

Autonics

POWER CONTROLLER SPC SERIES

INSTRUCTION MANUAL



Thank you for choosing our Autonics product.
Please read the following safety considerations before use.

■ Safety Considerations

※ Please observe all safety considerations for safe and proper product operation to avoid hazards.
※ ⚠ symbol represents caution due to special circumstances in which hazards may occur.

- Warning** Failure to follow these instructions may result in serious injury or death.
- Caution** Failure to follow these instructions may result in personal injury or product damage.

⚠ Warning

1. **Fail-safe device must be installed when using the unit with machinery that may cause serious injury or substantial economic loss.** (e.g. nuclear power control, medical equipment, ships, vehicles, railways, aircraft, combustion apparatus, safety equipment, crime/disaster prevention devices, etc.)
Failure to follow this instruction may result in personal injury, economic loss or fire.
2. **Do not use the unit in the place where flammable/explosive/corrosive gas, high humidity, direct sunlight, radiant heat, vibration, impact, or salinity may be present.**
Failure to follow this instruction may result in explosion or fire.
3. **Install on the device panel, and ground to the F.G. terminal separately.**
Failure to follow this instruction may result in fire or electric shock.
4. **Do not connect, repair, or inspect the unit while connected to a power source.**
Failure to follow this instruction may result in fire or electric shock.
5. **Check 'Connections' before wiring.**
Failure to follow this instruction may result in fire.
6. **Do not disassemble or modify the unit.**
Failure to follow this instruction may result in fire or electric shock.

⚠ Caution

1. **Use the unit within the rated specifications.**
Failure to follow this instruction may result in fire or product damage.
2. **Use dry cloth to clean the unit, and do not use water or organic solvent.**
Failure to follow this instruction may result in fire or electric shock.
3. **Keep the product away from metal chip, dust, and wire residue which flow into the unit.**
Failure to follow this instruction may result in fire or product damage.
4. **Since leakage current still flows right after turning off the power or in the output OFF status, do not touch the load terminal.**
Failure to follow this instruction may result in electric shock.

■ Ordering Information

SPC	1	-	35	-	E
Marking language	E	English			
Rated load current	35	35A			
Control phase	50	50A			
Item	1	Single phase			
	SPC	Solid state Power Controller			

■ Specifications

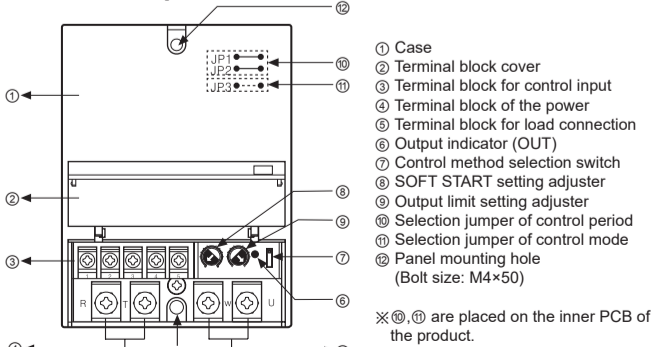
Model	SPC1-35-E	SPC1-50-E
Power supply	220VAC~ 50/60Hz	
Allowable voltage range	90 to 110% of rated voltage	
Operating frequency fluctuation	±1Hz	
Rated load current	35A (Single phase)	50A (Single phase)
Control power	220VAC~	
Control range	Phase control: 0 to 98%, Cycle control: 0 to 100%	
Applied load	Resistance load (Min. load: over 5% of rated current)	
Cooling method	Natural air cooling	
Control circuit	Micom control type	
Control input	1-5VDC	
	DC4-20mA (250Ω)	
	ON/OFF (External contact or 24VDC)	
	Output limit input (Front OUT ADJ. adjuster)	
Control method	By selection switch	Phase control*1
	By selection switch	Cycle control (Zero Cross turn-on) - period 0.5, 2.0, 10sec*1
Starting type	ON/OFF control (Zero Cross turn-on)	
Indicator	SOFT START (0 to 50 sec variable)	
Insulation resistance	Output indicator (OUT): red LED	
Dielectric strength	Over 100MΩ (at 500VDC megger)	
Noise immunity	2000VAC 50/60Hz for 1 minute	
Vibration	Mechanical	±2kV the square wave noise (pulse width: 1μs) by the noise simulator
	Malfunction	0.75mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 1 hour
Shock	Mechanical	0.5mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 10 min
	Malfunction	300m/s ² (approx. 30G) in each X, Y, Z direction for 3 times
Environment	Ambient temperature	100m/s ² (approx. 10G) in each X, Y, Z direction for 3 times
	Ambient humidity	0 to 50°C, storage: -25 to 65°C
Wire specification	35 to 85%RH, storage: 35 to 85%RH	
Unit weight	AWG16 to 8	
	Approx. 1kg	

※ 1. Refer to "Operation and Function."
※ Environment resistance is rated at no freezing or condensation.

■ Factory Default

Control method	Phase control
Control mode	Phase equal division type according to control input
Cycle control period	0.5 sec (JP1, JP2 short)
SOFT START setting	0 sec
OUT ADJ. setting	100%

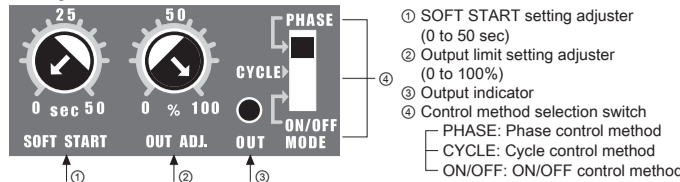
■ Unit Description



- ① Case
 - ② Terminal block cover
 - ③ Terminal block for control input
 - ④ Terminal block of the power
 - ⑤ Terminal block for load connection
 - ⑥ Output indicator (OUT)
 - ⑦ Control method selection switch
 - ⑧ SOFT START setting adjuster
 - ⑨ Output limit setting adjuster
 - ⑩ Selection jumper of control period
 - ⑪ Selection jumper of control mode
 - ⑫ Panel mounting hole (Bolt size: M4×50)
- ※ ⑧, ⑨ are placed on the inner PCB of the product.

※ The above specifications are subject to change and some models may be discontinued without notice.
※ Be sure to follow cautions written in the instruction manual and the technical descriptions (catalog, homepage).

■ Operation and Function

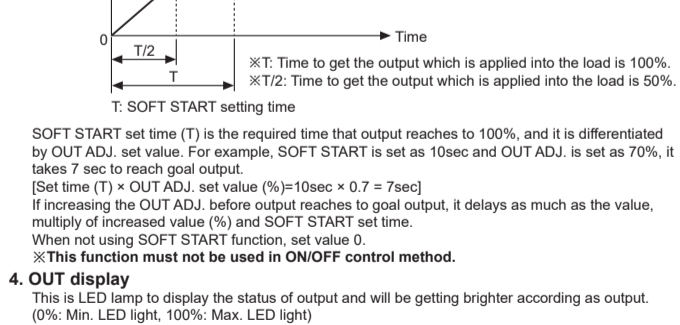
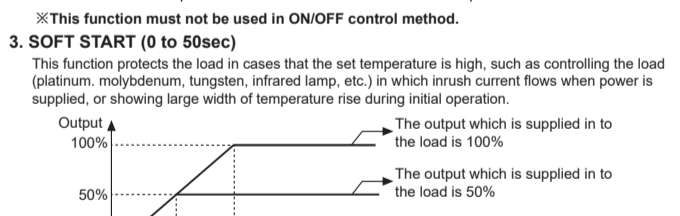
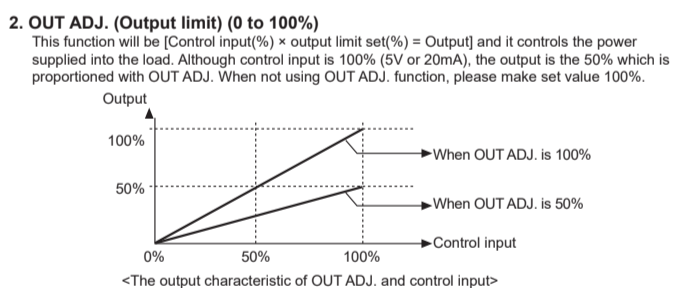
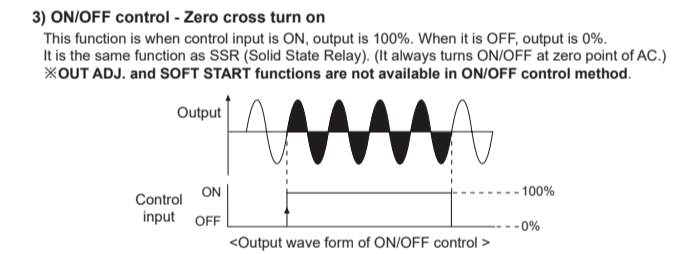
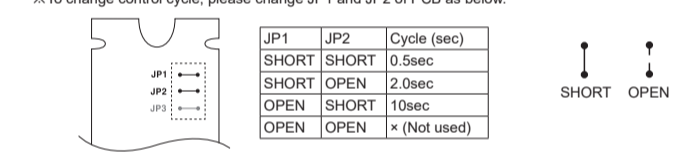
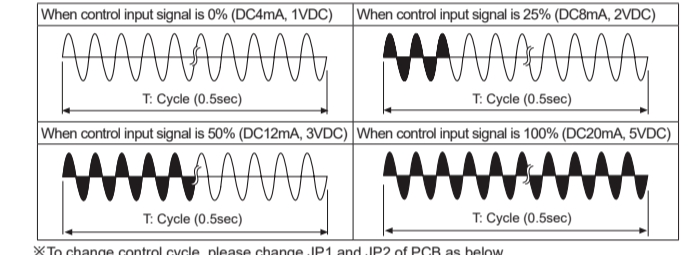
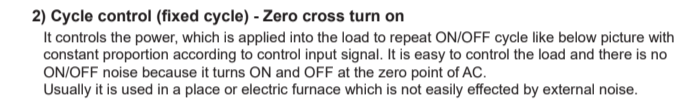
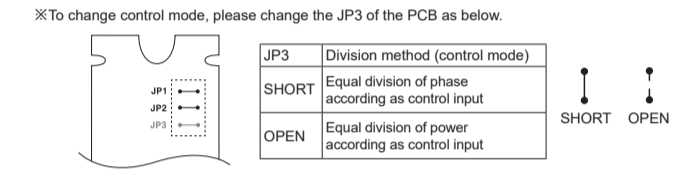
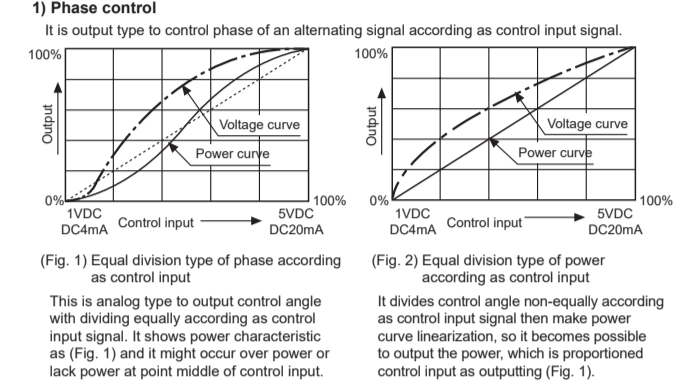


- ① SOFT START setting adjuster (0 to 50 sec)
 - ② Output limit setting adjuster (0 to 100%)
 - ③ Output indicator
 - ④ Control method selection switch
- PHASE: Phase control method
CYCLE: Cycle control method
ON/OFF: ON/OFF control method

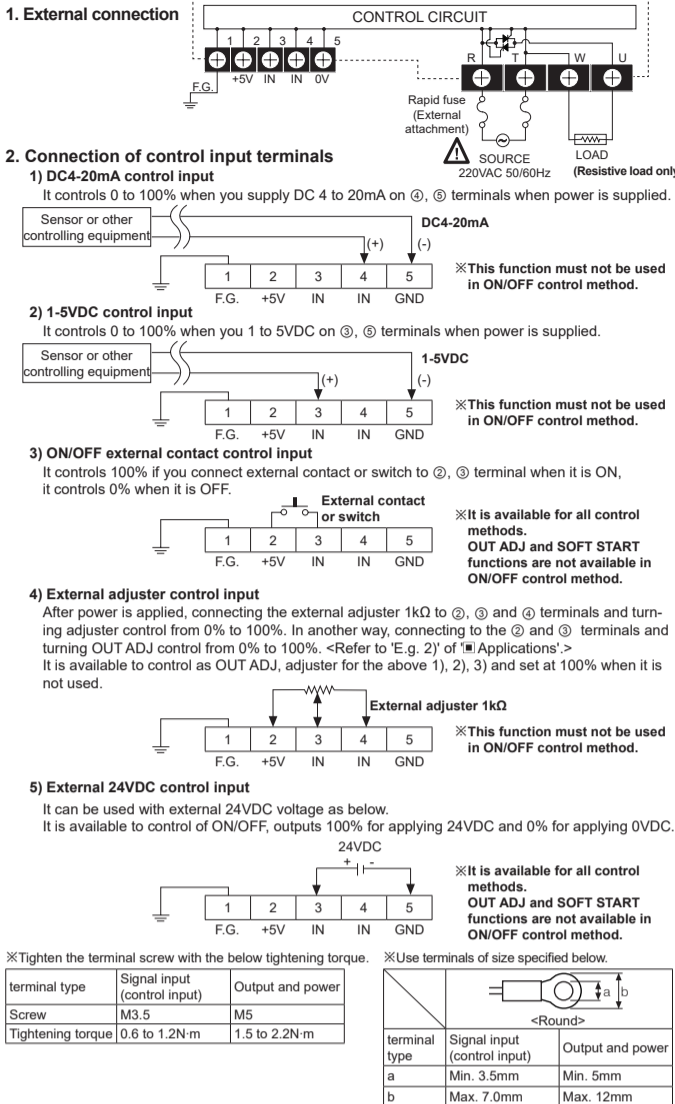
1. Control method selection

Control method	Phase control	Cycle control (Zero Cross turn-on)	ON/OFF control (Zero Cross turn-on)
Switch	PHASE CYCLE ON/OFF	PHASE CYCLE ON/OFF	PHASE CYCLE ON/OFF

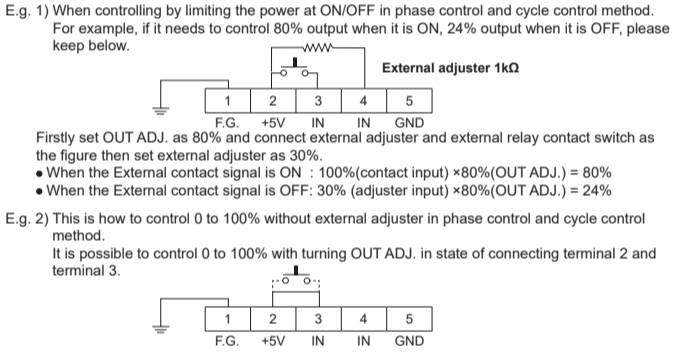
※ When selecting cycle control method, the cycle has been set as 0.5 sec. It can be changed to 2 sec, 10 sec by selection.
※ The control method setting cannot be changed while it is operating.
※ Turn OFF the power at first then change the setting and supply the power again.



■ Connections



■ Applications

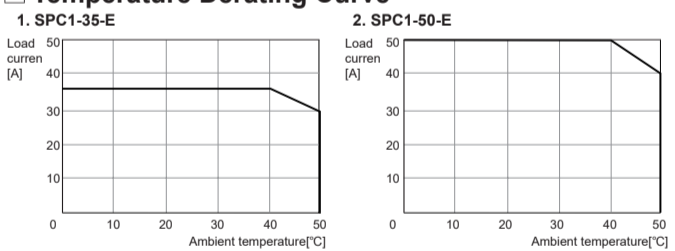


■ Control Input Specification and Function

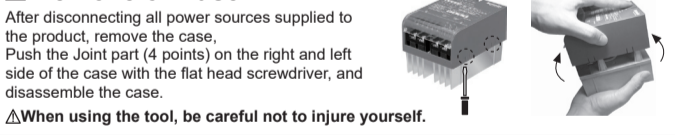
※ Please see <Connection of control input terminals> and above function.

Control method	Phase control	Cycle control	ON/OFF control
Input and function	DC4-20mA		
Control input specification	1-5VDC		External contact or 24VDC
	External contact, 24VDC		
Function	External adjuster		
	OUT ADJ.		OUT display

■ Temperature Derating Curve



■ Remove of Case



■ Cautions during Use

1. Follow instructions in 'Cautions during Use'. Otherwise, it may cause unexpected accidents.
2. Use the product, after 3 sec of supplying power.
3. Before use, set the mode and function according to the specification. Especially, be cautious that the product does not operate when OUT ADJ. is set to 0%. Since mode/parameter can not be changed during operation, set the mode and function after turning off the power.
4. To ensure the reliability of the product, install the product on the panel or metal surface vertically to the ground.
5. Install the unit in the well ventilated place.
6. While supplying power to the load or right after turning off the power of the load, do not touch the body and heat sink. Failure to follow this instruction may result in a burn due to the high temperature.
7. Install a power switch or circuit breaker in the easily accessible place for supplying or disconnecting the power.
8. Do not wire to terminals which are not used.
9. The rapid fuse must be connected between R terminal and the power source.
10. Do not use near the equipment which generates strong magnetic force or high frequency noise.
11. This unit may be used in the following environments.
 - ① Indoors (in the environment condition rated in 'Specifications')
 - ② Altitude max. 2,000m
 - ③ Pollution degree 2
 - ④ Installation category III