

## OPERATION MANUAL

### GUS SERIES SPEED CONTROL UNIT

**SEMI DIGITAL**



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**GGM Co., Ltd.**

Thank you for purchasing a GGM product.

To ensure that you are using this product correctly, make sure to first read this operation manual thoroughly and familiarize yourself with all knowledge, safety information and precautions related to the product. After you have read this operation manual, keep it at hand for reference when needed.

## 1. Safety precautions

In using and operating the product, be sure to observe the following precautions. Failure to observe the precautions may result in electric shock, injury or fire. The following precautions are very important and should be observed at all times.



## Warning

Ignoring these warnings may cause death or serious injury.

- Do not use the product near explosive materials, combustible materials, flammable gas, corrosive materials, or any place where it may be splashed by water. Doing so may cause fire, electric shock or injury.
- Do not forcibly bend, pull or insert the motor lead wire. Doing so may cause fire or electric shock.
- Do not move, install, connect or inspect the product while an electric current is being applied. Be sure to only perform repair or installation work after cutting off the power supply. Failure to do so may cause an electric shock.
- Have a qualified person with relevant knowledge install, connect, operate, control and check the product for failure. Doing so may cause fire, electric shock or injury.
- After cutting off the power supply, allow a full minute to elapse before touching the output terminal. Failure to do so may cause an electric shock.
- Be sure to cut off the power supply when the power failure protection device or overheating protection device (thermal protector) is triggered. Failure to do so may cause injury when the product re-starts without warning.
- Install the speed controller in the housing. Ground the protective ground terminal when it is installed. Failure to do so may cause an electric shock or injury.
- Make sure that the AC power supply to the speed controller is at the rated voltage. Failure to do so may cause a fire or product damage.
- Do not disassemble or modify the motor or the speed controller. Failure to do so may cause an electric shock or injury.



## Warning

Ignoring this warning and handling the product incorrectly may cause injury or property damage.

- Do not force the motor or speed controller to operate outside of their specifications. Doing so may cause an electric shock, injury or product damage.
- Do not operate the product with wet hands. Doing so may cause an electric shock.
- Do not carry the product by holding the motor lead wire. This may result in disconnection, as well as injury.
- Do not use the product for vertical operation. Doing so may cause injury or product damage.
- Only use the motor if the surface temperature of the motor is 90°C or below.
- If you do not intend to use the product for an extended period, please disconnect the power supply.
- Move the switch to the 'STAND-BY' position before connecting the power supply.
- Do not touch the product with your hand or any part of your body while operating the product or immediately after stopping operation. As the surface of the motor is very hot, skin contact should be avoided due to the risk of a burn.
- If any abnormality occurs, cut off the power supply immediately to stop the operation.
- The controller has no protection device. It is recommended to install an over-current protection device, earth leakage circuit breaker or overheating protection device for safety.
- If the product is operated in parallel with a device controlled by a thyristor for a welding machine with high capacity electric power, the product may malfunction. Use a separate power supply circuit.
- Use the product in an environment with an ambient operating temperature range of -10°C to 40°C and a humidity of less than 85%. Avoid exposing the product to direct sunlight, moisture or grease. If necessary, use the cover to protect the product against these elements.
- Do not use the product in a place where it will be frequently exposed to static electricity.
- For disposal purposes, this product should be handled as industrial waste.
- If you need to repair the product, contact the manufacturer or the vendor.
- Do not modify the product arbitrarily. Arbitrary product modification by the customer will void the warranty.

## 2. Confirmation when the product is handed over

- Confirm that the delivered product is the product you ordered.
- If a different product is installed, it will create the risk of injury or fire.
- Contact a nearby retail store if you were delivered an insufficient number of products or if a damaged product was delivered.

- 1) CONTROLLER ----- One  
2) extension cable( 0.5m ) ----- One  
3) external operation cable ( 0.5m ) ----- One  
4) user's manual (this manual) ----- One  
5) optional (extension cable)

Item name	length of extension cable
KE-05	0.5m
KE-10	1m
KE-15	1.5m
KE-20	2m

If the controller is far away from the motor, refer to the optional specification specified in the table above.

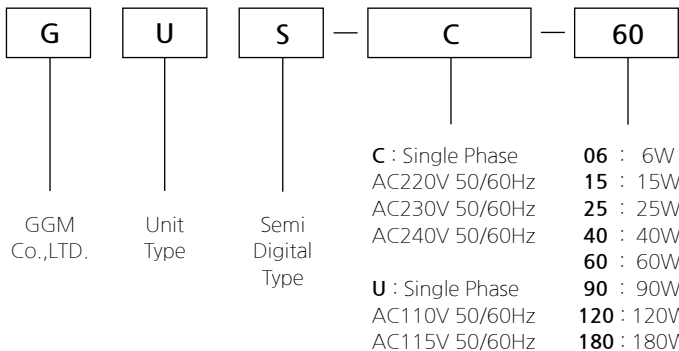
You can use this product with an extension cable up to 2 m in length. Do not use an extension cable that is longer than 2.5m, as degradation of the motor function may occur.

## 3. Specifications

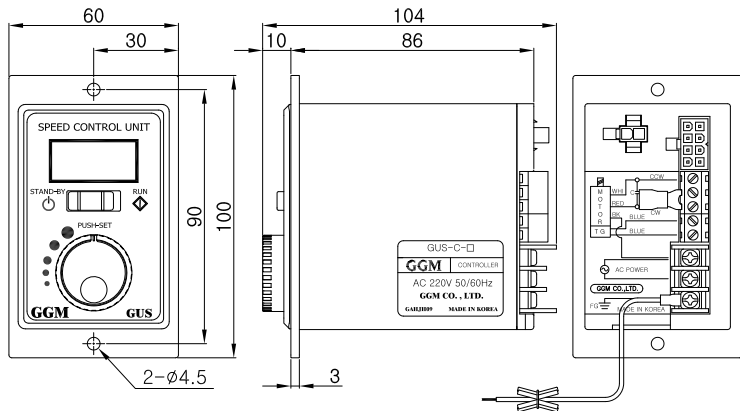
Property \ Model name	GUS-U-□	GUS-C-□
Rated voltage and power frequency	Single-phase AC110V 50/60Hz Single-phase AC115V 50/60Hz	Single-phase AC220V 50/60Hz Single-phase AC230V 50/60Hz Single-phase AC240V 50/60Hz
Operating voltage range	±10% (in comparison to the rated voltage)	
Applied motor output	INDUCTION : 6 ~ 180W REVERSIBLE : 6 ~ 180W	
Speed control range	60Hz : 100~1730rpm 50Hz : 100~1430rpm	
Speed regulation	±5% (Standard value)	
Speed setting	Set according to the volume	
Operating temperature range	-10~40℃	
Storage temperature range	-20~60℃	
Operating humidity range	less than 85% (in an environment with no dew condensation)	

※ A number indicating the output of the motor is displayed in □ of the model name.

#### 4. CONTROLLER CODING SYSTEM



#### 5. Dimensions of the product



## 6. Characteristics of the product

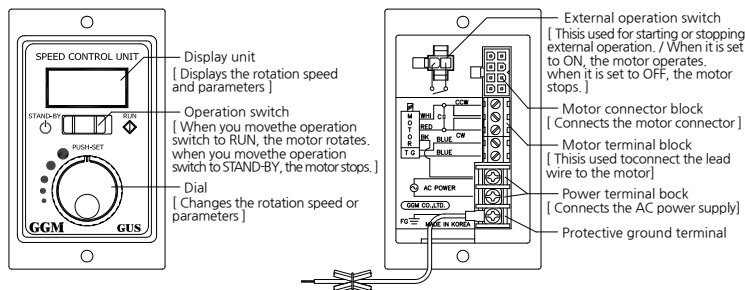
- ① Indicates the current rotation speed (r/min).
- ② The motor speed can be controlled simply by connecting the motor and the control unit with the exclusive connector and connecting the AC terminal to the power source.
- ③ You can increase the space between the motor and the control unit by up to 2M and control the speed by using the optional extension cable for the connector.
- ④ You can control the speed simply by using the front dial.  
- Variable speed range - 50Hz : 100 ~ 1430 r/min, 60Hz : 100~1730 r/min
- ⑤ Various operation modes can be set through the parameter setting.

## 7. Applied motor

K	9	I	G	40	N	C	SU
GGM Co., LTD.	6:□60 7:□70 8:□80 9:□90	I:Induction R:Reversible	S: Straight G: Pinion General P: Pinion Powerful	6 : 6W 15 : 15W 25 : 25W 40 : 40W 60 : 60W 90 : 90W 120 : 120W 180 : 180W	F: Cooling Fan N: Non Fan	J: 1Ø100V 50/60Hz U: 1Ø110V 60Hz L: 1Ø200V 50/60Hz C: 1Ø220V 50/60Hz 1Ø230V 50/60Hz D: 1Ø240V 50Hz	SU : SPEED CONTROL UNIT TYPE  SP : SPEED CONTROL PLUG IN TYPE

- The motor and the speed controller are packaged separately, so check whether the speed controller can be used for the applied motor.

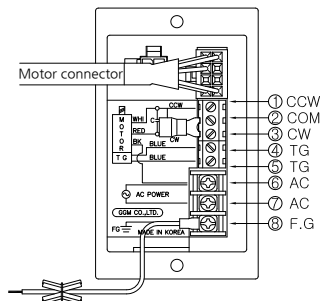
## 8. Names and functions of each part



## 9. How to use and wire

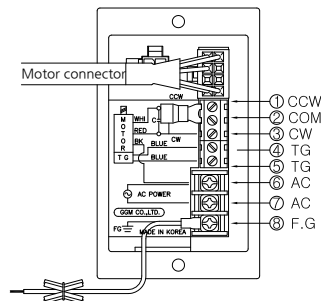
### 9-1 Connection method

#### ► Forward operation wiring



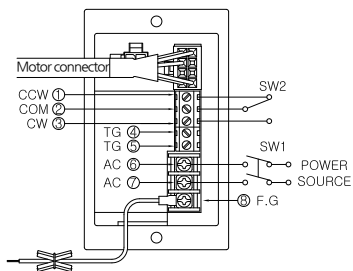
- 1) Connect the motor connector
- 2) Connect the ②COM and ③CW terminals.
- 3) Connect the AC power to the ⑥ and ⑦ terminals

#### ► Reverse operation wiring



- 1) Connect the motor connector
- 2) Connect the ②COM and ③CCW terminals.
- 3) Connect the AC power to the ⑥ and ⑦ terminals

## ► Two-way operation wiring



- 1) Connect the motor connector.
- 2) Install the power supply switch (SW1) and the forward and reserve rotation exchange switch (SW2) and change the rotation direction.

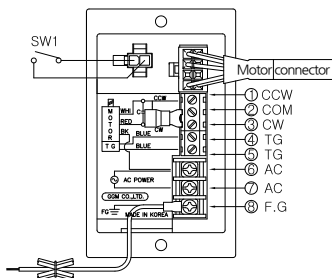
Instantaneous forward and reverse rotation are unavailable.

Turn off the power supply switch (SW1) and when the motor has stopped completely, replace the switch (SW2) to change the direction.

Caution) If you replace the switch (SW2) to change the direction when the power supply switch (SW1) is ON, it may damage the controller.

SWITCH	Switch contact capacity
SW1	AC 125V or 250V 5A or higher
SW2	AC 125V or 250V 5A or higher

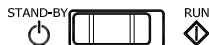
## ► External operation wiring



- 1) Connect the motor connector.
- 2) Connect the ②COM and ③CW terminals. (CW operation)  
Refer to the CCW operation and two-way operation wiring.
- 3) Connect the AC power to terminals ⑥ and ⑦.

- 4) Install the external operation switch (SW1).

When you move the front operation switch to STAND-BY and turn on the external operation switch (SW1), the motor operates.



When you turn off the external operation switch (SW1), the motor stops.



## 9-2 Operation sequence

After wiring, operate the product as follows.

### ① AC power supplied



The indication turns on. (Rotation speed)

### ② Control of operation switch (operation)



When you move the operation switch to RUN, the motor will rotate.

### ③ Setting the rotation speed



When you turn the dial, the rotation speed will change.

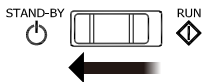
The rotation speed changed by the speed to rotate the dial.



Display of rotation speed

When the power is supplied again, the motor will rotate at the new rotation speed.

### ④ Control of operation switch (stop)



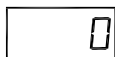
When you move the operation switch to STAND-BY, the motor will stop.

## 9-3 Parameters

Display unit	Function	Range	Default value	Note
RATE	Reduction gear ratio	1~999	1.0	Set the reduction gear ratio (can be adjusted in increments of 0.1) REAL RPM = Motor rotation speed reduction gear ratio
S-ON	Acceleration time	0~15	0.0	Mode set to accelerate the rotation of the motor slowly (set in increments of 0.1 seconds)
SOFF	Deceleration time	0~15	0.0	Mode set to decelerate the rotation of the motor slowly (set in increments of 0.1 seconds)
LOCK	Lock function	OFF NO	NO	Mode set to prevent any change in the set operation condition by locking setting keys other than RUN and STAND-BY keys. OFF: Enable locking mode ON: Disable locking mode

## 9-4 Parameter setting sequence

### ① Supply AC power



The indication turns on. (Rotation speed)

### ② Entering the parameter mode



Press and hold the dial (PUSH-SET) for 3 seconds to enter the parameter mode.

### ③ Selection of a parameter



Turn the dial and select the desired parameter(4 parameters)  
Modes can be selected in the order of  
RATE(reduction gear ratio)→ S-ON(acceleration time)  
→ SOFF(deceleration time)→ LOCK(locking)

### ④ Entering the parameter data



Press the dial (PUSH-SET) to enter the selected parameter data  
When you press the dial (PUSH-SET) after entering the data, the parameter selection mode will be displayed.

### ⑤ Changing the parameter data



When you rotate the dial, the data value will change.  
Set the desired data value.

### ⑥ Finishing the parameter data change and entering the operation mode



Press and hold  
(2 seconds)

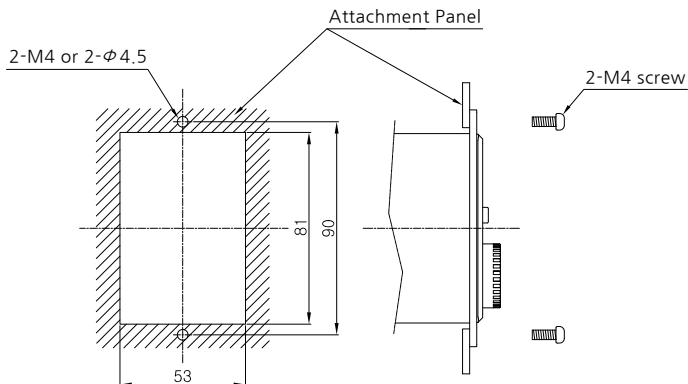
When you press and hold the dial (PUSH-SET) for 2 seconds, the changed value will be set and you will enter the operation mode.

To enter operation mode after entering the parameter mode, press and hold the dial (PUSH-SET) for 2 seconds.

## 10. Attachment method

### ■ Panel process drawing

1. Drill a hole in the attachment panel as shown in the figure below.  
Assemble the controller body and the front cover and fix them using an M4 screw and nut.
2. Use an attachment panel with a thickness of 2mm or less.



## 11. Troubleshooting

Problems	Part tocheck
The value is not displayed on the display unit when the power is supplied.	<ul style="list-style-type: none"><li>• Check the connection of the AC power supply.</li></ul>
The motor does not rotate.	<ul style="list-style-type: none"><li>• Confirm that the motor is connected correctly.</li><li>• Ensure that the operation switch is in the 'RUN' position.</li><li>• Determine if the product is overloaded.</li></ul>
The motor rotates, but the speed cannot be changed.	<ul style="list-style-type: none"><li>• If the rotation speed is not displayed on the display unit, check for an abnormality in the TG signal of the motor or for incorrect wiring.</li></ul>
The motor does not run immediately.	<ul style="list-style-type: none"><li>• Check to determine if the acceleration time is excessively long.</li></ul>
The speed cannot be changed.	<ul style="list-style-type: none"><li>• Cancel the lock setting. (Unlock the product.)</li></ul>
There is abnormality or excessive vibration in the motor operation.	<ul style="list-style-type: none"><li>• Check to determine whether the motor is affected by external noise.</li><li>• The combination of the motor and speed controller may be incorrect.</li></ul>

※ Contact your vendor or our second factory if you have any questions about product or require post-sales service.

Leader of geared motor GGM CO.,LTD.

<http://www.ggm.co.kr>

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