

SPEED CONTROLLER

: SS HIGH OUTPUT TYPE

Characteristics

- Used for induction speed control motors of 6W~90W, reversible speed control motors of 6W~40W and electromagnetic brake speed control motors of 6W~40W.
 - Built-in speed setting device on the case enables to control and set the speed of motors.
 - Instantaneous stop function is possible by electric brake.
 - It is a compact plug-in type with 11pins so it is easy to set and use.
 - It has slow run and slow stop functions, so operating and braking are not working rapidly, instead slowly.
 - There is time (period) setting device installed to control easily slow run and slow stop function.
 - Parallel operation is possible.
- ※ Parallel operation means that with one speed control volume, It can control plural speed controller at same time at same speed.



SPECIFICATIONS

MODEL		SS TYPE				
		SSA03-SRSS	SSB03-SRSS	SSC03-SRSS	SSD03-SRSS	SSX03-SRSS
Rated Voltage		SINGLE-PHASE AC110V	SINGLE-PHASE AC220V	SINGLE-PHASE AC100V	SINGLE-PHASE AC200V	SINGLE-PHASE AC220V~240V
Operation Voltage Range		±10%				
Power Source Frequency		60Hz		50/60Hz		50Hz
Rated Current		3.0A				
※1 APPLICABLE MOTOR OUTPUT	Induction	6W~90W	6W~90W	6W~90W	6W~90W	6W~90W
	Reversible	6W~40W	6W~40W	6W~40W	6W~40W	6W~40W
	E·S	6W~40W	6W~40W	6W~40W	6W~40W	6W~40W
Speed control range		90~1700rpm		90~1400rpm/90~1700rpm		90~1400rpm
Speed variation		5%(standard)				
Speed setting device		Built in external speed setting device attachable				
Braking		possible to stop for certain period by electric brake				
※2	Braking period	0.5초(standard)				
	Parallel operation	Possible				
	Slow Run, Slow Stop	Possible(0.5sec~15sec/1200rpm)				
Operation Temperature		-10°C~50°C				
Operation humidity		85% Max(non condensing)				
Storage Temperature		-20°C~60°C				
Insulation resistance		100MΩ or more when 500V megger is applied between the pin and the housing at ambient temperature and humidity				
Dielectric strength		No abnormality after input of 1500V 50/60Hz between the pin and the housing at ambient temperature and humidity for 1min				

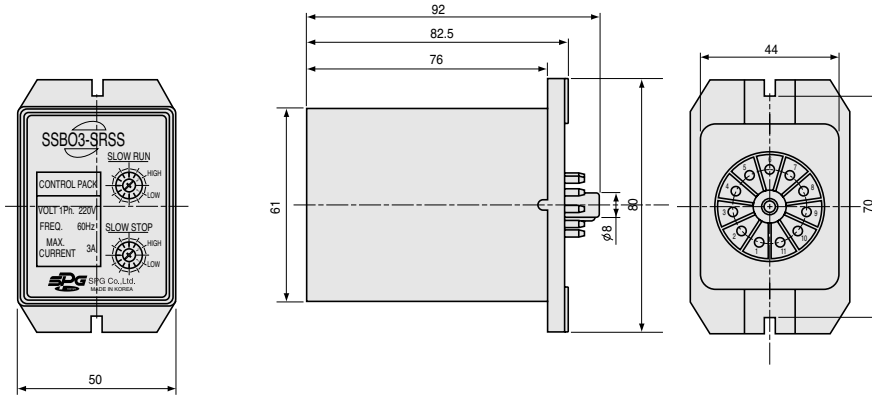
※ 1 : Applicable motors are socket type control motors of SPG. (Use for 24V motor T.G)

※ 2 : There are no holding torque on electric brake.

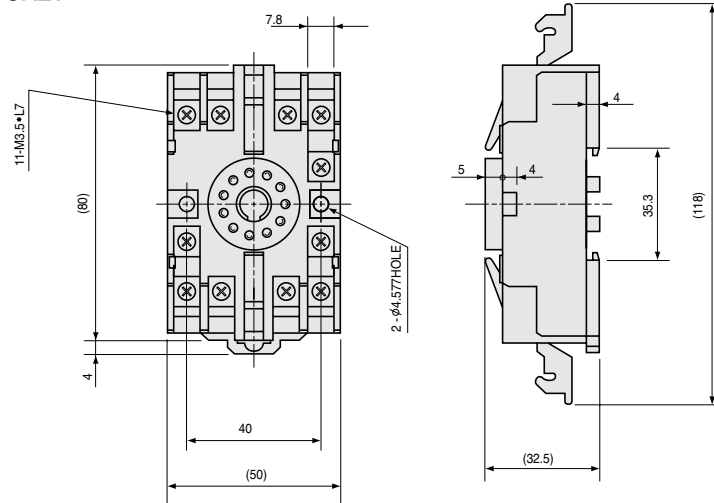
DIMENSIONS

■ SS TYPE (HIGH OUTPUT) SPEED CONTROLLER

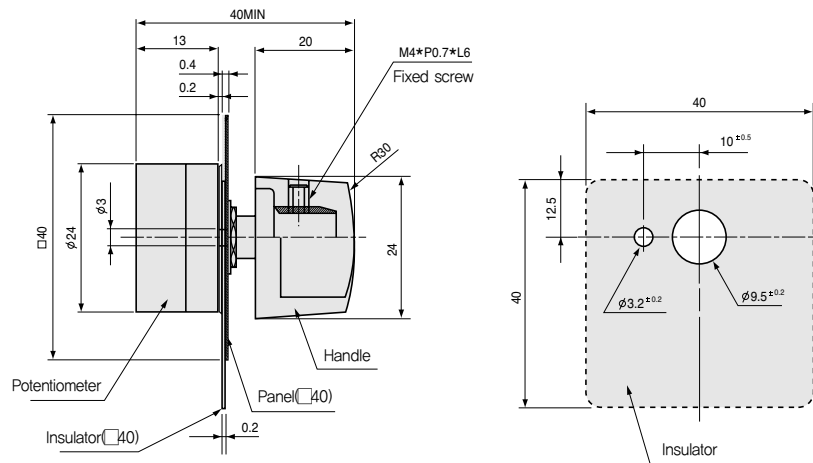
+ CONTROLLER



+ 11PIN SOCKET

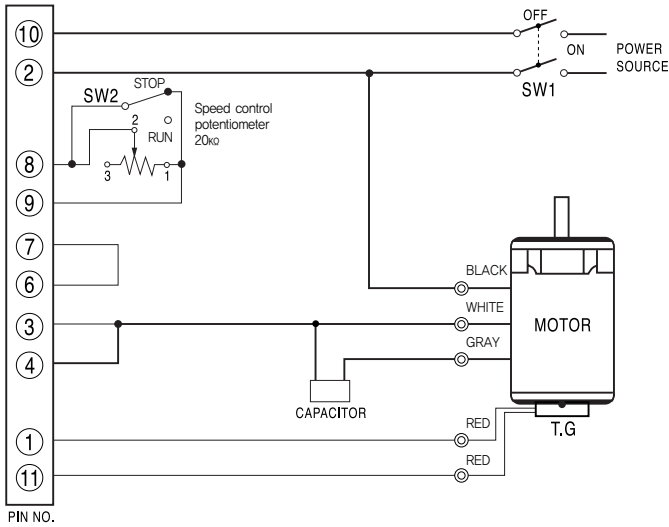


+ VARIABLE RESISTOR 20kΩ 1/4W



+ SCHEMATIC DIAGRAM (INDUCTION MOTOR)

1-1 Uni Direction + Variable Speed (6W~90W)

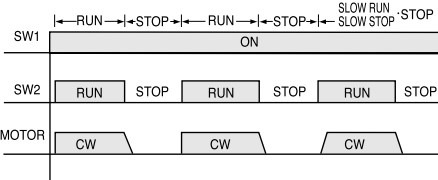


◀ For wiring of 220V~240V, 50Hz motor, change gray to brown.

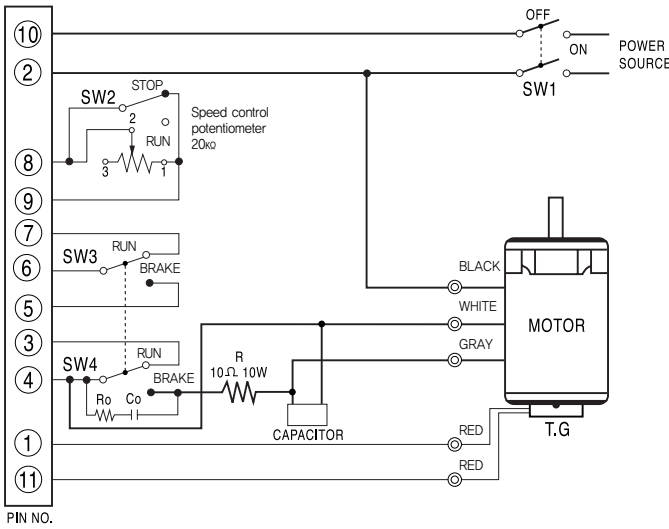
SW1	AC125V or AC 250V MIN. 5A
SW2	DC 20V 10mA

Note) 1. The motors, rotating direction is CW when viewed from output shaft. When adjusting to CCW direction, exchange white wire to gray.
 2. The connection of a fan motor is applicable only if the output of the motor is greater than 60W and refer to page 208 for the connection method.

◆ Example of operation



1-2 Uni Direction + Variable Speed + Brake (6W~25W)

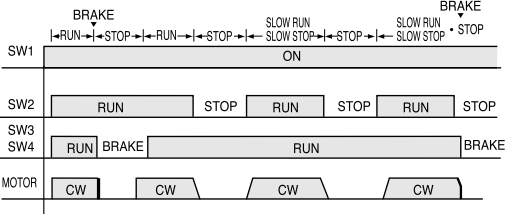


◀ For wiring of 220V~240V, 50Hz motor, change gray to brown.

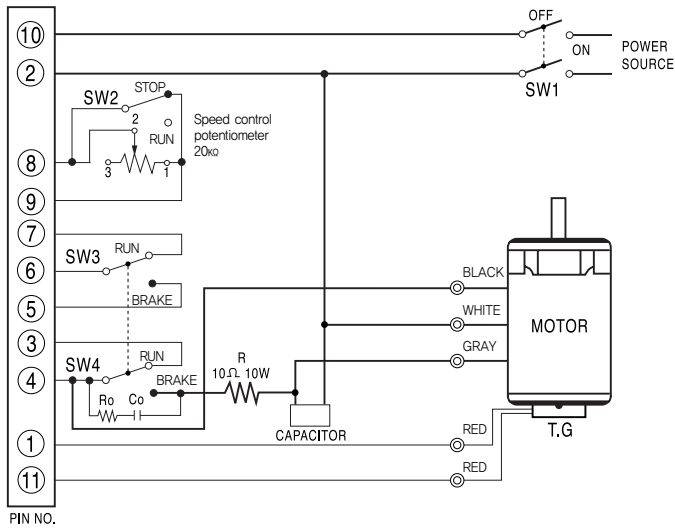
SW1,4	AC125V or AC 250V MIN. 5A
SW2,3	DC 20V 10mA
Ro,Co	Ro = 10~200Ω (MIN. 1/4W) Co = 0.1~0.2μF (AC 125WV, AC 250WV)
R : Braking external resistor	10Ω, MIN. 10W

Note) 1. The motor rotating direction is CW when viewed from output shaft. When adjusting to CCW direction, exchange white wire to gray.

◆ Example of operation



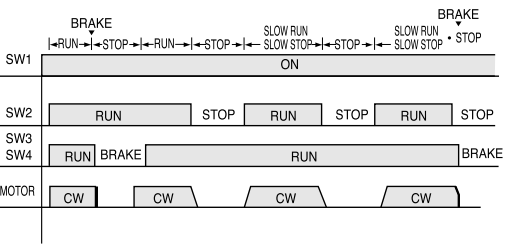
1-3 Uni Direction + Variable Speed + Brake (40W~90W)



◀ For wiring of 220V~240V, 50Hz motor, change gray to brown.

SW1,4	AC125V or AC 250V	MIN. 5A
SW2,3	DC 20V 10mA	
Ro,Co	Ro = 10~200Ω (MIN. 1/4W) Co = 0.1~0.2μF (AC 125WV, AC 250WV)	
R : Braking external resistor	10Ω, MIN. 10W	

◆ Example of operation



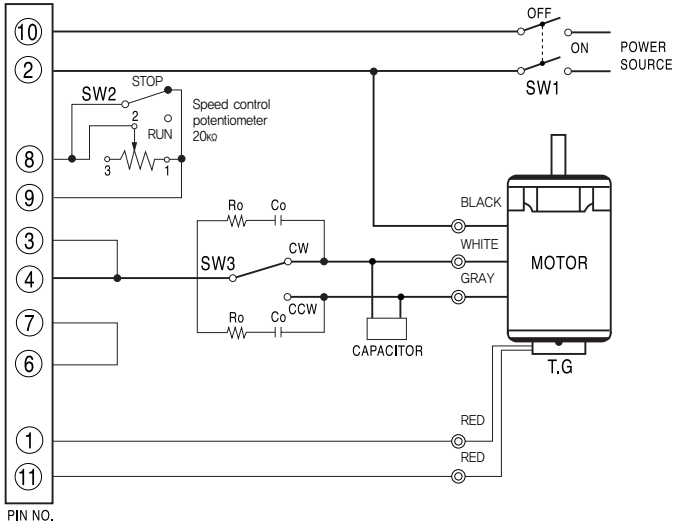
Note) 1. The motor's rotating direction is CW when viewed from output shaft.
When adjusting to CCW direction, exchange white wire to gray.
2. The connection of a fan motor is applicable only if the output of the motor is greater than 60W and refer to page 208 for the connection method.

1-4 Instruction (INDUCTION MOTOR)

- **Run/Stop function**
If SW2 is switched to "RUN" as section 1-1,2,3, the motor will rotate per fixed speed set by external speed controller. When switched to "STOP" rotation will spontaneously stop by inertia force.
 - **Run/Brake function**
If SW3 and SW4 is turned to stop while SW2 is on RUN condition, the brake will function for about 0.5 seconds and stop the motor instantaneously.
 - **Slow Run/Slow Stop function**
 - When SW2 is switched to Run/Stop after slow run, slow stop is set by the volume of controller, the motor will slowly start and slowly stop per set time.
 - The speed of slow run and slow stop changes in rectilinearly against set time and the slope can be controlled within 0.5sec ~15sec/1200rpm.
 - Slow stop cannot be set for shorter period than natural stopping period of motor.
- ※ Turn SW1 off to prevent control pack from generating heat when not used for a long period.

+ SCHEMATIC DIAGRAM (INDUCTION MOTOR)

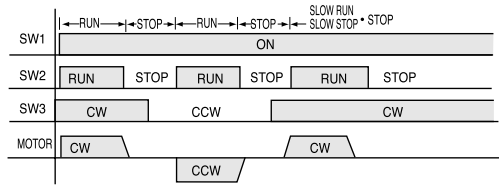
2-1 Reverse + Variable Speed (6W~40W)



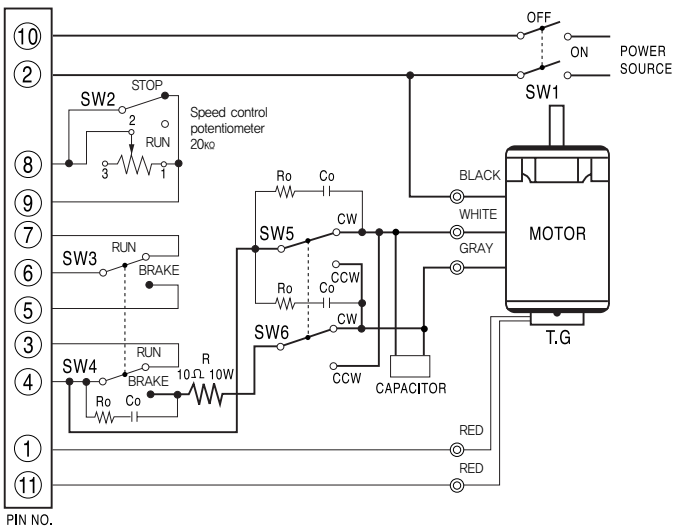
◀ For wiring of 220V~240V, 50Hz motor, change gray to brown.

SW1,3	AC125V or AC 250V	MIN. 5A
SW2	DC 20V 10mA	
Ro,Co	Ro=10~200Ω (MIN. 1/4W) Co=0.1~0.2μF (AC 125WV, AC 250WV)	

◆ Example of operation



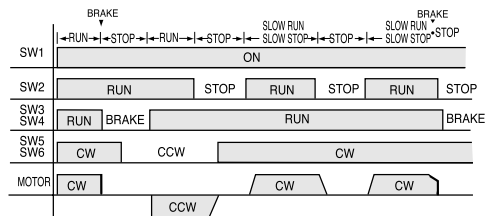
2-2 Reverse + Variable Speed + Brake (6W~25W)



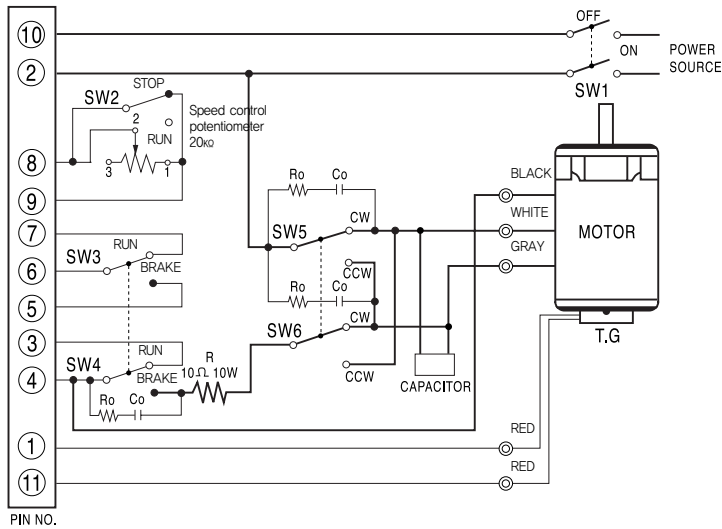
◀ For wiring of 220V~240V, 50Hz motor, change gray to brown.

SW1,4,5,6	AC125V or AC 250V	MIN. 5A
SW2,3	DC 20V 10mA	
Ro,Co	Ro=10~200Ω (MIN. 1/4W) Co=0.1~0.2μF (AC 125WV, AC 250WV)	
R : Braking external resistor	10Ω, MIN. 10W	

◆ Example of operation



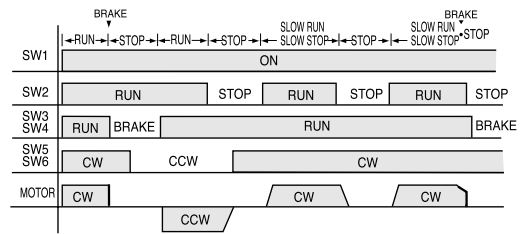
2-3 Reverse + Variable Speed + Brake (40W)



◀ For wiring of 220V~240V, 50Hz motor, change gray to brown.

SW1,4,5,6	AC125V or AC 250V	MIN. 5A
SW2,3	DC 20V	10mA
R _o ,C _o	R _o = 10~200Ω (MIN. 1/4W) C _o = 0.1~0.2μF (AC 125WV, AC 250WV)	
R : Braking external resistor	10Ω, MIN. 10W	

◆ Example of operation



2-4 Instruction (INDUCTION MOTOR)

● Run/Stop function

If SW2 is switched to "RUN" as section 2-1,2,3, the motor will rotate per fixed speed set by external speed controller. When switched to "STOP" rotation will spontaneously stop by inertia force.

● Run/Brake function

If SW3 and SW4 is turned to stop while SW2 is on RUN condition, the brake will function for about 0.5 seconds and stop the motor instantaneously.

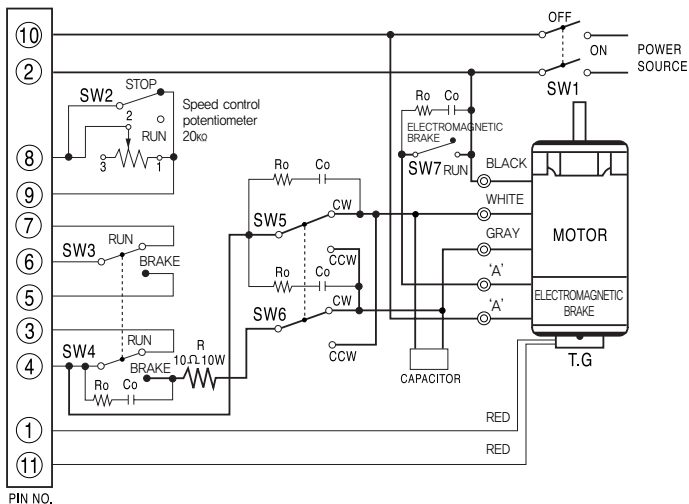
● Slow Run/Slow Stop function

- When SW2 is switched to Run/Stop after slow run, slow stop is set by the volume of controller, the motor will slowly start and slowly stop per set time.
- The speed of slow run and slow stop changes in rectilinearly against set time and the slope can be controlled within 0.5sec~15sec/1200rpm.
- Slow stop cannot be set for shorter period than natural stopping period of motor.

※ Turn SW1 off to prevent control pack from generating heat when not used for a long period.

+ SCHEMATIC DIAGRAM (E · S MOTOR)

3-1 Reverse + Variable Speed (6W~40W)

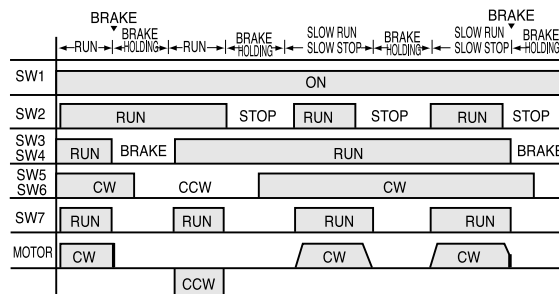


VOLTAGE	LEAD WIRE 'A'
SINGLE PHASE AC100V~110V	Blue
SINGLE PHASE AC200V~240V	Orange

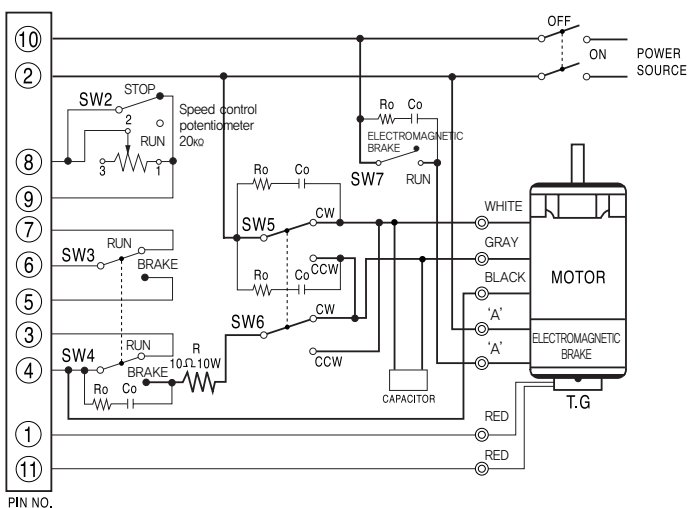
◀ For wiring of 220V~240V, 50Hz motor, change gray to brown.

SW1,4,5,6,7	AC125V or AC 250V	MIN. 5A
SW2,3	DC 20V	10mA
Ro,Co	Ro=10~200Ω (MIN. 1/4W) Co=0.1~0.2μF (AC125W, AC250WV)	
R : Braking external resistor	10Ω, MIN. 10W	

◆ Example of operation



3-2 Reverse + Variable Speed + Brake (6W~25W)

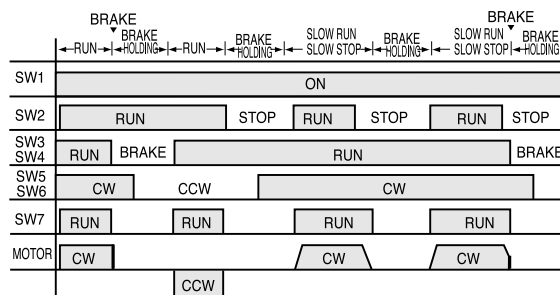


◀ For wiring of 220V~240V, 50Hz motor, change gray to brown.

VOLTAGE	LEAD WIRE 'A'
SINGLE PHASE AC100V~110V	Blue
SINGLE PHASE AC200V~240V	Orange

SW1,4,5,6,7	AC125V Or AC 250V	MIN. 5A
SW2,3	DC20V	10mA
Ro,Co	Ro = 10~200Ω (MIN. 1/4W) Co = 0.1~0.2μF (AC 125W, AC 250WV)	
R : Braking external resistor	10Ω, MIN. 10W	

◆ Example of operation



3-3 Instruction (E · S MOTOR)

- **Run/Stop function**

If SW2 is switched to "RUN" as section 3-1,2,3, the motor will rotate per fixed speed set by external speed controller. When switched to "STOP" rotation will spontaneously stop by inertia force.

- **Run/Brake function**

If SW3 and SW4 is turned to stop while SW2 is on RUN condition, the brake will function for about 0.5 seconds and stop the motor instantaneously.

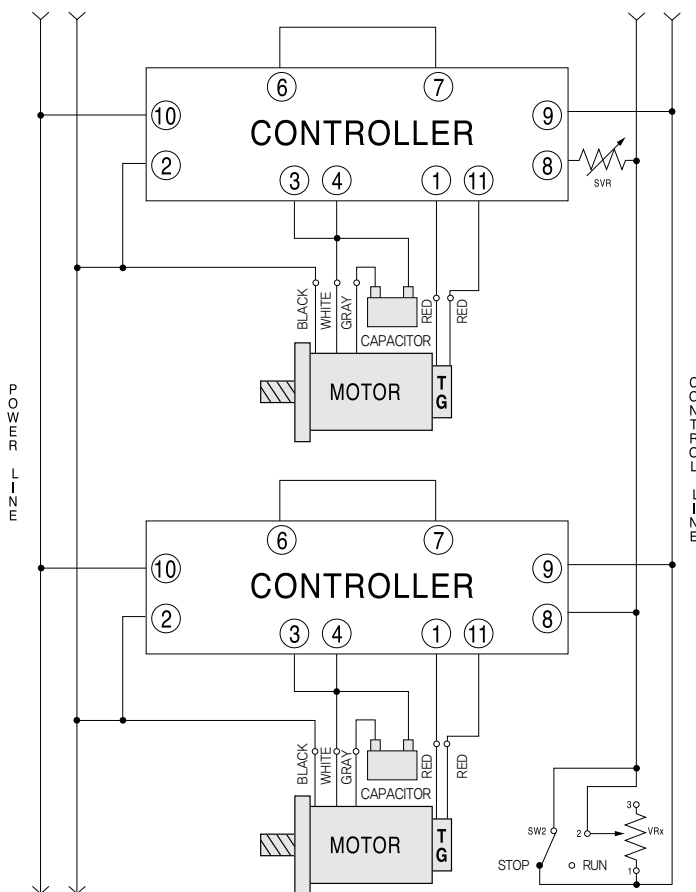
- **Slow Run/Slow Stop function**

- When SW2 is switched to Run/Stop after slow run, slow stop is set by the volume of controller, the motor will slowly start and slowly stop per set time.
 - The speed of slow run and slow stop changes in rectilinearly against set time and the slope can be controlled within 0.5sec~15sec/1200rpm.
 - Slow stop cannot be set for shorter period than natural stopping period of motor.
- ※Turn SW1 off to prevent control pack from generating heat when not used for a long period.

+ APPLICATION OF SCHEMATIC DIAGRAM

Parallel operation

SS TYPE high output controller can control speed of multiple motors using one variable resistor as per following diagram at same speed.



Usage(Parallel operation)

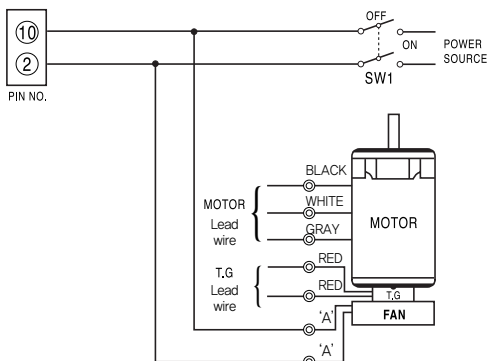
Connect power supply line(Terminal No. ②,⑩)& control line (Terminal No. ⑧, ⑨) for same line like the side wiring. In case of other motor and control pack, set power line and control line for parallel operation.

Warning

- Connect to correct pin numbers for power line and control line.
- The capacity of variable resistor for speed setting is calculated as follows.
 $VRx = 20/N \text{ k}\Omega$, $N/4W(N : \text{Quantity of motor})$
 eg) For 2EA of motors, it is $10\text{k}\Omega$ 1/2W
- Although every motor runs at almost the same speed, there could be slight error due to difference of load and variation of products. To prevent this phenomenon, prepare 5~10% of resistance and 1/4 capacity of VRx (Variable resistance for speed setting)with SVR(Variable resistor for precise control) of terminal ⑧.

◀ For wiring of 220V~240V, 50Hz motor, change gray to brown.

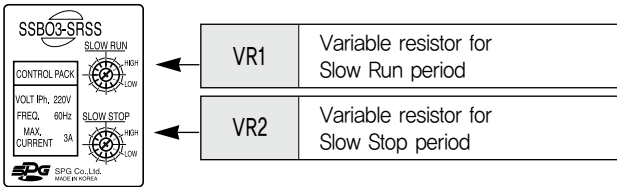
Box Fan Motor Connection



VOLTAGE	LEAD WIRE COLOR 'A'
SINGLE PHASE AC100V~110V	Brown
SINGLE PHASE AC200V~240V	Yellow

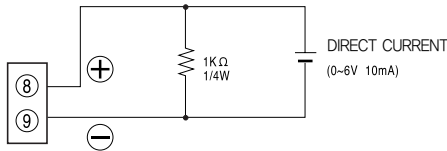
※ For the connection of something other than the box fan, refer to the electrical wiring diagram for the corresponding connection.

Panel



Speed control using external direct current

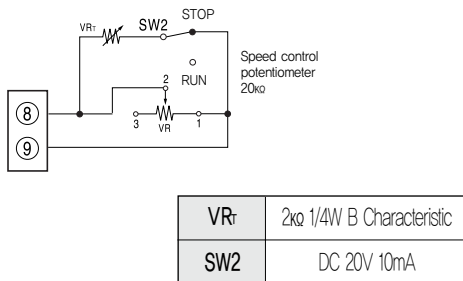
When speed is controlled by external direct current instead of supplied variable resistor for external speed setting, connect the wires of direct current with control pack as following diagram. (However, output of direct current has to be separated and insulated with alternative current input and avoid changing polarity.)



<The connection of speed control using external direct current>

Increasing operating speed

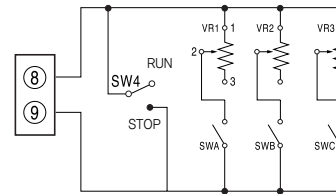
To quicken operating speed, as the set speed is decelerated, there are more delays to start rotations when switch is turned 'ON'. If this causes problems, please refer to following diagram and connect VRT (Variable resistor for operating time control)



- ※ For instantaneous stop, operate both RUN/BRAKE switch and RUN/STOP switch above.
- ※ Place RUN/STOP switch to stop and control VRT until motor starts.

Multistage speed conversion

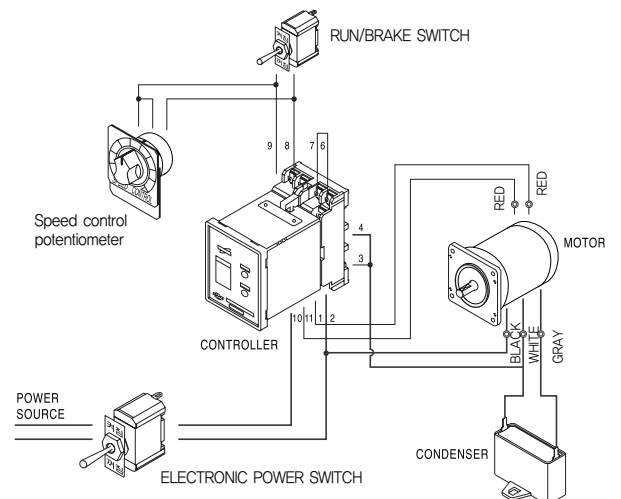
1. When multistage speed control is required, set each VR1, VR2 & VR3 and conversion is possible by using SWA, SWB, and SWC. Switch conversion time should be maintained similar to the operating time of relay operation.



VR1,2,3	20kΩ 1/4W B Characteristic
SW1,2,3,4	DC 20V 10mA

2. One external speed setting volume is included in a control pack. If additional external speed setting volume is required, please purchase SVR20KH.

Total system



1. Speed of motor can be controlled without steps by using variable speed resistor for external speed setting. Turn to (HIGH) for high speed, and (LOW) for low speed.
2. There are operating current flowing on thick line. Use cable with 0.75mm² for thick line and 0.5mm² for thin line.
3. For single-phase AC220V~240V 50Hz motors, change gray wire to brown.