Technical Data Sheet

RCAD1000-SW

1000W / Wide Range

RECOM
AC/DC CONVERTER

FEATURES

- Cost Effective
- Support Variety of Batteries
- 1000W Maximum Charging Power
- 90V-264Vac Wide Input Range Without Power Derating
- 8.49" x 5" x 1.69" Compact Size
- -20°C +50°C Operation Temperature Range
- Support Customized Charging Curve
- Optional Constant Voltage Models Available
- Build-In Active PFC
- Intelligent Fan Speed Control
- Remote On/Off Control
- Battery Connection Detection. Auto-Stop when Fully Charged
- Battery Reversed Connection Protection
- 5000m Operation Altitude
- Optional 2xmopp Isolation, Support Medical Application
- Optional 12V/1A Auxiliary Power Supply
- Can Bus Communication. Optional RS485 Version



Dimensions: 215.6 x 127.2 x 43mm (8.49" x 5" x 1.69")

APPLICATION



SAFETY & EMC

CE Reach compliant RoHS2 compliant 10 from 10 UKCA

DESCRIPTION

This power supply offers a cost-effective solution with support for a variety of batteries and delivers up to 1000W maximum charging power. It features a wide input range of 90V–264Vac without power derating and comes in a compact size (8.49" x 5" x 1.69"). The unit operates reliably in temperatures from -20°C to +50°C and supports customized charging curves. Optional constant voltage models are available.

Key features include built-in active PFC, intelligent fan speed control, remote on/off control, and automatic battery connection detection with auto-stop when fully charged. The device provides battery reverse connection protection, supports operation up to 5000m altitude, and offers optional 2xMOPP isolation for medical applications. Additional options include a 12V/1A auxiliary power supply and CAN bus communication, with an optional RS485 version.

MODEL

Part Number	Input Voltage Range [VAC]	Output Voltage Nom. [VDC]	Output Current Max. [A]	Efficiency Typ. [%]	Output Power Max. [W]
RCAD1000-240-24-SW	100/240 (90÷264)	24	41.7	92.5	1000
RCAD1000-240-28-SW		28	35.7		
RCAD1000-240-36-SW		36	27.8		
RCAD1000-240-48-SW		48	20.8		
RCAD1000-240-60-SW		60	16.7		
RCAD1000-240-72-SW		72	13.9		
RCAD1000-240-100-SW		100	10		

(*) For customized charging curve and any inquires, please contact RECOM Power Systems

RCAD1000-___ - ___ -SW-_-__

- Control Code: A=Standard M=Medical
- Battery Type: F_LFP Battery T_NCM/C(*) Customized Charging Curve
- Output Voltage
- Input Voltage

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RECOM
AC/DC CONVERTER

BASIC CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.
INPUT				
Rated Input Voltage		100VAC		240VAC
Input Voltage Range	Without De-Rating	90VAC		264VAC
Input Frequency		47Hz	50 / 60Hz	63Hz
Input Current	With Rated Input Voltage			12A
Power Factor	With Max Rated Output Power	0.95		
Peak Efficiency (Exclude Fan Power)	30V And Below Models, 230VAC			92.5%
	36V And Higher Models, 230VAC			93%
Inrush Current	240Vac			40A
Input Surge Voltage	Last For 1second			300VAC
OUTPUT				
Output Power				1000W
End-of-Charge Voltage Tolerance				±0.1V
Total Regulation	Include Line and Load Regulation			±0.1V
Output Voltage Ripple	Peak-Peak Value, Full Load Measure at Board End with 0.1uf Ceramic and 47uf Electrolytic Capacitor, 20MHz BW			1%
Output Current Ripple	20~200Hz BW, Rated Battery Voltage, Maximum Current			10%
Dynamic Response	With 50% Load Step			5%
Power Up time	Including Battery Detection and Current Ramp Up Time			4s
Rise Time	Without Capacitive Load or Battery Load			50ms
Hold Up time	@115VAC/60Hz, 800W Output Power	10ms		
EMC		Class B Emission		

PROTECTIONS

Function	Conditions	Min.	Typ.	Max.
Input Under Voltage	Auto-Restart After Fault Removed		80VAC	
Over Current Protection (OCP)	Constant Current Control, Auto-Restart After Fault Removed			
Short Circuit Protection (SCP)	Constant Current Control, Auto-Restart After Fault Removed			
Over Voltage Protection (OVP)	Auto-Restart After Fault Removed			105%
Over Temperature Protection (OTP)	Auto-Restart After Fault Removed			
Battery Reverse	Auto-Restart After Fault Removed		Optional	

STAND-BY OUTPUT SPECIFICATION

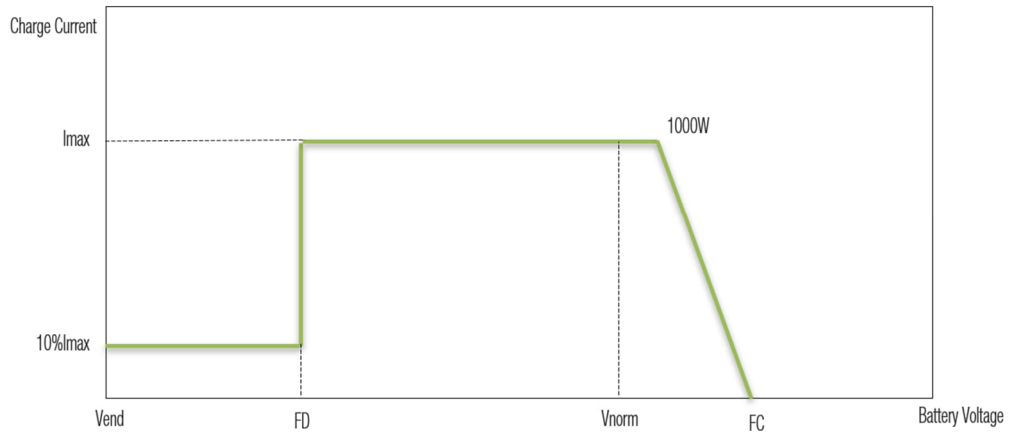
Function	Conditions	Min.	Typ.	Max.
Output Voltage		11.5V	12V	12.5V
Over Current Protection (OCP)	Auto-Restart After Fault Is Removed	1.1A		
Short Circuit Protection (SCP)	Auto-Restart After Fault Is Removed			

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BATTERY SUPPORTED

Battery Type	Series	End-of-discharge voltage	Cut-off Voltage	Nominal Voltage	End-of-Charge Voltage	Maximum Charge Current
		Vend	FD	Vnor	FC	Imax
LFP Battery	7	14.0V	17.5V	22.4V	25.2V	41.7A
	8	16.0V	20.0V	25.6V	29.2V	35.7A
	11	22.0V	27.5V	35.2V	40.2V	27.8A
	12	24.0V	30.0V	38.4V	43.8V	27.8A
	15	30.0V	37.5V	48.0V	54.8V	20.8A
	16	32.0V	40.0V	51.2V	58.4V	20.8A
	20	40.0V	50.0V	64.0V	72.0V	16.7A
	24	48.0V	60.0V	76.8V	87.6V	13.9A
	32	64V	80V	102.4	115.2V	10A
NCM Battery	6	16.5V	18.0V	21.6V	25.2V	41.7A
	7	19.25V	21.0V	25.2V	29.4V	35.7A
	10	27.5V	30.0V	36.0V	42.0V	27.8A
	11	30.25V	33.0V	39.6V	46.2V	27.8A
	13	35.75V	39.0V	46.8V	54.6V	20.8A
	14	38.5V	42.0V	50.4V	58.8V	20.8A
	17	46.75V	51.0V	61.2V	71.4V	16.7A
	20	55.0V	60.0V	72.0V	84.0V	13.9A
	27	74.25V	81.0V	97.2V	113.4V	10A

CHARGING CURVE



REALIBILITY

Function	Condition	Min.	Typ.	Max.
MTBF	According to Telcordia SR-332. 230Vac 25°C Ambient with Rated Load	500Khrs		
Life	Rated Conditions	5 Years		

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EMC

Condition	Standard
Conducted Emissions	EN 55011 / EN 55032, Class B
Radiated Emissions	EN 55011 / EN 55032, Class B
Note: RCAD1000-SW is an enclosed type PSU as a component intended to be assembled and built inside the system cabinet, PSU normally is to mounted connecting to an earthed metal plate, all the EMC tests are performed with the PSU and resistive loads plated on a metal plate to simulate the system application. The final system must re-evaluate to confirm it can still meet the EMC directives.	
Harmonic Current Emissions	IEC 61003-2 Meet Class A limit
Voltage Flicker	IEC 61000-3-3
Electrostatic Discharge	IEC 61004-2 Level 4 (Air Discharge: 15 kV, Contact Discharge: 8 kV) Criteria A
Radiated Field	IEC 61000-4-3 Criteria A
Electrical Fast Transient / Burst	IEC 61000-4-4 Level 3 (2 kV),Criteria A
Surge	IEC 61004-5 Level 3 (Common Mode 2kV, Differential Mode 1kV), Criteria A
CS	IEC 61000-4-6 Level 2 (150 kHz-80 MHz, 3 Vrms, 6 Vrms at ISM Bands and Amateur radio bands), Criteria A
Power Frequency Magnetic Fields	IEC 61004-8 Criteria A, Magnetic Field Strength 30 A/m
Voltage Dips	IEC 61000-4-11 30% 10 ms Criteria A 60% 100 ms Criteria B 100% 5000 ms Criteria B
Voltage Dips	IEC 60601-1-2 Criteria A @ 600 W or Lower 0% UT, 0.5 cycle(10 ms) (0°,45°,90°,135°,180°,225°,270°,315°,360°) Criteria B 0% UT,1 cycle (20 ms), 0° Criteria B 70% UT,25 cycle (500 ms) , 0° Criteria B 0% UT,250 cycle (5000 ms) , 0°

Criteria A: Normal operation within spec limit

Criteria B: Out of regulation or restart to normal operation after test

SAFETY & CERTIFICATIONS

Condition		Standard
Medical Safety (M suffix models only)		IEC 60601-1 2nd and 3rd+A1 edition+A2 edition EN 60601-1:2006+A1+A2 ANSI/AAMI ES60601-1:2005+A1+A2/CSA 60601-1
ITE Safety		IEC 62368-1-:2018 UL 62368-1+CAN/CSA 62368-1 GB 4943.1-2011, GB 9254-2008, GB 17625.1-2012
-1CE		EMC Directive 2014/30/EU and Low Voltage Directive 2014/35/EU EN 60601-1: 2006 + A1+A2 & EN 60601-1-2: 2015
UKCA		Electrical Equipment (Safety) Regulations 2016, Electromagnetic Compatibility Regulations 2016, Medical Devices Regulations 2002 (UK MDR 2002)
Dielectric Voltage	Input to/Output	4000Vac (2XMOPP)
	Input to/Ground	1800Vac (1XMOPP)
	Output to/Ground	1500Vac (1XMOPP)

* Compliance only, contact RECOM Power Systems for detailed safety certification.

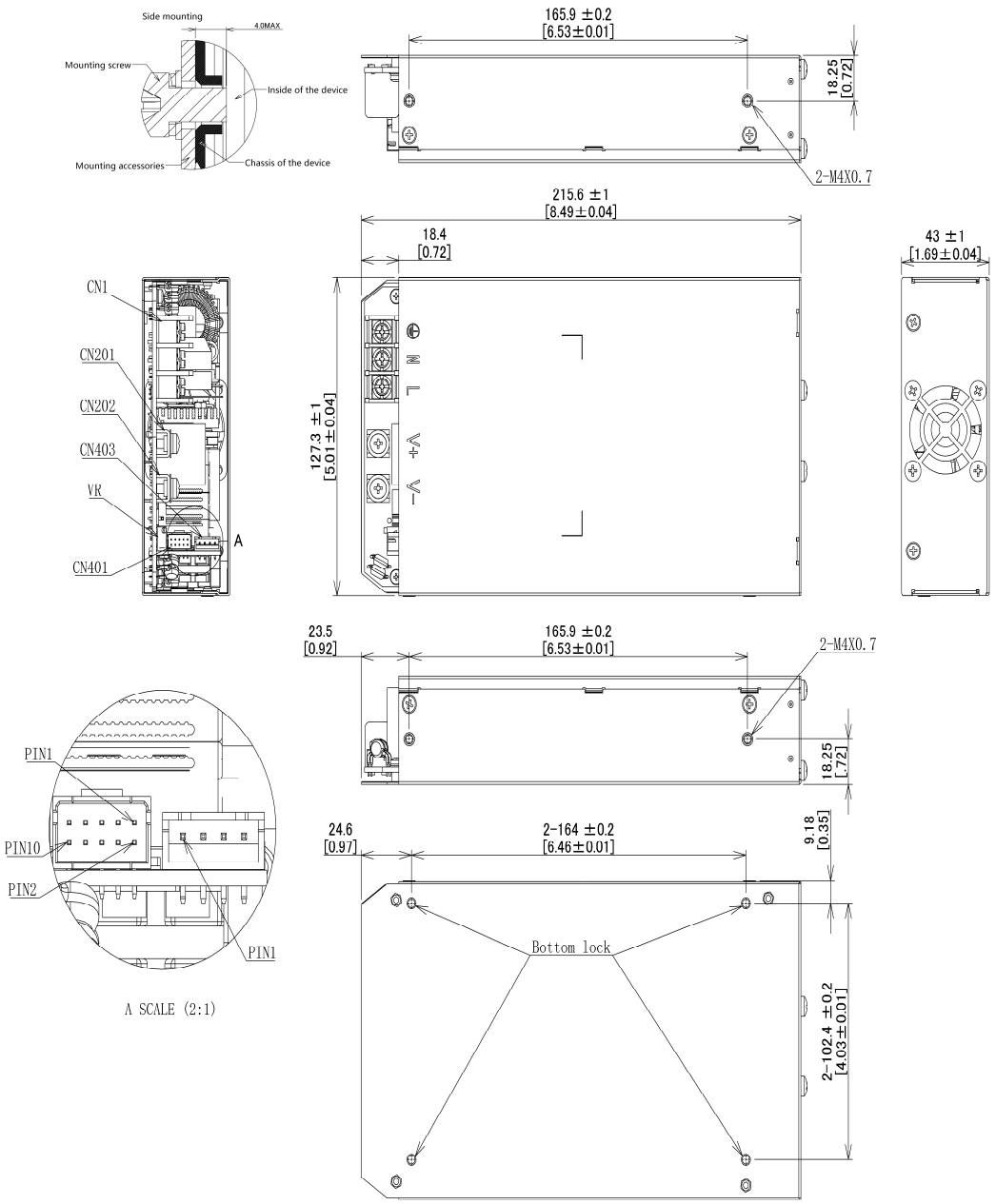
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LEAKAGE CURRENT		
Function	**Condition**	**Max**
Input-PE Leakage	264Vac/50Hz Normal Condition	300uA
	264Vac/50Hz Single Fault Condition	1mA
Output-PE Leakage	264Vac/50Hz Normal Condition	100uA
	264Vac/50Hz Single Fault Condition	500uA

ENVIRONMENTAL		
Parameter	**Conditions**	**Value**
Operating Temperature Range		-20°C to 50°C
Storage Temperature Range		-40°C to +70°C
Storage Humidity	Non-Condensing	10%RH – 90%RH
Operating Altitude		5000m / 16,405 Feet
Operating Humidity	Non-Condensing	10% - 90%
Fan Acoustic Noise	80% Load, 1m Distance	45dB
Shock	With Package	196m/s²
Vibration	155Hz (1 min Sweep). 1 Hour for Each Axis. With Package	19.6m/s²

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DIMENSION & MECHANICAL DRAWING



Notes:

1. Base plate mounting, M4 thread holes, maximum penetration 3.0 mm (0.12 inch) from outside face of chassis, 10 kgf.cm (8.8 inch.lbs) Max torque
2. Side mounting, M4 thread holes, maximum penetration 4.0 mm (0.16 inch) from outside face of chassis, 10kgf.cm (8.8 inch.lbs) Max torque
3. CN1 is AC input terminal block and with M4 screw in three positions, wire gauge is 10~18 AWG, 10 kgf.cm (8.8 inch.lbs) Max torque
4. CN201&CN202 is DC output terminal block and with M4 screw in two positions, 10kgf.cm(8.8inch.lbs) Max torque
5. CN401/CN403 is control or signal connection
6. VR: clockwise is to increase the output voltage, anticlockwise is to reduce the output voltage

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CONNECTOR AND PIN ASSIGNMENT

Position	Connector / Connection	
Input Connector CN1	SCED TB1100-01V-3P or Equivalent	
	Enclosure Mark	Designation
	L	Line
	N	Neutral
	⏚	Earth Ground
Main Output Connector CN201/CN202	Output Terminal Blocks, with M4x8 Screw and Plastic Spacer	
	Enclosure Mark	Designation
	Vo+	Output Positive
	Vo-	Output Return
Control Connector CN403	CJT A2501WR-4P or Equivalent Mating with CJT A2501H-4P or Equivalent	
	Pin#	Description
	1	CANL
	2	CANH
	3	CAN_GND
	4	CAN_5V
Control Connector CN401	CJT A2008WR-2X5P-46-BK or Equivalent Mating with CJT A2008H-2X5P or Equivalent	
	Pin#	Description
	1	C_GND
	2	C_GND
	3	12V
	4	12V
	5	Remote ON/OFF-
	6	Remote ON/OFF+
	7	Remote Sense+
	8	Remote Sense-
	9	N.C
	10	N.C

VOLTAGE TRIMMING

The power supply provides a potentiometer for user to adjust the output voltage. Switch the potentiometer clockwise to increase the output voltage, switch the potentiometer counterclockwise to decrease the output voltage.
Please reference to Output Specification for the output voltage range which user shall trim the voltage within.
When the output is adjusted below nominal value, the maximum output current is the same as the nominal output, when the output is adjusted above nominal value, the output power cannot exceed the nominal maximum power (the maximum output current used should be reduced accordingly).
The function is only valid for constant voltage models.

REMOTE SENSE

Remote sense feature can be used to compensate for the extra voltage drop on output wires that are connected from the main output terminals to the load. With wires connected from the remote sense pins, at the same locations as the wires from the main output, the remote sense function can compensate up to 500mV voltage drop.

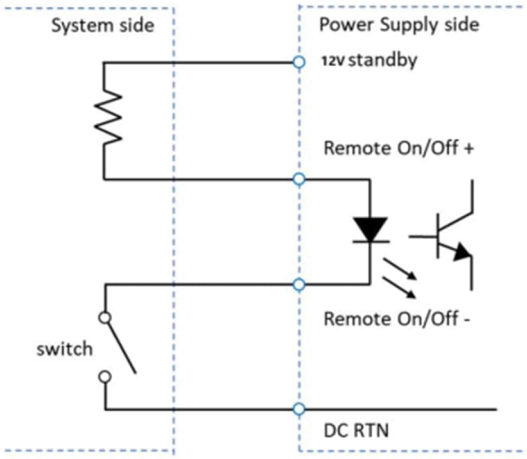
BATTERY DETECTION

The power supply will detect if the battery is connected. When a battery connection is detected, the power supply will start the output to charge the battery. Now battery is fully charged, the power supply will stop operation.
For customized requirement or different operation sequence, please contact RECOM

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REMOTE ON/OFF

Remote ON/OFF input can be used to turn off or turn on the power supply main output.
The output ON/OFF can be controlled by conducting an isolated diode located within the power supply. When the main output is disabled, the +12 V Standby output will continue to operate. System can use a switch to conduct through this diode (suggested pull up resistor to 12 V standby with 2 Kohm resistor) to disable the main out. The signal can be floated (no connection to the signal), in order to enable the main output.



CAN / I²C COMMUNICATION

The power supply comes with CAN Bus communication function. Please contact RECOM for communication protocols or other communication requirement.

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