

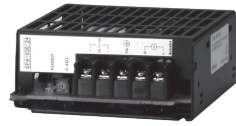
SPA Series

Switching Mode Power Supply With Minimized Noise And Ripple

■ Features

- Built-in over-current protection, output short-circuit protection, overheating and over-voltage protection circuits (SPA-075/100/400)
- Standard on safety EN60950, EN50178
- EMS (electromagnetic susceptibility) EN61000-6-2
- EMI (electromagnetic interference) EN61000-6-4
- Output voltage: 5VDC, 12VDC, 24VDC
- Output power: 30W, 50W, 75W, 100W, 400W

Line-up



SPA-030/050/075/100 Series



SPA-400-24

⚠ Please read "Safety considerations" in operation manual before using.



■ Ordering Information

SPA	—	030	—	24		
Item	—	Output power	—	Output voltage		
				05	5VDC	
				12	12VDC	
				24	24VDC	
Item	—	Output power	030	30W	100	100W
			050	50W	400	400W
			075	75W		
SPA	Switching Mode Power Supply					

■ Specifications

● SPA-030/050/075/100 Series

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
Output power	30W	50W	30W	50W	30W	50W	75W	100W	75W	100W	75W	100W
Input	Voltage*5											
	100-240VAC~ (permissible voltage: 85-264VAC~) switching type											
	(permissible voltage: 85-132/170-264VAC~)											
Input	Frequency											
	50/60Hz											
	Efficiency*1											
Input	Min. 60%	Min. 67%	Min. 74%	Min. 80%	Min. 70%	Min. 78%	Min. 72%	Min. 78%	Min. 80%	Min. 78%	Min. 78%	Min. 80%
	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	Max. 2.5A
Output	Voltage											
	5VDC==											
	Current											
	6A	10A	2.5A	4.2A	1.5A	2.1A	15A	20A	6.3A	8.5A	3.2A	4.2A
	Voltage adjustment range*4											
	±5%											
	Input fluctuation ratio*2											
	Max. ±0.5%											
	Load fluctuation ratio*1											
	Max. ±2%											
Ripple*1												
Max. ±1%												
Output	Starting time*1											
	Max. 200ms											
	Holding time*1											
Min. 10ms												
P-protection	Inrush current protection											
	Max. 30A (100VAC) /Max. 40A (200VAC)											
	Max. 20A (100VAC)											
	Max. 45A (100VAC) /Max. 50A (240VAC)											
P-protection	Over-current protection*3											
	Min. 110%											
	Min. 105%											
	Min. 110%											
P-protection	Over-voltage protection											
	6.5V ±10%											
P-protection	Output short-circuit protection											
	Max. 5ms											
Max. 10ms												
Max. 5ms												
Min. 10ms												
Max. 5ms												
Indicator												
Output indicator: Green LED												
Insulation resistance												
Over 100MΩ (between all input and output terminals with 500VDC)												
Dielectric strength												
3,000VAC 50/60Hz for 1 min (between all input and output terminals)												
1,500VAC 50/60Hz for 1 min (between all input terminals F.G.)												
Vibration												
0.75mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 2 hours												
Shock												
300m/s ² (approx. 30G) in each X, Y, Z direction for 3 times												
EMS												
Conforms to EN61000-6-2												
EMI												
Conforms to EN61000-6-4												
Safety standards												
EN60950, EN50178												
Environ-ment	Ambient temperature											
	-10 to 50°C											
	-10 to 40°C											
Environ-ment	Storage temperature											
	-25 to 65°C											
	Ambient humidity											
25 to 85%RH, storage: 25 to 90%RH												
Approval												
—												
CE												
Unit weight												
Approx. 350g												
Approx. 400g												

※1: 100% load for rated input voltage (100VAC).

※2: Rated input voltage [SPA-030/050 Series: 100-240VAC (85-264VAC) / SPA-075/100 Series: 100-120/200-240 (85-132/170-264VAC)] under 100% of load.

SPA-100-05 is under 100% of load for [100-120/200-240VAC (100-132/190-264VAC)].

※3: Rated input voltage (100VAC).

※4: Adjusting voltage by the output voltage adjuster (V.ADJ), it is changed the within voltage adjustment range.

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

※Environment resistance is rated at no freezing or condensation.

General-Purpose Switching Mode Power Supply

Specifications

SPA-400-24

Model		SPA-400-24	
Output power		400.8W	
Input condition	Voltage	200-240VAC~ (permissible voltage: 190-264VAC~)	
	Frequency	50/60Hz	
	Efficiency (typical)* ¹	220VAC~	85% (after 10 min of power ON)
	Current consumption (typical)	220VAC~	Max. 4.6A
Input condition	Leakage current (typical)	220VAC~	Max. 1mA
	Output characteristics		
Output characteristics	Voltage	24VDC---	
	Current	16.7A	
	Voltage adjustment range* ²	22.8-25.2VDC---	
	Input variation	Max. ±0.5%	
	Load variation	Max. ±1%	
	Temperature drift	360mV	
	Ripple&Ripple noise	Max. 290mV	
	Start-up time (typical)* ¹	220VAC~	1800-2300ms
	Hold time (typical)* ¹	200VAC~	Max. 17ms
	Protection	Inrush current protection (typical)* ¹	220VAC~
Over-current protection		110 to 160% (recovers automatically after the cause for over-current is removed)	
Over-voltage protection		27-33VDC	
Temp. rising limit		Yes	
Protection	Remote control	Yes (output voltage ON for shorting, output voltage OFF for open)	
	Indicator		Output indicator: Green LED
Insulation resistance		Over 100MΩ (at 500VDC megger between all input terminals and F.G.)	
Dielectric strength		3,000VAC 50/60Hz for 1 min (between all input and output terminals) 2,000VAC 50/60Hz for 1 min (between all input terminals and F.G.)	
Vibration		0.75mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 2 hours	
EMS		Conforms to EN61000-6-2	
EMI		Conforms to EN61000-6-4	
Safety standards		EN60950, EN50178	
Environment	Ambient temperature	-10 to 50°C, storage: -20 to 75°C	
	Ambient humidity	20 to 90%RH, storage: 20 to 90%RH	
Fan life cycle		70,000 hours (based on 40°C of ambient temperature)	
Approval		CE	
Weight* ³		Approx. 975g (approx. 885g)	

*1: It is for 100% load.

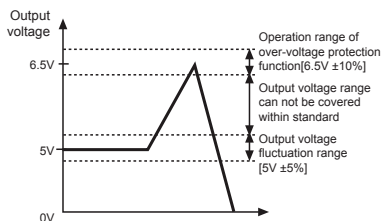
*2: Adjusting voltage by the output voltage adjuster (V.ADJ), it is changed the within voltage adjustment range.

*3: The weight includes packaging. The weight in parenthesis is for unit only.

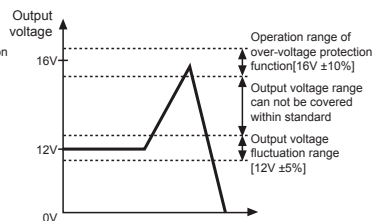
※Environment resistance is rated at no freezing or condensation.

Feature Data Of Over-Voltage Protection

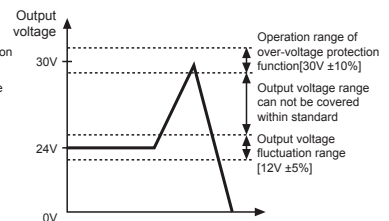
SPA-075-05/SPA-100-05



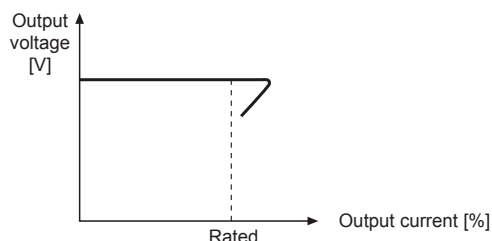
SPA-075-12/SPA-100-12



SPA-075-24/SPA-100-24/ SPA-400-24



Feature Data Of Over-Current Protection



- It is when the rated input voltage is 100VAC, 100% load. In case of SPA-400-24, the rated input voltage is 220VAC, 100% load.
- It is able to protect over-current by load with built-in over-current 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)

(A) Photoelectric Sensors

(B) Fiber Optic Sensors

(C) Door/Area Sensors

(D) Proximity Sensors

(E) Pressure Sensors

(F) Rotary Encoders

(G) Connectors/ Connector Cables/ Sensor Distribution Boxes/Sockets

(H) Temperature Controllers

(I) SSRs / Power Controllers

(J) Counters

(K) Timers

(L) Panel Meters

(M) Tacho / Speed / Pulse Meters

(N) Display Units

(O) Sensor Controllers

(P) Switching Mode Power Supplies

(Q) Stepper Motors & Drivers & Controllers

(R) Graphic/ Logic Panels

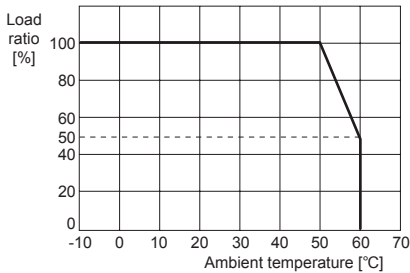
(S) Field Network Devices

(T) Software

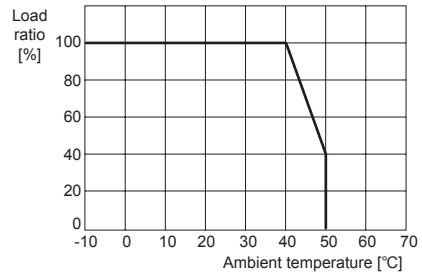
SPA Series

Output Derating Curve By Ambient Temperature

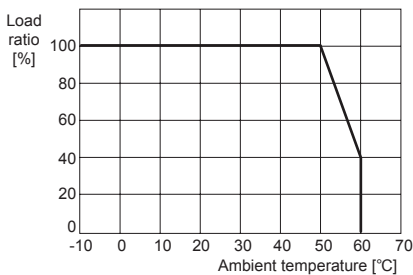
- SPA-030-05/SPA-030-24/SPA-050-24/
SPA-075-05/SPA-075-24 / SPA-100-05/
SPA-100-12/SPA-100-24



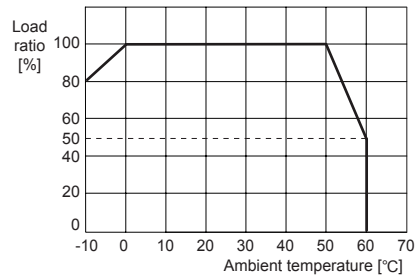
- SPA-030-12/SPA-050-05/SPA-050-12



- SPA-075-12

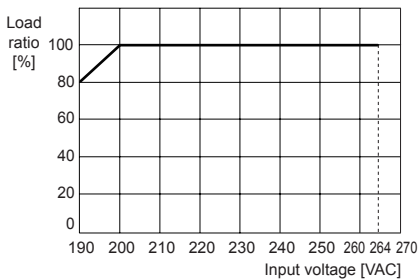


- SPA-400-24



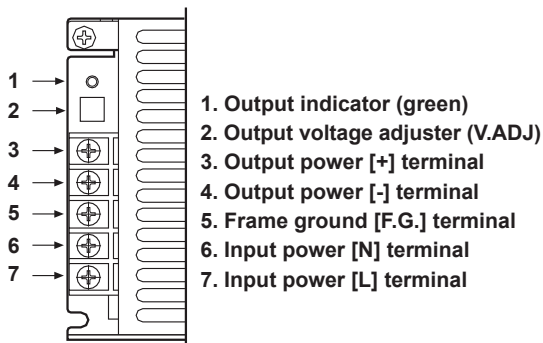
Output Static Characteristics By Input Voltage

- SPA-400-24

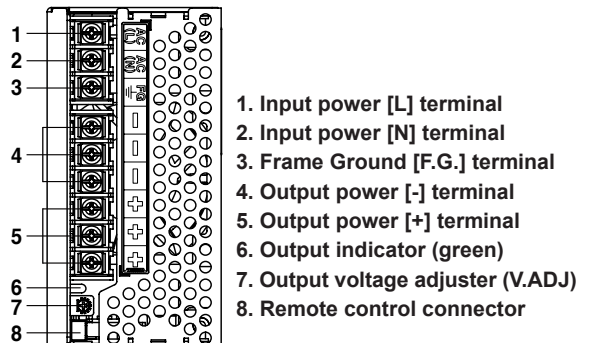


Unit Description

- SPA-030/050/075/100 Series



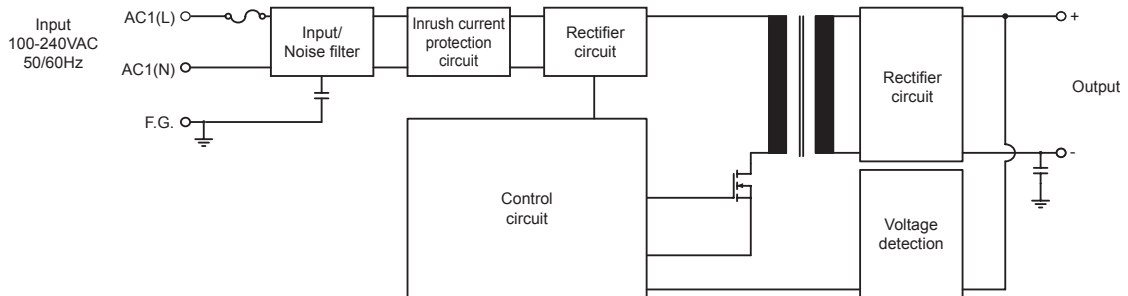
- SPA-400-24



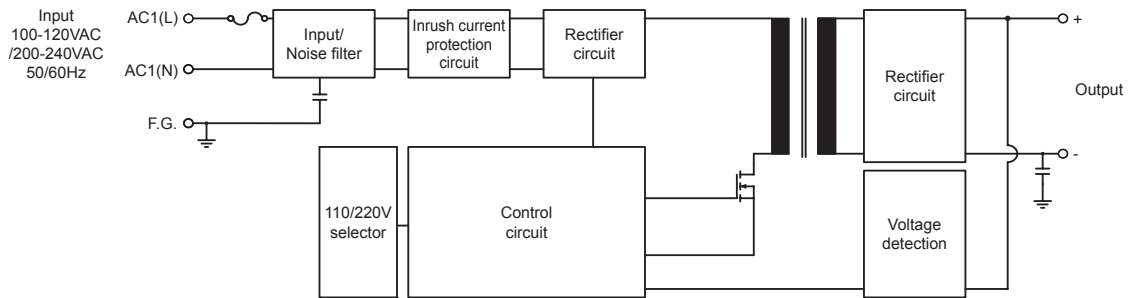
General-Purpose Switching Mode Power Supply

■ Block Diagram

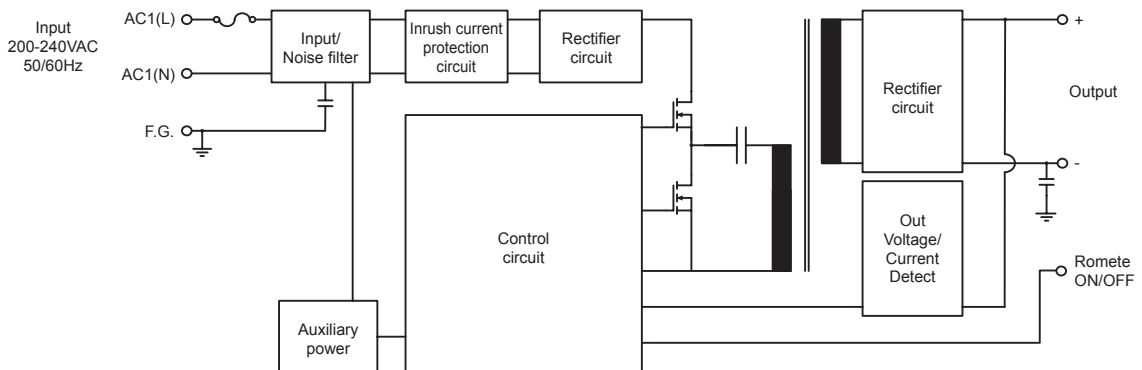
● SPA-030/050 Series



● SPA-075/100 Series



● SPA-400-24

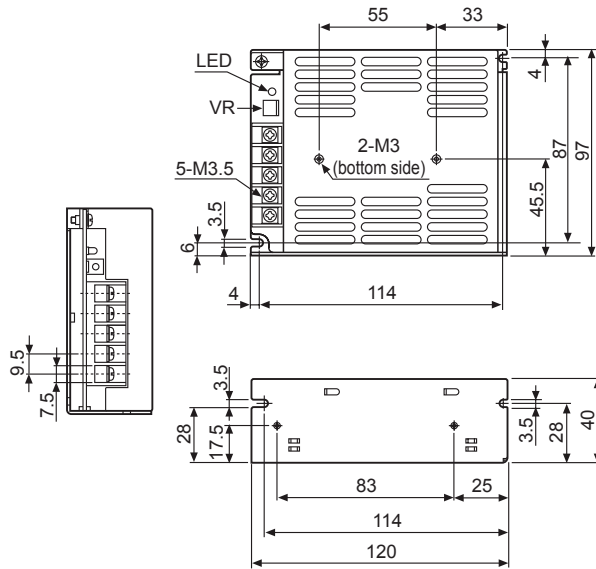


(A)	Photoelectric Sensors
(B)	Fiber Optic Sensors
(C)	Door/Area Sensors
(D)	Proximity Sensors
(E)	Pressure Sensors
(F)	Rotary Encoders
(G)	Connectors/ Connector Cables/ Sensor Distribution Boxes/Sockets
(H)	Temperature Controllers
(I)	SSRs / Power Controllers
(J)	Counters
(K)	Timers
(L)	Panel Meters
(M)	Tacho / Speed / Pulse Meters
(N)	Display Units
(O)	Sensor Controllers
(P)	Switching Mode Power Supplies
(Q)	Stepper Motors & Drivers & Controllers
(R)	Graphic/ Logic Panels
(S)	Field Network Devices
(T)	Software

SPA Series

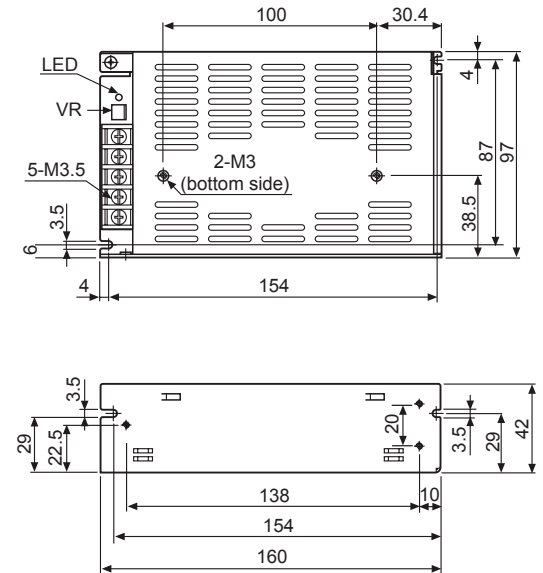
■ Dimensions

● SPA-030/050 Series

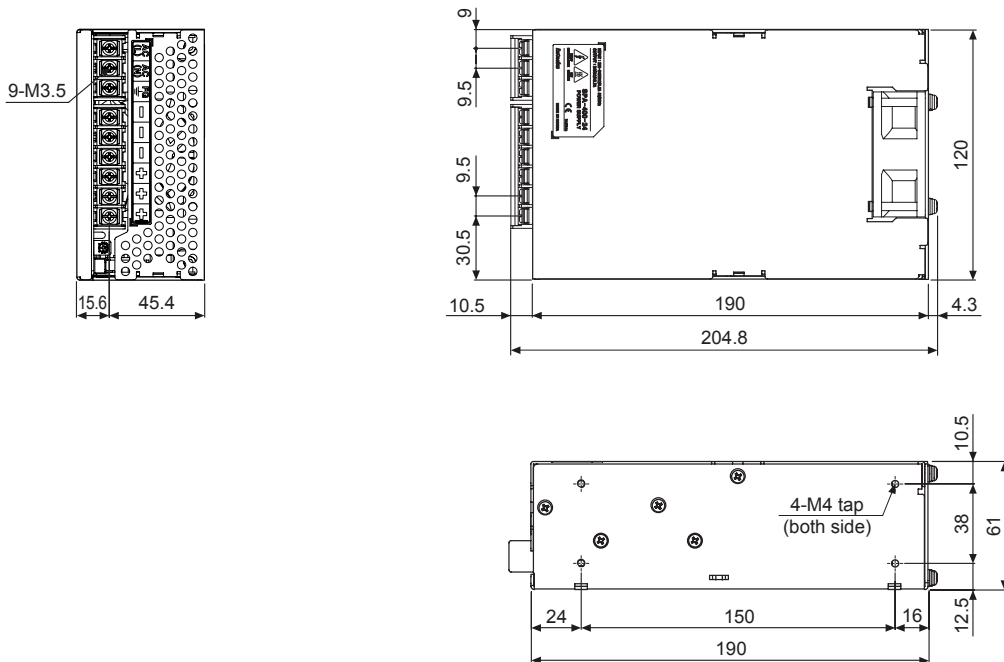


● SPA-075/100 Series

(unit: mm)



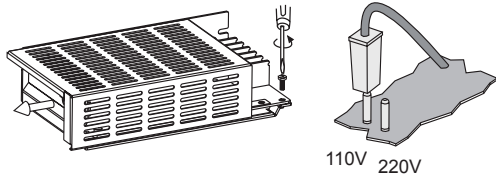
● SPA-400-24



General-Purpose Switching Mode Power Supply

■ Proper Usage

- For switch input voltage type, input voltage is 220V as factory default. To switch input voltage for 110V, remove the cover then select proper jumper switch as below figures.



- Caution for operating
- This product does not have the function for parallel or and series operation.
- The output current must be used within the rated specification. If over-current is applied to the product, over-current protection is operating. It causes shorten the life cycle of the product.
- The output voltage must be used within the rated output specification. When the over-voltage protection function is operated, the product operated normally with cancellation of input power for few minutes. In case of SPA-400-24, remove the cause of over-voltage and the unit operates normally.
- If adjusting the output voltage adjuster (V.ADJ) to over the rated voltage, the over-voltage protection function operates.
- This product has overheating protection function. Overheating protection function operates when the unit has overheat. It is operated normally when releasing the load connection for few minutes.
- It uses condenser rectification, and power factor is within 0.4 to 0.6 range. To use a cabinet panel or a electric transformer, select input power capacity of this product as below formula.

$$\text{Input apparent power [VA]} = \frac{\text{Output active power [W]}}{\text{Power factor} \times \text{Efficiency}}$$
- It does not have the harmonics suppression and power factor improvement circuit. To improve harmonics suppression and power factor, install the additional device.
- This product is provided with a noise filter, but noise is variable according to operating conditions such as installation environment and wiring.
- When the inner fuse is damaged, replace the fuse of same specification.

- Caution for mounting
- Mount this product on the surface of metal panel horizontally for the reliability.
- Mount this product at a well-ventilated place in order to increase the heat radiation efficiency.
- Dielectric or insulation resistance test when this unit is installed in the control panel.
- Separate the unit completely from a control panel circuit.
- Short all terminals of the unit.
- Caution for connecting the input power terminal
- Connect input line (AC) to the input terminal correctly. When you connect this to the other terminal, it may cause damage to the power supply.
- Do not use the unit in the following environments.
 - Environments with high vibration or shock.
 - Environments with strong alkali or acids.
 - Environments with exposure to direct sunlight.
 - Near machinery which produce strong magnetic force or electric noise.
- This unit may be used in the following environments.
 - Indoors
 - Max. altitude: 2,000m
 - Pollution degree 2
 - Installation category II

- Please use the power line as below specification.

Input power line specification	AWG21 to 19	AWG18 to 16
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 SPA-400-24

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