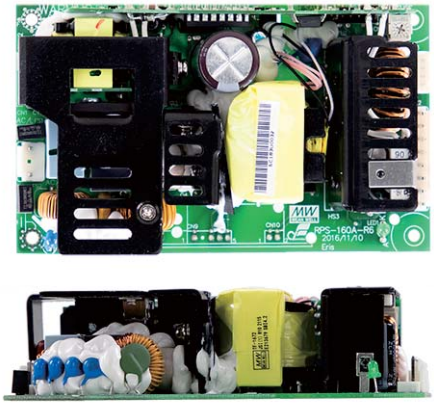
160W Reliable Green Medical Power Supply RPS-160 series

User's Manual



ANSI/AAMI ES60601-1 BS EN/EN60601-1 IEC60601-1

Features

- 5"× 3" compact size
- Medical safety approved (2 x MOPP) according to ANSI/AAMI ES60601-1 and IEC/BS EN/EN60601-1
- Suitable for BF application with appropriate system consideration
- 110W convention, 160W force air
- EMI class B for class Ⅰ configuration
- No load power consumption under 0.5W by PS-ON control (G model)
- 5Vdc standby output, Power Good, Power Fail ; Remote sense for 5~15V
- Protections: Short circuit / Overload / Over voltage / Over temperature
- Operating altitude up to 3000 meters
- 3 years warranty

Applications

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

GTIN CODE

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

Description

RPS-160 is a 160W highly reliable green PCB type medical power supply with a high power density on a 5" by 3" footprint. It accepts 90~264VAC input and offers various models with the output voltages between 5V and 48V. The working efficiency is up to 88% and the extremely low no load power consumption is down below 0.5W. RPS-160 is able to be used for Class Ⅰ (with FG) system design. The extremely low leakage current is less than 160μA. In addition, it conforms to the international medical regulations (2*MOPP) and EMC BS EN/EN55011, perfectly fitting all kinds of BF rated "patient contact" medical system equipment.

Model Encoding

RPS G - 160 - 5

- Output voltage
- Rated wattage
- Type
- Series name

Type	Description	Note
Blank	Without 5Vsb	In stock
G	With 5Vsb & No load power consumption <0.5W	In stock

160W Reliable Green Medical Power Supply RPS-160 series

SPECIFICATION

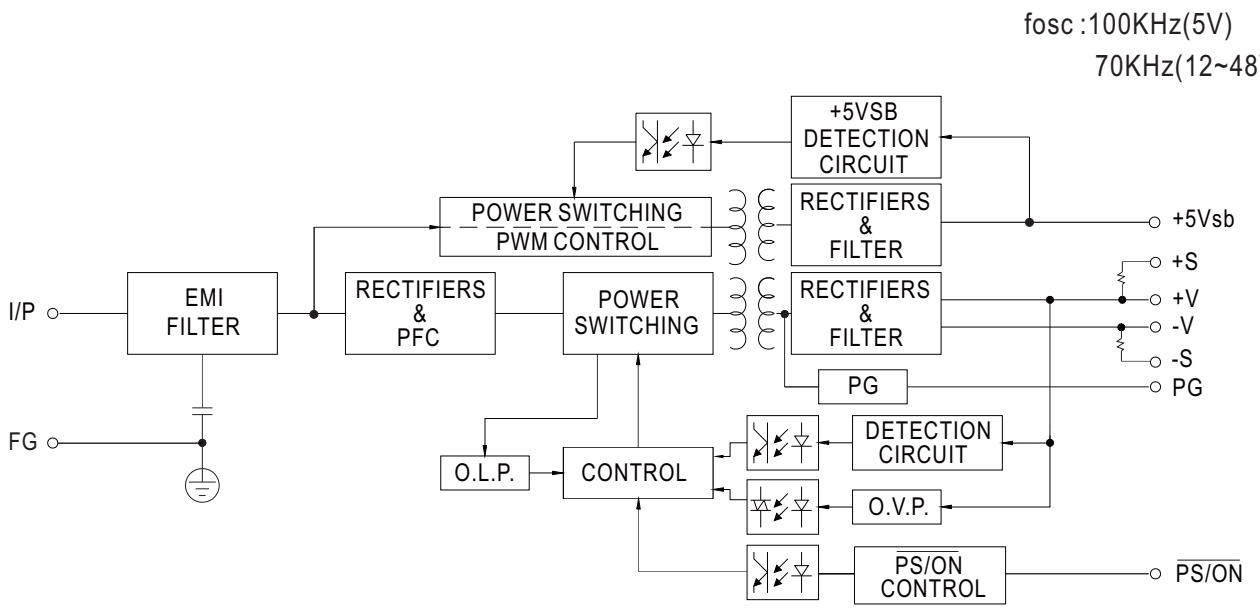
MODEL			RPS□-160-5	RPS□-160-12	RPS□-160-15	RPS□-160-24	RPS□-160-48
OUTPUT	DC VOLTAGE		5V	12V	15V	24V	48V
	RATED CURRENT (20.5CFM)		30A	12.9A	10.3A	6.5A	3.25A
	CURRENT	Convection	0 ~ 20A	0 ~ 9.1A	0 ~ 7.3A	0 ~ 4.6A	0 ~ 2.3A
		20.5CFM	0 ~ 30A	0 ~ 12.9A	0 ~ 10.3A	0 ~ 6.5A	0 ~ 3.25A
	RATED POWER	Convection Note.2	103W	112.2W	112.5W	113.4W	113.4W
		20.5CFM Note.3	155W	159.8W	159.5W	161W	161W
	RIPPLE & NOISE (max.) Note.4		80mVp-p	80mVp-p	120mVp-p	120mVp-p	150mVp-p
	VOLTAGE ADJ. RANGE(main output)		4.5 ~ 5.5V	10.8 ~ 13.2V	13.5 ~ 16.5V	22 ~ 27V	43.2 ~ 52.8V
	VOLTAGE TOLERANCE Note.5		±4.0%	±3.0%	±3.0%	±2.0%	±2.0%
	LINE REGULATION		±0.5%	±0.5%	±0.5%	±0.5%	±0.5%
	LOAD REGULATION		±1.0%	±1.0%	±1.0%	±1.0%	±1.0%
	SETUP, RISE TIME		1800ms, 30ms/230VAC 3500ms, 30ms/115VAC at full load				
	HOLD UP TIME (Typ.)		20ms/115VAC 25ms/230VAC at full load				
INPUT	VOLTAGE RANGE Note.6		90 ~ 264VAC 127 ~ 370VDC				
	FREQUENCY RANGE		47 ~ 63Hz				
	POWER FACTOR (Typ.)		PF>0.93/230VAC PF>0.98/115VAC at full load				
	EFFICIENCY (Typ.)		86%	87%	87%	87%	88%
	AC CURRENT (Typ.)		2A/115VAC 1.1A/230VAC				
	INRUSH CURRENT (Typ.)		COLD START 35A/115VAC 70A/230VAC				
	LEAKAGE CURRENT Note.7		Earth leakage current < 160μA/264VAC , Touch current < 100μA/264VAC				
PROTECTION	OVERLOAD		105 ~ 135% rated output power				
			Protection type : Hiccup mode, recovers automatically after fault condition is removed				
	OVER VOLTAGE		5.7 ~ 6.8V	13.8 ~ 16.2V	17.2 ~ 20.3V	27.6 ~ 32.4V	55.2 ~ 64.8V
			Protection type : Shut down o/p voltage, re-power on to recover				
	OVER TEMPERATURE		TSW1: Shut down o/p voltage, recovers automatically after temperature goes down				
			TSW2: Shut down o/p voltage, re-power on to recover				
FUNCTION	5V STANDBY (G model)		5Vsb : 5V@0.6A without fan, 0.8A with fan 20.5CFM ; Tolerance ± 2%, ripple : 50mVp-p(max.)				
	PS-ON INPUT SIGNAL (G model)		Power on: PS-ON = "Hi" or " > 2 ~ 5V" ; Power off: PS-ON = "Low" or " < 0 ~ 0.5V"				
	POWER GOOD / POWER FAIL		500ms>PG>10ms PF>1ms				
	REMOTE SENSE		5 ~ 15V				
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, 60min. each along X, Y, Z axes				
	OPERATING ALTITUDE Note.8		3000 meters				
SAFETY & EMC (Note 10)	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, EAC TP TC 004 approved; Design refer to BS EN/EN60335-1(by request)				
	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/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		2082.3K hrs min. Telcordia SR-332 (Bellcore) ; 234.5K hrs min. MIL-HDBK-217F (25℃)				
	DIMENSION (L*W*H)		127*76.2*34.6mm or 5" * 3" *1.36" inch				
	PACKING		0.33Kg; 36pcs/12.9Kg/0.96CUFT				

NOTE

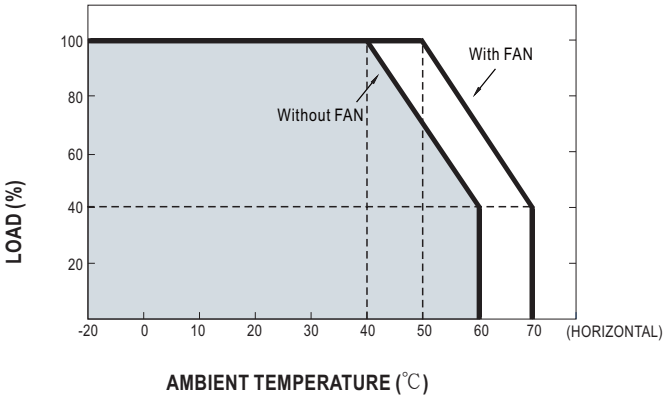
1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25℃ of ambient temperature.
2. The rated power includes 5Vsb @ 0.6A.
3. The rated power includes 5Vsb @ 0.8A.
4. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1 μF & 47 μF parallel capacitor.
5. Tolerance : includes set up tolerance, line regulation and load regulation.
6. Derating may be needed under low input voltages. Please check the derating curve for more details.
7. Touch current was measured from primary input to DC output.
8. 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).
9. HS1,HS2 & HS3 can not be shorted.
10. 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 https://www.meanwell.com//Upload/PDF/EMI_statement_en.pdf)

※ Product Liability Disclaimer : For detailed information, please refer to https://www.meanwell.com/serviceDisclaimer.aspx

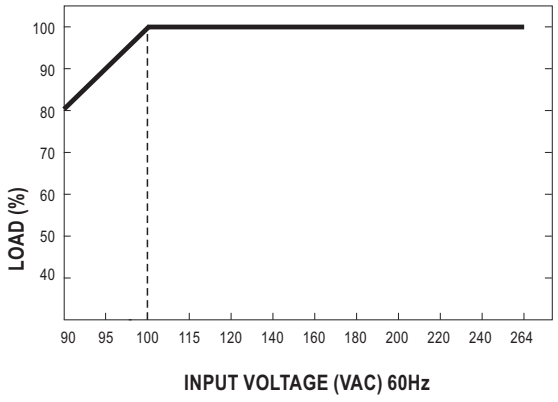
■ Block Diagram



■ Derating Curve

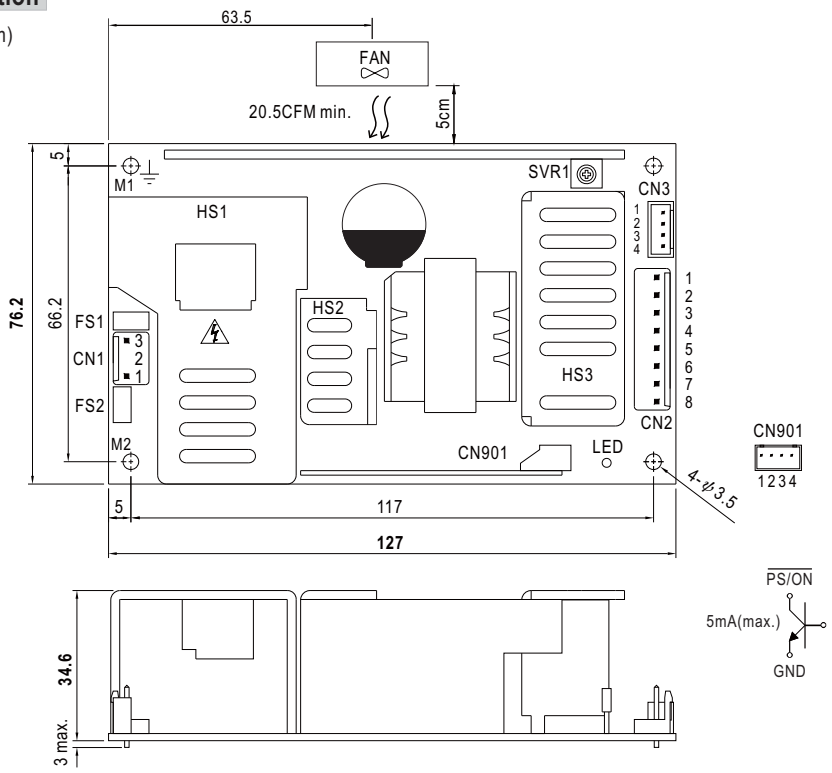


■ Output Derating VS Input Voltage



■ Mechanical Specification

(Unit: mm , tolerance ± 1mm)



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		

Power Good Connector(CN3):JST B4B-XH or equivalent

Pin No.	Status	Mating Housing	Terminal
1	PG	JST XHP or equivalent	JST SXH-001T-P0.6 or equivalent
2	GND		
3	-S		
4	+S		

DC Output Connector (CN2) : JST B8P-VH or equivalent

Pin No.	Assignment	Mating Housing	Terminal
1,2,3,4	+V	JST VHR or equivalent	JST SVH-21T-P1.1 or equivalent
5,6,7,8	-V		

5VSB Connector(CN901) : JST B-XH or equivalent

Pin No.	Assignment	Mating Housing	Terminal
1	$\overline{\text{PS/ON}}$	JST XHP or equivalent	JST SXH-001T or equivalent
2,4	GND		
3	5VSB		

⏚ : Grounding Required

⚠ 1.HS1,HS2,HS3 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