



## 60W Reliable Green Medical Power Supply

## RPS-60 series



User's Manual



### ■ Features

- 4"×2" compact size
- IT & Medical safety approved (2 x MOPP) according to ANSI/AAMI ES60601-1, IEC/BS EN/EN60601-1 and IEC/BS EN/EN/UL 62368-1
- Suitable for BF application with appropriate system consideration
- Cooling by free air convection
- EMI class B for class I configuration
- No load power consumption < 0.75W
- Protections: Short circuit / Overload / Over voltage
- Operating altitude up to 3000 meters
- 3 years warranty

### ■ Applications

- Oral irrigator
- Hemodialysis machine
- Medical computer monitors
- Sleep apnea devices

### ■ GTIN CODE

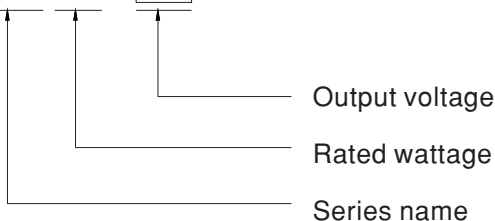
MW Search: <https://www.meanwell.com/serviceGTIN.aspx>

### ■ Description

RPS-60 is a 60W highly reliable green PCB type medical power supply with a high power density on the 4" by 2" footprint. It accepts 90~264VAC input and offers various output voltages between 3.3V and 48V. The working efficiency is up to 86% and the extremely low no load power consumption is down below 0.75W. RPS-60 is able to be used for Class I (with FG) system design. The extremely low leakage current is less than 130μA. In addition, it conforms to international IT and medical regulations (2\*MOPP) and EMC BS EN/EN55022/BS EN/EN55011, perfectly fitting all kinds of BF rated "patient contact" medical system equipment.

### ■ Model Encoding

RPS- 60 - 3.3





## SPECIFICATION

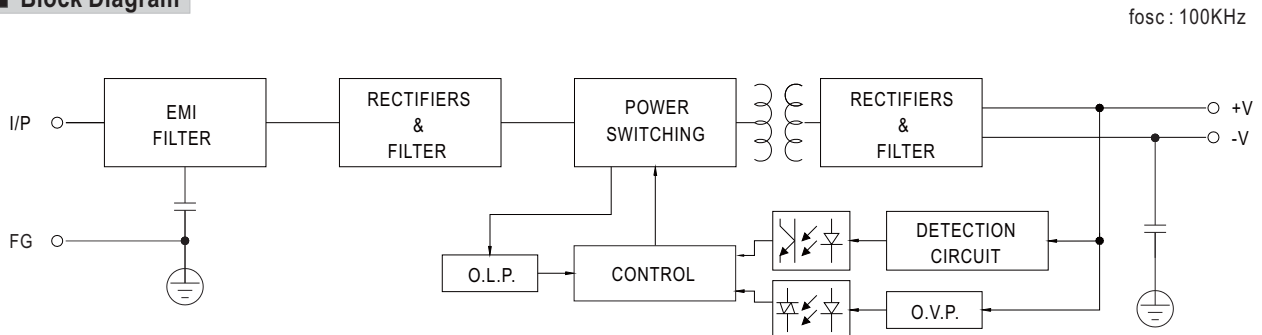
MODEL	RPS-60-3.3	RPS-60-5	RPS-60-12	RPS-60-15	RPS-60-24	RPS-60-48		
OUTPUT	DC VOLTAGE	3.3V	5V	12V	15V	24V	48V	
	RATED CURRENT	10A	10A	5A	4A	2.5A	1.25A	
	CURRENT RANGE	0 ~ 11A	0 ~ 11A	0 ~ 5.5A	0 ~ 4.4A	0 ~ 2.75A	0 ~ 1.375A	
	RATED POWER	33W	50W	60W	60W	60W	60W	
	PEAK LOAD(10sec.) Note.2	36.3W	55W	66W	66W	66W	66W	
	RIPPLE & NOISE (max.) Note.3	60mVp-p	60mVp-p	60mVp-p	100mVp-p	100mVp-p	100mVp-p	
	VOLTAGE ADJ. RANGE	3.1 ~ 3.6V	4.75 ~ 5.5V	11.4 ~ 13.2V	13.5 ~ 16.5V	22.8 ~ 27.6V	45.6 ~ 52.8V	
	VOLTAGE TOLERANCE Note.4	±2.0%	±2.0%	±2.0%	±2.0%	±1.0%	±1.0%	
	LINE REGULATION	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	
	LOAD REGULATION	±1.0%	±1.0%	±1.0%	±1.0%	±1.0%	±1.0%	
	SETUP, RISE TIME	500ms, 30ms/230VAC 500ms, 30ms/115VAC at full load						
HOLD UP TIME (Typ.)	60ms/230VAC 12ms/115VAC at full load							
INPUT	VOLTAGE RANGE	90 ~ 264VAC 127 ~ 370VDC						
	FREQUENCY RANGE	47 ~ 63Hz						
	EFFICIENCY (Typ.)	74%	79%	84%	85%	87%	86%	
	AC CURRENT (Typ.)	1.8A/115VAC 1 A/230VAC						
	INRUSH CURRENT (Typ.)	COLD START 60A/230VAC 30A/115VAC						
	LEAKAGE CURRENT(max.) Note.5	Earth leakage current < 130μA/264VAC , Touch current < 100μA/264VAC						
PROTECTION	OVER LOAD	115 ~ 150% rated output power Protection type : Hiccup mode, recovers automatically after fault condition is removed						
	OVER VOLTAGE	3.8 ~ 5V	5.7 ~ 6.8V	13.8 ~ 16.2V	17.2 ~ 20.3V	28.4 ~ 32.4V	55.2 ~ 64.8V	
		Protection type : Shut down o/p voltage, re-power on to recover						
ENVIRONMENT	WORKING TEMP.	-20 ~ +70°C (Refer to "Derating Curve")						
	WORKING HUMIDITY	20 ~ 90% RH non-condensing						
	STORAGE TEMP., HUMIDITY	-40 ~ +85°C, 10 ~ 95% RH non-condensing						
	TEMP. COEFFICIENT	±0.03%/°C (0 ~ 50°C)						
	VIBRATION	10 ~ 500Hz, 2G 10min./1cycle, period for 60min. each along X, Y, Z axes						
	OPERATING ALTITUDE Note.6	3000 meters						
SAFETY & EMC (Note 8)	SAFETY STANDARDS	IEC 60601-1:2005+A1+A2, TUV BS EN/ EN 60601-1:2006+A1+A12+A2, ANSI/AAMI ES60601-1:2005+A2, CAN/CSA C22.2 No. 60601-1:2014+A2, IEC 62368-1:2014, UL 62368-1, 2nd Ed, CSA C22.2 No. 62368-1-14, 2nd Ed, TUV BS EN/ EN 62368-1:2014+A11, EAC TP TC 004 approved						
	ISOLATION LEVEL	Primary-Secondary: 2xMOPP, Primary-Earth:1xMOPP, Secondary-Earth:1xMOPP						
	WITHSTAND VOLTAGE	I/P-O/P:4KVAC I/P-FG:2KVAC O/P-FG:1.5KVAC						
	ISOLATION RESISTANCE	I/P-O/P, I/P-FG, O/P-FG:100M Ohms / 500VDC/ 25°C/ 70% RH						
	EMC EMISSION	Parameter	Standard				Test Level / Note	
		Conducted emission	BS EN/EN55011 (CISPR11)				Class B	
		Radiated emission	BS EN/EN55011 (CISPR11)				Class B	
		Harmonic current	BS EN/EN61000-3-2				Class A	
		Voltage flicker	BS EN/EN61000-3-3				-----	
	EMC IMMUNITY	BS EN/EN55035 , BS EN/EN60601-1-2						
		Parameter	Standard				Test Level / Note	
		ESD	BS EN/EN61000-4-2				Level 4, 15KV air ; Level 4, 8KV contact	
		RF field susceptibility	BS EN/EN61000-4-3				Level 3, 10V/m( 80MHz~2.7GHz ) Table 9, 9~28V/m( 385MHz~5.78GHz )	
EFT bursts		BS EN/EN61000-4-4				Level 3, 2KV		
Surge susceptibility		BS EN/EN61000-4-5				Level 4, 4KV/Line-FG; 2KV/Line-Line		
Conducted susceptibility		BS EN/EN61000-4-6				Level 3, 10V		
Magnetic field immunity		BS EN/EN61000-4-8				Level 4, 30A/m		
Voltage dip, interruption		BS EN/EN61000-4-11				100% dip 1 periods, 30% dip 25 periods, 100% interruptions 250 periods		
OTHERS	MTBF	5153.0K hrs min. Telcordia SR-332 (Bellcore) ; 353.6K hrs min. MIL-HDBK-217F (25°C)						
	DIMENSION (L*W*H)	101.6*50.8*29mm or 4" * 2" * 1.141" inch						
	PACKING	0.15Kg; 96pcs/15.4Kg/0.89CUFT						
NOTE	<ol style="list-style-type: none"> <li>All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C of ambient temperature.</li> <li>33% Duty cycle maximum within every 30 seconds. Average output power should not exceed the rated power.</li> <li>Ripple &amp; noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1 μ F &amp; 47 μ F parallel capacitor.</li> <li>Tolerance : includes set up tolerance, line regulation and load regulation.</li> <li>Touch current was measured from primary input to DC output.</li> <li>The ambient temperature derating of 3.5°C/1000m with fanless models and of 5°C/1000m with fan models for operating altitude higher than 2000m(6500ft).</li> <li>Heat Sink HS1,HS2 can not be shorted.</li> <li>The power supply is considered a component which will be installed into a final equipment. All the EMC tests are been executed by mounting the unit on a 360mm*360mm metal plate with 1mm of thickness. The final equipment must be re-confirmed that it still meets EMC directives. For guidance on how to perform these EMC tests, please refer to "EMI testing of component power supplies." (as available on <a href="https://www.meanwell.com/Upload/PDF/EMI_statement_en.pdf">https://www.meanwell.com/Upload/PDF/EMI_statement_en.pdf</a> )</li> </ol> <p>※ Product Liability Disclaimer : For detailed information, please refer to <a href="https://www.meanwell.com/serviceDisclaimer.aspx">https://www.meanwell.com/serviceDisclaimer.aspx</a></p>							



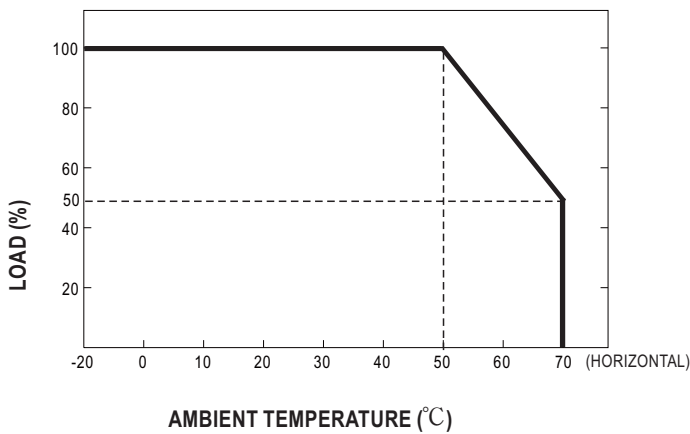
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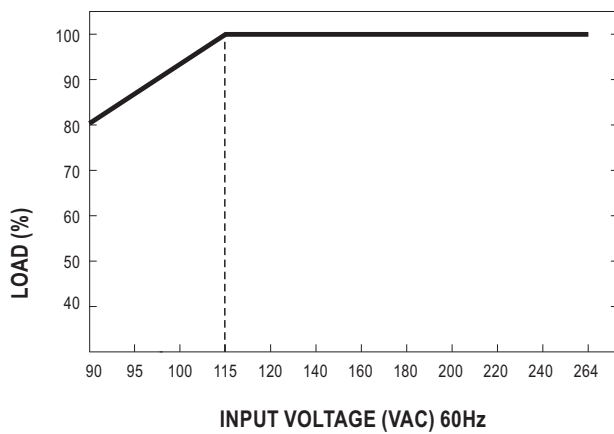
### Block Diagram



### Output Derating



### Output Derating VS Input Voltage

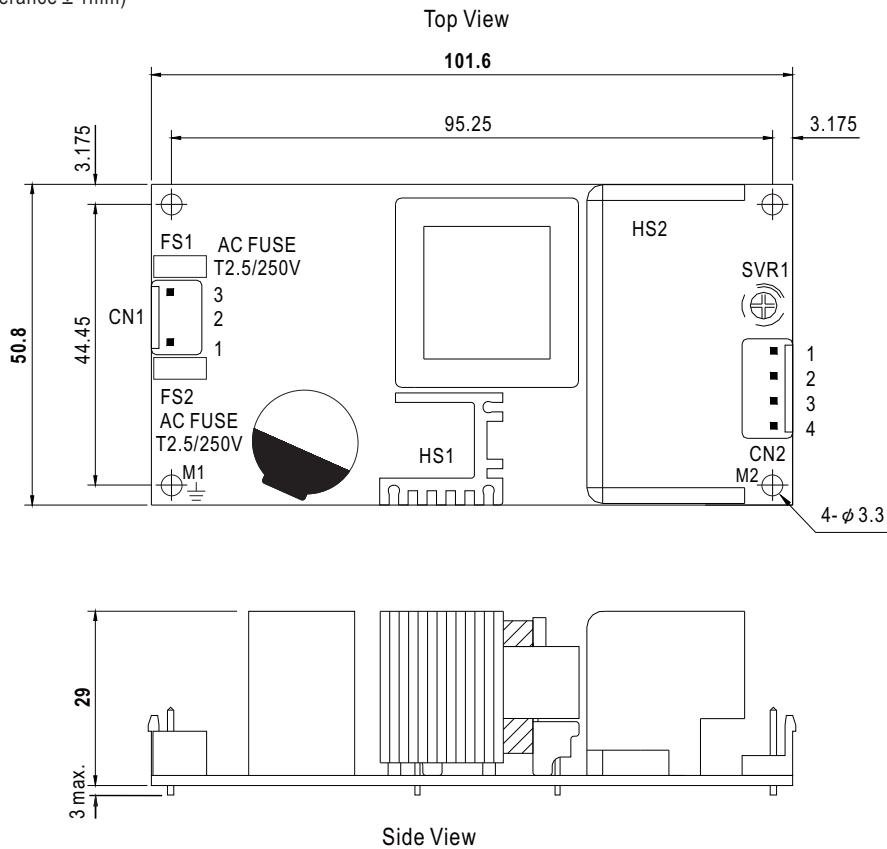




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### Mechanical Specification

(Unit: mm , tolerance  $\pm 1$ mm)

AC Input Connector (CN1) : JST B3P-VH or equivalent

Pin No.	Assignment	Mating Housing	Terminal
1	AC/N	JST VHR or equivalent	JST SVH-21T-P1.1 or equivalent
2	No Pin		
3	AC/L		

DC Output Connector (CN2) : JST B4P-VH or equivalent

Pin No.	Assignment	Mating Housing	Terminal
1,2	+V	JST VHR or equivalent	JST SVH-21T-P1.1 or equivalent
3,4	-V		

⊕ : Grounding Required

- ⚠ 1.HS1,HS2 cannot be shorted.  
2.M1 is safety ground. For better EMC performance,  
Please secure an electrical connection between  
M1,M2 and chassis grounding.

### Installation Manual

Please refer to : <http://www.meanwell.com/manual.html>