

# Switching Power Supply

## Switching Power Supply with minimized noise and ripple

### ■ Features

- Includes overcurrent protection, output short-circuit protection, overheating and overvoltage protection circuits (SPA-075/100)
- Standard on safety IEC 60950, IEC 50178
- EMS (Electromagnetic susceptibility) EN61000-6-2
- EMI (Electromagnetic interference) EN61000-6-4
- Output voltage : 5VDC, 12VDC, 24VDC
- Output current : 30W, 50W, 75W, 100W



**⚠ Please read "Caution for your safety" in operation manual before using.**



### ■ Ordering information

<b>SPA</b>	—	<b>030</b>	—	<b>24</b>	
					Output voltage
					Output power
				05	5V
				12	12V
				24	24V
				030	30W
				050	50W
				075	75W
				100	100W
				SPA	Switching Mode Power Supply

### ■ Specifications

Model	SPA-030-05	SPA-050-05	SPA-030-12	SPA-050-12	SPA-030-24	SPA-050-24	SPA-075-05	SPA-100-05	SPA-075-12	SPA-100-12	SPA-075-24	SPA-100-24		
Capacity	30W	50W	30W	50W	30W	50W	75W	100W	75W	100W	75W	100W		
Input	Voltage (5) 100-240VAC(85-264VAC) 100-120/200-240VAC(85-132/170-264VAC)													
	Frequency 50/60Hz													
	Efficiency (1)	Min. 60%	Min. 67%	Min. 74%		Min. 80%		Min. 70%	Min. 78%	Min. 72%	Min. 78%	Min. 80%		
Output	Current consumption(1)	Max. 1.2A	Max. 1.6A	Max. 1.0A	Max. 1.4A	Max. 0.8A	Max. 1.1A	Max. 3.0A	Max. 2.0A	Max. 3.0A	Max. 2.0A	Max. 2.5A		
	Voltage	5VDC		12VDC		24VDC		5VDC		12VDC		24VDC		
	Current	6A	10A	2.5A	4.2A	1.5A	2.1A	15A	20A	6.3A	8.5A	3.2A	4.2A	
	Voltage fluctuation range(4)	±5%												
	Input fluctuation ratio(2)	Max. ±0.5%												
	Load fluctuation ratio(1)	Max. ±2%		Max. ±1%				Max. ±2%		Max. ±1%				
	Ripple (1)	Max. ±1%												
	Starting time (1)	Max. 200ms		Max. 150ms				Max. 250ms						
	Holding time (1)	Min. 10ms						Min. 5ms		Min. 10ms	Min. 5ms	Min. 10ms		
	Protection	Inrush current protection	Max. 30A(100VAC) Max. 40A(200VAC)		Max. 20A(100VAC)				Max. 45A(100VAC) /Max. 50A(240VAC)		Max. 35A(100VAC) /Max. 40A(240VAC)	Max. 45A(100VAC) /Max. 50A(240VAC)	Max. 35A(100VAC) /Max. 40A(240VAC)	
Output overcurrent protection (3)		Min. 110%						Min. 105%		Min. 110%				
Output overvoltage protection		—————						6.5V ±10%		16V ±10%		30V ±10%		
Output short-circuit protection		Max. 5ms						Max. 10ms		Max. 5ms	Min. 10ms	Max. 5ms		
Output indicator	Green LED													
Insulation resistance	Min. 100MΩ (Between all input and output terminals with 500VDC)													
Dielectric strength	For 1 minute at 3.0kVAC 50/60Hz (Between all input and output terminals)													
	1 minute at 1.5kVAC 50/60Hz (Between all input terminals F,G)													
Vibration	0.75mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z directions for 2 hours													
Shock	300m/s <sup>2</sup> in X, Y, Z directions for 3 times													
Electromagnetic susceptibility	EN61000-6-2 Appropriate													
Electromagnetic interference	EN61000-6-4 Appropriate													
Protection	IEC60950, IEC50178 Standard													
Ambient temperature	-10~50℃	-10~40℃		-10~50℃		-10~40℃		-10~50℃	-10~40℃	-10~50℃		-10~50℃		
Ambient humidity	25 ~ 85%RH													
Storage temperature and humidity	-25 ~ 65℃ / 25 ~ 90%RH													
Approval	—————						CE		—————					
Unit weight	Approx. 350g						Approx. 400g							

(A) Counter

(B) Timer

(C) Temp. controller

(D) Power controller

(E) Panel meter

(F) Tacho/Speed/Pulse meter

(G) Display unit

(H) Sensor controller

(I) Switching power supply

(J) Proximity sensor

(K) Photo electric sensor

(L) Pressure sensor

(M) Rotary encoder

(N) Stepping motor & Driver & Controller

(O) Graphic panel

(P) Field network device

(Q) Production stoppage models & replacement

\* (1) 100% load for rated input voltage (100VAC).

\* (2) Rated input voltage [ SPA-030/050 Series : 100-240VAC(85-264VAC) ] under 100% of load.

[ SPA-075/100 Series : 100-120/200-240(85-132/170-264VAC) ].

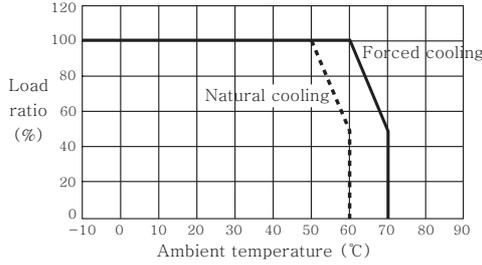
\* (3) Rated input voltage (100VAC). \* (4) Vary voltage by output voltage adjuster, it is changed over voltage variation range (±5%).

\* (5) The rated input voltage of SPA-100-05 is 100-120/200-240VAC (100-132/190-264VAC).

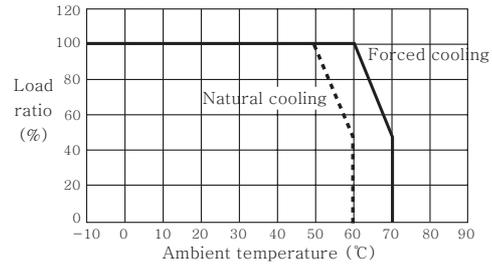
# SPA Series

## Output feature data for ambient temperature

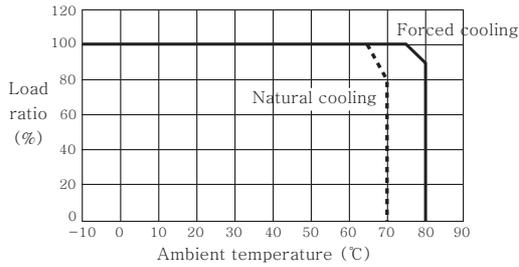
●SPA-030-05



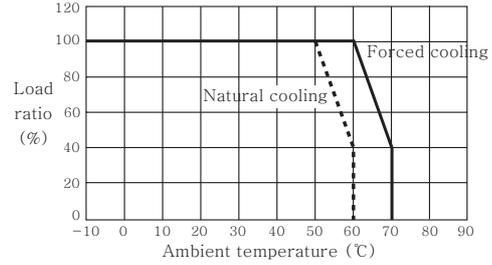
●SPA-075-05 ●SPA-100-05 ●SPA-100-12



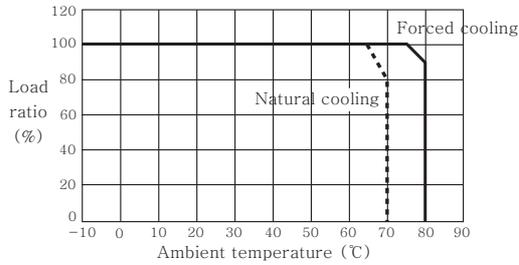
●SPA-030-12 ●SPA-050-12



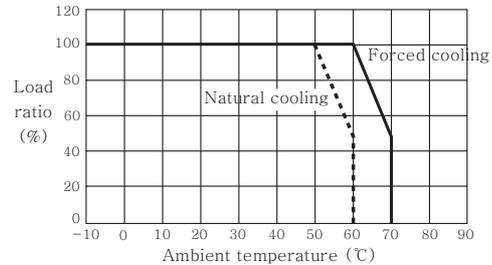
●SPA-075-12



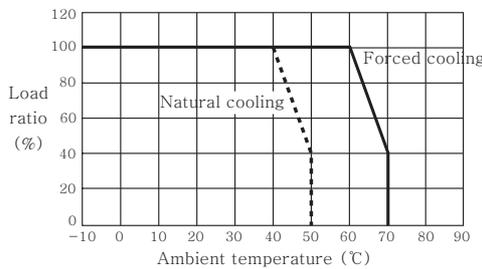
●SPA-030-24 ●SPA-050-24



●SPA-075-24 ●SPA-100-24

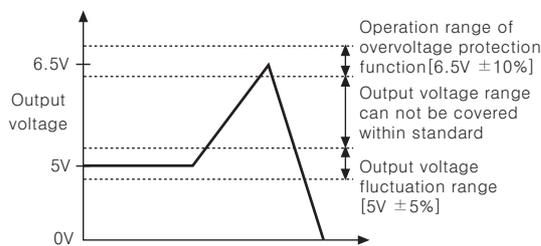


●SPA-050-05

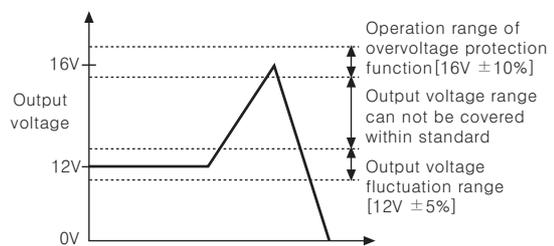


## Feature data for output overvoltage protection

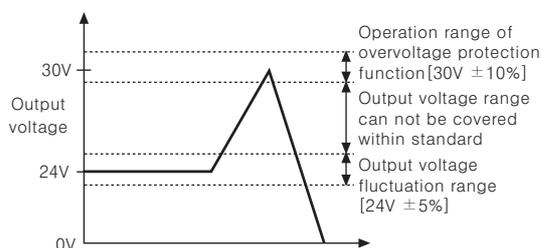
●SPA-075-05 / SPA-100-05



●SPA-075-12 / SPA-100-12

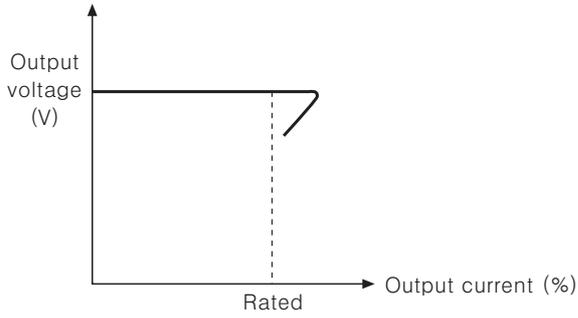


●SPA-075-24 / SPA-100-24



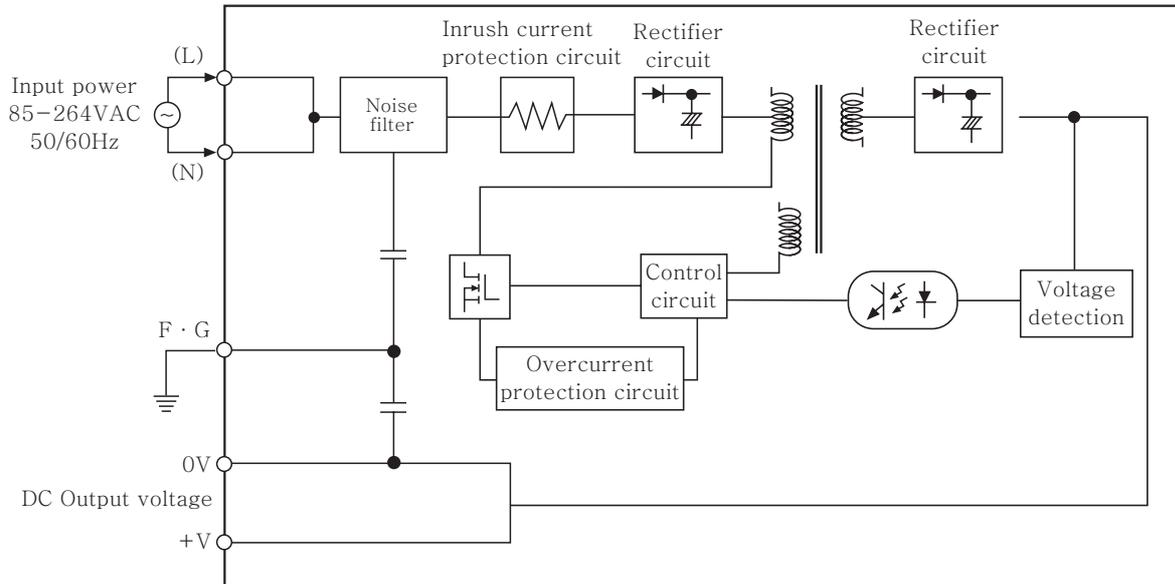
# Switching Power Supply

## Feature data of overcurrent protection



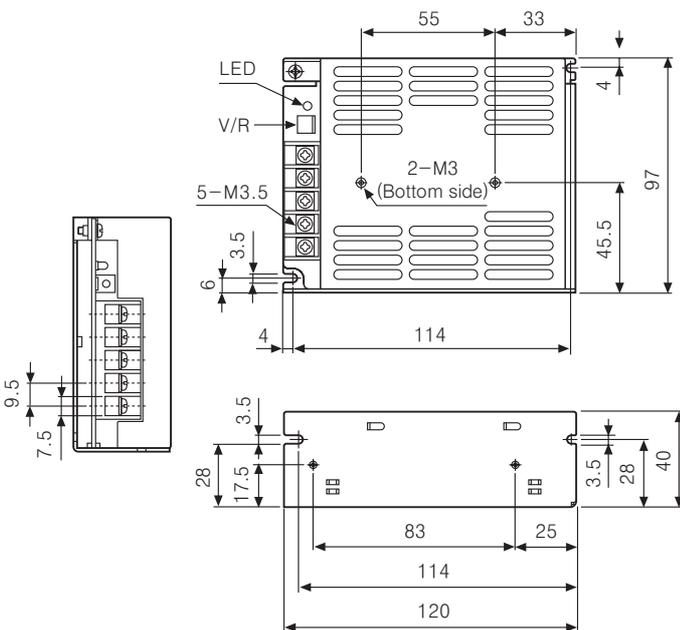
- It is when the rated input voltage is 100VAC, 100%.
  - It is able to protect overcurrent by load with built-in overcurrent protection circuit.
- When the over rated current is flowed, the circuit is operated (Output voltage is fallen.) and it is cancelled when the load current is under the rated current. (It is returned to the rated output voltage.)

## Block diagram

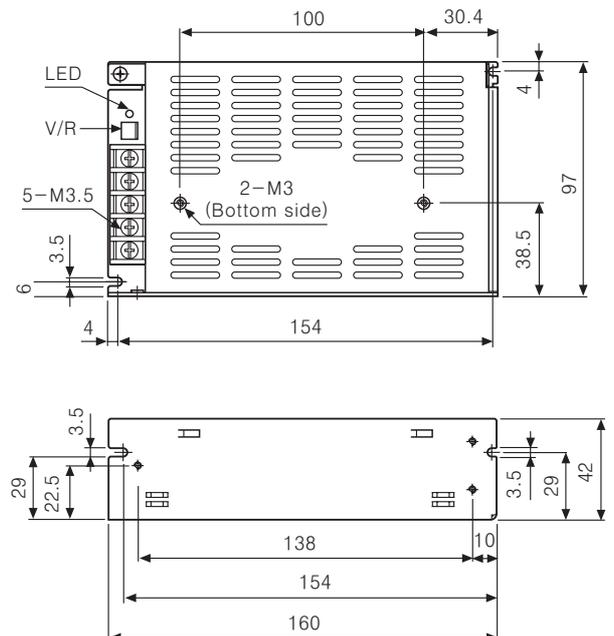


## Dimensions

### ●SPA-030/050 Series



### ●SPA-075/100 Series

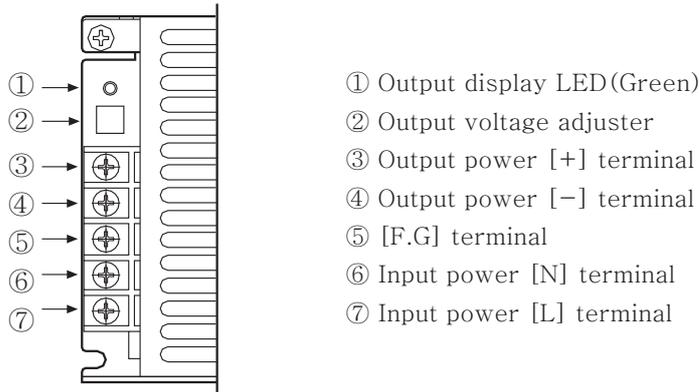


(Unit:mm)

(A)	Counter
(B)	Timer
(C)	Temp. controller
(D)	Power controller
(E)	Panel meter
(F)	Tacho/ Speed/ Pulse meter
(G)	Display unit
(H)	Sensor controller
(I)	Switching power supply
(J)	Proximity sensor
(K)	Photo electric sensor
(L)	Pressure sensor
(M)	Rotary encoder
(N)	Stepping motor & Driver & Controller
(O)	Graphic panel
(P)	Field network device
(Q)	Production stoppage models & replacement

# SPA Series

## Front part identification



## Proper Usage

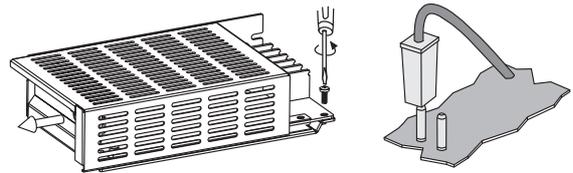
### 1. Technical information of operation

- ① This product is not available to operate of output voltage as parallel and series.
- ② The output current should be used within the rated range. When it is operated in overcurrent status, the life span of product can be shortened.
- ③ The output voltage should be used within the rated range. When the output overvoltage limit function is operated, the product operated normally with cancellation of input power for few minutes.
- ④ The overvoltage limit function is operated when it is exceeded the rated output voltage range with an output voltage adjuster.
- ⑤ This product has overheating protection function. It is operated normally when releasing the load connection for few minutes.
- ⑥ The power factor is within 0.5~0.7 using condenser rectified method. Please use the below formula and check the input power capacity when using a cabinet panel or transformer.

$$\text{Apparent power [VA]} = \frac{\text{Active Power [W]}}{\text{Power factor} \times \text{Efficiency}}$$

- ⑦ This product does not have harmonics suppression and power factor correction circuit.  
Please mount the device for it.
- ⑧ This product has a noise filter, it can be changed with the mounting place and connection.
- ⑨ Please change as a same rated fuse when the inner fuse is broken.

- ⑩ The input voltage is 220V for factory default of switching method. When it is switched as 110V, please detach the case as below and select the switch properly.



### 2. Caution for mounting

- ① Please mount the device on metal panel for the reliability.
- ② Please mount the device in a ventilative place for high radiation of heat.

### 3. Please use the power line as below specification.

Input power line specification	AWG19 ~ 21	AWG16 ~ 18
Model	SPA-030-05 SPA-030-12 SPA-050-12 SPA-075-12 SPA-030-24 SPA-050-24 SPA-075-24 SPA-100-24	SPA-050-05 SPA-075-05 SPA-100-05 SPA-100-12