

# Switching Power Supply Type SPD 240W Compact DIN rail mounting

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- Universal AC input full range
- Installation on DIN rail 7.5 or 15mm
- Short circuit protection
- Active PFC as standard
- High efficiency up to 93%
- Power ready output
- LED indicator for DC power ON
- LED indicator for DC low
- Parallel connection feature
- Compact dimensions
- UL, cUL listed and TUV/CE approved
- 150% peak load capability

## Product Description

The Switching power supplies SPD series are specially designed to be used in all automation application where the installation is on a DIN rail and compact dimensions and performance are a must.

## Ordering Key

**SP D 24 240 1C X**

Model \_\_\_\_\_  
 Mounting (D = Din rail) \_\_\_\_\_  
 Output voltage \_\_\_\_\_  
 Output power \_\_\_\_\_  
 Input type \_\_\_\_\_  
 Optional features \_\_\_\_\_

Input type: 1C = single phase Compact version

## Approvals



## Optional features

Description	Code
Screw terminal	Nil
Plug-in connectors	B

## Output Performance

MODEL NO.	INPUT VOLTAGE	OUTPUT POWER	OUTPUT VOLTAGE	OUTPUT CURRENT	EFF. (min.)	EFF. (typ.)
<b>Single Output Models</b>						
SPD 12 240 1C X	88~264 VAC	192 WATTS	+12 VDC	16A	89%	91%
SPD 24 240 1C X	88~264 VAC	240 WATTS	+ 24 VDC	10A	91%	93%

## Output Data (All specifications are at nominal values, full load, 25°C unless otherwise noticed)

Line regulation	± 1%	Reverse voltage	12V Model 18VDC 24V Model 35VDC	
Load regulation	±1%	Capacitor load	7000µF	
Minimum load	0%	Temperature coefficient	±0.03°C	
Turn on time		DC ON indicator threshold at start up (Green LED)	<b>VDC</b>	
Vi nom, lo nom	1000ms (full resistive load) 150ms with 7000µF CAP	Vi nom, lo nom	12V Model 24V Model	Min. Max. 10 11.2 17.6 19.4
Transient recovery time	2ms	DC LOW indicator threshold at start up (Red LED)	<b>VDC</b>	
Ripple and noise	100mVpp	Vi nom, lo nom	12V Model 24V Model	Min. Max. 10 11.2 17.6 19.4
Output voltage accuracy	0% ~ +1%	Parallel operation	0.1 lo min~0.9 lo max For parallel operation, turn the Switch S/P Single/Parallel to the position "P" in advance. Max 3 units and power out 90%	
Hold up time	Vi= 115VAC 25ms Vi= 230VAC 30ms			
Voltage fall time (I <sub>o</sub> nom, Vi nom)	150ms			
Voltage rise time				
Vi nom, lo nom	150ms (full resistive load) 500ms with 7000µF CAP			
Voltage trim range	12V Model 11.4-14.5 VDC 24V Model 22.5-28.5 VDC			
Rated continuous loading	12V Model 16A@12VDC/13A@14.5VDC 24V Model 10A@24VDC/8.4A@28.5VDC			

## Input Data (All specifications are at nominal values, full load, 25°C unless otherwise noticed)

<b>Rated input voltage</b> $I_{nom}$	100 - 240VAC	<b>Power dissipation</b> ( $V_i$ : 230VAC, $I_o$ nom)	<b>12V Model</b> 19W <b>24V Model</b> 18W
<b>Voltage range</b>		<b>Frequency range</b>	47- 63Hz
<b>AC IN</b>	88 - 264VAC	<b>Leakage current</b>	
<b>DC IN</b>	120 - 375VDC	<b>Input-Output</b>	<0.25mA
<b>Rated input current</b>		<b>Input-FG</b>	<3.5mA
<b><math>V_i</math>: 88VAC <math>I_o</math> nom</b>	3.2A Max.	<b>P.F.C. (Active)</b>	0.97@ $V_i$ :230VAC, $I_o$ nom
<b><math>V_i</math>: 115VAC <math>I_o</math> nom</b>	2.3A Typ.		
<b><math>V_i</math>: 230VAC <math>I_o</math> nom</b>	1.15A Typ.		
<b>Inrush current</b>			
<b><math>V_i</math>= 115VAC</b>	24A		
<b><math>V_i</math>= 230VAC</b>	48A		

## Controls and Protections (All specifications are at nominal values, full load, 25°C unless otherwise noticed)

<b>Overload <math>V_i</math> nom</b> (see typ current limited curve)	120% - 150%	<b>Power RDY</b> (for 24V model only)	Threshold voltage of contact closed (at start up) 17.6 - 19.4VDC
<b>Input fuse</b>	T5A/250VAC internal <sup>1)</sup>	<b>Electrical isolation</b>	500VDC
<b>Output short circuit</b>	Shut-down protection, after 7s auto-restart	<b>Over temperature</b> Detect on heat sink, shut down O/P voltage, recovers automatically after temperature goes down	100 - 110°C
<b>Over voltage protection</b> (Auto recovery)	<b>VDC</b>	<b>Rated over load protection</b> <b><math>V_i</math> nom</b> (see typ current limited curve)	120 - 150%
<b>12V Model</b>	<b>Min.</b> 15 <b>Max.</b> 16.5		
<b>24V Model</b>	30 33		
<b>Internal surge voltage protection</b> IEC 61000-4-5	Varistor		

<sup>1)</sup> Fuse not replaceable by user

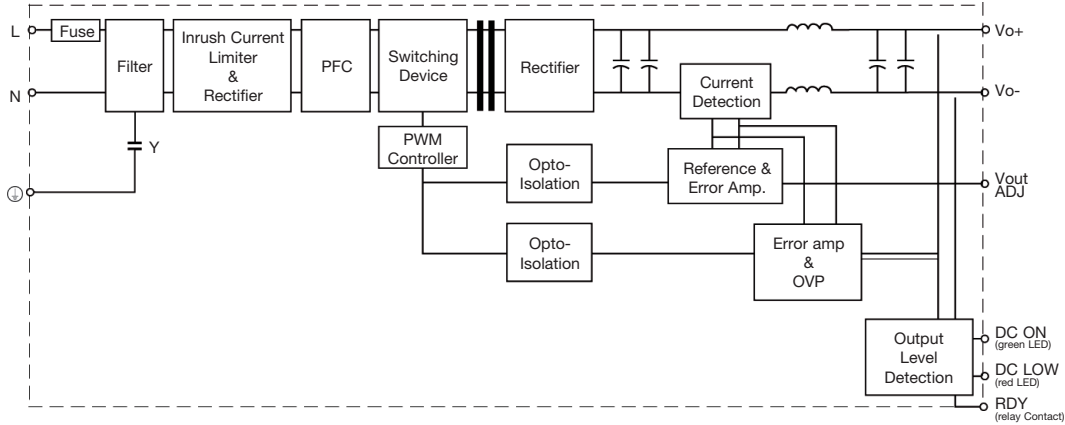
## General Data (All specifications are at nominal values, full load, 25°C unless otherwise noticed)

<b>Ambient temperature</b>	-40°C to + 71°C	<b>Pollution degree</b>	2
<b>Derating (+61°C to + 71°C)</b>	2.5%/°C (see curve)	<b>MTBF</b> (Bellcore issue 6 @ 40°C, GB)	
<b>Relative humidity</b>	20 ~ 95%RH	<b>12V Model</b>	374000 Hours
<b>Storage temperature</b>	-40°C to +85°C	<b>24V Model</b>	384000 Hours
<b>Protection degree</b>	IP20	<b>Case material</b>	Metal
<b>Cooling</b>	Free air convection	<b>Altitude</b>	4850m
<b>Insulation voltage</b>		<b>Dimensions LxWxD mm(inch)</b>	
<b>Input-Output</b>	3000VAC/4242VD min	<b>Screw terminal type</b>	124.5(4.9)x64(2.52)x123.6(4.87)
<b>Input-Fg</b>	1500VAC/2121VD min	<b>Detachable connector type</b>	143.5(5.65)x64(2.52)x123.6(4.87)
<b>Insulation resistance I/O</b>	100MΩ min (@ 500VDC)	<b>Weight</b>	860g
<b>Switching Frequency</b>	90 Khz Typ	<b>Packing</b>	960g

## Norms and Standards

<b>Vibration resistance</b>	meet IEC 60068-2-6 (Mounting by rail: Random wave, 10-500 Hz, 2G each long Z, Y, Z axes 10 min/cycle, 60min.)	<b>CE</b>	EN 61000-6-3, EN 55037 Class B, EN 61000-3-2, EN 61000-3-3, EN 61000-6-2, EN 55024, EN 61000-4-2 level 4, EN 61000-4-3 level 3 EN 61000-4-4 level 4 EN 61000-4-5 L-N level 3 EN 61000-4-6 level 3 EN 61000-4-8 level 4 EN 61000-4-11, ENV 50204 Level 2
<b>Shock resistance</b>	meet IEC 60068-2-27 (4G, 22ms, 3 Axis, 6 faces, 3 times for each face)		
<b>UL/cUL</b>	UL 508 Listed UL 60950-1 Recognized		
<b>TUV</b>	EN 60950-1 EN 21558-1 EN 6155-8-2-16		

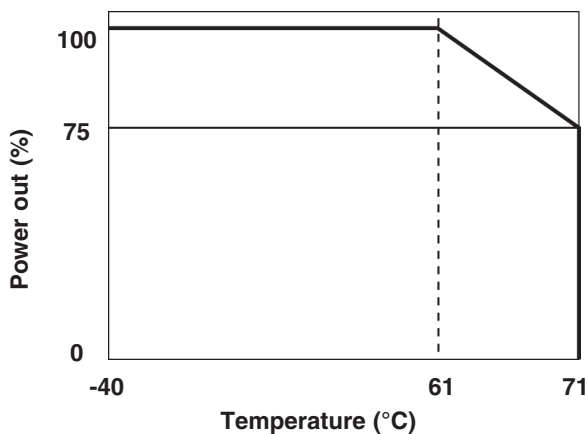
## Block Diagram



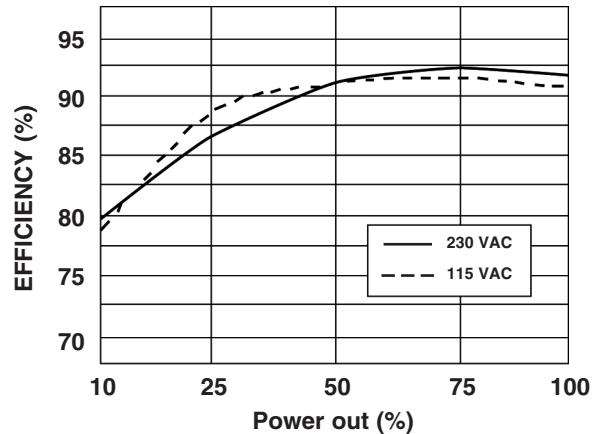
## Pin Assignment and Front Controls

Pin No.	Designation	Description
1	RDY	A normal open relay contact for DC ON level control Never connect except 24V model
2		
3. 4	V+	Positive output terminal
5. 6	V-	Negative output terminal
7	⊕	Ground this terminal to minimize high-frequency emissions
8	N	Input terminals (neutral conductor, no polarity at DC input)
9	L	Input terminal (phase conductor, no polarity at DC input)
LED	DC ON	Operation indicator LED
LED	DC LO	DC LOW voltage indicator LED
Trimmer	Vout ADJ.	Trimmer-potentiometer for Vout adjustment
Switch	S/P	Single / Parallel select switch

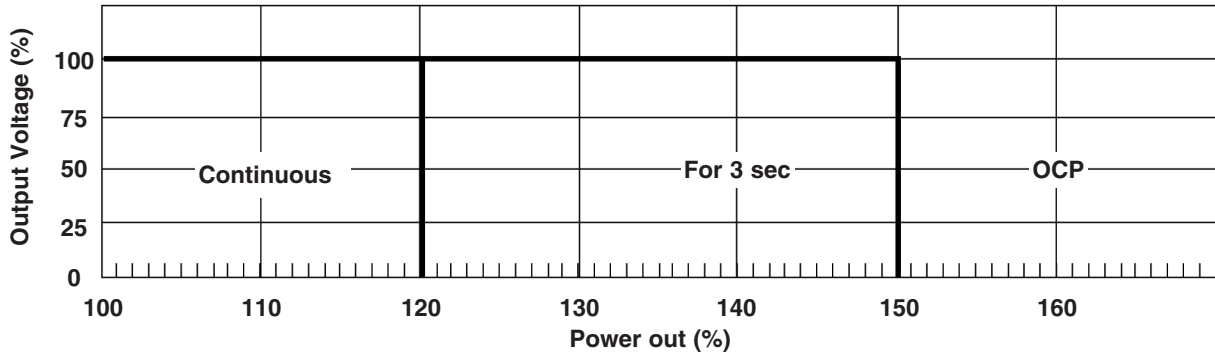
## Derating Curve



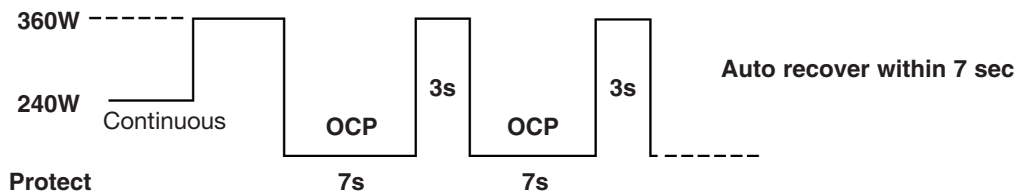
## Typ. Efficiency curve



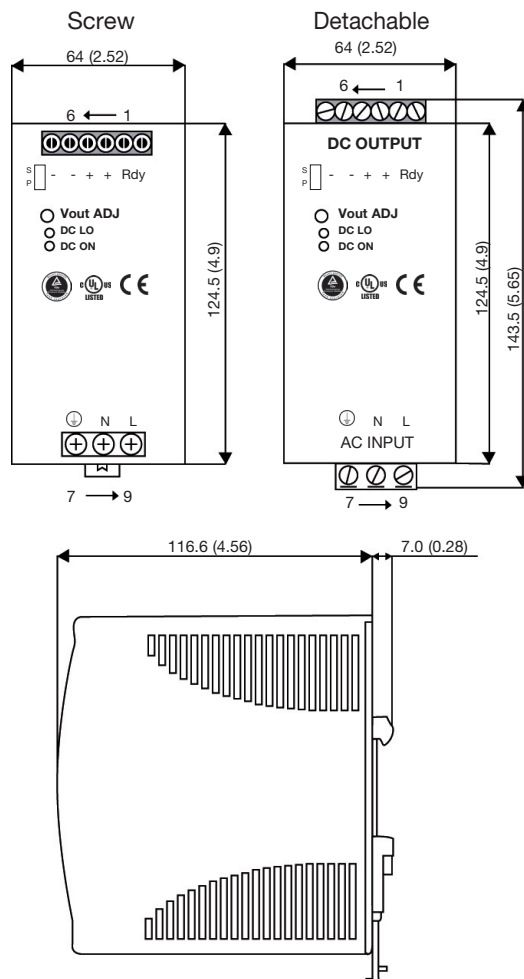
## Typ. Current Limited Curve



## Peak Loading



## Mechanical Drawings mm (inches)



## Installation

### Ventilation and cooling

Normal convection.  
 All sides 25mm free space  
 for cooling is recommended

### Connector size range

#### Screw terminals:

- Input Terminals
- Output Terminals

#### Detachable connectors:

- Input Terminals
- Output Terminals

AWG24-10 (0.2~4mm<sup>2</sup>)  
 flexible / solid cable,  
 max. torque at 1.16Nm  
 (9 pound-inches).  
 max. torque at 0.616Nm  
 (5.5 pound-inches).  
 8mm stripping at cable end  
 recommends.

AWG24-12 (0.2~2.5 mm<sup>2</sup>)  
 flexible / solid cable,  
 max. torque at 0.51 Nm  
 (4.5 pound-inches).  
 max. torque at 0.79 Nm  
 (7 pound-inches).  
 4~5mm stripping at cable end  
 recommends.  
 Use copper conductors  
 only, 60/75°C.

## Parallel Connection

