

!NOT RECOMMENDED FOR NEW DESIGNS!

RECOM
AC/DC Converter

Features

- Universal input voltage range
- 3kVAC / 1 minute isolation
- Low output ripple and noise
- Short circuit protected
- Triple output with independent outputs
- Suitable for industrial applications
- CE marked

Regulated Converter

Description

Switching AC/DC power module for PCB or DIN-rail mounting.

RAC40-B

**40 Watt
Single,
Dual, Double,
Triple Output**



Selection Guide

| Part Number | Input Voltage Range [VAC] | Output Voltage [VDC] | Output Current [mA] | Efficiency typ ⁽¹⁾ [%] | Max. Capacitive Load [µF] |
|-----------------------------|---------------------------|----------------------|---------------------|-----------------------------------|---------------------------|
| RAC40-05SB ⁽²⁾ | 90-264 | 5 | 8000 | 81 | 40000 |
| RAC40-12SB ⁽²⁾ | 90-264 | 12 | 3333 | 84 | 8600 |
| RAC40-15SB ⁽²⁾ | 90-264 | 15 | 2666 | 83 | 6600 |
| RAC40-24SB ⁽²⁾ | 90-264 | 24 | 1667 | 83 | 1400 |
| RAC40-05DB ⁽²⁾ | 90-264 | ±5 | ±4000 | 81 | ±12000 |
| RAC40-12DB ⁽²⁾ | 90-264 | ±12 | ±1666 | 83 | ±4400 |
| RAC40-15DB ⁽²⁾ | 90-264 | ±15 | ±1333 | 83 | ±1000 |
| RAC40-0512DB ⁽²⁾ | 90-264 | 5/12 | 5000/1250 | 82 | 10000/470 |
| RAC40-0512TB ⁽²⁾ | 90-264 | 5/±12 | 5000/±600 | 82 | 10000/±780 |
| RAC40-0515TB ⁽²⁾ | 90-264 | 5/±15 | 5000/±500 | 81 | 10000/±900 |

Notes:

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

Model Numbering



Notes:

Note2: no suffix for standard package (THT)
add suffix "ST" for screw terminal module

Ordering Examples:

| | | | | |
|---------------|---------|--------|---------------|----------------|
| RAC40-05SB | 40 Watt | 5Vout | Single Output | THT |
| RAC40-24SB-ST | 40 Watt | 24Vout | Single Output | Screw Terminal |

SEARCHING FOR ALTERNATIVES?

Contact RECOM

<https://recom-power.com/contact.html>

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 ⁽³⁾ | nom. Vin = 230VAC | 90VAC 100VDC | 230VAC | 264VAC 375VDC |
| Input Current | 115VAC 230VAC | | | 860mA 460mA |
| Inrush Current | 2ms max., cold start | 115VAC 230VAC | | 30A 50A |
| No load Power Consumption | 115VAC/230VAC | | | 720mW |
| Input Frequency Range | AC Input | 47Hz | | 440Hz |
| Hold-up Time | | 10ms | | |
| Minimum Load | Single Dual Double, Triple | 1% 10% 25% | | |
| Internal Operating Frequency | | | 132kHz | |
| Output Ripple and Noise ⁽⁴⁾ | 20MHz BW | | | 1.0% of Vout |
| Notes: Note3: The products were submitted for safety files at AC-Input operation Note4: Measurements are made with a 0.1µF and 47µF MLCC in parallel across output (low ESR) | | | | |

REGULATIONS

| Parameter | Condition | Value | |
|---|-----------------------|--|--|
| Output Accuracy ⁽⁵⁾ | Single, Dual | ±2.0% typ. | |
| | Double, Triple | ±3.0% typ. (+5Vout) / ±5.0% typ. (±Vout) | |
| Line Regulation | low line to high line | Single, Dual | ±0.5% typ. |
| | | Double, Triple | ±0.5% typ. (+5Vout) / ±5.0% typ. (±Vout) |
| Load Regulation ⁽⁶⁾ | 1% to 100% load | Single | 1.0% typ. |
| | 10% to 100% load | Dual | 1.0% typ. |
| | 25% to 100% load | Double | 2.0% typ. (+5Vout) / 6.0% typ. (±Vout) |
| | | Triple | 3.0% typ. (+5Vout) / 7.0% typ. (±Vout) |
| Cross Regulation | 15% to 100% load | Dual | ±5.0% typ. |
| | 25% to 100% load | Double | ±1.0% typ. (+5Vout) / ±7.0% typ. (±Vout) |
| | | Triple | ±3.0% typ. (+5Vout) / ±7.0% typ. (±Vout) |
| Notes: Note5: Triple output version has +/- Vout common that isn't connected to +5V return pin internally Note6: Operation below Minimum 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 | |
| Over Current Protection (OCP) | | 105% typ. | |
| Over Temperature Protection (OTP) | @tc =100°C | thermal shutdown, auto restart after cool down | |
| Isolation Voltage | I/P to O/P | tested for 1 minute | 3kVAC |
| Isolation Resistance | | | 100MΩ max. |
| Leakage Current | | | 0.75mA max. |

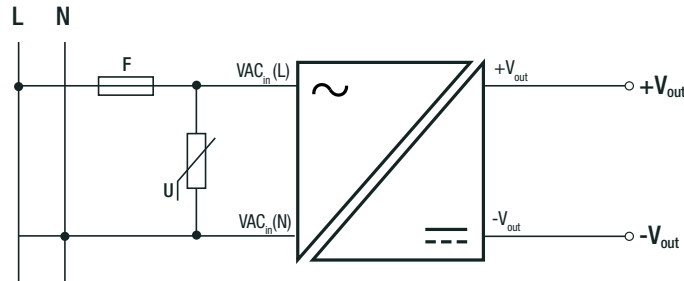
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Specifications (measured @ Ta= 25°C, nom. Vin, full load and after warm-up unless otherwise stated)

Notes:

- Note7: Refer to local safety regulations if input over-current protection is also required. Recommended fuse: slow blow type
 Note8: An external MOV is recommended. The varistor should comply with IEC-61051-2. e.g. 14S471K series

Protection Circuit

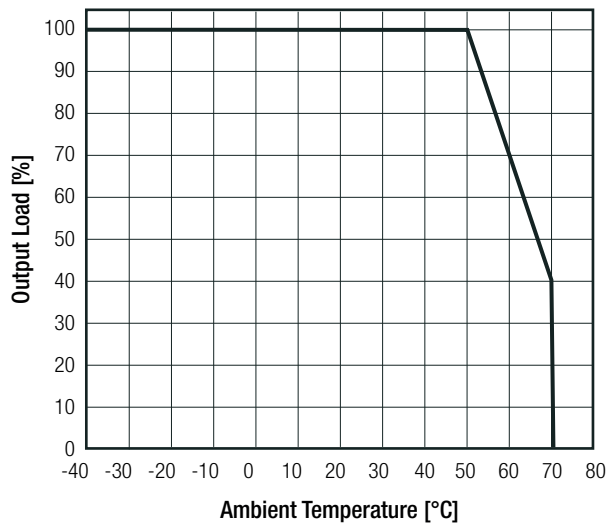


ENVIRONMENTAL

| Parameter | Condition | | Value |
|-----------------------------|----------------------------------|-------------------------|-----------------------------------|
| Operating Temperature Range | @ natural convection 0.1m/s | full load | -40°C to +50°C |
| | | refer to derating graph | -40°C to +70°C |
| Temperature Coefficient | | | ±0.01%/K typ. |
| Operating Humidity | | | 95% RH max. |
| MTBF | according to MIL-HDBK-217F, G.B. | +25°C | 200 - 400 x 10 ³ hours |

Derating Graph

(@ Chamber and natural convection 0.1 m/s)



SAFETY AND CERTIFICATIONS

| Certificate Type (Safety) | Report / File Number | Standard |
|---|----------------------|-------------------------------|
| 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 |

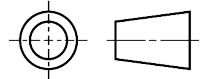
| EMC Compliance | Condition | Standard / Criterion |
|---|-----------|------------------------|
| Electromagnetic compatibility of multimedia equipment – Emission Requirements | | EN55032:2015, Class B |
| Information technology equipment - Immunity characteristics - Limits and methods of measurement | | 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 fibreglas (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" | 242g typ. 317g typ. |

Dimension Drawing (mm)



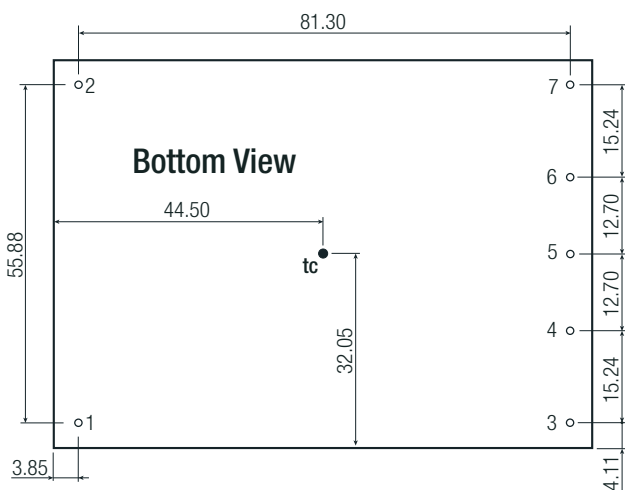
Pin Connections

| Pin # | Single | Dual | Double | Triple |
|-------|------------|------------|------------|------------|
| 1 | VAC in (L) | VAC in (L) | VAC in (L) | VAC in (L) |
| 2 | VAC in (N) | VAC in (N) | VAC in (N) | VAC in (N) |
| 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 |

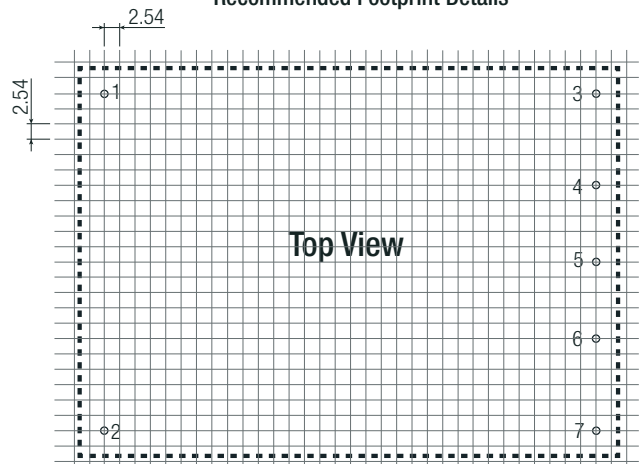
tc = case temperature measuring point

Tolerance: xx.x= ±0.5mm

xx.xx= ±0.25mm



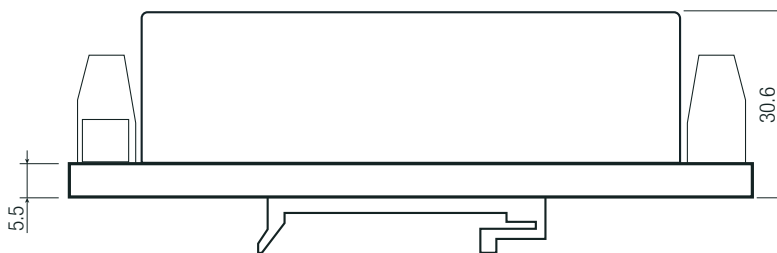
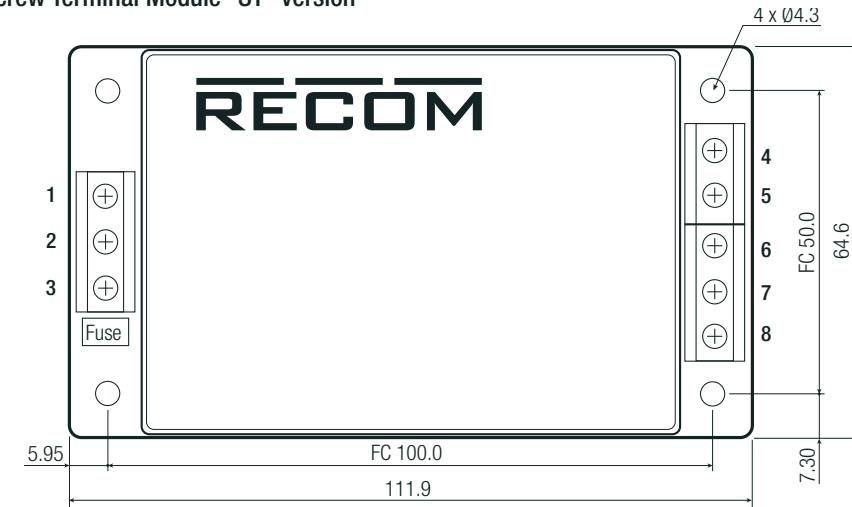
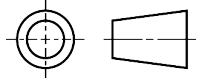
Recommended Footprint Details



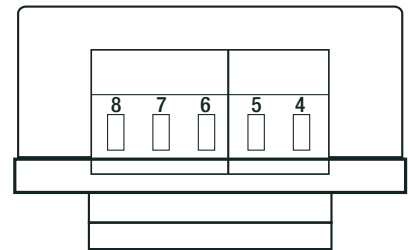
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Specifications (measured @ Ta= 25°C, nom. Vin, full load and after warm-up unless otherwise stated)

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 (L) | VAC in (L) | VAC in (L) | VAC in (L) |
| 3 | VAC in (N) | VAC in (N) | VAC in (N) | VAC in (N) |
| 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 with suffix "-ST" | 260.0 x 70.0 x 42.0mm 119.0 x 64.0 x 54.0mm |
| Packaging Quantity | standard with suffix "-ST" | | 2pcs 1pcs |
| Storage Temperature Range | | | -40°C to +85°C |
| Storage Humidity | non-condensing | | 95% RH |

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