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Features

Regulated Converters

- 40mW max. No Load Power Consumption
- High Efficiency up to 76%
- Isolated Output 3kVAC / 1 min
- SCP, OVP Protection
- Wide Operating Temperature Range: -40°C to +85°C
- Universal Input 85-305VAC

RECOM

AC/DC Converter

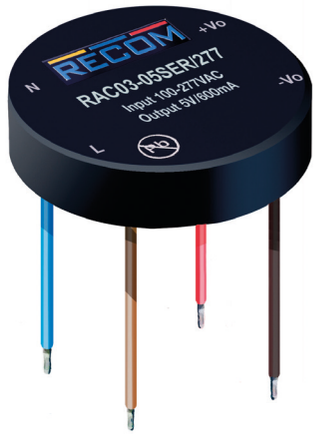
RAC03-SER/277

3 Watt Single Output

3 YEAR Warranty

Description

The modules of the RAC03-SER/277 series are regulated AC/DC converters with 3kVAC isolation and a round, flat shape. This series has been designed to offer low stand-by consumption and an ultra-wide input voltage range. Uses include a variety of applications in building automation, security systems and communication systems.



Selection Guide

Part Number	nom. Input Voltage Range [VAC]	Output Voltage [VDC]	Output Current [mA]	Efficiency typ. [%]	Max. Capacitive Load [µF]
RAC03-3.3SER/277	100-277	3.3	900	68	22000
RAC03-05SER/277	100-277	5	600	70	7500
RAC03-12SER/277	100-277	12	250	74	1000
RAC03-24SER/277	100-277	24	125	76	200

Model Numbering

RAC03-__SER/277-__

Output Voltage — Packaging[1]

Ordering Examples:
RAC03-05SER/277-TRAY, Single Output, 5Vout and Tray Packaging

Notes:

Note1: add suffix "-TRAY" for Tray packaging, without suffix standard cardboard box packaging.

Specifications (measured @ ta= 25°C, nominal input voltage (115/230VAC), full load and after warm-up)

BASIC CHARACTERISTICS				
Parameter	**Condition**	**Min.**	**Typ.**	**Max.**
Input Voltage Range		85VAC 120VDC		305VAC 430VDC
Input Current	115VAC 230VAC		70mA 45mA	
Inrush Current	cold start at 25°C, 115VAC cold start at 25°C, 230VAC			15A 30A
No load Power Consumption	85-305VAC, 47-440Hz			40mW
Input Frequency Range	AC Input	47Hz		440Hz
Hold-up time	115VAC	18ms		
Internal Operating Frequency	100% load at nominal Vin		55kHz	
Minimum Load			10%	
Ripple & Noise[2]	3.3 Vout all others		250mVp-p 200mVp-p	

Notes:

Note2: Ripple and Noise is the maximum peak-to-peak voltage value measured at the output with a 20MHz bandwidth, at rated line voltage at full load. And with a 47µF low-ESR electrolytic capacitor in parallel with a 0.1µF ceramic capacitor across output.

continued on next page

EN55024 Certified
EN60950-1 Certified
UL60950-1 Certified
EN60335-1 Certified

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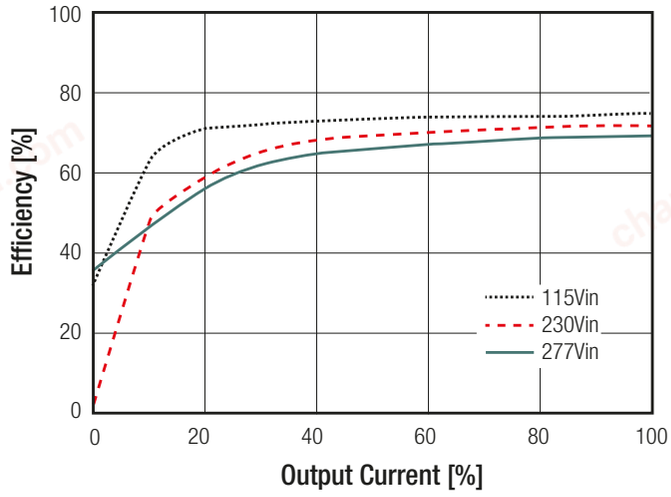
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AC/DC Converter

RAC03-SER/277 Series

Specifications (measured @ ta= 25°C, nominal input voltage (115/230VAC), full load and after warm-up)

Efficiency vs Load



REGULATIONS

Parameter	Condition	Value
Output Voltage Tolerance[3]	3.3Vout	±4% typ. / ±8% max.
	5Vout	±3.5% typ. / ±5% max.
	12, 24Vout	±3% typ. / ±4% max.
Line Voltage Regulation	low line to high line, full load	±0.7% typ. / ±1% max.
Load Voltage Regulation	3.3Vout 10% to 100% load	±5.5% typ. / ±9% max.
	5Vout 10% to 100% load	±5% typ. / ±7.5% max.
	12, 24Vout 10% to 100% load	±4% typ. / ±5.5% max.

Notes:

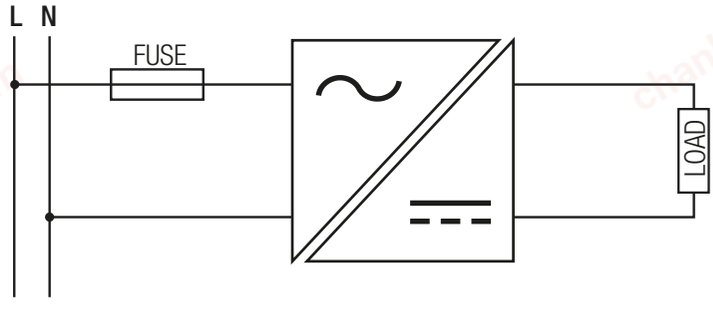
Note3: Includes initial voltage accuracy, thermal drift, line regulation and load regulation at rated input voltage and load conditions.

PROTECTIONS

Parameter	Type	Value
Short Circuit Protection (SCP)		continuous, automatic recovery
Over Voltage Protection (OVP)	Zener Diode clamp	105% - 150%
Over Current Limit		120% - 190%
Over Voltage Cagetory		OVC II
Isolation Voltage		3kVAC / 1 Minute
Isolation Resistance		1GΩ min.
Leakage Current	85-305VAC, 47-440Hz	10µA max.

Notes:

Note4: An input fuse is required if the mains supply is not over-current protected. Recommended fuse: T1A slow blow type



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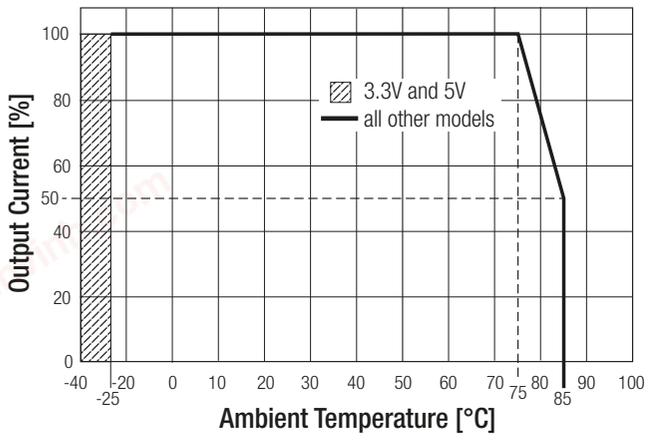
Specifications (measured @ ta= 25°C, nominal input voltage (115/230VAC), full load and after warm-up)

ENVIRONMENTAL

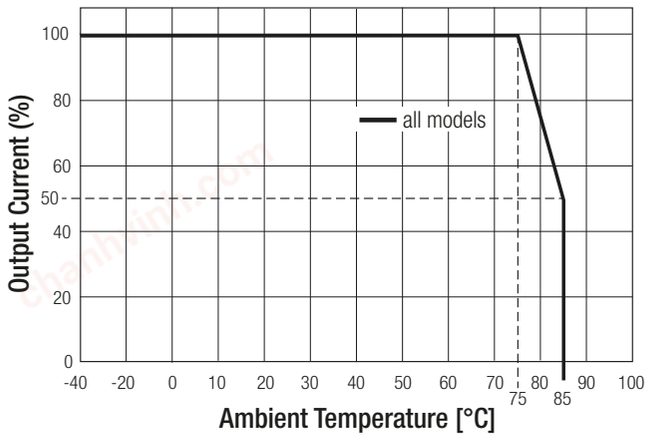
Parameter	Condition	Value
Operating Temperature Range [5]	230VAC, with derating (see graph)	-40°C to +85°C
Maximum Case Temperature		105°C
Thermal Impedance		9.5°C / W typ.
Humidity	non-condensing	5% - 95%, RH max.
MTBF [6]	MIL-HDBK-217F, 115VAC, +25°C MIL-HDBK-217F, 230VAC, +25°C	3554 x 10^3 hours 3219 x 10^3 hours

Derating Graph

@ 85-140VAC



@ 140-305VAC



Notes:

Note5: At low input voltage (85-140VAC) and temperature below -25°C the RAC03-3.3SER/277 and RAC03-05SER/277, will not start.

Note6: MTBF is referring RAC03-05SER/277

SAFETY AND CERTIFICATIONS

Certificate Type (Safety)	Report / File Number	Standard
Information Technology Equipment, General Requirements for Safety (LVD)	LVD1208051	IEC60950-1, 2nd Edition, 2009 EN60950-1, 2nd Edition, 2011
Information Technology Equipment, General Requirements for Safety	E224736-X1-A24	UL60950-1, 2nd Edition, 2014 CAN/CSA C22.2 No. 60950-1-07, 2nd Edition 2014
Household and similar electrical appliances, General requirements	L0339L26-B2	EN60335-1, 2014

EMC Compliance	Condition	Standard / Criterion
Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement	Report: 1502CE17	EN55022, Class B EN55024
ESD Electrostatic discharge immunity test	±8kV Air Discharge; ±6kV Contact	EN61000-4-2, Criteria B
Radiated, radio-frequency, electromagnetic field immunity test	3V/m	EN61000-4-3, Criteria A
Fast Transient and Burst Immunity	AC Power Port: ±1kV	EN61000-4-4, Criteria B
Surge Immunity	AC Power Port: line to line: ±1kV	EN61000-4-5, Criteria B
Immunity to conducted disturbances, induced by radio-frequency fields	AC Power Port: 3V/m	EN61000-4-6, Criteria A
Power Magnetic Field Immunity	1 A/m	EN61000-4-8, Criteria A
Voltage Dips and Interruption	Voltage Dips: >95% reduction >30% reduction Interruption: >95%	EN61000-4-11, Criteria B EN61000-4-11, Criteria C EN61000-4-11, Criteria C
Voltage Fluctuations and Flicker in Public Low-Voltage Systems		EN61000-3-3

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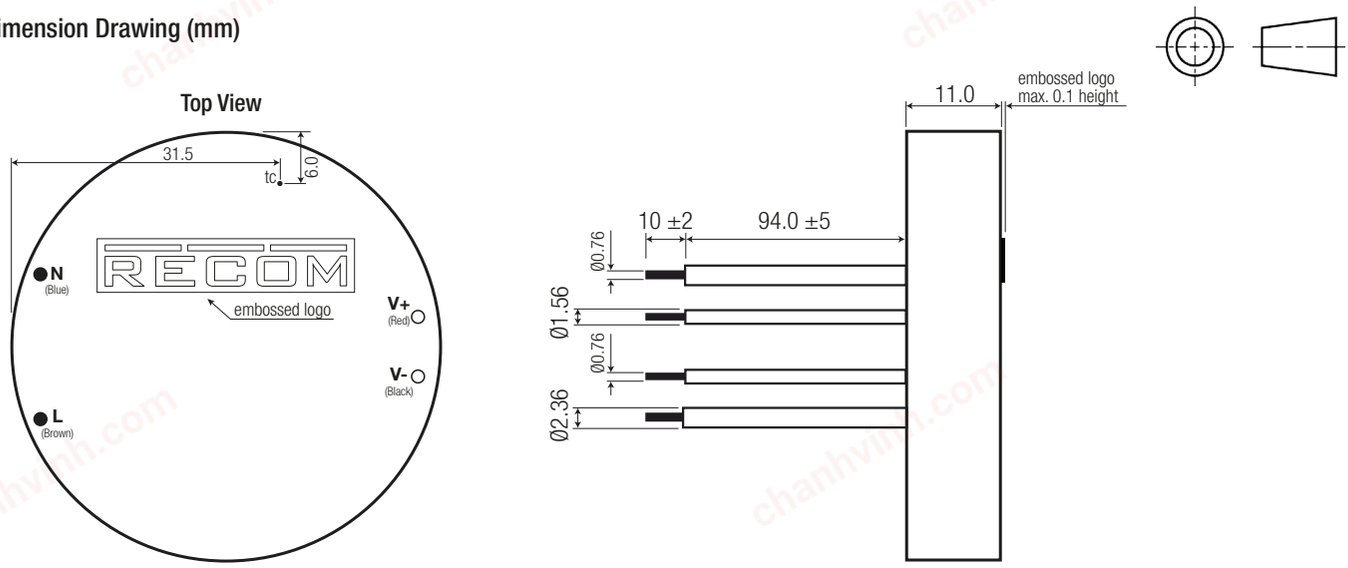
RAC03-SER/277 Series

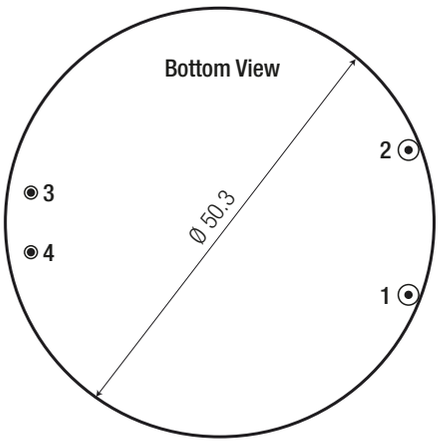
Specifications (measured @ ta= 25°C, nominal input voltage (115/230VAC), full load and after warm-up)

DIMENSION and PHYSICAL CHARACTERISTICS

Parameter	Type	Value
Material	Case	black plastic (UL94 V-0)
	Potting	epoxy (UL94 V-0)
Package Dimension (LxWxH)		50.3 x 50.3 x 11.0mm
Package Weight		41g typ.

Dimension Drawing (mm)





Wired Connections

Wired Color	Type	Wire Composition	Function
1, brown	UL-1015, AWG22	17/0.16	VAC in (L)
2, blue	UL-1015, AWG22	17/0.16	VAC in (N)
3, red	UL-1430, AWG22	17/0.16	+Vout
4, black	UL-1430, AWG22	17/0.16	-Vout

Tolerance: xx.x= ±0.5mm
xx.xx= ±0.35mm

PACKAGING INFORMATION

Parameter	Type	Value
Packaging Dimension (LxWxH)	cardboard box	195.0 x 170.0 x 140.0mm
Packaging Quantity		12 pcs
Storage Temperature Range		-40°C to +85°C

The product information and specifications are subject to change without prior notice. RECOM products are not authorized for use in safety-critical applications (such as life support) without RECOM's explicit written consent. A safety-critical application is defined as an application where a failure of a RECOM product may reasonably be expected to endanger or cause loss of life, inflict bodily harm or damage property. The buyer shall indemnify and hold harmless RECOM, its affiliated companies and its representatives against any damage claims in connection with the unauthorized use of RECOM products in such safety-critical applications.