



60W Reliable Green Medical Power Supply

**RPS-60** series



## ■ Features

- 4"x2" compact size
- IT & Medical safety approved (2 x MOPP) according to ANSI/AAMI ES60601-1, IEC/EN60601-1 and IEC/EN/UL 60950-1
- 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
- 3 years warranty

## ■ Applications

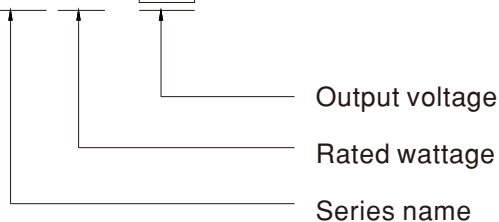
- Oral irrigator
- Hemodialysis machine
- Medical computer monitors
- Sleep apnea devices

## ■ 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 EN55022/EN55011, perfectly fitting all kinds of BF rated "patient contact" medical system equipment.

## ■ Model Encoding

**RPS- 60 - 3.3**

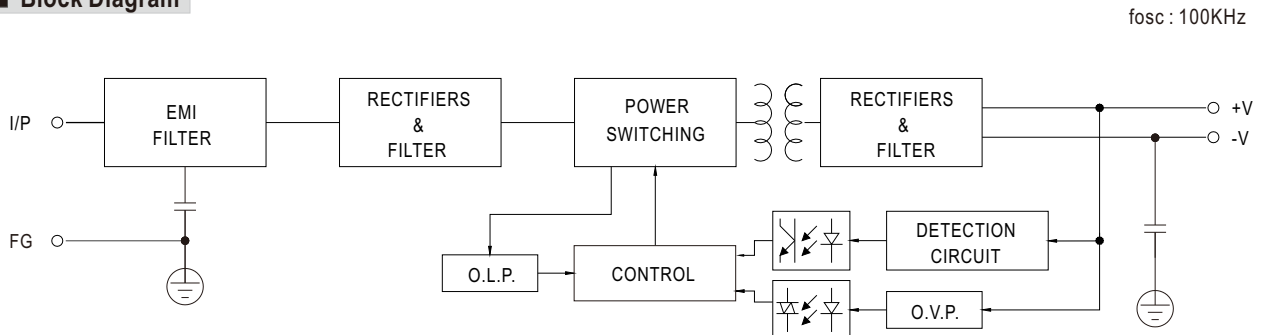




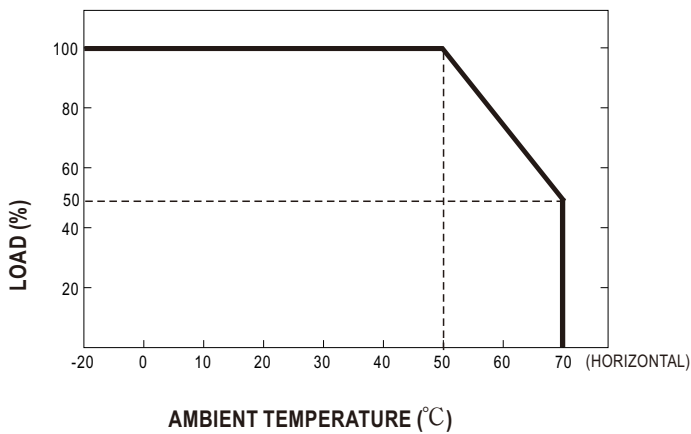
## SPECIFICATION

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.) <small>Note.2</small>	36.3W	55W	66W	66W	66W	66W
	RIPPLE & NOISE (max.) <small>Note.3</small>	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 <small>Note.4</small>	± 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      14ms/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.) <small>Note.5</small>	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 <small>Note.6</small>	3000 meters					
SAFETY & EMC (Note 8)	SAFETY STANDARDS	IEC60950-1, UL60950-1, TUV EN60950-1, IEC60601-1, TUV EN60601-1, UL ANSI / AAMI ES60601-1(3.1 version), CAN/CSA-C22.2 No. 60601-1:14 - Edition 3 approved; Design refer to EN60335-1					
	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	EN55011 (CISPR11)			Class B	
		Radiated emission	EN55011 (CISPR11)			Class B	
		Harmonic current	EN61000-3-2			Class A	
		Voltage flicker	EN61000-3-3			-----	
	EMC IMMUNITY	EN60601-1-2					
		Parameter	Standard			Test Level / Note	
		ESD	EN61000-4-2			Level 4, 15KV air ; Level 4, 8KV contact	
		RF field susceptibility	EN61000-4-3			Level 3, 10V/m( 80MHz~2.7GHz ) Table 9, 9~28V/m( 385MHz~5.78GHz )	
		EFT bursts	EN61000-4-4			Level 3, 2KV	
		Surge susceptibility	EN61000-4-5			Level 4, 4KV/Line-FG; 2KV/Line-Line	
		Conducted susceptibility	EN61000-4-6			Level 3, 10V	
		Magnetic field immunity	EN61000-4-8			Level 4, 30A/m	
		Voltage dip, interruption	EN61000-4-11			100% dip 1 periods, 30% dip 25 periods, 100% interruptions 250 periods	
		OTHERS	MTBF	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	1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C of ambient temperature. 2. 33% Duty cycle maximum within every 30 seconds. Average output power should not exceed the rated power. 3. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1μf & 47μf parallel capacitor. 4. Tolerance : includes set up tolerance, line regulation and load regulation. 5. Touch current was measured from primary input to DC output. 6. The ambient temperature derating of 5°C/1000m is needed for operating altitude greater than 2000m (6500ft). 7. Heat Sink HS1,HS2 can not be shorted. 8. 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="http://www.meanwell.com">http://www.meanwell.com</a> )						

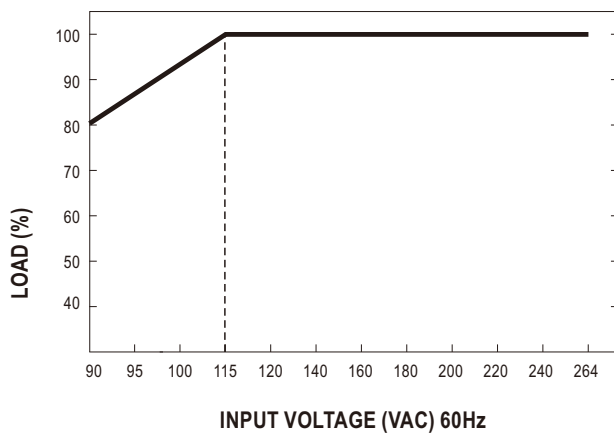
### ■ Block Diagram



### ■ Output Derating

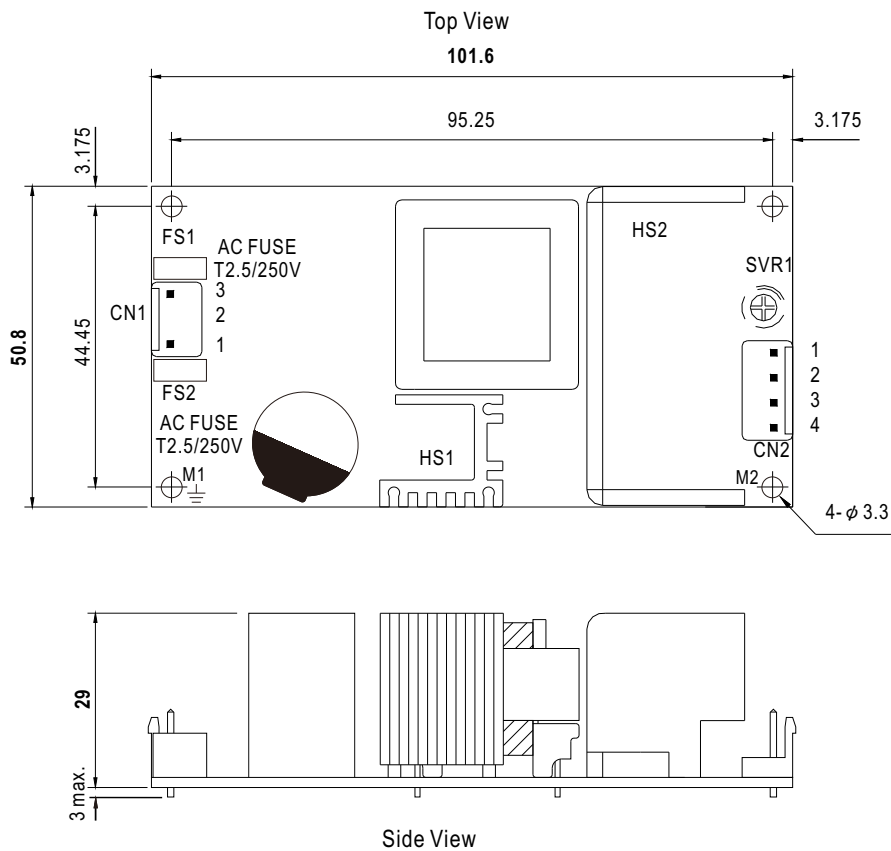


### ■ Output Derating VS Input Voltage



# Mechanical Specification

Unit: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>