

# 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%	Rated continuous loading <b>12V Model</b> <b>24V Model</b>	16A@12VDC/13A@14.5VDC 10A@24VDC/8.4A@28.5VDC	
Load regulation	±1%		Reverse voltage <b>12V Model</b> <b>24V Model</b>	18VDC 35VDC
Minimum load	0%	Capacitor load		7000µF
Turn on time Vi nom, Io nom	1000ms (full resistive load) 1500ms with 7000µF CAP	Temperature coefficient	±0.03°C	
Transient recovery time	2ms	DC ON indicator threshold at start up (Green LED) Vi nom, Io nom	<b>VDC</b> <b>Min.</b> <b>Max.</b>	
Ripple and noise	100mVpp		<b>12V Model</b> 10    11.2 <b>24V Model</b> 17.6    19.4	
Output voltage accuracy	0% ÷ +1%	DC LOW indicator threshold at start up (Red LED) Vi nom, Io nom	<b>VDC</b> <b>Min.</b> <b>Max.</b>	
Hold up time Vi= 115VAC    25ms Vi= 230VAC    30ms			<b>12V Model</b> 10    11.2 <b>24V Model</b> 17.6    19.4	
Voltage fall time (I <sub>o</sub> nom, Vi nom)	150ms	Parallel operation	0.1 Io min~0.9 Io max	
Voltage rise time Vi nom, Io nom	150ms (full resistive load) 500ms with 7000µF CAP			
Voltage trim range <b>12V Model</b> <b>24V Model</b>	11.4-14.5 VDC 22.5-28.5 VDC			

## 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> <b>24V Model</b>	17W 16W
<b>Voltage range</b>		<b>Frequency range</b>	47- 63Hz	
<b>AC IN</b>	88 - 264VAC	<b>Leakage current</b>	<b>Input-Output</b>	<0.25mA
<b>DC IN</b>	120 - 375VDC		<b>Input-FG</b>	<3.5mA
<b>Rated input current</b>		<b>P.F.C. (Active)</b>	0.97@ $V_i$ :230VAC, $I_o$ nom	
<b><math>V_i</math>: 88VAC <math>I_o</math> nom</b>	3.2A Max.			
<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)
<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> (Shut-Down Protection)	<b>VDC</b>	<b>Rated over load protection</b>	120 - 150%
	<b>Min.</b>	<b>Max.</b>	
<b>12V Model</b>	14.5	17.5	
<b>24V Model</b>	30	33	
<b>Internal surge voltage protection</b> IEC 61000-4-5	Varistor	<b><math>V_i</math> nom</b> (see typ current limited curve)	

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

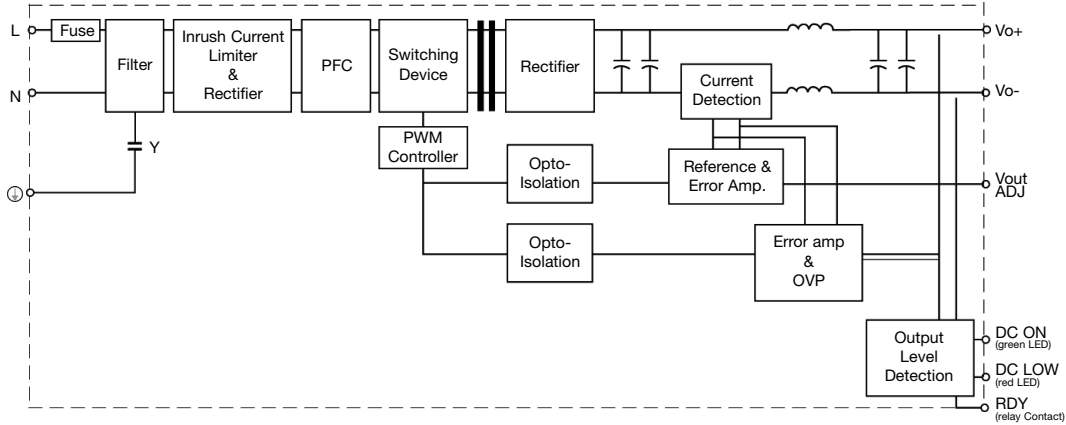
## General Data (All specifications are at nominal values, full load, 25°C unless otherwise noticed)

<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/4242VDC min	<b>Screw terminal type</b>	124.5(4.9)x64(2.52)x123.6(4.87)
<b>Input-Fg</b>	1500VAC/2121VDC 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 55022 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 EN 61204-3
<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. CB scheme		

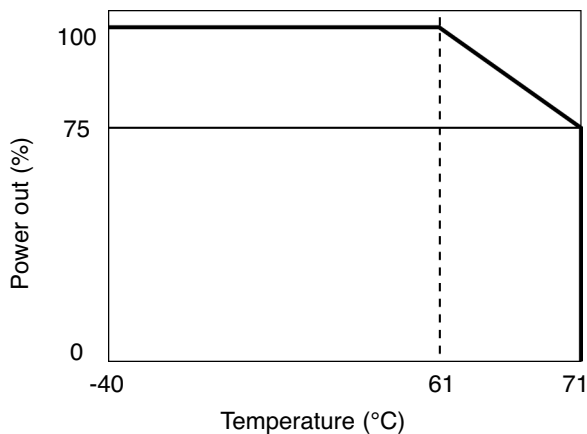
## Block Diagram



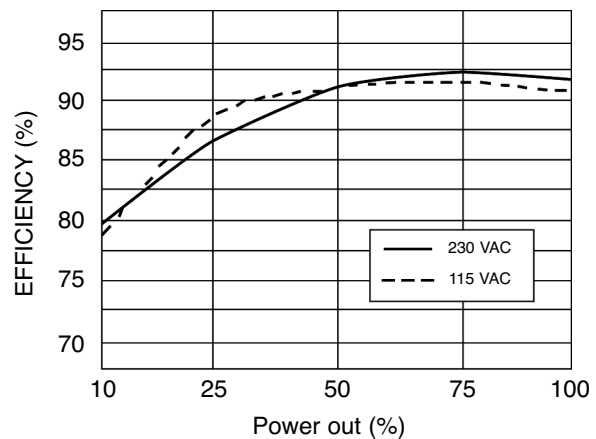
## Pin Assignment and Front Controls

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

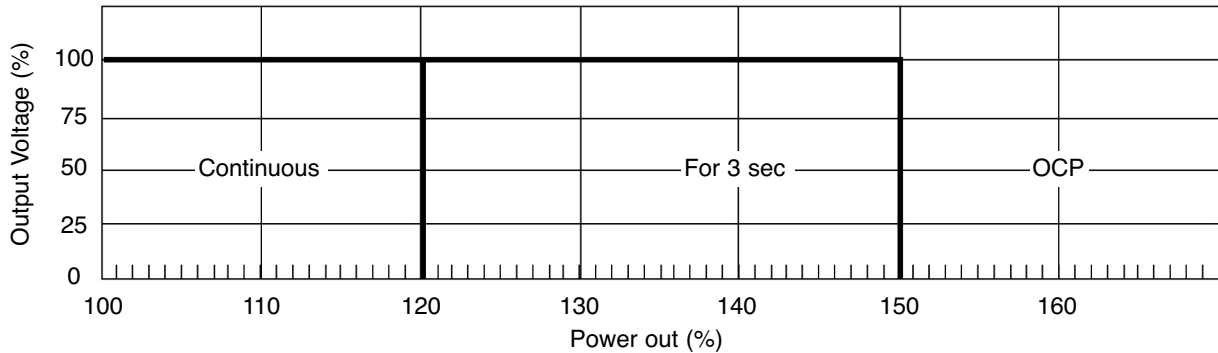
## Derating Curve



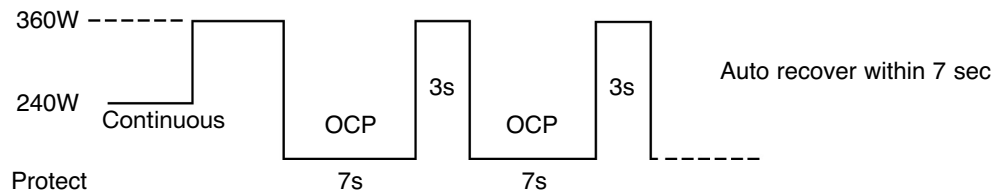
## Typ. Efficiency curve



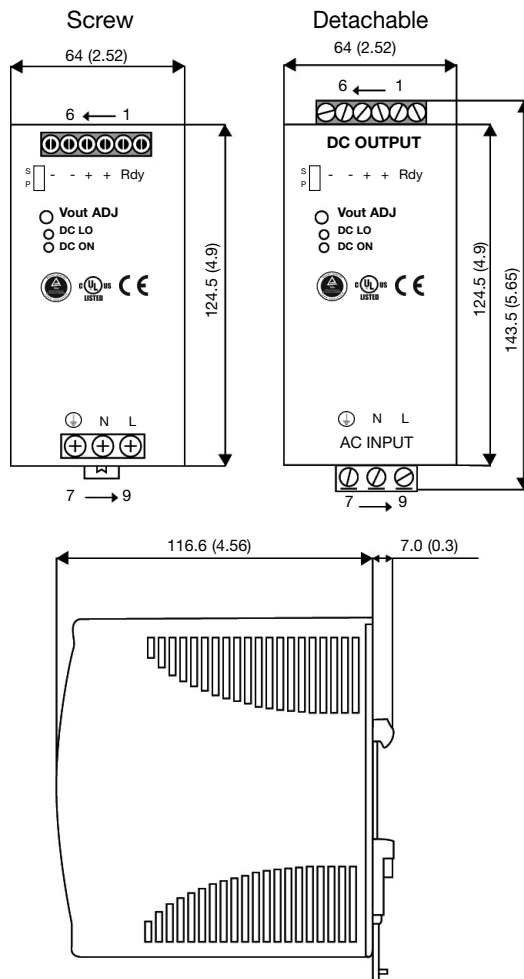
## Typ. Current Limited Curve



## 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

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.

### Detachable connectors:

- Input Terminals
- Output Terminals

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.