Features

Regulated Converter

- 30 Watt PCB mount package
- Universal input voltage range
- 3000VAC / 1 minute isolation
- Low output ripple and noise
- Short circuit protected
- Triple output with independent outputs
- UL certified, CE marked

RECOM

AC/DC Converter

RAC30-A

30 Watt Single, Dual, Double, Triple Output

3 YEAR Warranty

Description

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

Consider RACM30-ER 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]
RAC30-3.3SA (2,3)	90-264	3.3	6000	75	80000
RAC30-05SA (2,3)	90-264	5	6000	79	70000
RAC30-12SA (2,3)	90-264	12	2500	82	14000
RAC30-15SA (2,3)	90-264	15	2000	82	11000
RAC30-24SA (2,3)	90-264	24	1250	82	5900
RAC30-05DA (2,3)	90-264	±5	±3000	79	±50000
RAC30-12DA (2,3)	90-264	±12	±1250	82	±14000
RAC30-15DA (2,3)	90-264	±15	±1000	80	±10000
RAC30-0512DA (2,3)	90-264	5/12	3000/1250	79	13200/6400
RAC30-0512TA (2,3)	90-264	5/±12	3000/±630	79	15000/±5400
RAC30-0515TA (2,3)	90-264	5/±15	3000/±500	78	10000/±3200

NOT RECOMMENDED FOR NEW DESIGNS

Notes:

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

Model Numbering

RAC30-__ A-E-__

- RAC30-__ : nom. Output Power
- RAC30-__ : Output Voltage
- A-E-__ : Connection (3)
- A-E-__ : Temperature (2)
- A-__- : **S**ingle, **D**ual or **T**riple

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:

RAC30-05SA	30 Watt	5Vout	Single Output	standard Temperature	THT
RAC30-05DA-E	30 Watt	±5Vout	Dual Output	extended Temperature	THT
RAC30-0512TA-ST	30 Watt	5/±12Vout	Triple Output	standard Temperature	Screw Terminal
RAC30-15SA-E-ST	30 Watt	15Vout	Single Output	extended Temperature	Screw Terminal

c UL us E196683

UL60950-1 certified
CSA C22.2 No. 60950-1-07 certified
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 (4)	nom. Vin = 230VAC			90VAC 120VDC	230VAC	264VAC 370VDC
Input Current	115VAC 230VAC					520mA 320mA
Inrush Current	2ms max., cold start	115VAC	standard with suffix "-E"			10A 23A
		230VAC	standard with suffix "-E"			20A 46A
No load Power Consumption	115VAC/230VAC					2.58W
Input Frequency Range	AC Input			47Hz		440Hz
Hold-up Time				15ms		
Minimum Load	Single Dual Double, Triple			5%(3.3Vout), 8%(5Vout), 2%(12Vout,15Vout,24Vout) 2%(±5Vout), 3%(±12Vout), 1%(±15Vout) 20%		
Internal Operating Frequency					100kHz	
Output Ripple and Noise (5)	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 in parallel across output (low ESR)

REGULATIONS

Parameter	Condition		Value
Output Accuracy			±2.0% typ.
Line Regulation (6)	low line to high line	Single, Dual Triple	±1.0% typ. ±1.0% typ. (+5Vout) /±5.0 typ. (±Vout)
Load Regulation (7)	5% to 100% load	Single	1.0% typ.
		Dual Triple	3.0% typ. 2.0% typ. (+5Vout) / 6.0 typ. (±Vout)

Notes:

Note6: Triple output version has +/- Vout common that isn't connected to +5V return pin internally

Note7: 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.

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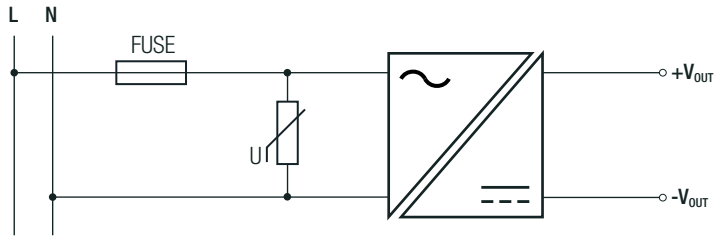
Specifications (measured @ Ta= 25°C, nom. Vin, full load and after warm-up unless otherwise stated)

Notes:

Note8: Refer to local safety regulations if input over-current protection is also required. Recommended fuse: slow blow type

Note9: An external MOV is recommended. The varistor should comply with IEC-61051-2. e.g. 14S471K series

Protection Circuit



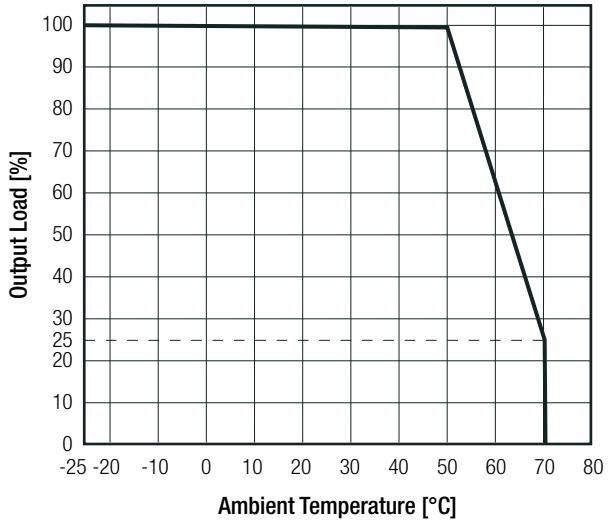
ENVIRONMENTAL

Parameter	Condition		Value
Operating Temperature Range	@ natural convection 0.1m/s	standard	-25°C to +70°C
		with suffix "-E"	-40°C to +70°C
Temperature Coefficient			±0.02%/K typ.
Operating Humidity			95% RH max.
MTBF	according to MIL-HDBK-217F, G.B.	+25°C	>200 x 10^3 hours

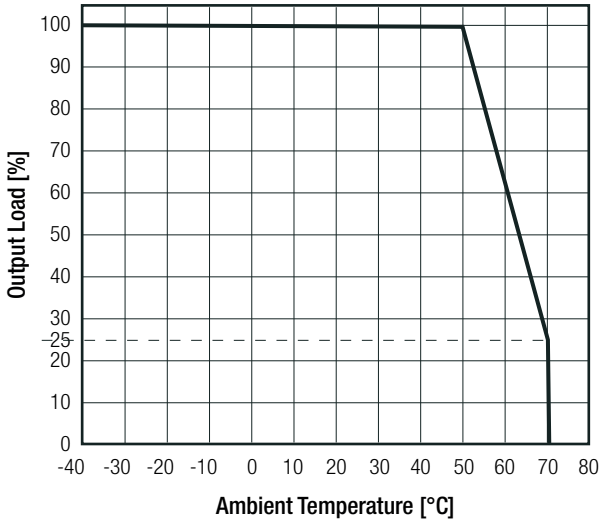
Derating Graph

(@ Chamber and natural convection 0.1m/s)

standard



with suffix „-E"



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

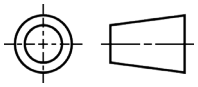
EMC Compliance	Condition	Standard / Criterion
Electromagnetic compatibility of multimedia equipment – Emission Requirements		EN55032:2015, Class B
Information technology equipment - Immunity characteristics - Limits and methods of measurement		EN55024:2010 + A1:2015
Limits for harmonic current emissions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

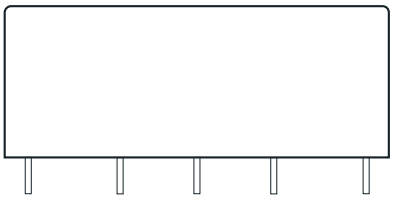
Specifications (measured @ Ta= 25°C, nom. Vin, full load and after warm-up unless otherwise stated)

DIMENSION AND PHYSICAL CHARACTERISTICS

Parameter	Type	Value
Material	case	epoxy with fibreglass (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"	230g typ. 305g typ.

Dimension Drawing (mm)

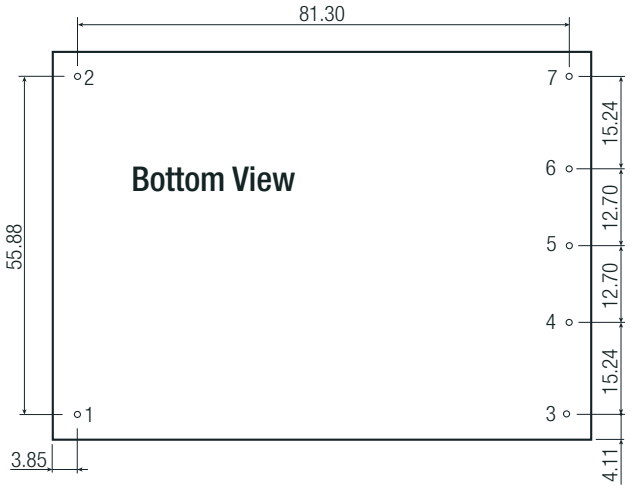




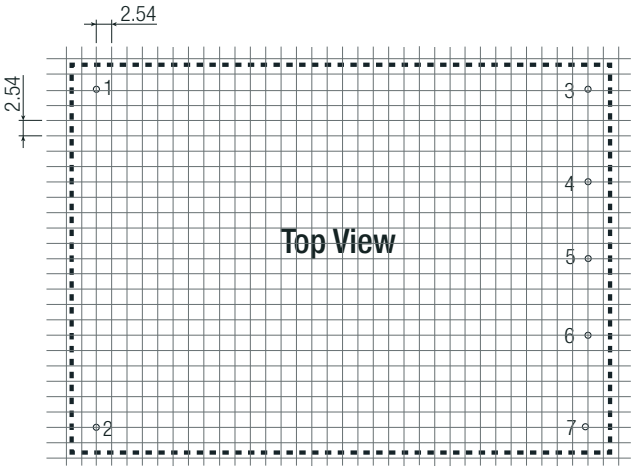
Pin Connections

Pin #	Single	Dual	Double	Triple
1	VAC in (N)	VAC in (N)	VAC in (N)	VAC in (N)
2	VAC in (L)	VAC in (L)	VAC in (L)	VAC in (L)
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

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



Recommended Footprint Details



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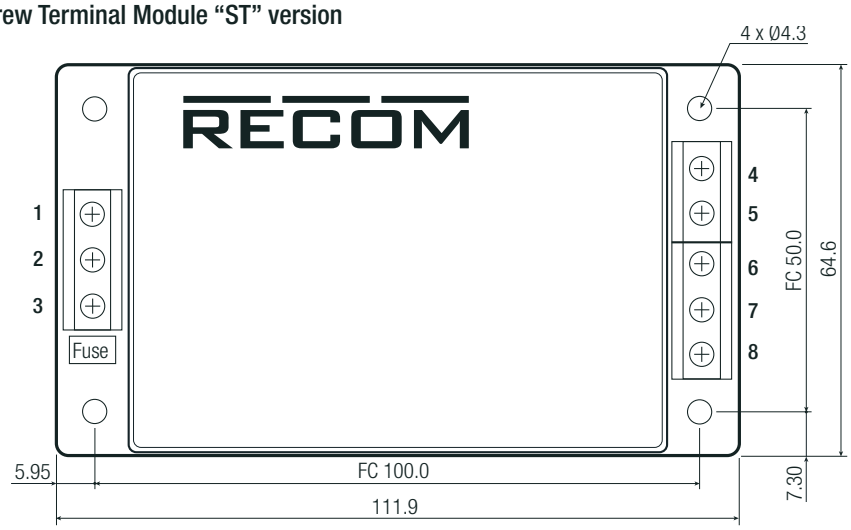
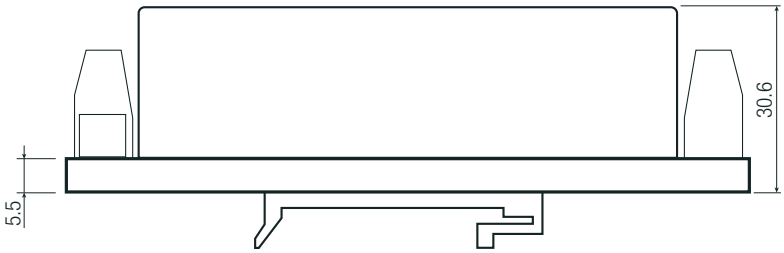
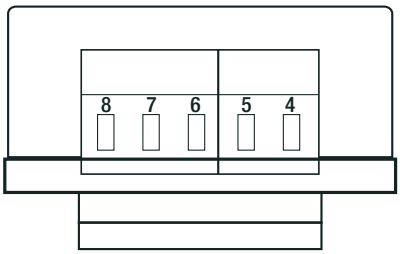
Specifications (measured @ Ta= 25°C, nom. Vin, full load and after warm-up unless otherwise stated)

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 (N)	VAC in (N)	VAC in (N)	VAC in (N)
3	VAC in (L)	VAC in (L)	VAC in (L)	VAC in (L)
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 (0.5-2.5mm²)
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

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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