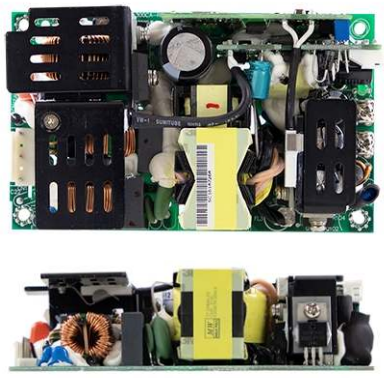
300W Reliable Green Medical Power Supply

RPS-300 series





User's Manual
Click Me

ANSI/AAMI ES60601-1
UL 62368-1
BS EN/EN60601-1
BS EN/EN 62368-1
IEC60601-1
IEC60335-1
IEC62368-1
TPTC004
BS EN/EN60335-1
ECO
Medical
2xMOPP
BF rated

Features

- 5"×3" compact size
- ANSI/AAMI ES60601-1, IEC/BS EN/EN 60601-1 (2 x MOPP) and IEC/EN/UL 62368-1 approved
- Suitable for BF application with appropriate system consideration
- 200W convection,300W force air
- No load power consumption<0.5W by PS-ON control
- Extremely low leakage current
- 5Vdc standby output, 12Vdc fan supply, Power Good, Power Fail and remote sense
- Protections: Short circuit / Overload / Over voltage / Over temperature
- Typical Lifetime > 40K hours
- 3 years warranty

Applications

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

GTIN CODE

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

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 150 μA. In addition, it conforms to international medical regulations (2*MOPP) and EMC BS EN/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: Type
- 12: Output voltage
- 300: Rated 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	Convection	0 ~ 16.67A	0 ~ 13.33A	0 ~ 8.33A	0 ~ 7.4A	0 ~ 4.17A
		20.5CFM	0 ~ 25A	0 ~ 20A	0 ~ 12.5A	0 ~ 11.12A	0 ~ 6.25A
	RATED POWER	Convection	200W	200W	200W	200W	200.2W
		20.5CFM	300W	300W	300W	300W	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	14.25 ~ 15.75V	22.8 ~ 25.2V	25.65 ~ 28.35V	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 35A/115VAC 70A/230VAC				
	LEAKAGE CURRENT(max.) Note.5		PCB Type: Earth leakage current <150μA / 264VAC, Touch current <70μA/264VAC Enclosed Type: Earth leakage current <200μA / 264VAC, Touch current <70μA/264VAC				
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% at main output 20% rated current (20.5CFM)				
	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 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		4000 meters				

SAFETY & EMC (Note 7)	SAFETY STANDARDS	IEC 60601-1:2005+A1+A2, IEC 62368-1 , TUV BS EN/ EN 60601-1:2006+A1+A12+A2,BS EN/EN 62368-1 ANSI/AAMI ES60601-1:2005+A2, CAN/CSA C22.2 No. 60601-1:2014+A2, UL 62368-1 IEC 60335-1:2010+A1+A2, Dekra BS EN/ EN 60335-1:2012+A11+A13A+A1+A14+A2+A15 EAC TP TC 004 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	BS EN/EN55011 (CISPR11), BS EN/EN55032(CISPR32)	Class B
		Radiated emission	BS EN/EN55011 (CISPR11), BS EN/EN55032(CISPR32)	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	PCB type: 2853.1K hrs min. Telcordia SR-332 (Bellcore) ; 160.0K hrs min. MIL-HDBK-217F (25℃)		
		Enclosed type: 1487.9K hrs min. Telcordia SR-332 (Bellcore) ; 163.8K hrs min. MIL-HDBK-217F (25℃)		
	DIMENSION (L*W*H)	PCB type:127*76.2*35mm or 5″*3″*1.37″inch		
		Enclosed type:130*86*43mm or 5.11″*3.39″*1.69″inch		
	PACKING	PCB type:0.37Kg; 36pcs/14.3Kg/0.96CUFT		
		Enclosed type:0.563Kg; 24pcs/14.5Kg/0.77CUFT		

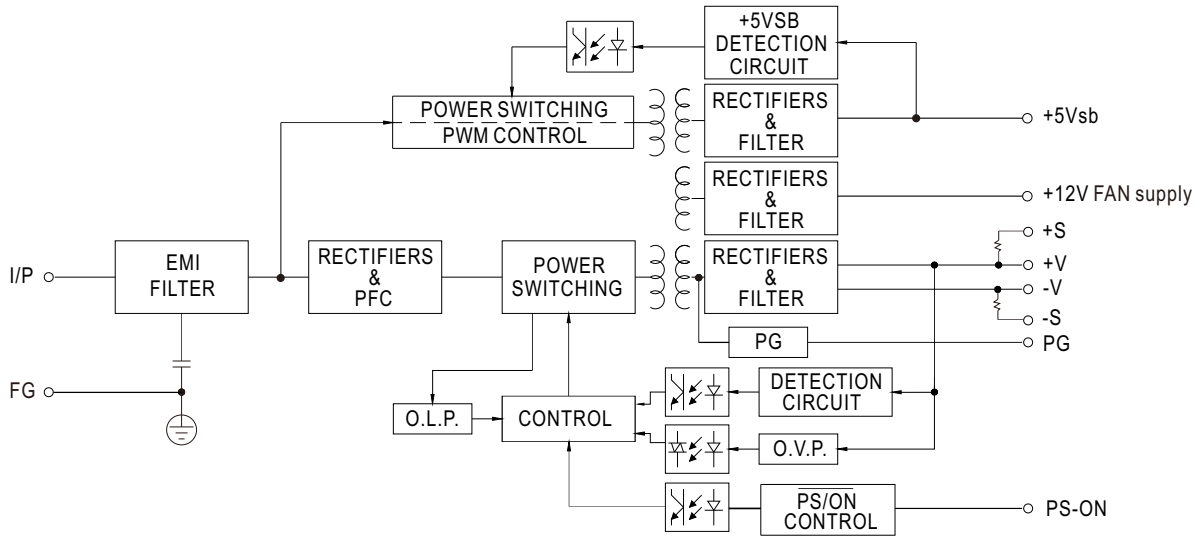
NOTE

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 0.1μf & 47μf 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 Class Ⅰ (with FG) EMC tests are 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)

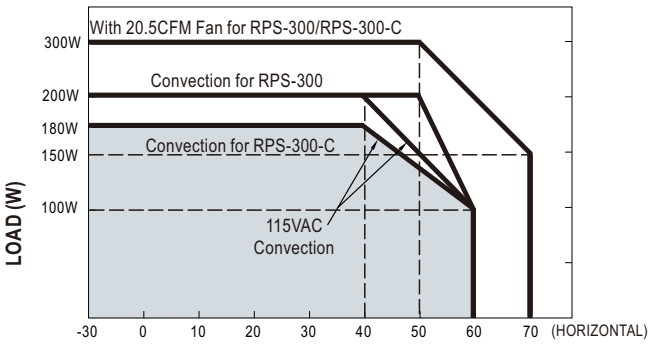
※ Product Liability Disclaimer：For detailed information, please refer to https://www.meanwell.com/serviceDisclaimer.aspx

■ Block Diagram

PFC fosc : 65KHz
PWM fosc : 70KHz

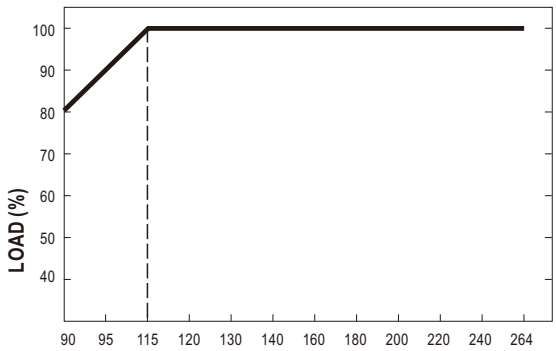


■ Derating Curve



AMBIENT TEMPERATURE (℃)

■ Output Derating VS Input Voltage



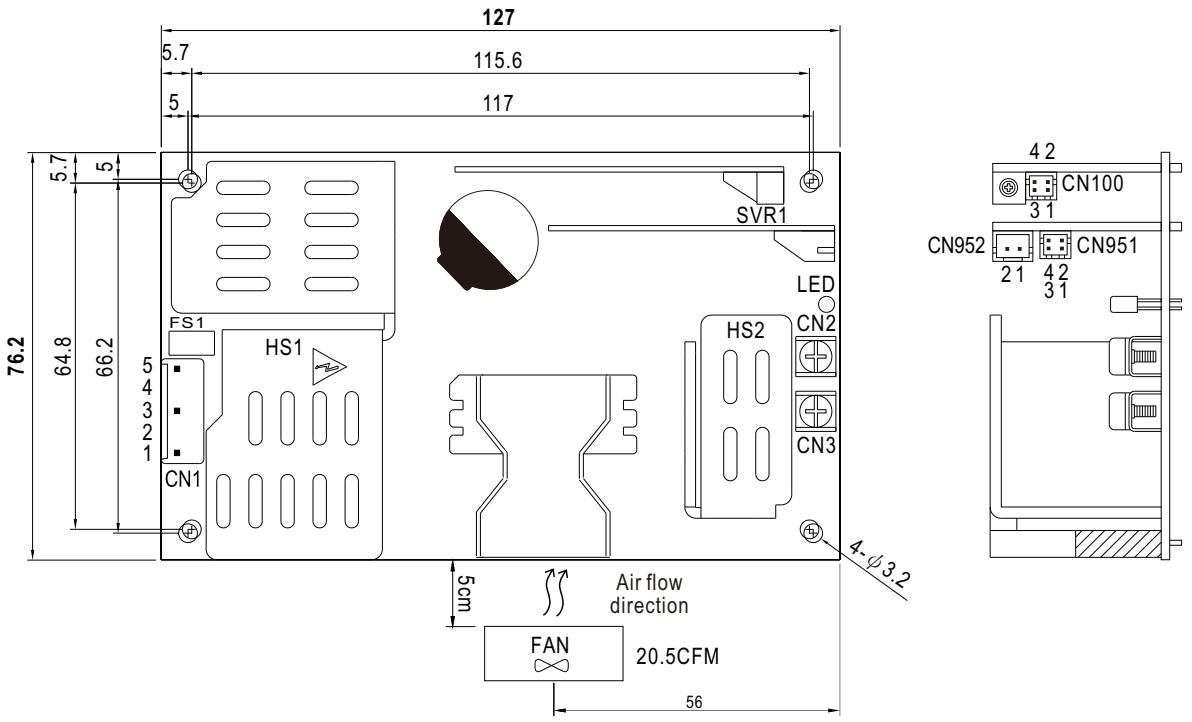
INPUT VOLTAGE (VAC) 60Hz

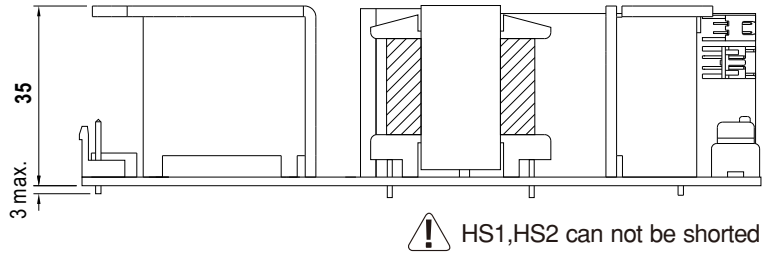
■ Mechanical Specification

(Unit: mm , tolerance ± 1mm)

◎ RPS-300 (PCB type)

Top View

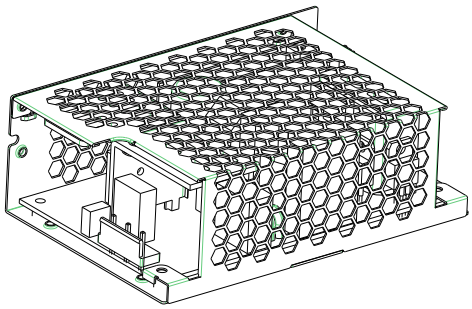


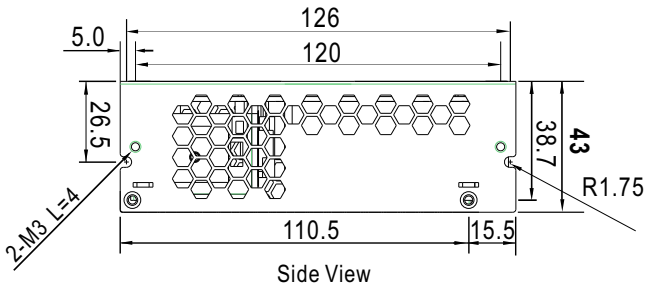


Side View

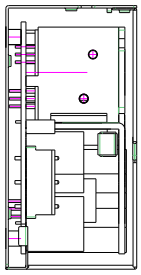
◎ **RPS-300-C (Enclosed type)**

Case No. 247A

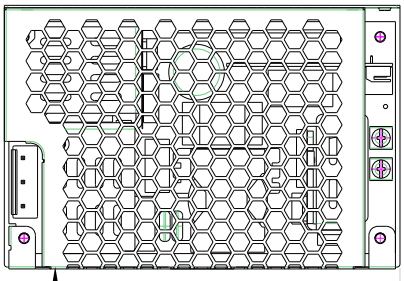




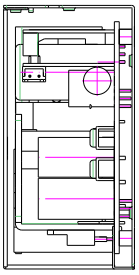
Side View



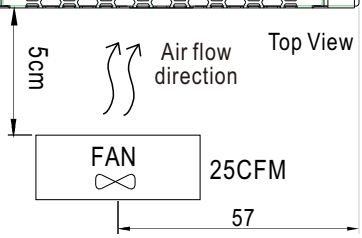
Side View

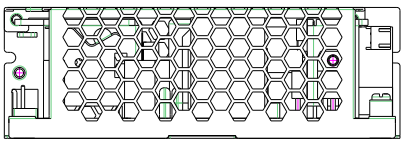


Top View

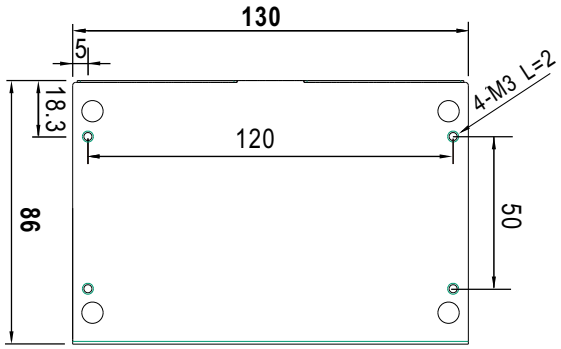


Side View





Side View



Bottom View

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

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

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	M3.5 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 PCB type (Blank type) model delivers EMI Class B for both conducted emission and radiated emission for power supply , when configured into either Class Ⅰ (with FG) .

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

■ Installation Manual

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