

SPEED CONTROLLER

: SR TYPE

Characteristics

- This is a speed controller for small geared motors which was developed to meet the motor's variable speed demands.
- It uses the IC circuit that SPG Motor independently developed and is small, lightweight and reliable.
- Speed control is possible by controlling the number of revolutions with the variable resistor on the front of the case.
- Remote control is possible by installing a speed controller(speed setter).
- Instantaneous braking is possible with an electric brake.
- The small 8 pin plug in method was used.



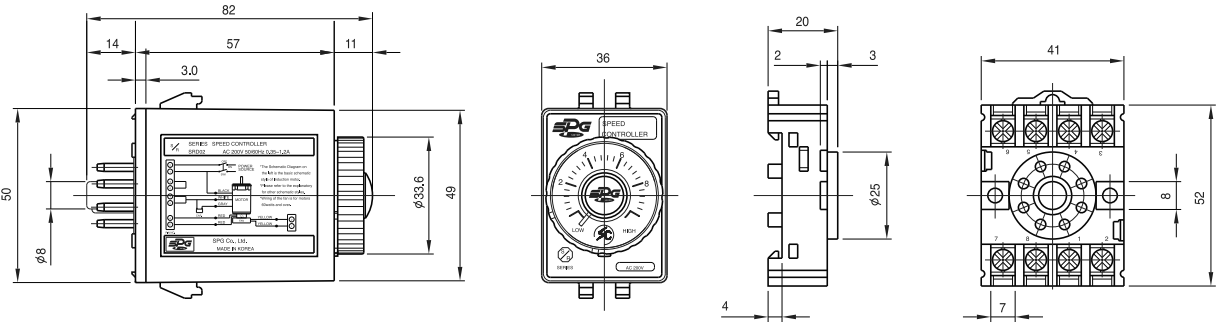
SPECIFICATIONS

MODEL SPEC		SR TYPE									
		SRA01	SRA02	SRB01	SRB02	SRC01	SRC02	SRD01	SRD02	SRX01	SRX02
Rated Voltage		AC110V 60Hz		AC220V 60Hz		AC100V 50/60Hz		AC200V 50/60Hz		AC220~240V 50Hz	
Operation Voltage Range		±10%									
※1 APPLICABLE MOTOR OUTPUT	INDUCTION	6W	15W~90W	6W	15W~90W	6W	15W~90W	6W	15W~90W	6W	15W~90W
	REVERSIBLE	6W	15W~40W	6W	15W~40W	6W	15W~40W	6W	15W~40W	6W	15W~40W
	E・S	6W	15W~90W	6W	15W~90W	6W	15W~90W	6W	15W~90W	6W	15W~90W
Speed control range		50Hz：90~1400rpm					60Hz：90~1700rpm				
Speed variation		5%(standard)									
Speed setting device		Built in external speed setting device attachable									
Braking		Possible to stop brake for certain period by electric brake									
※2	Braking period	0.5sec(standard)									
	Parallel operation	Not suitable for parallel operation									
	Slow Run, Slow Stop	none									
Operation Temperature		-10~50℃									
Storage Temperature		-20~60℃									
Ambient humidity		85%Maximum(non condensing)									

※ 1: Suitable motors are Socket Type Speed Control Motor. (Use for 12V motor T.G)

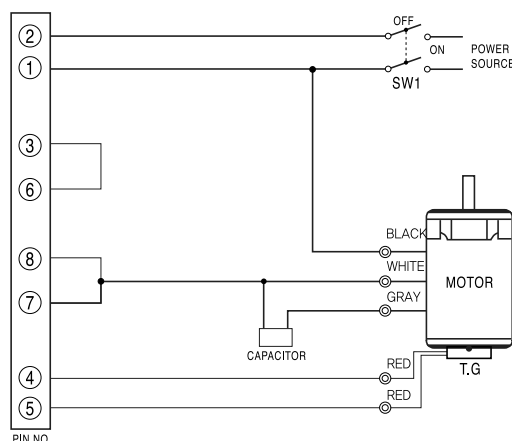
※ 2: The electric brake does not have holding torque.

+ DIMENSIONS SR TYPE SPEED CONTROLLER



+ SCHEMATIC DIAGRAM (INDUCTION MOTOR)

1-1 Uni Direction+Variable Speed INDUCTION MOTOR (6W~90W) REVERSIBLE MOTOR (6W~40W)

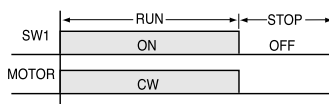


SW1 AC 125V or AC 250V MIN. 5A

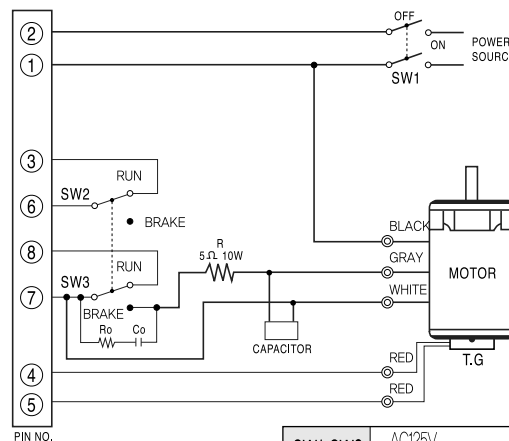
▲ For wiring of 220V~240V, 50Hz motor, change gray to brown.

- Note) 1. The motor rotating direction is CW when viewed from output shaft. When adjusting to CCW, change and connect white and gray wire of motor.
2. The connection of a fan motor is applicable only if the output of the motor is greater than 60W and refer to page 178 for the connection method.

◆ Example of operation



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

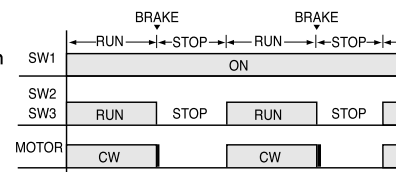


▲ For wiring of 220V~240V, 50Hz motor, change gray to brown.

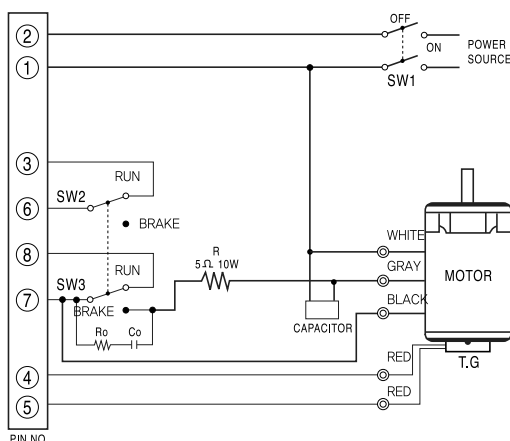
SW1,SW3	AC125V or AC250V MIN 5A
SW2	DC 20V 10mA
Ro,Co	Ro=10~200Ω (MIN. 1/4W) Co=0.1~0.2μF (AC125W, AC250W)
R	4.7Ω~6.8Ω MIN. 10W

- Note) 1. The motor rotating direction is CW when viewed from output shaft. When adjusting to CCW, change and connect white and gray wire of motor.
2. When switched from Run to Stop, electric brake will function about 0.5 sec and motor will stop instantaneously.

◆ Example of operation



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

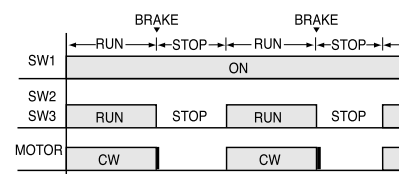


▲ For wiring of 220V~240V, 50Hz motor, change gray to brown.

SW1,3	AC125V or AC250V MIN 5A
SW2	DC 20V 10mA
Ro,Co	Ro=10~200Ω (MIN. 1/4W) Co=0.1~0.2μF (AC125W, AC250W)
R	4.7Ω~6.8Ω MIN. 10W

- Note) 1. The motor rotating direction is CW when viewed from output shaft. When adjusting to CCW, change and connect white and gray wire of motor.
2. When switched from Run to Stop, electric brake will function about 0.5 sec and motor will stop instantaneously.
3. The connection of a fan motor is applicable only if the output of the motor is greater than 60W and refer to page 178 for the connection method.

◆ Example of operation

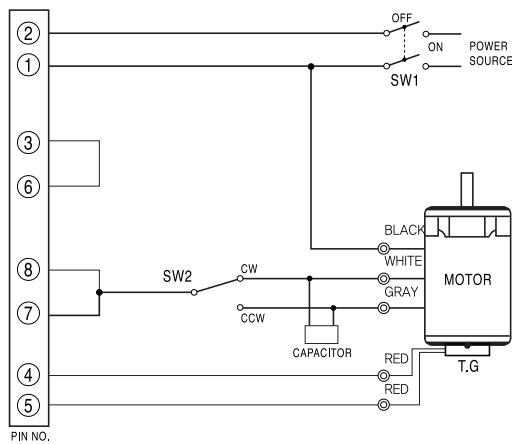


Note) The power switch should be off and check the PIN number when inserting a control pack into socket groove.
(There is a possibility to be burned.)

+ SCHEMATIC DIAGRAM (REVERSIBLE MOTOR)

2-1 Reverse+Variable Speed

INDUCTION MOTOR (6W~90W) REVERSIBLE MOTOR (6W~40W)

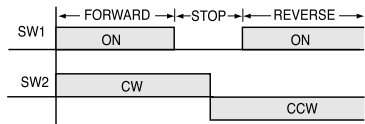


▲ For wiring of 220V~240V, 50Hz motor, change gray to brown.

SW1,2 AC125V or AC 250V MIN. 5A

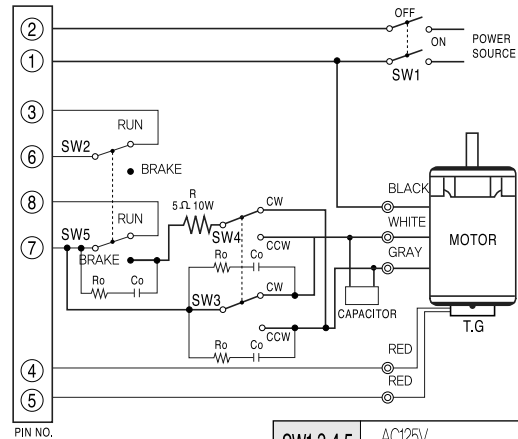
- Note) 1. Set "Stop" period for induction motor and switch SW2 after rotation has stopped.
 2. Rversible Motor does not need "Stop" period. It has no relation operating SW2 when SW1 is on.
 3. The connection of a fan motor is applicable only if the output of the motor is greater than 60W and refer to page 178 for the connection method.

◆ Example of operation



2-2 Reverse + Variable Speed + Brake

INDUCTION MOTOR (6W~25W) REVERSIBLE MOTOR (6W~25W)

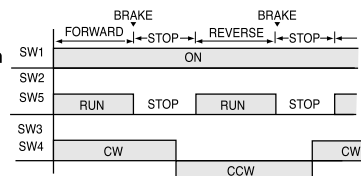


▲ For wiring of 220V~240V, 50Hz motor, change gray to brown.

SW1,3,4,5	AC125V or AC250V MIN. 5A
SW2	DC 20V 10mA
Ro,Co	Ro=10~200Ω (MIN. 1/4W) Co=0.1~0.2μF (AC125VV, AC250VV)
R	4.7Ω~6.8Ω MIN. 10W

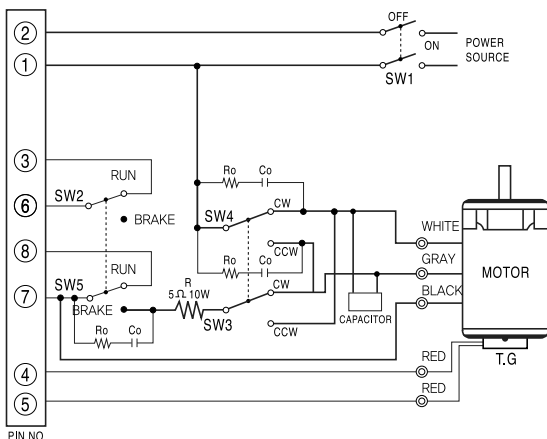
- Note) 1. When switched from Run to Stop, electric brake will function for 0.5sec. and motor will stop instantaneously.
 2. Do not operate SW4, SW5 for this 0.5 sec.
 3. Changing period of SW4, SW5 should be done quicker than Stop to Run of SW2, SW3.

◆ Example of operation



2-3 Reverse + Variable Speed + Brake

INDUCTION MOTOR (40W~90W)
REVERSIBLE MOTOR (40W)

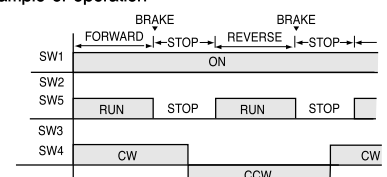


▲ For wiring of 220V~240V, 50Hz motor, change gray to brown.

SW1,3,4,5	AC125V or AC250V MIN. 5A
SW2	DC 20V 10mA
Ro,Co	Ro=10~200Ω (MIN. 1/4W) Co=0.1~0.2μF (AC125VV, AC250VV)
R	4.7Ω~6.8Ω MIN. 10W

- Note) 1. When switched from Run to Stop, electric brake will function for 0.5sec. and motor will stop instantaneously.
 2. Do not operate SW4, SW5 for this 0.5 sec.
 3. Changing period of SW4, SW5 should be done quicker than Stop to Run of SW2, SW3.
 4. The connection of a fan motor is applicable only if the output of the motor is greater than 60W and refer to 178 page for the connection method.

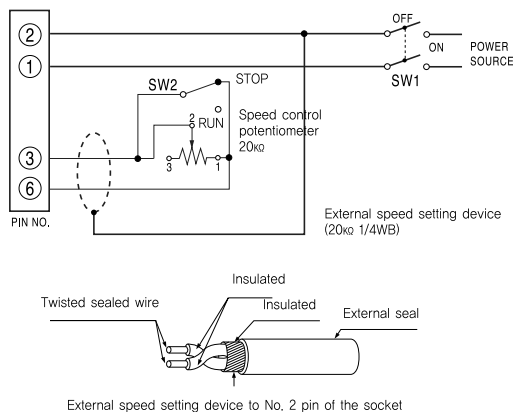
◆ Example of operation



Note) The power switch should be off and check the PIN number when inserting a control pack into socket groove.
 (There is a possibility to be burned.)

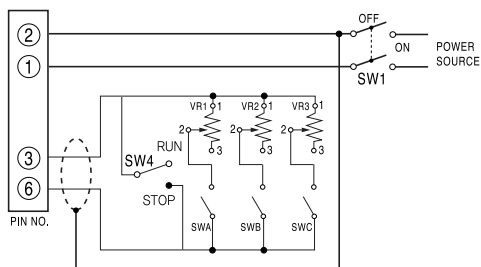
3-1 External speed setting device

■ When Distance Control is Necessary



- Note) 1. Set the volume to 'LOW'.
2. Shorten the connection cable as much as possible. May result in malfunction. In such case use twist shield cable and connect it to No.2 terminal.

■ When Multi-Stage Speed Setting is Necessary



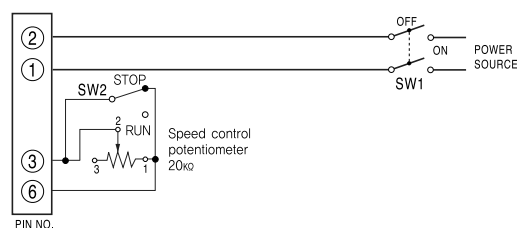
- Note) 1. Set the volume to 'LOW'.
2. If multi-stage speed control is needed, install VR1, VR2, and VR3 respectively and the speed can be changed by SWA, SWB, and SWC. The open/close time of the switch is advised to follow the open/close time of the relay contact point.

Note) The power switch should be off and check the PIN number when inserting a control pack into socket groove.
(There is a possibility to be burned.)

3-2 For prompt start(1)

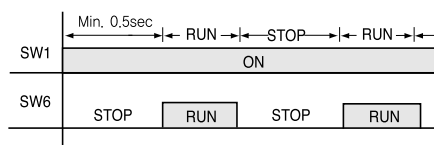
▼ Without braking

- ※ When the motor starts slowly while starting signal is input at Run switch(SW1), use external volume VR at SW2 for Run/Stop.



SW2	DC 20V 10mA	External speed setting device (20kΩ 1/4WB)
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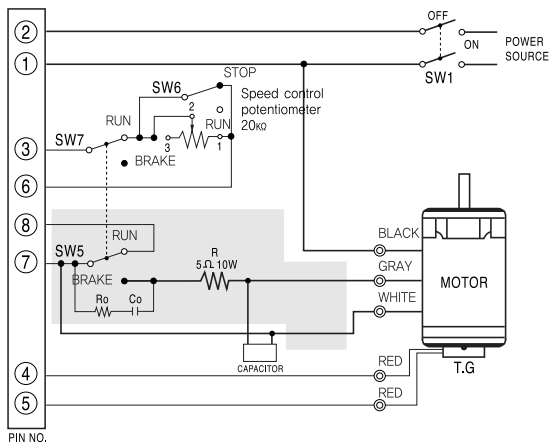
◆ Example of operation



- Note) 1. Input time of SW1 should be about 0.5sec earlier than starting signal of SW2.
2. Set the volume to "LOW" and use external volume VR to control speed.
3. During Run/Stop operation, control SW2 while SW1 is on. Even with small signal motor can be controlled.
4. When not in use for long period turn SW1 off.

3-3

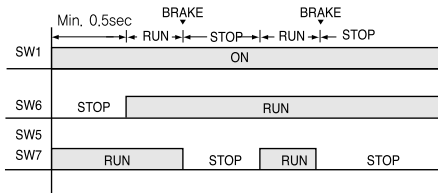
▼ While braking



SW1,5	AC125V or AC250V MIN. 5A
SW6,7	DC 20V 10mA
Ro,Co	Ro=10~200Ω (MIN. 1/4W) Co=0.1~0.2μF (AC125VV, AC250VV)
R	4.7Ω~6.8Ω MIN. 10W

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

◆ Example of operation



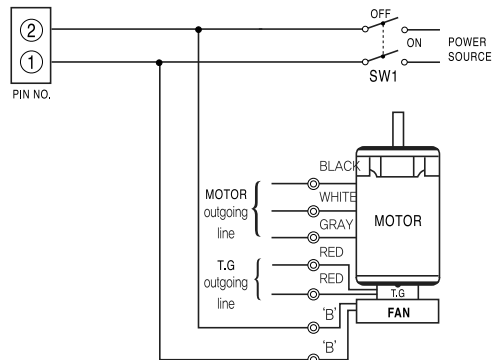
Note) 1. This wiring is for unidirection+variable speed+braking of motors 25W or less. For motors 40W over part of wiring is different. Refer to the electrical wiring diagram for the corresponding connection.

2. Input time of SW1 should be about 0.5sec earlier than SW6.

3. Set the volume to "LOW" and use external volume VR to control speed.

4. When not in use for long period turn SW1 off.

3-4



VOLTAGE	LEAD WIRE COLOR'B'
SINGLE PHASE AC100V~110V	BROWN
SINGLE PHASE AC200V~240V	YELLOW

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

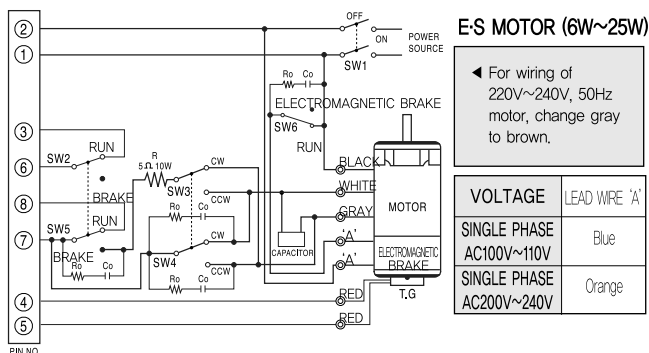
※ For the connection of something other than the box fan, refer to the electrical wiring diagram for the corresponding connection.

Note) The power switch should be off and check the PIN number when inserting a control pack into socket groove.
(There is a possibility to be burned.)

4-1

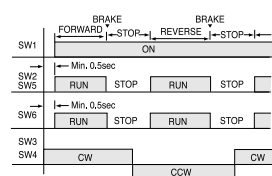
Wire connection for electromagnetic brake motor

When electric brake of controller is used at the same time



SW1,3,4,5,6	AC125V or AC250V MIN. 5A
SW2	DC 20V 10mA
Ro,Co	Ro=10~200Ω (MIN. 1/4W) Co=0.1~0.2μF (AC125VW, AC250VW)
R	4.7Ω~6.8Ω MIN. 10W

Example of operation

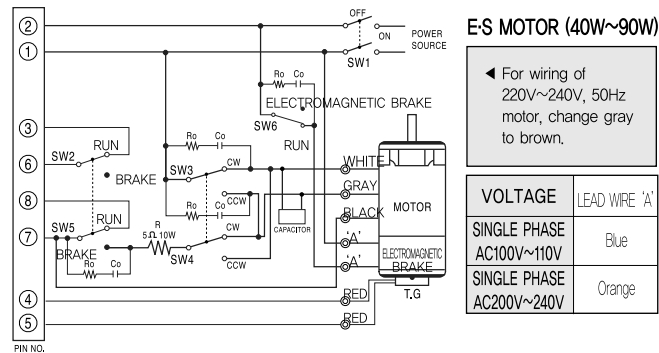


- Note) 1. When switched from Run to Stop, electromagnetic brake will function for about 0.5sec, and motor will stop instantaneously.
 2. Operate SW3, SW4 after the motor has stopped.
 3. Changing period of SW3, SW4 should be done quicker than stop to run of SW2, SW5, SW6.
 4. Power input for SW1 should be at least 0.5sec. earlier than starting signals of SW2, SW5, SW6.
 5. When Run/Stop, operate with SW2, SW5, SW6 while SW1 is On condition. Even with small signal it can control the motor. Turn SW1 off when not used for long period.

4-2

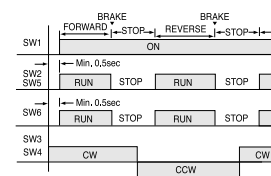
Wire connection for electromagnetic brake motor

When electric brake of controller is used at the same time



SW1,3,4,5,6	AC125V or AC250V MIN. 5A
SW2	DC 20V 10mA
Ro,Co	Ro=10~200Ω (MIN. 1/4W) Co=0.1~0.2μF (AC125VW, AC250VW)
R	4.7Ω~6.8Ω MIN. 10W

Example of operation

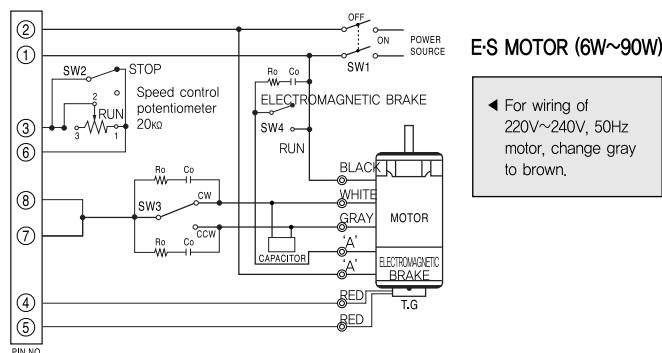


- Note) 1. When switched from Run to Stop, electromagnetic brake will function for about 0.5sec, and motor will stop instantaneously.
 2. Operate SW3, SW4 after the motor has stopped.
 3. Changing period of SW3, SW4 should be done quicker than stop to run of SW2, SW5, SW6.
 4. Power input for SW1 should be at least 0.5sec. earlier than starting signals of SW2, SW5, SW6.
 5. When Run/Stop, operate with SW2, SW5, SW6 while SW1 is 'On' condition. Even with small signal it can control the motor. Turn SW1 off when not used for long period.
 6. The connection of a fan motor is applicable only if the output of the motor is greater than 60W and refer to page 178 for the connection method.

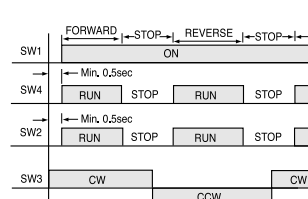
4-3

Wire connection for electromagnetic brake motor

When electric brake of controller is used at the same time



Example of operation



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

SW 1,3,4	AC125V or AC250V MIN. 5A
SW 2	DC 20V 10mA
Ro,Co	Ro=10~200Ω (MIN. 1/4W) Co=0.1~0.2μF (AC125VW, AC250VW)

- Note) 1. Set the stop period to stop and convert to SW2 after rotation has stopped
 2. Input period for power switch SW1 should be about 0.5sec. earlier than the signal of start operating of SW6, SW9

3. When Run/Stop, operate with SW2, SW4 while SW1 is on. Even with small signal it can control the motor Turn SW1 off when not used for long period.
 4. Set the volume low and control the speed with external speed setting device VR
 5. The connection of a fan motor is applicable only if the output of the motor is greater than 60W and refer to page 178 for the connection method.

Note) The power switch should be off and check the PIN number when inserting a control pack into socket groove.
 (There is a possibility to be burned.)

SPEED CONTROLLER

: SRCE TYPE

Characteristics

- Speed controller SR series are developed by the demands of speed variation.
- It uses the IC circuit that SPG Motor independently developed and is small, light weight and reliability.
- With acquisition of CE Mark certification, the product guarantees higher reliability.
- The rotating speed of the motor may be adjusted by a speed control variable resistor located at the front of the case and can also operate long-range by an extra speed setter.
- Increase of instantaneous stop function by electromagnetic brake
- Miniaturized type with 11pin plug



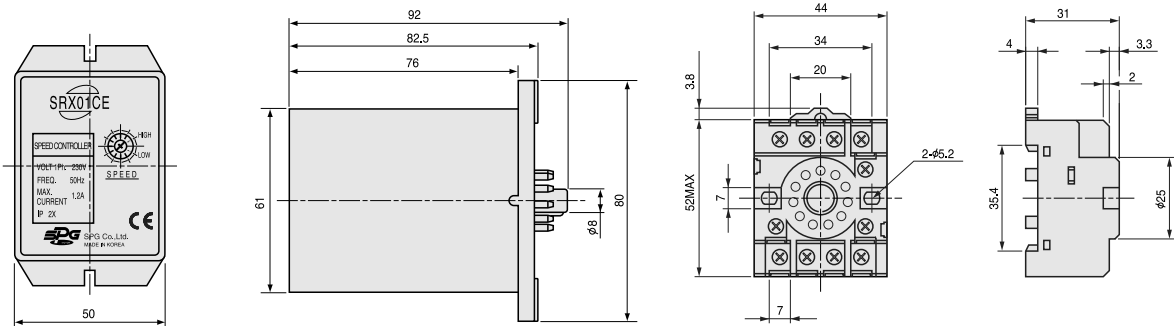
SPECIFICATIONS

MODEL SPEC		SRCE TYPE									
		SRA01CE	SRA02CE	SRB01CE	SRB02CE	SRC01CE	SRC02CE	SRD01CE	SRD02CE	SRX01CE	SRX02CE
Rated Voltage		AC110V 60Hz		AC220V 60Hz		AC100V 50/60Hz		AC200V 50/60Hz		AC220~240V 50Hz	
Operation Voltage Range		±10%									
※1 APPLICABLE MOTOR OUTPUT	INDUCTION	6W	15W~90W	6W	15W~90W	6W	15W~90W	6W	15W~90W	6W	15W~90W
	REVERSIBLE	6W	15W~40W	6W	15W~40W	6W	15W~40W	6W	15W~40W	6W	15W~40W
	E・S	6W	15W~90W	6W	15W~90W	6W	15W~90W	6W	15W~90W	6W	15W~90W
Speed control range		50Hz：90~1400rpm					60Hz：90~1700rpm				
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	0.5sec(standard)									
	Parallel operation	Not suitable for parallel operation									
	Slow Run, Slow Stop	none									
	Operation Temperature	-10~50℃									
	Storage Temperature	-20~60℃									
Ambient humidity		85%Maximum(non condensing)									

※1: Suitable motors are Socket Type Speed Control Motor. (Use for 12V motor T.G)

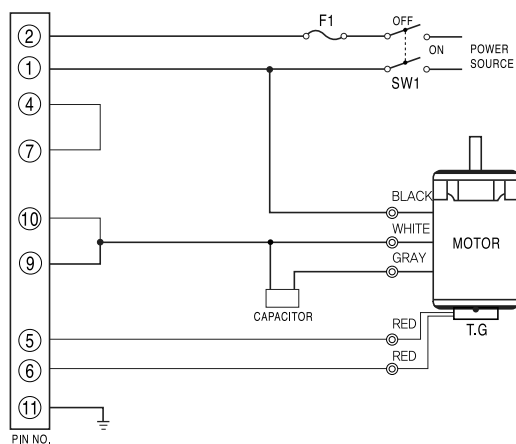
※2: The electric brake does not have holding torque.

+ DIMENSIONS SRCE TYPE SPEED CONTROLLER



SCHEMATIC DIAGRAM

1-1 Uni Direction + Variable Speed INDUCTION MOTOR (6W~90W) REVERSIBLE MOTOR (6W~40W)

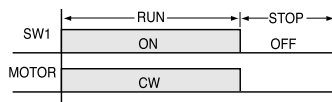


SW1	AC 125V or AC 250V	MIN. 5A
F1	AC 125V or AC 250V	3A

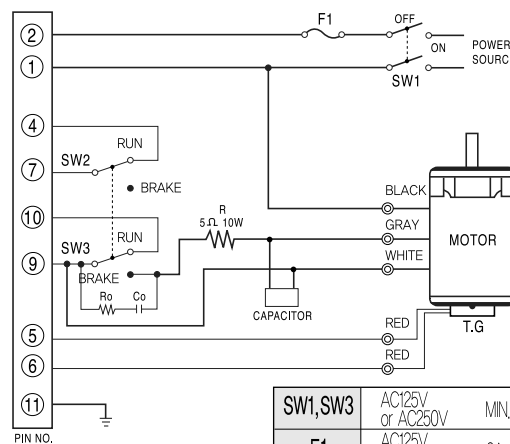
▲ For wiring of 220V~240V,
50Hz motor, change gray to
brown.

- Note) 1. The motor rotating direction is CW when viewed from output shaft.
When adjusting to CCW, change and connect white and gray wire
of motor.
2. The connection of a fan motor is applicable only if the output of the
motor is greater than 60W and refer to page 184 for the connection
method.

◆ Example of operation



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

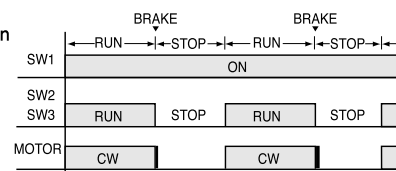


SW1, SW3	AC125V or AC250V	MIN. 5A
F1	AC125V or AC250V	3A
SW2	DC 20V 10mA	
Ro, Co	Ro=10~200Ω (MIN. 1/4W) Co=0.1~0.2μF (AC125V, AC250V)	
R	4.7Ω~6.8Ω MIN. 10W	

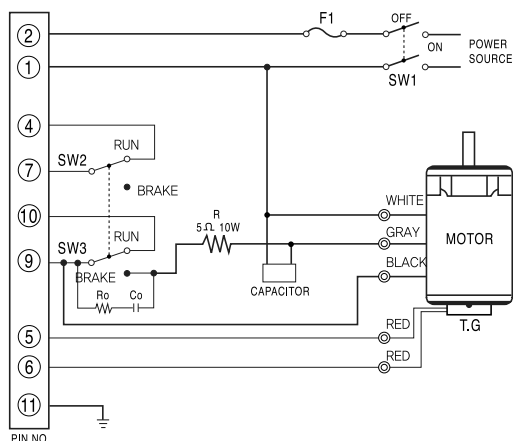
▲ For wiring of 220V~240V,
50Hz motor, change gray to
brown.

- Note) 1. The motor rotating direction is CW when viewed from output shaft.
When adjusting to CCW, change and connect white and gray wire
of motor.
2. When switched from Run to Stop, electric brake will function about
0.5 sec. and motor will stop instantaneously.

◆ Example of operation



1-3 Uni Direction + Variable Speed + Brake

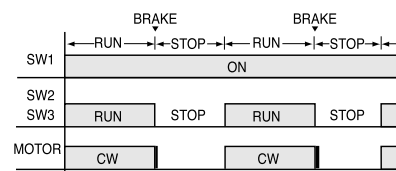


▲ For wiring of 220V~240V, 50Hz
motor, change gray to brown.

SW1, SW3	AC125V or AC250V	MIN. 5A
F1	AC125V or AC250V	3A
SW2	DC 20V 10mA	
Ro, Co	Ro=10~200Ω (MIN. 1/4W) Co=0.1~0.2μF (AC125V, AC250V)	
R	4.7Ω~6.8Ω MIN. 10W	

- Note) 1. The motor rotating direction is CW when viewed from
output shaft. When adjusting to CCW, change and
connect white and gray wire of motor.
2. When switched from Run to Stop, electric brake will
function for 0.5sec. and motor will stop
instantaneously.
3. The connection of a fan motor is applicable only if
the output of the motor is greater than 60W and refer to
page 184 for the connection method.

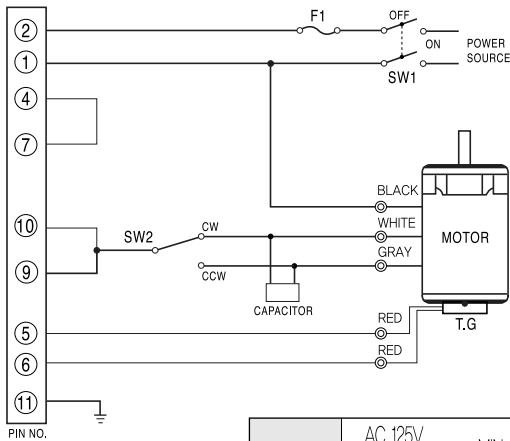
◆ Example of operation



Note) The power switch should be off and check the PIN number when inserting a control pack into socket groove.
(There is a possibility to be burned.)

2-1 Reverse + Variable Speed

INDUCTION MOTOR (6W~90W) REVERSIBLE MOTOR (6W~40W)

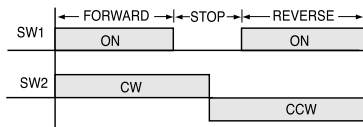


▲ For wiring of 220V~240V, 50Hz motor, change gray to brown.

SW1,2	AC 125V or AC 250V	MIN. 5A
F1	AC 125V or AC 250V	3A

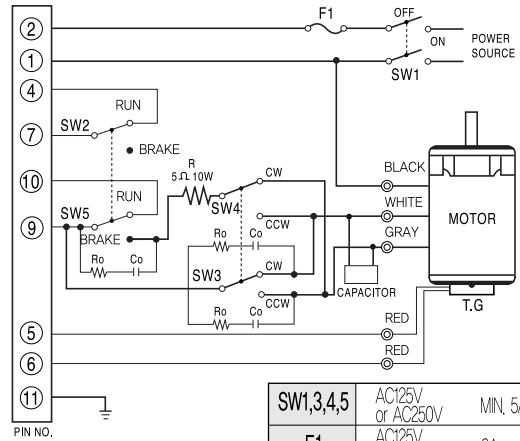
- Note) 1. Set "Stop" period for induction motor and switch SW2 after rotation has stopped.
2. Reversible Motor does not need "Stop" period. SW2 does not work when SW1 is on.
3. The connection of a fan motor is applicable only if the output of the motor is greater than 60W and refer to page 184 for the connection method.

◆ Example of operation



2-2 Reverse + Variable Speed + Brake

INDUCTION MOTOR (6W~25W) REVERSIBLE MOTOR (6W~25W)

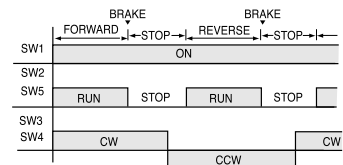


▲ For wiring of 220V~240V, 50Hz motor, change gray to brown.

SW1,3,4,5	AC125V or AC250V	MIN. 5A
F1	AC125V or AC250V	3A
SW2	DC 20V 10mA	
R _o ,C _o	R _o =10~200Ω (MIN. 1/4W) C _o =0.1~0.2μF (AC125WV, AC250WV)	
R	4.7Ω ~6.8Ω MIN. 10W	

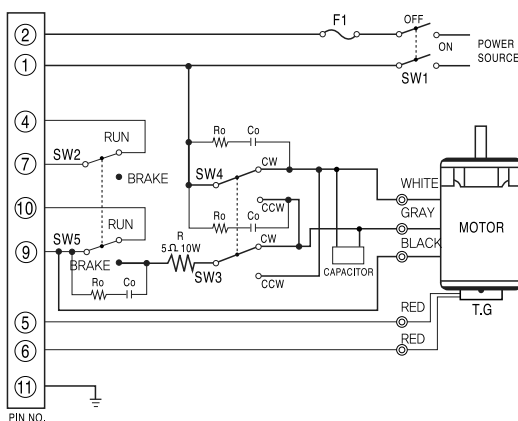
- Note) 1. When switched from Run to Stop, electric brake will function for 0.5sec. and motor will stop instantaneously
2. Do not operate SW4, SW5 for this 0.5 sec.
3. Changing period of SW4, SW5 should be done quicker than Stop to Run of SW2, SW3

◆ Example of operation



2-3 Reverse + Variable Speed + Brake

INDUCTION MOTOR (40W~90W)
REVERSIBLE MOTOR (40W)

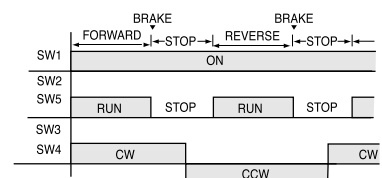


▲ For wiring of 220V~240V, 50Hz motor, change gray to brown.

SW1,3,4,5	AC125V or AC250V	MIN. 5A
F1	AC125V or AC250V	3A
SW2	DC 20V 10mA	
R _o ,C _o	R _o =10~200Ω (MIN. 1/4W) C _o =0.1~0.2μF (AC125WV, AC250WV)	
R	4.7Ω ~6.8Ω MIN. 10W	

- Note) 1. When switched from Run to Stop, electric brake will function for 0.5sec. and motor will stop instantaneously
2. Do not operate SW4, SW5 for this 0.5 sec.
3. Changing period of SW4, SW5 should be done quicker than Stop to Run of SW2, SW3
4. The connection of a fan motor is applicable only if the output of the motor is greater than 60W and refer to page 184 for the connection method.

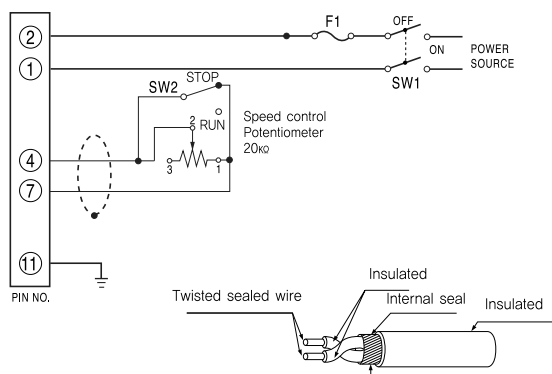
◆ Example of operation



Note) The power switch should be off and check the PIN number when inserting a control pack into socket groove.
(There is a possibility to be burned.)

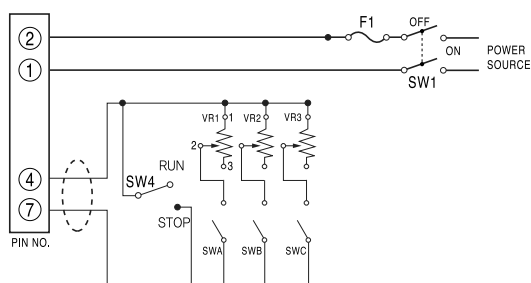
3-1 External speed setting device

■ When Distance Control is Necessary



- Note) 1. Set the volume to 'LOW'.
 2. Shorten the connection cable as much as possible. May result in malfunction. In such case use twist shield cable and connect it to No.2 terminal.

■ When Multi-Stage Speed Setting is Necessary

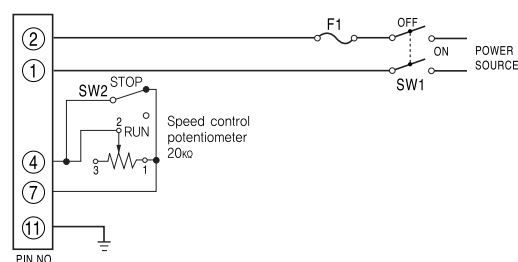


- Note) 1. Set the volume to 'LOW'.
 2. If multi-stage speed control is needed, install VR1, VR2, and VR3 respectively and the speed can be changed by SWA, SWB, and SWC. The open/close time of the switch is advised to follow the open/close time of the relay contact point.

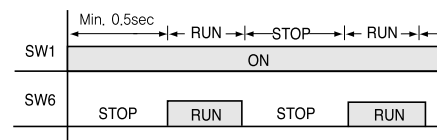
3-2 For prompt start(1)

▼ Without braking

※ When the motor starts slowly while starting signal is input at FUN switch(SW1), use external volume VR at SW2 for Run/Stop.



◆ Example of operation

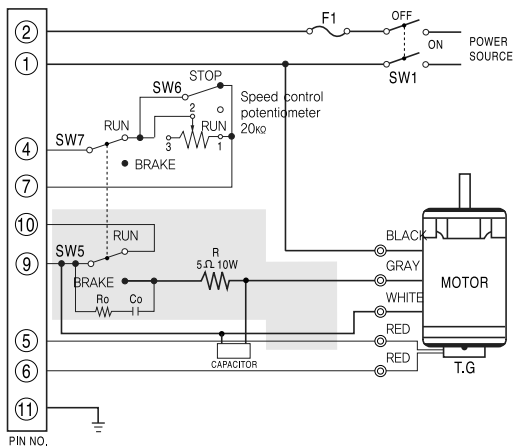


- Note) 1. Input time of SW1 should be about 0.5sec quicker than starting signal of SW2.
 2. Set the volume to "LOW" and use external volume VR to control speed.
 3. During Run/Stop operation, control SW2 while SW1 is on. Even with small signal motor can be controlled.
 4. When not in use for long period turn SW1 off.

Note) The power switch should be off and check the PIN number when inserting a control pack into socket groove.
 (There is a possibility to be burned.)

3-3 For prompt start(2)

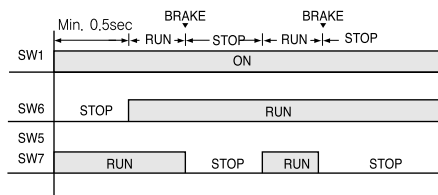
▼ With Braking INDUCTION MOTOR(6W~25W) REVERSIBLE MOTOR (6W~25W)



SW1,5	AC125V or AC250V	MIN. 5A
F1	AC125V or AC250V	3A
SW6,7	DC 20V 10mA	
Ro,Co	Ro=10~200Ω (MIN. 1/4W) Co=0.1~0.2μF (AC125VV, AC250VV)	
R	4.7Ω ~6.8Ω MIN. 10W	

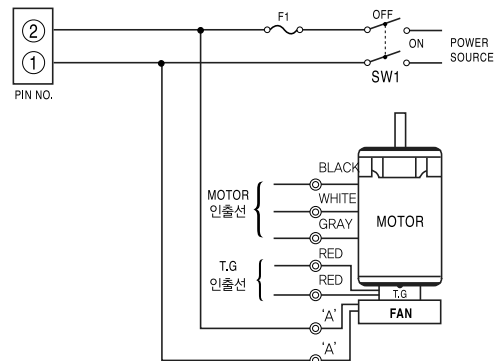
▲ For wiring of 220V~240V,
50Hz motor, change gray to
brown.

◆ Example of operation



- Note) 1. This wiring is for unidirection+Variable speed+braking of motors 25W or less. For motors 40W and over part of wiring is different. Refer to the electrical wiring diagram for the corresponding connection.
2. Input time of SW1 should be about 0.5sec quicker than SW6.
3. Set the volume to "LOW" and use external volume VR to control speed.
4. When not in use for long period turn SW1 off.

3-4 Box fan motor connection method



VOLTAGE	LEAD WIRE COLOR 'A'
SINGLE PHASE AC100V~110V	BROWN
SINGLE PHASE AC200V~240V	YELLOW

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

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

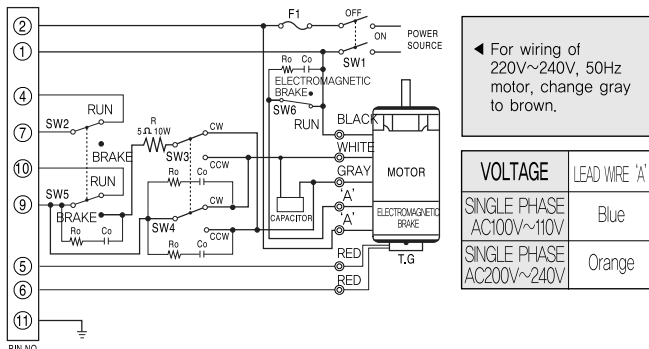
Note) The power switch should be off and check the PIN number when inserting a control pack into socket groove.
(There is a possibility to be burned.)

4-1

Wire connection for electromagnetic brake motor

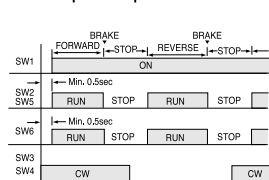
When electric brake of controller is used at the same time

E-S MOTOR (6W~25W)



SW1,3,4,5,6	AC125V or AC250V	MIN. 5A
F1	AC125V or AC250V	3A
SW2	DC 20V 10mA	
Ro,Co	Ro=10~200Ω (MIN. 1/4W) Co=0.1~0.2μF (AC125V, AC250V)	
R	4.7Ω~6.8Ω	MIN. 10W

Example of operation



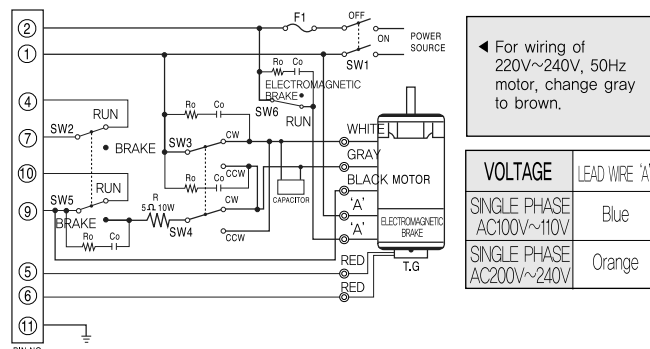
- Note) 1. When switched from Run to Stop, electromagnetic brake will function for about 0.5sec. and motor will stop instantaneously.
 2. Operate SW3, SW4 after the motor has stopped.
 3. Changing period of SW3, SW4 should be done quicker than stop to run of SW2, SW5, SW6.
 4. Power input for SW1 should be at least 0.5sec. quicker than starting signals of SW2, SW5, SW6.
 5. When Run/Stop, operate with SW2, SW5, SW6 while SW1 is 'On' condition. Even with small signal it can control the motor. Turn SW1 off when not used for long period.

4-2

Wire connection for electromagnetic brake motor

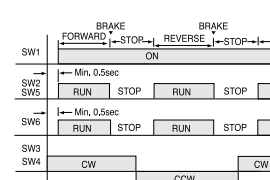
When electric brake of controller is used at the same time

E-S MOTOR (40W~90W)



SW1,3,4,5,6	AC125V or AC250V	MIN. 5A
F1	AC125V or AC250V	3A
SW2	DC 20V 10mA	
Ro,Co	Ro=10~200Ω (MIN. 1/4W) Co=0.1~0.2μF (AC125V, AC250V)	
R	4.7Ω~6.8Ω	MIN. 10W

Example of operation



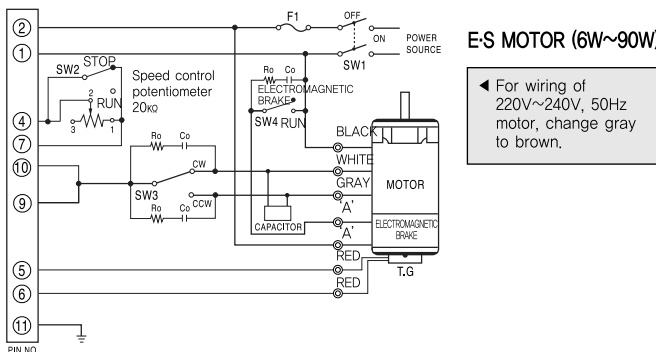
- Note) 1. When switched from Run to Stop, electromagnetic brake will function for about 0.5sec. and motor will stop instantaneously.
 2. Operate SW3, SW4 after the motor has stopped.
 3. Changing period of SW3, SW4 should be done quicker than stop to run of SW2, SW5, SW6.
 4. Power input for SW1 should be at least 0.5sec. quicker than starting signals of SW2, SW5&SW6.
 5. When Run/Stop, operate with SW2, SW5, SW6 while SW1 is On condition. Even with small signal it can control the motor. Turn SW1 off when not used for long period.
 6. The connection of a fan motor is applicable only if the output of the motor is greater than 60W and refer to page 184 for the connection method.

4-3

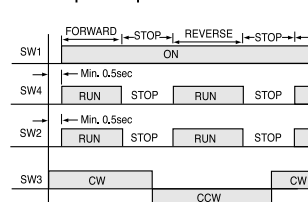
Wire connection for electromagnetic brake motor

When electric brake of controller is used at the same time

E-S MOTOR (6W~90W)



Example of operation



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

SW1,3,4	AC125V or AC250V	MIN. 5A
F1	AC125V or AC250V	3A
SW2	DC 20V 10mA	
Ro,Co	Ro=10~200Ω (MIN. 1/4W) Co=0.1~0.2μF (AC125V, AC250V)	

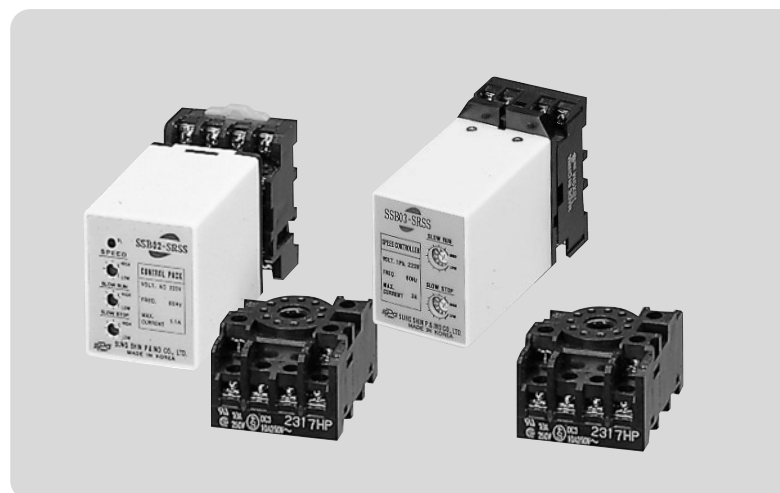
- Note) 1. Set the stop period to stop and convert to SW2 after rotation has stopped.
 2. Input period for power switch SW1 should be about 0.5sec. quicker than the signal of start operating of SW6, SW9.

3. When Run/Stop, operate with SW2, SW4 while SW1 is on. Even with small signal it can control the motor. Turn SW1 off when not used for long period.
 4. Set the volume to "LOW" and control the speed with external speed setting device VR.
 5. The connection of a fan motor is applicable only if the output of the motor is greater than 60W and refer to page 184 for the connection method.

Note) The power switch should be off and check the PIN number when inserting a control pack into socket groove.
 (There is a possibility to be burned.)



SS TYPE SPEED CONTROLLER



1. Characteristics of the socket SS standard type

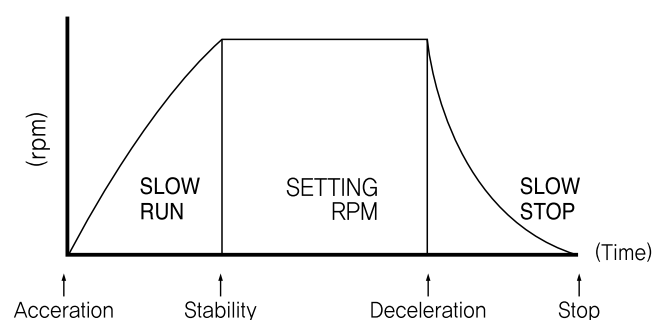
- (1) This is used with the 6W~40W induction speed control motor and the 6W~40W reversible speed control motor.
- (2) Number of revolutions may be controlled and designated with the speed setter on the front of the case.
- (3) Instantaneous braking is possible with an electric brake.
- (4) The small 11 pin plug-in method was used.
- (5) It has slow run and slow stop functions, so operating and braking are not working rapidly, instead, slowly.
- (6) It is simple to control because the slow run and slow stop functions have time setting functions.
- (7) SPG has socket (SS) type standard speed controller may not be used for parallel operations. When parallel operation is necessary, the socket (SS) type high-output speed controller should be used.

2. Characteristics of the socket SS high-output type speed control

- (1) It is used in the 6W~90W induction speed control motor, the 6W~40W reversible speed control motor and the 6W~40W electro-magnetic brake speed control motor.
- (2) An external controller can control the number of rotation of the motor.
- (3) Instantaneous braking is possible with an electric brake.
- (4) Installation and operation is simple because of a compact plug-in 11pin type.
- (5) It has slow run and slow stop functions, so operating and braking are not working rapidly instead, slowly.
- (6) It is simple to control because the slow run and slow stop functions have time setting functions.
- (7) Parallel operation is possible. Parallel operation allows multiple motor control packs to be operated at the same speed with one speed setter.

3. Use of socket SS type speed control

(1) Use of slow run and slow stop



- The SRSS function of the socket SS type speed controller allows slow acceleration with slow run and gradual deceleration with slow stop function.
- This function relieves impact when accelerating and decelerating and should be used when smooth acceleration and deceleration are desired.
- Slow run and slow stop functions have time setting functions. The variable resistor in the control pack allows time to be set within 0.5 seconds~15 seconds/1200[rpm].
- Slow stop braking in a shorter time than the natural braking of the motor is impossible.
- When slow operation is not necessary, turn the volume switch inside all the way to the left (counter-clockwise).

(2) Characteristics of instantaneous braking

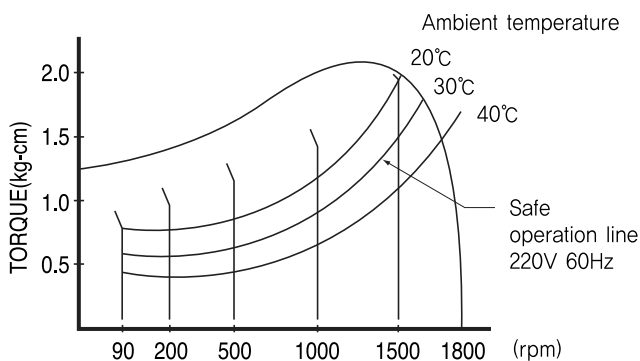
- The control pack has an electric brake which allows instantaneous braking of the motor within 0.1 seconds.
- Brake current operates for about 0.5 seconds and then automatically discharges.
- Because there is no holding torque to hold the motor, after it stops, it is possible to control the location.
- When holding torque is necessary to stop an object that is moving up and down, use SPG has electro-magnetic brake control motor.

※ Note

- In the control pack, after instantaneous braking, it takes about 0.5 seconds before the motor starts rotating after the brake switch is turned to operate.
- In the control pack, if instantaneous braking is applied with the variable resistor at 0Ω or with the run/stop switch at stop and then turned to run again, the motor might rotate once, so do not operate it in this manner.
- If the run/stop switch is repeatedly switched from the AC power source within 0.5 seconds, the motor might momentarily rotate, so do not run/stop with the AC power source.

(3) Temperature rise of the motor

- The AC speed control motor gets higher input power as the load increases so the rise in temperature is greater with a larger load.
- The curve with the temperature rise of the motor, the threshold torque and the number of rotations are called the safe operation line. Use the motor at the torque and number of revolutions below the curve.
- Safe operation line may be used at above the curve in the following cases.
 - › When radiation is high.
 - › When a cooling fan is used.
 - › When the ambient temperature is low.



★ Use at surface temperature of the motor case below 90°C

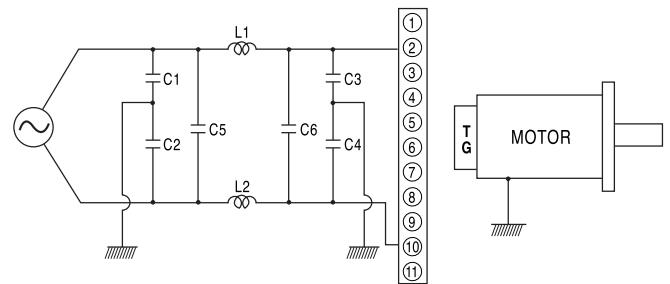
4. Cautions

1) Cautions in installation

- Use in temperature range between -10°C and +50°C and humidity of 85% or less. Avoid places with direct sunlight, moisture and oiliness. When used in such places, use a cover.
- Avoid places with vibration, shock, dust, inflammable and corrosive gas.

2) Cautions in wiring

- Use sockets for connection and do not solder on the PIN of the main body.
- When connecting the socket, check the terminal number.
- When inserting the control pack in the socket, turn the power off, check the PIN number and then insert.
- High-output motors, solenoid, high frequency power and electric welding machines could cause malfunctions of the control pack. Use a separate circuit and wire the above equipment circuits separately.



C1~C4 : 1000pF (2000VDC)

C5~C6 : 0.1μF~0.2μF (AC125WV or AC250WV)

L1~L2 : about 100μH

Note)

1. The specification of L1~L2 should not be magnetically saturated by the motor current.
2. The condenser and the motor should be grounded in the same place.
3. Use short wiring and ground with thick wires.

- Install a noise filter to prevent malfunctions.
- Install the motor and the control pack as closely as possible.
- When noise filters are necessary for independent parts, use a circuit as shown in the picture.

3) Cautions in operation

- Use at a motor surface temperature below 90°C in rated load. Frequent instantaneous braking and repetition of operating raises the temperature of the motor.
- When stopping for a long time, turn the power off.
- Do not operate or stop the motor with the AC power source. The surge voltage from the switch could destroy the product.

5. Cause of malfunctions and management methods

1) Check

- To raise efficiency and use the control pack longer, check the followings.
 - ① Is operation being carried out smoothly?
 - ② Is there a strange noise when operating?
 - ③ Is abnormal heat being generated?

2) Cause of malfunctions and management methods

Malfunction	Checklist	Malfunctioning part	How to fix
The motor does not rotate.	Separate the pack from the socket and connect socket ④ and ⑩ terminals.	• The speed controller or the controller parts if the motor rotates.	• Check the connection of the speed control variable resistor.
		• The motor parts if the motor does not rotate.	• Check the connection of the motor. • Check the connection of the condenser.
	Separate the pack with the socket and open socket ⑧ and ⑨ terminals.	• The speed controller parts if the motor rotates at maximum.	• Check the connection of the speed control variable resistor. • Check the connection of the run/stop switch.
		• The motor parts if the motor does not rotate.	• Check the connection parts of the motor.
The motor is rotating at maximum speed.	Separate the control pack from the socket and allow AC power.	• The speed controller or the controller if the motor rotates.	• Check the connection of the speed control variable resistor.
		• The motor parts if the motor does not rotate.	• Check the connection of the motor.
	Separate the pack from the socket and connect socket ⑧ and ⑨ terminals.	• The speed controller if the motor stop.	• Check the connection of the speed control variable resistor. • Check the connection of the run/stop switch • Check the connection of ① and ⑩ terminals.
		• The speed controller or the controller if the motor rotates.	
The motor's speed is not controlled.	Select the variable resistor at maximum and check the voltage of ① and ⑩ terminals of the socket.	• The speed controller or the control parts if it is more than AC20V	• Check the connection of the speed control variable resistor.
		• The tachometer if it is less than AC20V	• Check the connection of ① and ⑩ terminals. • Check that the resistance of the tachometer part is 1.5k Ω .
	When changing the speed of the variable resistor, check the voltage of ⑧ and ⑨ terminals.	• The speed controller parts (speed setting section) if it changes between DC 0~6V	• Check the connection of the speed control variable resistor • Check the connection of the run/stop switch • Check if the speed control variable resistor changes between 0~20k Ω .
		• The controller if it does not change between DC 0~6V	
The motor does not stop instantaneously.			• Check the connection of external resistance 10 Ω , 10W. • Check the connection of the run/stop switch.

SPEED CONTROLLER

: SS STANDARD TYPE

Characteristics

- Used for induction & reversible speed control motor 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 electromagnetic brake.
- Compact plug-in type with 11pins.
- 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 slow run and slow stop functions easily.
- Can not be used for parallel operation. For parallel operation, please use high-output type of SPG.



SPECIFICATIONS

MODEL SPEC	SS TYPE									
	SSA01-SRSS	SSA02-SRSS	SSB01-SRSS	SSB02-SRSS	SSC01-SRSS	SSC02-SRSS	SSD01-SRSS	SSD02-SRSS	SSX01-SRSS	SSX02-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	1.1A	1.5A	1.1A	1.1A	1.0A	1.4A	1.0A	1.0A	1.1A	1.1A
Applicable motor output	6W	15W~40W	6W	15W~40W	6W	15W~40W	6W	15W~40W	6W	15W~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(20KΩ)								(10KΩ)	
Braking	Possible to stop for certain period by electric brake									
Braking period	0.5초(standard)									
Parallel operation	Not suitable for parallel operation									
SLOW RUN, SLOW STOP	Possible(0.5sec~15sec/1200rpm)									
Ambient temperature	-10℃~50℃									
Ambient humidity	85%Maximum(non condensing)									
Storage temperature	-20℃~+60℃									
Insulation resistance	100MΩ or more when 500V megger is applied between the pin and the housing at ambient temperature and humidity									
Dielectric strength	sufficient 1500V at 50/60Hz applied between the pin and the housing at ambient temperature and humidity for 1min									

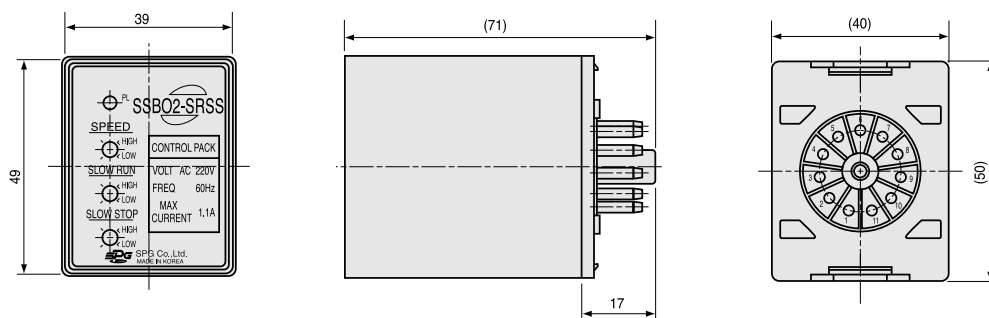
※ 1 : Applicable motors are socket type control motors of SPG. (Use for 24V motor T.G)

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

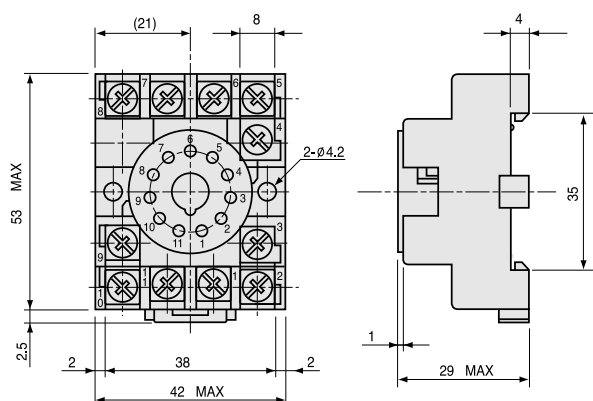
DIMENSIONS

■ SS TYPE (STANDARD) SPEED CONTROLLER

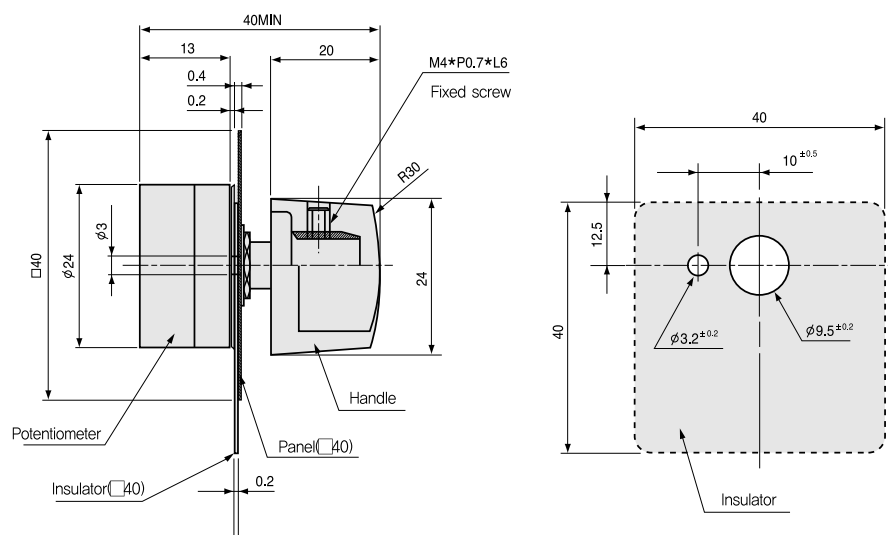
+ CONTROLLER



+ 11PIN SOCKET

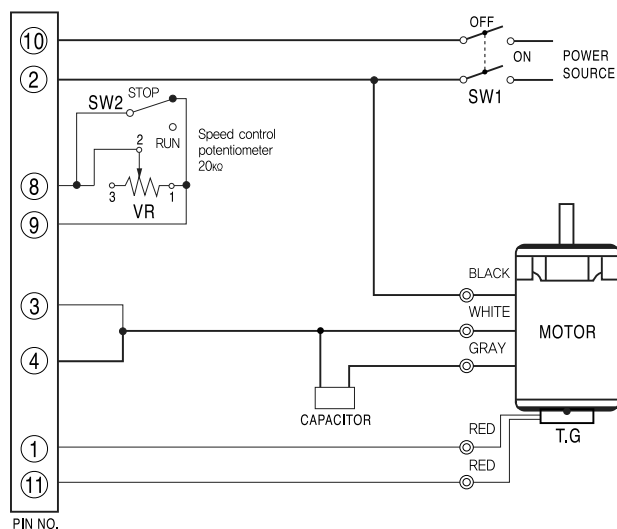


+ SPECIFICATION OF VARIABLE RESISTOR FOR SPEED SETTING : 20k Ω (10k Ω) 1/4W B CHARACTERISTIC



+ SCHEMATIC DIAGRAM (INDUCTION MOTOR)

1-1 Uni Direction + Variable Speed (6W~40W)



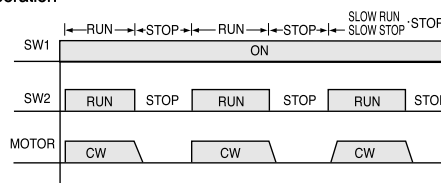
SW1	AC125V or AC250V MIN. 5A
SW2	DC 20V 10mA

◀ For wiring of 220V~240V, 50Hz motor, change gray to brown. Here, VR is 10kΩ.

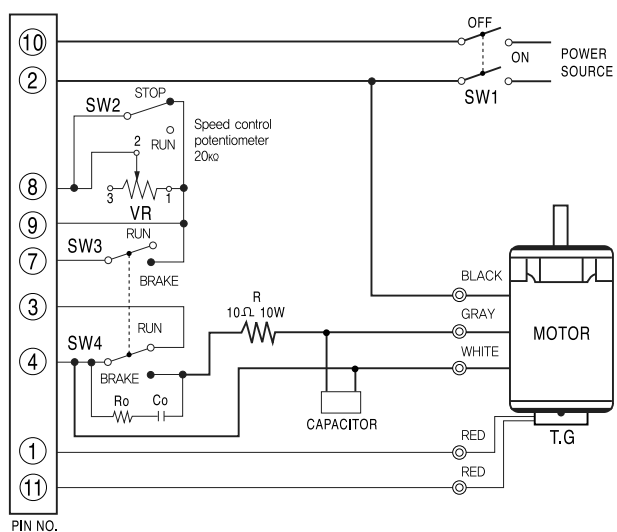
Note)

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

◆ Example of operation



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



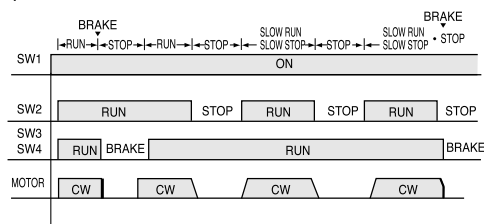
SW1,4	AC125V or AC250V MIN. 5A
SW2,3	DC 20V 10mA
R ₀ ,C ₀	R ₀ =10~200Ω (MIN. 1/4W) C ₀ =0.1~0.2μF (AC125V, AC250V)
R : Braking external resistor	10Ω, MIN. 10W

◀ For wiring of 220V~240V, 50Hz motor, change gray to brown. Here, VR is 10kΩ.

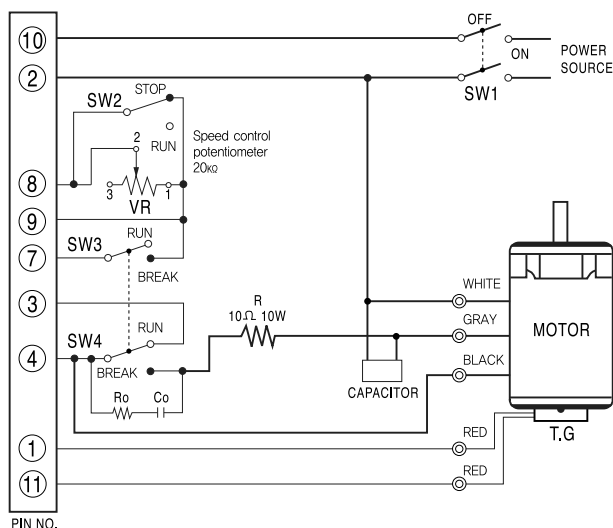
Note)

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 Single Direction + Variable Speed + Brake (40W)



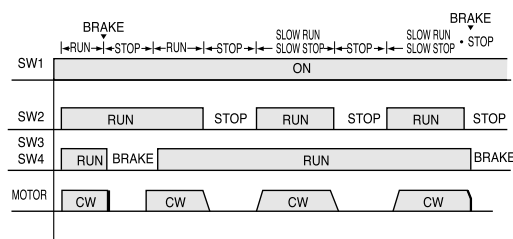
◀ For wiring of 220V~240V, 50Hz motor, change gray to brown. Here, VR is 10kΩ.

SW1,4	AC125V or AC250V MIN. 5A
SW2,3	DC 20V 10mA
R ₀ ,C ₀	R ₀ =10~200Ω (MIN. 1/4W) C ₀ =0.1~0.2μF (AC125V, AC250V)
R : Braking external resistor	10Ω, MIN. 10W

Note)

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

◆ Example of operation



1-4 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.

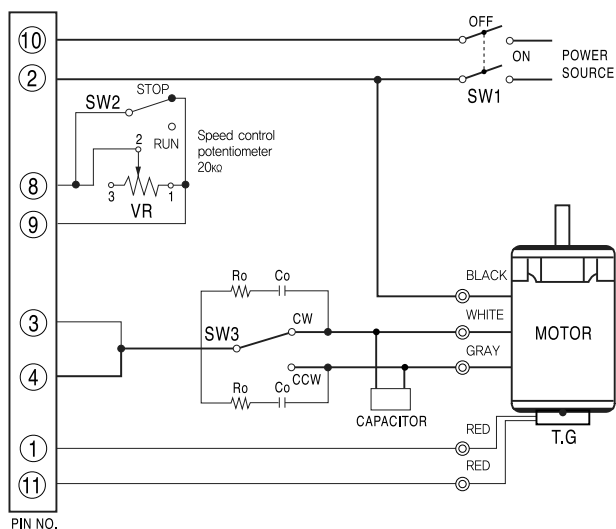
● Slow Run/Slow Stop function

- 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 (REVERSIBLE MOTOR)

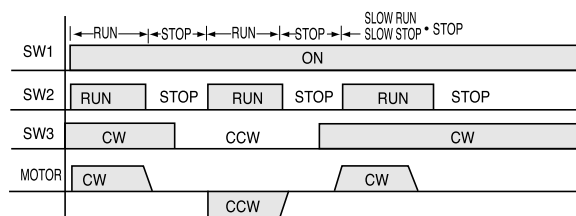
2-1 Reverse + Variable Speed (6W~40W)



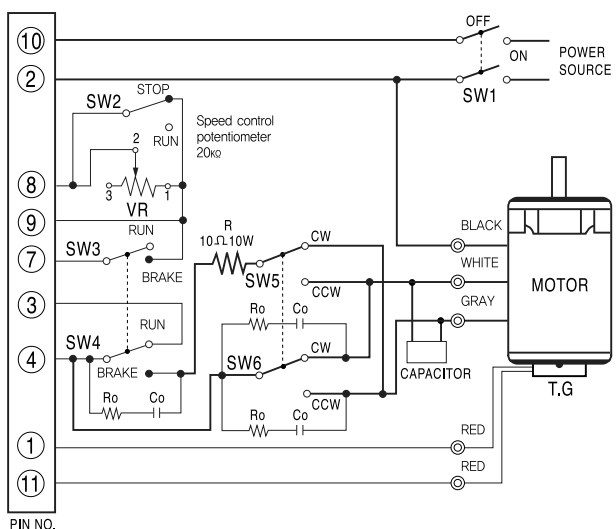
SW1,3	AC125V or AC 250V MIN. 5A
SW2	DC 20V 10mA
Ro,Co	Ro=10~200Ω (MIN. 1/4W) Co=0.1~0.2μF (AC125VV, AC250VV)

◀ For wiring of 220V~240V, 50Hz motor, change gray to brown. Here, VR is 10kΩ.

◆ Example of operation



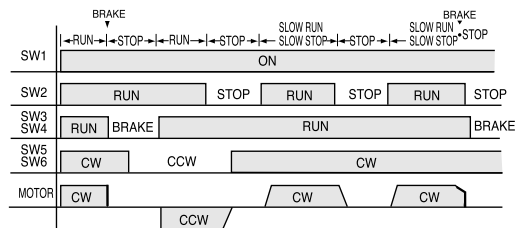
2-2 Reverse + Variable Speed + Brake (6W~25W)



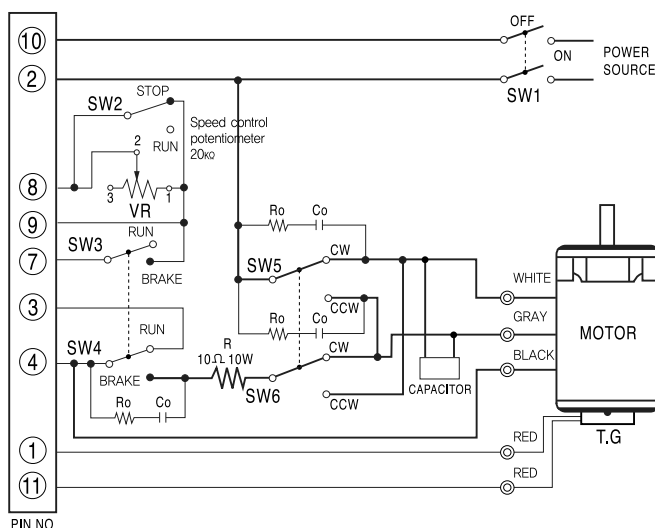
SW1,4,5,6	AC125V or AC 250V MIN. 5A
SW2,3	DC20V 10mA
Ro,Co	Ro=10~200Ω (MIN. 1/4W) Co=0.1~0.2μF (AC125VV, AC250VV)
R: Braking external resistor	10Ω, 1MIN, 10W

◀ For wiring of 220V~240V, 50Hz motor, change gray to brown. Here, VR is 10kΩ.

◆ Example of operation



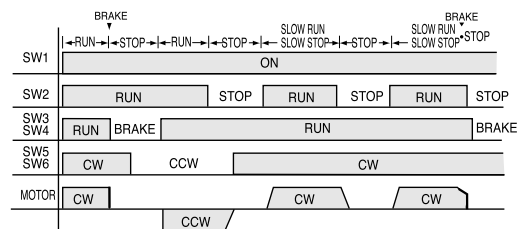
2-3 Reverse + Variable Speed + Brake (40W)



SW1,4,5,6	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 250W)
R: Braking external resistor	10Ω, MIN. 10W

◀ For wiring of 220V~240V, 50Hz motor, change gray to brown. Here, VR is 10kΩ.

◆ Example of operation



2-4 Instruction (REVERSIBLE 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.

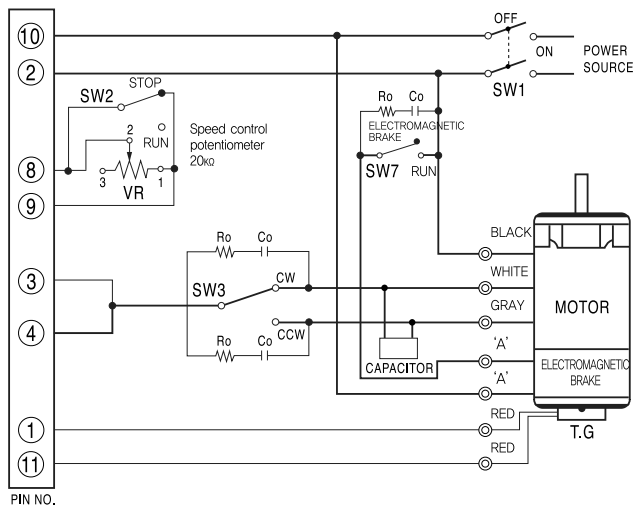
● Slow Run/Slow Stop function

- 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 (E · S MOTOR)

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

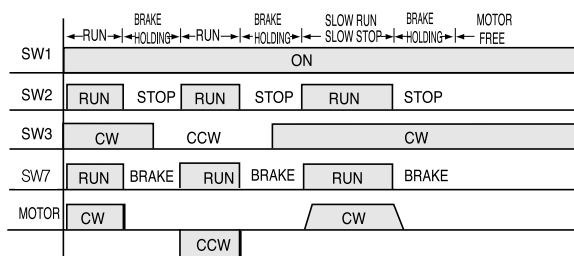


VOLTAGE	LEAD WIRE 'A'
SINGLE PHASE AC100V~110V	Blue
SINGLE PHASE AC200V~240V	Orange

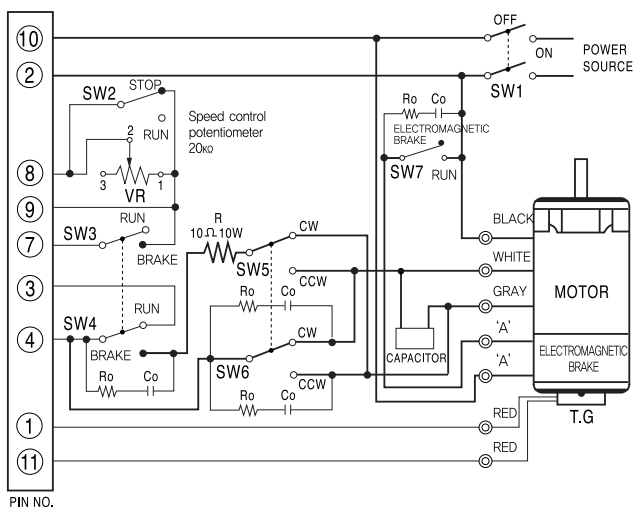
SW1,3,7	AC125V or AC 250V	MIN. 5A
SW2	DC 20V 10mA	
Ro,Co	Ro = 10~200Ω (MIN. 1/4W) Co = 0.1~0.2μF (AC 125VV, AC 250VV)	

◀ For wiring of 220V~240V, 50Hz motor, change gray to brown. Here, VR is 10kΩ.

◆ Example of operation



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

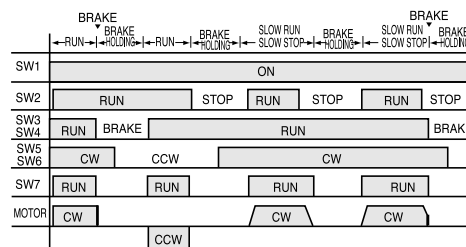


SW1,4,5,6,7	AC125V or AC250V	MIN. 5A
SW2,3	DC 20V 10mA	
Ro,Co	Ro=10~200Ω (MIN. 1/4W) Co=0.1~0.2μF (AC125VV, AC250VV)	
R: Braking external resistor	10Ω, MIN. 10W	

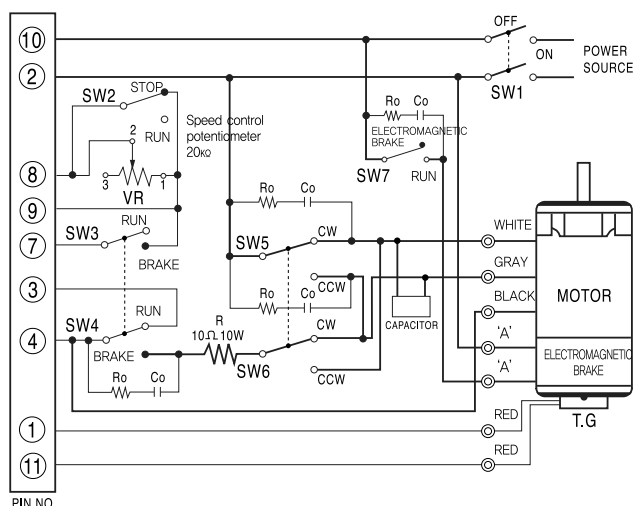
◀ For wiring of 220V~240V, 50Hz motor, change gray to brown. Here, VR is 10kΩ.

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

◆ Example of operation



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

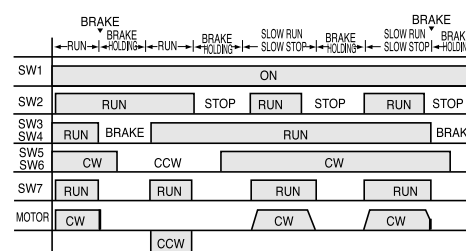


SW1,4,5,6,7	AC125V or AC250V MIN. 5A
SW2,3	DC 20V 10mA
R ₀ , Co	R ₀ = 10~200Ω (MIN. 1/4W) Co = 0.1~0.2μF (AC 125W, AC 250W)
R : Braking external resistor	10Ω MIN. 10W

◀ For wiring of 220V~240V, 50Hz motor, change gray to brown. Here, VR is 10kΩ.

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

◆ Example of operation



3-4 Instruction (E.S MOTOR)

● Run/Stop function

If SW7 is switched to "RUN" and then switch SW2 to run from section 3-1,2 and 3, the motor will rotate per fixed speed set by external speed controller. When switched to "STOP" rotation will spontaneously stop by inertia force. (When SW2 and SW7 is to be linked and used braking and keeping position will be done by electromagnetic brake.)

● Run/Brake function

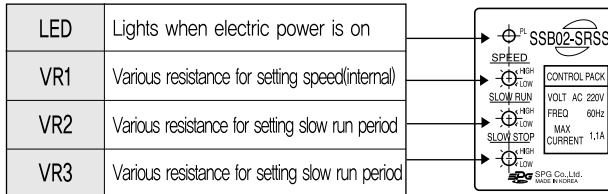
If SW3, SW4 and SW7 is linked and set to brake while SW2 is on RUN position from the basic diagram of section 3-2,3 electric brake will function for 0.5 seconds to stop motor instantaneously and will keep position by electromagnetic brake. Please do not tamper with SW5 or SW6 for 0.5 seconds while brake is functioning.

● 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.

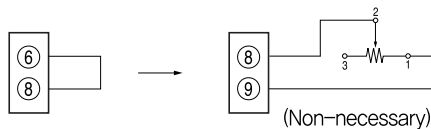
+ WIDE APPLICATION OF ELECTRIC WIRING

Panel Layout



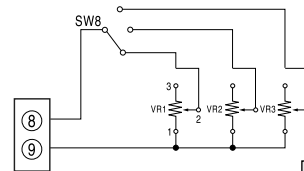
Using Internal Volume

SS TYPE has various internal resistance for speed setting device installed. Therefore, it is possible to use without external variable resistor for speed setting. When pin no.⑥ and ⑧ of 11pin plug is connected, it is possible to use internal volume. Wiring diagram is the same except wiring for variable resistor for speed setting is not required.



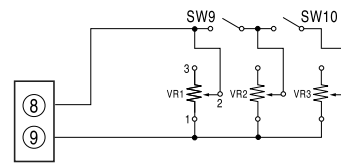
Multistage Speed Control

- When multistage speed control is required, set each VR1, VR2 and VR3 and then use SW8 to convert.



VR1,2,3	20kΩ 1/4W B Characteristic
SW8	DC 20V 10mA

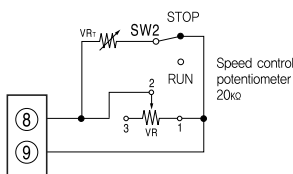
- When converting time is slow as rotating switch SW8, converting speed is possible by connecting SW9, SW10 as following diagram since motor rotates with full speed momentarily.



VR1,2,3	20kΩ 1/4W B Characteristic
SW9, SW10	DC 20V 10mA

How to Speed Up Operation

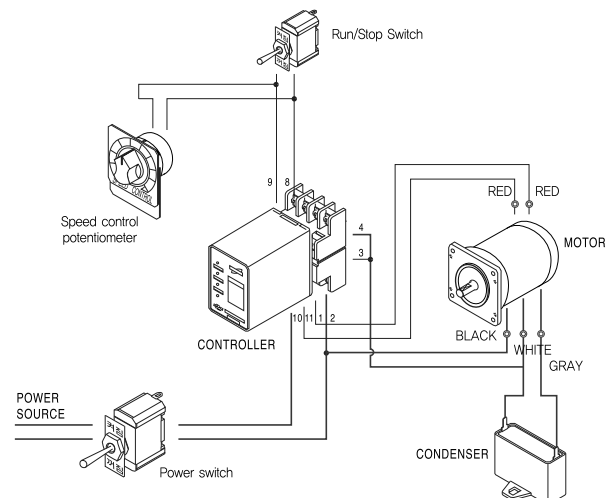
To quicken operating speed, as the set speed is decelerated, there are more delays to start rotation when switch is turned ON. If this causes problems, refer to following diagram and connect VRT.(Variable resistor for operating time control.)



VRt	2kΩ 1/4W B Characteristic
SW2	DC 20V 10mA

- ※ 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.

Total system



- If the power switch (SW1) is turned on, the power lamp of the control pack will be lighted.
- 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.
- There are operating current flowing on thick line. Use cable with 0.75mm² for thick line and 0.5mm² for thin line.



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 SPEC		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				
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				
Braking period		0.5초(standard)				
Parallel operation		Possible				
Slow Run,Slow Stop		Possible(0.5sec~15sec/1200rpm)				
Operation Temperature		-10℃~50℃				
Operation humidity		85% Max(non condensing)				
Storage Temperature		-20℃~60℃				
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				

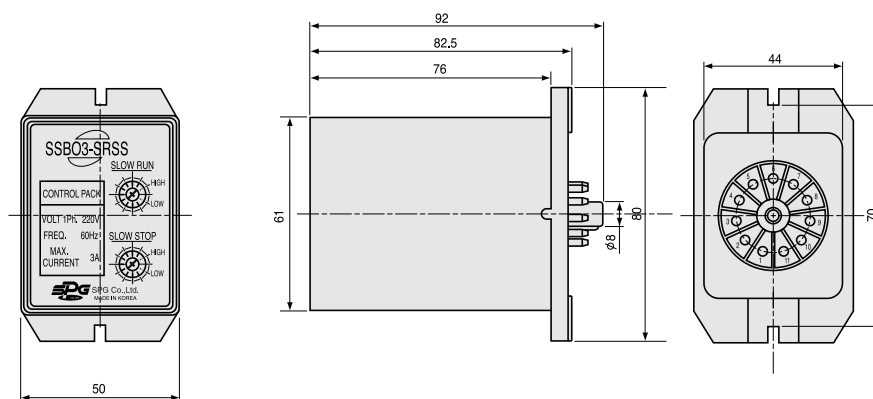
※ 1. : Applicable motors are socket type control motors of SPG. (Use for 24V motor T.G)

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

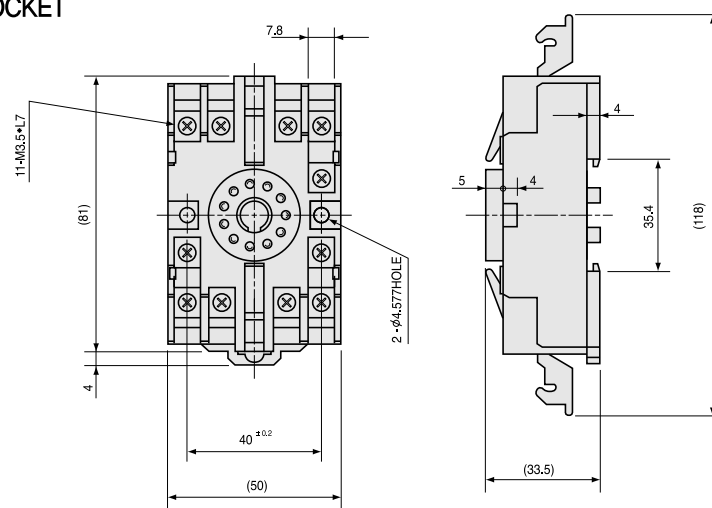
DIMENSIONS

■ SS TYPE (HIGH OUTPUT) SPEED CONTROLLER

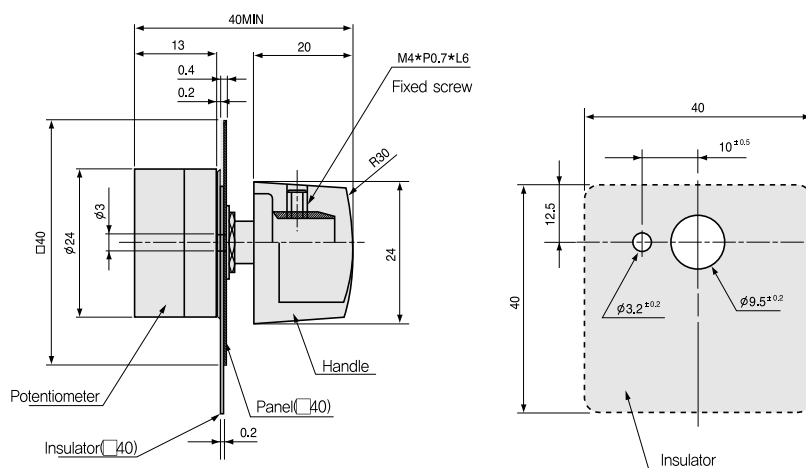
+ CONTROLLER



+ 11PIN SOCKET

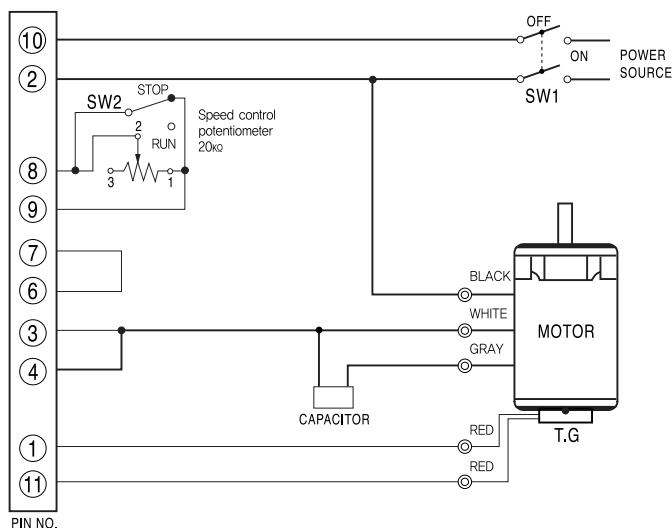


+ VARIABLE RESISTOR 20kΩ 1/4W



+ SCHEMATIC DIAGRAM (INDUCTION MOTOR)

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

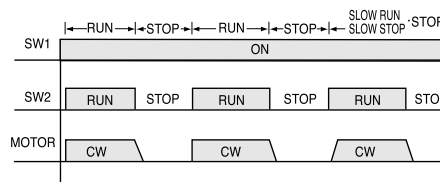


◀ For wiring of 220V~240V, 50Hz motor, change gray to brown.

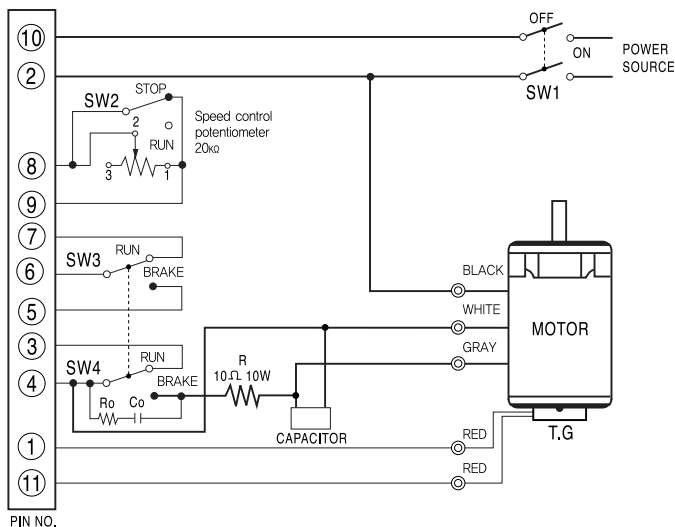
SW1	AC125V or AC 250V MIN. 5A
SW2	DC 20V 10mA

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)

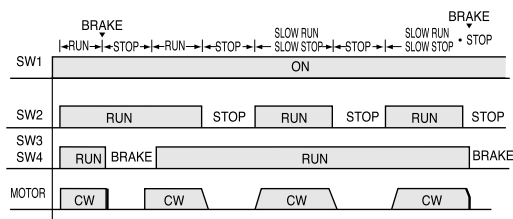


◀ For wiring of 220V~240V, 50Hz motor, change gray to brown.

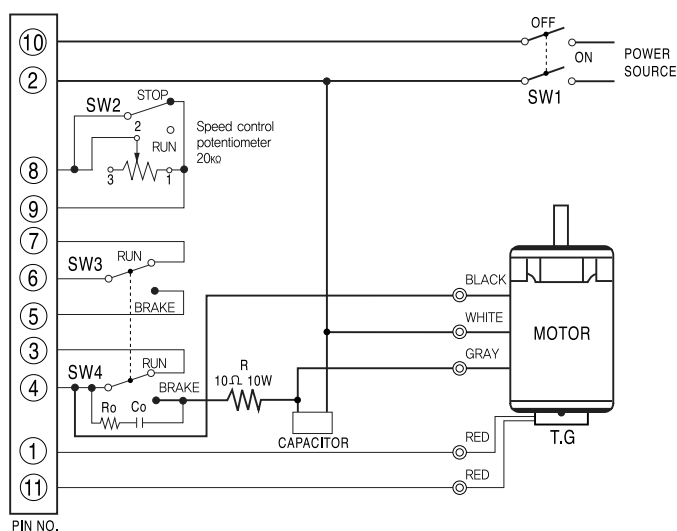
SW1,4	AC125V or AC 250V MIN. 5A
SW2,3	DC 20V 10mA
R ₀ ,C ₀	R ₀ = 10~200Ω (MIN. 1/4W) C ₀ = 0.1~0.2μF (AC 125WV, AC 250WV)
R : Braking external resistor	10Ω, MIN. 10W

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



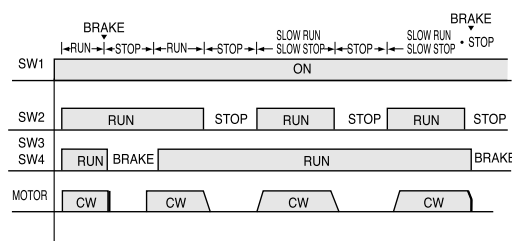
1-3 Uni Direction + Variable Speed + Brake (40W~90W)



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

SW1,4	AC125V or AC 250V	MIN. 5A
SW2,3	DC 20V 10mA	
R ₀ ,C ₀	R ₀ = 10~200Ω (MIN. 1/4W) C ₀ = 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.

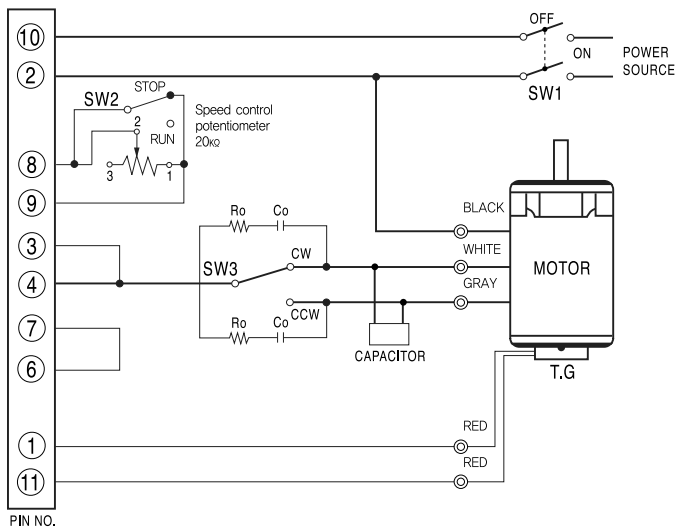
● Slow Run/Slow Stop function

- 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)

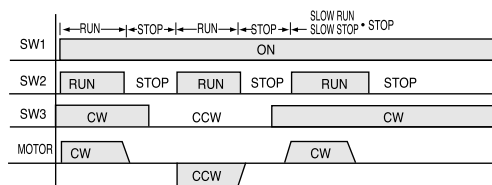
2-1 Reverse + Variable Speed (6W~40W)



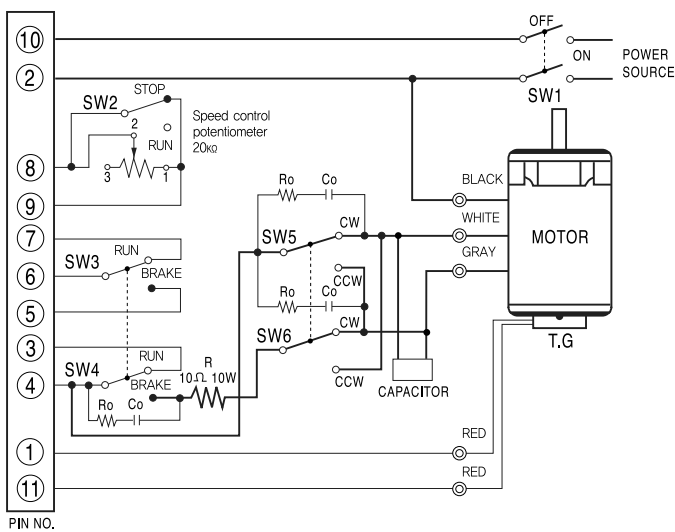
◀ For wiring of 220V–240V, 50Hz motor, change gray to brown.

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

◆ Example of operation



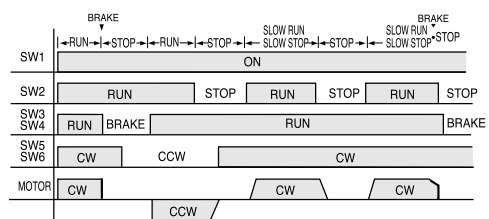
2-2 Reverse + Variable Speed + Brake (6W~25W)



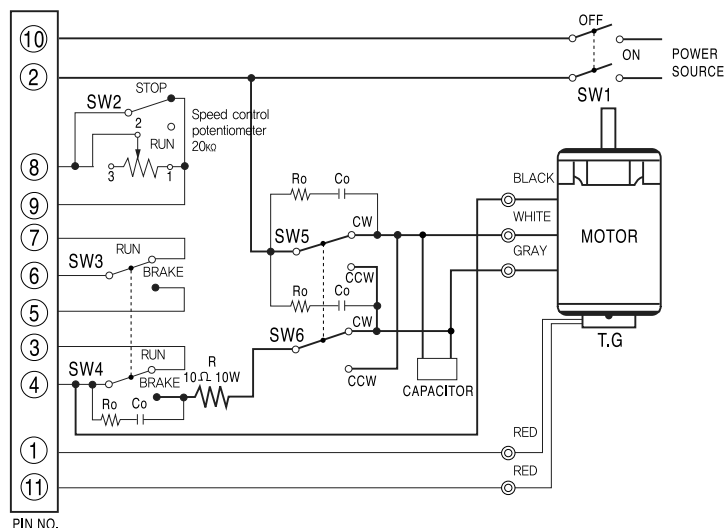
◀ For wiring of 220V-240V, 50Hz motor, change gray to brown.

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



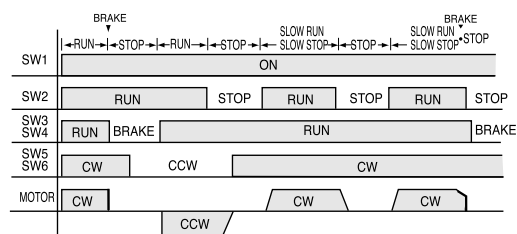
2-3 Reverse + Variable Speed + Brake (40W)



◀ 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	
R0,Co	R0 = 10~200Ω (MIN. 1/4W) Co = 0.1~0.2μF (AC 125WV, AC 250WV)	
R : Braking external resistor	10Ω, MIN. 10W	

◆ Example of operation



2-4 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.

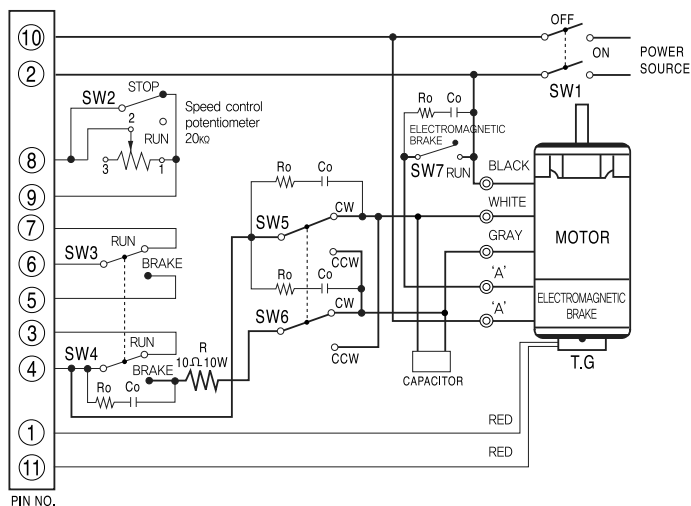
● Slow Run/Slow Stop function

- 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)

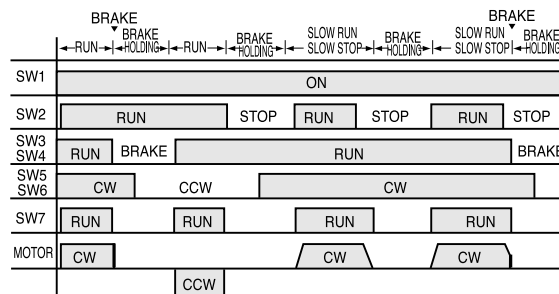


VOLTAGE	LEAD WIRE 'A'
SINGLE PHASE AC100V~110V	Blue
SINGLE PHASE AC200V~240V	Orange

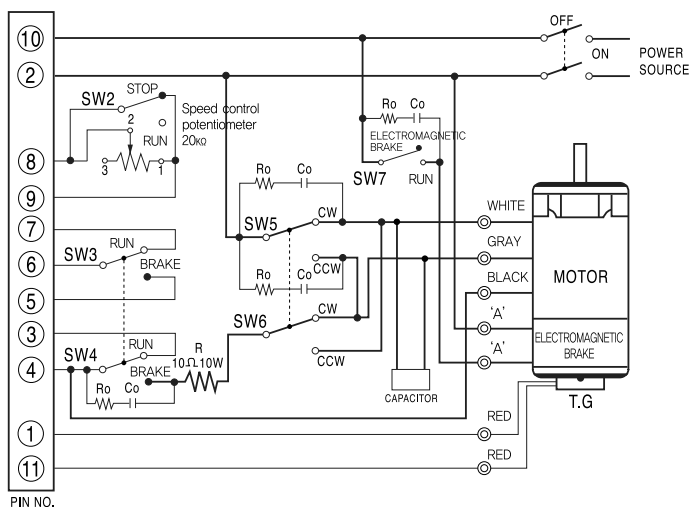
◀ For wiring of 220V~240V, 50Hz motor, change gray to brown.

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, AC250W)
R : Braking external resistor	10Ω, MIN. 10W

◆ Example of operation



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

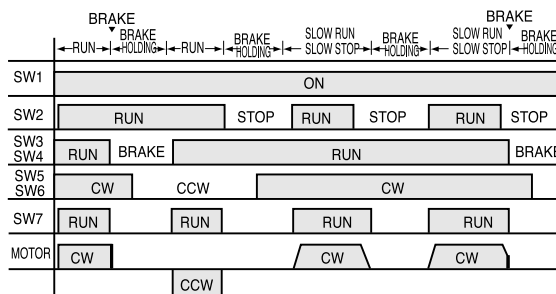


◀ For wiring of 220V~240V, 50Hz motor, change gray to brown.

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	DC 20V 10mA
Ro,Co	Ro = 10~200Ω (MIN. 1/4W) Co = 0.1~0.2μF (AC 125W, AC 250W)
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.

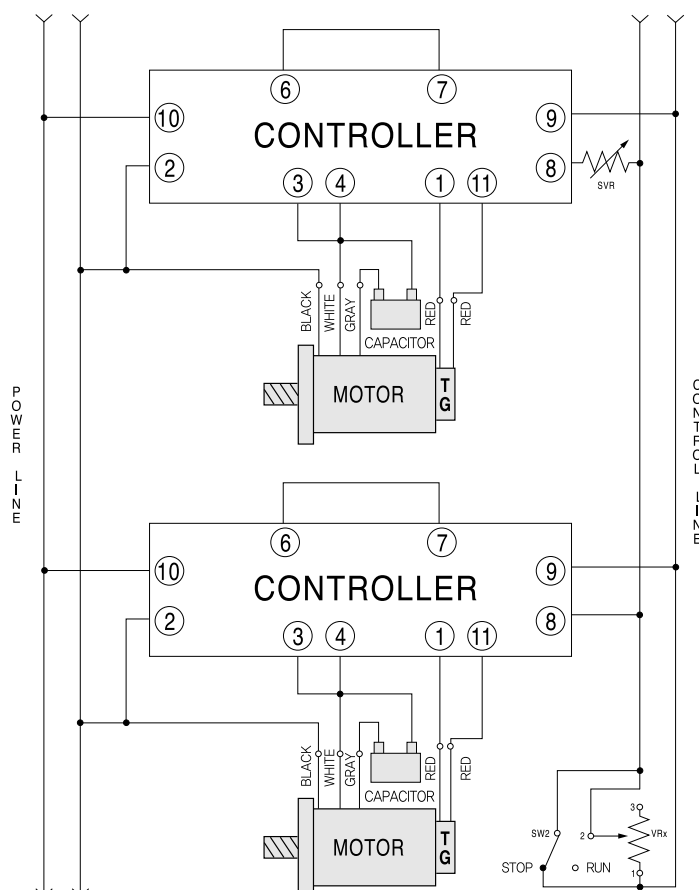
- **Slow Run/Slow Stop function**

- 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)

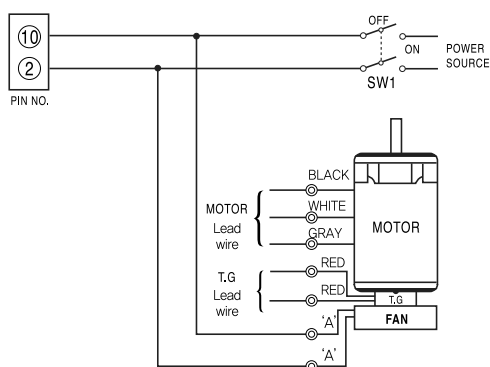
Connect power supply line(Terminal No. ②,⑩)& control line (Terminal No. ⑧, ⑨) for same line like the side wiring. In case of other motor and control pack, set power line and control line for parallel operation.

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 $10\text{k}\Omega \text{ } 1/2W$
- 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 $VR \times (\text{Variable resistance for speed setting})$ with SVR(Variable resistor for precise control) of terminal ⑧.

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

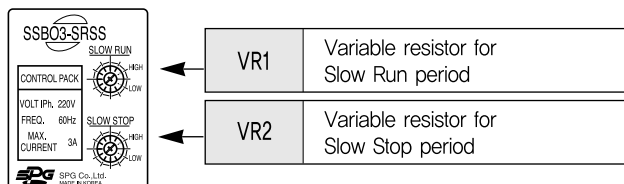
Box Fan Motor Connection



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

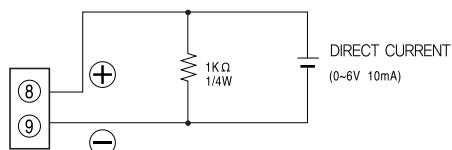
※ For the connection of something other than the box fan, refer to the electrical wiring diagram for the corresponding connection.

Panel



Speed control using external direct current

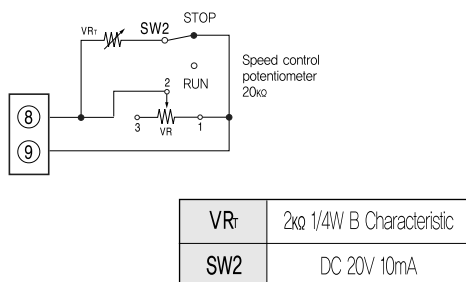
When speed is controlled by external direct current instead of supplied variable resistor for external speed setting, connect the wires of direct current with control pack as following diagram. (However, output of direct current has to be separated and insulated with alternative current input and avoid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



〈The connection of speed control using external direct current〉

Increasing operating speed

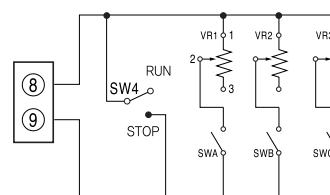
To quicken operating speed, as the set speed is decelerated, there are more delays to start rotations when switch is turned 'ON'. If this causes problems, please refer to following diagram and connect VRT (Variable resistor for operating time control)



- ※ 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

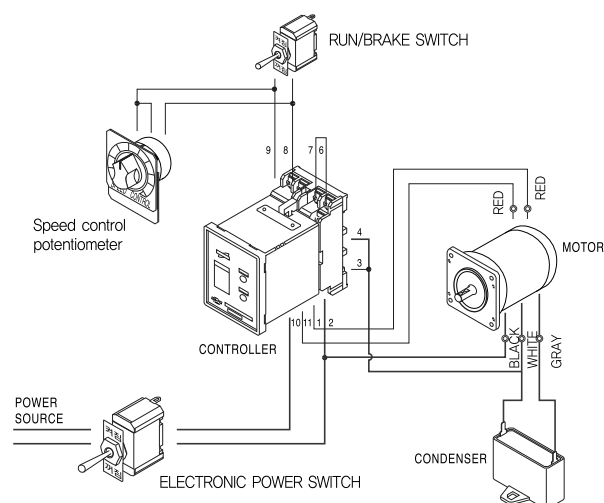
1. When multistage speed control is required, set each VR1, VR2 & VR3 and conversion is possible by using SWA, SWB, and SWC. Switch conversion time should be maintained similar to the operating time of relay operation.



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.