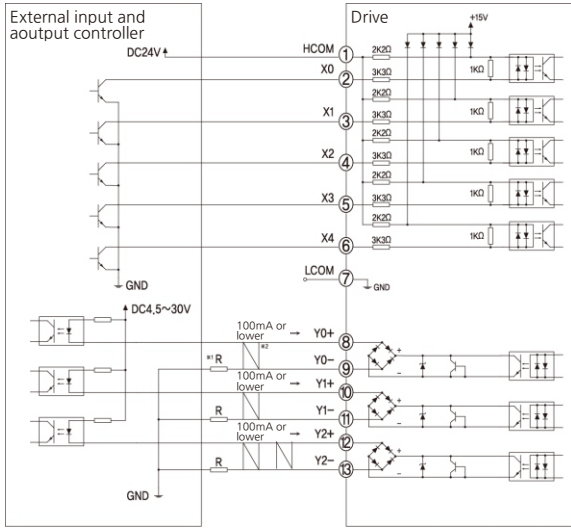
If the "Control setting by external I/O" parameter is set to "ON" and the rotational direction switch is set to "FWD"



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.

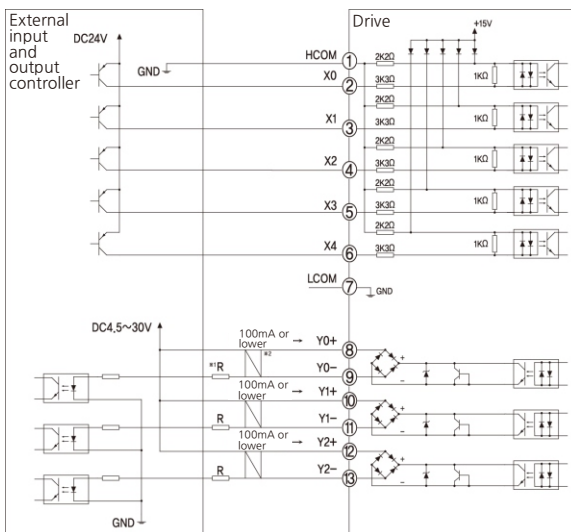
- Example of connection between the I/O signals and the high-level controller

### SINK LOGIC



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

### SOURCE LOGIC



※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. • Check the wiring of the power supply cable.
[AL.oV.]	Overvoltage	• Supplied power exceeds approximately 120% of the rated voltage. • When vertical operation is carried out or load exceeding the permissible load inertia is operated	• Check the voltage of the power supply unit. • 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. • 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. • 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.	• Reduce the load. • Check the operation patterns including acceleration and reduction times again.
[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".  • 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". Next, clear the alarm using the "S" button.  • Toggle the operation switch from "RUN" to "STAND-BY". • 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.