!NOT RECOMMENDED FOR NEW DESIGNS!

Features

Regulated Converters

- Continuous short circuit protection
- Efficiency up to 79%
- Universal input 80-264VAC
- 100mW no load power consumption
- Isolated output 3.75kVAC / 1 min
- EN, UL and CE/EAC certified

RECOM
AC/DC Converter

RAC04-C/230

4 Watt Single & Dual Output

3 YEAR warranty

Description

The RAC04-C/230 series are fully certified single and dual regulated AC/DC converters in an encapsulated PCB-mount package style with 3.75kVAC isolation and very low standby power consumption. The converters have SC protected single as well as dual outputs and meet EN55032 class B without any external components. Uses include board-level power supplies, home automation, instrumentation systems and standby applications.

Selection Guide

Part Number	Input Voltage Range [VAC]	Output Voltage [VDC]	Output Current [mA]	Efficiency typ [%]	Max. Capacitive Load (1) [µF]
RAC04-3.3SC/230	80-264	3.3	1200	72	10000
RAC04-05SC/230	80-264	5	800	75	7200
RAC04-12SC/230	80-264	12	333	77	1000
RAC04-15SC/230	80-264	15	267	78	820
RAC04-24SC/230	80-264	24	167	79	220
RAC04-0512DC/230	80-264	5/12	720/33	75	4700/100
RAC04-05DC/230	80-264	±5	±400	76	±3300
RAC04-12DC/230	80-264	±12	±166	78	±680

Notes:

Note1: measured at 115VAC

Model Numbering

RAC04-__ __C/230

Output Voltage

Single or **D**ual

Ordering Examples:

e.g. RAC04-3.3SC/230, 3.3VDC single output
e.g. RAC04-05DC/230, 5VDC dual output

PREFERRED ALTERNATIVES

Please consider these alternatives:

RAC04-K/277 Series

RAC10-K/277 Series

IEC/EN60950-1 certified
IEC/EN62368-1 certified
UL60950-1 certified
CSA/CAN 22.2 60950-1-07 certified
CB Report
EN55032 compliance
EN55024 compliance

RECOM

AC/DC Converter

RAC04-C/230 Series

Specifications (measured at Ta= 25°C, nominal input voltage, full load otherwise noted)

BASIC CHARACTERISTICS					
Parameter	**Condition**		**Min.**	**Typ.**	**Max.**
Input Voltage Range [2]			80VAC 113VDC		264VAC 373VDC
Input Current	115VAC 230VAC				98mA 64mA
Inrush Current	<0.5ms cold start at 25°C	115VAC 230VAC			15A 30A
No load Power Consumption	115VAC/230VAC				100mW
Input Frequency Range	AC Input		47Hz		440Hz
Hold-up time	115VAC			15ms	
Internal Operating Frequency	100% load at nominal Vin			67kHz	
Minimum Load			0%		
Output Ripple and Noise [3]				200mVp-p	

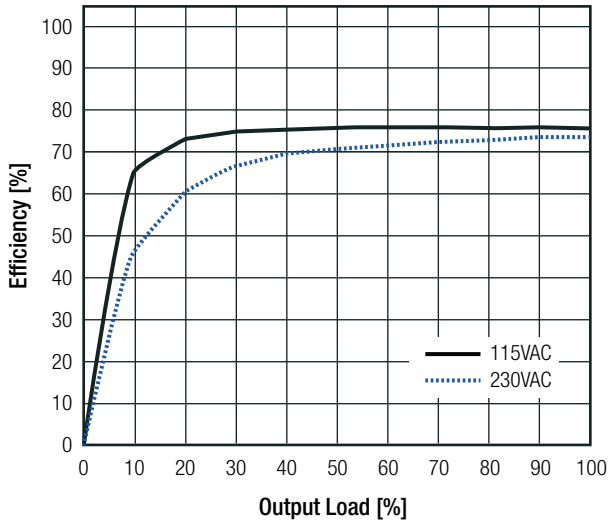
Notes:

Note2: Refer to line derating graph on page PA-4

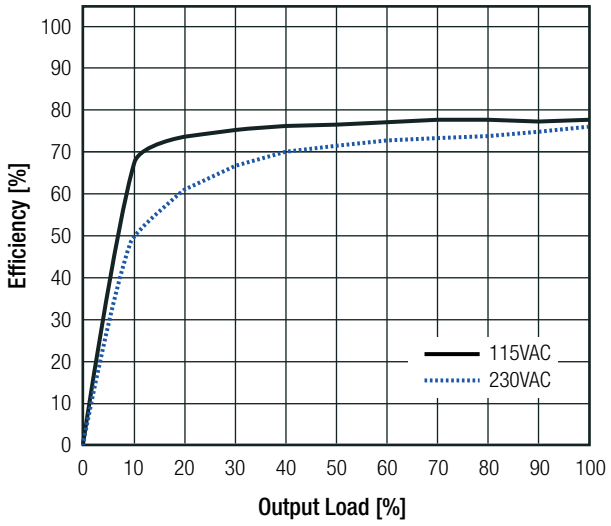
Note3: Ripple and Noise is measured at 20MHz bandwidth and with a 47µF low-ESR electrolytic capacitor in parallel with a 0.1µF ceramic capacitor across output

Efficiency vs. Load

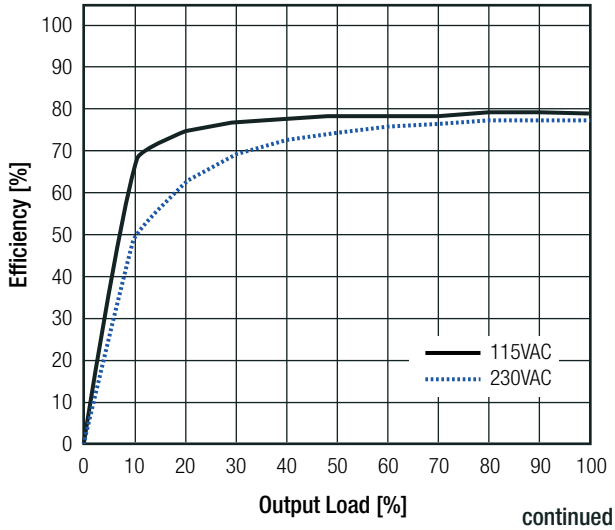
RAC04-3.3SC/230



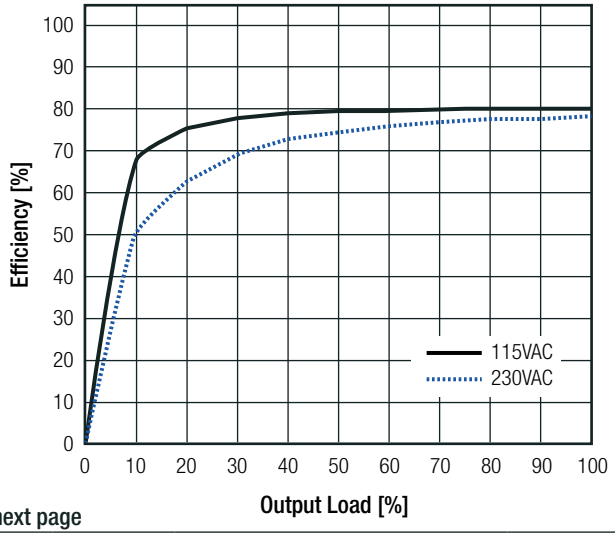
RAC04-05SC/230



RAC04-12SC/230



RAC04-15SC/230



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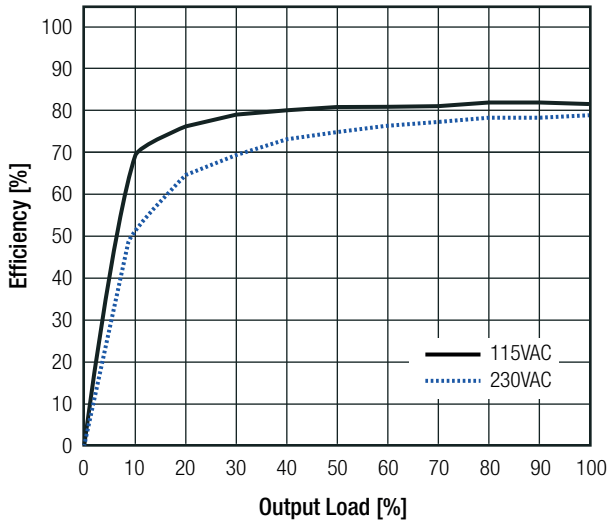
RECOM
AC/DC Converter

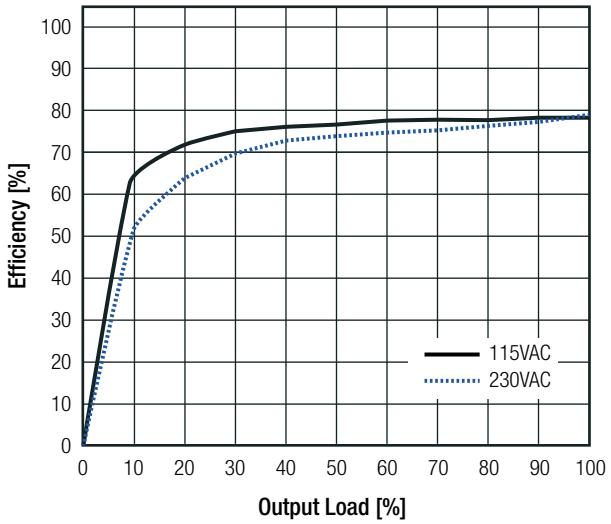
RAC04-C/230 Series

Specifications (measured at Ta= 25°C, nominal input voltage, full load otherwise noted)

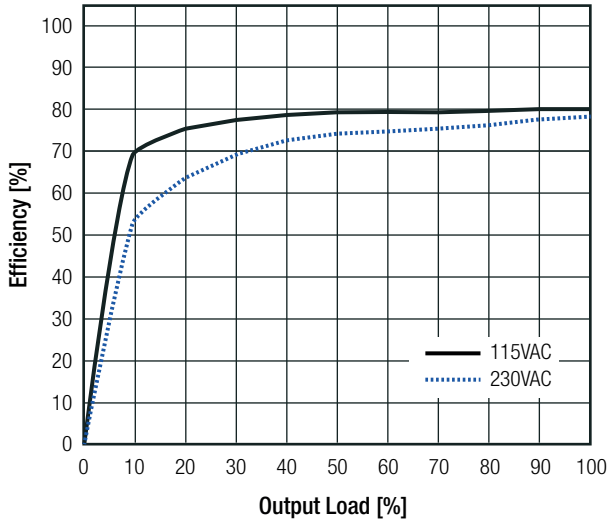
RAC04-24SC/230



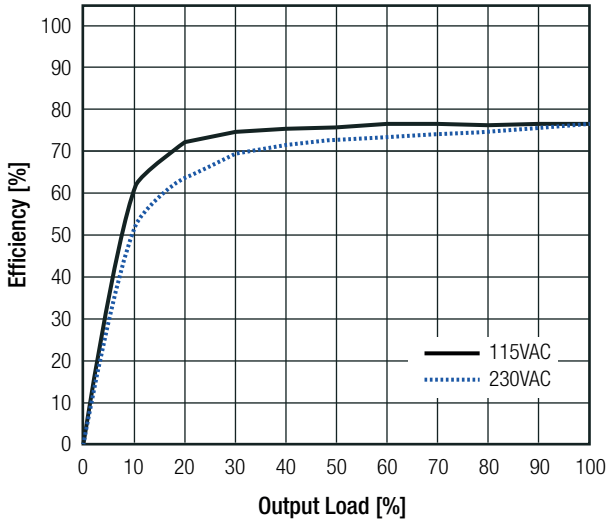
RAC04-05DC/230



RAC04-12DC/230



RAC04-0512DC/230



REGULATIONS

Parameter	Condition		Value
Output Accuracy	single and dual 5V/12V dual assymetrical		±2.0% typ. ±2.0% / ±10.0% typ.
Line Regulation	90-264VAC	single and dual 5V/12V dual assymetrical	±0.2% typ. ±0.2% / ±1.0% typ.
Load Regulation	10% to 100% load	3.3V, 5V output all others 5V/12V dual assymetrical	1.0% typ. 0.5% typ. 1.0% / 5.0% typ.

PROTECTIONS

Parameter	Type		Value
Short Circuit Protection (SCP)			automatic recovery
Over Voltage Category			OVC II
Isolation Voltage	I/P to O/P	tested for 1 minute	3.75kVAC
Isolation Resistance			100MΩ min.
Insulation Grade			reinforced
Leakage Current	230VAC / 50Hz		0.25mA max.

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RECOM

AC/DC Converter

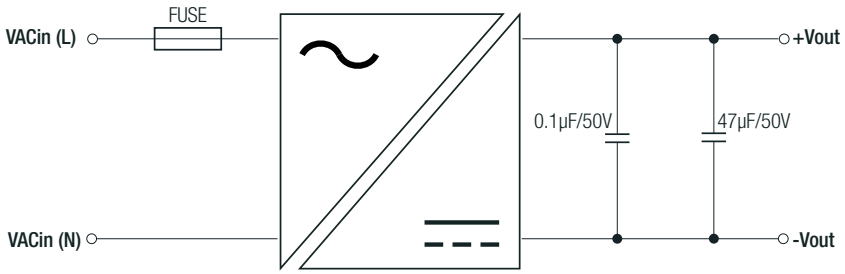
RAC04-C/230 Series

Specifications (measured at Ta= 25°C, nominal input voltage, full load otherwise noted)

Notes:

Note4: Refer to local safety regulations if input over-current protection is also required

Protection Circuit

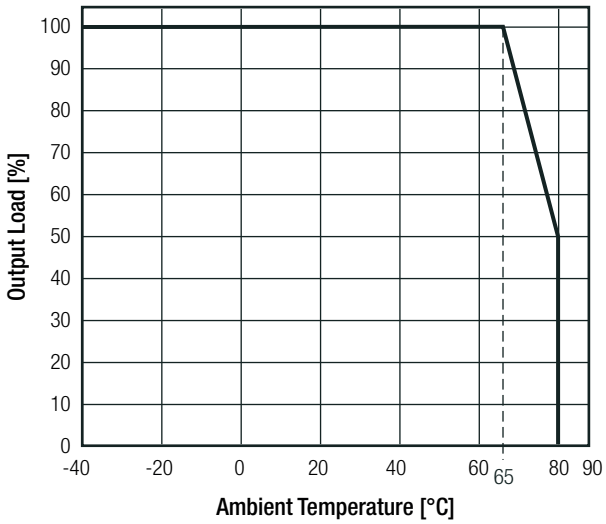


ENVIRONMENTAL

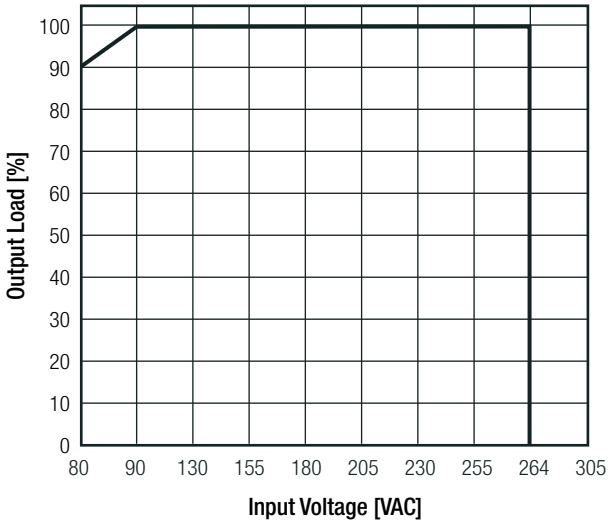
Parameter	Condition		Value
Operating Temperature Range	@ natural convection 0.1m/s	full load	-40°C to +65°C
		refer to derating graph	-40°C to +80°C
Operating Altitude			2000m
Operating Humidity	non-condensing		95% RH max.
Pollution Degree			PD2
Vibration			according to MIL-STD-810F standard
MTBF	according to MIL-HDBK-217F, G.B.	+25°C	500 x 10^3 hours

Derating Graph

(@ Chamber and natural convection 0.1m/s)



Line Derating



SAFETY AND CERTIFICATIONS

Certificate Type	Report / File Number	Standard
Information Technology Equipment, General Requirements for Safety (CB Scheme)	1310055-1-CB-M1	IEC60950-1:2005, 2nd Edition + A1:2009
Information Technology Equipment, General Requirements for Safety	E224736-A21	UL60950-1, 2nd Edition 2011 CAN/CSA C22.2 No. 60950-1-07, 2nd Edition, 2011
Audio/video, information and communication technology equipment - Safety requirements	AL106051	EN62368-1:2014 IEC62368-1:2014 2nd Edition
EAC	RU-AT.03.67361	TP TC 004/020, 2011
RoHS2+		RoHS-2011/65/EU + AM-2015/863

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RECOM

AC/DC Converter

RAC04-C/230 Series

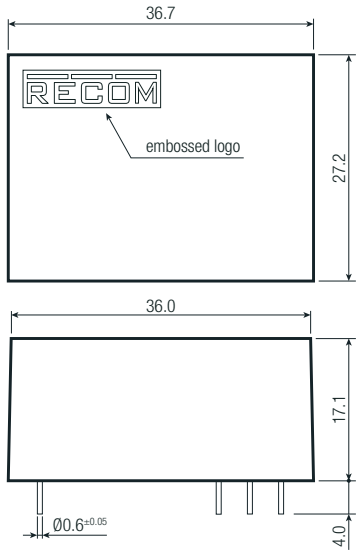
Specifications (measured at Ta= 25°C, nominal input voltage, full load otherwise noted)

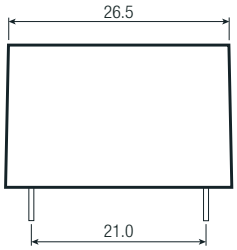
EMC Compliance	Report / File Number	Standard / Criterion
Electromagnetic compatibility of multimedia equipment - Emission requirements	T160225D10-E	EN55032, Class B
Information technology equipment - Immunity characteristics - Limits and methods of measurement		EN55024:2010
ESD Electrostatic discharge immunity test	Air: ±2, 4, 8kV Contact: ±4kV	IEC61000-4-2:2008, Criteria A
Radiated, radio-frequency, electromagnetic field immunity test	3V/m	IEC61000-4-3:2010, Criteria A
Fast Transient and Burst Immunity	AC Power Port: ±1kV	IEC61000-4-4:2004 + A1:2010, Criteria A
Surge Immunity	AC Power Port: L-N ±1kV	IEC61000-4-5:2005, Criteria A
Immunity to conducted disturbances, induced by radio-frequency fields	AC Power Port: 3V	IEC61000-4-6:2008, Criteria A
Power Magnetic Field Immunity	50Hz, 1A/m	IEC61000-4-8:2009, Criteria A
Voltage Dips and Interruptions	Voltage Dips: >95% Voltage Dips: 30% Interruptions: >95%	IEC61000-4-11:2004, Criteria A IEC61000-4-11:2004, Criteria A IEC61000-4-11:2004, Criteria B

DIMENSION AND PHYSICAL CHARACTERISTICS

Parameter	Type	Value
Material	case potting PCB	black plastic (UL94 V-0) silicone (UL94 V-0) FR4 (UL94 V-0)
Dimension (LxWxH)		36.7 x 27.2 x 17.1mm
Weight		31.5g typ.

Dimension Drawing (mm)





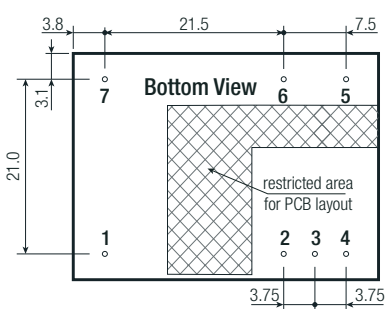
Pinning information

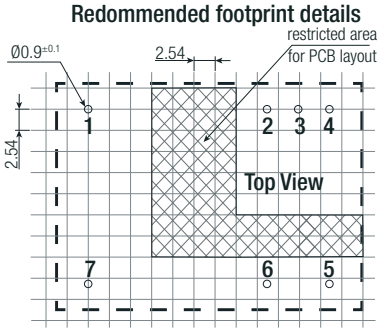
Pin #	Single	Dual	Dual (assymetric)
1	No Pin	No Pin	No Pin
2	+Vout	+Vout	+5Vout
3	-Vout	Com	Com
4	NC	-Vout	+12Vout
5	VAC in (L)	VAC in (L)	VAC in (L)
6	VAC in (N)	VAC in (N)	VAC in (N)
7	NC*	NC*	NC*

*Pin 7 is NC but need 4mm minimum clearence to ground for safety

NC= no connection
Tolerance: xx.x= ±0.5mm
xx.xx= ±0.25mm

Redommended footprint details





RECOM
AC/DC Converter

RAC04-C/230 Series

Specifications (measured at Ta= 25°C, nominal input voltage, full load otherwise noted)

PACKAGING INFORMATION		
Parameter	**Type**	**Value**
Packaging Dimension (LxWxH)	tube	520.0 x 32.0 x 27.0mm
Packaging Quantity		12pcs
Storage Temperature Range		-40°C to +100°C