



THE DATASHEET OF RAC30-12SA



!NOT RECOMMENDED FOR NEW DESIGNS!

LAST TIME BUY: 31ST MARCH 2024, (RAC30-24SA VERSION)



Features

- 30 Watt PCB mount package
- Universal input voltage range
- 3000VAC / 1 minute isolation
- Low output ripple and noise
- Short circuit protected
- Triple output with independent outputs
- UL certified, CE marked

Regulated Converter

RAC30-A

30 Watt
Single,
Dual, Double,
Triple Output



Description

UL certified switching AC/DC power module for PCB, screw terminal connection or DIN-rail mounting.

NOT RECOMMENDED FOR NEW DESIGN

| Part Number | Input Voltage Range [VAC] | Output Voltage [VDC] | Output Current [mA] | Efficiency typ ⁽¹⁾ [%] | Max. Capacitive Load [µF] |
|-------------|---------------------------|----------------------|---------------------|-----------------------------------|---------------------------|
| RAC30-24SA | 90-264 | 24 | 1250 | 82 | 5900 |

Notes:

Note1: Efficiency is tested at nominal input and full load at +25°C ambient

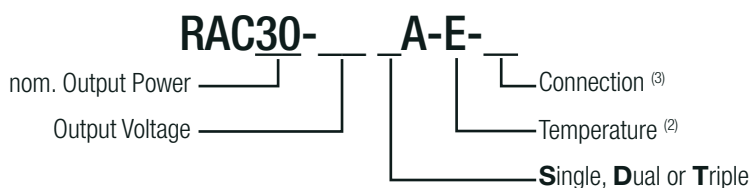


END OF LIFE

| Part Number | Input Voltage Range [VAC] | Output Voltage [VDC] | Output Current [mA] | Efficiency typ ⁽¹⁾ [%] | Max. Capacitive Load [µF] |
|-------------------------------|---------------------------|----------------------|---------------------|-----------------------------------|---------------------------|
| RAC30-3.3SA ^(2,3) | 90-264 | 3.3 | 6000 | 75 | 80000 |
| RAC30-05SA ^(2,3) | 90-264 | 5 | 6000 | 79 | 70000 |
| RAC30-12SA ^(2,3) | 90-264 | 12 | 2500 | 82 | 14000 |
| RAC30-15SA ^(2,3) | 90-264 | 15 | 2000 | 82 | 11000 |
| RAC30-05DA ^(2,3) | 90-264 | ±5 | ±3000 | 79 | ±50000 |
| RAC30-12DA ^(2,3) | 90-264 | ±12 | ±1250 | 82 | ±14000 |
| RAC30-15DA ^(2,3) | 90-264 | ±15 | ±1000 | 80 | ±10000 |
| RAC30-0512DA ^(2,3) | 90-264 | 5/12 | 3000/1250 | 79 | 13200/6400 |
| RAC30-0512TA ^(2,3) | 90-264 | 5/±12 | 3000/±630 | 79 | 15000/±5400 |
| RAC30-0515TA ^(2,3) | 90-264 | 5/±15 | 3000/±500 | 78 | 10000/±3200 |



Model Numbering



Notes:

Note2: with suffix "-E" for -40°C to +70°C operating temperature range
without suffix standard operating temperature range (-25°C to +70°C)

Note3: no suffix for standard package (THT)
add suffix "ST" for screw terminal module

Ordering Examples:

| | | | | | |
|-----------------|---------|-----------|---------------|----------------------|----------------|
| RAC30-05SA | 30 Watt | 5Vout | Single Output | standard Temperature | THT |
| RAC30-05DA-E | 30 Watt | ±5Vout | Dual Output | extended Temperature | THT |
| RAC30-0512TA-ST | 30 Watt | 5/±12Vout | Triple Output | standard Temperature | Screw Terminal |
| RAC30-15SA-E-ST | 30 Watt | 15Vout | Single Output | extended Temperature | Screw Terminal |

PREFERRED ALTERNATIVES

Please consider this alternatives:

RACM40-K Series

RACM30-SK/277

UL60950-1 certified
CSA C22.2 No. 60950-1-07 certified
EN60950-1 certified
EN55032 compliant
EN55024 compliant

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

| BASIC CHARACTERISTICS | | | | | |
|---|----------------------------------|-----------------|---|--------|------------------|
| Parameter | Condition | | Min. | Typ. | Max. |
| Input Voltage Range ⁽⁴⁾ | nom. Vin = 230VAC | | 90VAC 120VDC | 230VAC | 264VAC 370VDC |
| Input Current | 115VAC 230VAC | | | | 520mA 320mA |
| Inrush Current | 2ms max., cold start | 115VAC | standard with suffix "-E" | | 10A 23A |
| | | 230VAC | standard with suffix "-E" | | 20A 46A |
| No load Power Consumption | 115VAC/230VAC | | | | 2.58W |
| Input Frequency Range | AC Input | | 47Hz | | 440Hz |
| Hold-up Time | | | 15ms | | |
| Minimum Load | Single Dual Double, Triple | | 5%(3.3Vout), 8%(5Vout), 2%(12Vout,15Vout,24Vout) 2%(±5Vout), 3%(±12Vout), 1%(±15Vout) 20% | | |
| Internal Operating Frequency | | | | 100kHz | |
| Output Ripple and Noise ⁽⁵⁾ | 20MHz BW | Noise Ripple | <0.5% Vout + 50mVp-p max. <0.2% Vout + 40mVp-p max. | | |
| Notes: | | | | | |
| Note4: The products were submitted for safety files at AC-Input operation | | | | | |
| Note5: Measurements are made with a 0.1µF and 47µF MLCC in parallel across output (low ESR) | | | | | |

| REGULATIONS | | | |
|--|-----------------------|------------------------|---|
| Parameter | Condition | | Value |
| Output Accuracy | | | ±2.0% typ. |
| Line Regulation ⁽⁶⁾ | low line to high line | Single, Dual Triple | ±1.0% typ. ±1.0% typ. (+5Vout) / ±5.0 typ. (±Vout) |
| Load Regulation ⁽⁷⁾ | 5% to 100% load | Single | 1.0% typ. |
| | | Dual Triple | 3.0% typ. 2.0% typ. (+5Vout) / 6.0 typ. (±Vout) |
| Notes: | | | |
| Note6: Triple output version has +/- Vout common that isn't connected to +5V return pin internally | | | |
| Note7: Operation below 5% load will not harm the converter, but specifications may not be met | | | |

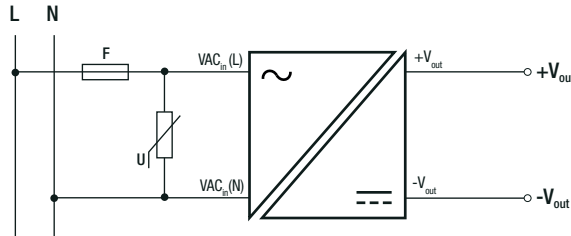
| PROTECTIONS | | | |
|--------------------------------|------------|---------------------|----------------------------|
| Parameter | Type | | Value |
| Short Circuit Protection (SCP) | | | Hiccup mode, auto recovery |
| Over Voltage Protection (OVP) | | | zener diode clamp |
| Isolation Voltage | I/P to O/P | tested for 1 minute | 3kVAC |
| Isolation Resistance | | | 100MΩ max. |
| Leakage Current | | | 0.75mA max. |
| continued on next page | | | |

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

Notes:

- Note8: Refer to local safety regulations if input over-current protection is also required. Recommended fuse: slow blow type
- Note9: An external MOV is recommended. The varistor should comply with IEC-61051-2. e.g. 14S471K series

Protection Circuit



ENVIRONMENTAL

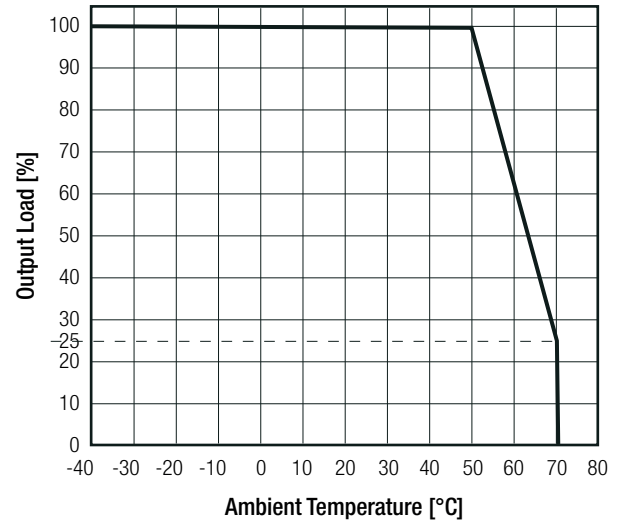
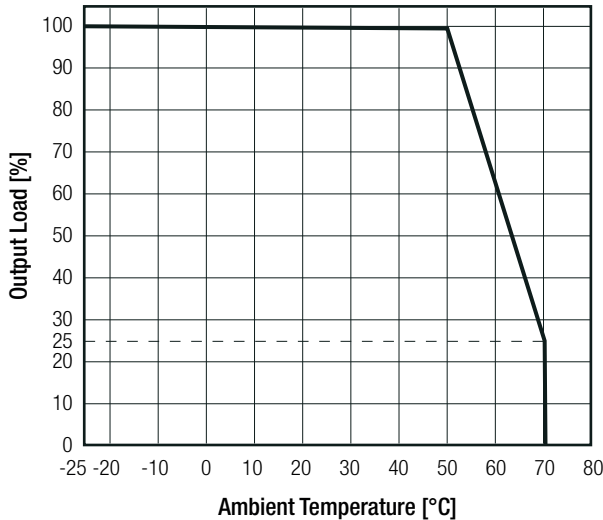
| Parameter | Condition | | Value |
|-----------------------------|----------------------------------|------------------|------------------------------|
| Operating Temperature Range | @ natural convection 0.1m/s | standard | -25°C to +70°C |
| | | with suffix "-E" | -40°C to +70°C |
| Temperature Coefficient | | | ±0.02%/K typ. |
| Operating Humidity | | | 95% RH max. |
| MTBF | according to MIL-HDBK-217F, G.B. | +25°C | >200 x 10 ³ hours |

Derating Graph

(@ Chamber and natural convection 0.1m/s)

standard

with suffix „-E“



SAFETY AND CERTIFICATIONS

| Certificate Type (Safety) | Report / File Number | Standard |
|---|----------------------|---|
| Information Technology Equipment, General Requirements for Safety | E196683 | UL60950-1, 2nd Edition, 2007 CAN/CSA-C22.2 No. 60950-1-07, 2nd Edition, 2007 |
| Information Technology Equipment, General Requirements for Safety | | EN60950-1:2006 + A2:2013 |
| EAC Safety of Low Voltage Equipment | RU-AT.49.09571 | TP TC 004/2011 |
| RoHS2+ | | RoHS-2011/65/EU + AM-2015/863 |

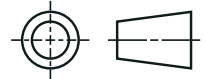
| EMC Compliance | Condition | Standard / Criterion |
|---|-----------|------------------------|
| Electromagnetic compatibility of multimedia equipment – Emission Requirements | | EN55032:2015, Class B |
| Information technology equipment - Immunity characteristics - Limits and methods of measurement | | EN55024:2010 + A1:2015 |
| Limits for harmonic current emissions | | EN61000-3-2, 2014 |
| Limitation of voltage fluctuations/flicker in low-voltage systems | | EN61000-3-3, 2013 |

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

DIMENSION AND PHYSICAL CHARACTERISTICS

| Parameter | Type | Value |
|-------------------|-------------------------------|---|
| Material | case | epoxy with fibreglass (UL94V-0) |
| Dimension (LxWxH) | standard with suffix "-ST" | 89.0 x 64.1 x 25.0mm 111.9 x 64.6 x 30.6mm |
| Weight | standard with suffix "-ST" | 230g typ. 305g typ. |

Dimension Drawing (mm)



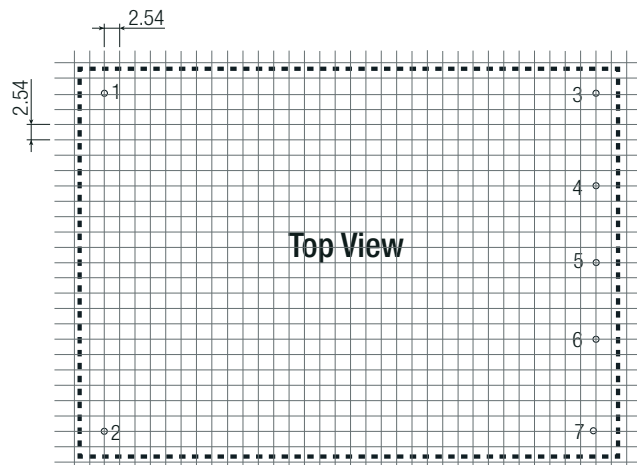
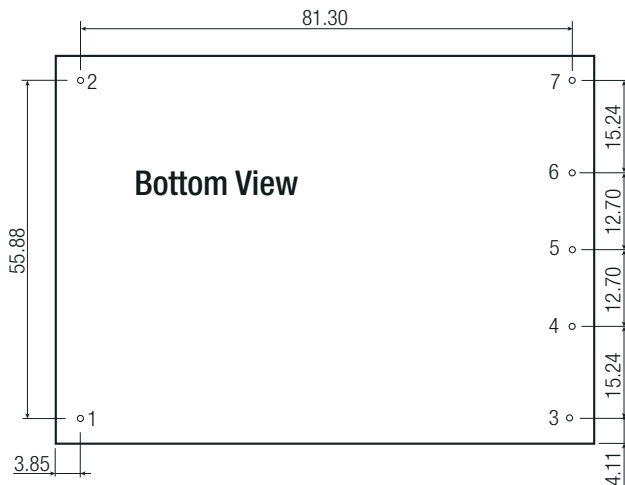
Pin Connections

| Pin # | Single | Dual | Double | Triple |
|-------|------------|------------|------------|------------|
| 1 | VAC in (N) | VAC in (N) | VAC in (N) | VAC in (N) |
| 2 | VAC in (L) | VAC in (L) | VAC in (L) | VAC in (L) |
| 3 | +Vout | +Vout | +12Vout | +Vout |
| 4 | no Pin | no Pin | +5Vout | +5Vout |
| 5 | -Vout | Com | +12V Rth | Vout Com |
| 6 | no Pin | no Pin | +5V Rth | +5V Rth |
| 7 | NC | -Vout | no Pin | -Vout |

Tolerance: xx.x= ±0.5mm
xx.xx= ±0.25mm



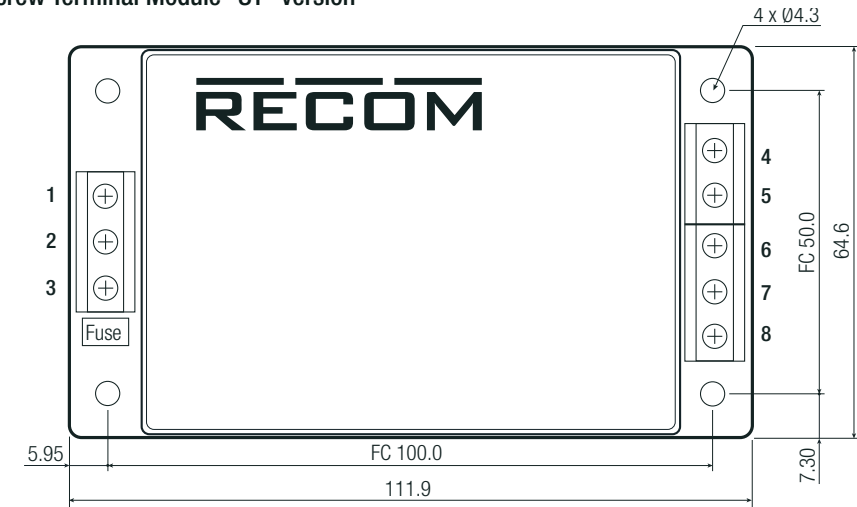
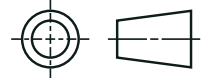
Recommended Footprint Details



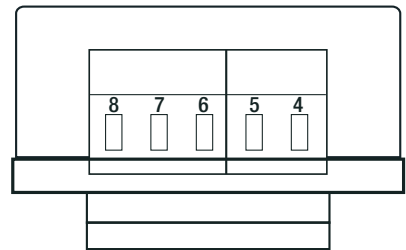
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Specifications (measured @ Ta= 25°C, nom. Vin, full load and after warm-up unless otherwise stated)

Screw Terminal Module "ST" version



removable DIN RAIL Mounting Bracket



Screw terminal information

| # | Single | Dual | Double | Triple |
|---|------------|------------|------------|------------|
| 1 | NC | NC | NC | NC |
| 2 | VAC in (N) | VAC in (N) | VAC in (N) | VAC in (N) |
| 3 | VAC in (L) | VAC in (L) | VAC in (L) | VAC in (L) |
| 4 | +Vout | +Vout | +12Vout | +Vout |
| 5 | NC | NC | +5Vout | +5Vout |
| 6 | -Vout | Com | +12V Rth | Com |
| 7 | NC | NC | +5V Rth | +5V Rth |
| 8 | NC | -Vout | NC | -Vout |

7.5mm Pitch
suitable wire: 24-12AWG (0.5-2.5mm²)
wire stripping length: 7mm typ.
recommended tightening torque: 0.5Nm

NC = No Connection
FC = Fixing Centers
Tolerance: xx.x= ±0.5mm
xx.xx= ±0.25mm



PACKAGING INFORMATION

| Parameter | Type | | Value |
|-----------------------------|-------------------|-------------------|-----------------------|
| Packaging Dimension (LxWxH) | cardboard box | standard | 260.0 x 70.0 x 42.0mm |
| | | with suffix "-ST" | 119.0 x 64.0 x 54.0mm |
| Packaging Quantity | standard | | 2pcs |
| | with suffix "-ST" | | 1pcs |
| Storage Temperature Range | | | -40°C to +85°C |
| Storage Humidity | non-condensing | | 95% RH |

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