60W Reliable Green Medical Power Supply RPS-60 series

User's Manual

ANSI/AAMI ES60601-1
UL62368-1

BS EN/EN60601-1
BS EN/EN62368-1

IEC60601-1
IEC62368-1

TPTC004

ECO Medical 2xMOPP BF rated

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

- 3.3 → Output voltage
- 60 → Rated wattage
- RPS → Series name

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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℃ (Refer to "Derating Curve")					
	WORKING HUMIDITY	20 ~ 90% RH non-condensing					
	STORAGE TEMP., HUMIDITY	-40 ~ +85℃, 10 ~ 95% RH non-condensing					
	TEMP. COEFFICIENT	±0.03%/℃ (0 ~ 50℃)					
	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	IEC62368-1, UL62368-1, TUV BS EN/EN62368-1, IEC60601-1, TUV BS EN/EN60601-1, UL ANSI / AAMI ES60601-1 (3.1 version), CAN/CSA-C22.2 No. 60601-1:14 - Edition 3, EAC TP TC 004 approved; Design refer to BS EN/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℃/ 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/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	5153.0hrs min. Telcordia SR-332 (Bellcore) ; 353.6K hrs min. MIL-HDBK-217F (25℃)					
	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℃ 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 3.5℃/1000m with fanless models and of 5℃/1000m with fan models for operating altitude higher 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 http://www.meanwell.com) ※ Product Liability Disclaimer : For detailed information, please refer to https://www.meanwell.com/serviceDisclaimer.aspx						

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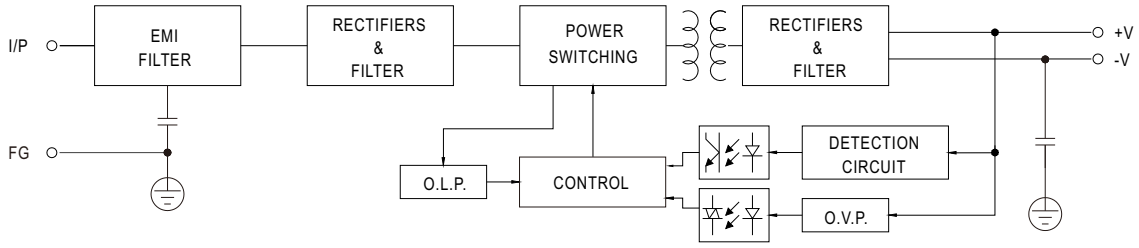
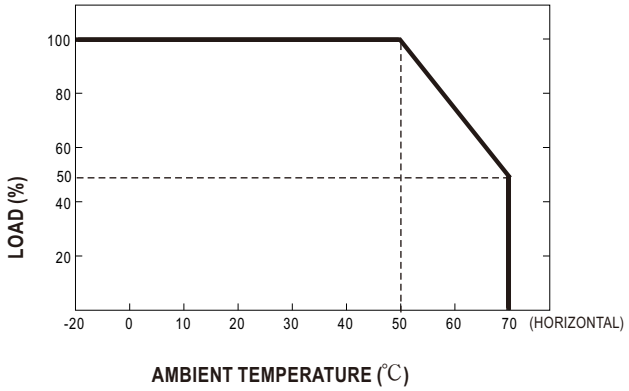
■ Block Diagram

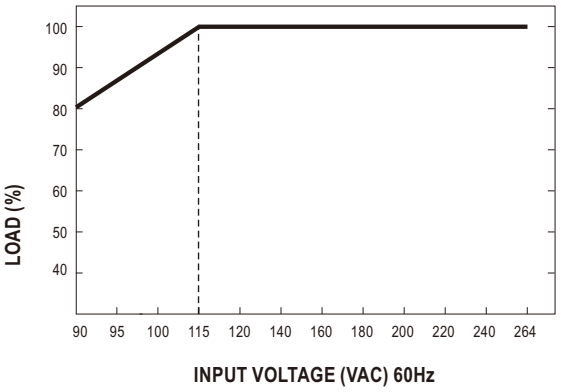
fosc : 100KHz



■ Output Derating



■ Output Derating VS Input Voltage



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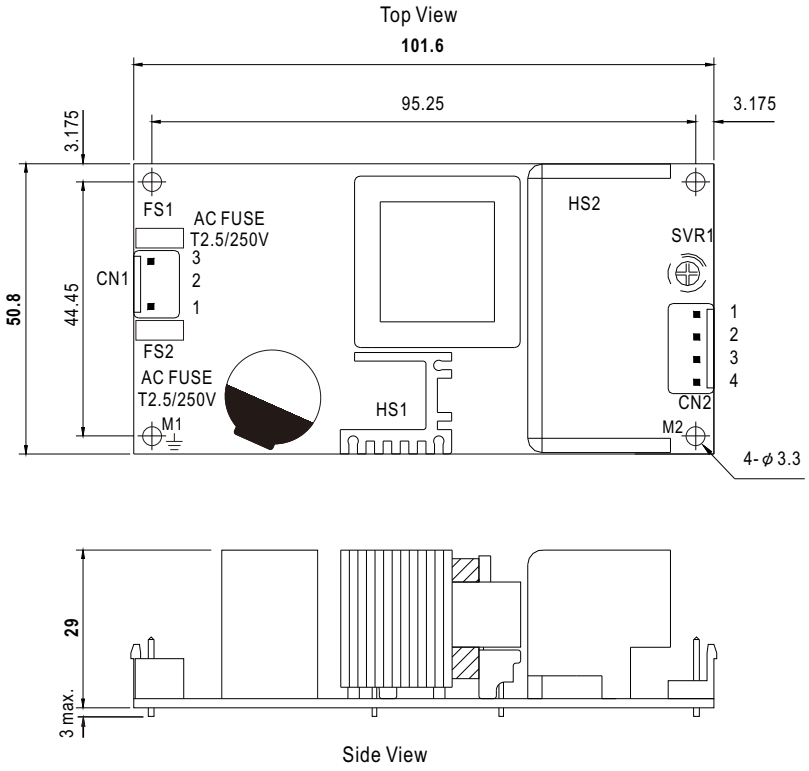
■ Mechanical Specification

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

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