

ANSI/AAMI ES60601-1



EN60601-1



IEC60601-1



■ Features

- 3"×2" compact size
- 120W convention, 150W peak (10sec.)
- Medical safety approved (2 x MOPP) according to ANSI/AAMI ES60601-1 and IEC/EN60601-1
- Suitable for BF application with appropriate system consideration
- EMI for both Class I & Class II configuration
- -30~+85°C wide range operating temperature
- No load power consumption<0.3W
- Extremely low leakage current
- Protections: Short circuit / Overload / Over voltage / Over temperature
- Operating altitude up to 4000 meters (Note.6)
- 3 years warranty

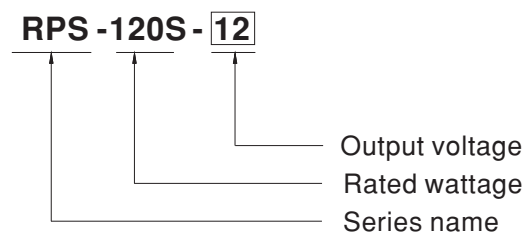
■ Applications

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

■ Description

RPS-120S is a 120W highly reliable green PCB type medical power supply with a high power density on a 3" by 2" footprint. It accepts 80~264VAC input and offers various models with the output voltages between 12V and 48V. The working efficiency is up to 94% and the extremely low no load power consumption is down below 0.3W. RPS-120S is able to be used for both Class I (with FG) & Class II (no FG) system design. The extremely low leakage current is less than 150μA. 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.

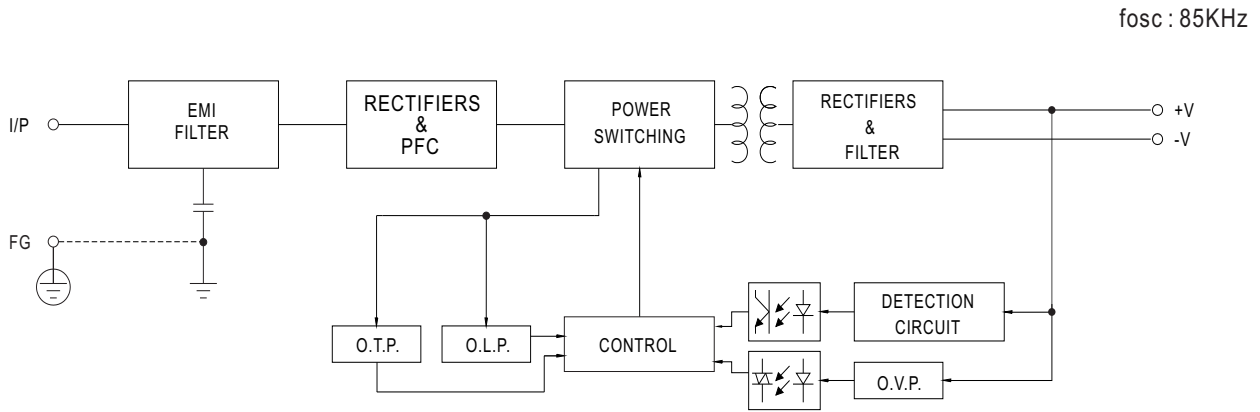
■ Model Encoding



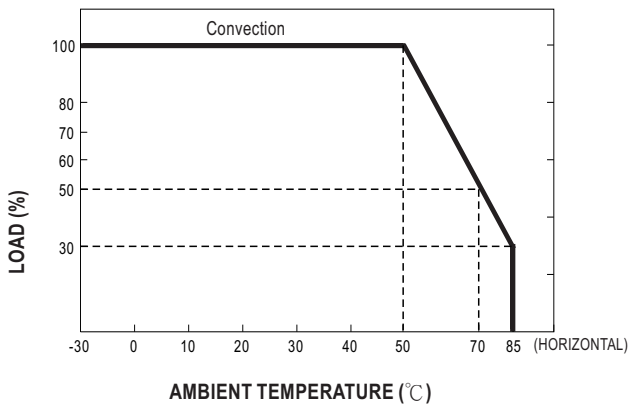
SPECIFICATION

| MODEL | | RPS-120S-12 | RPS-120S-15 | RPS-120S-24 | RPS-120S-27 | RPS-120S-48 | |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|----------------------------------------------------------------------|--------------|----------------------------------------------------------------------|--------|
| OUTPUT | DC VOLTAGE | 12V | 15V | 24V | 27V | 48V | |
| | CURRENT | Peak(10 sec.) | 11.8A | 9.5A | 6.25A | 5.55A | 3.125A |
| | | Convection | 9.5A | 7.6A | 5A | 4.44A | 2.5A |
| | RATED POWER | Peak(10 sec.) | 141.6W | 142.5W | 150W | 149.8W | 150W |
| | | Convection | 114W | 114W | 120W | 119.9W | 120W |
| | RIPPLE & NOISE (max.) Note.2 | 100mVp-p | 120mVp-p | 150mVp-p | 150mVp-p | 200mVp-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 | 600ms, 30ms/230VAC 600ms, 30ms/115VAC at full load | | | | | | |
| HOLD UP TIME (Typ.) | 15ms/230VAC 15ms/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% | 93% | 94% | 93.5% | |
| | AC CURRENT (Typ.) | 2.3A/115VAC | | 1.1A/230VAC | | | |
| | INRUSH CURRENT (Typ.) | COLD START 30A/115VAC | | 60A/230VAC | | | |
| | LEAKAGE CURRENT(max.) Note.5 | Earth leakage current < 150µA/264VAC , touch current < 80µA/264VAC | | | | | |
| PROTECTION | OVERLOAD | 130~160% 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 | |
| | OVER TEMPERATURE | Protection type : Shut down o/p voltage, recovers automatically after temperature goes down | | | | | |
| ENVIRONMENT | WORKING TEMP. | -30 ~ +85°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 | | | | | |
| 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 (By request) | | | | | |
| | 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, O/P-FG: 100M Ohms / 500VDC / 25°C / 70% RH | | | | | |
| | EMC EMISSION | Parameter | | Standard | | Test Level / Note | |
| | | Conducted emission | | EN55011 (CISPR11) | | Class B | |
| | | Radiated emission | | EN55011 (CISPR11) | | Class I : Class B , Class II : Class A | |
| | | 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(385MHz~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 | | 95% dip 1 periods, 30% dip 25 periods, 95% interruptions 250 periods | | | |
| OTHERS | MTBF | 468Khrs min. MIL-HDBK-217F (25°C) | | | | | |
| | DIMENSION (L*W*H) | 76.2*50.8*28mm or 3" * 2" *1.1" inch | | | | | |
| | PACKING | 0.13Kg; 100pcs/14Kg/1.13CUFT | | | | | |
| NOTE | <p>1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25 of ambient temperature.</p> <p>2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1µf & 47µf parallel capacitor.</p> <p>3. Tolerance : includes set up tolerance, line regulation and load regulation.</p> <p>4. Derating may be needed under low input voltages. Please check the derating curve for more details.</p> <p>5. Touch current was measured from primary input to DC output.</p> <p>6. The ambient temperature derating of 3.5°C/1000m with fanless models and of 5°C/1000m with fan models for operating altitude higher than 2000m(6500ft).</p> <p>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)</p> | | | | | | |

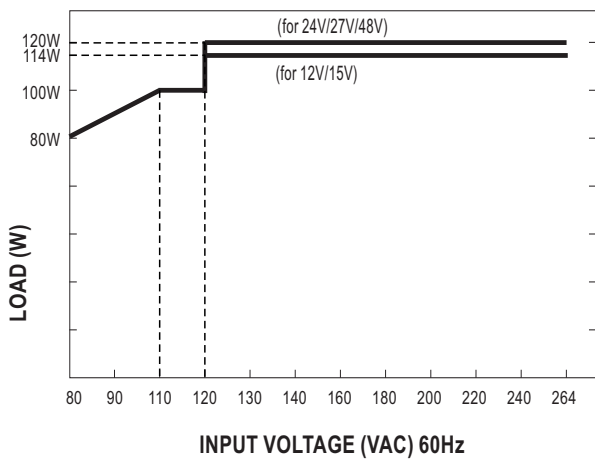
Block Diagram



Derating Curve

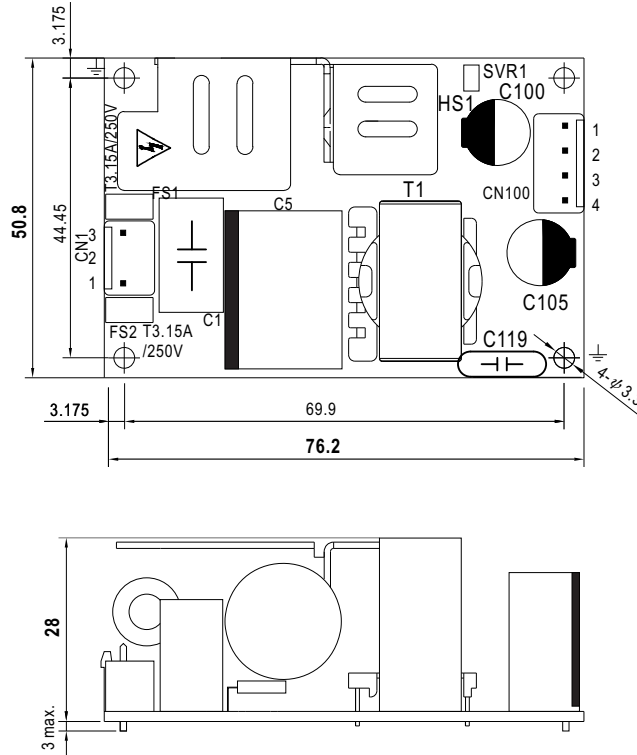


Output Derating VS Input Voltage



■ Mechanical Specification

Unit:mm



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 B4P-VH or equivalent

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

⚠ 1.HS1 must have safety isolation distance with system case.

※Note :

- 1.RPS-120S model delivers EMI Class B for both conducted emission and radiated emission for the power supply, when configured into Class I (with FG) system.
- 2.RPS-120S model delivers EMI Class B conducted emission and Class A radiated emission with King Core K5B RC (12*15*7) in output cable for the power supply when configured into Class II (no FG) system.

■ Installation Manual

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