Autonics

DIN-Rail Mount SMPS

SP Series

PRODUCT MANUAL

For your safety, read and follow the considerations written in the instruction manual, other manuals and Autonics website.
The specifications, dimensions, etc. are subject to change without notice for product improvement. Some models may be discontinued without notice.

Major Features

- Compact size
- Built-in overcurrent protection circuit
- DIN rail mount and screw mount methods
- Power supply: 100-240 VAC∼
- Output voltage: 5 VDC⎓, 12 VDC⎓, 24 VDC⎓
- Output power: 3 W

Safety Considerations

- Observe all 'Safety Considerations' for safe and proper operation to avoid hazards.
- ⚠ symbol indicates caution due to special circumstances in which hazards may occur.

⚠ Warning Failure to follow instructions may result in serious injury or death.

01. 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.

02. 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 explosion or fire.

03. Install on the device panel or DIN rail, and ground to the F.G. terminal separately.
Failure to follow this instruction may result in fire or electric shock.

04. 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.

05. Check 'Wiring Diagram' before wiring.
Failure to follow this instruction may result in fire.

06. Do not disassemble or modify the unit.
Failure to follow this instruction may result in fire or electric shock.

⚠ Caution Failure to follow instructions may result in injury or product damage.

01. When connecting the F.G. terminal, use AWG 14 (2.1 mm^2) cable or over and tighten the terminal screw with a tightening torque of 0.7 to 0.9 N·m.
Failure to follow this instruction may result in fire or malfunction due to contact failure.

02. Use the unit within the rated specifications.
Failure to follow this instruction may result in fire, product damage or shortening the life cycle of the product.

03. 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.

04. 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.

05. Do not touch the product during operation or for a certain period of time after stopping.
Failure to follow this instruction may result in burns.

06. Upon occurrence of an error, disconnect the power source.
Failure to follow this instruction may result in fire or product damage.

Cautions during Use

- Follow instructions in 'Cautions during Use'. Otherwise, it may cause unexpected accidents.
- Do not connect the output voltage neither in serial nor in parallel.
- Since there is no harmonic suppression or power factor correction circuit, install the circuit separately if necessary.

EAC

- Since using the condenser input method, power factor is in the range of 0.4 to 0.6. When using distribution board or transformer, check the capacity of the input voltage.
  Input apparent power (VA) = $\frac{\text{Output active power (W)}}{\text{Power factor} \times \text{Efficiency}}$
- Even though a noise filter is installed inside the product, the product can be affected by noise depending on the installation location or wiring
- If the internal fuse is damaged, please contact our A/S center.
- To ensure the reliability of the product, install the product on the panel or metal surface vertically to the ground.
- Install the unit in the well ventilated place.
- Do not use near the equipment which generates strong magnetic force or high frequency noise.
- This unit may be used in the following environments.
  - Indoors (in the environment condition rated in 'Specifications')
  - Altitude max. 2,000 m
  - Pollution degree 2
  - Installation category II

Ordering Information

This is only for reference.
For selecting the specific model, follow the Autonics web site.

SP	-	03	❶

❶ Output voltage
Number: Output voltage (unit: VDC⎓)

Product Components

- Product
- Instruction manual

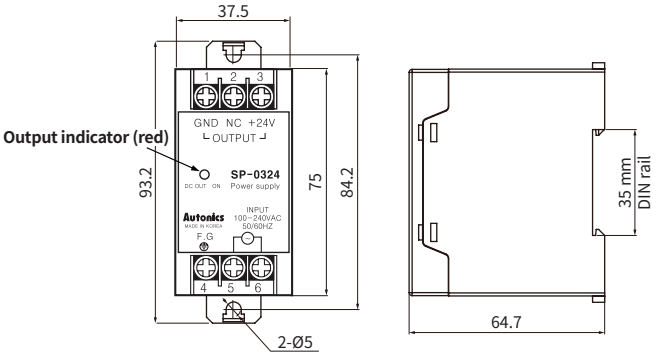
Specifications

Model	SP-0305	SP-0312	SP-0324
Output power	3 W		
Input condition			
Voltage	100 - 240 VAC~		
Permissible voltage range	85 - 264 VAC~		
Frequency	50 / 60 Hz		
Efficiency (typical)	67 to 74%		
Current consumption (typical)	≤ 0.15 A		
Output characteristics			
Voltage	5 VDC⎓	12 VDC⎓	24 VDC⎓
Current	0.6 A	0.25 A	0.13 A
Voltage adjustment range	≤ ±5%		
Ripple noise	≤ 5%		
Voltage variation	≤ 0.5% (at 85 - 264 VAC~ 100% load)		
Protection			
Over-current protection	≥ 110%		
Approval	EAC		
Unit weight (Package)	≈ 100 g		

Indicator	Output indicator (red)
Insulation resistance	≥ 100 MΩ (500 VDC⎓ megger)
Dielectric strength	2,000 VAC~ 50 / 60 Hz for 1 min
Vibration	0.75 mm amplitude at frequency of 10 to 55 Hz (for 1 min) in each X, Y, Z direction for 2 hours
Vibration (malfunction)	0.5 mm amplitude at frequency of 10 to 55 Hz (for 1 min) in each X, Y, Z direction for 10 minutes
Shock	300 m/s^2 (≈ 30 G) X, Y, Z direction for 3 times
Shock (malfunction)	100 m/s^2 (≈ 10 G) X, Y, Z direction for 3 times
Ambient temperature	-10 to 50 °C, storage: -20 to 70 °C (no freezing or condensation)
Ambient humidity	35 to 85%RH (no freezing or condensation)

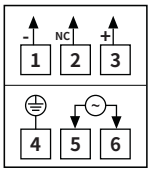
Dimensions

- Unit: mm, refer to the Autonics website for the details of the product.
- This is based on the SP-0324 model.



Connections

- Wire: AWG 22 to 16
- Torque: 0.7 to 0.9 N·m

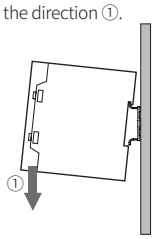


Terminal	Mark	Function
1	GND	Output power (-)
2	NC	Not Connected
3	+24V	Output power (+)
4	F.G	Frame ground
5, 6	INPUT	Input power

Install

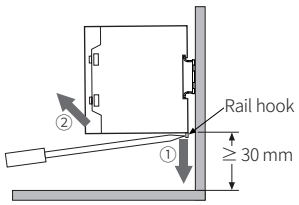
■ Mounting on DIN rail

Put the unit on the rail before press it to the direction ①.



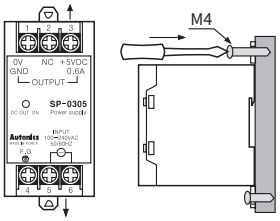
■ Removing from DIN rail

Put a screw driver into the rail hook, pull it to direction ①, and lift it to the direction ②.



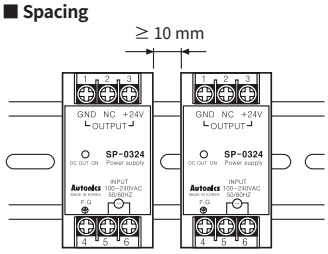
- When mounting this unit on the rail, place the unit at least 30 mm above from the floor to remove it easily.

■ Mounting on panel



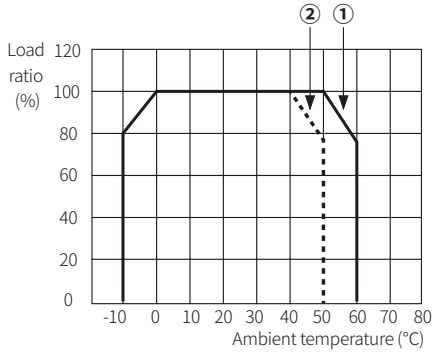
It is able to mount by screwing a bolt at the 2 hooks on the body as following figure.

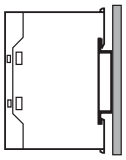
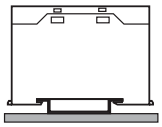
■ Spacing



When installing multiple SMPSs, please keep space at least 10 mm between SMPSs for heat radiation.

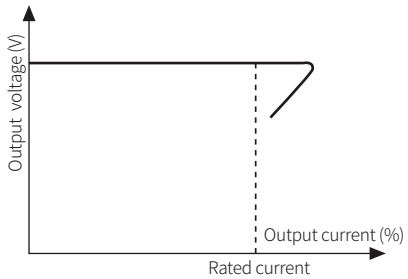
Output De-rating Curve by Ambient Temperature



① Vertical installation	② Horizontal installation
	

Feature Data of Over-Current Protection

When the over rated current is flowed, the over-current protection circuit is operated to protect the product by reducing output voltage.
The protection circuit is released automatically when the load current is under the rated current.



Block Diagram