



ANSI/AAMI ES60601-1 BS EN/EN60601-1 IEC60601-1 TPTC004



### ■ Features

- 3"×2" compact size
- 120W convention, 150W peak (10sec.)
- Medical safety approved (2 x MOPP) according to ANSI/AAMI ES60601-1 and IEC/BS EN/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

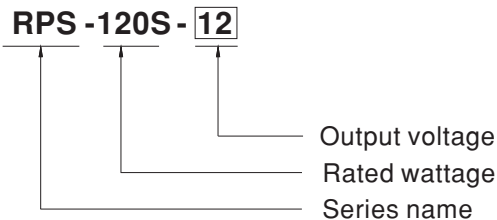
### ■ Applications

- 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 150μ A. In addition, it conforms to the international medical regulations (2\*MOPP) and EMC BS EN/EN55011, perfectly fitting all kinds of BF rated "patient contact" medical system equipment.

### ■ Model Encoding

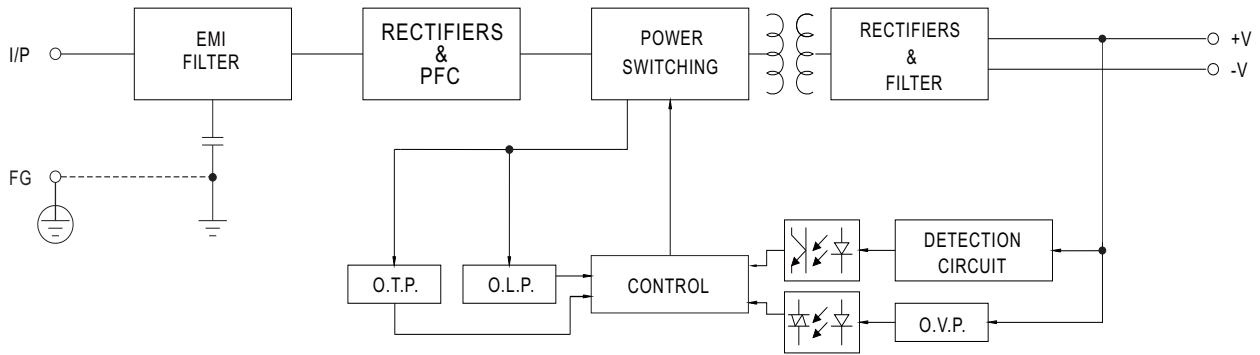


**SPECIFICATION**

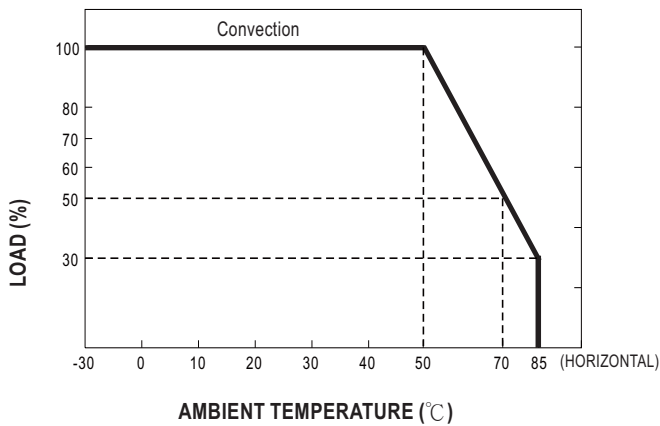
| MODEL                     |   | RPS-120S-12   | RPS-120S-15             | RPS-120S-24   | RPS-120S-27  | RPS-120S-48                           |        |
|---------------------------|---|---|-------------------------|---|--|---------------------------------------|--------|
| OUTPUT                    | 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<br>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 BS EN/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 BS EN/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  | BS EN/EN55011 (CISPR11) |   |  | Class B                               |        |
|                           |   | Radiated emission   | BS EN/EN55011 (CISPR11) |   |  | Class I : Class B, Class II : Class A |        |
|                           |   | Harmonic current  | BS EN/EN61000-3-2       |   |  | Class A                               |        |
|                           | EMC IMMUNITY  | Voltage flicker   | BS EN/EN61000-3-3       |   |  | -----                                 |        |
|                           |   | 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 )<br>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  |   |                         | 95% dip 1 periods, 30% dip 25 periods,<br>95% interruptions 250 periods |  |                                       |        |
| OTHERS                    | MTBF  | 4050.3K hrs min.    Telcordia SR-332 (Bellcore) ; 468.0K hrs 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                      | 1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25 of ambient temperature.<br>2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1μf & 47μf parallel capacitor.<br>3. Tolerance : includes set up tolerance, line regulation and load regulation.<br>4. Derating may be needed under low input voltages. Please check the derating curve for more details.<br>5. Touch current was measured from primary input to DC output.<br>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).<br>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."<br>(as available on <a href="http://www.meanwell.com">http://www.meanwell.com</a> )<br>※ Product Liability Disclaimer : For detailed information, please refer to <a href="https://www.meanwell.com/serviceDisclaimer.aspx">https://www.meanwell.com/serviceDisclaimer.aspx</a> |   |                         |   |  |                                       |        |

■ **Block Diagram**

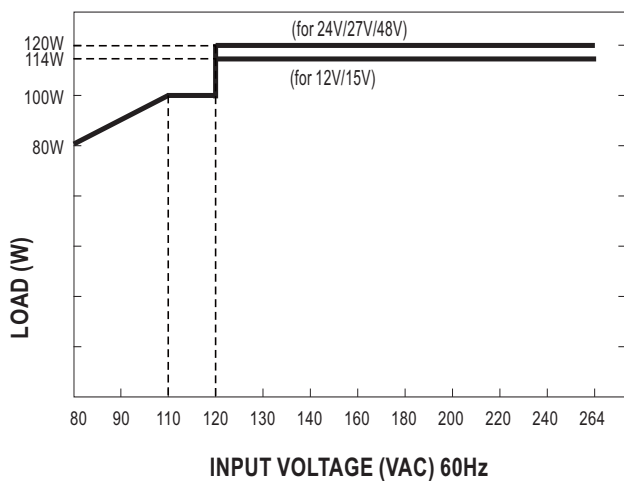
fosc : 85KHz



■ **Derating Curve**

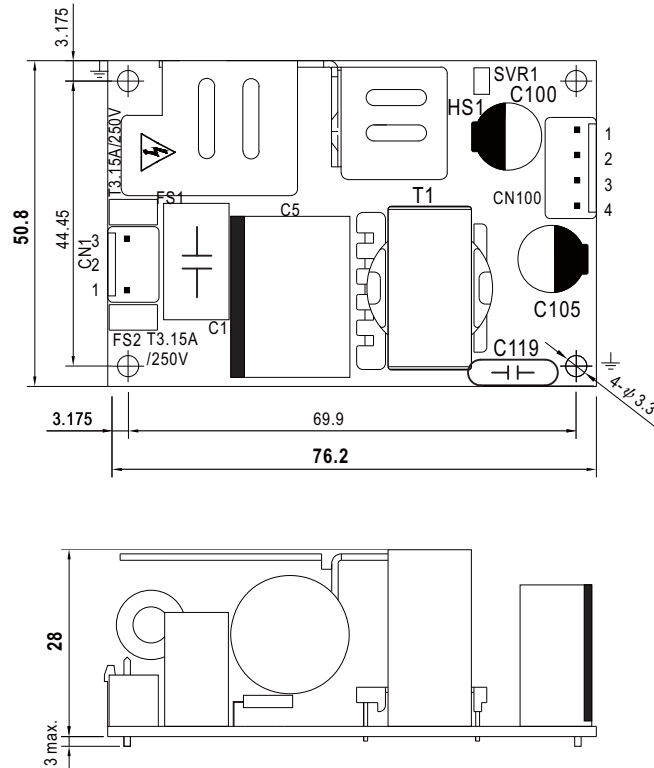


■ **Output Derating VS Input Voltage**



■ Mechanical Specification

Unit:mm



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

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

DC Output Connector (CN100) : JST B4P-VH or equivalent

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