

# Features

## Regulated Converters

- Ultracompact AC-DC Power Supply
- 4 Watt PCB Mount Package
- Universal Input Voltage Range including 277VAC
- 3kVAC Isolation (Class II)
- Very Low No Load Input Current
- Dual output version for standby relay circuits
- Short Circuit Protected
- EN/UL Certified, CE Marked.

### Description

The RAC04 series is an ultra-compact universal input AC/DC power module for PCB mounting. It features ultralow no-load power consumption, short circuit, overload and output overvoltage protection as well as a built-in EMC Class B filter. A high input voltage version (suffix /277) is also available for input voltages of up to 305VAC or 430VDC.

### Selection Guide

Part Number	Input Range (VAC)* (Std)	Input Range (VAC)* (/277)	Output Voltage (VDC)	Output Current (mA)	Efficiency (%)	Max Capacitive Load
RAC04-3.3SA	90-264	90-305	3.3	1200	68	14000µF
RAC04-05SA	90-264	90-305	5	800	72	8000µF
RAC04-09SA	90-264	90-305	9	444	75	2400µF
RAC04-12SA	90-264	90-305	12	333	76	1000µF
RAC04-15SA	90-264	90-305	15	267	76	700µF
RAC04-24SA	90-264	90-305	24	167	77	220µF
RAC04-0512DA	90-264	90-305	5/12	120/250	75	4700/330µF

\* add suffix /277 for 90-305VAC input. High input voltage converters are identified by omitting pin 1.

### Specifications (typical at 25°C and after warm up time unless otherwise specified)

Input Voltage Range	standard	90-264VAC or 120-370VDC
	/277 versions	90-305VAC or 120-430VDC
Rated Power		4 Watts max
Input Frequency Range (for AC Input)		47-440Hz
Input Current (full load)	115/230VAC	95/65mA max.
	/277	75/55mA max.
No Load Power Consumption	115/230/277VAC	150/210/220mW typ.
Inrush Current (<0.5ms)	115/230VAC	15/25A max.
Leakage Current		0.25mA max
Output Voltage Accuracy (full load)	single outputs	±2%
	3.3V (/277 Version)	±0.5%
Dual output version	5V/12V	±5%/±2%
Line Voltage Regulation (low line, high line at full load)		±0.2% typ
Dual output version	5V/12V	±3%/±0.2% typ
Load Voltage Regulation	3.3V output	±1% typ (
0% to 100% full load)	All others	±0.5% typ
Dual output version	5V/12V	±5%/±0.5% typ
Output Ripple and Noise	3.3V output	<250mVp-p max
(measured @ 20MHz of bandwidth with 0.1µF & 47µF parallel capacitor)	5V output	<200mVp-p max.
	All others	100mVp-p max
Operating Frequency		132kHz typ
Hold-up time		15ms min.
Minimum Load	single outputs	0%
	5V/12V	25%
RMS Isolation Voltage (input to output)		3kVAC / 1minute
Temperature Coefficient		±0.02%/°C typ
Isolation Resistance		100 MΩ max
Short Circuit Protection		Hiccup, Automatic Restart
Output Overvoltage Protection		Zener Clamping Diode
Operating Temperature Range	All others	-40°C to +70°C
(natural convection, with derating)	Dual output version	-40°C to +70°C
Storage Temperature Range		-40°C to +85°C
Humidity		95% RH max

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# POWERLINE

## AC/DC-Converter

with 3 year Warranty

# RECOM

## 4 Watt Single/Dual Output



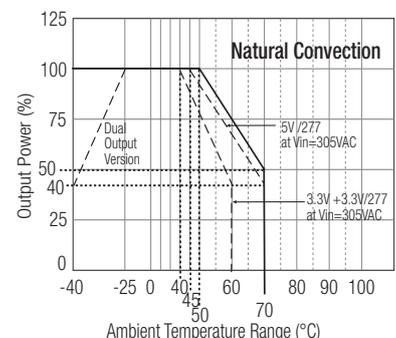
E196683

EN 55022/55024 Certified  
UL-60950-1 Certified

# RAC04-A

## Derating-Graph

(Ambient Temperature)



Refer to Application Notes

# POWERLINE

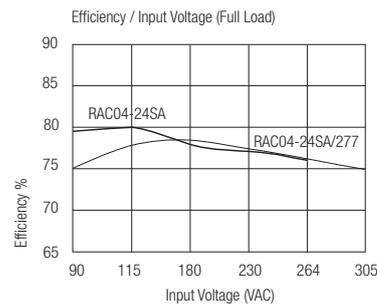
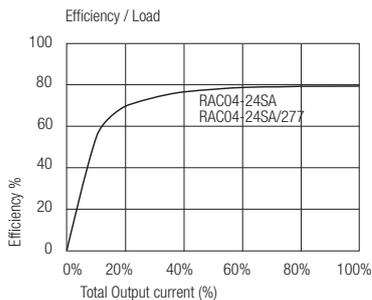
## AC/DC-Converter

# RAC04-SA Series

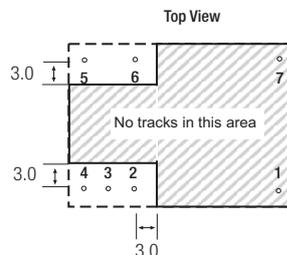
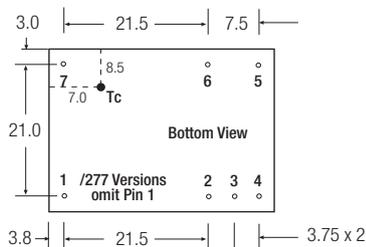
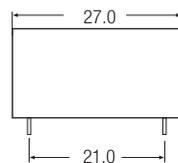
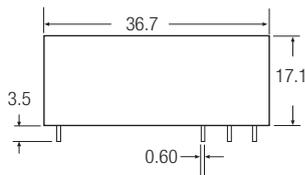
### Specifications (typical at 25°C and after warm up time unless otherwise specified )

Case Material	Epoxy with Fibreglass (UL94V-0)		
Package Weight	26g		
Packing Quantity	12 pcs		
EMC	Conducted and Radiated Noise Immunity	EN 55022 Class B EN 55024	
MTBF (+25°C)	using MIL-HDBK-217F	>350 x 10 <sup>3</sup> hours	

### Typical Characteristics



### Standard Package Style and Pinning



#### Pin Connections

Pin #	Single Output	Dual Output	/277 Versions
1	NC	NC	No Pin
2	+VDC out	+12V	same
3	-VDC out	Com	same
4	NC	+5V	same
5	VAC in (L)	VAC in (L)	VAC in (L)
6	VAC in (N)	VAC in (N)	VAC in (N)
7	NC	NC	NC

NC = No Connection

XX.X ± 0.5 mm  
XX.XX ± 0.25 mm

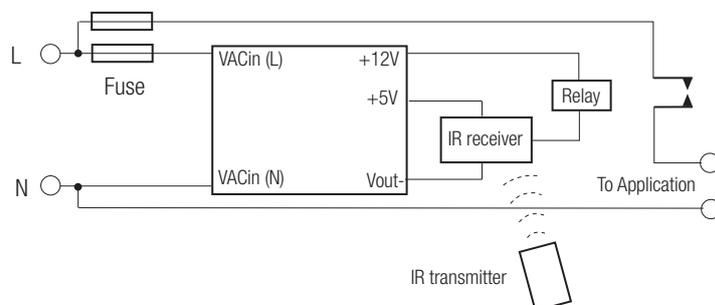
It is recommended to additionally bond the /277 version of the converter to the PCB if the application is subject to vibration or mechanical shock.

### Standard Application Circuit

#### Standby Relay Application

With 110VAC supply and 10mA standby load, the circuit consumes typically only 150mW.

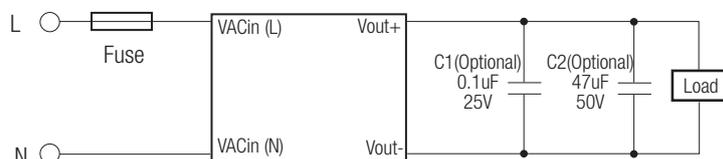
Once activated by the remote handset, the standard 12V relay can switch a 16A load.



#### Compact single output regulated power supply

Suggested fuse rating:

1A Slow Blow



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