!NOT RECOMMENDED FOR NEW DESIGNS!

Features

Regulated Converter

- 0.25W maximum no load power consumption
- Efficiency up to 83%
- Isolated output 3kVAC / 1 minute
- SCP, OVP, OCP(OLP) protection
- Wide operating temperature range -40°C to +70°C with derating
- Universal input 90-264VAC

RECOM
AC/DC Converter

RAC20-N

20 Watt Single Output

3 YEAR warranty

Description

The RAC20-N series is a universal-input, board-mounting AC/DC module that delivers 20W in a compact 2" x 1" footprint. The converter is pin-compatible with the RAC05-SC, RAC10-SC and RAC20-SB models, offering a simple power upgrade or a cost-down option without requiring any PCB changes.

Selection Guide

Part Number	Input Voltage Range [VAC]	Output Voltage [VDC]	Output Current [mA]	Efficiency typ. (1) [%]	Max. Capacitive Load [µF]	Output Power max. [W]
RAC20-3.3SN	90-264	3.3	3600	73	5000	12
RAC20-05SN	90-264	5	3600	78	5000	18
RAC20-12SN	90-264	12	1660	82	1500	20
RAC20-15SN	90-264	15	1330	83	1000	20
RAC20-24SN	90-264	24	833	83	470	20

Notes:

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

Model Numbering

RAC20-__ __SN

- RAC20-__ : nom. Output Power
- RAC20-__ : Output Voltage
- SN: **S**ingle

Ordering Examples:

RAC20-05SN	20 Watt	5Vout	Single Output
RAC20-24SN	20 Watt	24Vout	Single Output

PREFERRED ALTERNATIVES
Please consider these alternatives:

RAC20-K Series

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

RECOM

AC/DC Converter

RAC20-N Series

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 (2)			90VAC 120VDC	230VAC	264VAC 370VDC
Input Current	115VAC 230VAC				385mA 250mA
Inrush Current	2ms max., cold start	115VAC 230VAC			20A 40A
No load Power Consumption	115VAC/230VAC				0.25W
Input Frequency Range	AC Input		47Hz		440Hz
Minimum Load			0%		
Hold-up Time	115VAC 230VAC			10ms 50ms	
Output Ripple and Noise (3)	20MHz BW				120mVp-p

Notes:

Note2: The products were submitted for safety files at AC-Input operation

Note3: Measurements are made with a 0.1µF and 47µF MLCC in parallel across output (low ESR)

REGULATIONS

Parameter	Condition	Value
Output Accuracy		±2.0% typ.
Line Regulation	low line to high line, full load	±0.5% typ.
Load Regulation (4)	5% to 100% load	1.0% typ.

Notes:

Note4: Operation below 5% load will not harm the converter, but specifications may not be met

PROTECTIONS

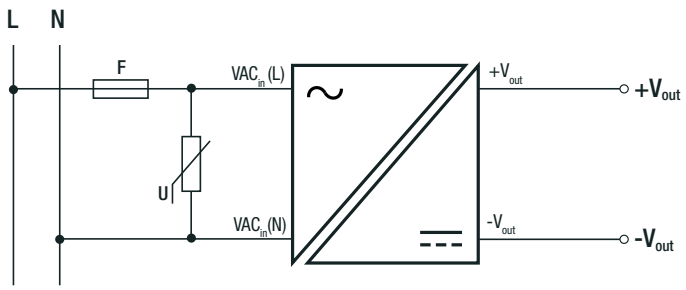
Parameter	Type		Value
Short Circuit Protection (SCP)			Hiccup mode, auto recovery
Over Voltage Protection (OVP)			110% - 140%, zener diode clamp
Over Current Protection (OLP)			Hiccup mode, auto recovery
Isolation Voltage	I/P to O/P	tested for 1 minute	3kVAC

Notes:

Note5: Refer to local safety regulations if input over-current protection is also required. Recommended fuse: slow blow type

Note6: An external MOV is recommended. The varistor should comply with IEC-61051-2. e.g. 14S471K series

Protection Circuit



RECOM

AC/DC Converter

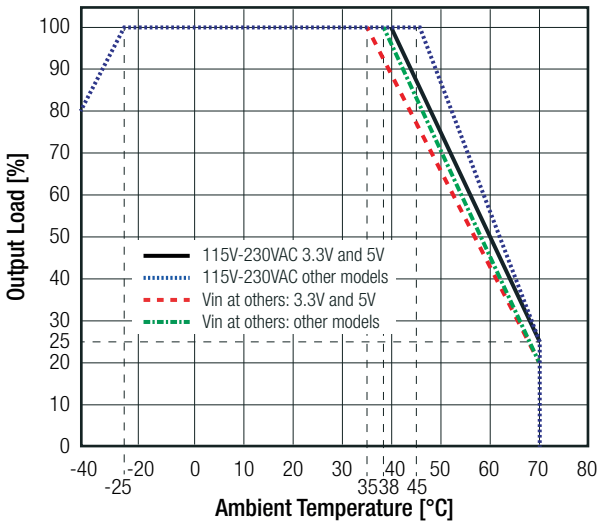
RAC20-N Series

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	-25°C to +35°C
		refer to derating graph	-40°C to +70°C
Maximum Case Temperature			+80°C
Temperature Coefficient			±0.05%/K
Operating Humidity	non-condensing		95% RH max.
MTBF	according to MIL-HDBK-217F, G.B.	+25°C	400 x 10^3 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 (LVD)	SPCLVD1605075	EN60950-1:2006 + A2:2013 IEC60950-1:2005 2nd Edition + 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
ESD Electrostatic discharge immunity test	±8.0kV Air, ±4.0kV Contact	IEC61000-4-2, Criteria A
Radiated, radio-frequency, electromagnetic field immunity test	3V/m	IEC61000-4-3, Criteria A
Fast Transient and Burst Immunity	AC Power Port: ±1.0kV	IEC61000-4-4, Criteria A
Surge Immunity	AC Power Port: ±1.0kV DC Output: L-PE + N-PE ±2.0kV	IEC61000-4-5, Criteria A
Immunity to conducted disturbances, induced by radio-frequency fields	AC Power Port: 3V	IEC61000-4-6, Criteria A
Power Magnetic Field Immunity	50Hz, 1A/m	IEC61000-4-8, Criteria A
Voltage Dips and Interruptions	Voltage Dips >95% Voltage Dips 30% Voltage Interruptions >95%	IEC61000-4-11:2004, Criteria A IEC61000-4-11:2004, Criteria A IEC61000-4-11:2004, Criteria C

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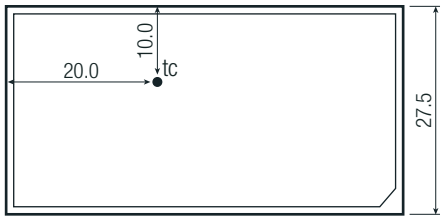
RAC20-N Series

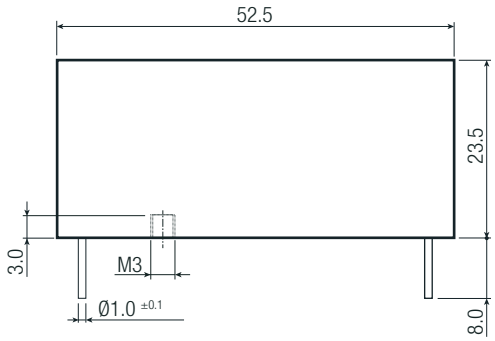
Specifications (measured @ Ta= 25°C, nom. Vin, full load and after warm-up unless otherwise stated)

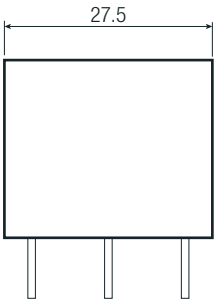
DIMENSION AND PHYSICAL CHARACTERISTICS

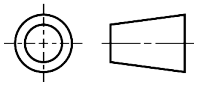
Parameter	Type	Value
Material	case potting	plastic resin (UL94V-0) silicone (UL94V-0)
Dimension (LxWxH)		52.5 x 27.5 x 23.5mm
Weight		62g typ.

Dimension Drawing (mm)







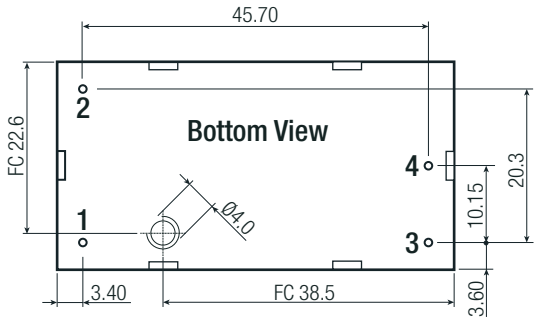


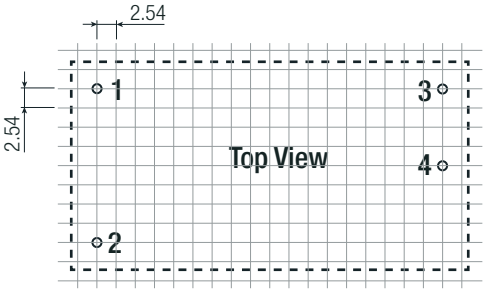
Pinning information

Pin #	Single
1	VAC in (L)
2	VAC in (N)
3	+VDC out
4	-VDC out

recommended tightening tourgue= 1.21Nm max.
tc= case temperature measuring point
FC= fixing centers
Tolerance: xx.x= ±0.5mm
xx.xx= ±0.35mm
Pin width: ±0.05mm

Recommended Footprint Details





PACKAGING INFORMATION

Parameter	Type	Value
Packaging Dimension (LxWxH)	cardboard box	260.0 x 70.0 x 42.0mm
Packaging Quantity		8pcs
Storage Temperature Range		-40°C to +85°C
Storage Humidity	non-condensing	95% RH max.