

Features

Regulated Converters

- Long 5 Year Warranty
- 2MOPP/250VAC
- Suitable for built in Class II Applications
- Wide Input Voltage Range (85-264VAC)
- Low Leakage Current (<75µA)
- 5000m Operation
- Active Power Factor Correction
- Connector Set available



RACM100

100 Watt Enclosed & Open Frame Case Style Single Output



Description

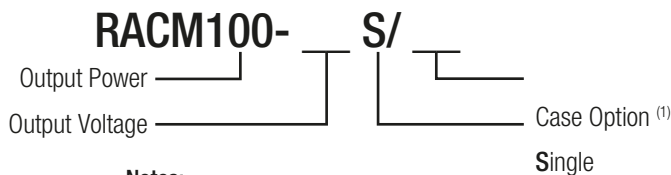
The RACM100 is a compact 3" x 2" high efficiency AC/DC power supply with 2xMOPP safety approval for medical applications. These space saving enclosed power supplies have an universal input voltage range (85-264VAC), 4kVAC isolation, require no minimum load and can be used at ambient temperatures of between -25°C and +85°C. The 12V, 15V, 24V or 48V output voltages are fully protected and have tolerances of less than ±0.2% over the entire input voltage range and less than ±0.5% over the entire load range. The RACM100 series is certified to medical safety standard IEC/ES/EN-60601-1 3rd Edition and feature BF rated outputs with less than 75µA leakage current. It has a built-in Class B EMI filter and comes with a five year warranty.

Selection Guide

| Part Number | Input Voltage Range [VAC] | Output Voltage [VDC] | Output Current [A] | Input Power @ No Load [W] | Efficiency typ. [%] |
|----------------------------|---------------------------|----------------------|--------------------|---------------------------|---------------------|
| RACM100-12S ⁽¹⁾ | 85-264 | 12 | 8.34 | 0.3 | 91 |
| RACM100-15S ⁽¹⁾ | 85-264 | 15 | 6.67 | 0.3 | 92 |
| RACM100-24S ⁽¹⁾ | 85-264 | 24 | 4.17 | 0.3 | 92 |
| RACM100-48S ⁽¹⁾ | 85-264 | 48 | 2.09 | 0.3 | 91 |



Model Numbering



Notes:

Note1: add suffix "/OF" for Open Frame Package without suffix, standard enclosed case package

Ordering Examples:

RACM100-12S = 12Vout, Standard Enclosed Case Package
 RACM100-24S/OF = 24Vout, Open Frame Version



Specifications (measured @ ta= 25°C, 250VAC, full load and after warm-up)

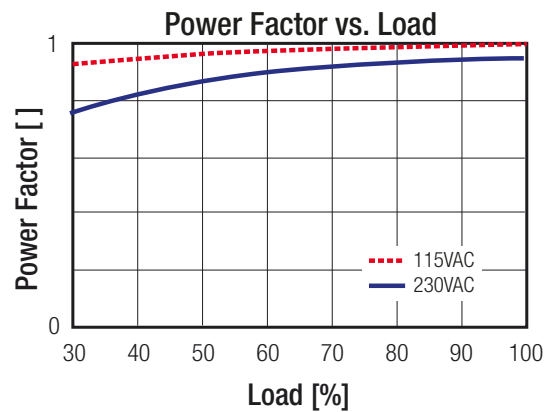
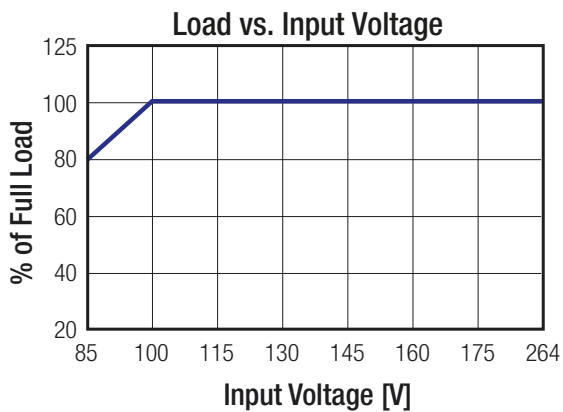
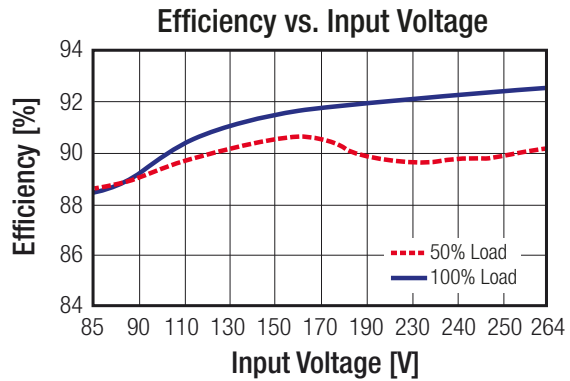
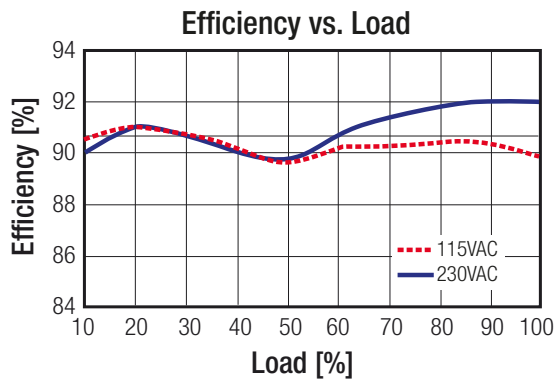
| BASIC CHARACTERISTICS | | | | |
|-------------------------|--------------------|--------|------|----------|
| Parameter | Condition | Min. | Typ. | Max. |
| Input Voltage | | 85VAC | | 264VAC |
| | | 120VDC | | 370VDC |
| Input Current | 115VAC, full load | | | 1.15A |
| | 230VAC, full load | | | 0.55A |
| Inrush Current | cold start, 230VAC | | | 60A |
| Input Frequency Range | AC Input | 47Hz | | 63Hz |
| Output Voltage Trimming | | | | ±10% |
| Start-up Time | | | | 1 Second |
| Rise Time | | | 20ms | |
| Hold up Time | 115VAC, full load | 16ms | | |
| Minimum Load | | | | 0% |

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IEC/EN-60601 Certified
 ES-60601 Certified
 EN-55011 Certified
 EN-55022 Certified

Specifications (measured @ $t_a = 25^\circ\text{C}$, 250VAC, full load and after warm-up)

| | | | |
|------------------------------|----------|---|--|
| Power Factor | | 0.95 | |
| Internal Operating Frequency | | | 60kHz |
| Output Ripple and Noise | 20MHz BW | 12VDC, with 10 μ F/25V MLCC 15VDC, with 10 μ F/25V MLCC 24VDC, with 1 μ F/50V MLCC 48VDC, with 0.1 μ F/100V MLCC | 120mVp-p 150mVp-p 160mVp-p 340mVp-p |



REGULATIONS

| Parameter | Condition | Value |
|--------------------------|--|------------------|
| Output Voltage Accuracy | 230VAC, full load | $\pm 1\%$ |
| Line Voltage Regulation | low line to high line, full load | $\pm 0.2\%$ |
| Load Voltage Regulation | 0% to 100% load | $\pm 0.5\%$ max. |
| | 10% to 100% load | $\pm 0.4\%$ max. |
| Transient Peak Deviation | load step from 50% - 75% change at 2.5A/ μ s | 3% Vout max. |
| Transient Recovery Time | load step from 50% - 75% change at 2.5A/ μ s | 500 μ s typ. |

PROTECTIONS

| Parameter | Condition | Value |
|--------------------------------|---------------------------|------------------------------------|
| Input Fuse | internal line and neutral | T3.15A / 250VAC, slow blow type |
| Short Circuit Protection (SCP) | | continuous, auto-recovery |
| Over Load Protection (OLP) | % of Iout rated | Hiccup Mode, 115% min. / 150% max. |
| Over Voltage Protection (OVP) | % of Vout nominal | Latch Mode, 115% min. / 135% max. |
| Isolation Voltage | I/P to O/P | 4kVAC / 1 minute |
| | I/P to Chassis | 1.5kVAC / 1 minute |
| | O/P to Chassis | 1.5kVAC / 1 minute |
| | working voltage | 250VAC / continuous |

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Specifications (measured @ ta= 25°C, 250VAC, full load and after warm-up)

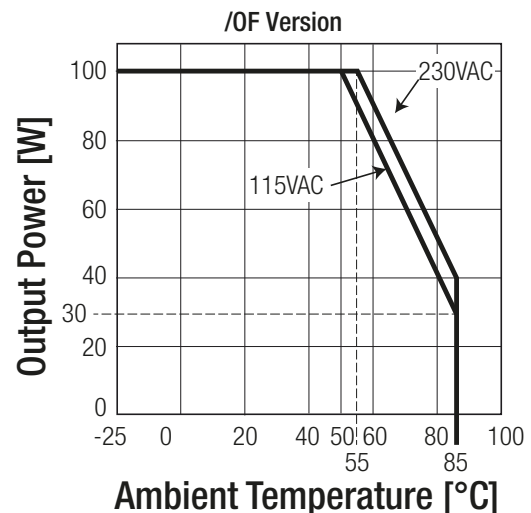
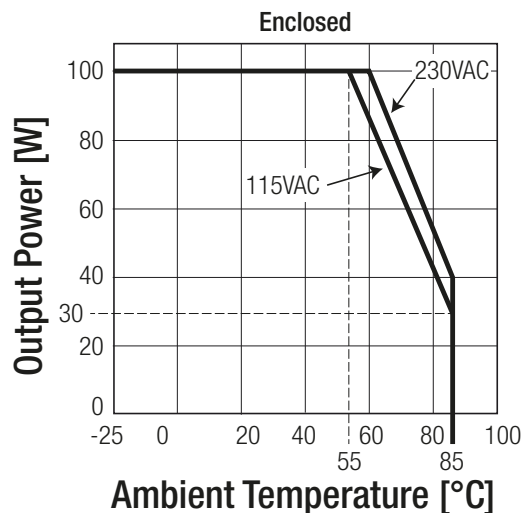
| | | |
|-------------------------------|------------|------------------------|
| Means of Protection | | 2MOPP |
| Leakage Current | 264VAC | 75µA max. |
| Medical Device Classification | | Type BF applied device |
| Internal Clearance | I/P to O/P | 8mm min. |
| Creepage | I/P to O/P | 8mm min. |
| Isolation Resistance | 500VDC | 100MΩ min. |
| Insulation Grade | | Reinforced Insulation |

ENVIRONMENTAL

| Parameter | Condition | | Value |
|-----------------------------|---------------------------------------|------------------------|----------------------------------|
| Relative Humidity | non-condensing | | 5% to 95% RH |
| Temperature Coefficient | | | ±0.02% / °C |
| Operating Temperature Range | with derating | | -25°C to +85°C |
| | without derating, 230VAC | enclosed open frame | -25°C to +60°C -25°C to +55°C |
| Operating Altitude | | | 5000m max. |
| MTBF (+25°C) | according to MIL-HDBK-217F, full load | | 790.3 x 10 ³ hours |

Derating Graph

(@ Chamber and natural convection 0.1m/s)



SAFETY AND CERTIFICATIONS

| Certificate Type (Safety) | Report / File Number | Standard |
|-----------------------------------|----------------------|---|
| IEC/EN Medical Safety (CB Scheme) | 1408016004 | IEC/EN-60601-1 |
| ANSI/AAMI Medical Safety | | ES60601-1 |
| CAN/CSA Medical Safety | | C22.2 No. 60601-1 |
| Risk Management | 1408016005 | Medical Report + ISO14971 Risk Assessment |

| EMC Compliance | Conditions | Standard / Criterion |
|-------------------|------------------------|-----------------------------|
| EMI | Conducted | CISPR 11, EN-55011, Class B |
| | Radiated | CISPR 11, EN-55011, Class A |
| | Conducted and Radiated | FCC18, Class B |
| ESD | Air ±8kV; Contact ±6kV | EN61000-4-2, Criteria A |
| Radiated Immunity | 20V/m | EN61000-4-3, Criteria A |
| Fast Transient | ±2kV | EN61000-4-4, Criteria A |

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Specifications (measured @ ta= 25°C, 250VAC, full load and after warm-up)

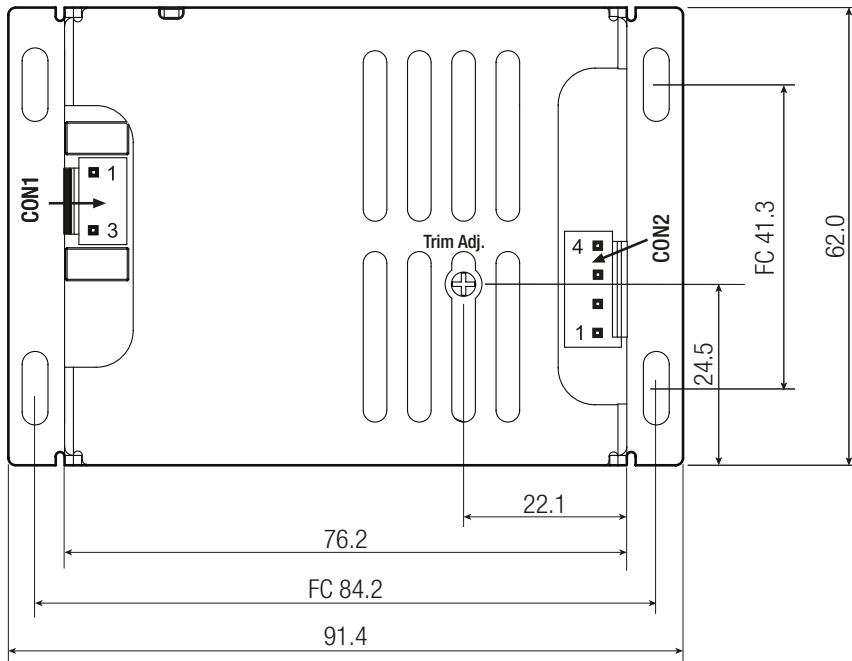
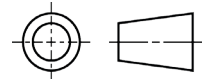
| | | | |
|--------------------------------|-------------------------------|-------------|---------------------------------------|
| Surge | L-N ±1kV and L-GND/N-GND ±2kV | | EN61000-4-5, Criteria A |
| Conducted Immunity | 20Vr.m.s | | EN61000-4-6, Criteria A |
| Power Frequency Magnetic Field | 10A/m | | EN61000-4-8, Criteria A |
| Voltage Dip and Interruptions | 100/230VAC, 50Hz | 30% 500ms | EN61000-4-11, EN60601-1-2, Criteria A |
| | | >95% 10ms | EN61000-4-11, EN60601-1-2, Criteria A |
| | | >95% 5000ms | EN61000-4-11, EN60601-1-2, Criteria B |
| Harmonic Current | full load | | EN61000-3-2; Class D |
| Voltage Flicker | | | EN61000-3-3, PASS |
| Thermal Shock | | | MIL-STD-810F |
| Shock | | | IEC60068-2-27 |
| Vibration | | | IEC60068-2-6 |

DIMENSION and PHYSICAL CHARACTERISTICS

| Parameter | Type | Value |
|---------------------------|------------|----------------------|
| Case Material | enclosed | Aluminum |
| Package Dimension (LxWxH) | enclosed | 91.4 x 62.0 x 39.2mm |
| | open frame | 76.2 x 50.8 x 32.0mm |
| Package Weight | enclosed | 210g |
| | open frame | 150g |

Dimension Drawing Enclosed (mm)

Top View



AC Input Connector (CON1)

| Pin# | Terminal | Mating Housing |
|--------|--------------|----------------|
| 1 AC/L | SVH-21T-P1.1 | VHR-3N |
| 3 AC/N | | |

DC Output Connector (CON2)

| Pin# | Terminal | Mating Housing |
|-----------|--------------|----------------|
| 1,2 -Vout | SVH-21T-P1.1 | VHR-4N |
| 3,4 +Vout | | |

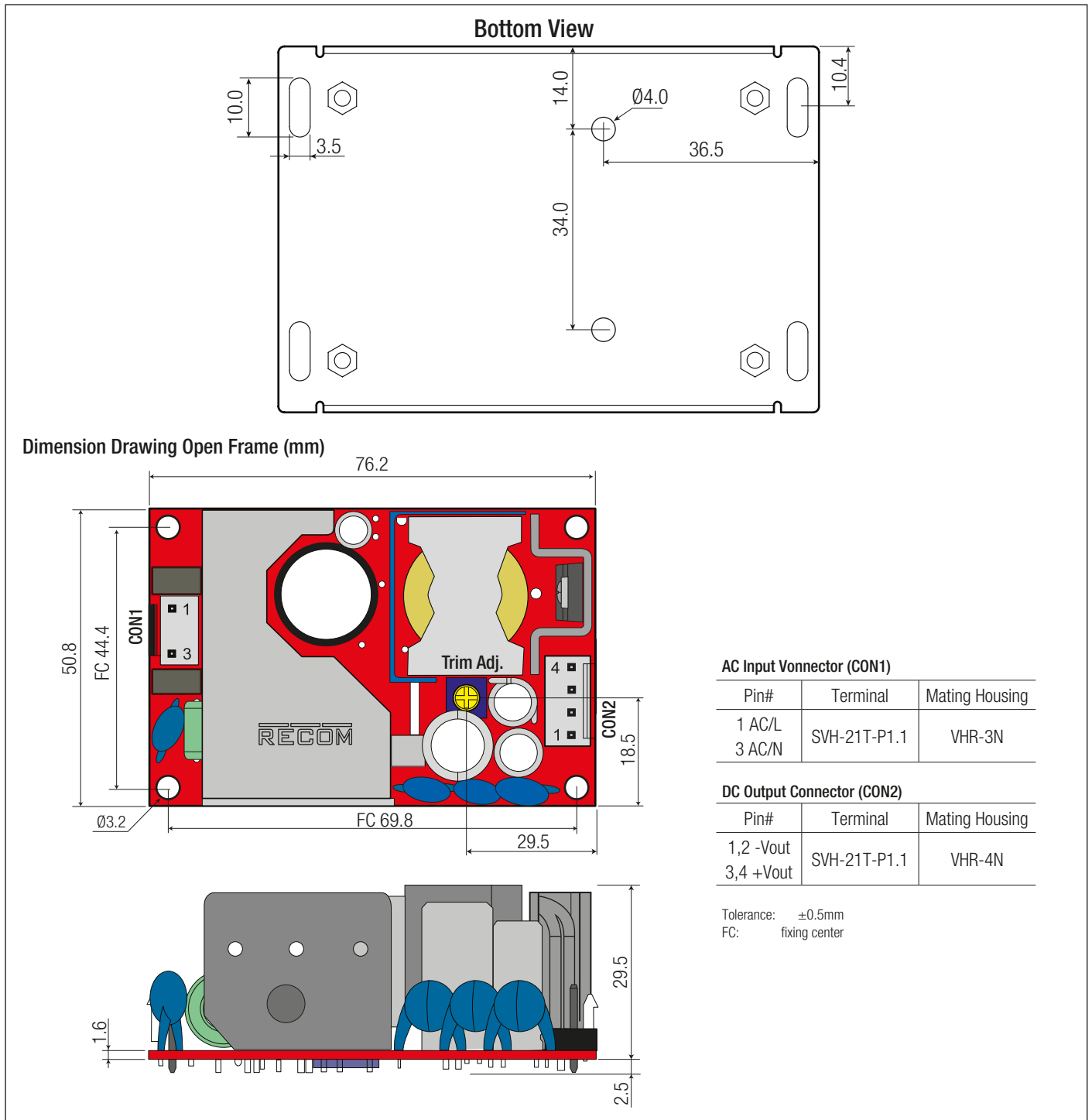
Tolerance: ±0.5mm
FC: fixing center

Side View



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Specifications (measured @ ta= 25°C, 250VAC, full load and after warm-up)



| PACKAGING INFORMATION | | |
|-----------------------------|---------------|--|
| Parameter | Type | Value |
| Packaging Dimension (LxWxH) | cardboard box | enclosed case 418.0 x 258.0 x 105.0mm |
| | | open frame 494.0 x 250.0 x 95.0mm |
| Packaging Quantity | | enclosed case 10pcs |
| | | open frame 25pcs |
| Storage Temperature Range | | -40°C to +85°C |

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