Features

Regulated Converter

- Long 5 year warranty
- 2MOPP/250VAC
- Suitable for built in Class II applications
- Wide input voltage range (85-264VAC)
- Low leakage current (<75µA)
- 5000m operation
- Active power factor correction

RECOM
AC/DC Converter

RACM100

100 Watt Enclosed & Open Frame Case Style Single Output

Description

The RACM100 is a compact 3" x 2" high efficiency AC/DC power supply with 2xMOPP 3rd Ed. safety approval for medical applications. The range has now been extended to include open frame models (/OF suffix). Like the original enclosed versions, the RACM100/OF series are space-saving universal input voltage power supplies (85-264VAC), with 4kVAC isolation, PFC, no minimum load and can be used at ambient temperatures of between -25°C and +85°C. The 12V, 15V, 24V or 48V output voltages are fully protected and have tolerances of less than ±0.2% over the entire input voltage range and less than ±0.5% over the entire load range. The RACM100/OF series is certified to medical safety standard IEC/ES/EN-60601-1 3rd Edition and feature BF rated outputs with less than 75µA leakage current. It has a built-in Class B EMI filter and comes with a five year warranty.

Selection Guide

Part Number	Input Voltage Range [VAC]	Output Voltage [VDC]	Output Current [A]	Input Power @ No Load [W]	Efficiency typ. [%]	Max. Capacitive Load (1) [µF]
RACM100-12S (1)	85-264	12	8.34	0.3	91	6950
RACM100-15S (1)	85-264	15	6.67	0.3	92	4450
RACM100-24S (1)	85-264	24	4.17	0.3	92	1750
RACM100-48S (1)	85-264	48	2.09	0.3	91	430

Notes:

Note1: Max Cap Load is tested at minimum input and full resistive load

Model Numbering

RACM100- __ S/ __

- Output Power
- Output Voltage
- Case Style (2)
- Single

Notes:

Note2: without suffix, standard enclosed case
add suffix ***"/OF"*** for open frame style

Examples:

RACM100-12S = 12Vout, standard enclosed case
RACM100-24S/OF = 24Vout, open frame style

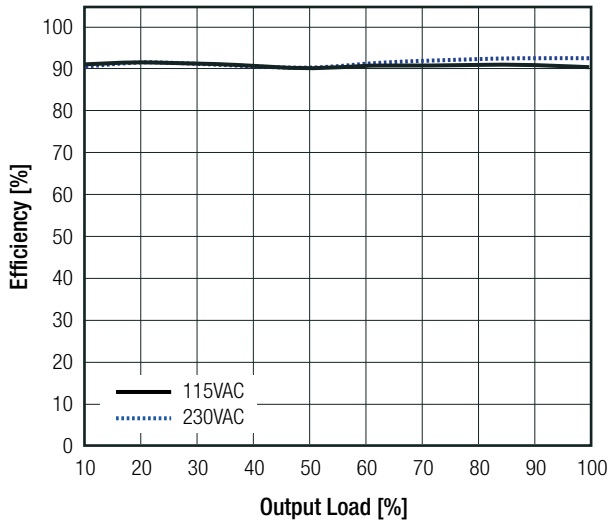
2MOPP
250VAC

IEC/EN60601 certified
ANSI/AAMI ES60601 certified
EN55011 certified
CISPR11
FCC Part 15

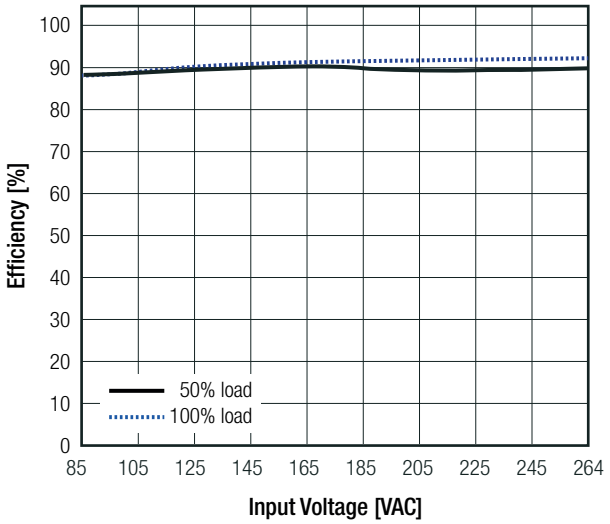
Specifications (measured @ Ta= 25°C, 250VAC, full load and after warm-up)

BASIC CHARACTERISTICS				
Parameter	**Condition**	**Min.**	**Typ.**	**Max.**
Input Voltage		85VAC 120VDC		264VAC 370VDC
Input Current	115VAC, fulll load 230VAC, full load			1.15A 0.55A
Inrush Current	cold start, 230VAC			60A
No load Power Consumption				0.11W
Input Frequency Range	AC Input	47Hz		63Hz
Output Voltage Trimming			±10.0%	
Minimum Load		0%		
Power Factor		0.95		
Start-up Time				1s
Rise Time			20ms	
Hold up Time	115VAC, full load	16ms		
Internal Operating Frequency			60kHz	
Output Ripple and Noise (measured @ 20MHz BW)	12VDC, with 10µF/25V MLCC 15VDC, with 10µF/25V MLCC 24VDC, with 1µF/50V MLCC 48VDC, with 0.1µF/100V MLCC		120mVp-p 150mVp-p 160mVp-p 340mVp-p	

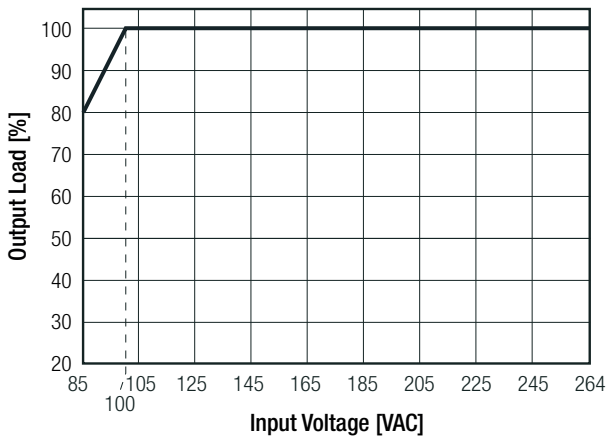
Efficiency vs. Load



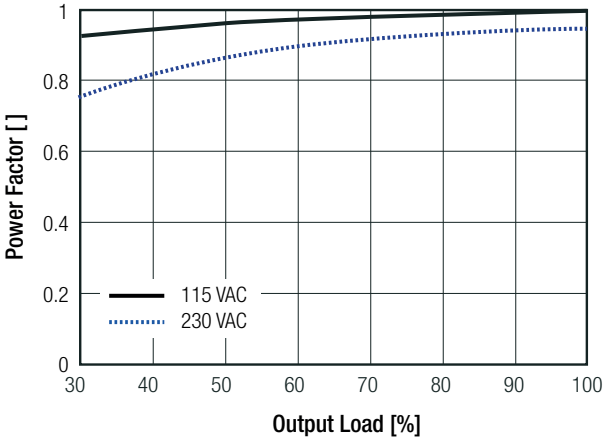
Efficiency vs. Input Voltage



Line Derating



Power Factor vs. Load



Specifications (measured @ Ta= 25°C, 250VAC, full load and after warm-up)

REGULATIONS		
Parameter	**Condition**	**Value**
Output Accuracy	230VAC, full load	±1.0%
Line Regulation	low line to high line, full load	±0.2%
Load Regulation	0% to 100% load 10% to 100% load	0.5% max. 0.4% max.
Transient Peak Deviation	load step from 50% - 75% change at 2.5A/µs	3.0% Vout max.
Transient Recovery Time	load step from 50% - 75% change at 2.5A/µs	500µs typ.

PROTECTIONS			
Parameter	**Condition**		**Value**
Input Fuse	internal line and neutral		T3.15A / 250VAC, slow blow type
Short Circuit Protection (SCP)			continuous, auto-recovery
Over Load Protection (OLP)	% of Iout rated (Hiccup)		115% min. / 150% max.
Over Voltage Protection (OVP)	% of Vout nominal (Latch off)		115% min. / 135% max.
Isolation Voltage [5]	tested for 1 minute	I/P to O/P I/P to Case O/P to Case	4kVAC 1.5kVAC 1.5kVAC
Isolation Resistance	500VDC		100MΩ min.
Insulation Grade			reinforced
Leakage Current	264VAC		75µA max.
Means of Protection	working voltage 250VAC/continuous		2MOPP
Medical Device Classification			built-in power supply
Internal	clearance creepage		>8.0mm >8.0mm

Notes:

Note5: For repeat Hi-Pot testing, reduce the time and/or the test voltage

ENVIRONMENTAL			
Parameter	**Condition**		**Value**
Operating Temperature Range	refer to ***"Derating Graph"***		-25°C to +85°C
	full load, 230VAC	enclosed open frame	-25°C to +60°C -25°C to +55°C
Temperature Coefficient			±0.02%/K
Operating Altitude			5000m max.
Operating Humidity	non-condensing		5% to 95% RH
Pollution Degree			PD2
High Temperature Operating Life (HTLO)			JEDEC JESD22-A108
Shock			IEC60068-2-27
Vibration			IEC60068-2-6
MTBF	according to MIL-HDBK-217F, full load, +25°C		790.3 x 10^3 hours

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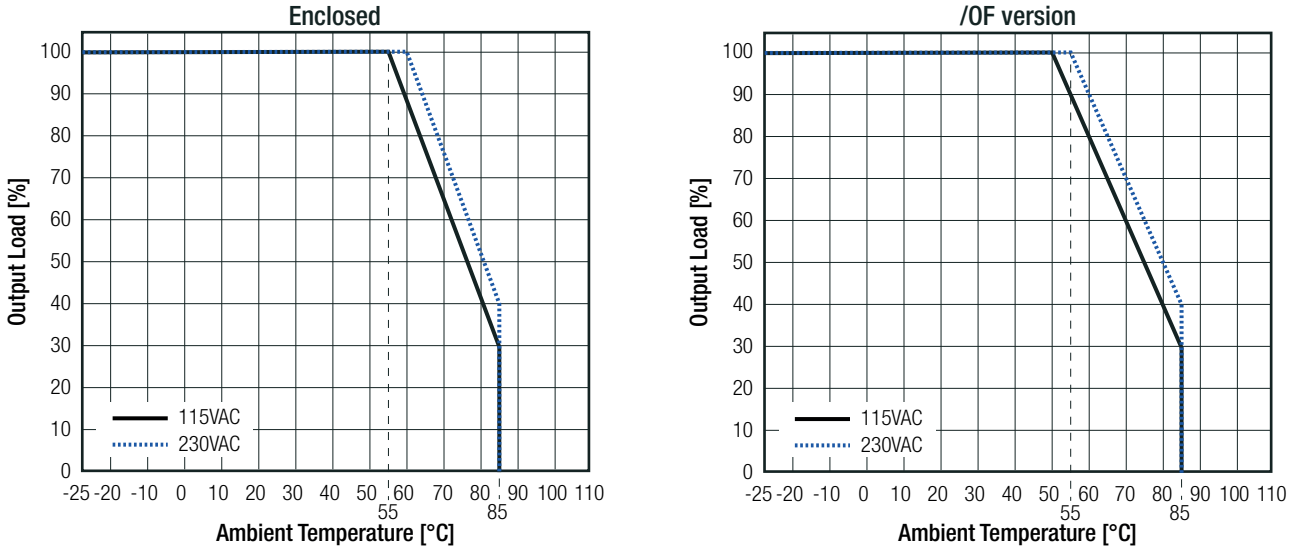
Specifications (measured @ Ta= 25°C, 250VAC, full load and after warm-up)

Derating Graph

(@ Chamber and natural convection 0.1m/s)



SAFETY AND CERTIFICATIONS

Certificate Type (Safety)	Report / File Number	Standard
Medical Electric Equipment, General Requirements for Safety and Essential Performance	E314885	CAN/CSA-C22.2 No. 60601-1:14 ANSI/AAMI ES60601-1:2005 + A2:2010
Medical Electric Equipment, General Requirements for Safety and Essential Performance (CB)	181200102	IEC60601-1:2005 + A1:2012, 3rd Edition
Medical Electric Equipment, General Requirements for Safety and Essential Performance		EN60601-1:2006 +12:2014
Information Technology Equipment - General Requirements for Safety (LVD)	TW1708008-001	EN60950-1:2006 + A2:2013
Information Technology Equipment - General Requirements for Safety		IEC60950-1:2005, 2nd Edition + A2:2013
EAC	RU-AT.49.09571	TP TC 004/2011 TP TC 004/2011
RoHS2		RoHS-2011/65/EU + AM-2015/863

EMC Compliance (Medical)	Conditions	Standard / Criterion
Medical electrical equipment - Part 1-2: General requirements for basic safety and essential performance - Collateral standard: Electromagnetic compatibility - Requirements and tests		EN60601-1-2:2015
Industrial, scientific and medical equipment – Radio frequency disturbance characteristics – Limits and methods of measurement		EN55011:2009 + A1:2010 Class B Conducted, Class A Radiated
Industrial, scientific and medical equipment - Radio frequency disturbance characteritics - Limits and methods of measurement		CISPR11:2009 + A1:2010 Class B Conducted, Class A Radiated
ESD Electrostatic discharge immunity test	Air ±15kV; Contact ±8kV	IEC61000-4-2:2008
Radiated, radio-frequency, electromagnetic field immunity test	10V/m (80-2700MHz) 27V/m (385MHz) 28V/m (450MHz)	IEC61000-4-3:2006 + A2:2010
Fast Transient and Burst Immunity	AC Power Port: ±2kV	IEC61000-4-4:2012
Surge Immunity	AC Port: L-N= ±1kV, L-GND= ±2kV	IEC61000-4-5:2005
Immunity to conducted disturbances, induced by radio-frequency fields	6Vr.m.s	IEC61000-4-6:2013
Power Frequency Magnetic Field	50Hz, 30A/m	IEC61000-4-8:2009
Voltage Dips and Interruptions	Dips: >95%; 30%; Interruptions >95%	IEC61000-4-11:2004
Limits of Harmonic Current Emissions		EN61000-3-2:2005 + A2:2009, Class D
Limits of Voltage Fluctuations and Flicker		EN61000-3-3:2013

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Specifications (measured @ Ta= 25°C, 250VAC, full load and after warm-up)

EMC Compliance (Industrial)	Conditions	Standard / Criterion
Limitations on the amount of electromagnetic intererence allowed from digital & electronic devices		47CFR FCC Part 15 Subpart B, Class B
Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz		ANSI C63.4:2014
Electromagnetic compatibility of multimedia equipment – Emission Requirements		EN55032:2015+AC:2013, Class B
Information technology equipment - Immunity characteristics - Limits and methods of measurement		EN55024:2010+A1:2015
ESD Electrostatic discharge immunity test	Air ±8kV; Contact ±6kV	IEC61000-4-2:2008, Criteria A
Radiated, radio-frequency, electromagnetic field immunity test	3V/m (80-1000MHz) 20V/m (80-1000MHz) 3V/m (1-2.5GHz) 10V/m (1-2.5GHz	IEC61000-4-3:2006 + A2:2010, Criteria A
Fast Transient and Burst Immunity	DC Port: ±2kV	IEC61000-4-4:2012, Criteria A
Surge Immunity	DC Port: ±1kV	IEC61000-4-5:2014, Criteria A
Immunity to conducted disturbances, induced by radio-frequency fields	DC Power Port 3V + 20V	IEC61000-4-6:2013, Criteria A
Power Frequency Magnetic Field	50Hz/60Hz 1A/m 50Hz/60Hz 10A/m	IEC61000-4-8:2009, Criteria A
Voltage Dips and Interruptions	Dips: >95%; 60%; 30% Interruptions >95%	IEC61000-4-11:2004, Criteria A IEC61000-4-11:2004, Criteria B
Limits of Harmonic Current Emissions		EN61000-3-2:2014, Class D
Limits of Voltage Fluctuations and Flicker		EN61000-3-3:2013

DIMENSION and PHYSICAL CHARACTERISTICS		
Parameter	**Type**	**Value**
Material	enclosed	aluminum
Dimension (LxWxH)	enclsoded open frame	91.4 x 62.0 x 39.2mm 76.2 x 50.8 x 32.0mm
Weight	enclosed open frame	210g 150g

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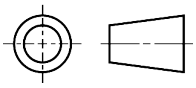
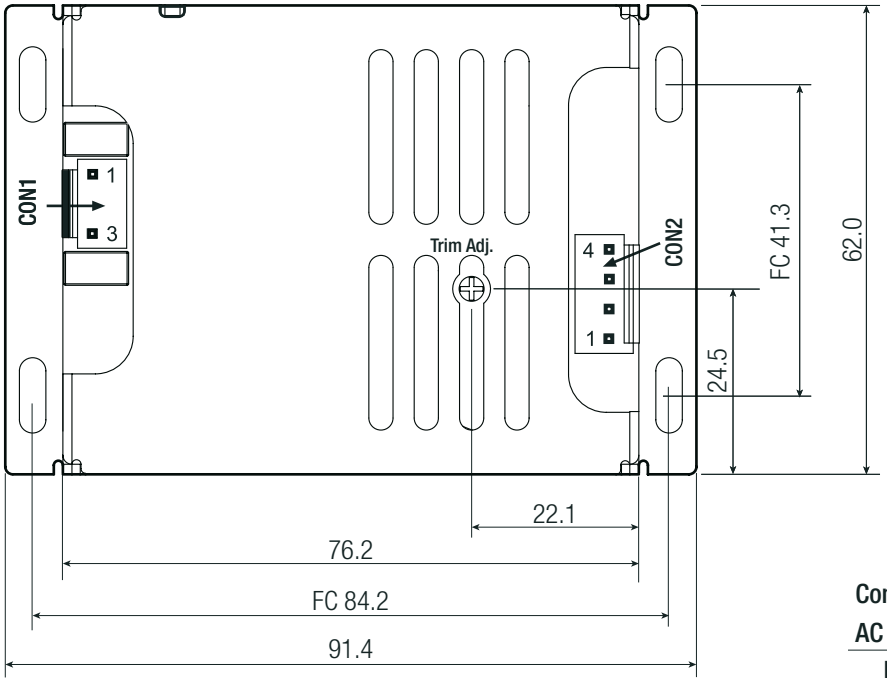
Specifications (measured @ Ta= 25°C, 250VAC, full load and after warm-up)

Dimension Drawing Enclosed (mm)

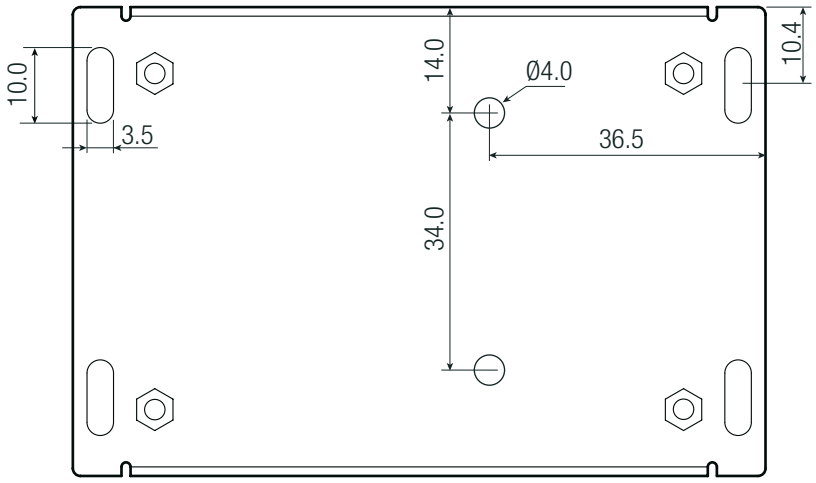


Top View



Side View

Bottom View



Connection via Connector

AC Input (CON1)

Pin #	Pin Header
1 AC/L 3 AC/N	SVH-21T-P1.1

DC Output Connector (CON2)

Pin #	*Pin Header*
1,2 -Vout 3,4 +Vout	SVH-21T-P1.1

FC= fixing centers
Crimp Terminal AWG Range: 18-22AWG
Tolerance: ±0.5mm

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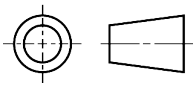
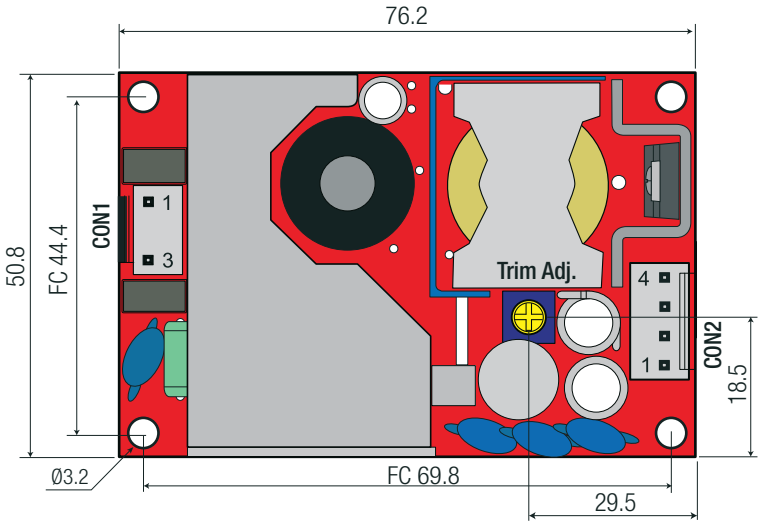
Specifications (measured @ Ta= 25°C, 250VAC, full load and after warm-up)

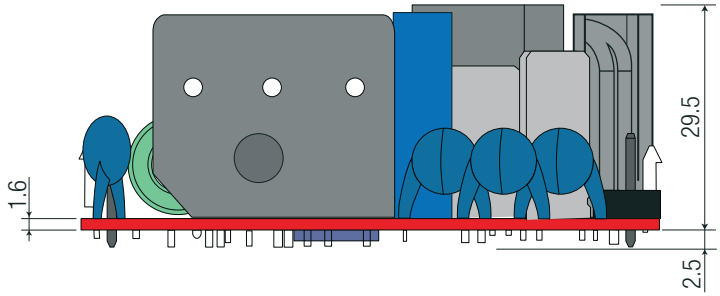
Dimension Drawing Open Frame (mm)



Top View



Side View



Connection via Connector

AC Input (CON1)

Pin #	Pin Header
1 AC/L 3 AC/N	SVH-21T-P1.1

DC Output Connector (CON2)

Pin #	Pin Header
1,2 -Vout 3,4 +Vout	SVH-21T-P1.1

FC= fixing centers
Crimp Terminal AWG Range: 18-22AWG
Tolerance: ±0.5mm

PACKAGING INFORMATION

Parameter	Type		Value
Packaging Dimension (LxWxH)	cardboard box	enclosed case	418.0 x 258.0 x 105.0mm
		open frame	494.0 x 250.0 x 95.0mm
Packaging Quantity	enclosed case		10pcs
	open frame		25pcs
Storage Temperature Range			-40°C to +85°C
Storage Humidity	non-condensing		5% to 95% RH

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