

## Embedded Switch Mode Power Supplies (SMPS)

### FEATURES

- Universal 85 - 264V AC or 120-370 VDC
- Active PFC
- Slimline design: width 48mm
- Efficiency up to 94%
- DC OK function
- Operating temperature range - 40°C to +70°C
- DC ON output status indicator LED
- Output short circuit, over-current, over-voltage protection.
- EMI performance meets. CISPR32 / EN55032 CLASS B
- Safety according to IEC/EN/UL62368, UL61010, UL508

## RS PRO Embedded Switch Mode Power Supplies

- 220-5412
- 220-5413



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 DIN rail power supply suitable for a wide range of Industrial, Machinery and Instrumentation applications. Featuring a universal AC input this cost-effective, slimline design is available in a range of standard outputs. Complying with International and European EMC and safety standards IEC/EN/UL62368, UL61010, UL508

### General Specifications

<b>Model</b>	AC-DC 480W power supply
<b>Mounting Type</b>	DIN Rail mount
<b>MTBF</b>	MIL-HDBK-217F@25°C > 300,000 h
<b>Applications</b>	Industrial control systems, instrumentation and machinery equipment

RS Stock#	Input Voltage	Output Voltage	Output Current	Adj'range (V)	Wattage	Efficiency (Typ)
2205412	85 to 264V ac 120 to 370V dc	24V	20A	24-28V	480W	94%
2205413	85 to 264V ac 120 to 370V dc	48V	10A	48-55V	480W	94%

### Input Specifications

Input Specification	
<b>Voltage Range</b>	85 to 264V ac, 120 to 370V dc
<b>Frequency</b>	47 to 63Hz
<b>AC Current Rating</b>	5A/115V ac, 2.5A/230V ac
<b>Inrush Current</b>	20A/ 115V ac, 40A / 230V ac
<b>Leakage</b>	<0.8mA
<b>Power Factor</b>	0.99 115Vac, 0.95 230Vac

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## Output Specifications

Output Specification		
<b>MPN</b>	2205412	2205413
<b>Output voltage</b>	24V	48V
<b>Trim range</b>	24-28V	48-55V
<b>Rated Current</b>	20A	10A
<b>Ripple &amp; Noise (max.) *</b>	120mV	150mV
<b>Rated Power</b>	240W	480W
<b>Peak output power 3S</b>	360W	360W
<b>Line Regulation typ.</b>	±0.5%	±0.5%
<b>Load Regulation typ.</b>	±1%	±1%
<b>Max Capacitive load μF</b>	4700μF	2700μF
<b>Minimum Load</b>	0%	0%

<b>Hold Up Time (Typ)</b>	22ms Typ.					
<b>DC OK Signal*</b>	30VDC/1A Max					
<b>Over Voltage Protection</b>	29-35V (Output voltage turn off or clamp, re-power on for recover or automatic recover)					
	56-60V (Output voltage turn off or clamp, re-power on for recover automatic recover)					
<b>Over-current Protection</b>	Normal temperature, high temperature	110%-150% I <sub>o</sub> , the output turned off after working normally for 1s, self-recovery				
	Low temperature	≥105% I <sub>o</sub> , automatic recover after fault condition is removed				
<b>Short Circuit Protection</b>	Hiccup, continuous, self-recovery					
<b>Over-temperature Protection</b>	230VAC, 100% I <sub>o</sub>	Over-temperature Protection start	Min	Typ	Max	°C
		Over-temperature Protection release	60	-	-	
<b>Isolation</b>	3KVAC					

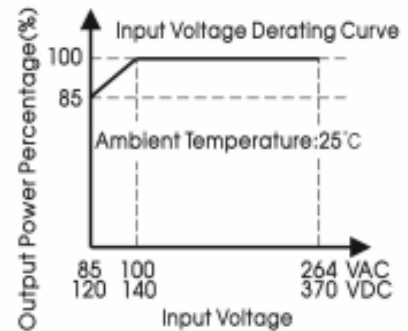
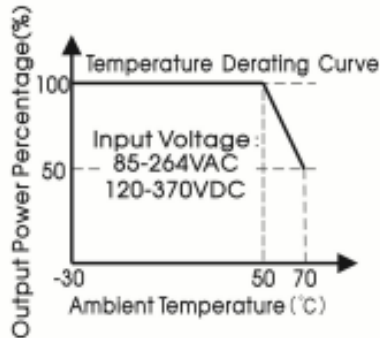
Note: \*The "Tip and barrel method" is used for ripple and noise test, output parallel 47μF electrolytic capacitor and 0.1μF ceramic capacitor, please refer to Enclosed Switching Power Supply Application Notes for specific information.

## General Specifications

Item		Operating Conditions		Min	Typ	Max.	Unit
Isolation	Input-Output	Electric strength test for 1min., leakage current <10mA		3000	-	-	VAC
	Input-Earth			2000	-	-	
	Output-Earth			500	-	-	
Insulation Resistance	Input-Earth	At 500VDC		100	-	-	MΩ
	Input-Output			100	-	-	
	Output-Earth			100	-	-	
Operating Temperature				-30	-	+70	°C
Storage Temperature				-40	-	+85	
Storage Humidity		Non-condensing		10	-	95	%RH
Operating Humidity				20	-	95	
Power Derating	Operating temperature derating	+50 to +70°C		2.5			%/°C
	Input voltage derating	85VAC-100VAC		1	-	-	%/VAC
Safety Standard				Meet IEC/EN/UL62368/UL61010/UL508			
Safety Certification				EN62368/UL61010			
Safety Class				CLASS I (PE and must be connected)			
MTBF		MIL-HDBK-217F@25°C		> 300,000 h			

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## Derating



Note: 1. With an AC input voltage between 85 -100VAC and a DC input between 120-140VDC the output power must be derated as per the temperature derating curves.

## EMC Specifications

Emissions	CE	CISPR32/EN55032 CLASS B	
	RE	CISPR32/EN55032 CLASS B	
	Harmonic Current	IEC/EN61000-3-2 CLASS D	
Immunity	ESD	IEC/EN 61000-4-2 Contact ±6KV/Air ±8KV	Perf. Criteria A
	RS	IEC/EN 61000-4-3 10V/m	Perf. Criteria A
	EFT	IEC/EN 61000-4-4 ±2KV	Perf. Criteria A
	Surge	IEC/EN 61000-4-5 line to line ±2KV/line to ground ±4KV	Perf. Criteria A
	CS	IEC/EN61000-4-6 10 Vr.m.s	Perf. Criteria A
	DIP (AC input)	IEC/EN61000-4-11 0%, 70%	Perf. Criteria A

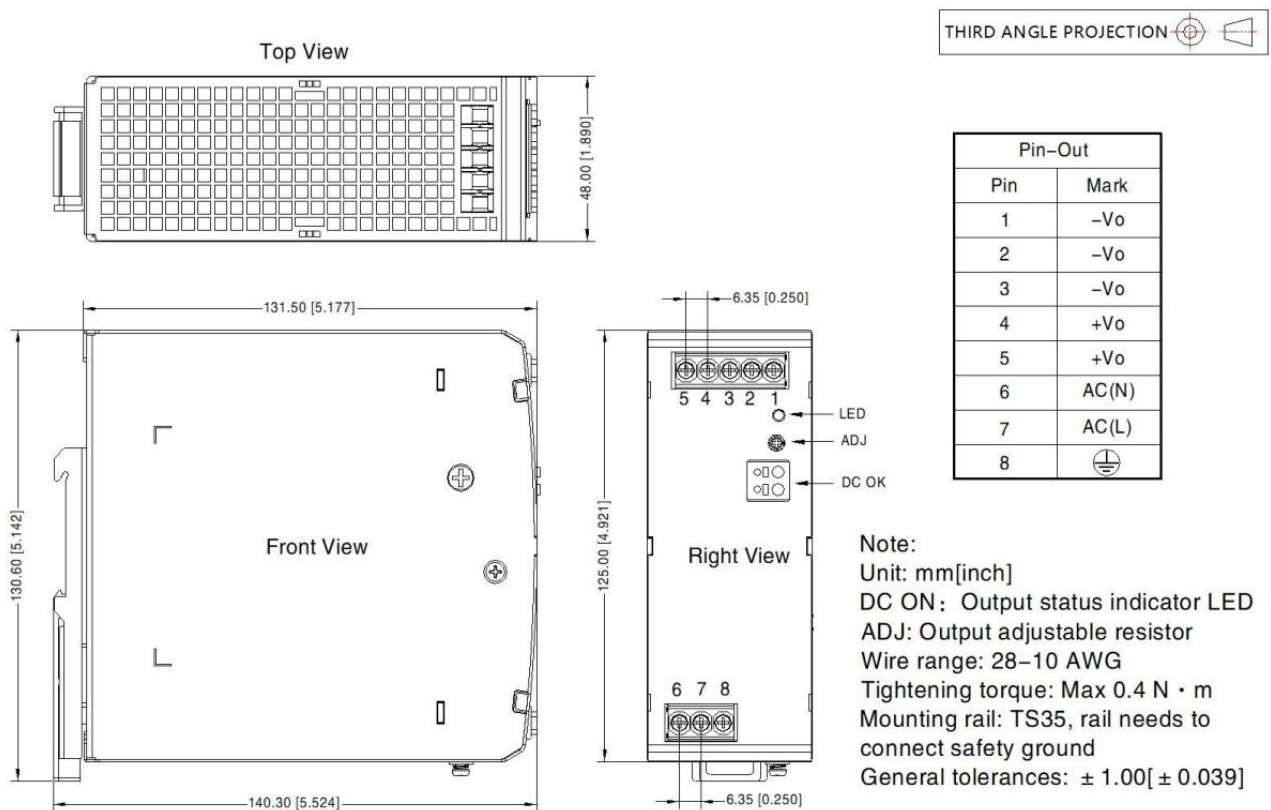
## Mechanical Specifications

Case Material	Metal (AL1100, SPCC) and Plastic (PC940)
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<b>Dimensions</b>	131.50 x 48.00 x 125.00 mm
<b>Weight</b>	980g (Typ.)
<b>Cooling Method</b>	Free air convection

## Dimensions and recommended layout



## Approvals

<b>Safety Standards</b>	Meet IEC/EN/UL62368/UL61010/UL508
<b>Safety Certification</b>	EN62368/ UL62368/UL61010/UL508 (Pending)
<b>Safety Class</b>	Class I (PE and must be connected)

### Note:

1. Unless otherwise specified, parameters in this datasheet were measured under the conditions of  $T_a=25^\circ\text{C}$ , humidity <75%RH with nominal input voltage and rated output load.
2. The room temperature derating of  $5^\circ\text{C}/1000\text{m}$  is needed for operating altitude greater than 2000m.
3. All index testing methods in this datasheet are based on our company corporate standards.

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4. 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.
5. Products are related to laws and regulations: see "Features" and "EMC".
6. The out case needs to be connected to the earth of system when the terminal equipment in operating.
7. Our products shall be classified according to ISO14001 and related environmental laws and regulations and shall be handled by qualified units.