

Features

- Universal input 85-264VAC
- <250mW No load power consumption
- Class II installations (without FG)
- -25°C to +80°C Operating temperature, with derating
- Continuous SCP, OCP
- IEC/EN60950 & IEC/EN/UL62368 certified

Regulated Converter

RECOM AC/DC Converter

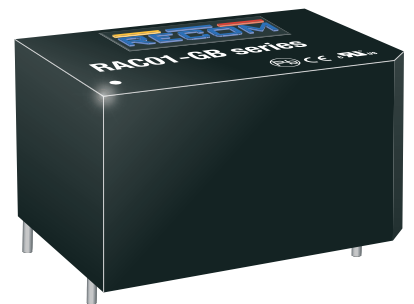
RAC01-GB

**1 Watt
Single
Output
EMC Class B**



Description

The RAC01-GB series are low cost AC/DC power supplies, ideal for PCB mounted, compact, board level industrial applications. They feature universal AC input voltage range, regulated and short-circuit-proof isolated DC outputs, low standby power consumption and -25°C to +80°C operating temperature range. The RAC01-GB have a built-in Class B / FCC Part 15 EMC filter, are certified to EN60950 and EN62368 safety standards and come with a three year warranty.



Selection Guide

| Part Number | Input Voltage Range [VAC] | Output Voltage [VDC] | Output Current [mA] | Efficiency typ [%] | Max. Capacitive Load ⁽¹⁾ [µF] |
|--------------|---------------------------|----------------------|---------------------|--------------------|--|
| RAC01-3.3SGB | 85-264 | 3.3 | 303 | 63 | 500 |
| RAC01-05SGB | 85-264 | 5 | 200 | 63 | 500 |
| RAC01-12SGB | 85-264 | 12 | 83 | 68 | 200 |
| RAC01-24SGB | 85-264 | 24 | 42 | 63 | 200 |

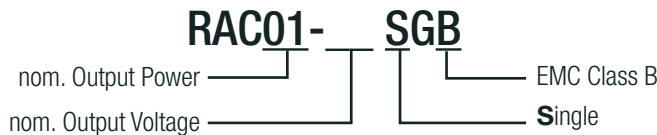
Notes:

Note1: Measured with all input voltages at +25°C with constant resistant mode at full load



ULIEC/EN60950-1 certified
 UL/IEC/EN62368-1 certified
 CAN/CSA-C22.2 No. 62368 certified
 IEC/EN62368-1 certified
 CB Report

Model Numbering



Ordering Examples:

RAC01-12SGB 12Vout Single Output EMC Class B

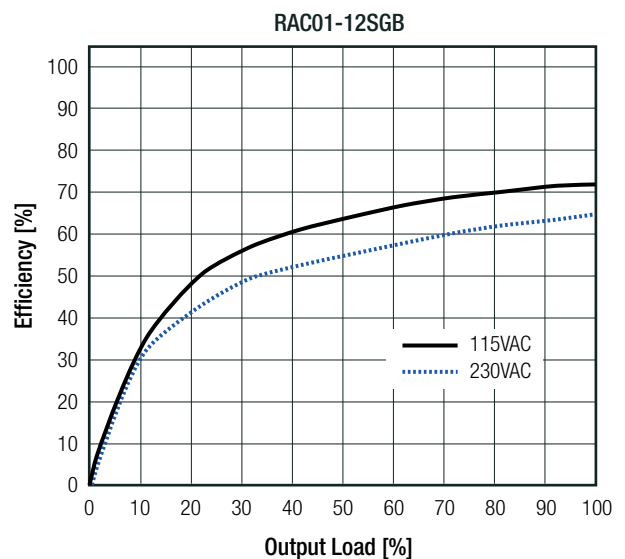
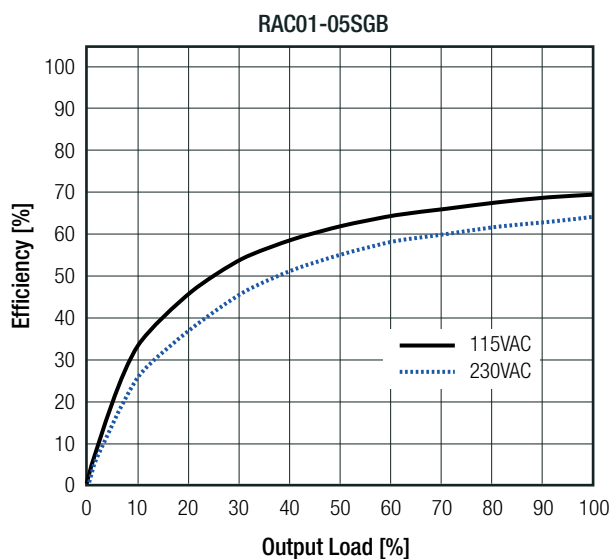
Specifications (measured @ Ta= 25°C, nom. Vin (115/230VAC), full load and after warm-up unless otherwise stated)

| BASIC CHARACTERISTICS | | | | | |
|--|--------------------------|------------------|--------------------------------------|----------------|--|
| Parameter | Condition | | Min. | Typ. | Max. |
| Internal Input Filter | | | Pi-type | | |
| Input Voltage Range ^(2,3,4) | nom. Vin = 230VAC | | 85VAC | 230VAC | 264VAC |
| Input Current | 115VAC 230VAC | | | 25mA 18mA | 30mA 20mA |
| Inrush Current | cold start at +25°C | 115VAC 230VAC | | | 30A 40A |
| No load Power Consumption | | | | 180mW | 250mW |
| Input Frequency Range | | | 47Hz | | 63Hz |
| Minimum Load | | | 0% | | |
| Power Factor | 115VAC 230VAC | | | 0.5 0.38 | |
| Start-up Time | 115VAC 230VAC | | | 250ms 200ms | 2s 2s |
| Hold-up time | 115VAC 230VAC | | | | 20ms 80ms |
| Internal Operating Frequency | 100% load at nominal Vin | | | 65kHz | |
| Output Ripple and Noise | 20MHz BW | 0°C to 80°C | 3.3Vout 5Vout 12Vout 24Vout | | 100mVp-p 100mVp-p 200mVp-p 240mVp-p |
| | | -25 °C to 0°C | 3.3Vout 5Vout 12Vout 24Vout | | 200mVp-p 200mVp-p 300mVp-p 300mVp-p |

Notes:

- Note2: No proper operation with DC input voltage
- Note3: The products were submitted for safety files at AC-Input operation
- Note4: Refer to **“Line Derating”**

Efficiency vs. Load

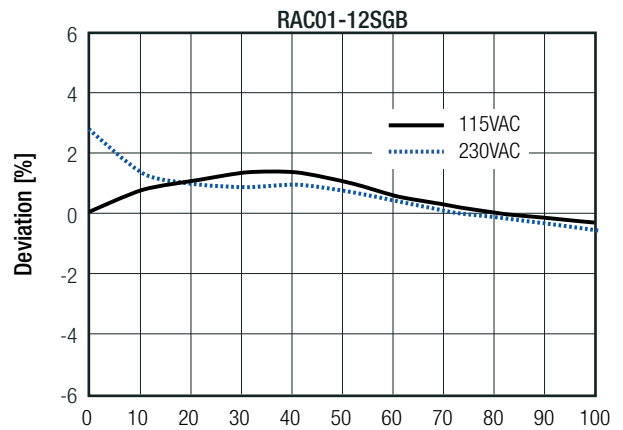
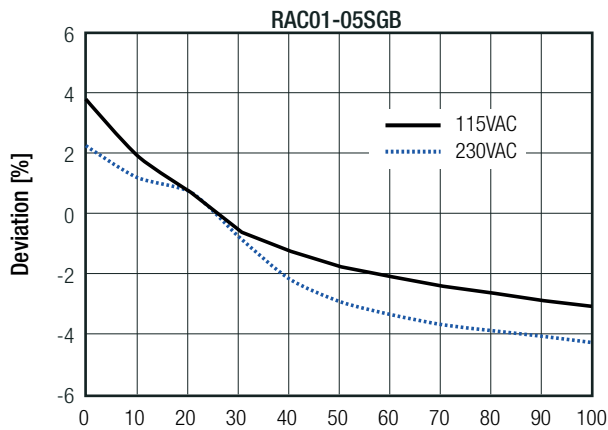


Specifications (measured @ Ta= 25°C, nom. Vin (115/230VAC), full load and after warm-up unless otherwise stated)

REGULATIONS

| Parameter | Condition | Value |
|-----------------|----------------|------------|
| Output Accuracy | -25°C to +80°C | ±6.0% max. |
| Line Regulation | -25°C to +80°C | ±2.0% max. |
| Load Regulation | -25°C to +80°C | 6.0% max. |

Deviation vs. Load



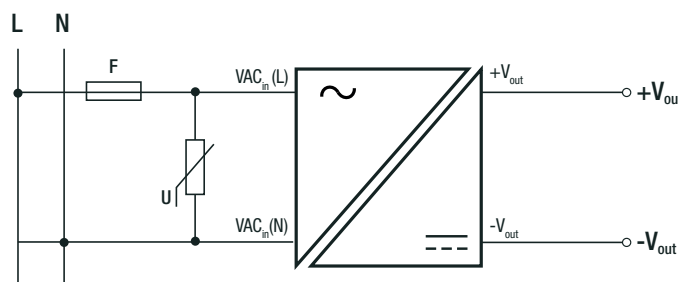
PROTECTIONS

| Parameter | Type | Value | |
|----------------------------------|--------------------------------------|--|-------------|
| Input Fuse ⁽⁵⁾ | internal | fusible resistor, 1Ω/1W | |
| Short Circuit Protection (SCP) | below 100mΩ | continuous, auto recovery | |
| Over Voltage Category | | OVCII | |
| Over Current Protection (OCP) | 3.3Vout 5Vout 12Vout 24Vout | 0.33A - 0.60A 0.22A - 0.50A 0.09A - 0.25A 0.05A - 0.14A | hiccup mode |
| Class of Equipment | | Class II | |
| Isolation Voltage ⁽⁶⁾ | I/P to O/P | rated for 1 minute | 3kVAC |
| Isolation Resistance | | | 100MΩ min. |
| Isolation Capacitance | | | 1nF |
| Insulation Grade | | | reinforced |
| Leakage Current | I/P to O/P | | 0.25mA max. |

Notes:

- Note5: Refer to local safety regulations if input over-current protection is also required
- Note6: For repeat Hi-Pot testing, reduce the time and/or the test voltage
- Note7: For operation at 230VAC, an external MOV is recommended. The Varistor should comply with IEC-61051-2. e.g. EPCOS S14 series

Protection Circuit



Specifications (measured @ Ta= 25°C, nom. Vin (115/230VAC), full load and after warm-up unless otherwise stated)

ENVIRONMENTAL

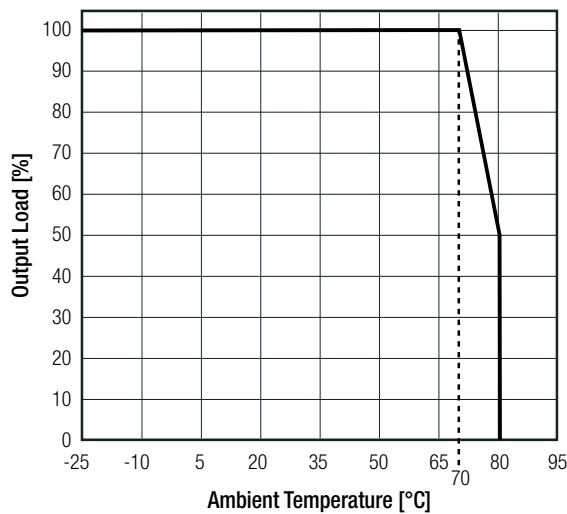
| Parameter | Condition | | Value |
|-----------------------------------|--------------------------------------|----------------------------------|---|
| Operating Temperature Range | @ natural convection 0.1m/s | full load | -25°C to +70°C |
| | | refer to "Derating Graph" | -25°C to +80°C |
| Maximum Case Temperature | | | +120°C |
| Temperature Coefficient | | | 0.03%/K |
| Operating Altitude ⁽⁸⁾ | | | 4000m |
| Operating Humidity | non-condensing | | 10% - 95% RH max. |
| Pollution Degree | | | PD2 |
| Shock | | | 10-150Hz, 2G 10min./1cycle, period 60min. each along x,y,z axes |
| Vibration | according to MIL-STD-202G | | 20G/11ms pulse, 3 times at each x, y, z axes |
| MTBF ⁽⁹⁾ | according to MIL-HDBK-217F, method 2 | +25°C | 1691 x 10 ³ hours |
| | | +70°C | 424 x 10 ³ hours |

Notes:

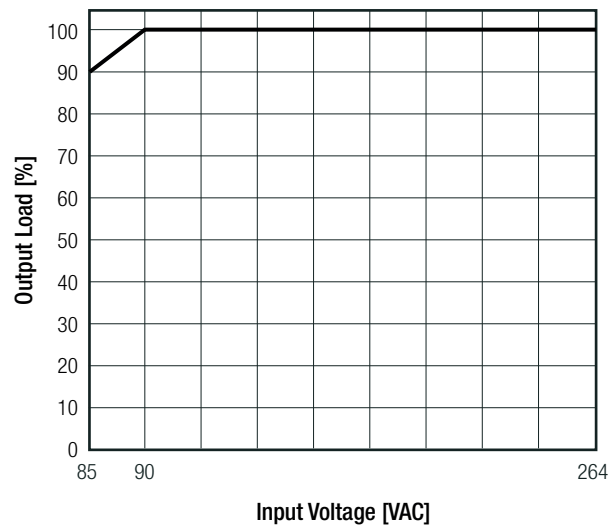
- Note8: Recognized by UL for safe operation up to 4000m. High altitude operation may impact the performance and lifetime. Contact TechsupportAT@RECOM-POWER.com for advice
- Note9: Based on calculation for 5Vout

Derating Graph

(@ Chamber and natural convection 0.1m/s)



Line Derating



SAFETY AND CERTIFICATIONS

| Certificate Type (Safety) | Report / File Number | Standard |
|--|--------------------------------|---|
| Information Technology Equipment, General Requirements for Safety | SA1804152L01001 | IEC60950-1:2005 2nd Edition + Am2:2013 EN60950-1:2006 + A12:2011 + A2:2013 |
| Audio/Video, information and communication technology equipment - Part1: Safety requirements | E196683-A5 and E19668-A6001 | UL62368-1, 2nd Edition CAN/CSA-C22.2 No. 62368-1-14 |
| Audio/Video, information and communication technology equipment - Part1: Safety requirements (CB Scheme) | SA1804152S 001 | IEC62368-1:2014 2nd Edition |
| Audio/Video, information and communication technology equipment - Part1: Safety requirements | | EN62368-1:2014+A11:2017 |
| RoHS2 | | RoHS 2011/65/EU + AM2015/863 |

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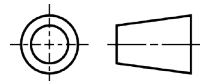
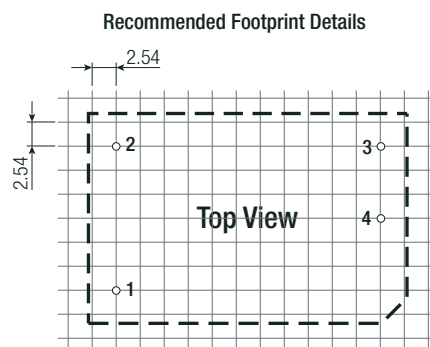
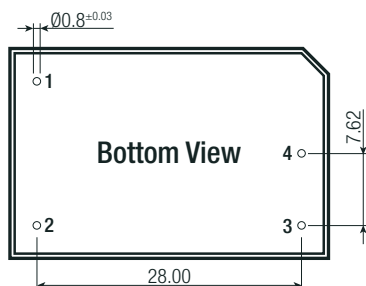
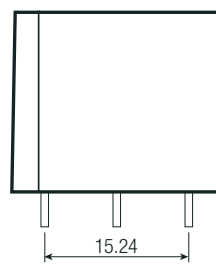
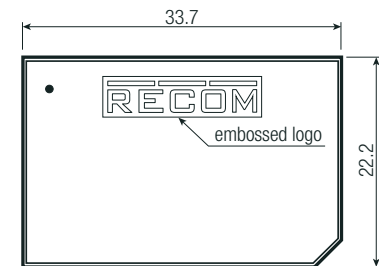
Specifications (measured @ Ta= 25°C, nom. Vin (115/230VAC), full load and after warm-up unless otherwise stated)

| EMC Compliance | Condition | Standard / Criterion |
|---|-----------------------------------|--|
| Electromagnetic compatibility of multimedia equipment - Emission requirements | EA1804152E 01001 | EN55032, Class B |
| Information technology equipment - Immunity characteristics - Limits and methods of measurement | | EN55024:2010 + A1:2015 |
| ESD Electrostatic discharge immunity test | Air ±2, 4, 8kV Contact ±2, 4kV | EN61000-4-2:2009, Criteria A |
| Radiated, radio-frequency, electromagnetic field immunity test | 3V/m | EN61000-4-3:2006 + A2:2010, Criteria A |
| Fast Transient and Burst Immunity | AC Power Port: ±1.0kV | EN61000-4-4:2012, Criteria A |
| Surge Immunity | AC Power Port: L-N ±1.0kV | EN61000-4-5:2014, Criteria B |
| Immunity to conducted disturbances, induced by radio-frequency fields | AC Power Port 3V | EN61000-4-6:2014, Criteria A |
| Power Magnetic Field Immunity | 50Hz, 1A/m | EN61000-4-8:2009, Criteria A |
| Voltage Dips and Interruption | Voltage Dips >95% | EN61000-4-11:2004, Criteria A |
| | Voltage Dips 30% | EN61000-4-11:2004, Criteria B |
| | Voltage Interruptions >95% | EN61000-4-11:2004, Criteria B |
| Limits of Voltage Fluctuations & Flicker | | EN61000-3-3:2013 |

DIMENSION AND PHYSICAL CHARACTERISTICS

| Parameter | Type | Value |
|-------------------|-------------|--|
| Material | case PCB | black plastic (UL94V-2) FR4 (UL94V-0) |
| Dimension (LxWxH) | | 33.7 x 22.2 x 19.0mm |
| Weight | | 12g typ. |

Dimension Drawing (mm)



Pin Connections

| Pin # | Single |
|-------|------------|
| 1 | VAC in (L) |
| 2 | VAC in (N) |
| 3 | -Vout |
| 4 | +Vout |

Tolerance:
Pin length: -0.5/+0.9
xx.x= ±0.5mm
x.xx= ±0.25mm

Specifications (measured @ Ta= 25°C, nom. Vin (115/230VAC), full load and after warm-up unless otherwise stated)

| PACKAGING INFORMATION | | |
|-----------------------------|----------------|-----------------------|
| Parameter | Type | Value |
| Packaging Dimension (LxWxH) | tube | 470.0 x 36.4 x 26.4mm |
| Packaging Quantity | | 20pcs |
| Storage Temperature Range | | -25°C to +85°C |
| Storage Humidity | non-condensing | 5% - 95% RH max. |

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- Специальные условия для постоянных клиентов.
- Подбор аналогов.
- Поставку компонентов в любых объемах, удовлетворяющих вашим потребностям.
- Приемлемые сроки поставки, возможна ускоренная поставка.
- Доставку товара в любую точку России и стран СНГ.
- Комплексную поставку.
- Работу по проектам и поставку образцов.
- Формирование склада под заказчика.
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- Тестирование поставляемой продукции.
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- Техническую поддержку проекта.
- Защиту от снятия компонента с производства.
- Оценку стоимости проекта по компонентам.
- Изготовление тестовой платы монтаж и пусконаладочные работы.



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