

Autonics Single-Phase, LED Display Slim Power Controller SPR1 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.

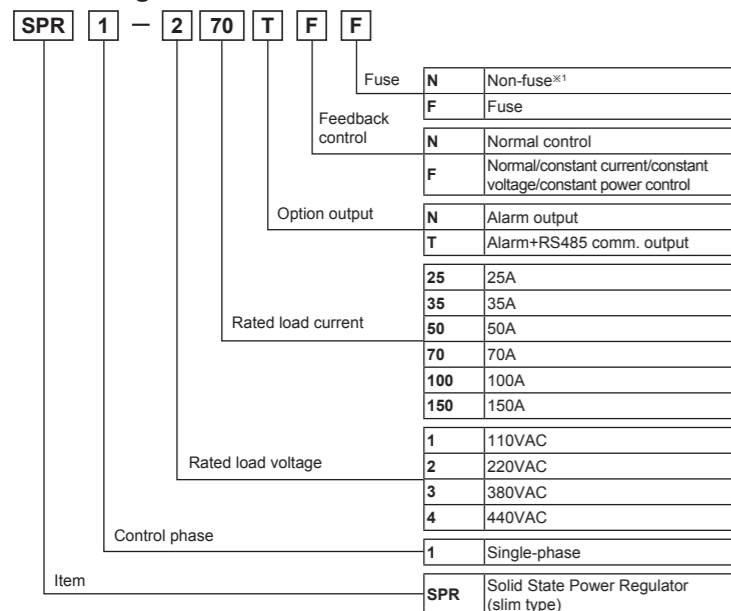
Warning

- 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 fire, personal injury, or economic loss.
- Install on the device panel, and ground to the bolt for grounding separately.** Failure to follow this instruction may result in electric shock or fire.
- Do not connect, repair, or inspect the unit while connected to a power source.** Failure to follow this instruction may result in electric shock or fire.
- Check 'Connections' before wiring.** Failure to follow this instruction may result in fire.
- Do not disassemble or modify the unit.** Failure to follow this instruction may result in electric shock or fire.

Caution

- Use the unit within the rated specifications.** Failure to follow this instruction may result in fire or product damage.
- Use dry cloth to clean the unit, and do not use water or organic solvent.** Failure to follow this instruction may result in electric shock or fire.
- Do not use the unit in the place where flammable/explosive/corrosive gas, humidity, direct sunlight, radiant heat, vibration, impact, or salinity may be present.** Failure to follow this instruction may result in fire or explosion.
- Keep metal chip, dust, and wire residue from flowing into the unit.** Failure to follow this instruction may result in fire or product damage.
- 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



※1: Product is not equipped with a rapid fuse inside. Install the suitable fuse for rated load current of the model separately. (The performance of the product is guaranteed only when using the fuse provided by us.)

※The above specifications are subject to change and some models may be discontinued without notice.

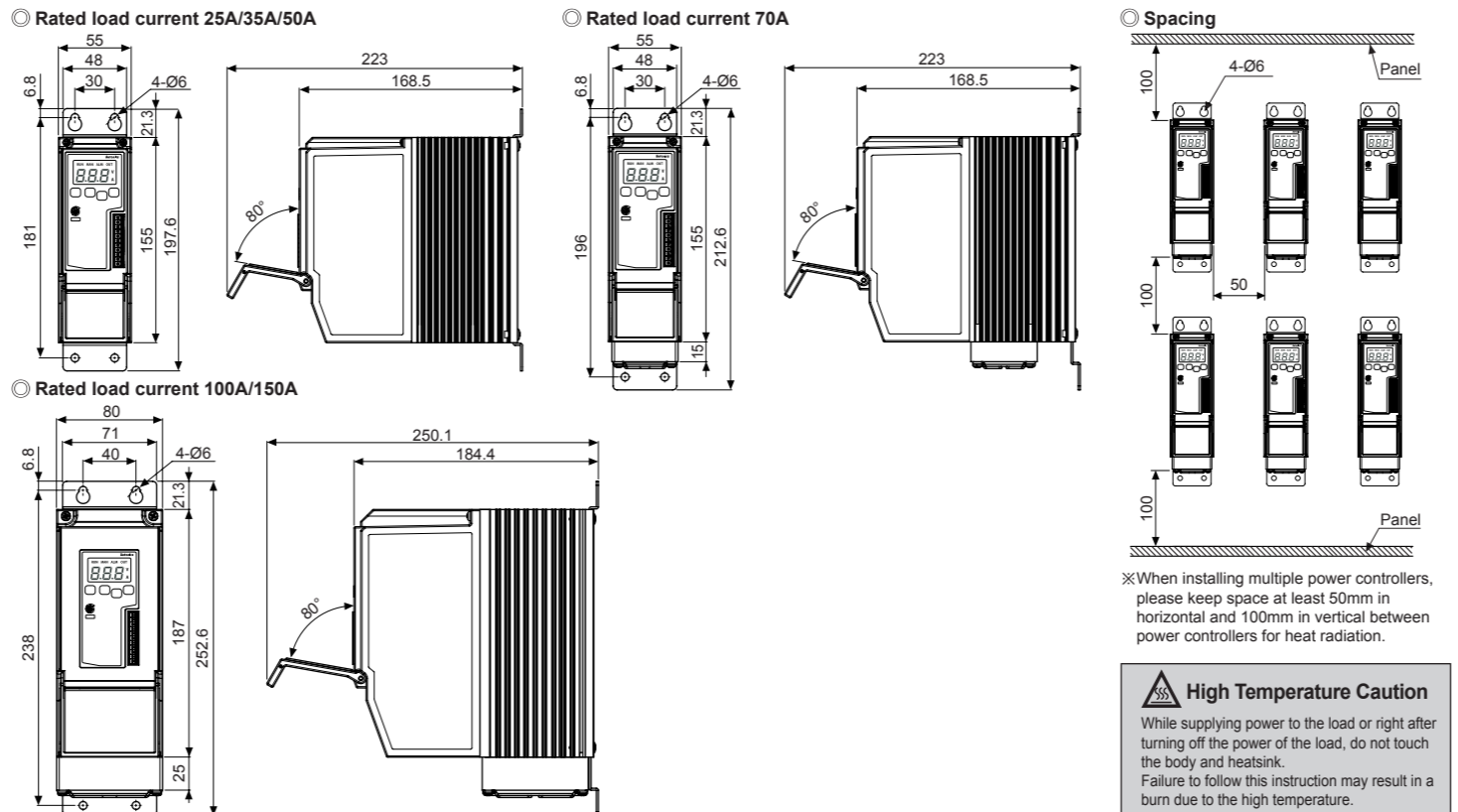
※Be sure to follow cautions written in the instruction manual, user manual, and the technical descriptions (catalog, homepage).

Specifications

Model	SPR1-1	SPR1-2	SPR1-3	SPR1-4
Control phase	Single-phase			
Rated load voltage (50/60Hz)	110VAC~	220VAC~	380VAC~	440VAC~
Power supply	100-240VAC~ 50/60Hz			
Min. load current	1A			
Permissible voltage range	90 to 110% of rated voltage			
Power consumption	• Rated load current 25A/35A/50A: max. 7VA • Rated load current 70A/100A/150A: max. 12VA			
Display method	3-digit 7-segment LED			
Indicator	• Operation indicator/Manual control indicator: green LED • Alarm indicator/output indicator/unit (V, A) indicator: red LED			
Control method	• Phase control: normal control mode, constant current/constant voltage/constant power feedback control mode • Cycle control: fixed cycle control mode, variable cycle control mode • ON/OFF control			
Applied load	• Phase control, ON/OFF control: resistance load, inductive load • Cycle control: resistance load			
Control input	• Auto control: DC4-20mA, 1-5VDC=, ON/OFF contact (no-voltage input), pulse voltage (5-12VDC=) • Manual control: outside adjuster (10kΩ), inside adjuster (output limit)			
Digital input (DI)	RUN/STOP switching, AUTO/MAN switching, RESET			
Output	Alarm	250VAC~ 3A, 30VDC= 3A, 1c resistive load		
Communication	RS485 communication output (Modbus RTU method), max. connection: 31 units			
Output range	• Phase control: 0 to 98% • Cycle control: 0 to 100% • ON/OFF control: 0%, 100%			
Output accuracy	• Normal control: within ±10% F.S. of rated load voltage • Constant current feedback control: within ±3% F.S. of rated load current • Constant voltage feedback control: within ±3% F.S. of rated load voltage • Constant power feedback control: within ±3% F.S. of rated load power			
Set method	By front keys, by communication			
Functions	Alarm	Output limit (OUT ADJ), AUTO/MAN selection, control method selection, RESET, SOFT START, SOFT UP/DOWN, output high/low limit, input correction, input slope correction, monitoring (control input, load voltage/current/power/resistance, power supply frequency, heatsink temperature) Overcurrent alarm, overvoltage alarm, fuse break alarm, SCR error alarm, heater break alarm, heatsink overheat alarm		
Cooling method	• Rated load current 25A/35A/50A: natural cooling • Rated load current 70A/100A/150A: forced air cooling (with the cooling fan)			
Insulation resistance	Over 200MΩ (at 500VDC megger)			
Dielectric strength	2,000VAC 50/60Hz for 1 min (between input terminals and power terminals)			
Output leakage current	Max. 10mA			
Noise immunity	±2kV the square wave noise (pulse width: 1μs) by the noise simulator			
Memory retention	Approx. 10 years (when using non-volatile semiconductor memory type)			
Vibration	Mechanical	0.75mm amplitude at frequency of 5 to 55Hz in each X, Y, Z direction for 2 hours		
Malfunction	0.5mm amplitude at frequency of 5 to 55Hz in each X, Y, Z direction for 10 min			
Environment	Ambient temp.	-10 to 55°C, storage: -20 to 80°C		
Ambient humi.	35 to 85%RH, storage: 35 to 85%RH			
Accessory	11-pin connector			
Approval	CE			
Weight*1	• Rated load current 25A/35A/50A: approx. 1.6kg (approx. 1.3kg) • Rated load current 70A: approx. 1.65kg (approx. 1.35kg) • Rated load current 100A/150A: approx. 3.2kg (approx. 2.8kg)			

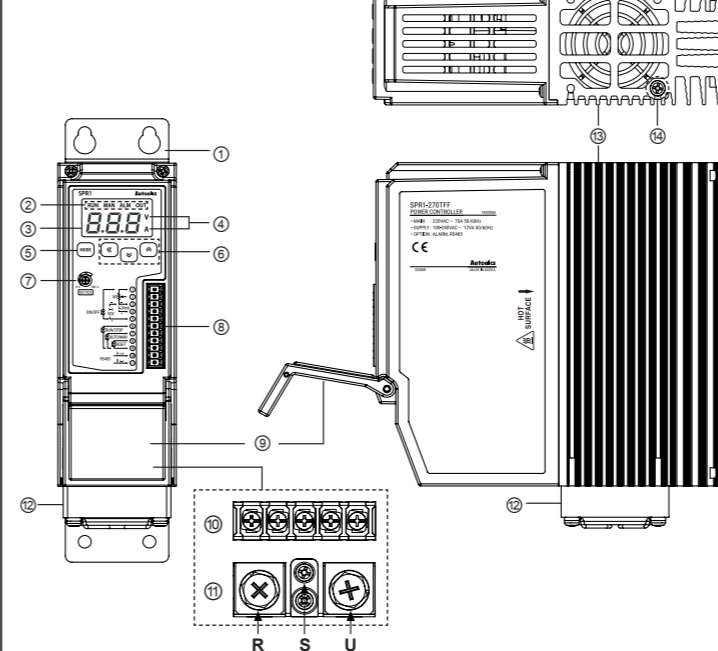
※1: The weight includes packaging. The weight in parenthesis is for unit only. ※Environment resistance is rated at no freezing or condensation.

Dimensions



High Temperature Caution
While supplying power to the load or right after turning off the power of the load, do not touch the body and heatsink. Failure to follow this instruction may result in a burn due to the high temperature.

Unit Description



① Bracket
② Indicator

Indicator	Color	Function
RUN	Green LED	Turns on in the RUN mode.
MAN	Green LED	Turns on when adjusting load output in the manual control mode.
ALM	Red LED	Flashes in alarming status.
OUT	Red LED	Turns on when load control outputs.

③ Display part: Displays settings of the front display [d / 5] parameter in RUN mode, and displays parameter and setting value in setting mode.

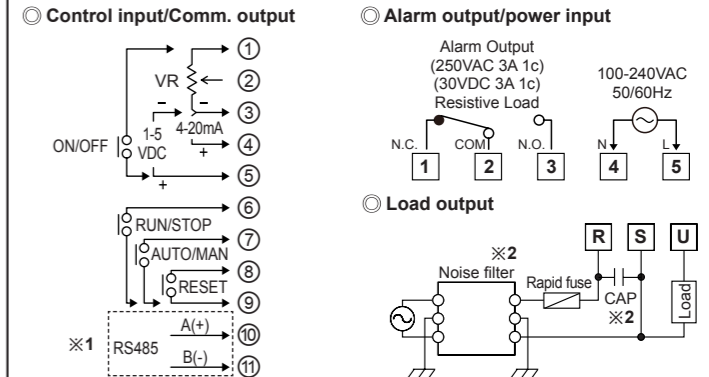
④ Unit indicator (☺: Light ON/●: Light OFF)

Indicator	Display
V	Resistance, input
A	Voltage
●	Current
☺	Power

⑤ Setting value adjustment key: Enters SV setting mode and move digits.
⑥ Output limit adjuster (OUT ADJ): Limits output from 0 to 100%.
⑦ 11-pin connector terminal
⑧ Terminal cover
⑨ Alarm output and power input terminals

⑩ R, S, U load output terminals
⑪ Cooling fan: For models with the rated load current of 70A/100A/150A, a cooling fan is attached.
⑫ Heatsink
⑬ Bolt for grounding (M4)

Connections



※1: This is only for models with RS485 communication output (SPR1-□□□□□).
※2: When connecting noise filter and capacitor, it is appropriate for EMC.
CAP: Rated load voltage 110VAC-220VAC → 1μF/250VAC
Rated load voltage 380VAC-440VAC → 0.47μF/500VAC

※Tighten the terminal screw with the below tightening torque.

Rated load current	Specification	Alarm output/power input	Load output
25A, 35A, 50A, 70A	Screw	M3	M3
100A, 150A	Screw	M3	M3
	Tightening torque	0.5N·m	0.5N·m
			5.5 to 6.0N·m
			6.5 to 7.0N·m

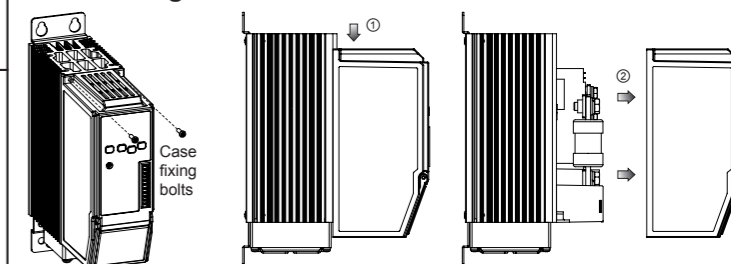
※Use crimp terminals or terminals of size specified below. (unit: mm)

Terminal type	Terminal number	a	b	c
Input (11-pin)	1 to 11	6 to 7	Max. 1.5	Max. 3.5
Alarm output/power input	S	Min. 3.0	Max. 6.0	
Load output	R, U	Rated load current 25A/35A/50A/70A	Min. 6.0	Max. 16.0
		Rated load current 100A/150A	Min. 8.0	Max. 26.0

※Connect the specified wire as the rated load current.

Rated load current	Wire specification	Alarm output/power input	Load output
25A/35A/50A/70A	AWG 18 to 14	S	R, U
100A/150A	AWG 18 to 14		AWG 13 to 4
			AWG 4 to 2/0

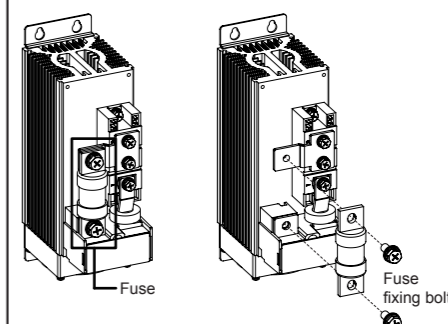
Removing the Case



Specification of case fixing bolts

Rated load current	Specification of bolts
25A, 35A, 50A, 70A	M3
100A, 150A	M4

Replacement of Fuse



Specification of fuse fixing bolts

Rated load current	Spec. of bolts
25A, 35A, 50A, 70A	M6
100A, 150A	M8

Recommended fuse specifications

For replacing the fuse, please use the recommended fuse which has the below specifications. (manufacture: BUSSMANN)

Rated load current	Model	Rated load current	Model	Rated load current	Model
25A	50FE	50A	80ET	100A	FWH-150B
35A	63ET	70A	100FE	150A	FWH-200B

※The performance of the product is guaranteed only when using the fuse provided by us.

