

# Features

## Regulated Converter

- Wide input range 85-264VAC
- Standby mode optimized PSU (ENER Lot 6)
- Ultra-high efficiency over entire load range
- Operating temperature range: -40°C to +85°C
- Class II installations (without FG)
- EMC compliant without external components
- No load power consumption 40mW typ.

**RECOM**  
AC/DC Converter

## RAC15-K

15 Watt  
Single  
Output



### Notes:

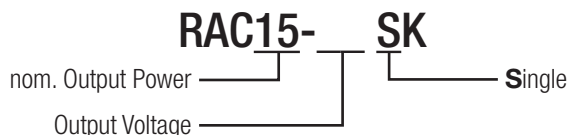
Note1: Efficiency is tested at 230VAC input and constant resistive load at +25°C ambient

Note2: Max Cap Load is tested at nominal input and full resistive load

## Selection Guide

Part Number	Input Voltage Range [VAC]	Output Voltage [VDC]	Output Current [mA]	Efficiency typ <sup>(1)</sup> [%]	Max. Capacitive Load <sup>(2)</sup> [μF]
RAC15-05SK	85-264	5	3000	84	10000
RAC15-12SK	85-264	12	1670	86	8000
RAC15-15SK	85-264	15	1000	86	1500
RAC15-24SK	85-264	24	630	85	1000

## Model Numbering



### Ordering Examples:

RAC15-05SK      5Watt      5Vout      Single Output

IEC/EN62368-1 certified  
UL62368-1 certified  
CAN/CSA-C22.2 No. 62368-1-14 certified  
IEC/EN60335 pending  
IEC/EN61204-3 compliant  
EN55032/14 compliant  
EN55024 compliant  
CB Report

## Specifications (measured @ Ta= 25°C, nom. Vin, full load and after warm-up unless otherwise stated)

### BASIC CHARACTERISTICS

Parameter	Condition	Min.	Typ.	Max.
Internal Input Filter				Pi type
Input Voltage Range <sup>(3,4)</sup>	nom. Vin = 230VAC	85VAC 120VDC	230VAC	264VAC 370VDC
Input Current	115VAC 230VAC			400mA 350mA
Inrush Current	cold start at +25°C	115VAC 230VAC		20A 40A

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**Specifications** (measured @ Ta= 25°C, nom. Vin, full load and after warm-up unless otherwise stated)

### BASIC CHARACTERISTICS

Parameter	Condition	Min.	Typ.	Max.
No Load Power Consumption	230VAC		40mW	
ErP Lot 6 Standby Mode Conformity (Output Load Capability)	0.5W Input Power = 1.0W 2.0W			0.3W 0.7W 1.6W
Input Frequency Range	AC Input	47Hz		63Hz
Minimum Load		0%		
Power Factor	115VAC 230VAC	0.6 0.5		
Start-up Time			150ms	
Rise Time			40ms	
Hold-up Time	115VAC 230VAC		15ms 90ms	
Internal Operating Frequency				100kHz
Output Ripple and Noise <sup>(5)</sup>	20MHz BW		100mVp-p	

#### Notes:

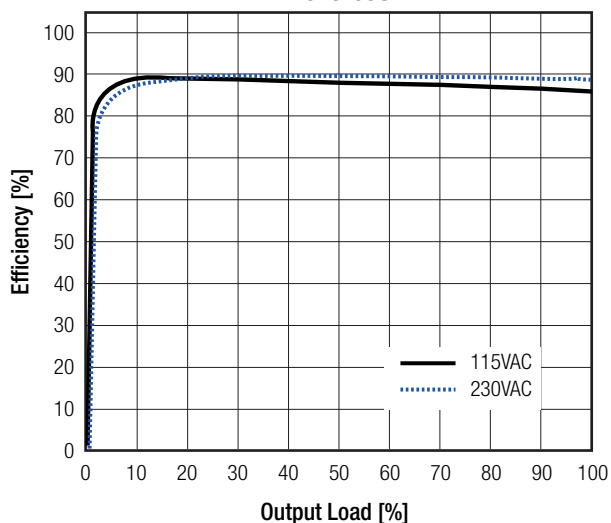
Note3: The products were submitted for safety files at AC-Input operation

Note4: Refer to line derating graph on page 4

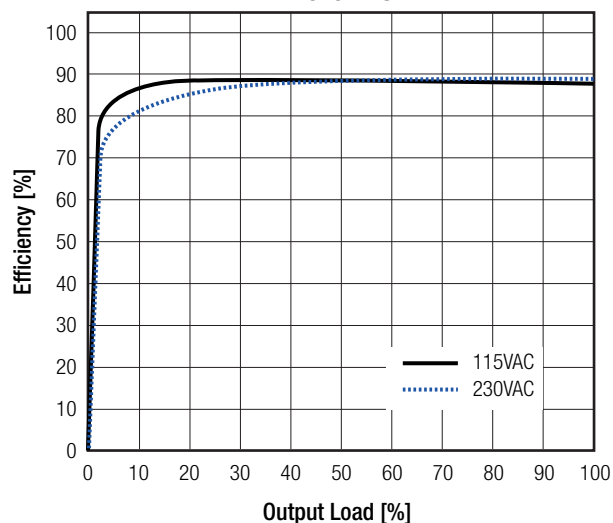
Note5: Measurements are made with a 1.0µF MLCC across output (low ESR)

#### Efficiency vs. Load

RAC15-05SK



RAC15-12SK



### REGULATIONS

Parameter	Condition	Value
Output Accuracy		±2.0% typ.
Line Regulation	low line to high line	±1.0% typ.
Load Regulation <sup>(6)</sup>	10% to 100% load	1.0% typ.
Transient Response	25% load step change recovery time	4.0% max. 500µs typ.

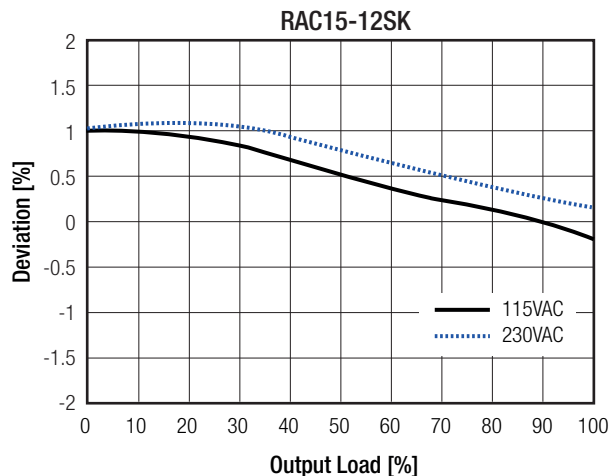
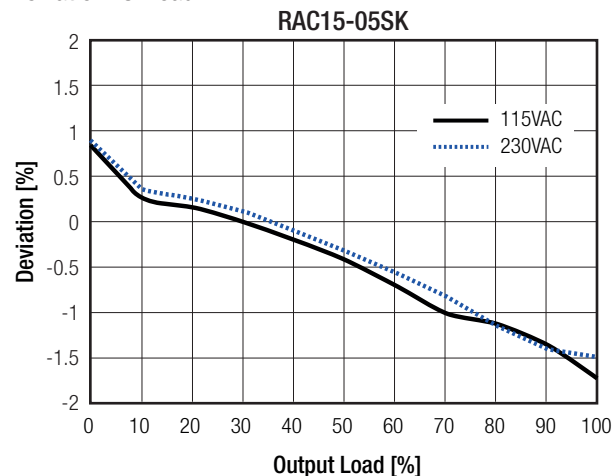
#### Notes:

Note6: Operation below 10% load will not harm the converter, but specifications may not be met

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**Specifications** (measured @ Ta= 25°C, nom. Vin, full load and after warm-up unless otherwise stated)

Deviation vs. Load



### PROTECTIONS

Parameter	Type		Value
Input Fuse <sup>(7)</sup>	internal		T3.15A, slow blow type
Short Circuit Protection (SCP)	below 100mΩ		hiccup, auto recovery
Over Voltage Protection (OVP)			150% - 195%, latch off mode
Over Current Protection (OCP)			150% - 195%, hiccup mode
Over Voltage Category			OVCII
Class of Equipment			Class II
Isolation Voltage <sup>(8)</sup>	I/P to O/P	tested for 1 minute	3kVAC
Isolation Resistance		V <sub>iso</sub> = 500VDC	1GΩ min.
Isolation Capacitance			100pF max.
Insulation Grade			reinforced
Leakage Current			0.25mA max.

**Notes:**

Note7: Refer to local safety regulations if input over-current protection is also required

Note8: For repeat Hi-Pot testing, reduce the time and/or the test voltage

### ENVIRONMENTAL

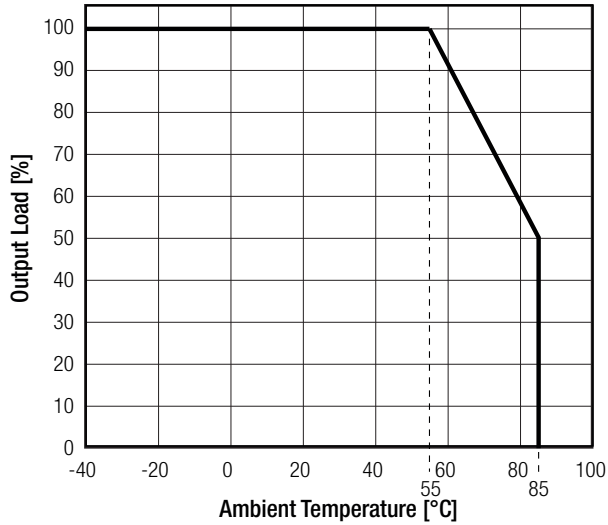
Parameter	Condition		Value
Operating Temperature Range	natural convection 0.1m/s	full load	-40°C to +55°C
		refer to derating graph	-40°C to +85°C
Maximum Case Temperature			+95°C
Temperature Coefficient			0.05%/K
Operating Altitude			3000m
Operating Humidity	non-condensing		20% - 90% RH max.
IP Rating			IP20
Pollution Degree			PD2
Vibration	according to MIL-STD-202G		10-500Hz, 2G 10min./1cycle, period 60min. along x,y,z axes
Design Lifetime	+25°C		300 x 10 <sup>3</sup> hours
	+55°C		40 x 10 <sup>3</sup> hours
MTBF	according to MIL-HDBK-217F, G.B.	+25°C	>450 x 10 <sup>3</sup> hours
		+55°C	>56 x 10 <sup>3</sup> hours

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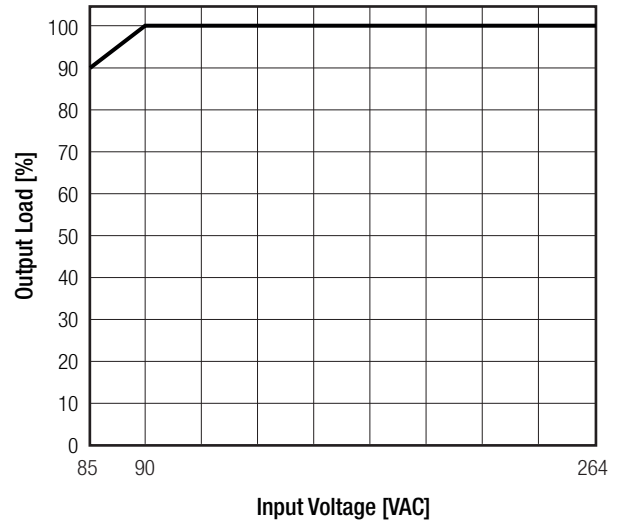
**Specifications** (measured @ Ta= 25°C, nom. Vin, full load and after warm-up unless otherwise stated)

### Derating Graph

(@ Chamber and natural convection 0.1 m/s)



### Line Derating



## SAFETY AND CERTIFICATIONS

Certificate Type (Safety)	Report / File Number	Standard
Audio/Video, information and communication technology equipment - Safety requirements	E224736	UL62368-1, 2nd Edition, 2014 CAN/CSA C22.2 Nr. 62368-1-14, 2nd Ed. 2014
Audio/Video, information and communication technology equipment - Safety requirements (CB Scheme)	E491408-A6002-CB-1	IEC62368-1:2014 2nd Edition EN62368-1:2014 + A11:2017
Household and similar electrical appliances – Safety – Part 1: General requirements	pending	IEC60335-1:2010 + AMD2:2016 + COR1:2016 EN60335-1:2012 + A11:2014 + A13:2017
RoHS 2		RoHS-2011/65/EU

EMC Compliance	Condition	Standard / Criterion
Low voltage power supplies, d.c. output Part 3: Electromagnetic compatibility (EMC)		IEC/EN61204-3:2000, Class B
Electromagnetic compatibility of multimedia equipment - Emission requirements	without external filter	EN55032:2015, Class B
Electromagnetic compatibility of household appliances, electric tools and similar apparatus - Emission Requirements		EN55014-1:2006+A2:2011
Information technology equipment - Immunity characters - Limits and methods of measurement		EN55024:2010 + A1:2015
Electromagnetic compatibility of household appliances, electric tools and similar apparatus - Immunity Requirements		EN55014-2:2015
ESD Electrostatic discharge immunity test	air $\pm 2, 4, 8$ kV, contact $\pm 2, 4$ kV	EN61000-4-2:2009, Criteria B
Radiated, radio-frequency, electromagnetic field immunity test	10V/m, 3V/m, 1V/m	EN61000-4-3:2006 + A1:2008, Criteria A
Fast Transient and Burst Immunity	AC Power Port: $\pm 2.0$ kV DC Output Port: $\pm 2.0$ kV	EN61000-4-4:2012, Criteria B
Surge Immunity	AC Power Port: L-N $\pm 1.0$ kV DC Output Port: $\pm 0.5$ kV	EN61000-4-5:2014+A1:2017, Criteria B
Immunity to conducted disturbances, induced by radio-frequency fields	AC Power Port: 10V DC Output Port: 10V	EN61000-4-6:2014, Criteria A
Power Magnetic Field Immunity	50Hz, 30A/m	EN61000-4-8:2010, Criteria A
Voltage Dips and Interruptions	Voltage Dips 20% Voltage Dips 30% Voltage Dips 60% Voltage Dips 100% Voltage Interruptions > 95%	EN61000-4-11:2004+A1:2017, Criteria C EN61000-4-11:2004+A1:2017, Criteria C EN61000-4-11:2004+A1:2017, Criteria C EN61000-4-11:2004+A1:2017, Criteria B EN61000-4-11:2004+A1:2017, Criteria C

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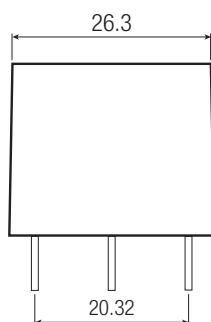
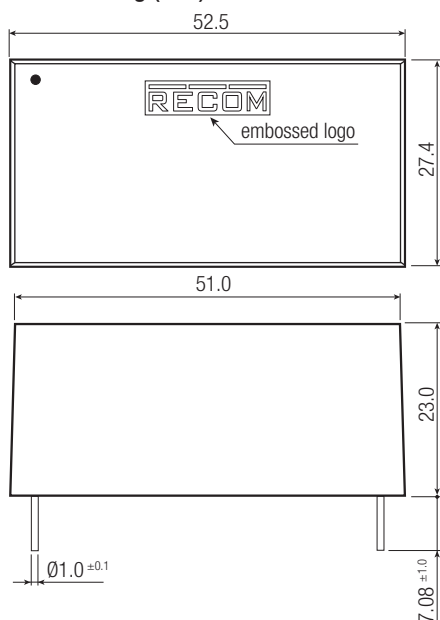
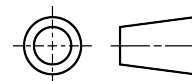
**Specifications** (measured @ Ta= 25°C, nom. Vin, full load and after warm-up unless otherwise stated)

EMC Compliance	Condition	Standard / Criterion
Limits of Voltage Fluctuations & Flicker		EN61000-3-3:2013
Limitations on the amount of electromagnetic interference allowed from digital and electronic devices		FCC 47 CFR Part 15 Subpart B, Class B
American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz		ANSI C63.4-2014, Class B

### DIMENSION AND PHYSICAL CHARACTERISTICS

Parameter	Type	Value
Material	case potting PCB baseplate	black plastic, (UL94V-0) silicone, (UL94V-0) FR4, (UL94V-0) black plastic, (UL94V-0)
Dimension (LxWxH)		52.5 x 27.4 x 23.0mm
Weight		60g typ.

#### Dimension Drawing (mm)

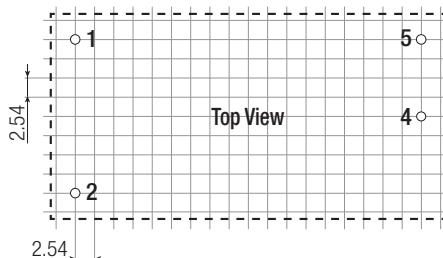
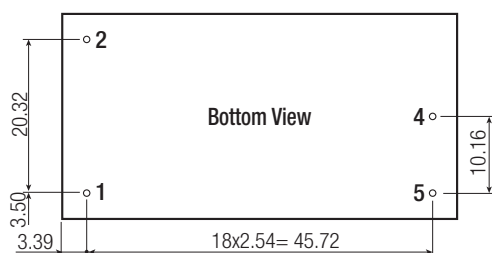


#### Pinning information

Pin #	Single
1	VAC in (N)
2	VAC in (L)
4	-Vout
5	+Vout

Tolerance: xx.x= ±0.5mm  
xx.xx= ±0.25mm

#### Recommended Footprint Details



### PACKAGING INFORMATION

Parameter	Type	Value
Packaging Dimension (LxWxH)	tube	490.0 x 56.0 x 40.0mm
Packaging Quantity	tube	15pcs
Storage Temperature Range		-40°C to +85°C
Storage Humidity	non-condensing	20% to 90% RH max.

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