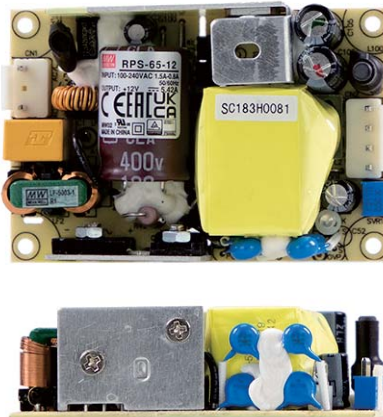




## 65W Reliable Green Medical Power Supply

## RPS-65 series



User's Manual



### ■ Features

- 3"x2" compact size
- 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
- Cooling by free air convection
- EMI class B for class II configuration
- No load power consumption<0.1W
- Extremely low leakage current
- Protections: Short circuit / Overload / Over voltage
- Operating altitude up to 4000 meters
- 3 years warranty

### ■ Applications

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

### ■ GTIN CODE

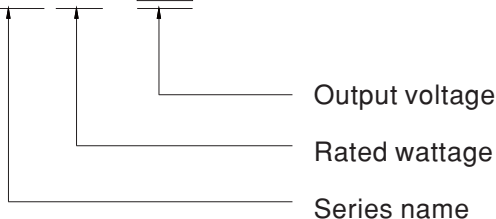
MW Search: <https://www.meanwell.com/serviceGTIN.aspx>

### ■ Description

RPS-65 is a 65W highly reliable green PCB type medical power supply with a high power density on the 3" by 2" footprint. It accepts 80~264VAC input and offers various output voltages between 3.3V and 48V. The working efficiency is up to 91% and the extremely low no load power consumption is down below 0.1W. RPS-65 is able to be used for Class II (no FG) system design. The extremely low leakage current is less than 100  $\mu$ 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.

### ■ Model Encoding

**RPS-65 - 3.3**

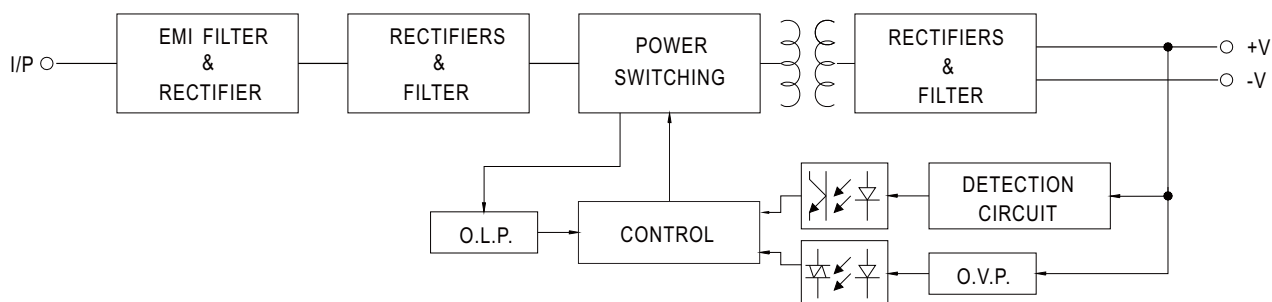


# SPECIFICATION

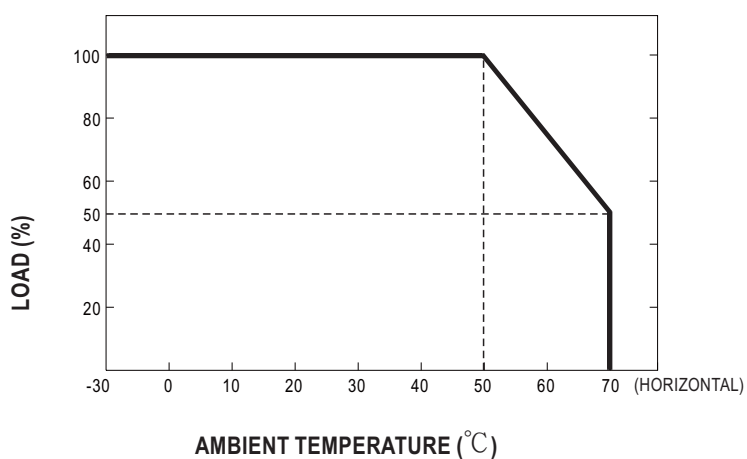
| ORDER NO.                 |                                                                                                                                                                                                                                                                                                                                                                                                                                             | RPS-65-3.3                                                                                                                                                                                     | RPS-65-5                | RPS-65-7.5 | RPS-65-12  | RPS-65-15                                                                 | RPS-65-24                                                            | RPS-65-48  |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|------------|------------|---------------------------------------------------------------------------|----------------------------------------------------------------------|------------|
| OUTPUT                    | DC VOLTAGE                                                                                                                                                                                                                                                                                                                                                                                                                                  | 3.3V                                                                                                                                                                                           | 5V                      | 7.5V       | 12V        | 15V                                                                       | 24V                                                                  | 48V        |
|                           | RATED CURRENT                                                                                                                                                                                                                                                                                                                                                                                                                               | 10A                                                                                                                                                                                            | 10A                     | 8A         | 5.42A      | 4.34A                                                                     | 2.71A                                                                | 1.36A      |
|                           | CURRENT RANGE                                                                                                                                                                                                                                                                                                                                                                                                                               | 0 ~ 11A                                                                                                                                                                                        | 0 ~ 11A                 | 0 ~ 8.8A   | 0 ~ 5.96A  | 0 ~ 4.77A                                                                 | 0 ~ 2.98A                                                            | 0 ~ 1.49A  |
|                           | RATED POWER                                                                                                                                                                                                                                                                                                                                                                                                                                 | 33W                                                                                                                                                                                            | 50W                     | 60W        | 65W        | 65.1W                                                                     | 65W                                                                  | 65.3W      |
|                           | PEAK LOAD(10sec.)                                                                                                                                                                                                                                                                                                                                                                                                                           | 36.3W                                                                                                                                                                                          | 55W                     | 66W        | 71.5W      | 71.6W                                                                     | 71.5W                                                                | 71.5W      |
|                           | RIPPLE & NOISE (max.) Note.2                                                                                                                                                                                                                                                                                                                                                                                                                | 80mVp-p                                                                                                                                                                                        | 80mVp-p                 | 80mVp-p    | 120mVp-p   | 120mVp-p                                                                  | 120mVp-p                                                             | 150mVp-p   |
|                           | VOLTAGE ADJ.RANGE                                                                                                                                                                                                                                                                                                                                                                                                                           | 2.9~3.6V                                                                                                                                                                                       | 4.7~5.5V                | 7.12~8.3V  | 11.4~13.2V | 13.5~16.5V                                                                | 22.8~27.6V                                                           | 45.6~52.8V |
|                           | VOLTAGE TOLERANCE Note.3                                                                                                                                                                                                                                                                                                                                                                                                                    | ±2.0%                                                                                                                                                                                          | ±2.0%                   | ±2.0%      | ±2.0%      | ±1.0%                                                                     | ±1.0%                                                                | ±1.0%      |
|                           | LINE REGULATION                                                                                                                                                                                                                                                                                                                                                                                                                             | ±0.5%                                                                                                                                                                                          | ±0.5%                   | ±0.5%      | ±0.5%      | ±0.5%                                                                     | ±0.5%                                                                | ±0.5%      |
|                           | LOAD REGULATION                                                                                                                                                                                                                                                                                                                                                                                                                             | ±2.0%                                                                                                                                                                                          | ±2.0%                   | ±2.0%      | ±2.0%      | ±1.0%                                                                     | ±1.0%                                                                | ±1.0%      |
|                           | SETUP, RISE TIME                                                                                                                                                                                                                                                                                                                                                                                                                            | 500ms, 30ms / 230VAC      500ms, 30ms / 115VAC at full load                                                                                                                                    |                         |            |            |                                                                           |                                                                      |            |
|                           | HOLD UP TIME (Typ.)                                                                                                                                                                                                                                                                                                                                                                                                                         | 30ms / 230VAC      12ms / 115VAC at full load                                                                                                                                                  |                         |            |            |                                                                           |                                                                      |            |
| INPUT                     | VOLTAGE RANGE Note.4                                                                                                                                                                                                                                                                                                                                                                                                                        | 80 ~ 264VAC                                                                                                                                                                                    |                         |            |            |                                                                           |                                                                      |            |
|                           | FREQUENCY RANGE                                                                                                                                                                                                                                                                                                                                                                                                                             | 47 ~ 63Hz                                                                                                                                                                                      |                         |            |            |                                                                           |                                                                      |            |
|                           | EFFICIENCY (Typ.)                                                                                                                                                                                                                                                                                                                                                                                                                           | 80%                                                                                                                                                                                            | 84%                     | 85%        | 88%        | 89%                                                                       | 90%                                                                  | 91%        |
|                           | AC CURRENT (Typ.)                                                                                                                                                                                                                                                                                                                                                                                                                           | 1.5A / 115VAC      1A / 230VAC                                                                                                                                                                 |                         |            |            |                                                                           |                                                                      |            |
|                           | INRUSH CURRENT (Typ.)                                                                                                                                                                                                                                                                                                                                                                                                                       | COLD STAR 30A/115VAC    50A/230VAC                                                                                                                                                             |                         |            |            |                                                                           |                                                                      |            |
|                           | LEAKAGE CURRENT(max.) Note.5                                                                                                                                                                                                                                                                                                                                                                                                                | Touch current< 100μA/264VAC                                                                                                                                                                    |                         |            |            |                                                                           |                                                                      |            |
| PROTECTION                | OVERLOAD                                                                                                                                                                                                                                                                                                                                                                                                                                    | 115 ~ 150% rated output power<br>Protection type : Hiccup mode, recovers automatically after fault condition is removed                                                                        |                         |            |            |                                                                           |                                                                      |            |
|                           | OVER VOLTAGE                                                                                                                                                                                                                                                                                                                                                                                                                                | 3.8~4.5V                                                                                                                                                                                       | 5.7~6.8V                | 8.6~11.3V  | 13.8~16.2V | 17.2~20.3V                                                                | 27.6~32.4V                                                           | 55.2~64.8V |
|                           |                                                                                                                                                                                                                                                                                                                                                                                                                                             | Protection type : Shut down o/p voltage, re-power on to recover                                                                                                                                |                         |            |            |                                                                           |                                                                      |            |
| 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% / °C (0 ~ 50℃)                                                                                                                                                                          |                         |            |            |                                                                           |                                                                      |            |
|                           | VIBRATION                                                                                                                                                                                                                                                                                                                                                                                                                                   | 10 ~ 500Hz, 2G 10min./1cycle, period for 60min. each along X, Y, Z axes                                                                                                                        |                         |            |            |                                                                           |                                                                      |            |
|                           | OPERATING ALTITUDE Note.6                                                                                                                                                                                                                                                                                                                                                                                                                   | 4000 meters                                                                                                                                                                                    |                         |            |            |                                                                           |                                                                      |            |
| SAFETY & EMC<br>(Note. 7) | SAFETY STANDARDS                                                                                                                                                                                                                                                                                                                                                                                                                            | IEC 60601-1:2005+A1,TUV BS EN/ EN 60601-1:2006+A1+A12+A2, ANSI/AAMI ES60601-1:2005+A2<br>CAN/CSA C22.2 No. 60601-1:2014+A2,EAC TP TC 004 approved; Design refer to BS EN/EN60335-1(by request) |                         |            |            |                                                                           |                                                                      |            |
|                           | ISOLATION LEVEL                                                                                                                                                                                                                                                                                                                                                                                                                             | Primary-Secondary: 2xMOPP                                                                                                                                                                      |                         |            |            |                                                                           |                                                                      |            |
|                           | WITHSTAND VOLTAGE                                                                                                                                                                                                                                                                                                                                                                                                                           | I/P-O/P: 4KVAC                                                                                                                                                                                 |                         |            |            |                                                                           |                                                                      |            |
|                           | ISOLATION RESISTANCE                                                                                                                                                                                                                                                                                                                                                                                                                        | I/P-O/P:100M Ohms / 500VDC / 25℃ / 70% RH                                                                                                                                                      |                         |            |            |                                                                           |                                                                      |            |
|                           | EMC EMISSION                                                                                                                                                                                                                                                                                                                                                                                                                                | Parameter                                                                                                                                                                                      | Standard                |            |            |                                                                           | Test Level / Note                                                    |            |
|                           |                                                                                                                                                                                                                                                                                                                                                                                                                                             | Conducted emission                                                                                                                                                                             | BS EN/EN55011 (CISPR11) |            |            |                                                                           | Class B                                                              |            |
|                           |                                                                                                                                                                                                                                                                                                                                                                                                                                             | Radiated emission                                                                                                                                                                              | BS EN/EN55011 (CISPR11) |            |            |                                                                           | 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 )<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, 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,<br>100% interruptions 250 periods |                                                                      |            |
| OTHERS                    | MTBF                                                                                                                                                                                                                                                                                                                                                                                                                                        | 3334.3K hrs min.      Telcordia SR-332 (Bellcore) ; 959.1K hrs min.      MIL-HDBK-217F (25℃)                                                                                                   |                         |            |            |                                                                           |                                                                      |            |
|                           | DIMENSION (L*W*H)                                                                                                                                                                                                                                                                                                                                                                                                                           | 76.2*50.8*24mm or 3" * 2" *0.945" inch                                                                                                                                                         |                         |            |            |                                                                           |                                                                      |            |
|                           | PACKING                                                                                                                                                                                                                                                                                                                                                                                                                                     | 0.11Kg; 120pcs/14.2Kg/0.94CUFT                                                                                                                                                                 |                         |            |            |                                                                           |                                                                      |            |
| 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 μ F & 47 μ F parallel capacitor.                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                |                         |            |            |                                                                           |                                                                      |            |
|                           | 3. Tolerance : includes set up tolerance, line regulation and load regulation.                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                |                         |            |            |                                                                           |                                                                      |            |
| NOTE                      | 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. 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="https://www.meanwell.com/Upload/PDF/EMI_statement_en.pdf">https://www.meanwell.com/Upload/PDF/EMI_statement_en.pdf</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>                                                                                                                                                                                                                                                    |                                                                                                                                                                                                |                         |            |            |                                                                           |                                                                      |            |

## ■ Block Diagram

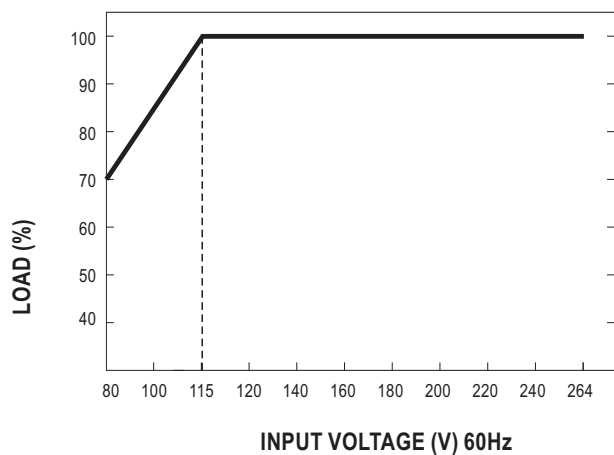
fosc : 65KHz



## ■ Derating Curve

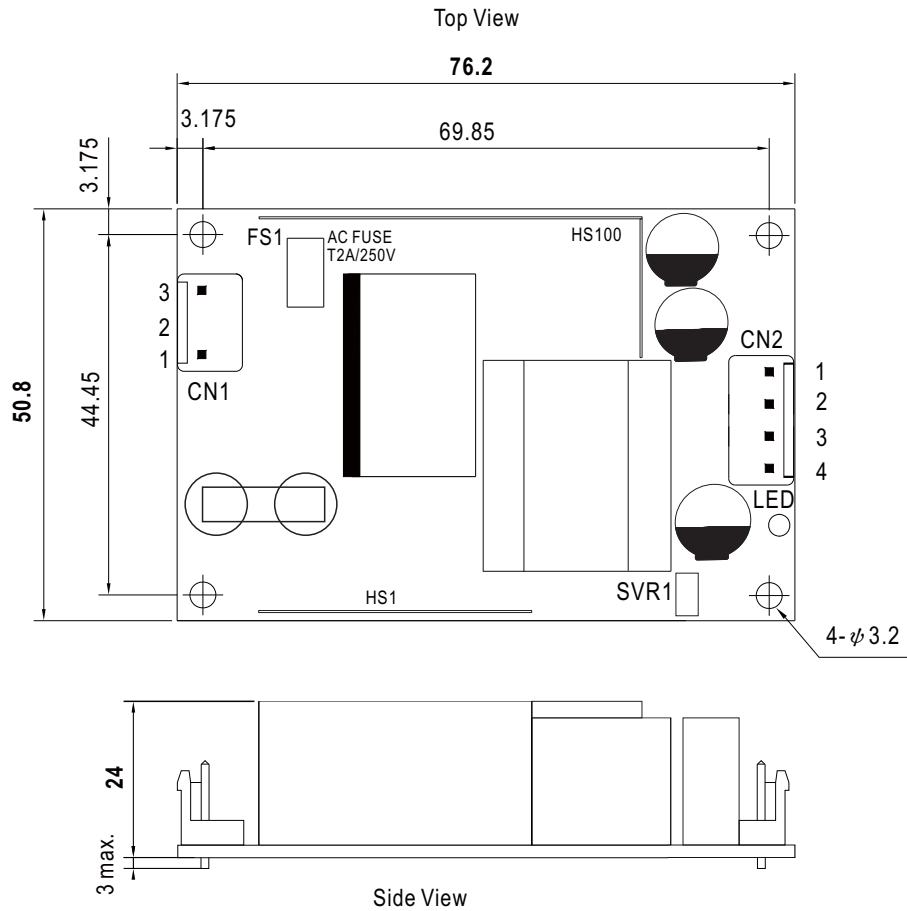


## ■ Static Characteristics



## Mechanical Specification

Case No. Unit:mm



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       |                       |                                |

DC Output Connector (CN2) : JST B4P-VH or equivalent

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

## Installation Manual

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