

# 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

**RECOM**  
AC/DC Converter

## RACM150

**150 Watt  
Enclosed  
Case Style  
Single Output**



2MOPP  
250VAC



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

### Description

The RACM150-S/(F) is a compact 4.6"x 1.63" high efficiency AC/DC power supply with 2xMOPP safety approval for medical applications. These space saving enclosed power supplies have a universal input voltage range (85-264VAC), 4kVac isolation, require no minimum load and can be used at ambient temperatures of between -25°C and +80°C. The 12V, 15V, 24V or 48V output voltages are fully protected and have tolerances of less than  $\pm 0.2\%$  over the entire input voltage range and less than  $\pm 0.5\%$  over the entire load range. The RACM150-S/(F) series is certified to medical safety standard IEC/ES/EN-60601-1 3rd Edition and feature BF rated outputs with less than 100µA leakage current. It has a built-in Class B EMI filter and comes with a five year warranty.

### Selection Guide

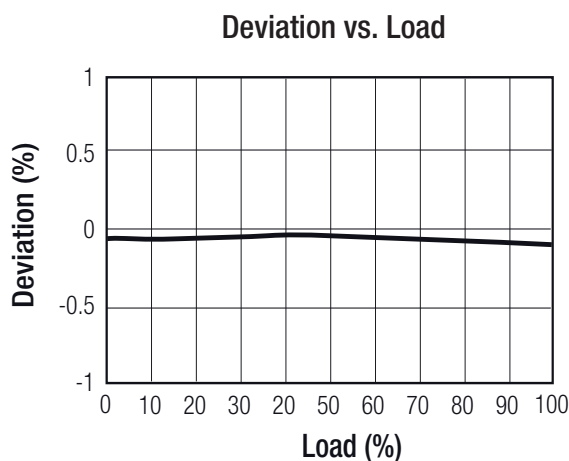
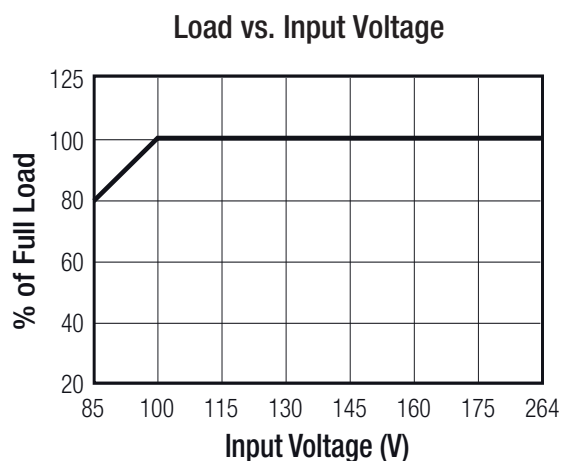
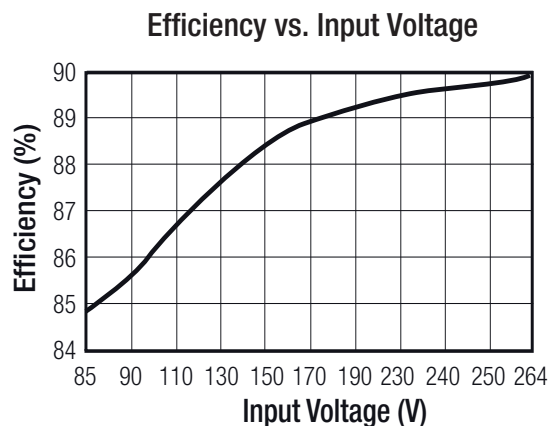
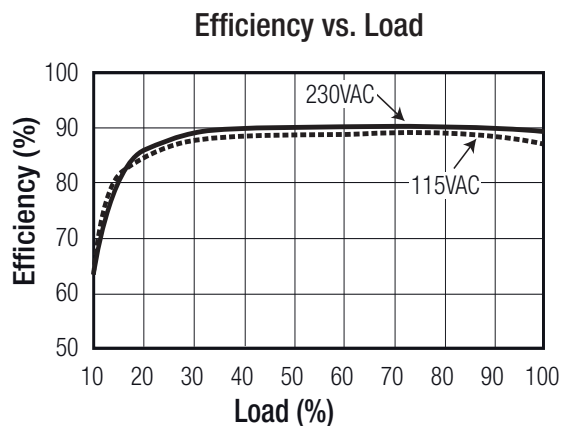
| Part Number   | Input Voltage Range (VAC) | Output Voltage (VDC) | Output Current (A) 115/230VAC | Efficiency typ. (%) | Peak Output Power (W) 115/230VAC |
|---------------|---------------------------|----------------------|-------------------------------|---------------------|----------------------------------|
| RACM150-12S   | 85-264                    | 12                   | 10.0 / 10.84                  | 91                  | 120 / 130                        |
| RACM150-15S   | 85-264                    | 15                   | 8.33 / 9.0                    | 92                  | 125 / 135                        |
| RACM150-24S   | 85-264                    | 24                   | 5.2 / 5.63                    | 92                  | 125 / 135                        |
| RACM150-48S   | 85-264                    | 48                   | 2.5 / 2.71                    | 91                  | 120 / 130                        |
| RACM150-12S/F | 85-264                    | 12                   | 12.5                          | 91                  | 150                              |
| RACM150-15S/F | 85-264                    | 15                   | 10.0                          | 92                  | 150                              |
| RACM150-24S/F | 85-264                    | 24                   | 6.25                          | 92                  | 150                              |
| RACM150-48S/F | 85-264                    | 48                   | 3.13                          | 91                  | 150                              |

### Specifications (measured at T<sub>A</sub>= 25°C, 230VAC, full load and after warm-up)

| BASIC CHARACTERISTICS                         |                                                                                                                 |                 |                                              |                  |
|-----------------------------------------------|-----------------------------------------------------------------------------------------------------------------|-----------------|----------------------------------------------|------------------|
| Parameter                                     | Condition                                                                                                       | Min.            | Typ.                                         | Max.             |
| Input Voltage                                 |                                                                                                                 | 85VAC<br>120VDC |                                              | 264VAC<br>370VDC |
| Input Current                                 | 115VAC, full load<br>230VAC, full load                                                                          |                 |                                              | 1.7A<br>0.8A     |
| Inrush Current                                | cold start, 115VAC<br>cold start, 230VAC                                                                        |                 |                                              | 30A<br>60A       |
| No Load Input Power                           | 230VAC, with fan<br>230VAC, without fan                                                                         |                 | 0.6W<br>0.25W                                | 1W<br>0.3W       |
| Input Frequency                               | AC Input                                                                                                        | 47Hz            |                                              | 63Hz             |
| Start-up Time                                 |                                                                                                                 |                 | 0.7s                                         | 1s               |
| Rise Time                                     |                                                                                                                 |                 | 20ms                                         |                  |
| Hold up Time                                  |                                                                                                                 |                 | 30ms                                         |                  |
| Minimum Load                                  |                                                                                                                 |                 |                                              | 0%               |
| Power Factor                                  |                                                                                                                 | 0.95            |                                              |                  |
| Switching Frequency                           |                                                                                                                 |                 | 60kHz                                        |                  |
| Output Ripple and Noise (measured @ 20MHz BW) | 12VDC, with 1µF/25V MLCC<br>15VDC, with 1µF/25V MLCC<br>24VDC, with 1µF/50V MLCC<br>48VDC, with 0.1µF/100V MLCC |                 | 120mVp-p<br>150mVp-p<br>220mVp-p<br>250mVp-p |                  |

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Specifications (measured at  $T_A = 25^\circ\text{C}$ , 230VAC, full load and after warm-up)



### REGULATIONS

| Parameter                | Condition                                              | Value                               |
|--------------------------|--------------------------------------------------------|-------------------------------------|
| Output Voltage Accuracy  | 230VAC, full load                                      | $\pm 0.1\%$ typ. / $\pm 1\%$ max.   |
| Line Voltage Regulation  | low line to high line, full load                       | $\pm 0.1\%$ typ. / $\pm 0.2\%$ max. |
| Load Voltage Regulation  | 0% to 100% load                                        | $\pm 0.1\%$ typ. / $\pm 0.5\%$ max. |
| Output Voltage Trim      |                                                        | $\pm 10\%$                          |
| Transient Peak Deviation | load step from 50% - 75% change at 2.5A/ $\mu\text{s}$ | 3% Vout max.                        |
| Transient Recovery Time  | load step from 50% - 75% change at 2.5A/ $\mu\text{s}$ | 500 $\mu\text{s}$ 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, 115-150%                                          |
| Over Voltage Protection (OVP)           | % of Vout nominal                              | Latch Mode, 115%-135% max.                                     |
| Isolation Voltage<br>(2MOPP insulation) | I/P to O/P<br>I/P to Chassis<br>O/P to Chassis | 4kVAC / 1 minunte<br>1.5kVAC / 1 minute<br>1.5kVAC / 1 minunte |

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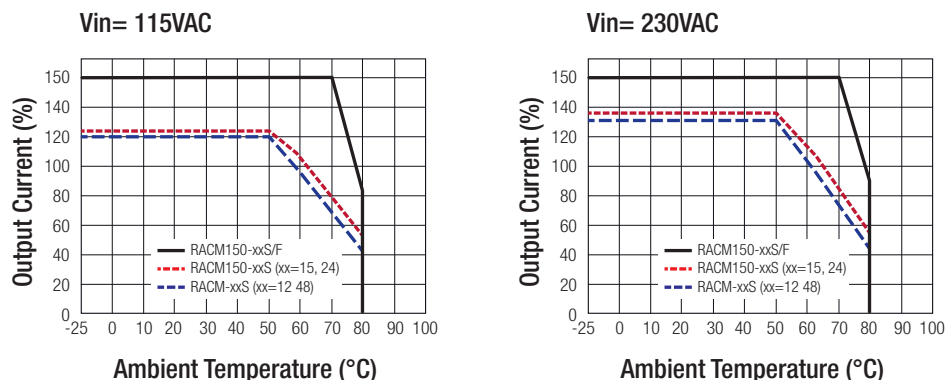
**Specifications** (measured at  $T_A = 25^\circ\text{C}$ , 230VAC, full load and after warm-up)

|                      |            |                    |
|----------------------|------------|--------------------|
| Leakage Current      | 264VAC     | 100 $\mu$ A max.   |
| Clearance            | I/P to O/P | 8mm                |
| Creepage             | I/P to O/P | 8mm                |
| Isolation Resistance | 500VDC     | 0.1G $\Omega$ min. |

**ENVIRONMENTAL**

| Parameter                                                | Condition                                                   | Value                                                                                        |
|----------------------------------------------------------|-------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| Relative Humidity                                        | non-condensing                                              | 5% to 95% RH                                                                                 |
| Temperature Coefficient                                  |                                                             | $\pm 0.02\%$ / $^\circ\text{C}$                                                              |
| Operating Temperature Range<br>(refer to derating graph) | without fan and with derating<br>with fan and with derating | -25 $^\circ\text{C}$ to +80 $^\circ\text{C}$<br>-25 $^\circ\text{C}$ to +80 $^\circ\text{C}$ |
| Storage Temperature Range                                | with fan<br>without fan                                     | -40 $^\circ\text{C}$ to +80 $^\circ\text{C}$<br>-40 $^\circ\text{C}$ to +80 $^\circ\text{C}$ |
| Operating Altitude                                       |                                                             | 5000m max.                                                                                   |
| MTBF (+25 $^\circ\text{C}$ )                             | according to MIL-HDBK-217F, full load                       | 780 x 10 <sup>6</sup> hours                                                                  |

**Derating Graph**



**SAFETY AND CERTIFICATIONS**

| Certificate Type         | Report / File Number | Standard                                                    |
|--------------------------|----------------------|-------------------------------------------------------------|
| IEC/EN Medical Safety    |                      | IEC/EN-60601-1<br>Medical Report + ISO14971 Risk Assessment |
| ANSI/AAMI Medical Safety | E314885              | ES60601-1                                                   |
| CAN/CSA Medical Safety   | E314885              | C22.2 No. 60601-1                                           |

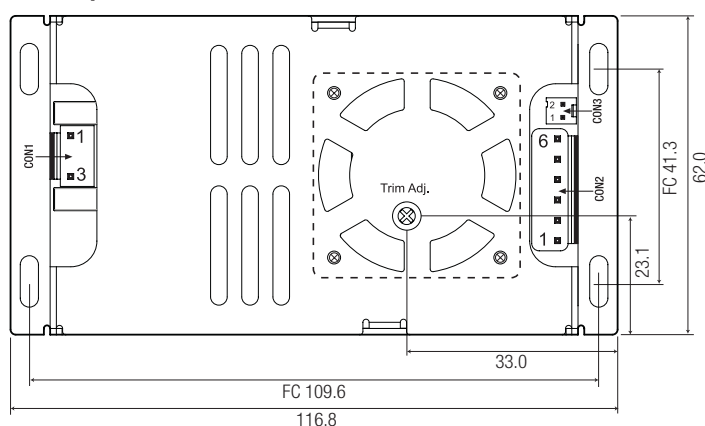
| Certificate Type (Environmental) | Condition                                                             | Standard / Criterion                                                                                     |
|----------------------------------|-----------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| ESD                              | Air $\pm 8\text{kV}$ ; Contact $\pm 6\text{kV}$                       | EN61000-4-2, Criteria A                                                                                  |
| Radiated Immunity                | 20V/m                                                                 | EN61000-4-3, Criteria A                                                                                  |
| Fast Transient                   | $\pm 2\text{kV}$                                                      | EN61000-4-4, Criteria A                                                                                  |
| Surge                            | DM $\pm 1\text{kV}$ and CM $\pm 2\text{kV}$                           | 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                                                                                  |
| Harmonic Current                 | full load                                                             | EN61000-3-2; Class A and D                                                                               |
| Voltage Flicker                  |                                                                       | EN61000-3-3, PASS                                                                                        |
| Thermal Shock                    |                                                                       | MIL-STD-810F                                                                                             |
| Shock                            |                                                                       | IEC68-2-27                                                                                               |
| Vibration                        |                                                                       | IEC68-2-6                                                                                                |
| Dip and Interruptions            | 230VAC 50Hz<br>30%, 500ms<br>60%, 100ms<br>>95%, 10ms<br>>95%, 5000ms | EN60601-1-2, Criteria A<br>EN60601-1-2, Criteria A<br>EN60601-1-2, Criteria A<br>EN60601-1-2, Criteria B |

Specifications (measured at T<sub>A</sub> = 25°C, 230VAC, full load and after warm-up)

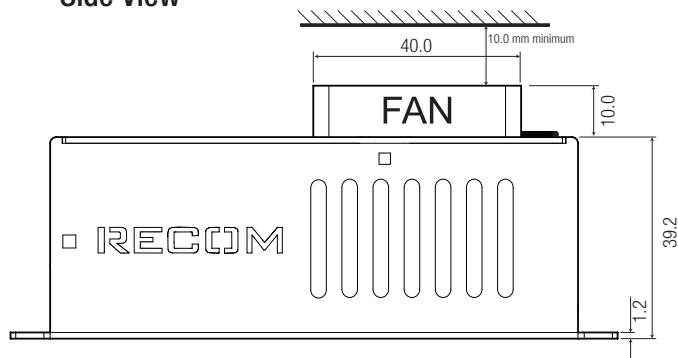
| DIMENSIONS and PHYSICAL CHARACTERISTICS |               |                       |
|-----------------------------------------|---------------|-----------------------|
| Parameter                               | Type          | Value                 |
| Material                                | Case          | Aluminium             |
| Package Dimensions (LxWxH)              | with fan      | 116.8 x 62.0 x 49.2mm |
|                                         | without Fan   | 116.8 x 62.0 x 39.2mm |
| Package Weight                          | with Fan      | 270g                  |
|                                         | without Fan   | 255g                  |
| Packaging Dimensions (LxWxH)            | Cardboard Box | 145 x 80 x 85mm       |
| Packaging Quantity                      |               | 1pcs                  |

### Mechanical Dimensions (mm)

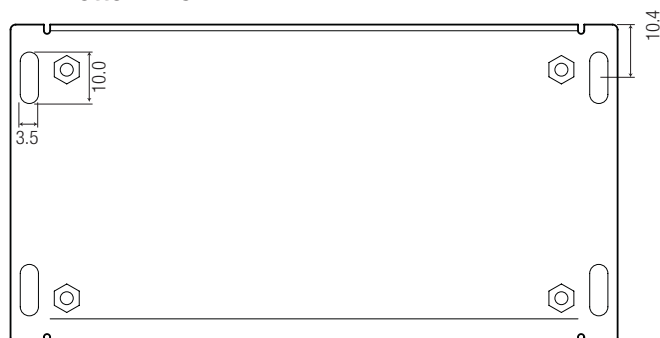
#### Top View



#### Side View



#### Bottom View



#### FAN

|                           |                          |
|---------------------------|--------------------------|
| Rated Voltage:            | 12V (7-13.8)             |
| Input Power:              | 0.96W typ. 1.8W max.     |
| Speed:                    | 6000RPM                  |
| Air Flow:                 | 7CFM/Min.; 30dBA max.    |
| expected Lifetime (40°C): | >70khours continuous     |
| Cable length:             | 55mm including connector |

#### CON1 - Input

- Pin1 Line
- Pin3 Neutral

Mates with  
JST housing: VHR-3N  
JST crimp terminals: SVH-21T-P1.1

#### CON2 - Output

- Pin1,2,3 -Vout
- Pin4,5,6 +Vout

Mates with  
JST housing: VHR-6N  
JST crimp terminals: SVH-21T-P1.1

#### CON2 - Output

- Pin1 -Fan
- Pin2 +Fan

Mates with  
Molex housing: 22-01-1022  
Molex crimp terminals: 2759

Tolerance: ±0.5mm  
FC: fixing center

The product information and specifications are subject to change without prior notice. All products are designed for non-safety critical commercial and industrial applications.  
The buyer agrees to implement safeguards that anticipate the consequences of any failures that might cause harm, loss of life and/or property damage.



Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

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