

# SPB Series

## DIN rail mounting switching mode power supply

### ■ Features

- DIN rail type and fixing screw type mountings
- Built-in overcurrent protection, output short circuit protection, overheat and over voltage limit protection circuit (SPB-120/240)
- Built-in power factor correction circuit (SPB-120/240)
- Low-voltage LED indicator
- Slim-type size (SPB-015: W22.5×H90×L90mm)
- Minimizes noise and ripple
- Improves user safety with terminal cover
- Designed to minimize heat
- Output power: 15W, 30W, 60W, 120W, 240W
- Output voltage: 5VDC, 12VDC, 24VDC, 48VDC

Line-up



SPB-015/030  
Series

SPB-060  
Series

SPB-120  
Series

SPB-240  
Series

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



### ■ Ordering Information

SPB	—	120	—	24
				Output voltage
				Output power
				Item
				5
				12
				24
				48
				015
				030
				060
				SPB
				Switching Mode Power Supply

### ■ Specifications

Model	SPB-015-05	SPB-015-12	SPB-015-24	SPB-030-05	SPB-030-12	SPB-030-24	SPB-060-12	SPB-060-24	SPB-060-48	SPB-120-12	SPB-120-24	SPB-120-48	SPB-240-12	SPB-240-24	SPB-240-48
Output power	15W	15.6W		25W	30W	31.2W	60W		62.4W	96W	120W		240W		
Input	Voltage 100-240VAC (permissible voltage: 85-264VAC/120-370VDC)														
	Frequency 50/60Hz														
	Efficiency <sup>*1</sup> (Typical)	100VAC 77%	80%	83%	77%	82%	84%	81%	84%	85%	82%	82%	85%	87%	89%
		240VAC 76%	79%	82%	78%	83%	85%	83%	86%	87%	85%	85%	88%	90%	92%
	Power factor <sup>*1</sup>	—			—			—			Min. 0.9			Min. 0.9	
	Current consumption <sup>*1</sup> (Typical)	100VAC 0.35A	0.36A	0.34A	0.56A	0.63A	0.63A	1.24A	1.21A	1.19A	1.19A	1.49A	1.43A	2.76A	2.71A
		240VAC 0.19A	0.19A	0.19A	0.30A	0.35A	0.35A	0.66A	0.65A	0.64A	0.52A	0.61A	0.61A	1.14A	1.12A
Power factor correction circuit	—			—			—			Built-in			Built-in		
Output	Voltage	5VDC	12VDC	24VDC	5VDC	12VDC	24VDC	12VDC	24VDC	48VDC	12VDC	24VDC	48VDC	12VDC	24VDC
	Current	3A	1.3A	0.65A	5A	2.5A	1.3A	5A	2.5A	1.3A	8A	5A	2.5A	20A	10A
	Voltage adjustment range <sup>*2</sup>	Max. ±10%			Max. ±10%			Max. ±5%			Max. ±5%			Max. ±5%	
	Input variation <sup>*3</sup>	Max. ±0.5%			Max. ±0.5%			Max. ±0.5%			Max. ±0.5%			Max. ±0.5%	
	Load variation	Max. ±1%			Max. ±1%			Max. ±1%			Max. ±1%			Max. ±1%	
	Ripple&Ripple noise <sup>*1, *4</sup>	Max. ±1.5%			Max. ±1.5%			Max. ±1%			Max. ±1%			Max. ±1%	
	Start-up time <sup>*1</sup> (Typical)	100VAC 500ms	550ms	650ms	600ms	550ms	550ms	520ms	550ms	1200ms	1200ms	760ms	1200ms	75ms	87ms
		240VAC 550ms	550ms	650ms	600ms	550ms	550ms	530ms	550ms	400ms	400ms	280ms	400ms	45ms	56ms
	Hold time <sup>*1</sup> (Typical)	100VAC 24ms	25ms	25ms	20ms	15ms	15ms	15ms	14ms	15ms	98ms	81ms	87ms	33ms	36ms
		240VAC 190ms	190ms	190ms	130ms	110ms	110ms	100ms	110ms	108ms	97ms	81ms	86ms	33ms	36ms

※1: It is for 100% load.

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

※3: It is for the rated input voltage 100-240VAC (85-264VAC), and 100% load.

※4: It is for the rated input voltage 100-240VAC.

# DIN rail Mounting Type Switching Mode Power Supply

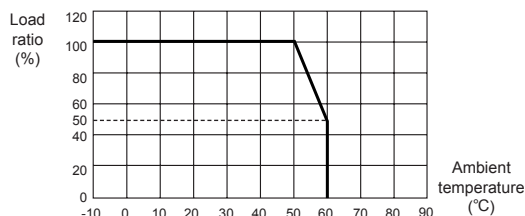
## Specifications

Model			SPB -015 -05	SPB -015 -12	SPB -015 -24	SPB -030 -05	SPB -030 -12	SPB -030 -24	SPB -060 -12	SPB -060 -24	SPB -060 -48	SPB -120 -12	SPB -120 -24	SPB -120 -48	SPB -240 -12	SPB -240 -24	SPB -240 -48
Protection	Inrush current protection (Typical)	100VAC	7A	7A	7A	7A	7A	6A	13A	14A	10A	9A	16A	10A	8A	8A	8A
		240VAC	32A	30A	31A	29A	31A	29A	19A	17A	37A	37A	20A	37A	22A	25A	26A
	Output over current protection※4		105 to 160%			105 to 160%			105 to 160%			105 to 160%			105 to 160%		
	Output over voltage protection		—			—			—			16.0V ±10%	30.0V ±10%	58.0V ±10%	16.0V ±10%	30.0V ±10%	58.0V ±10%
	Output low-voltage indicate		4.2V ±10%	9.6V ±10%	20.0V ±10%	4.2V ±10%	9.6V ±10%	20.0V ±10%	9.6V ±10%	20.0V ±10%	43.0V ±10%	9.6V ±10%	20.0V ±10%	43.0V ±10%	10.0V ±10%	20.0V ±10%	43.0V ±10%
Indicator			Output indicator: green LED, Output low-voltage indicator: red LED														
Insulation resistance			Min. 100MΩ(at 500VDC megger between all input terminals and output terminals)														
Dielectric strength			3000VAC 50/60Hz for 1 min.(between all input terminals and output terminals) 1500VAC 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 hour														
Shock			300m/s²(approx. 30G) in each X, Y, Z direction for 3 times														
EMS			Conforms to EN61000-6-2														
EMI			Conforms to EN61000-6-4														
Safety			IEC60950, IEC50178														
Environ-ment	Ambient temp.		-10 to 50°C, storage: -25 to 65°C														
	Ambient humi.		25 to 85%RH, storage: 25 to 90%RH														
Input cable			AWG24 to 19			AWG24 to 19			AWG21 to 19			AWG21 to 19			AWG18 to 16		
Protection			IP20(IEC standard)														
Approval			CE														
Weight※5			Approx. 202g (approx. 129g)			Approx. 249g (approx. 176g)			Approx. 347g (approx. 274g)			Approx. 570g (approx. 466g)			Approx. 866g (approx. 736g)		

※5: The weight includes packaging. The weight in parentheses is for unit only.

※Environment is rated at no freezing or condensation.

## Output Derating Curve By Ambient Temperature



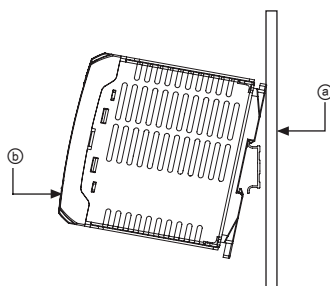
## Over-Heating Protection

If the inner temperature of the switching element is around 140°C by overheat, it stops switching operation and becomes open state. Output voltage is not output.

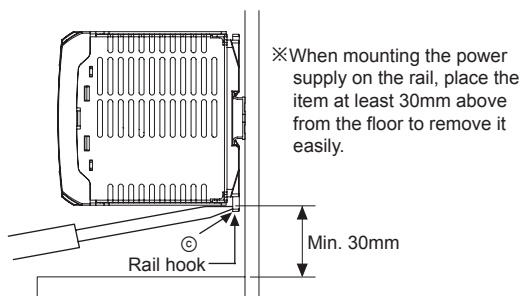
## Installation

### DIN rail mounting

• To mount the power supply on the rail,  
First put the power supply on the part ㊸ of the rail  
and then press it for the direction ㊹.



• To remove the power supply on the rail  
First put a screw driver into the part ㊺ and push it  
downward.

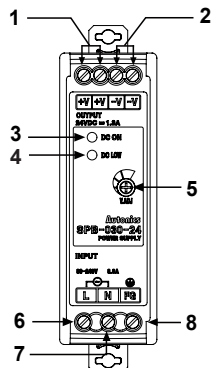


(A)	Photo electric sensor
(B)	Fiber optic sensor
(C)	Door/Area sensor
(D)	Proximity sensor
(E)	Pressure sensor
(F)	Rotary encoder
(G)	Connector/Socket
(H)	Temp. controller
(I)	SSR/Power controller
(J)	Counter
(K)	Timer
(L)	Panel meter
(M)	Tacho/Speed/ Pulse meter
(N)	Display unit
(O)	Sensor controller
(P)	Switching mode power supply
(Q)	Stepper motor& Driver&Controller
(R)	Graphic/Logic panel
(S)	Field network device
(T)	Software
(U)	Other

# SPB Series

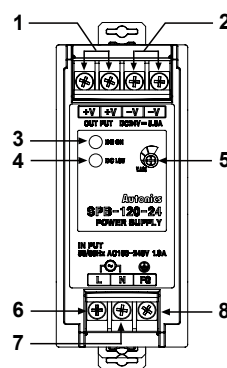
## Unit Description

### ● SPB-015/030 Series



1. Output power [+V] terminal
2. Output power [-V] terminal
3. Output(DC ON) indicator(green)
4. Output low voltage(DC LOW) indicator(red)
5. Output voltage adjuster(V.ADJ)
6. Input power [L] terminal
7. Input power [N] terminal
8. Frame ground [F.G.] terminal

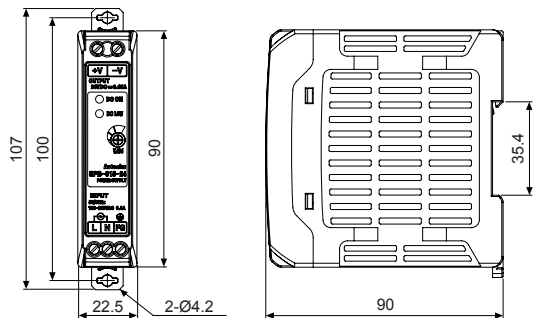
### ● SPB-060/120/240 Series



※SPB-015, SPB-060 Series has an output power(+V) terminal(1) and an output power(-V) terminal(2).

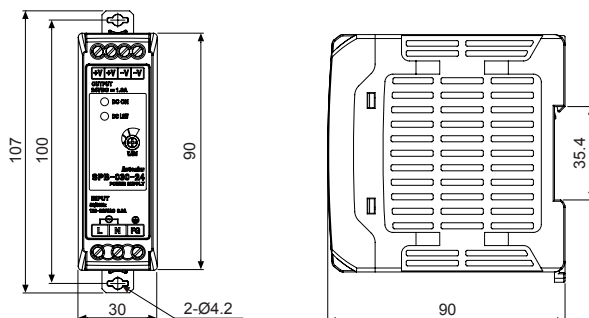
## Dimensions

### ● SPB-015 Series

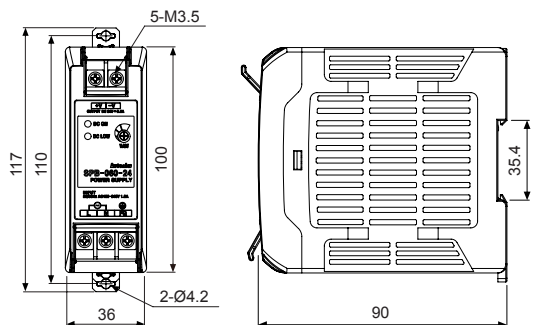


### ● SPB-030 Series

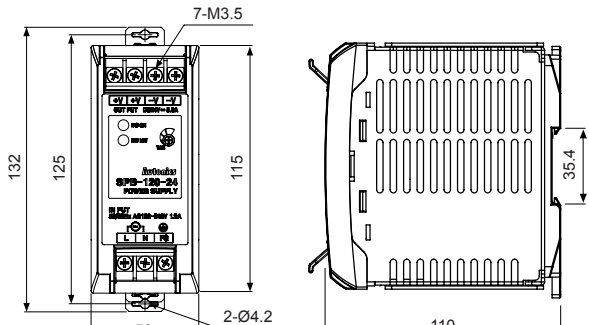
(unit: mm)



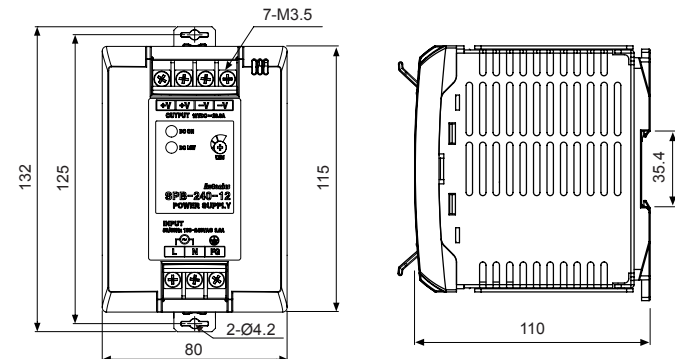
### ● SPB-060 Series



### ● SPB-120 Series



### ● SPB-240 Series



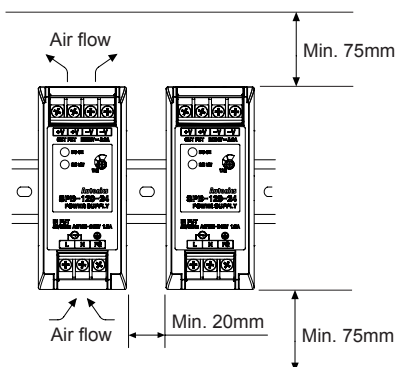
# DIN rail Mounting Type Switching Mode Power Supply

## ■ Cautions During Use

- Caution for operating
  - This product does not have the function for parallel or 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.
  - For the product, which has the control function for over-voltage, if making the output voltage adjuster(V.ADJ) to over rated voltage, the function starts to work.
  - This product has the function of over-heating protection.  
The over-heating protection operates when the product has over-heating condition.  
The product normally operates if the load is removed for over 5 minutes.
  - In case of the SPB-060, it does not have the harmonics suppression and power factor improvement circuit.  
To improve harmonics suppression and power factor, install the additional device.
  - In case of the SPB-060, 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.

$$\text{Input apparent power[VA]} = \frac{\text{Output active power[W]}}{\text{Power factor} \times \text{Efficiency}}$$

- 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 vertically for the reliability.
  - Please mount this product at a well-ventilated place in order to increase the heat radiation efficiency.
  - Effective mounting  
When installing more than two power supplies, min. 20mm distance is required to radiate heat effectively.  
Assure min. 75mm distance of the upper or the lower product and mount the products as following figure.



- 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 this unit at below places.
  - Place where there are severe vibration or impact.
  - Place where strong alkalis or acids are used.
  - Place where there is direct ray of the sun.
  - Place where strong magnetic field or electric noise are generated.
- Installation environment
  - It shall be used indoor
  - Altitude max. 2000m
  - Pollution Degree 2
  - Installation Category II

(A)	Photo electric sensor
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