

# Features

- 15 Watt PCB mount package
- Universal input voltage range
- 3kVAC / 1 minute isolation
- Low output ripple and noise
- Short circuit protected
- UL certified, CE marked

# Regulated Converter



# RAC15-A

15 Watt  
Single,  
Dual, Double,  
Triple Output



UL60950-1 certified  
CSA C22.2 No. 60950-1-07 certified  
EN60950-1 certified  
EN55032 compliant  
EN55024 compliant

## Description

UL certified switching AC/DC power module for PCB, screw terminal connection or DIN-rail mounting.

Consider RAC15-K series for new designs

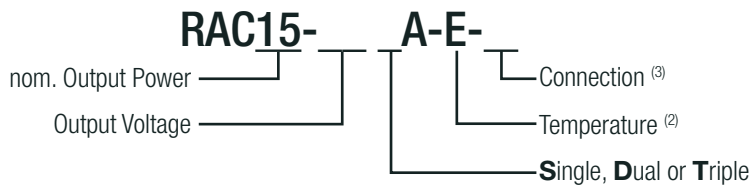
## Selection Guide

Part Number	Input Voltage Range [VAC]	Output Voltage [VDC]	Output Current [mA]	Efficiency typ <sup>(1)</sup> [%]	Max. Capacitive Load [µF]
RAC15-05SA <sup>(2,3)</sup>	90-264	5	3000	74	31000
RAC15-12SA <sup>(2,3)</sup>	90-264	12	1250	79	4500
RAC15-15SA <sup>(2,3)</sup>	90-264	15	1000	78	2700
RAC15-24SA <sup>(2,3)</sup>	90-264	24	625	80	900
RAC15-05DA <sup>(2,3)</sup>	90-264	±5	±1500	76	±13500
RAC15-12DA <sup>(2,3)</sup>	90-264	±12	±650	79	±2700
RAC15-15DA <sup>(2,3)</sup>	90-264	±15	±500	77	±1400
RAC15-0512TA <sup>(2,3)</sup>	90-264	5/±12	2000/±200	73	14000/±900
RAC15-0515TA <sup>(2,3)</sup>	90-264	5/±15	2000/±150	73	14000/±680

### Notes:

Note1: Efficiency is tested at nominal input and full load at +25°C ambient

## Model Numbering



### Notes:

Note2: with suffix "-E" for -40°C to +70°C operating temperature range without suffix standard operating temperature range (-25°C to +70°C)

Note3: no suffix for standard package (THT)  
add suffix "ST" for screw terminal module

### Ordering Examples:

RAC15-05SA	15 Watt	5Vout	Single Output	Standard Temperature	THT
RAC15-05DA-E	15 Watt	±5Vout	Dual Output	Extended Temperature	THT
RAC15-0512TA-ST	15 Watt	5/±12Vout	Triple Output	Standard Temperature	Screw Terminal
RAC15-15SA-E-ST	15 Watt	15Vout	Single Output	Extended Temperature	Screw Terminal

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

**BASIC CHARACTERISTICS**

Parameter	Condition		Min.	Typ.	Max.
Input Voltage Range <sup>(4)</sup>	nom. Vin = 230VAC		90VAC 120VDC	230VAC	264VAC 370VDC
Input Current	115VAC 230VAC				310mA 170mA
Inrush Current	2ms max.	115VAC	standard with suffix "-E"		10A 23A
		230VAC	standard with suffix "-E"		20A 46A
No load Power Consumption	115VAC/230VAC				1.37W
Input Frequency Range	AC Input		47Hz		440Hz
Minimum Load	Single, Dual Triple		0%	10%	
Hold-up Time	115VAC/230VAC		15ms		
Internal Operating Frequency				100kHz	
Output Ripple and Noise <sup>(5)</sup>	20MHz BW	Noise Ripple	<0.5% Vout + 50mVp-p max. <0.2% Vout + 40mVp-p max.		

**Notes:**

Note4: The products were submitted for safety files at AC-Input operation

Note5: Measurements are made with a 0.1µF and 47µF MLCC across output (low ESR)

**REGULATIONS**

Parameter	Condition		Value
Output Accuracy			±2.0% typ.
Line Regulation	low line to high line	Single, Dual Triple	±0.5% typ. ±1.0% typ. (+5Vout) / ±5.0 typ. (±Vout)
Load Regulation <sup>(6)</sup>	5% to 100% load	Single Dual Triple	0.5% typ. 3.0% typ. 2.0% typ. (+5Vout) / 5.0 typ. (±Vout)

**Notes:**

Note6: Operation below 5% load will not harm the converter, but specifications may not be met

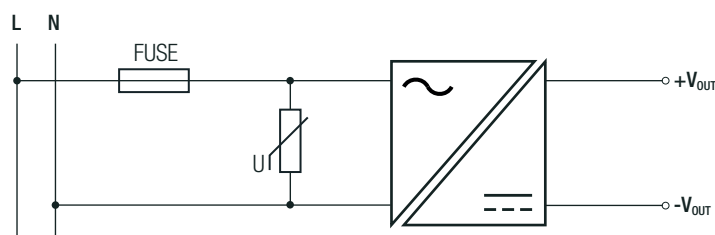
**PROTECTIONS**

Parameter	Type		Value
Short Circuit Protection (SCP)			Hiccup mode, auto recovery
Over Voltage Protection (OVP)			zener diode clamp
Isolation Voltage	I/P to O/P	tested for 1 minute	3kVAC
Isolation Resistance			100MΩ max.
Leakage Current			0.75mA max.

**Notes:**

Note7: Refer to local safety regulations if input over-current protection is also required. Recommended fuse: slow blow type

Note8: An external MOV is recommended. The varistor should comply with IEC-61051-2. e.g. 14S471K series

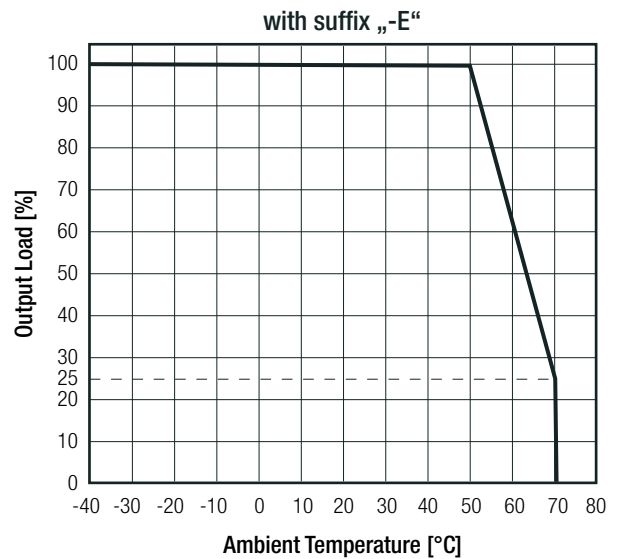
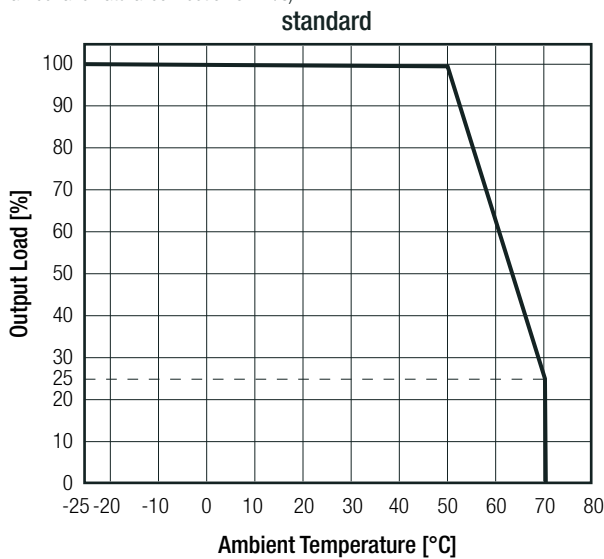


**Specifications** (measured @ Ta= 25°C, nom. Vin, full load and after warm-up unless otherwise stated)

ENVIRONMENTAL				
Parameter	Condition		Value	
Operating Temperature Range	@ natural convection 0.1m/s	full load	standard	-25°C to +50°C
			with suffix "-E"	-40°C to +50°C
Temperature Coefficient			±0.02%/K typ.	
Operating Humidity	non-condensing		95% RH max.	
MTBF	according to MIL-HDBK-217F, G.B.	+25°C	>200 x 10 <sup>3</sup> hours	

**Derating Graph**

(@ Chamber and natural convection 0.1m/s)



**SAFETY AND CERTIFICATIONS**

Certificate Type (Safety)	Report / File Number	Standard
Information Technology Equipment, General Requirements for Safety	E196683	UL60950-1, 2nd Edition, 2007 CAN/CSA-C22.2 No. 60950-1-07, 2nd Edition, 2007
Information Technology Equipment, General Requirements for Safety		EN60950-1:2006 + A2:2013
EAC Safety of Low Voltage Equipment	RU-AT.49.09571	TP TC 004/2011
RoHS2+		RoHS-2011/65/EU + AM-2015/863

EMC Compliance	Condition	Standard / Criterion
Electromagnetic compatibility of multimedia equipment – Emission Requirements		EN55032:2015, Class B
Information technology equipment - Immunity characteristics - Limits and methods of measurement		EN55024:2010 + A1:2015
Limits for harmonic current emissions		EN61000-3-2: 2014
Limitation of voltage fluctuations/flicker in low-voltage systems		EN61000-3-3: 2013

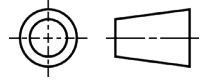
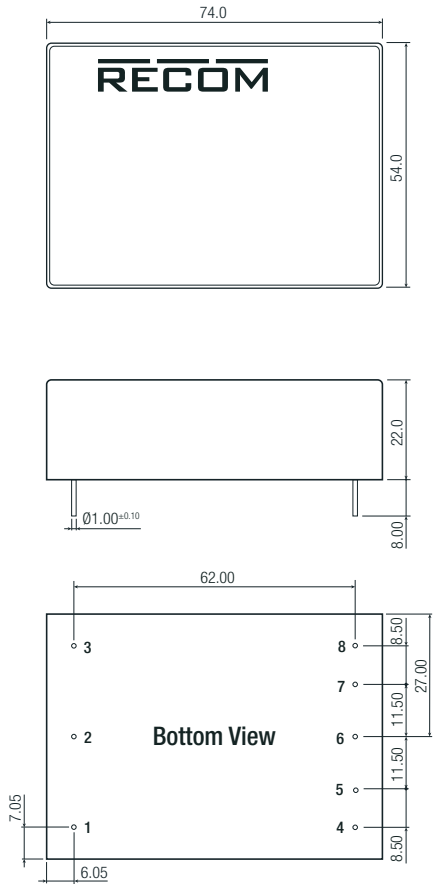
**DIMENSION AND PHYSICAL CHARACTERISTICS**

Parameter	Type	Value
Material	case	epoxy with fibreglas (UL94V-0)
Dimension (LxWxH)	standard	74.0 x 54.0 x 22.0mm
	with suffix "-ST"	111.9 x 64.6 x 27.6mm
Weight	standard	133g typ.
	with suffix "-ST"	208g typ.

continued on next page

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

Dimension Drawing (mm)



Pin Connections

Pin #	Single	Dual	Triple
1	FG	FG	FG
2	VAC in (N)	VAC in (N)	VAC in (N)
3	VAC in (L)	VAC in (L)	VAC in (L)
4	no Pin	no Pin	-Vout
5	-Vout	-Vout	Com
6	no Pin	Com	+Vout
7	+Vout	+Vout	+5V Rtn
8	no Pin	no Pin	+5Vout

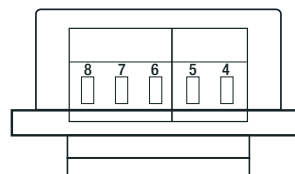
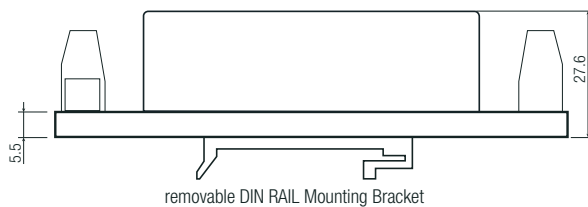
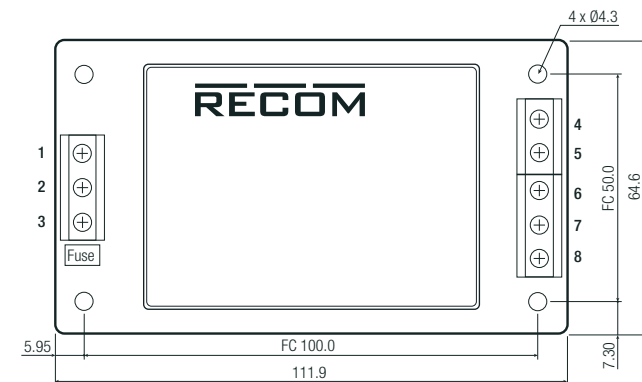
Tolerance: xx.x=  $\pm 0.5$ mm  
xx.xx=  $\pm 0.25$ mm

Screw terminal information

#	Single	Dual	Triple
1	FG	FG	FG
2	VAC in (N)	VAC in (N)	VAC in (N)
3	VAC in (L)	VAC in (L)	VAC in (L)
4	NC	NC	-Vout
5	-Vout	-Vout	Com
6	NC	Com	+Vout
7	+Vout	+Vout	+5V Rtn
8	NC	NC	+5Vout

7.5mm Pitch  
suitable wire: 24-12AWG (0.5-2.5mm<sup>2</sup>)  
wire stripping length: 7mm typ.  
recommended tightening torque: 0.5Nm  
NC = No Connection  
FC = Fixing Centers  
Tolerance: xx.x=  $\pm 0.5$ mm  
xx.xx=  $\pm 0.25$ mm

Screw Terminal Module "ST" version



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

PACKAGING INFORMATION			
Parameter	Type		Value
Packaging Dimension (LxWxH)	cardboard box	standard	260.0 x 70.0 x 42.0mm
		with suffix "-ST"	119.0 x 64.0 x 54.0mm
Packaging Quantity	standard		3pcs
	with suffix "-ST"		1pcs
Storage Temperature Range			-40°C to +85°C
Storage Humidity	non-condensing		95% RH

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