


**CB EAC CE UK CA**

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



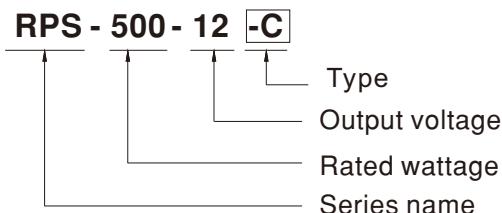
## ■ Features

- 5" x 3" compact size
- 320W convection, 500W force air
- 550W peak power (3sec.)
- Medical safety approved (2 x MOPP) according to ANSI/AAMI ES60601-1 and IEC/BS EN/EN60601-1
- EMI for both Class I & Class II configuration
- -30~+70°C wide range operating temperature
- No load power consumption <0.5W by PS\_ON control
- High efficiency up to 94%
- Protections: Short circuit / Overload / Over voltage / Over temperature
- 5Vdc standby output, 12Vdc fan supply, Power Good, Power Fail and remote sense
- Operating altitude up to 4000 meters (Note.5)
- LED indicator for power on
- 3 years warranty

## ■ Description

RPS-500 is a 500W highly reliable green PCB type medical power supply with a high power density on the 5" by 3" footprint. It accepts 80~264VAC input and offers various output voltages between 12V and 48V. The working efficiency is up to 94% and the extremely low no load power consumption is down below 0.5W. RPS-500 (blank type only) 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 220  $\mu$ A. 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-500 series also offers the enclosed style models ( -C / TF / SF )

## ■ Model Encoding



## ■ Applications

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

Type	Description	Note
Blank	PCB Type	In stock
-C	Enclosed casing Type	In stock
-TF	Enclosed Type with fan on the top	In stock
-SF	Enclosed Type with fan on the side	In stock



# 500W 5"×3" Reliable Green Medical Power Supply **RPS-500** series

## SPECIFICATION

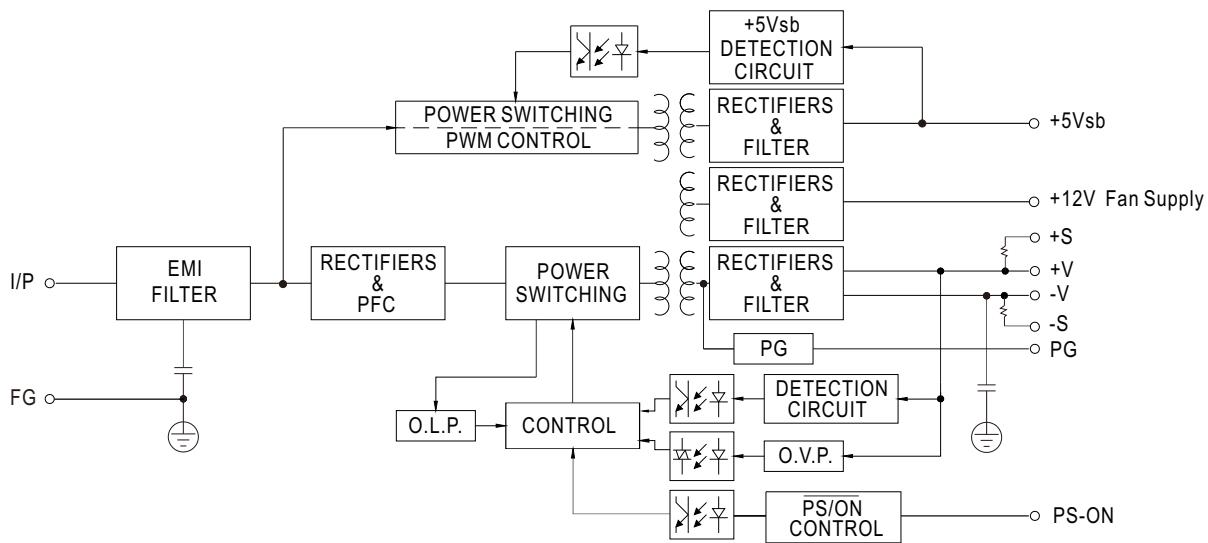
MODEL	RPS-500-12	RPS-500-15	RPS-500-18	RPS-500-24	RPS-500-27	RPS-500-36	RPS-500-48					
OUTPUT	DC VOLTAGE	12V	15V	18V	24V	27V	36V					
	RATED CURRENT Note.7	Blank	25CFM	41.6A	33.3A	27.8A	20.8A					
			Convection	26.7A	21.3A	17.8A	13.4A					
		- C	25CFM	41.6A	33.3A	27.8A	20.8A					
			Convection	25.8A	20.7A	17.2A	12.9A					
	RATED POWER Note.7	Blank	25CFM	41.6A	33.3A	27.8A	20.8A					
			Convection	499.2W	499.5W	500.4W	499.2W					
		- C	25CFM	499.2W	499.5W	500.4W	499.2W					
			Convection	320.4W	319.5W	321.6W	320.4W					
		- TF/SF	25CFM	499.2W	499.5W	500.4W	499.2W					
			Convection	309.6W	310.5W	309.6W	312W					
	PEAK POWER(3sec.)	550W										
	RIPLPE & NOISE (max.) Note.2	200mVp-p	200mVp-p	200mVp-p	200mVp-p	200mVp-p	200mVp-p					
	VOLTAGE ADJ. RANGE(main output)	11.4~12.6V	14.3~15.8V	17.1~18.9V	22.8~25.2V	25.6~28.4V	34.2~37.8V					
	VOLTAGE TOLERANCE Note.3	±3.0%	±3.0%	±3.0%	±2.0%	±2.0%	±1.0%					
	LINE REGULATION	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%					
	LOAD REGULATION	±1.0%	±1.0%	±1.0%	±1.0%	±1.0%	±1.0%					
	SETUP, RISE TIME	1000ms, 30ms/230VAC 1500ms, 30ms/115VAC at full load										
	HOLD UP TIME (Typ.)	10ms/230VAC	10ms/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.)	91%	92%	92.5%	93%	93.5%	94%					
	AC CURRENT (Typ.)	5.8A/115VAC	2.9A/230VAC									
	INRUSH CURRENT (Typ.)	COLD START 40A/115VAC	80A/230VAC									
	LEAKAGE CURRENT (max.) Note.5	Earth leakage current <220μA/264VAC 50Hz, Touch current < 100μA/264VAC										
PROTECTION	OVERLOAD	105~135% rated output power										
		Protection type : Hiccup mode, recovers automatically after fault condition is removed										
	OVER VOLTAGE	13.2~15.6V	16.5~19.5V	19.8~23.4V	26.4~31.2V	29.7~35.1V	39.6~46.8V					
		Protection type : Shut down o/p voltage, re-power on to recover										
FUNCTION	OVER TEMPERATURE	Protection type : Shut down o/p voltage, recovers automatically after temperature goes down										
	5V STANDBY	5Vs : 5V@0.6A without fan, 1A with fan 25CFM ; Tolerance ±2%, ripple : 120mVp-p(max.)										
	12V FAN SUPPLY	12V@0.5A for driving fan ; Tolerance ±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°C (Refer to "Derating Curve")										
	WORKING HUMIDITY	20~90% RH non-condensing										
	STORAGE TEMP.	-40~+85°C										
	TEMP. COEFFICIENT	±0.03%/°C (0~50°C)										
	VIBRATION	10~500Hz, 2G 10min./1cycle, 60min. each along X, Y, Z axes										
	OPERATING ALTITUDE Note.6	4000 meters										

## SPECIFICATION

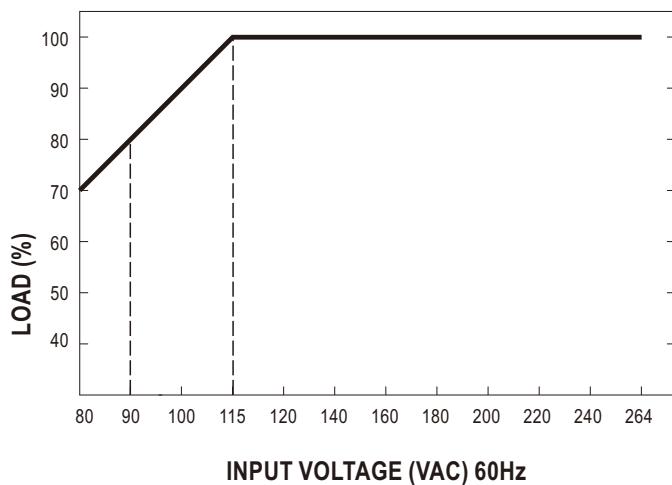
SAFETY & EMC (Note 8)	SAFETY STANDARDS	IEC60601-1, TUV BS EN/EN60601-1, UL ANSI / AAMI ES60601-1 (3.1 version), EAC TP TC 020. CAN/CSA-C22.2 No. 60601-1:14 - Edition 3 approved; Design refer to BS EN/EN60335-1 (By request)											
	ISOLATION LEVEL	Primary-Secondary: 2xMOPP, Primary-Earth:1xMOPP, Secondary-Earth:1xMOPP											
	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:100M Ohms / 500VDC / 25°C / 70% RH											
	EMC EMISSION	Parameter	Standard	Test Level / Note									
		Conducted emission	BS EN/EN55011 (CISPR11)	Class I : Class B , Class II : Class A									
		Radiated emission	BS EN/EN55011 (CISPR11)	Class A									
		Harmonic current	BS EN/EN61000-3-2	Class A									
	EMC IMMUNITY	Voltage flicker	BS EN/EN61000-3-3	-----									
		BS EN/EN55024 , BS EN/EN60601-1-2, BS EN/EN61204-3											
		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	194.1Khrs min. MIL-HDBK-217F (25°C)											
	DIMENSION	Type	RPS-500	RPS-500-C	RPS-500-TF								
		L*W*H	127x76.2x41mm 5"x3"x1.61"inch	130x86x43mm 5.11"x3.39"x1.69"inch	130x86x66.5mm 5.11"x3.39"x2.62"inch 6.3"x3.39"x1.69"inch								
	PACKING	P.W.	0.46Kg	0.54Kg	0.58Kg								
		Q'TY	30pcs	24pcs	24pcs								
		G.W.	14.8Kg	14Kg	14.9Kg								
		M'MENT	0.96CUFT	0.77CUFT	0.86CUFT								
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 $0.1\mu\text{f}$ & $47\mu\text{f}$ 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 $3.5^\circ\text{C}/1000\text{m}$ with fanless models and of $5^\circ\text{C}/1000\text{m}$ with fan models for operating altitude higher than 2000m(6500ft). 7. Please refer to "Derating curve". 8. The power supply is considered a component which will be installed into a final equipment. All 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 <a href="http://www.meanwell.com">http://www.meanwell.com</a> ).												
	※ Product Liability Disclaimer : For detailed information, please refer to <a href="https://www.meanwell.com/serviceDisclaimer.aspx">https://www.meanwell.com/serviceDisclaimer.aspx</a>												
	<table border="1"> <tr> <td>EMI Performance</td> <td>Conducted</td> <td>Radiated</td> </tr> <tr> <td>Class I (with FG)</td> <td>Class B</td> <td>Class A</td> </tr> <tr> <td>Class II (no FG)</td> <td>Class A</td> <td>Class A</td> </tr> </table>		EMI Performance	Conducted	Radiated	Class I (with FG)	Class B	Class A	Class II (no FG)	Class A	Class A		
EMI Performance	Conducted	Radiated											
Class I (with FG)	Class B	Class A											
Class II (no FG)	Class A	Class A											

■ Block Diagram

PFC fosc : 90KHz  
PWM fosc : 100KHz



■ Output Derating vs Input Voltage

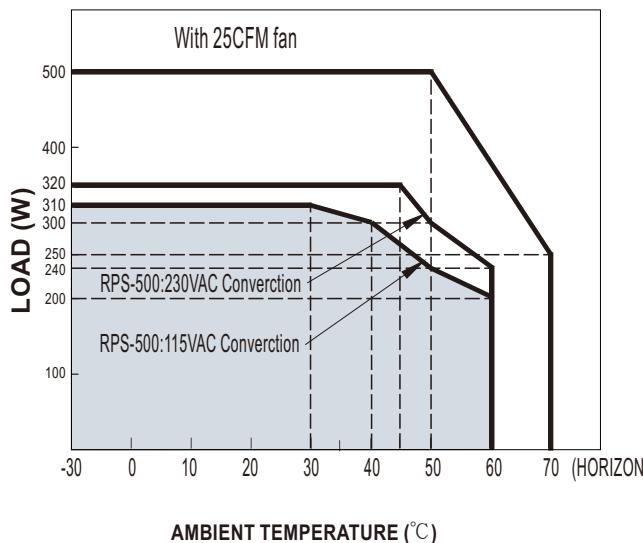




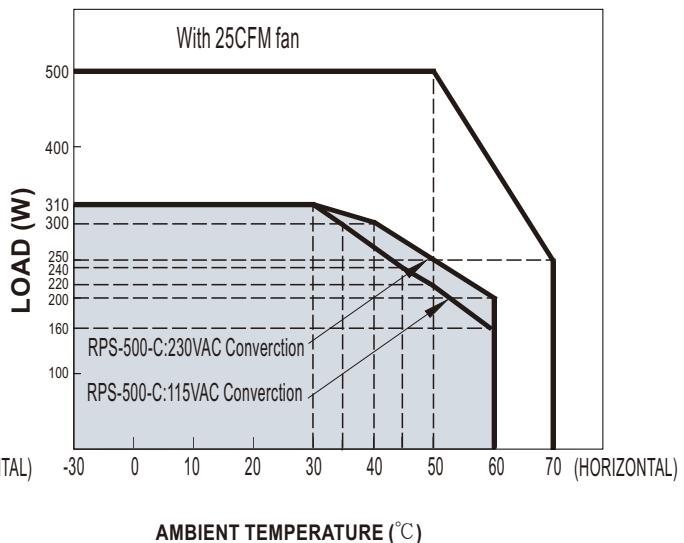
# 500W 5"×3" Reliable Green Medical Power Supply **RPS-500** series

## ■ Derating Curve

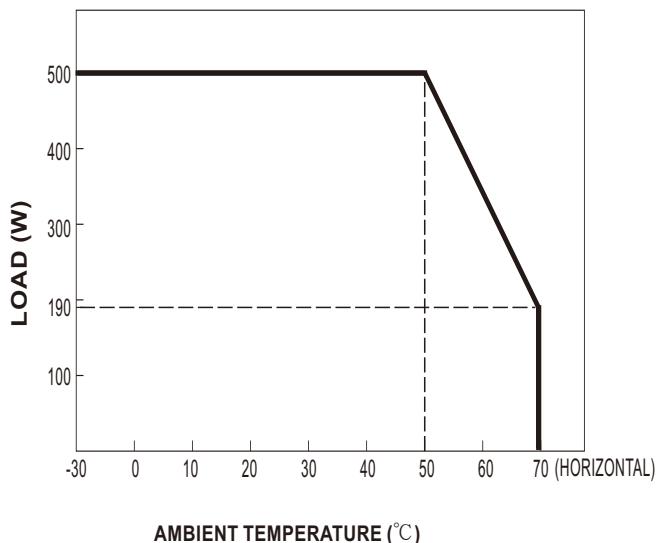
◎ **RPS-500**



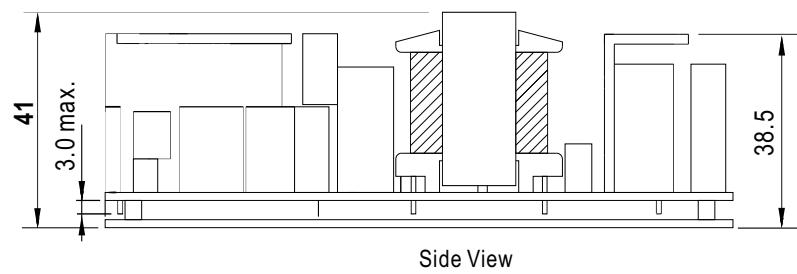
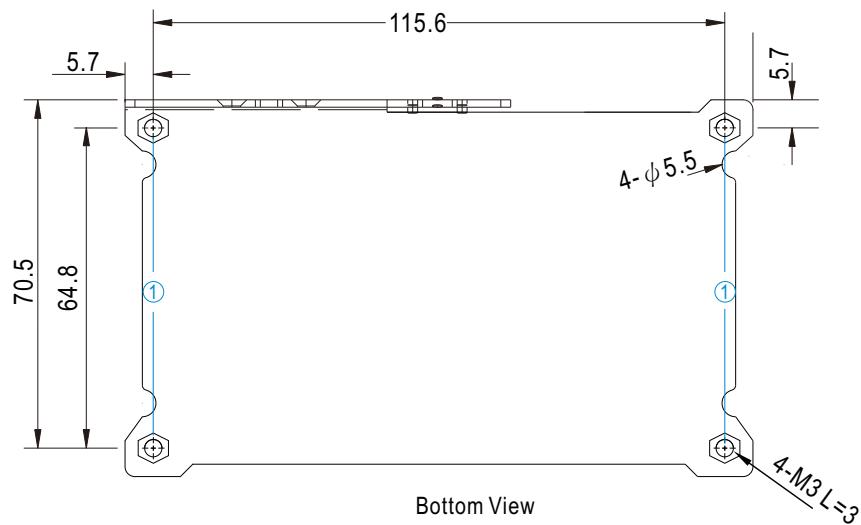
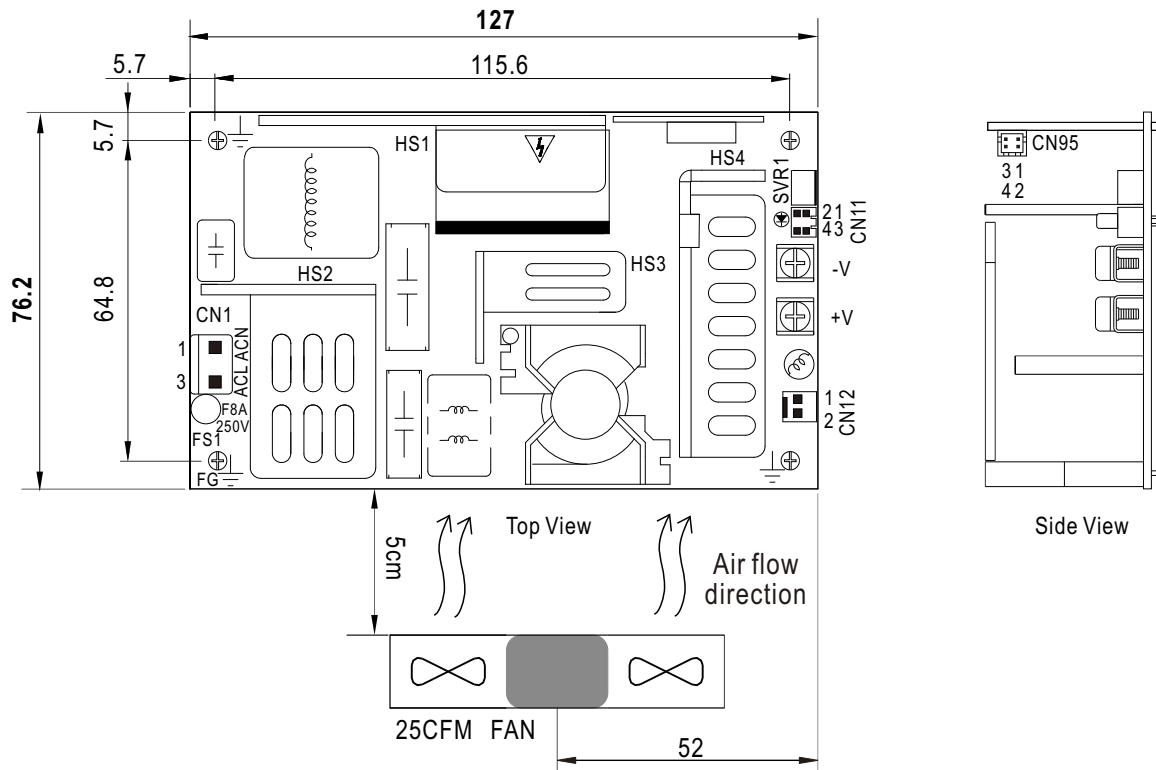
◎ **RPS-500-C**



◎ **RPS-500-TF/SF**



Order No.	RPS-500	RPS-500-C	RPS-500-TF	RPS-500-SF
Products				
Convection	320W	310W	---	---
Force Air	500W	500W	500W	500W

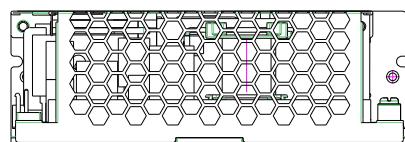
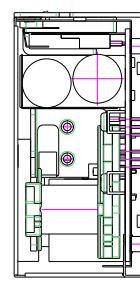
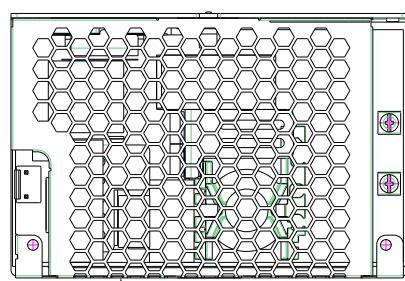
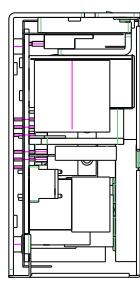
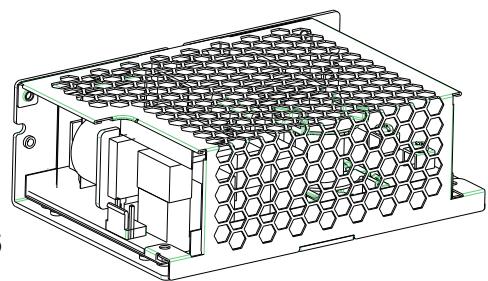
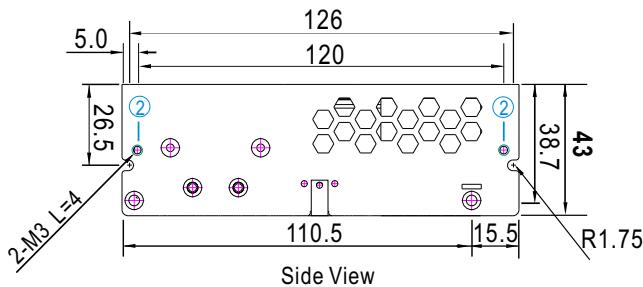
**■ Mechanical Specification**
**● RPS-500 (PCB Type)**




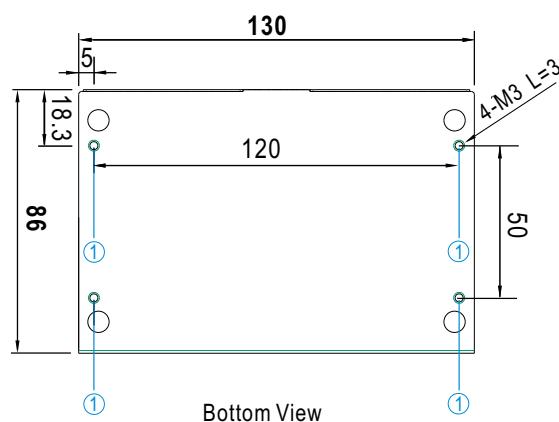
500W 5"×3" Reliable Green Medical Power Supply **RPS-500** series

● RPS-500-C (Enclosed type)

Case No. 247C-T 269A-D Unit:mm

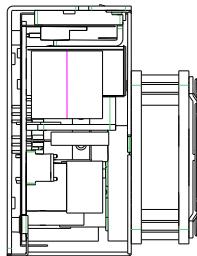
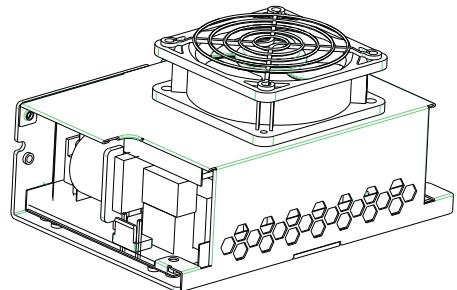
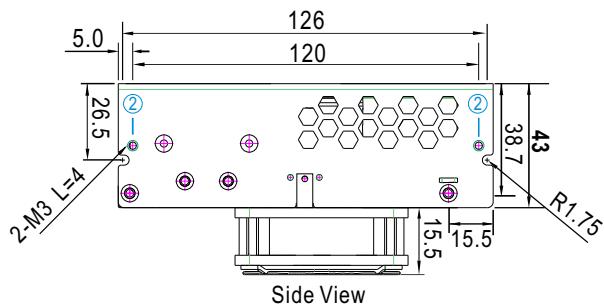


Side View

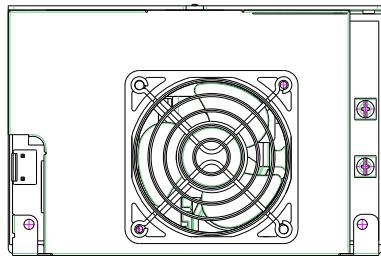


● RPS-500-TF (Enclosed type with fan on the top)

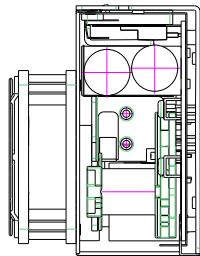
Case No. 269A-D 247D-T Unit:mm



Side View

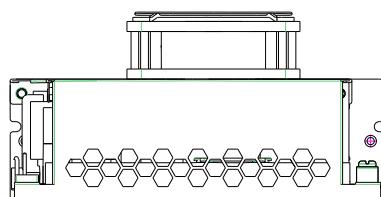


Top View

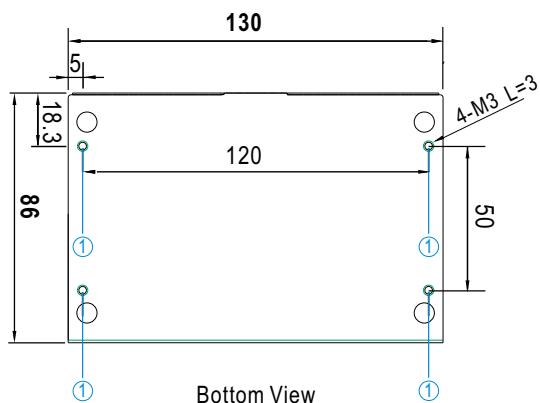


Side View

↗ Air flow direction



Side View

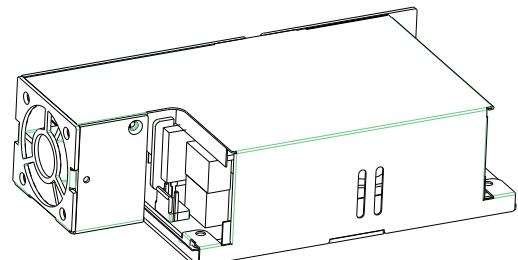
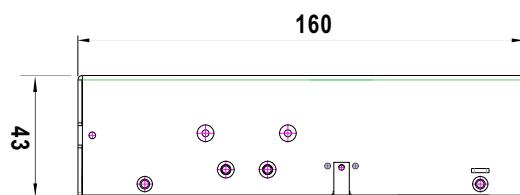




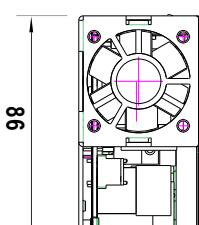
## 500W 5"×3" Reliable Green Medical Power Supply **RPS-500** series

### ● RPS-500-SF (Enclosed type with fan on the side)

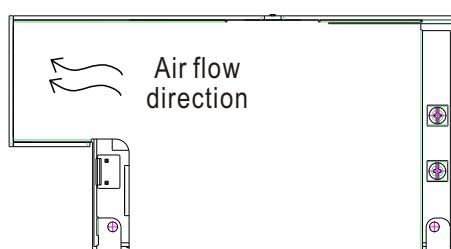
Case No. 248B Unit:mm



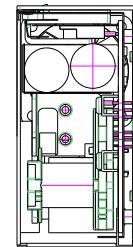
Side View



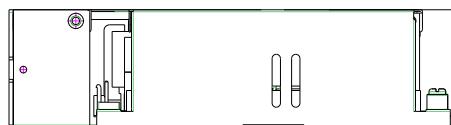
Side View



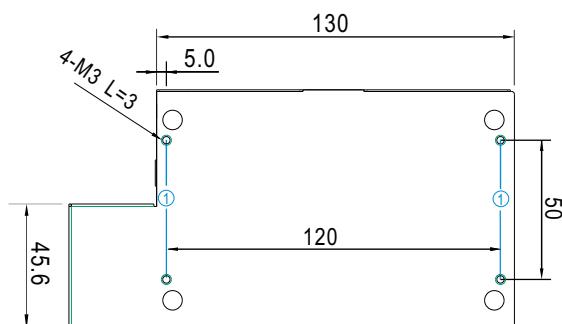
Top View



Side View



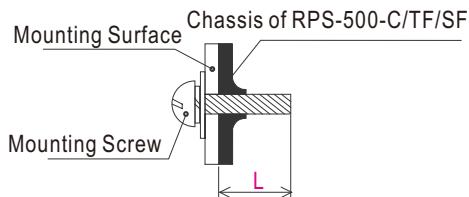
Side View



Bottom View

### ※ Mounting Instruction for -C/-TF/-SF Type

Hole No.	Recommended Screw Size	MAX. Penetration Depth L	Recommended mounting torque
①	M3	3mm	4~6Kgf-cm
②	M3	4mm	4~6Kgf-cm



### ※ CONNECTION

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		

Function Connector(CN11): TKP DH2I-2X2 or equivalent

Pin No.	Assignment	Mating Housing	Terminal
1	-S	TKP DH2 or equivalent	TKP 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 Torque to 8 lbs-in(90cNm)max.
CN3	+V	

Function Connector(CN95): TKP DH2L-2X2 or equivalent

Pin No.	Assignment	Mating Housing	Terminal
1	5Vsb	TKP DH2 or equivalent	TKP or equivalent
2,4	DC COM		
3	PS-ON		

⚠ HS1,HS2,HS3,HS4 can not be shorted

FAN Connector(CN12) : TKP 8812-2 or equivalent  
(Except for RPS-500-TF/SF)

Pin No.	Assignment	Mating Housing	Terminal
1	DC COM	TKP 2502 or equivalent	TKP 8811 or equivalent
2	+12V		

※ Note: 1. The enclosed type (-C/TF/SF type) models are not suitable for configuration within a Class II (without FG) system, but suggested within a Class I (with FG) system.

2. Mounting Instruction for enclosed type.

### ■ Installation Manual

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