300W Reliable Green Medical Power Supply — RPS-300 series

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

Medical 2xMOPP BF rated

Features

- 5"×3" miniature size
- Medical safety approved (2 x MOPP) accroding to AAMI/ANSI ES60601-1 and IEC/EN60601-1 3rd edition
- Suitable for BF application with appropriate system consideration
- 200W convection,300W force air
- EMI Class B for Class I and Class A for Class II configuration
- No load power consumption<0.5W by PS-ON control
- 5Vdc standby output, 12Vdc fan supply, Power Good, Power Fail and remote sense
- Typical Lifetime

Type	RPS-300	RPS-300-C
Without Fan Watt	＞71K hours	＞28K hours
With Fan Watt	＞98K hours	＞37K hours

- 3 years warranty

Applications

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

Description

RPS-300 is a 300W highly reliable green PCB type medical power supply with a high power density on the 5” by 3” footprint. It accepts 90~264VAC input and offers various output voltages between 12V and 48V. The working efficiency is up to 93% and the extremely low no load power consumption is down below 0.5W. The extremely low leakage current is less than 200μA. In addition, it conforms to international medical regulations (2*MOPP) and EMC EN55011, perfectly fitting all kinds of BF rated “patient contact” medical system equipment. RPS-300 series also offers the enclosed style model (RPS-300-C).

Model Encoding

RPS - 300 - 12 -C

- -C: Package version
- 12: Output voltage
- 300: Output wattage
- RPS: Series name

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

SPECIFICATION

MODEL		RPS-300-12□	RPS-300-15□	RPS-300-24□	RPS-300-27□	RPS-300-48□
OUTPUT	DC VOLTAGE	12V	15V	24V	27V	48V
	RATED CURRENT (20.5CFM)	25A	20A	12.5A	11.12A	6.25A
	CURRENT RANGE (convection)	0 ~ 16.67A	0 ~ 13.33A	0 ~ 8.33A	0 ~ 7.4A	0 ~ 4.17A
	CURRENT RANGE (20.5CFM)	0 ~ 25A	0 ~ 20A	0 ~ 12.5A	0 ~ 11.12A	0 ~ 6.25A
	RATED POWER (convection)	200W	200W	199.9W	199.8W	200.2W
	RATED POWER (20.5CFM)	300W	300W	300W	300.24W	300W
	RIPPLE & NOISE (max.) Note.2	120mVp-p	120mVp-p	150mVp-p	200mVp-p	250mVp-p
	VOLTAGE ADJ. RANGE	Main output:11.4 ~ 12.6V	Main output:14.25 ~ 15.75V	Main output:22.8 ~ 25.2V	Main output:25.65 ~ 28.35V	Main output:45.6 ~ 50.4V
	VOLTAGE TOLERANCE Note.3	±3.0%	±3.0%	±2.0%	±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	2500ms, 30ms/230VAC 3000ms, 30ms/115VAC at full load				
	HOLD UP TIME (Typ.)	13ms/230VAC/115VAC at full load				
INPUT	VOLTAGE RANGE Note.4	90 ~ 264VAC 127 ~ 370VDC				
	FREQUENCY RANGE	47 ~ 63Hz				
	POWER FACTOR (Typ.)	PF>0.93/230VAC PF>0.98/115VAC at full load				
	EFFICIENCY (Typ.)	90%	90%	92.5%	93%	93%
	AC CURRENT (Typ.)	3.5A/115VAC 1.8A/230VAC				
	INRUSH CURRENT (Typ.)	COLD START 40A/115VAC 80A/230VAC				
	LEAKAGE CURRENT(max.) Note.5	Earth leakage current <150uA / 264VAC, Touch current <100uA/264VAC (for PCB)				
		Earth leakage current <200uA / 264VAC, Touch current <100uA/264VAC (for -C)				
PROTECTION	OVERLOAD	105 ~ 135% rated output power				
		Protection type : Hiccup mode, recovers automatically after fault condition is removed				
	OVER VOLTAGE	13.5 ~ 15V	16.2 ~ 18.5V	26 ~ 30V	29.5 ~ 33.5V	52 ~ 59.5V
		Protection type : Shut down o/p voltage, re-power on to recover				
	OVER TEMPERATURE	Protection type : (TSW1)Shut down o/p voltage, recovers automatically after temperature goes down				
		Protection type : (TSW2)Shut down o/p voltage, re-power on to recover				
FUNCTION	5V STANDBY	5Vsb : 5V@0.6A without fan, 1A with fan 20.5CFM ; tolerance ± 2%, ripple : 150mVp-p(max.)				
	FAN SUPPLY	12V@0.5A for driving a fan ; tolerance -15% ~ +10%				
	PS-ON INPUT SIGNAL	Power on: PS-ON = "Hi" or " > 2 ~ 5V" ; Power off: PS-ON = "Low" or " < 0 ~ 0.5V"				
	POWER GOOD / POWER FAIL	500ms>PG>10ms ; The TTL signal goes high with 10ms to 500ms delay after power set up ; The TTL signal goes low at least 1ms before Vo below 90% of rated value				
ENVIRONMENT	WORKING TEMP.	-30 ~ +70℃ (Refer to "Derating Curve")				
	WORKING HUMIDITY	20 ~ 90% RH non-condensing				
	STORAGE TEMP., HUMIDITY	-40 ~ +85℃ , 10 ~ 95% RH				
	TEMP. COEFFICIENT	±0.03%/℃ (0 ~ 50℃)				
	VIBRATION	10 ~ 500Hz, 2G 10min./1cycle, 60min. each along X, Y, Z axes				
	OPERATING ALTITUDE Note.6	4000 meters				

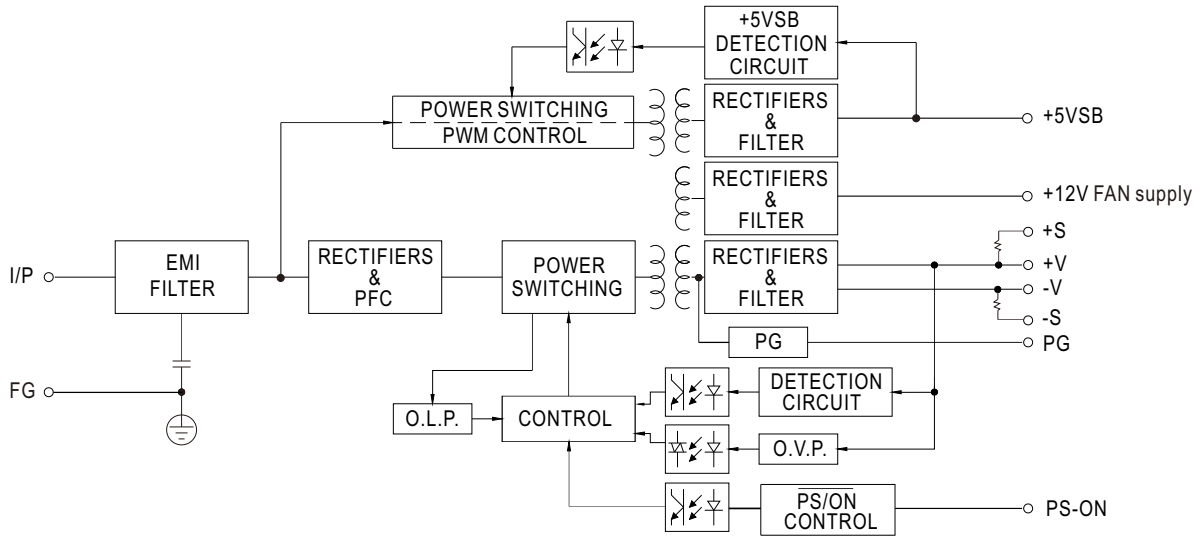
SAFETY & EMC (Note 7)	**SAFETY STANDARDS**	ANSI/AAMI ES60601-1, TUV EN60601-1, IEC60601-1 approved		
	ISOLATION LEVEL	Primary-Secondary: 2xMOPP, Primary-Earth:1xMOPP, Secondary-Earth:1xMOPP		
	WITHSTAND VOLTAGE	I/P-O/P:4KVAC I/P-FG:2KVAC O/P-FG:1.5KVAC		
	ISOLATION RESISTANCE	I/P-O/P, I/P-FG, O/P-FG:100M Ohms / 500VDC / 25℃ / 70% RH		
	EMC EMISSION	**Parameter**	**Standard**	**Test Level / Note**
		Conducted	EN55011 (CISPR11)	Class B
		Radiated	EN55011 (CISPR11)	Class B
		Harmonic Current	EN61000-3-2	Class A
		Voltage Flicker	EN61000-3-3	-----
	EMC IMMUNITY	EN55024 , EN60601-1-2		
		Parameter	**Standard**	**Test Level / Note**
		ESD	EN61000-4-2	Level 4, 15KV air ; Level 4, 8KV contact
		Radiated	EN61000-4-3	Level 3
		EFT / Burst	EN61000-4-4	Level 3
		Surge	EN61000-4-5	Level 3, 2KV/Line-FG ; 1KV/Line-Line
		Conducted	EN61000-4-6	Level 3
		Magnetic Field	EN61000-4-8	Level 4
		Voltage Dips and Interruptions	EN61000-4-11	100% dip 1 periods, 30% dip 25 periods, 100% interruptions 250 periods
OTHERS	**MTBF**	160Khrs min. MIL-HDBK-217F (25℃)		
	DIMENSION	PCB type:127*76.2*35mm (L*W*H) ; Enclosed type:130*86.6*43mm (L*W*H)		
	PACKING	PCB type:0.37Kg; 36pcs/14.3Kg/1.03CUFT ; Enclosed type:0.563Kg; 24pcs/14.5Kg/0.77CUFT		

NOTE

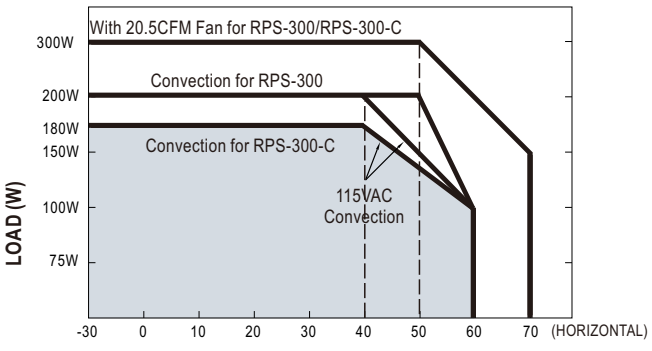
1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25 of ambient temperature.
2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uf & 47uf parallel capacitor.
3. Tolerance : includes set up tolerance, line regulation 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 2.5℃/ 1000m is needed for operating altitude greater than 2000m(6500ft).
7. The power supply is considered a component which will be installed into a final equipment. All the Class Ⅰ (with FG) EMC tests are executed by mounting the unit on a 360mm*360mm metal plate with 1mm of thickness. The Class Ⅱ (without FG) EMC tests are executed by mounting the unit on a 130mm*86.6mm 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.”

■ Block Diagram

PFC fosc : 65KHz
PWM fosc : 70KHz

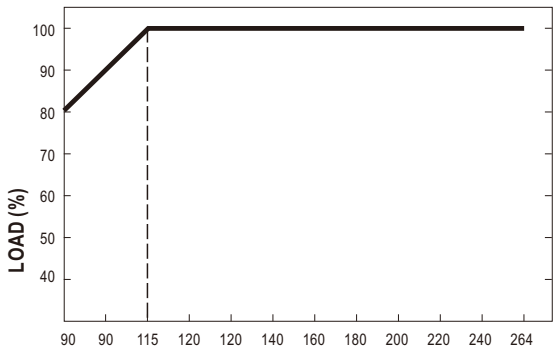


■ Derating Curve



AMBIENT TEMPERATURE (℃)

■ Output Derating VS Input Voltage

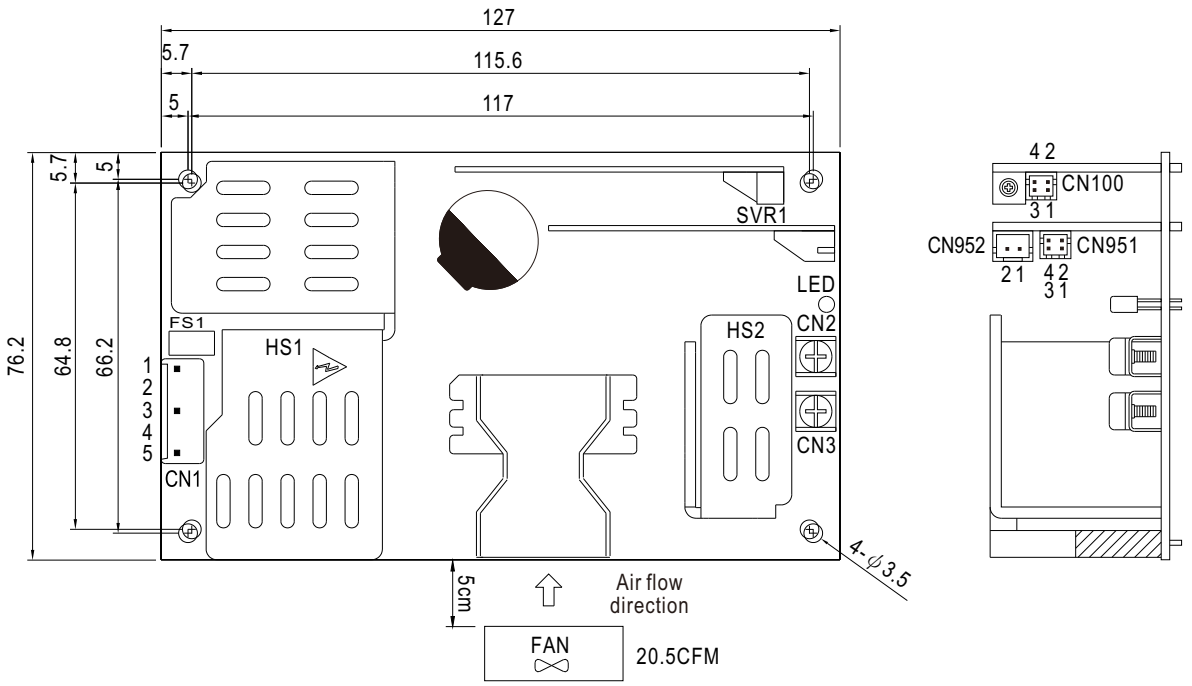


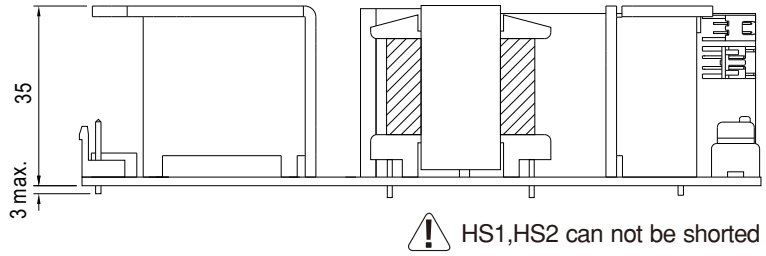
INPUT VOLTAGE (VAC) 60Hz

■ Mechanical Specification

Unit:mm

◎ RPS-300 (PCB type)

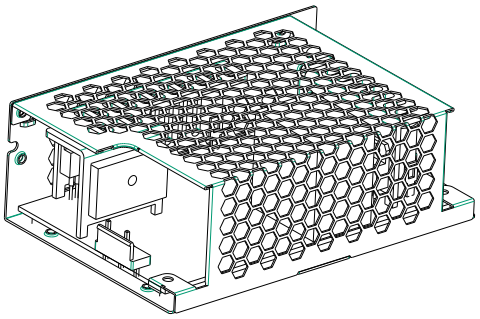


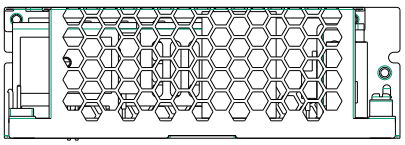


⚠ HS1,HS2 can not be shorted

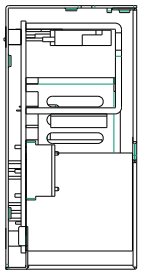
◎ **RPS-300-C (Enclosed type)**

Case No. 247A Unit:mm

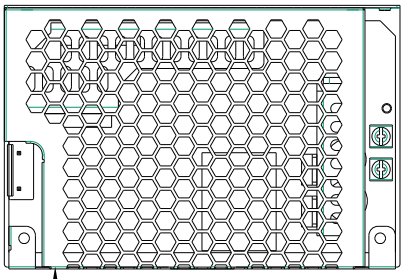




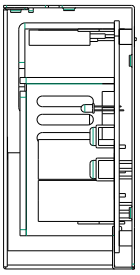
Side View



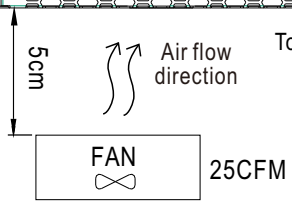
Side View

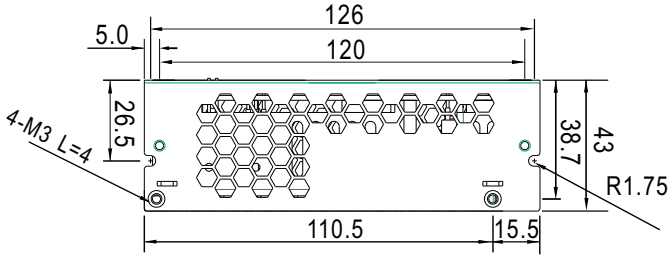


Top View

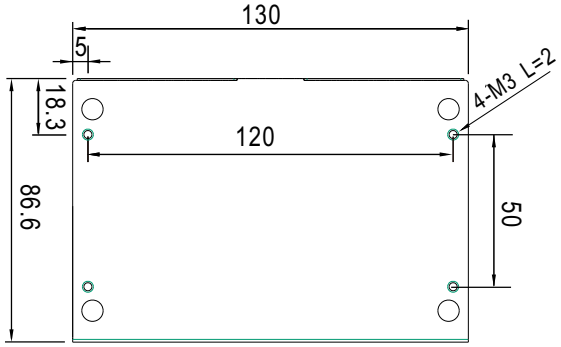


Side View





Side View



Bottom View

AC Input Connector (CN1) : JST B5P-VH or equivalent

Pin No.	Assignment	Mating Housing	Terminal
1	AC/N	JST VHR or equivalent	JST SVH-21T-P1.1 or equivalent
2,4	No Pin		
3	AC/L		
5	FG ⏚		

Function Connector(CN100):HRS DF11-4DP-2DS or equivalent

Pin No.	Status	Mating Housing	Terminal
1	-S	HRS DF11-4DS or equivalent	HRS DF11-**SC or equivalent
2	+S		
3	DC COM		
4	PG		

DC Output Connector (CN2,CN3)

Pin No.	Assignment	Output Terminals
CN2	-V	M4 Pan HD screw in 2 positions
CN3	+V	Torque to 8 lbs-in(90cNm)max.

⚠ 1.HS1,HS2 cannot be shorted.

Function Connector(CN951):HRS DF11-4DP-2DS or equivalent

Pin No.	Status	Mating Housing	Terminal
1	5VSB	HRS DF11-4DS or equivalent	HRS DF11-**SC or equivalent
2,4	DC COM		
3	PS-ON		

FAN Connector(CN952) : JST S2B-XH or equivalent

Pin No.	Assignment	Mating Housing	Terminal
1	DC COM	JST XHP or equivalent	JST SXH-001T-P0.6 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 enclosed type(-C type) model is not suitable for configuration within a Class II (without FG) system but suggested within a Class I (with FG) system.

■ Installation Manual

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