

**!NOT RECOMMENDED FOR NEW DESIGNS!**

LAST TIME BUY: 30<sup>TH</sup> OCT 2020, 0512DB, 0512TB, 0515TB, 05DB, 12DB, 12SB, 24SB

LAST TIME BUY: 30<sup>TH</sup> OCT 2020, "-ST" VERSION

**RECOM**  
AC/DC Converter

## Features

- Universal input voltage range
- 3kVAC / 1 minute isolation
- Low output ripple and noise
- Short circuit protected
- Triple output with independent outputs
- Suitable for industrial applications
- CE marked

## Regulated Converter

### Description

Switching AC/DC power module for PCB or DIN-rail mounting.

## RAC40-B

40 Watt  
Single,  
Dual, Double,  
Triple Output



### Selection Guide

Part Number	Input Voltage Range [VAC]	Output Voltage [VDC]	Output Current [mA]	Efficiency typ <sup>(1)</sup> [%]	Max. Capacitive Load [µF]
RAC40-15SB	90-264	15	2666	83	6600
RAC40-15DB	90-264	±15	±1333	83	±1000

#### Notes:

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

### NRND (Last time buy: 30<sup>th</sup> Oct 2020)

Part Number	Input Voltage Range [VAC]	Output Voltage [VDC]	Output Current [mA]	Efficiency typ <sup>(1)</sup> [%]	Max. Capacitive Load [µF]
RAC40-05SB <sup>(2)</sup>	90-264	5	8000	81	40000
RAC40-12SB <sup>(2)</sup>	90-264	12	3333	84	8600
RAC40-24SB <sup>(2)</sup>	90-264	24	1667	83	1400
RAC40-05DB <sup>(2)</sup>	90-264	±5	±4000	81	±12000
RAC40-12DB <sup>(2)</sup>	90-264	±12	±1666	83	±4400
RAC40-0512DB <sup>(2)</sup>	90-264	5/12	5000/1250	82	10000/470
RAC40-0512TB <sup>(2)</sup>	90-264	5/±12	5000/±600	82	10000/±780
RAC40-0515TB <sup>(2)</sup>	90-264	5/±15	5000/±500	81	10000/±900

### Model Numbering



#### Notes:

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

#### Ordering Examples:

RAC40-05SB	40 Watt	5Vout	Single Output	THT
RAC40-24SB-ST	40 Watt	24Vout	Single Output	Screw Terminal

### PREFERRED ALTERNATIVES

Please consider this alternatives:

**RACM40-K Series**

EN60950-1 certified  
EN55032 compliant  
EN55024 compliant

**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>(3)</sup>	nom. Vin = 230VAC		90VAC 100VDC	230VAC	264VAC 375VDC
Input Current	115VAC 230VAC				860mA 460mA
Inrush Current	2ms max., cold start	115VAC 230VAC			30A 50A
No load Power Consumption	115VAC/230VAC				720mW
Input Frequency Range	AC Input		47Hz		440Hz
Hold-up Time			10ms		
Minimum Load	Single Dual Double, Triple		1% 10% 25%		
Internal Operating Frequency				132kHz	
Output Ripple and Noise <sup>(4)</sup>	20MHz BW				1.0% of Vout
<b>Notes:</b>					
Note3: The products were submitted for safety files at AC-Input operation					
Note4: Measurements are made with a 0.1µF and 47µF MLCC in parallel across output (low ESR)					

REGULATIONS			
Parameter	Condition		Value
Output Accuracy <sup>(5)</sup>	Single, Dual		±2.0% typ.
	Double, Triple		±3.0% typ. (+5Vout) / ±5.0% typ. (±Vout)
Line Regulation	low line to high line	Single, Dual	±0.5% typ.
		Double, Triple	±0.5% typ. (+5Vout) / ±5.0% typ. (±Vout)
Load Regulation <sup>(6)</sup>	1% to 100% load	Single	1.0% typ.
	10% to 100% load	Dual	1.0% typ.
	25% to 100% load	Double	2.0% typ. (+5Vout) / 6.0% typ. (±Vout)
		Triple	3.0% typ. (+5Vout) / 7.0% typ. (±Vout)
Cross Regulation	15% to 100% load	Dual	±5.0% typ.
	25% to 100% load	Double	±1.0% typ. (+5Vout) / ±7.0% typ. (±Vout)
		Triple	±3.0% typ. (+5Vout) / ±7.0% typ. (±Vout)
<b>Notes:</b>			
Note5: Triple output version has +/- Vout common that isn't connected to +5V return pin internally			
Note6: Operation below Minimum Load will not harm the converter, but specifications may not be met			

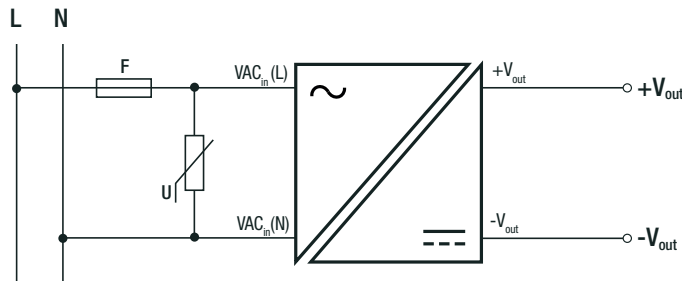
PROTECTIONS			
Parameter	Type		Value
Short Circuit Protection (SCP)			Hiccup mode, auto recovery
Over Voltage Protection (OVP)			zener diode clamp
Over Current Protection (OCP)			105% typ.
Over Temperature Protection (OTP)	@tc =100°C		thermal shutdown, auto restart after cool down
Isolation Voltage	I/P to O/P	tested for 1 minute	3kVAC
Isolation Resistance			100MΩ max.
Leakage Current			0.75mA max.
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**Specifications** (measured @ Ta= 25°C, nom. Vin, full load and after warm-up unless otherwise stated)

**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

**Protection Circuit**

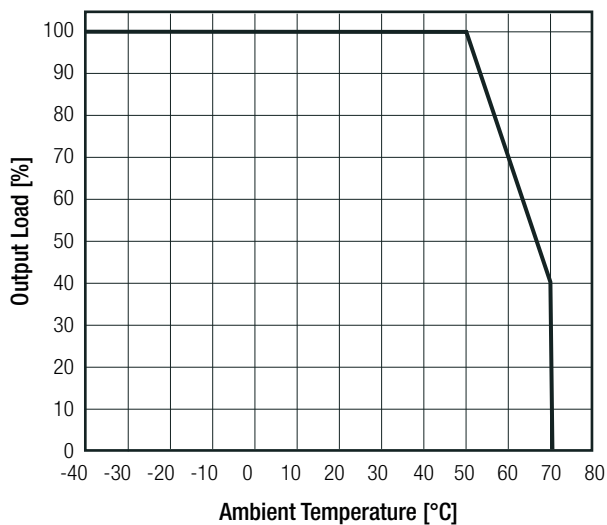


**ENVIRONMENTAL**

Parameter	Condition		Value
Operating Temperature Range	@ natural convection 0.1m/s	full load	-40°C to +50°C
		refer to derating graph	-40°C to +70°C
Temperature Coefficient			±0.01%/K typ.
Operating Humidity			95% RH max.
MTBF	according to MIL-HDBK-217F, G.B.	+25°C	200 - 400 x 10 <sup>3</sup> hours

**Derating Graph**

(@ Chamber and natural convection 0.1 m/s)



**SAFETY AND CERTIFICATIONS**

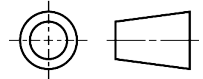
Certificate Type (Safety)	Report / File Number	Standard
Information Technology Equipment, General Requirements for Safety		EN60950-1:2006 + A2:2013
EAC Safety of Low Voltage Equipment	RU-AT.49.09571	TP TC 004/2011
RoHS2+		RoHS-2011/65/EU + AM-2015/863
EMC Compliance	Condition	Standard / Criterion
Electromagnetic 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

**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	epoxy with fibreglas (UL94V-0)
Dimension (LxWxH)	standard with suffix "-ST"	89.0 x 64.1 x 25.0mm 111.9 x 64.6 x 30.6mm
Weight	standard with suffix "-ST"	242g typ. 317g typ.

**Dimension Drawing (mm)**



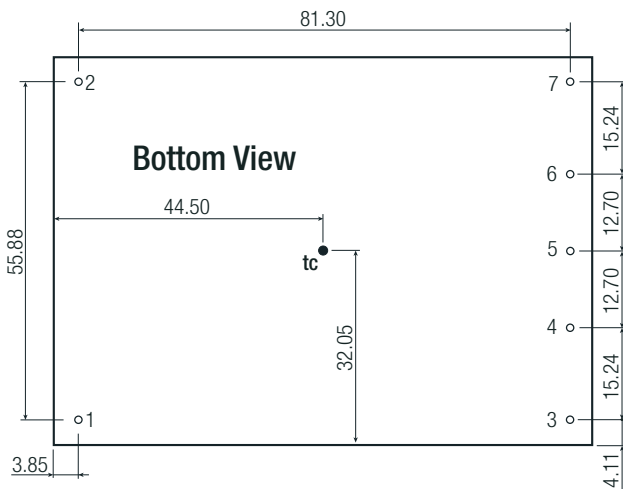
**Pin Connections**

Pin #	Single	Dual	Double	Triple
1	VAC in (L)	VAC in (L)	VAC in (L)	VAC in (L)
2	VAC in (N)	VAC in (N)	VAC in (N)	VAC in (N)
3	+Vout	+Vout	+12Vout	+Vout
4	no Pin	no Pin	+5Vout	+5Vout
5	-Vout	Com	+12V Rth	Vout Com
6	no Pin	no Pin	+5V Rth	+5V Rth
7	NC	-Vout	no Pin	-Vout

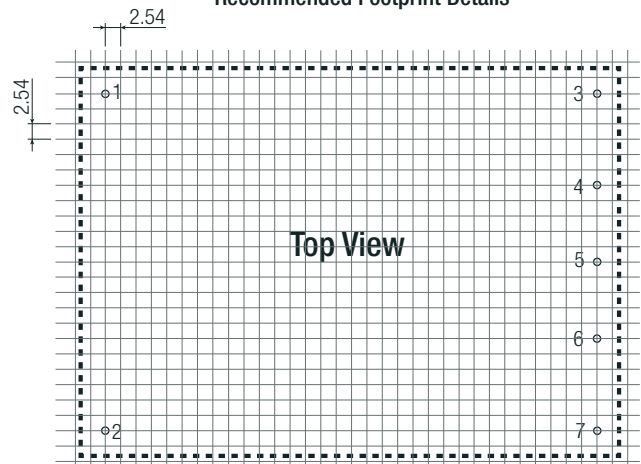
tc = case temperature measuring point

Tolerance: xx.x= ±0.5mm

xx.xx= ±0.25mm



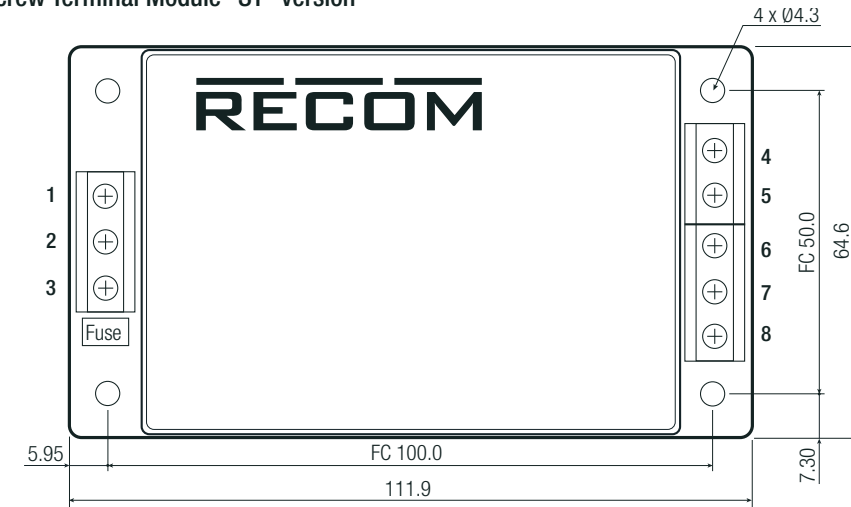
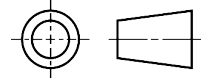
**Recommended Footprint Details**



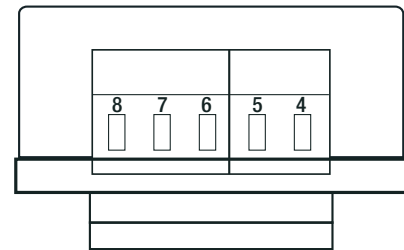
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**Specifications** (measured @ Ta= 25°C, nom. Vin, full load and after warm-up unless otherwise stated)

Screw Terminal Module "ST" version



removable DIN RAIL Mounting Bracket



**Screw terminal information**

#	Single	Dual	Double	Triple
1	NC	NC	NC	NC
2	VAC in (L)	VAC in (L)	VAC in (L)	VAC in (L)
3	VAC in (N)	VAC in (N)	VAC in (N)	VAC in (N)
4	+Vout	+Vout	+12Vout	+Vout
5	NC	NC	+5Vout	+5Vout
6	-Vout	Com	+12V Rth	Com
7	NC	NC	+5V Rth	+5V Rth
8	NC	-Vout	NC	-Vout

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= ±0.5mm  
 xx.xx= ±0.25mm

**PACKAGING INFORMATION**

Parameter	Type		Value
Packaging Dimension (LxWxH)	cardboard box	standard with suffix "-ST"	260.0 x 70.0 x 42.0mm 119.0 x 64.0 x 54.0mm
Packaging Quantity	standard with suffix "-ST"		2pcs 1pcs
Storage Temperature Range			-40°C to +85°C
Storage Humidity	non-condensing		95% RH

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