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 3 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	Input Voltage Range (VAC)	Output Voltage (VDC)	Output Current (mA)	Efficiency typ. (%)	Max. Capacitive Load (µF)
RAC03-3.3SER/277	85-305	3.3	900	68	22000
RAC03-05SER/277	85-305	5	600	70	7500
RAC03-12SER/277	85-305	12	250	74	1000
RAC03-24SER/277	85-305	24	125	76	200

RoHS 6/6 compliant · REACH compliant · ERP compliant

CE · c UL us E224736

Specifications (measured at T_A= 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	full load, 115VAC full load, 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	AC Input	47Hz		440Hz
Hold-up time	115VAC	18ms		
Switching Frequency	100% load at nominal Vin		55kHz	
Efficiency	see Selection Guide			
Minimum Load			10%	
Output Ripple and Noise (1)	3.3Vout all others		250mVp-p 200mVp-p	

Notes:

Note1: 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.

Refer to Applications Notes

RAC03-SER/277
Series

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

REGULATIONS

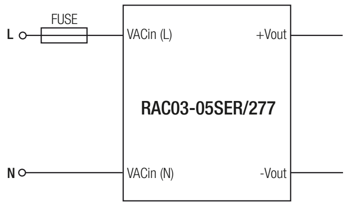
Parameter	Condition	Value
Output Voltage Tolerance (2)	3.3Vout 5Vout 12, 24Vout	±4% typ. / ±8% max. ±3.5% typ. / ±5% max. ±3% typ. / ±4% max.
Line Voltage Regulation	low line to high line, full load	±0.7% typ. / ±1% max.
Load Voltage Regulation	3.3Vout 10% to 100% load 5Vout 10% to 100% load 12, 24Vout 10% to 100% load	±5.5% typ. / ±9% max. ±5% typ. / ±7.5% max. ±4% typ. / ±5.5% max.

Notes:
Note2: 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	120% - 190%
Over Current Limit		105% - 150%
Isolation Voltage		3kVAC / 1 Minute
Isolation Resistance		1GΩ min.
Leakage Current	85-305VAC, 47-440Hz	10µA max.

Notes:
Note3: An input fuse must be always used. Recommended fuse: T1A slow blow type.



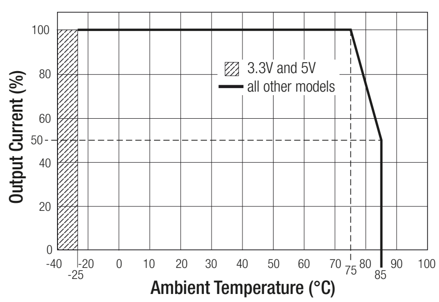
ENVIRONMENTAL

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

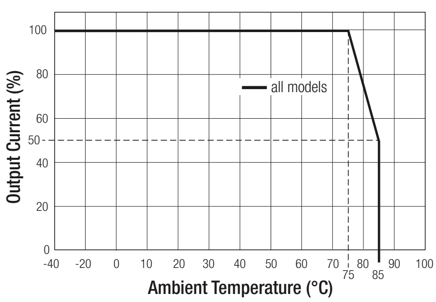
Notes:
Note3: MTBF is referring RAC03-05SER/277

Derating Graph

@ 85-140VAC



@ 140-305VAC



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

SAFETY AND CERTIFICATIONS

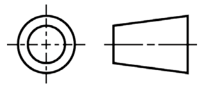
Certificate Type	Report / File Number	Standard
EN General Safety	SPCLVD1208051	EN-60950-1, 2nd Edition
UL General Safety	E224736	UL-60950-1, 2nd Edition

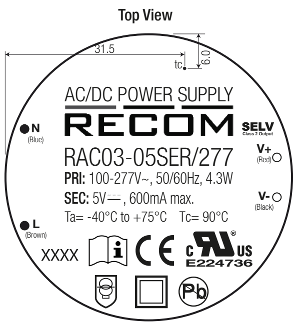
Certificate Type (Environmental)	Condition / Report or File Number	Standard / Criterion
ESD	Air ±5kV, Contact ±4kV	EN61000-4-2, Criteria B
Radiated Immunity	3V/m	EN61000-4-3, Criteria A
Fast Transient	AC Power Port: ±1kV	EN61000-4-4, Criteria B
Surge	AC Power Port: line to line: ±1kV	EN61000-4-5, Criteria B
Conducted Immunity	AC Power Port: 3V/m	EN61000-4-6, Criteria A
PMF	1 A/m	EN61000-4-8, Criteria A
Voltage Dips & Voltage Variations	Voltage Dips: >95% reduction	EN61000-4-11, Criteria B
	30% reduction	EN61000-4-11, Criteria C
	Voltage Interruptions: >95% reduction	EN61000-4-11, Criteria C
Voltage		EN-61000-3-3
EMI Standard	Report: 1502CE17	EN55022, Class B EN55024
Over Voltage Category		OVC II

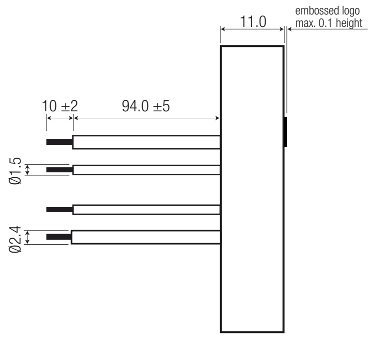
DIMENSIONS and PHYSICAL CHARACTERISTICS

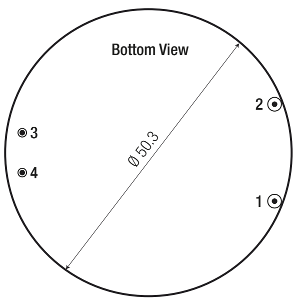
Parameter	Type	Value
Material	Case Potting	UL94V-0, black plastic UL94V-0, Epoxy
Dimensions (LxWxH)		50.3 x 50.3 x 11.0mm
Weight		41g typ.
Packaging Dimensions (LxWxH)	Tube	520 x 32 x 27mm
Packaging Quantity		12 pcs.

Mechanical Dimensions (mm)









Wired Connections

Wired Color	Type	Single
1, brown	UL-1015, AWG#22	VAC in (L)
2, blue	UL-1015, AWG#22	VAC in (N)
3, red	UL-1430, AWG#22	+Vout
4, black	UL-1430, AWG#22	-Vout

Tolerance: ±0.5mm