Features

Regulated Converters

- 35mW max. No Load Power Consumption
- 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

RAC02-SE/277/W

2 Watt Single Output

3 YEAR 3 warranty

Description

The ultra-compact wired RAC02-SE/277/W modules are available with output voltages of 3.3, 5, 12 and 24V, and the input-to-output isolation is 3kVAC/1min. With a standby consumption of 35mW maximum, the mini power supplies are particularly suitable for energy-saving sleep mode and stand-by applications. Because of its compact design (height <18mm), it is a versatile solution for home automation and other similar applications. Complete with an integrated input filter, the series has enhanced EMI performance and complies with EN55022, class B. The mini power supplies are also protected against short circuit with fully automatic restart after the error has been solved. The converters are EN/UL60950-1 certified and come complete with a 3 year warranty.

Selection Guide

Part Number	Input Voltage Range (VAC)	Output Voltage (VDC)	Output Current (mA)	Efficiency typ. (%)	Max. Capacitive Load (µF) (1)
RAC02-3.3SE/277/W	85-305	3.3	600	67	12000
RAC02-05SE/277/W	85-305	5.0	400	70	5500
RAC02-12SE/277/W	85-305	12	167	73	500
RAC02-24SE/277/W	85-305	24	83	76	160

Notes:

Note1: Test by minimum input and constant resistor load.

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		47mA 30mA	
Inrush Current	cold start at 25°C, 115VAC cold start at 25°C, 230VAC			15A 30A
No load Power Consumption	85-305VAC, 47-440Hz			35mW
Input Frequency Range	AC Input	47Hz		440Hz
Hold-up time	115VAC	18ms		
Operating Frequency Range	100% load at nominal Vin		55kHz	
Efficiency	see Selection Guide			
Minimum Load			2%	
Output Ripple and Noise (2)	3.3V 5V, 12V, 24V			300mVp-p 250mVp-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

RoHS 6 compliant · REACH compliant · ERP compliant

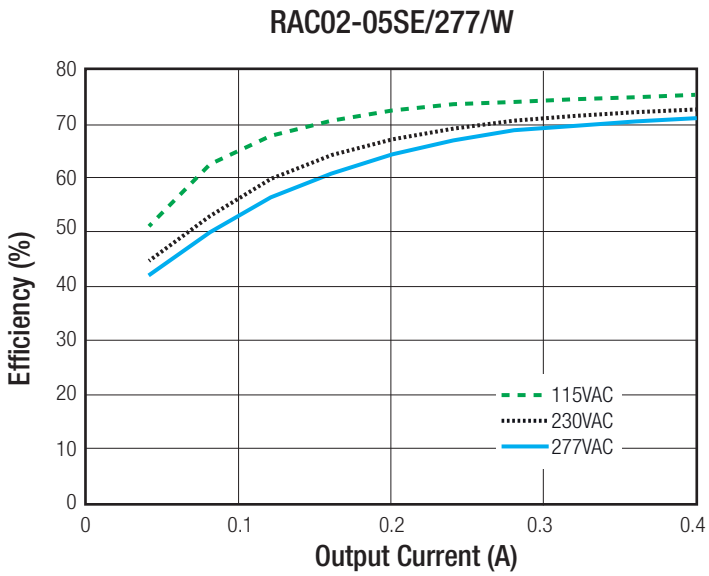
CE cULus E224736

EN55024 Certified
EN60950-1 Certified
UL60950-1 Certified

RAC02-SE/277/W Series

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

Efficiency vs. Load



REGULATIONS

Parameter	Condition	Value
Output Voltage Tolerance [3]		±6% max.
Line Voltage Regulation	low line to high line, full load	±1.5% max.
Load Voltage Regulation	2% to 100% load	±6% typ.

Notes:

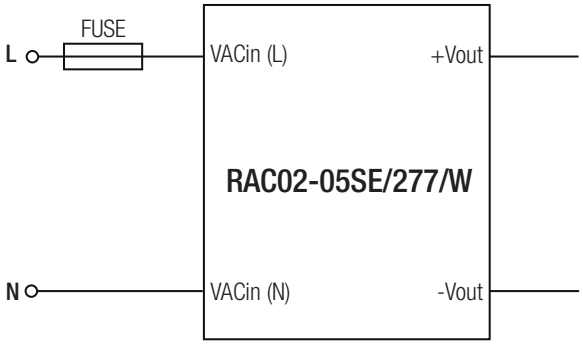
Note3: Includes initial voltage accuracy, thermal drift, line regulation and load regulation at rated input voltage and load conditions.

PROTECTIONS

Parameter	Type	Value
Short Circuit Protection (SCP)		continuous, automatic recovery
Over Voltage Protection (OVP)	Zener Diode clamp	110% - 140%
Over Current Limit		110% - 190%
Isolation Voltage		3kVAC / 1 Minute
Isolation Resistance		1GΩ min.
Leakage Current	85-305VAC, 47-440Hz	10µA max.

Notes:

Note4: An input fuse is recommended: T1A slow blow type.



RAC02-SE/277/W Series

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

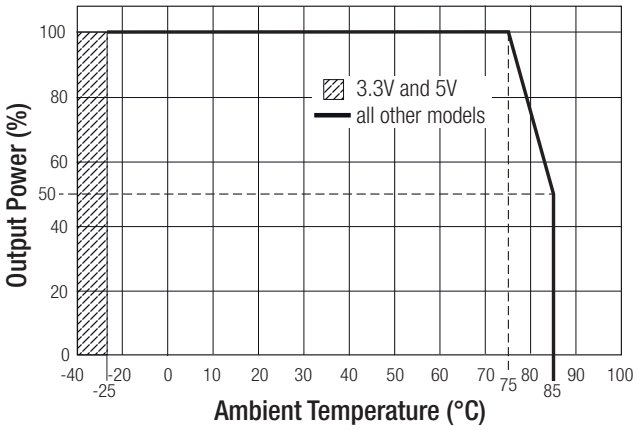
ENVIRONMENTAL		
Parameter	**Condition**	**Value**
Operating Temperature Range	230VAC, with derating (see graph)	-40°C to +85°C
Maximal Case Temperature		+105°C
Thermal Impedance		8.5°C/W typ.
Humidity	non-condensing	5% - 95%, RH max.
MTBF (5)	MIL-HDBK-217F, 115VAC, +25°C MIL-HDBK-217F, 230VAC, +25°C	2238 x 10^3 hours 1670 x 10^3 hours

Notes:

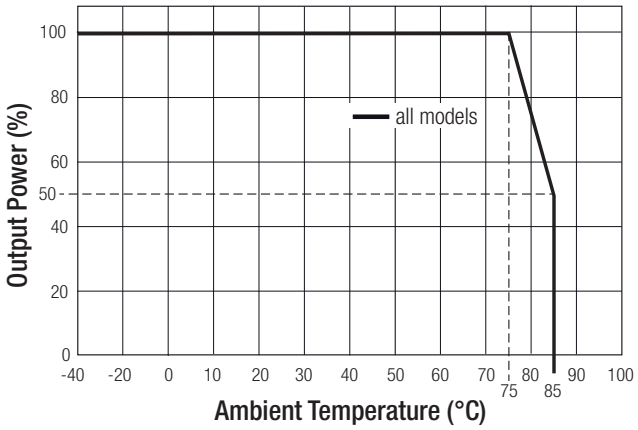
Note5: MTBF is referring RAC02-05SE/277/W

Derating Graph

@ 85-140VAC



@ 140-305VAC



SAFETY AND CERTIFICATIONS		
Certificate Type	**Report / File Number**	**Standard**
EN General Safety	SPCLVD1208051	EN-60950-1, 2nd Edition
UL General Safety	E224736-X1-A24	UL-60950-1, 2nd Edition, 2014
Canada General Safety	E224736-X1-A24	CAN/CSA C22.2 No. 60950-1-07, 2nd Edition, 2014
Certificate Type (Environmental)	**Report / File Number**	**Standard / Criterion**
ESD	±8kV Air Discharge; ±6kV Contact	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
Power Magnetic Field	1 A/m	EN61000-4-8, Criteria A
Voltage Dips and Interruption	Voltage Dips: >95% reduction	EN61000-4-11, Criteria B
	>30% reduction	EN61000-4-11, Criteria C
	Interruption: >95%	EN61000-4-11, Criteria C
Voltage flicker		EN61000-3-3
EMI Standard	Report: 1502CE17	EN55022, Class B EN55024
Vibration		MIL-STD-202G
Over Voltage Category		OVC II

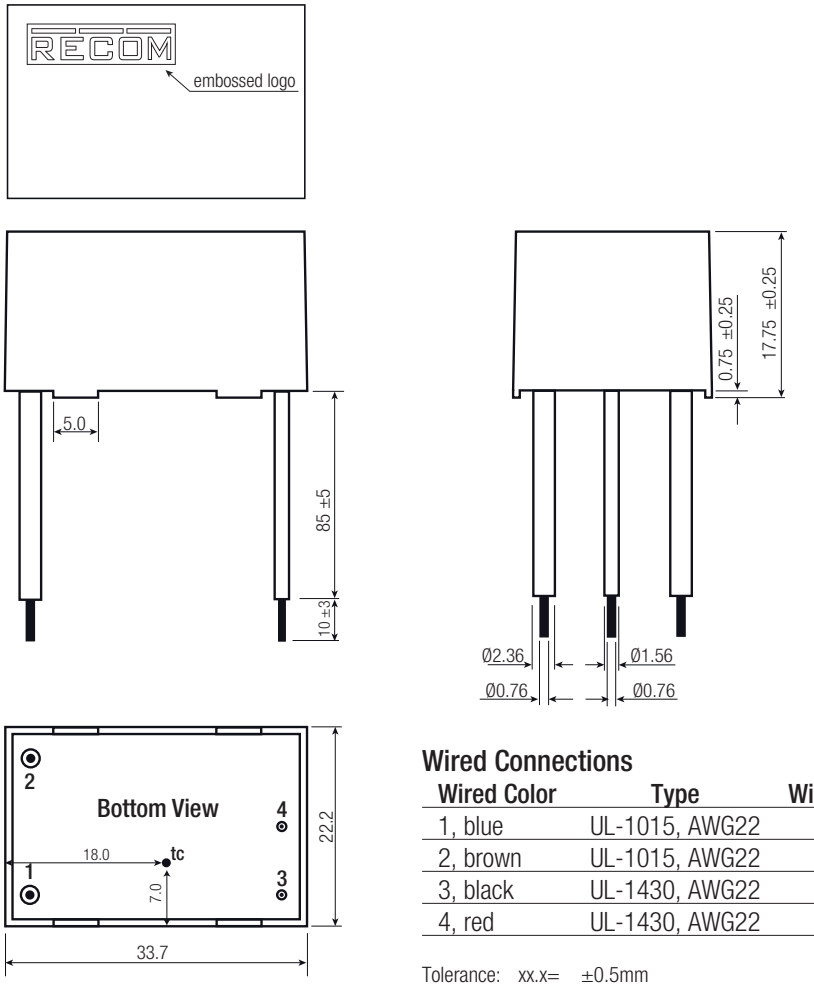
RAC02-SE/277/W Series

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

DIMENSION and PHYSICAL CHARACTERISTICS

Parameter	Type	Value
Case Material		UL94V-0, black plastic
Potting Material		UL94V-0, Epoxy
Package Dimension (LxWxH)		33.7 x 22.2 x 17.75mm
Package Weight		25g typ.

Dimension Drawing (mm)



Wired Connections

Wired Color	Type	Wire Composition	Function
1, blue	UL-1015, AWG22	17/0.16	VAC in (N)
2, brown	UL-1015, AWG22	17/0.16	VAC in (L)
3, black	UL-1430, AWG22	17/0.16	-Vout
4, red	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	520 x 195 x 67mm
Packaging Quantity		30 pcs.
Storage Temperature Range		-40°C to +85°C