

## Embedded Switch Mode Power Supplies (SMPS)

### FEATURES

- Universal 90 - 264V  
AC Active PFC
- Compact size: 130 x 86 x 43mm
- Efficiency up to 93%
- Stand-by power consumption.  
< 0.5W
- 310W free air, 550W with 25CFM
- 5V standby output, 12V fan  
supply, power good signal
- Operating temperature range  
- 40°C to +70°C
- Output short circuit, over-current,  
over-voltage protection.
- Conformally coated
- EMI performance meets.  
CISPR32 / EN55032 CLASS B
- Suitable for BF application  
IEC/EN/UL62368,  
IEC/EN61558, GB4943,  
IEC/EN/ES60601-1

## RS PRO Embedded Switch Mode Power Supplies

- **2367920**
- **2367924**



RS Professionally Approved Products bring to you professional quality parts across all product categories. Our product range has been tested by engineers and provides a comparable quality to the leading brands without paying a premium price.

## Embedded Switch Mode Power Supplies (SMPS)

### Product Description

AC-DC enclosed power supply suitable for a wide range of Industrial, Medical and Dental applications. Featuring a universal AC input, this cost-effective, high-density design has double or reinforced insulation and is available in a range of standard outputs. Complying with International and European EMC and safety standards IEC/EN/UL62368, GB4943, IEC/EN60335, IEC/EN61558, IEC/EN/ES60601

### General Specifications

<b>Model</b>	AC-DC 450W Medical / Industrial power supply
<b>Mounting Type</b>	Chassis Mount enclosed
<b>MTBF</b>	MIL-HDBK-217F@25°C > 200,000 h
<b>Applications</b>	Industrial control systems, instrumentation and medical equipment

RS Stock#	Input Voltage	Output Voltage	Adj'range (V)	Output Current	Wattage	Efficiency (Typ)
2367920	90 to 264V ac 127 to 370V dc	12V DC	11.4-12.6	25.8A (Free air)	309.6W	91%
				41.6A (25CFM)	499.5W	
2367924	90 to 264V ac 127 to 370V dc	24V DC	22.8-25.2	12.9A (Free air)	309.6W	93%
				22.9A (25CFM)	549.6W	

### Input Specifications

Input Specification	
<b>Voltage Range</b>	90 to 264V ac, 127 to 370V dc
<b>Frequency</b>	47 to 63Hz
<b>Input Current</b>	6.5A/115V ac, 3A/230V ac
<b>Inrush Current</b>	50A/ 115V ac, 80A / 230V ac
<b>Leakage</b>	<0.1mA contact leakage, <0.5mA Earth Leakage
<b>Power Factor</b>	0.98 115VAC, 0.95 230VAC Full Load
<b>Standby power consumption</b>	0.5W Room Temperature, 230Vac input (PS-ON Low potential)

## Output Specifications

Output Specification						
	2367920		2367924			
Output voltage	12V		24V			
Adjustment range	11.4-12.6V		22.8-25.2V			
Rated Current (25CFM)	41.6A		22.9A			
Max Capacitive load $\mu$ F	6000 $\mu$ F		6000 $\mu$ F			
Ripple & Noise (max.) *	200mVp-p		200mVpp			
Line Regulation typ.	$\pm$ 0.5%		$\pm$ 0.5%			
Load Regulation typ.	$\pm$ 1%		$\pm$ 1%			
Minimum Load	0%		0%			
Hold-up Time	10mS		10mS			
Short Circuit Protection	Recover time <5s after short circuit is removed (Hiccup, continuous, self-recover)					
Over-current Protection	$\geq$ 105%Io, hiccup, self-recover					
Over Voltage Protection	12V $\leq$ 15.6VDC (Output voltage turn off, re-power on for recover)					
	24V $\leq$ 31.2VDC (Output voltage turn off, re-power on for recover)					
Fan Power	12V/0.5A					
PS_ON Input Signal*	Power on	PS_ON High	2	-	5	V
	Power off	PS_ON Low	0	-	0.5	
PG Signal*	Power on	The PG signal goes high with 10ms to 500ms delay after power set up	10	-	500	mS
	Power off/Power fail	The TTL signal goes low at least 1ms before output below 90% of rated value	1	-	-	
	High level	High	2	-	6	V
	Low level	Low	0	-	0.6	
Remote Sense*	When RS+ and RS- are connected to the system, with function of remote voltage compensation, if not needed, left RS+ and RS open					
5V Standby*	5Vsb: The load capacity is 0.6A without fan, the load capacity is 1A with fan 25CFM; tolerance 2%, ripple: 120mVp-p(max.)					
Over-temperature Protection*	Output voltage turn off, auto recover after the temperature drops					
Note: 1.*Output Voltage Accuracy : including setting error, line regulation, load regulation; 2.*The "Tip and barrel method" is used for ripple and noise test, output parallel 47 $\mu$ F electrolytic capacitor (Low ESR) and 0.1 $\mu$ F ceramic capacitor, please refer to AC-DC Converter Application Notes for specific information; 3.*Over-temperature Protection: use the discharge pen to release the input electrolytic charge completely, and then						

## Embedded Switch Mode Power Supplies (SMPS)

test the restart auto recover. 4.\*For all the above test items, please refer to our company standard "AC-DC Black Box Test Specification" for specific test specifications and methods; 5.\*For fan power connection method, please refer to 5, 6 in the external dimension drawing; 6.\*For PS\_ON, 5V standby connection method, please refer to CN6 in the external dimension drawing; 7.\*For PG standby connection method, please refer to CN2 in the external dimension drawing.

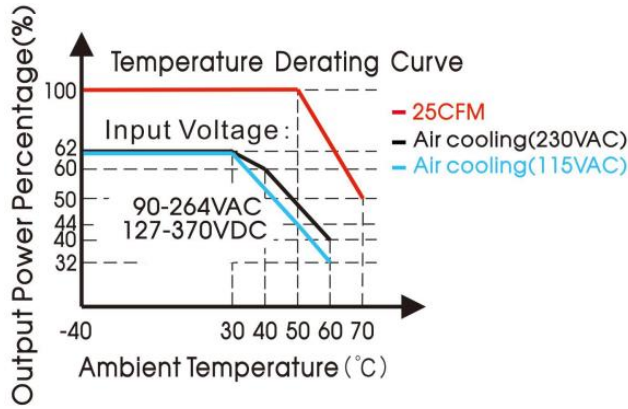
### General Specifications

Item		Operating Conditions		Min	Typ	Max	Unit
Isolation	Input-output	Electric strength test for 1min., leakage current <5mA		4000	-	-	VAC
	Input-Earth			2000	-	-	
	Output-Earth			1500	-	-	
Insulation Resistance	Input-Earth	Environment temperature: 25±5°C, Relative humidity: <95%RH, non-condensing Testing voltage 500VDC		100	-	-	MΩ
	Input-output			100	-	-	
	Output-Earth			100	-	-	
Isolation level	Input-output			2 × MOPP			
	Input-Earth			1 × MOPP			
	Output-Earth			1 × MOPP			
Operating Temperature				-40	-	+70	°C
Storage Temperature				-40	-	+85	
Storage Humidity		Non-condensing		10	-	95	%RH
Operating Humidity				20	-	90	
Power Derating	25CFM	LOF550-20B12-C	+50°C to +70°C	2.5	-	-	% / °C
		LOF550-20B24-C	+50°C to +70°C	2.75	-	-	
	Air cooling	230V	+30°C to +40°C	1	-	-	W / °C
			+40°C to +60°C	5	-	-	
		115V	+30°C to +50°C	4.5	-	-	
			+50°C to +60°C	6.0	-	-	
	Input voltage derating		90VAC -115VAC		1.0	-	-
Safety Standard		IEC/EN/UL62368/EN60335/GB4943					
Safety Certification		EN/UL62368-1/EN60601-1					
Safety Class		CLASS I					
MTBF		MIL-HDBK-217F@25°C		> 200,000 h			

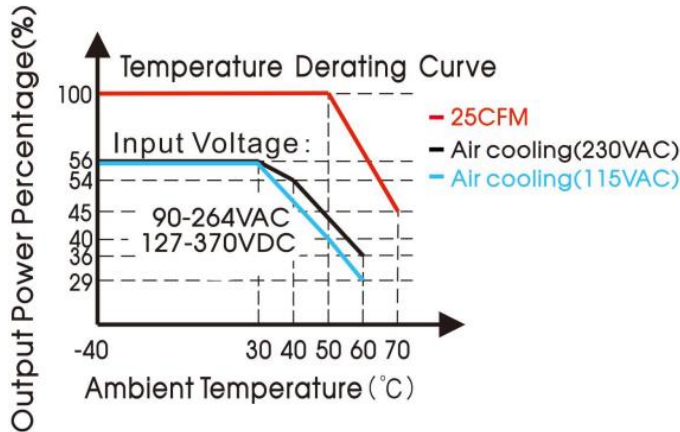
# Embedded Switch Mode Power Supplies (SMPS)

## Derating

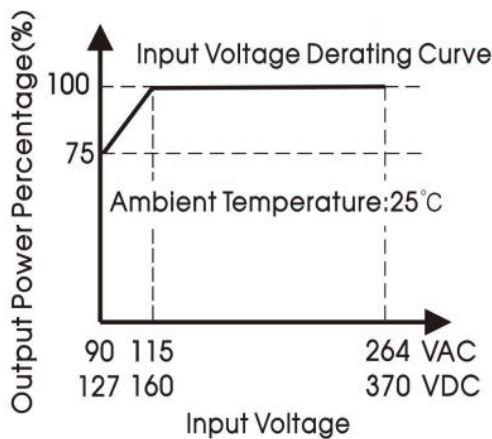
**2367920 (full load 500W with 25CFM)**



**2367924 (full load 550W with 25CFM)**



**2367920, 2367924 Input Voltage Derating Curve**



Note: With an AC input voltage between 90 - 115VAC and a DC input between 127 - 160VDC the output power must be derated as per the temperature derating curves

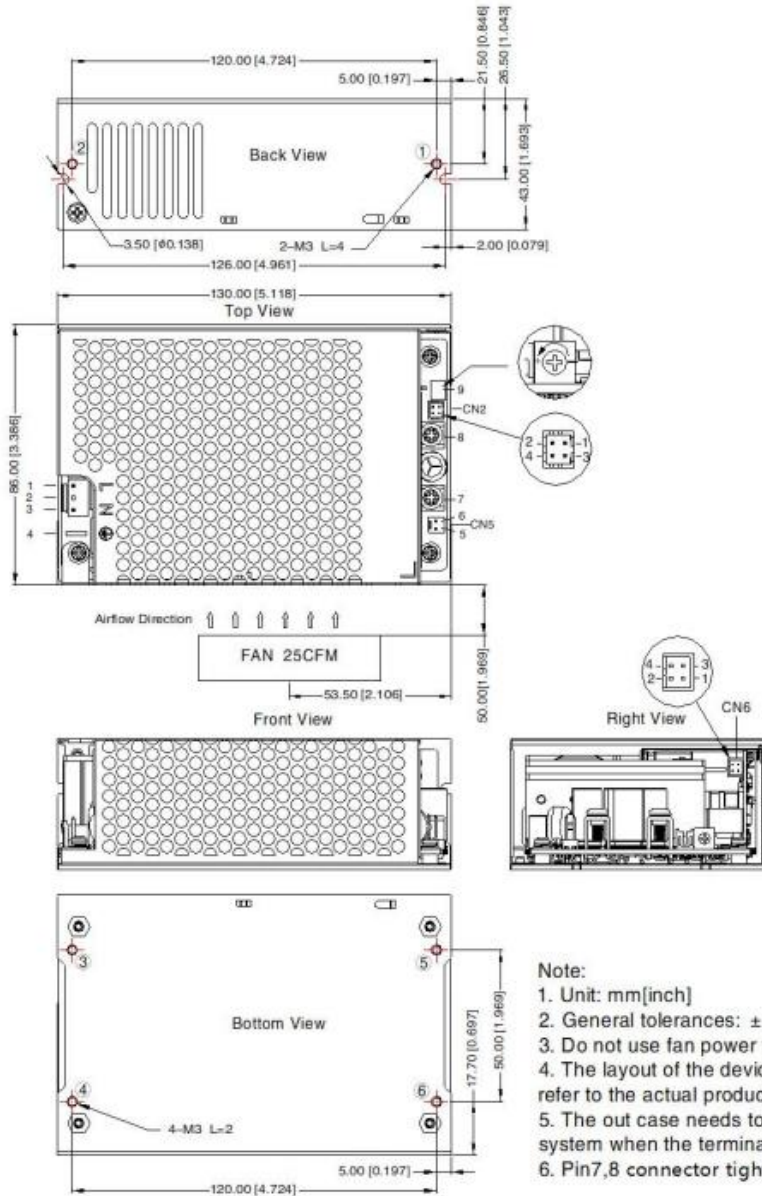
## EMC Specifications

Emissions	CE	EN55032(CISPR32)/EN55011(CISPR11) CLASS B	
	RE	EN55032(CISPR32)/EN55011(CISPR11) CLASS B	
	Harmonic Current	IEC/EN61000-3-2 CLASS A and CLASS D	
	Flicker	IEC/EN61000-3-3	
Immunity	ESD	IEC/EN 61000-4-2 Contact $\pm 8\text{KV}$ /Air $\pm 15\text{KV}$	Perf. Criteria A
	RS	IEC/EN 61000-4-3 10V/m	Perf. Criteria A
	EFT	IEC/EN 61000-4-4 $\pm 2\text{KV}$	Perf. Criteria A
	Surge	IEC/EN61000-4-5 line to line $\pm 2\text{KV}$ , line to ground $\pm 4\text{KV}$	Perf. Criteria A
	CS	IEC/EN61000-4-6 10Vr.m.s	Perf. Criteria A
	DIP	IEC/EN61000-4-11 0%, 70%	Perf. Criteria A
<p>Note: *The power supply should be considered as a part of the components in the system. All EMC measurements have been completed on a metal plate (LxWxH, 360mm x 360mm x 1mm). The power supply must be combined with final equipment for EMC confirmation</p>			

## Mechanical Specifications

<b>Case Material</b>	Metal (AL5052, SUS304)
<b>Dimensions</b>	130x86x43mm
<b>Weight</b>	605g (Typ.)
<b>Cooling Method</b>	Air cooling (310W) / 25CFM(500W/550W)

# Embedded Switch Mode Power Supplies (SMPS)



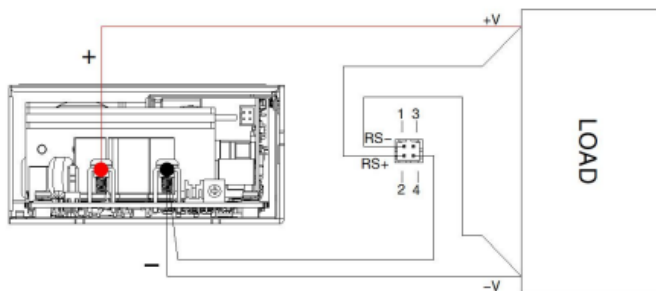
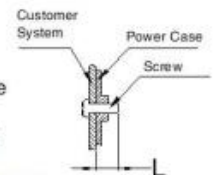
THIRD ANGLE PROJECTION

Pin-Out		Customer Connector
Pin	Mark	Housing: JST VHR or equivalent Contact: JST SVH-21T-P1.1 or equivalent
1	AC(L)	
2	NC	
3	AC(N)	
4		CN5: Fan power output port Housing: TKP 2502 or equivalent Contact: TKP 8B11 or equivalent
5	FAN+	
6	FAN-	
7	+Vo	
8	-Vo	
9	ADJ Output adjustable resistor	

Pin-Out		Customer Connector
Pin	Mark	Housing: JST PHD-2*2Y or equivalent Contact: JST PHD-TE or equivalent
1	+5V	
2	GND	
3	PS-ON	
4	GND	

Pin-Out		Customer Connector
Pin	Mark	Housing: JST PHD-2*2Y or equivalent Contact: JST PHD-TE or equivalent
1	RS-	
2	RS+	
3	GND	
4	PG	

Position	Screw Spec.	L(max)	Torque(max)
①-②	M3	4mm	0.4N·m
③-④	M3	2mm	0.4N·m



Remote sensing function wiring diagram

**Note:**

- RS - and RS + cannot be shorted or reversed, otherwise the power module will be damaged;
- The remote compensation function can compensate the voltage drop on the output cable, which includes the sum of the cable drop connected to the output positive terminal and the output negative terminal;
- If you need to use remote compensation function, the signal pin needs to be connected with the load and with a twisted pair, otherwise the power module will be damaged.



### Approvals

<b>Safety Standard</b>	EN/UL62368/EN60601-1 Design refers to IEC/CB62368 /GB4943-1/EN60335-1
<b>Safety Certification</b>	EN/UL62368/EN60601-1
<b>Safety Class</b>	Class I (PE and must be connected)

### Additional Information

<b>Custom Tariff Number</b>	85044030
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#### Note:

1. Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta=25°C, humidity<75%RH with nominal input voltage and rated output load.
2. All index testing methods in this datasheet are based on our company corporate standards.
3. In order to improve the efficiency at high input voltage, there will be audible noise generated, but it does not affect product performance and reliability.
4. Products are related to laws and regulations: see "Features" and "EMC".
5. Our products shall be classified according to ISO14001 and related environmental laws and regulations and shall be handled by qualified units.
6. CAUTION: Double pole, neutral fusing. Disconnect mains before servicing."/"/> ATTENTION: Double pôle/fusible sur le neutre. Débrancher l'alimentation avant l'entretien;
7. The power supply is considered a component which will be installed into a terminal.