Features

Regulated Converter

- Compact AC-DC power supply
- 20 Watt PCB mount package
- Universal input voltage range
- 3KVAC / 1 minute isolation
- Low output ripple and noise
- Short circuit protected
- Anti-vibration mechanical fixing

RECOM

AC/DC Converter

RAC20-B

20 Watt Single Output

Description

Compact switching AC/DC power module for PCB, screw-terminal connection or DIN-rail mounting. The converter is pin compatible with the RAC05-SB, RAC10-SB and RAC20-SN models. A threaded insert is provided for additional mechanical fixing.

Consider RAC20-K series for new designs

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]
RAC20-3.3SB (2)	90 - 264	3.3	3600	74	4500	11.9
RAC20-05SB (2)	90 - 264	5	3600	78	3500	18
RAC20-12SB (2)	90 - 264	12	1660	82	1800	20
RAC20-15SB (2)	90 - 264	15	1330	83	1500	20
RAC20-24SB (2)	90 - 264	24	833	83	1200	20

Notes:

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

EN60950-1 certified
EN55032 compliant
EN55024 compliant

Model Numbering

RAC20- SB-

- RAC20-: nom. Output Power
- RAC20-: Output Voltage
- SB-: Connection (2)
- SB-: **S**ingle

Notes:

Note2: no suffix for standard package (THT)
add suffix "ST" for screw terminal module

Ordering Examples:

RAC20-05SB	20 Watt	5Vout	Single Output	THT
RAC20-24SB-ST	20 Watt	24Vout	Single Output	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 (3)	nom. Vin = 230VAC		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				470mW
Input Frequency Range	AC Input		47Hz		440Hz
Minimum Load			0%		
Hold-up Time	115VAC 230VAC		12ms 56ms		
Internal Operating Frequency			100kHz		130kHz
Output Ripple and Noise (4)	20MHz BW	Noise (3.3Vout, 5Vout) Ripple (3.3Vout, 5Vout) Ripple and Noise (Others)			75mVp-p 120mVp-p 1.0% Vout

Notes:

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

Note4: Measurements are made with a 0.1µF and 47µF MLCC across output (low ESR)

REGULATIONS

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

Notes:

Note5: Operation below 5% load will not harm the converter, but specifications may not be met

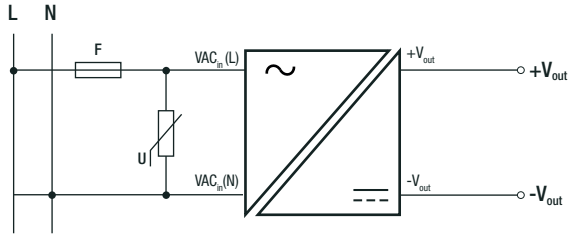
PROTECTIONS

Parameter	Type		Value
Short Circuit Protection (SCP)			Hiccup mode, auto recovery
Over Voltage Protection (OVP)			zener diode clamp
Over Voltage Category			OVC II
Isolation Voltage (6)	I/P to O/P	tested for 1 minute	3kVAC
Isolation Resistance			100MΩ min.
Leakage Current			0.75mA max.

Notes:

Note6: Refer to local safety regulations if input over-current protection is also required. Recommended fuse: slow blow type

Note7: An external MOV is recommended. The varistor should comply with IEC-61051-2. e.g. 14S471K series

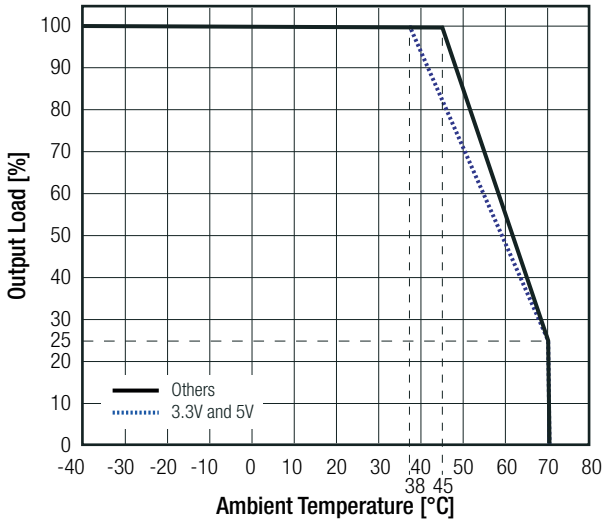


Specifications (measured @ Ta= 25°C, nom. Vin, full load and after warm-up unless otherwise stated)

ENVIRONMENTAL

Parameter	Condition		Value
Operating Temperature Range	@ natural convection 0.1m/s	full load (3.3V, 5V) full load (others)	-40°C to +38°C -40°C to +45°C
		refer to derating graph	-40°C to +70°C
Temperature Coefficient			±0.02%/K typ.
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		EN60950-1:2006 + A2:2013
EAC Safety of Low Voltage Equipment	RU-AT.49.09571	TP TC 004/2011
RoHS 2+		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

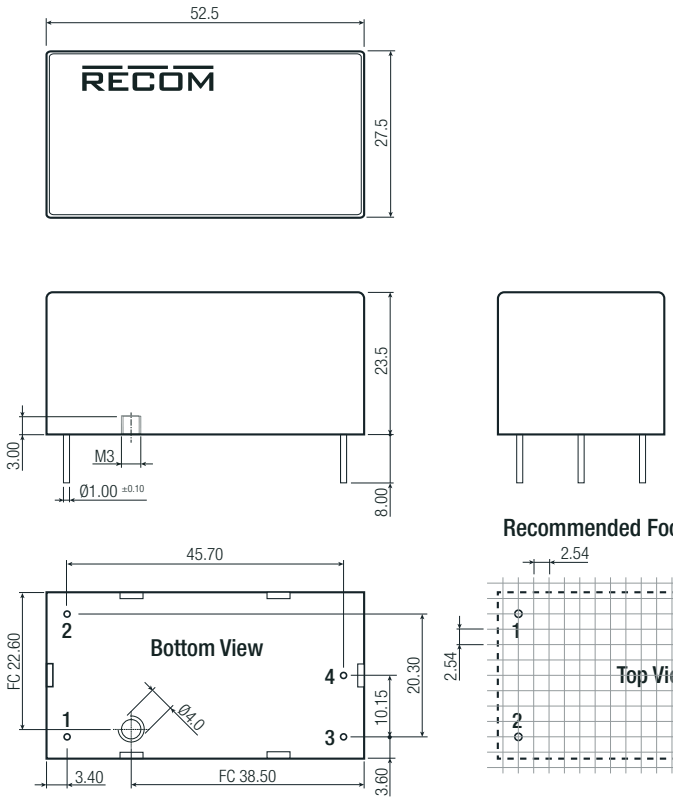
DIMENSION AND PHYSICAL CHARACTERISTICS

Parameter	Type	Value
Material	case	epoxy with fibreglass (UL94V-0)
Dimension (LxWxH)	standard with suffix "-ST"	52.5 x 27.5 x 23.5mm 96.0 x 53.9 x 29.1mm
Weight	standard with suffix "-ST"	58g typ. 122g typ.

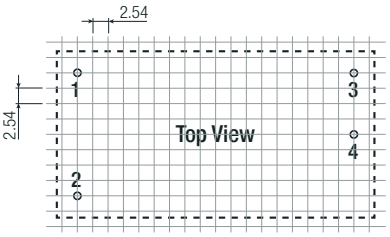
continued on next page

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

Dimension Drawing (mm)



Recommended Footprint Details

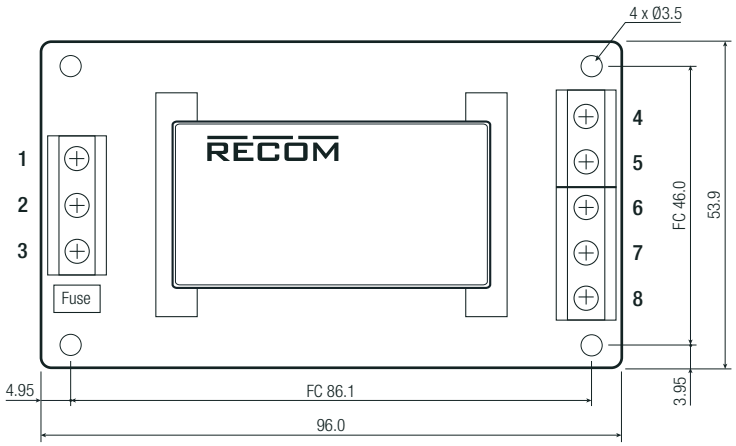


Pinning information

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

recommended tightening tourgue= 1.21Nm max.
FX= fixing centers
Tolerance: xx.x= ±0.5mm
xx.xx= ±0.25mm

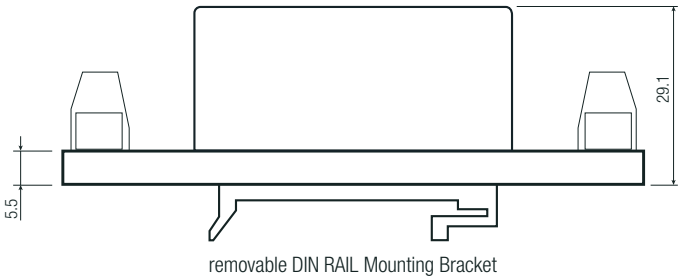
Screw Terminal Module "ST" version



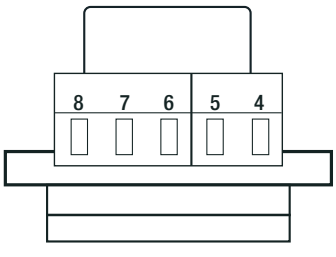
Screw terminal information

#	Single
1	NC
2	VAC in (N)
3	VAC in (L)
4	NC
5	+Vout
6	-Vout
7	NC
8	NC

7.5mm Pitch
suitable wire: 24-12AWG (0.5-2.5mm²)
wire stripping length: 7mm typ.
recommended tightening torque: 0.5Nm
NC = No Connection
FC = Fixing Centers
Tolerance: xx.x= ±0.5mm
xx.xx= ±0.25mm



removable DIN RAIL Mounting Bracket



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		8pcs
	with suffix "-ST"		1pcs
Storage Temperature Range			-40°C to +85°C
Storage Humidity	non-condensing		95% RH