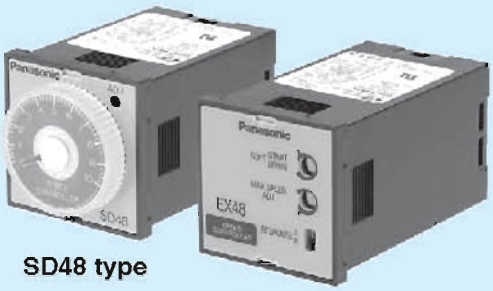
Speed controller — 48 mm sq. (1.89 inchsq.) type



SD48 type

EX48 type

• Features

- First DIN 48 size in the industry
  Compact space saving model (control panel)
  (standardized panel machining holes)
  A wide choice of options (recommended by Matsushita Electric Works, Ltd.)
- Simplified and neat wiring arrangement
  Main circuit and signal inputs are isolated on the terminal block.
  Use of 8-pin terminal block requires fewer wiring connections.
- Can operate under a wide range of power supply voltage (100V→100 to 120V, 200V→200 to 240V)

• Standard specification

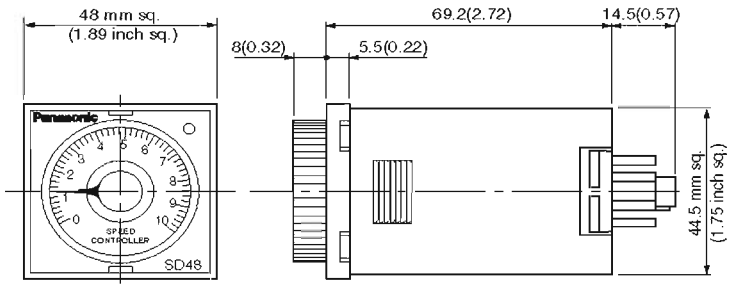
Part No. / Characteristic	SD48 type						EX48 type					
	DVSD 48AL	DVSD 48BL	DVSD 48CL	DVSD 48AY	DVSD 48BY	DVSD 48CY	DVEX 48AL	DVEX 48BL	DVEX 48CL	DVEX 48AY	DVEX 48BY	DVEX 48CY
Rated voltage	100 to 120 VAC			200 to 240 VAC			100 to 120 VAC			200 to 240 VAC		
Operating voltage range	±10% (at rated voltage)						±10% (at rated voltage)					
Power frequency	50/60Hz						50/60 Hz					
Rated current	0.5 A	1.0 A	2.0 A	0.3 A	0.5 A	1.0 A	0.5 A	1.0 A	2.0 A	0.3 A	0.5 A	1.0 A
Compatible motor output *1	3 to 20 W	25 to 40 W	60 to 90 W	3 to 20 W	25 to 40 W	60 to 90 W	3 to 20 W	25 to 40 W	60 to 90 W	3 to 20 W	25 to 40 W	60 to 90 W
Speed variation	90 to 1400 min^{-1} / 90 to 1700 min^{-1}						Mode A (high-response mode): 50 to 1400 min^{-1} / 50 to 1700 min^{-1} Mode B (high-response mode): 90 to 1400 min^{-1} / 90 to 1700 min^{-1} *2					
Speed setting	Internal						External speed changer, analog voltage, maximum speed setting control					
Brake *3	Applies braking force to the motor by feeding electric braking current to the motor for 0.5 sec (typ)						Applies braking force to the motor by feeding electric braking current to the motor for 5 sec (typ) (Turns off electric braking current even within 5 sec as the motor stops.)					
Parallel operation	Not possible						Possible					
Soft-start/down	Not applicable						Variable up to 5 sec (typ) (0 to max. revolving speed)					
Operating temperature range	–10 to 50°C						–10 to 50°C					
Storage temperature	–20 to 60°C						–20 to 60°C					

*1. Applicable to Panasonic compact geared motors and variable speed motors.
*2. EX48 models are set to mode A (high-stable) upon shipment.
*3. Electric braking has no mechanical brake holding force.
To provide the holding force, use a variable speed motor with electromagnetic braking feature.

* Please read your User's manual carefully so that you will understand the operation and safety precautions before attempting to operate the system.

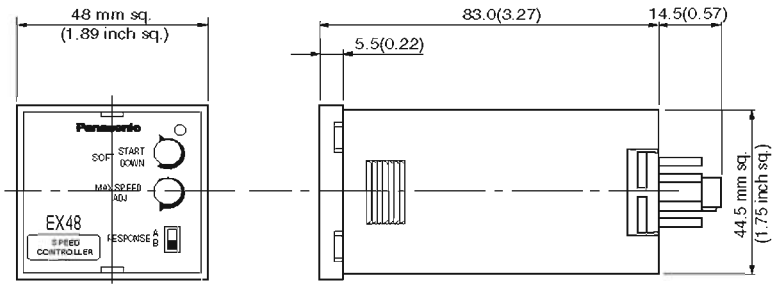
• Outline drawing

48 mm sq. SD48 type



Unit: mm (inch)

48 mm sq. EX48 type



Unit: mm (inch)

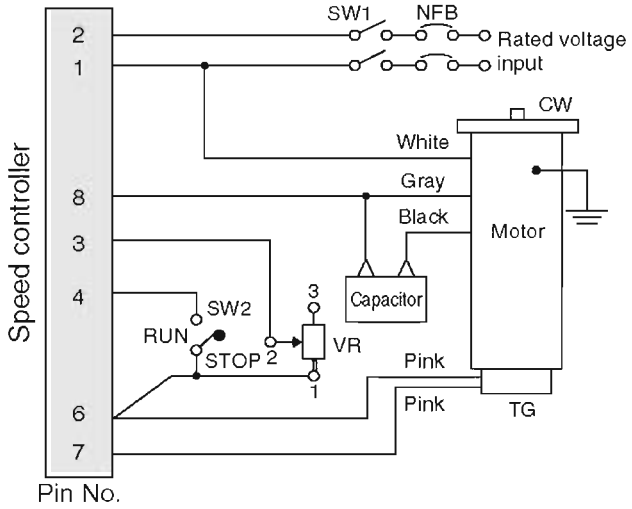
• Connection diagram list

Connection diagram	Function	Speed controller	Page
1	Wiring diagram (for unidirectional rotation)	SD48 type	C-23
2	Speed change only	SD48 type	C-24
3	Unidirectional rotation and electric brake	SD48 type	C-25
4	Normal/reverse rotation and electric brake	SD48 type	C-26
5	Wiring of cooling fan motor (F) or motor with thermal protector (TP)	SD48 type	C-27
6	Wiring to electromagnetic brake	SD48 type	C-27
7	Wiring diagram (for unidirectional rotation)	EX48 type	C-28
8	Speed change only	EX48 type	C-29
9	Unidirectional rotation and electric brake	EX48 type	C-30
10	Normal/reverse rotation and electric brake	EX48 type	C-31
11	Multispeed setting application	EX48 type	C-32
12	Speed change with analog signal	EX48 type	C-32
13	Operation through contactless signal	EX48 type	C-32
14	Parallel operation through external speed changer	EX48 type	C-33
15	Parallel operation through analog signal	EX48 type	C-33
16	Soft-operation	EX48 type	C-34
17	Wiring of cooling fan motor (F) and motor with thermal protector (TP)	EX48 type	C-35
18	Wiring to electromagnetic brake	EX48 type	C-35

* Please read your User's manual carefully so that you will understand the operation and safety precautions before attempting to operate the system.

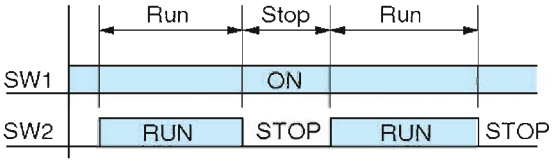
8 Speed change only

Unidirectional rotation

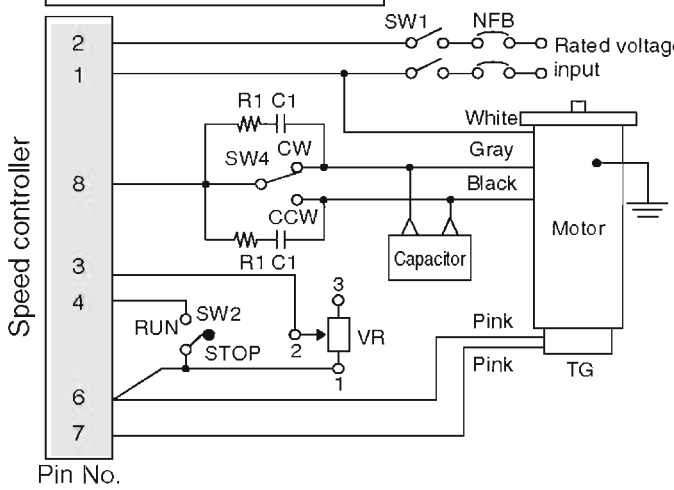


Rotating direction viewed from shaft end	
CW	Clockwise
CCW	Counterclockwise

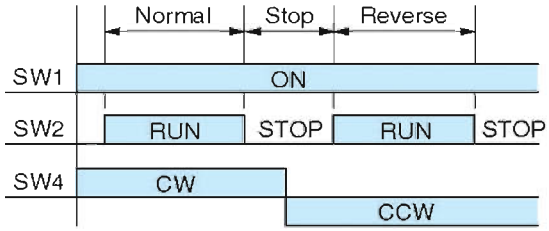
- This wiring diagram causes the motor to rotate clockwise when viewed from the motor shaft end. To run the motor counterclockwise, interchange the connecting point of black and gray leads. interchange the connecting point of black and gray leads.



Normal/reverse rotation



SW1	100 to 120 V supply system	5 A or more at 125 VAC
SW4	200 to 240 V supply system	5 A or more at 250 VAC
SW2		DC10 V 10 mA
R1, C1		DV0P008 (option)
VR		DV0P003 (option)



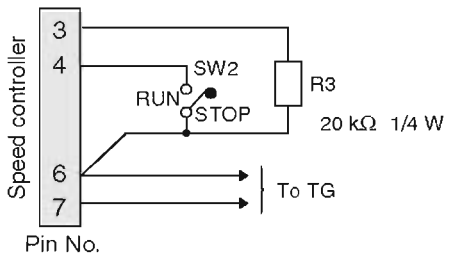
SW1 : Power switch
SW2 : RUN/STOP switch
SW4 : Normal/reverse selector switch

<Precautions>

1. To change rotating direction of induction motor: Provide a motor halt period. Switch over SW2 after complete stop of the motor.
2. To change rotating direction of reversible motor: A motor halt period is not necessary. Switch over SW2 while keeping SW1 turned ON. When configuring SW2 with relay contacts, use a relay having large gap between contacts (e.g. HG/HP relay from Matsushita Electric Works, Ltd.) to prevent malfunction due to short-circuited capacitor.
3. For motors for cooling fan and motors with thermal protector, also refer to page C-35.
4. When using independent relay contacts for SW2 to change over normal/reverse, interlock both contacts so that they will not close simultaneously.
5. The spark killer consisting of R1 and C1 must be used to protect the relay contacts.

Operation from maximum speed control

- When no external speed changer is required, the speed can be adjusted from the maximum speed control.



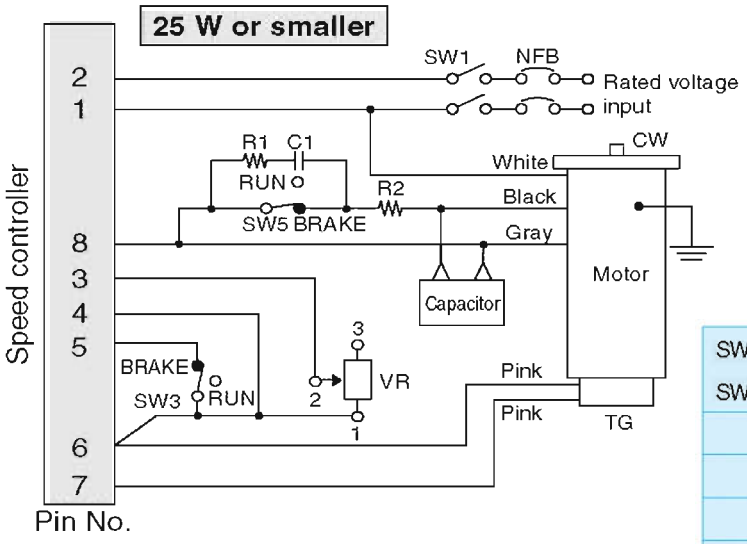
<Precautions>

Connect a fixed resistor (R3) in place of external speed changer (VR).
Even if the R3 is not used (connection across pins 3 and 6 are open), the speed can be adjusted from the maximum speed control within its adjustable range (not full range but almost by half).

* Please read your User's manual carefully so that you will understand the operation and safety precautions before attempting to operate the system.

9 Unidirectional rotation and electric brake

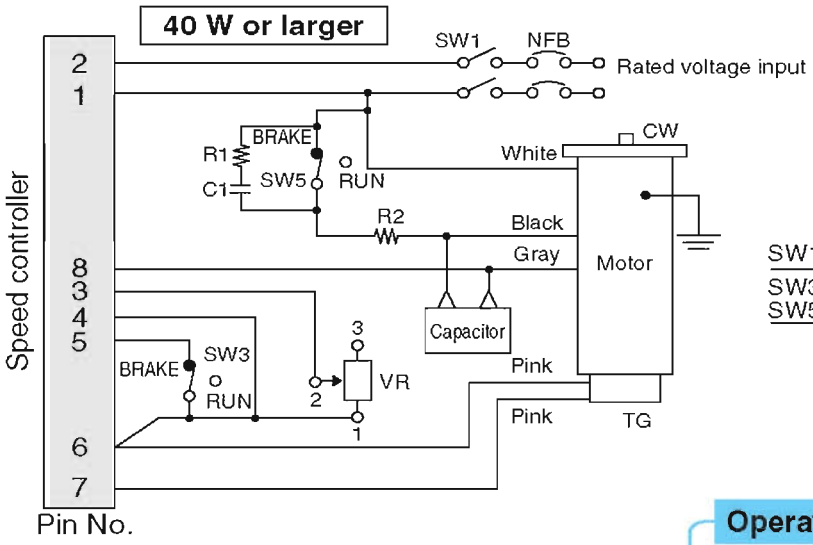
25 W or smaller

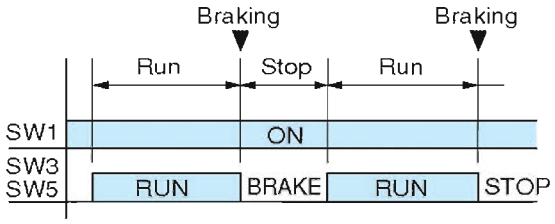


- Connection according to this wiring diagram causes the motor to rotate clockwise when viewed from the motor shaft end. To run the motor counterclockwise, interchange the connecting point of black and gray leads.

SW1	100 to 120 V supply system	5 A or more at 125 VAC
SW5	200 to 240 V supply system	5 A or more at 250 VAC
SW3		DC10 V 10 mA
R1, C1		DV0P008 (option)
R2		DV0P003 (option)
VR		DV0P002 (option)

40 W or larger





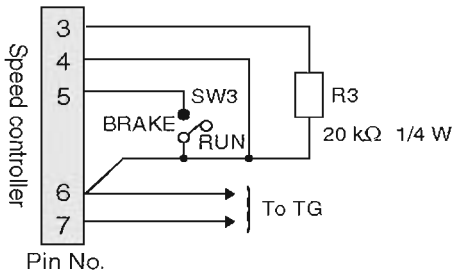
SW1 : Power switch
SW3 : Brake start switch
SW5 : RUN/STOP switch

<Precautions>

1. When SW3 and SW5 are switched from RUN to STOP, electric braking is applied for approx. 5 sec, or until the motor stops.
   SW3 and SW5 must be operated simultaneously. Otherwise, abnormal operation occurs (full speed rotation for a short time), causing the motor temperature to rise excessively.
2. The number of start/stop cycles must be 6/min. or less.
3. When using cooling fan motor or motor with thermal protector, also see page C-35.
4. Insert R1 and C1 to protect relay contact.
5. R2 restricts discharge current in case of capacitor short circuit during braking.

Operation from maximum speed control

- When no external speed changer is required, the speed can be adjusted from the maximum speed control.



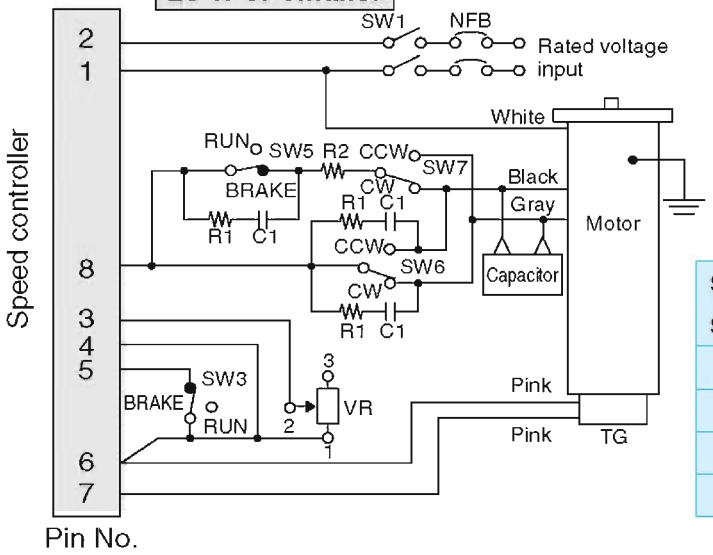
<Precautions>

Connect a fixed resistor (R3) in place of external speed changer (VR).
Even if the R3 is not used (connection across pins 3 and 6 are open), the speed can be adjusted from the maximum speed control within its adjustable range (not full range but almost by half).

* Please read your User's manual carefully so that you will understand the operation and safety precautions before attempting to operate the system.

10 Normal/reverse rotation and electric brake

25 W or smaller

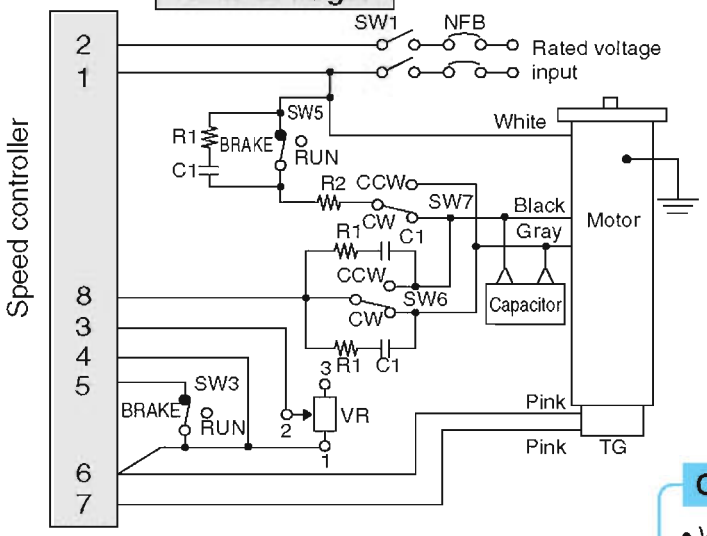


Pin No.

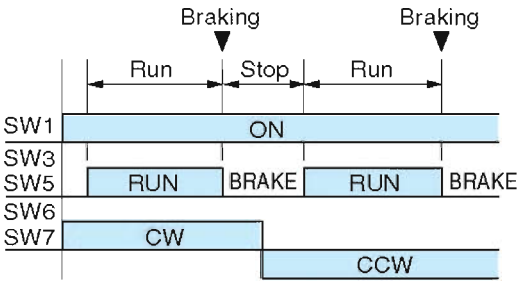
Rotating direction viewed from shaft end	
CW	Clockwise
CCW	Counterclockwise

SW1, SW5	100 to 120 V supply system	5 A or more at 125 VAC
SW6, SW7	200 to 240 V supply system	5 A or more at 250 VAC
SW3		DC10 V 10 mA
R1, C1		DV0P008 (option)
R2		DV0P003 (option)
VR		DV0P002 (option)

40 W or larger



Pin No.



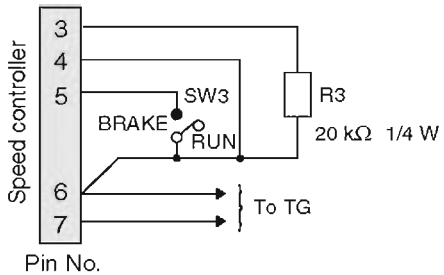
SW1 : Power switch
SW3 : Braking start switch
SW5 : RUN/STOP switch
SW6,SW7 : Normal/reverse selector switch

<Precautions>

1. When SW3 and SW5 are switched from RUN to STOP, electric braking is applied for approx. 5 sec, or until the motor stops. (Do not operate SW6 and SW7 until the motor stops completely.) SW3 and SW5 must be operated simultaneously. Otherwise, abnormal operation occurs (full speed rotation for a short time), causing the motor temperature to rise excessively.
2. Do not change the rotating direction (SW6, SW7) while the motor is running.
3. The number of start/stop cycles must be 6/min. or less.
4. When using cooling fan motor or motor with thermal protector, also see page C-35.
5. Insert R1 and C1 to protect relay contact.
6. R2 restricts discharge current in case of capacitor short circuit during braking.

Operation from maximum speed control

- When no external speed changer is required, the speed can be adjusted from the maximum speed control.



Pin No.

<Precautions>

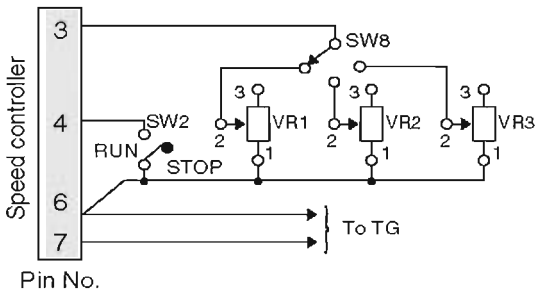
Connect a fixed resistor (R3) in place of external speed changer (VR).
Even if the R3 is not used (connection across pins 3 and 6 are open), the speed can be adjusted from the maximum speed control within its adjustable range (not full range but almost by half).

* Please read your User's manual carefully so that you will understand the operation and safety precautions before attempting to operate the system.

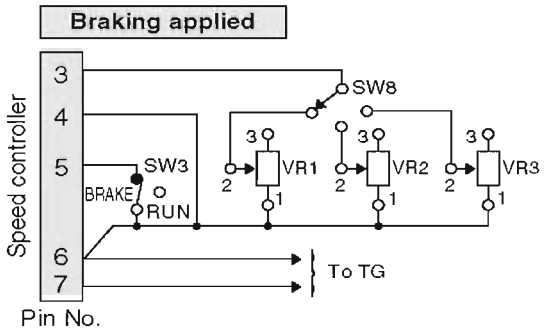
Speed controller

11 Multispeed setting application

No braking applied



Braking applied

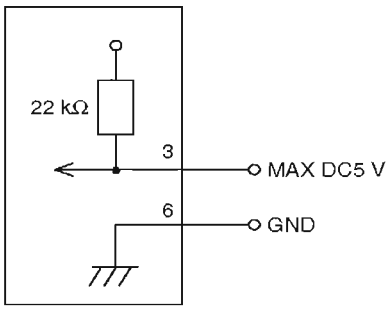


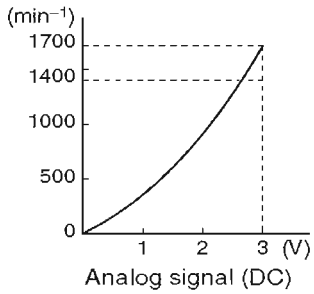
SW2 SW3 SW8	DC10V 10 mA
VR1 VR2 VR3	DV0P002 (option)

<Precautions>

1. Set external speed changers VR1, VR2 and VR3 to 3 different speeds and select the desired speed from SW8.
2. When activating the brake, simultaneously switch over SW3 and RUN-STOP of other switches.
3. For remaining wirings, refer to the corresponding wiring diagrams.

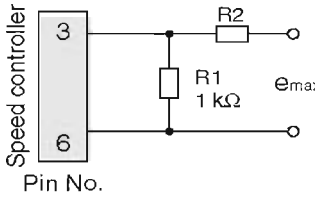
12 Speed change with analog signal





<Precautions>

1. Soft-operation can be adjusted from the soft-start and soft-down controls or by using analog signal.
2. The absolute maximum rating of analog signal is 5 VDC. The system should be designed to use standard 3 VDC analog signal. If the signal voltage exceeds 3 VDC, the circuit diagram shown below should be used for wiring.



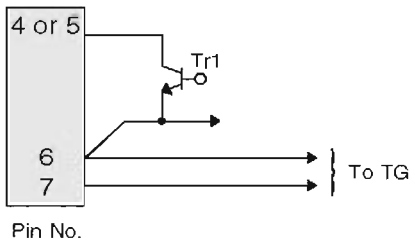
$$R2 \geqq \frac{e\max}{3} - 1\ k\Omega$$

emax : Analog signal max. voltage
R1 : External resistor: 1 kW
R2 : External resistor

3. Revolution speed "0" signal should not exceed 0.1 VDC.
4. The percentage ripple of analog voltage signal should be 2% or less.
5. For other wirings, refer to the corresponding circuit/wiring diagrams.

13 Operation through contactless signal

- Small signal relays SW2 and SW3 can be replaced with transistor.

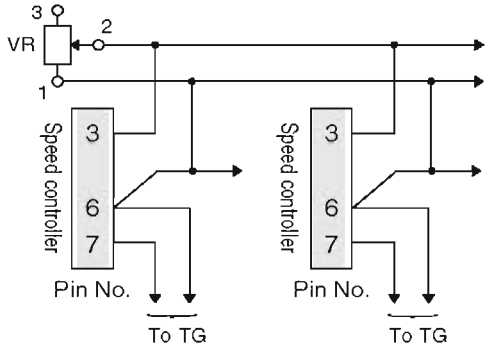


* Please read your User's manual carefully so that you will understand the operation and safety precautions before attempting to operate the system.

14 Parallel operation through external speed changer

<Precautions>

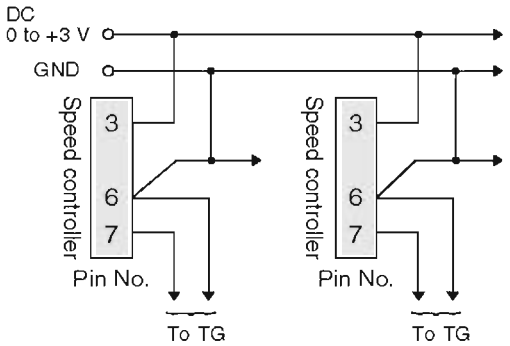
1. The resistance Rs of the external speed changer VR should be as follows:
   Rs = 20/N (kΩ)
   where, N is the number of motors.
2. For synchronous operation or ratio operation, desired revolving speeds must be set from the maximum speed control.
   Soft-start and soft-down controls and operation changeover switch must be set to the same position.
3. Wirings from the external speed changer VR should be connected to the same pins (No.3 and No.6) on the controller.
4. Malfunction may occur as the number of devices operated in parallel increases.
   To secure correct operation, connect a noise filter to each unit.
5. For other electrical connections, refer to corresponding circuit/wiring diagrams.



15 Parallel operation through analog signal

<Precautions>

The input impedance of the controller is approx. 22 kΩ.
The output impedance of the analog signal source should be determined based on the total input impedance of the speed controllers.
For other precautions, refer to [14] Parallel operation through external speed changer and [12] Speed change with analog signal.

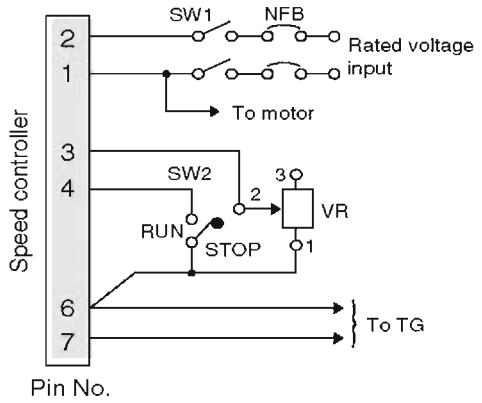


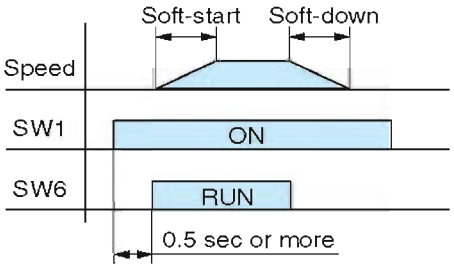
16 Soft-operation

• Soft-start, soft-down

<Precautions>

1. Power switch SW1 should be turned on approx. 0.5 sec before the operation start signal from SW6.
2. When repeating run/stop cycles, turn on/off only SW6 while keeping SW1 turned ON. In this way, the motor can be controlled by using a small signal. To stop operation for a long time, also turn off SW1.
3. Soft-start/soft-down period is the time required for the equipment to start up from stop state to full speed when the external speed changer is set at maximum value.
4. Soft-start/soft-down control, when at the full clockwise position, disables the soft-start/soft-down function.
   As the stop signal is input, power supply to the motor is turned off immediately. However, the revolving speed gradually decreases in proportion to the inertia of the load and motor starts free-running stop sequence.
5. Soft-start/soft-down control can set maximum time length of approx. 5 seconds (Typ. at FCCW). The setting may be exceeded if the inertia of the load is too large.
6. For other electrical connections, refer to corresponding circuit/wiring diagrams.





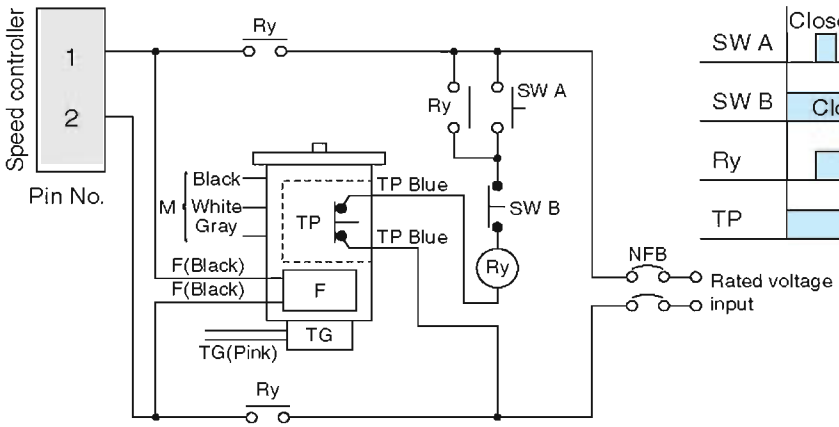
SW1	100 to 120 V supply system	5 A or more at 125 VAC
	200 to 240 V supply system	5 A or more at 250 VAC
SW2		DC10 V 10 mA
VR		DV0P002 (option)

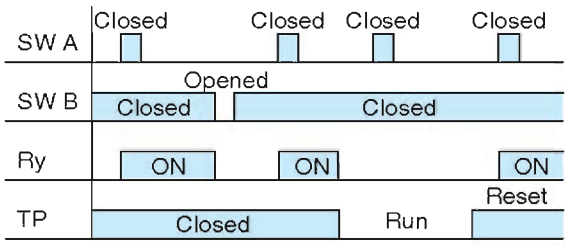
• Soft-start and electric brake

Electrical wirings are the same as for "Unidirectional rotation and electric brake" and "Normal/reverse rotation and electric brake".
Adjust the soft-start time from the soft-start/soft-down control.

* Please read your User's manual carefully so that you will understand the operation and safety precautions before attempting to operate the system.

17 Wiring of cooling fan motor and motor (F) with thermal protector (TP)





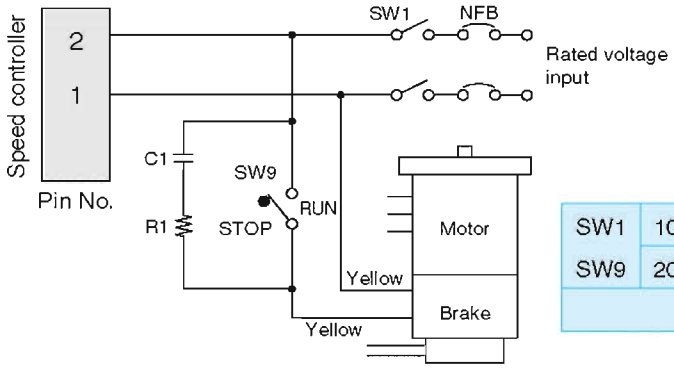
SW A		Momentary N.O. contact
SW B		Momentary N.C. contact
Ry	100 to 120 V supply system	5 A or more at 125 VAC 3a contact
	200 to 240 V supply system	5 A or more at 250 VAC 3a contact

<Precautions>

1. The thermal protector (TP) is an automatic reset type. To prevent hazards caused by restarting, connect the TP as shown above. Don't connect TP directly to the power supply.
2. Once the TP operates, cooling period is required before the operation can restart.
3. Connect the cooling fan motor (F) across pins 1 and 2 on the power terminal.
4. Motor (M) and tachometer generator (TG) should be connected according to corresponding wiring diagram shown later.

18 Wiring to electromagnetic brake

• Variable speed motor with electromagnetic brake should be wired as shown below.



SW1	100 to 120 V supply system	5 A or more at 125 VAC
SW9	200 to 240 V supply system	5 A or more at 250 VAC
R1+C1		DV0P008 (option)

<Precautions>

1. SW9 should be switched to RUN or STOP at the same time as the other switches are switched to RUN or STOP.
   If the other switches are set to RUN while the brake is energized (SW9 in STOP position), the motor will generate heat.
2. For other wirings, refer to the corresponding circuit/wiring diagrams.

单击下面可查看定价，库存，交付和生命周期等信息

>>Panasonic(松下)