200W Reliable Green Medical Power Supply — RPS-200 series

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

Features

- 4"x2" compact size
- Medical safety approved (2 x MOPP) according to ANSI/AAMI ES60601-1 and IEC/EN60601-1
- Suitable for BF application with appropriate system consideration
- 140W convention, 200W force air
- EMI Conduction for Class B Radiation for Class B with FG(Class Ⅰ) and Class A without FG(Class Ⅱ)
- No load power consumption<0.5W
- Extremely low leakage current
- 12V/0.5A fan supply
- Protections: Short circuit / Overload / Over voltage / Over temperature
- Lifetime > 65K hours
- Operating altitude up to 5000 meters
- 3 years warranty

Applications

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

Description

RPS-200 is a 200W highly reliable green PCB type medical power supply with a high power density (21.9W/in³) on the 4" by 2" footprint. It accepts 80~264VAC input and offers various output voltages between 12V and 48V. The working efficiency is up to 95% and the extremely low no load power consumption is down below 0.5W. RPS-200 is able to be used for both Class Ⅰ (with FG) and Class Ⅱ (no FG) system design. The extremely low leakage current is less than 130 μA. In addition, it conforms to the international medical regulations (2*MOPP) and EMC EN55011, perfectly fitting all kinds of BF rated "patient contact" medical system equipment.

Model Encoding

RPS - 200 - 12 -C

- Type
- Output voltage
- Rated wattage
- Series name

Type	Description	Note
Blank	PCB Type	In stock
C	Enclosed casing Type	In stock

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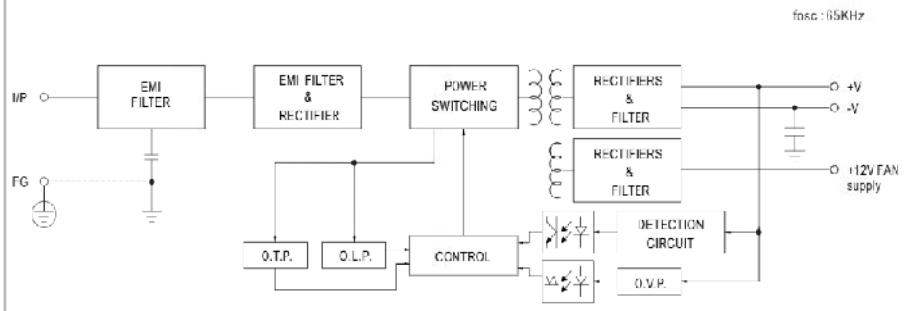
SPECIFICATION

MODEL			RPS-200-12□	RPS-200-15□	RPS-200-24□	RPS-200-27□	RPS-200-48□
OUTPUT	DC VOLTAGE		12V	15V	24V	27V	48V
	CURRENT	10CFM	16.7A	13.4A	8.4A	7.5A	4.2A
		Convection	11.7A	9.4A	5.9A	5.3A	3A
	RATED POWER	10CFM	200.4W	201W	201.6W	202.5W	201.6W
		Convection	140.4W	141W	141.6W	143.1W	144W
	RIPPLE & NOISE (max.) Note.2		100mVp-p	100mVp-p	120mVp-p	120mVp-p	120mVp-p
	VOLTAGE ADJ. RANGE		11.4~12.6V	14.3~15.8V	22.8~25.2V	25.6~28.4V	45.6~50.4V
	VOLTAGE TOLERANCE Note.3		±2.0%	±2.0%	±1.0%	±1.0%	±1.0%
	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		700ms, 30ms/230VAC 700ms, 30ms/115VAC at full load				
	HOLD UP TIME (Typ.)		16ms/230VAC 16ms/115VAC at full load				
INPUT	VOLTAGE RANGE Note.4		80 ~ 264VAC 113 ~ 370VDC				
	FREQUENCY RANGE		47 ~ 63Hz				
	POWER FACTOR		PF>0.94/230VAC PF>0.98/115VAC at full load				
	EFFICIENCY (Typ.)		93%	93.5%	94%	94%	95%
	AC CURRENT (Typ.)		2A/115VAC 1A/230VAC				
	INRUSH CURRENT (Typ.)		COLD START 30A/115VAC 60A/230VAC				
	LEAKAGE CURRENT (max.) Note.5		Earth leakage current < 130μA/264VAC , Touch current < 40μA/264VAC				
PROTECTION	OVERLOAD		110 ~ 140% rated output power Protection type : Hiccup mode, recovers automatically after fault condition is removed				
	OVER VOLTAGE		13.2 ~ 15.6V	16.5 ~ 19.5V	26.4 ~ 31.2V	29.7 ~ 35V	52.8 ~ 62.4V
			Protection type : Shut down o/p voltage, re-power on to recover				
	OVER TEMPERATURE		Protection type : Shut down o/p voltage, re-power on to recover				
FUNCTION	FAN SUPPLY		12V@0.5A for driving a fan ; tolerance +15% ~ -15%				
ENVIRONMENT	WORKING TEMP.		-30 ~ +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.6		5000 meters				
SAFETY & EMC (Note 7)	SAFETY STANDARDS		IEC60601-1, TUV EN60601-1, EAC TP TC 004, 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 RESISTANCE		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:100M Ohms / 500VDC / 25℃/ 70% RH				
	EMC EMISSION		Parameter	Standard	Test Level / Note		
			Conducted emission	EN55011 (CISPR11)	Class B		
			Radiated emission	EN55011 (CISPR11)	Class A (for Class II); Class B (for Class I)		
			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(380MHz~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		500.2Khrs min. MIL-HDBK-217F (25℃)				
	DIMENSION (L*W*H)		PCB:101.6*50.8*29mm or 4"*2"*1.14"inch ; Enclosed type:103.4*62*40mm or 4.07"*2.44"*1.57"inch				
	PACKING		PCB:0.19Kg; 72pcs/14.7Kg/0.82CUFT , Enclosed type:0.3Kg; 60pcs/19Kg/1.12CUFT				

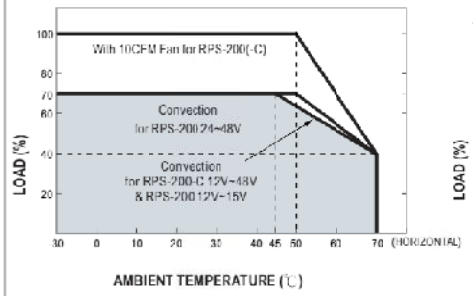
NOTE

1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25 of ambient temperature.
2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uf & 47uf parallel capacitor.
3. Tolerance : includes set up tolerance, line regulation and load regulation.
4. Derating may be needed under low input voltages. Please check the derating curve for more details.
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. 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)

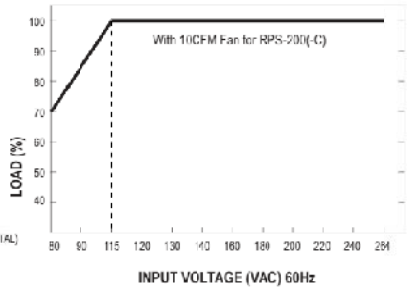
■ Block Diagram



■ Derating Curve

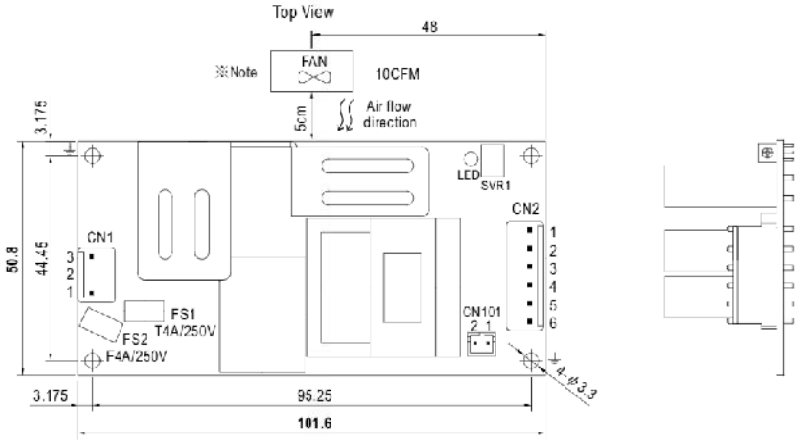


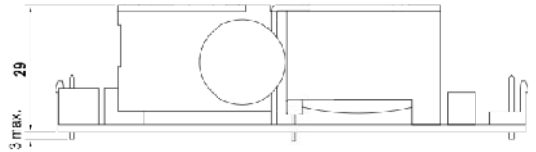
■ Output Derating VS Input Voltage



■ Mechanical Specification

● **RPS-200 (PCB Type)**

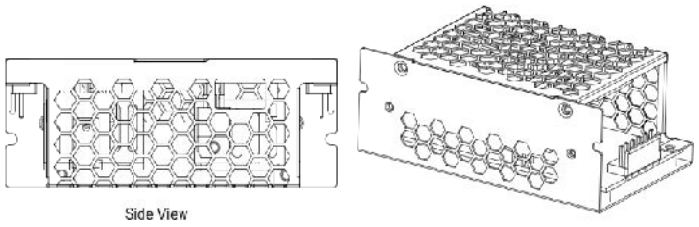




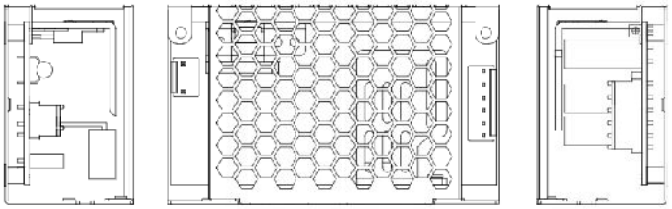
Side View

● **RPS-200-C (Enclosed Type)**

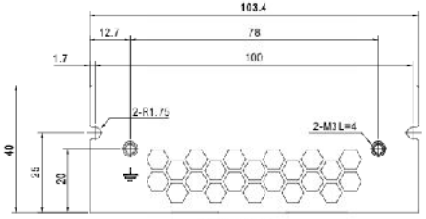
Case No.245A Unit:mm



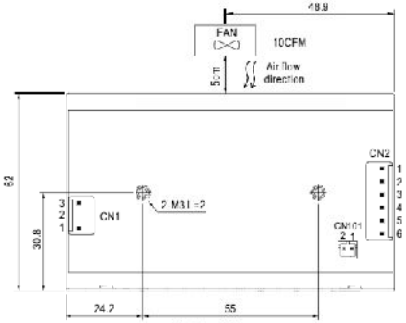
Side View



Side View Top View Side View



Side View



Bottom View

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

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

DC Output Connector (CN2) : JST B6P-VH or equivalent

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

FAN Connector(CN101) : JST B2B-PH-K-S or equivalent

Pin No.	Assignment	Mating Housing	Terminal
1	DC COM	JST PHR-2 or equivalent	JST SPH-002T-P0.5S or equivalent
2	+12V		

※Note : 1. The FAN supply is designed to serve as the source of the additive external fan for the cooling of the power supply, enabling the full load delivery and assuring the best life span of the product. Please do not use this FAN supply to drive other devices.

2.The PCB type(Blank type)EMI Conduction for Class B. Radiation for Class B with FG(Class Ⅰ) and Class A without FG(Class Ⅱ)

3.The enclosed type(-C type) model is not suitable for the configuration within a Class Ⅱ (no FG) system but is suggested to used within a Class Ⅰ (with FG) system.

■ Installation Manual

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