60W Reliable Dual Output Medical Grade RPD-60 series

ANSI/AAMI ES60601-1
UL60950-1

EN60601-1

EN60950-1

IEC60601-1

Medical

2xMOPP

BF rated

Features

- 4"×2" compact size
- Medical safety approved (2 x MOPP) accroding to ANSI/AAMI ES60601-1 and IEC/EN60601-1
- Suitable for BF application with appropriate system consideration
- Cooling by free air convection
- EMI class B for class Ⅰ configuration
- Extremely low leakage current
- Protections: Short circuit / Overload / Over voltage
- 3 years warranty

Applications

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

Description

RPD-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 dual output voltages .
RPD-60 is able to be used for Class Ⅰ (with FG) system design. The extremely low leakage current is less than 150μA. In addition, it conforms to international medical regulations (2*MOPP) and EMC EN55011.

Model Encoding

RPD- 60 A

- A: Output voltage
- 60: Rated wattage
- RPD-: Series name

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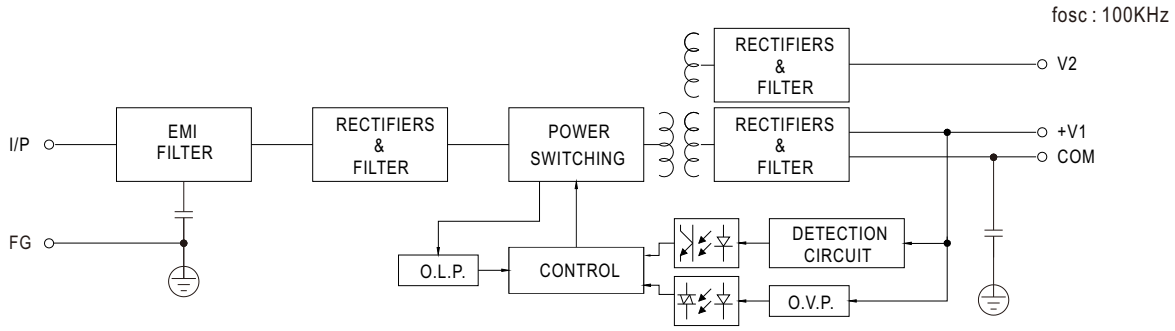
SPECIFICATION

MODEL		RPD-60A		RPD-60B	
OUTPUT	OUTPUT NUMBER	CH1	CH2	CH1	CH2
	DC VOLTAGE	5V	12V	5V	24V
	RATED CURRENT	5A	2A	3.5A	1.5A
	CURRENT RANGE	0.5 ~ 5.5A	0.1 ~ 2.2A	0.5 ~ 3.85A	0.1 ~ 1.65A
	RATED POWER	49W		53.5W	
	PEAK LOAD(10sec.) Note.2	53.9W		58.85W	
	RIPPLE & NOISE (max.) Note.3	80mVp-p	80mVp-p	80mVp-p	100mVp-p
	VOLTAGE TOLERANCE Note.4	+3,-2%	±6.0%	+3,-2%	+8,-4%
	LINE REGULATION	±0.5%	±1.0%	±0.5%	±1.0%
	LOAD REGULATION	±1.5%	±2.0%	±1.5%	±2.0%
	SETUP, RISE TIME	300ms, 15ms/230VAC 300ms, 15ms/115VAC at full load			
	HOLD UP TIME (Typ.)	70ms/230VAC 14ms/115VAC at full load			
INPUT	VOLTAGE RANGE	90 ~ 264VAC 127 ~ 370VDC			
	FREQUENCY RANGE	47 ~ 63Hz			
	EFFICIENCY (Typ.)	78%		82%	
	AC CURRENT (Typ.)	1.1A/115VAC 0.7 A/230VAC			
	INRUSH CURRENT (Typ.)	COLD START 60A/230VAC 30A/115VAC			
	LEAKAGE CURRENT Note.5	Earth leakage current < 150 μA/264VAC , Touch current < 100 μA/264VAC			
PROTECTION	OVERLOAD	115 ~ 150% rated output power			
		Protection type : Hiccup mode, recovers automatically after fault condition is removed			
	OVER VOLTAGE	CH1: 5.75 ~ 6.75V			
		Protection type : Shut down o/p voltage, re-power on to recover			
ENVIRONMENT	WORKING TEMP.	-20 ~ +65℃ (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 ~ 45℃)			
	VIBRATION	10 ~ 500Hz, 2G 10min./1cycle, period for 60min. each along X, Y, Z axes			
	OPERATING ALTITUDE Note.6	3000 meters			
SAFETY & EMC (Note 9)	SAFETY STANDARDS	UL60950-1,TUV EN60950-1,IEC60601-1, EAC TP TC 004, UL ANSI/AAMI ES60601-1, CAN/CSA-C22.2 No. 60601-1:14 - Edition 3 approved,TUV EN60601-1 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℃/ 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	677.8K hrs min. MIL-HDBK-217F (25℃)			
	DIMENSION (L*W*H)	101.6*50.8*29mm or 4" * 2" *1.14" inch			
	PACKING	0.15Kg; 96pcs/15.4Kg/0.89CUFT			

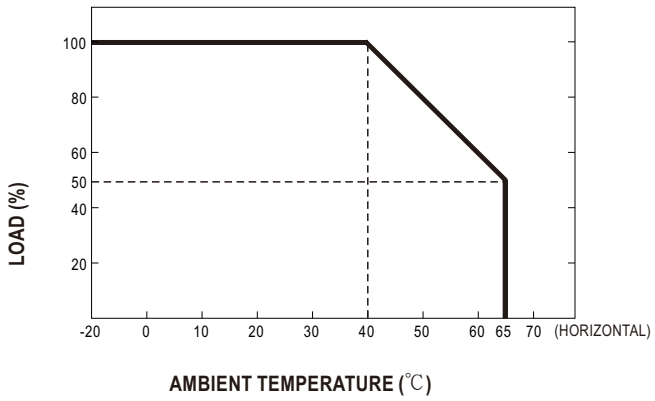
NOTE

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. Length of set up time is measured at cold first start. Turning ON/OFF the power supply may lead to increase of the set up time.
8. Heat Sink HS1,HS2 can not be shorted.
9. 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)

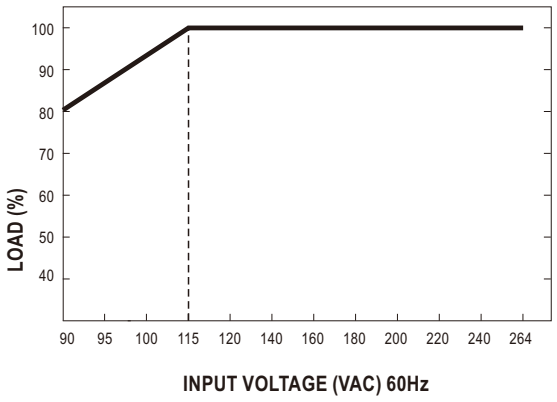
■ Block Diagram



■ Derating Curve



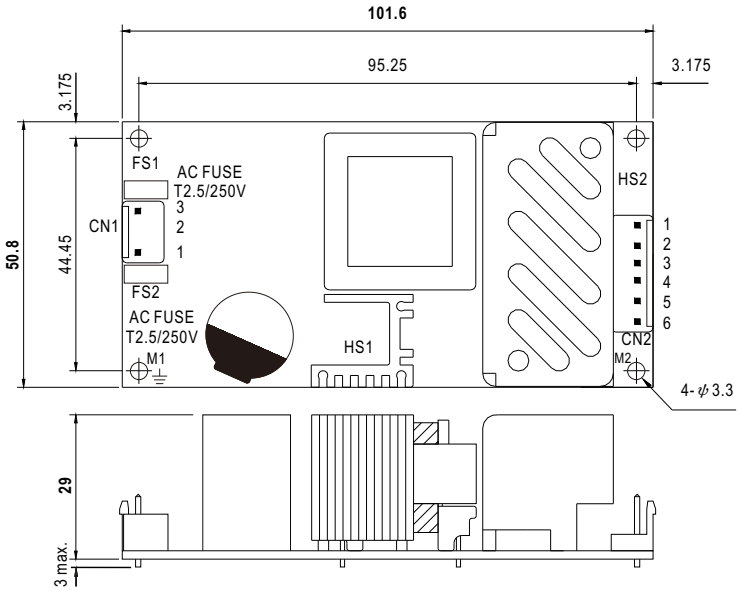
■ Output Derating VS Input Voltage



■ Mechanical Specification

Top View

Unit:mm



Side View

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 B6P-VH or equivalent

Pin No.	Assignment	Mating Housing	Terminal
1,2	V1	JST VHR or equivalent	JST SVH-21T-P1.1 or equivalent
3,4	COM		
5	V2		
6	NC		

⏚ : 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