

Features

Regulated Converters

- Universal Input 90-264VAC
- Efficiency 91%
- Short Circuit And Over Voltage Protected
- Active PFC Function, PF>0.95
- UL, CE Marked (CB Report)
- RECOM Connector Set Available
- Conformal Coating

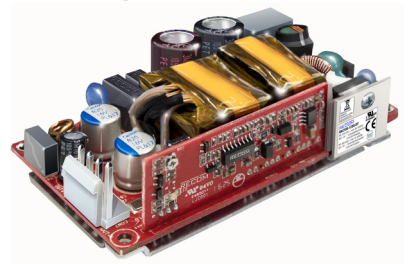


RAC150-G

150 Watt
4" x 2"



Open Frame or Enclosed Case



UL62368-1 (pending)
CAN/CSA C22.2 No. 62368-1-14 (pending)
UL60950 (pending)
CAN/CSA C22.2 N.60950-1-07 (pending)
IEC/EN60950-1 (pending)
EN55022/55024 compliant
FCC Part 15
CB Report

Description

The RAC150 series are cost-efficient 150 Watt AC/DC power supplies in a standard 2"x4" footprint with a universal input range of 90-264VAC for worldwide usage. They are built to deliver up to 125 Watt with natural air convection for use in tight, space-critical housings with low available airflow. UL and CE marks with CB-reports include the new 62368 safety standard as well as the usual 60950 safety standard. The RAC150 series offers tightly regulated 12V, 24V and 48VDC outputs with 3kVAC isolation and Class B EMC certifications and come with a three year warranty.

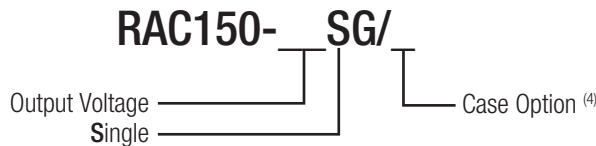
Selection Guide

Part Number	Input Voltage [VAC]	Output Voltage [VDC]	max. Output Current ⁽¹⁾ [mA]	typ. Efficiency ⁽²⁾ [%]	Max. Capacitive Load ⁽³⁾ [µF]
RAC150-12SG ⁽⁴⁾	90-264	12	12500	91	2000
RAC150-24SG ⁽⁴⁾	90-264	24	6250	91	1000
RAC150-48SG ⁽⁴⁾	90-264	48	3125	91	500

Notes:

- Note1: With forced air cooling, refer to derating graph.
 Note2: Typ. efficiency is tested @ 230VAC and full load.
 Note3: Max. cap load is tested @ 90-264VAC and full resistive load.

Model Numbering



Notes:

- Note4: add suffix "OF" for open frame version
 add suffix "ENC" for enclosed version

Ordering Examples:

- RAC150-24SG/OF, 24Vout Single, open frame version.
 RAC150-12SG/ENC, 12Vout Single, enclosed version.

Specifications (measured @ ta = 25°C, nominal input voltage, full load otherwise noted)

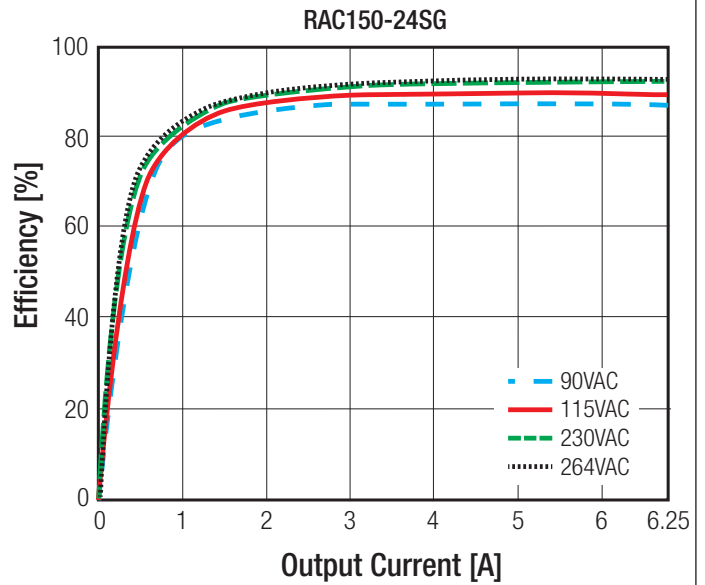
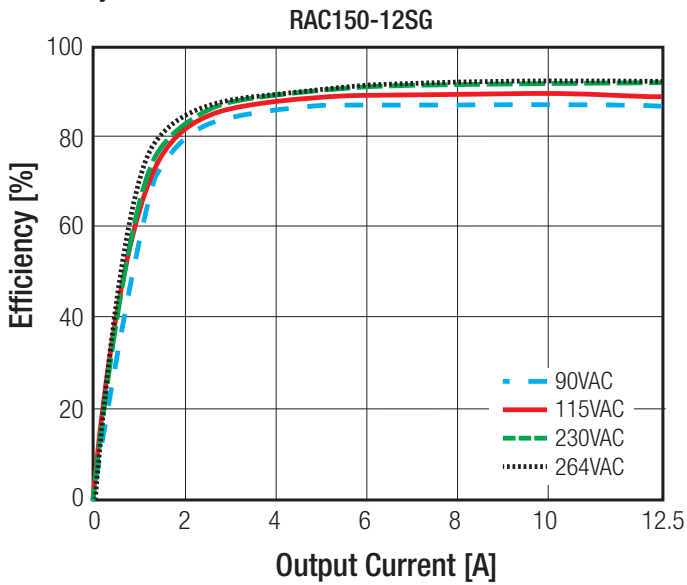
BASIC CHARACTERISTICS				
Parameter	Condition	Min.	Typ.	Max.
Output Power	90-264VAC, with 2.5m/s airflow			150W
	230VAC, 0.1m/s airflow			125W
	115VAC, 0.1m/s airflow			120W
	90-115VAC, 0.1m/s airflow	refer to derating guidelines (PA-4)		
Internal Input Filter		Pi type		
Input Voltage Range		90VAC	230VAC	264VAC
Input Current				2A
Inrush Current	cold start, 115VAC			40A
	cold start, 230VAC			60A
Input Frequency Range		47Hz		63Hz

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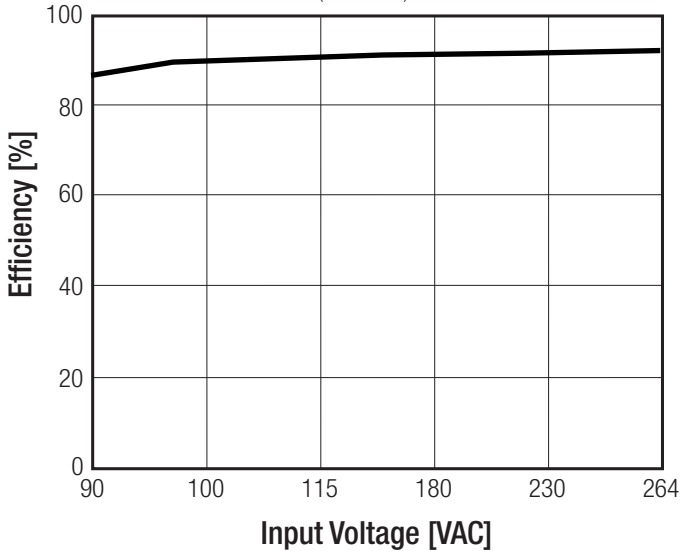
Specifications (measured @ $t_a = 25^\circ\text{C}$, nominal input voltage, full load otherwise noted)

Parameter	Condition		Min.	Typ.	Max.
Rise Time	115VAC/230VAC				50ms
Hold-up Time	115VAC / 230VAC	100% load 50% load	6ms	20ms	
Minimum Load			0%		
Internal Operating Frequency				132kHz	
Output Ripple & Noise	+70°C	12Vout			150mVp-p
		24Vout			240mVp-p
	-30°C	48Vout			360mVp-p
		12Vout			300mVp-p
Power Factor	115VAC		0.98		
	230VAC		0.95		

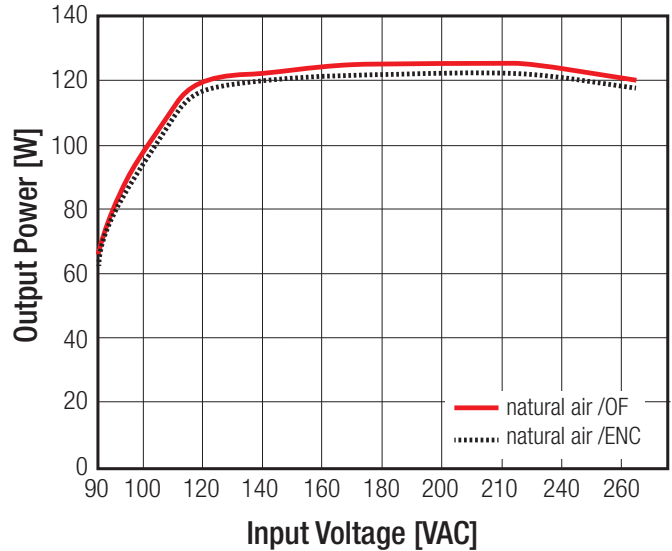
Efficiency vs. Load



Efficiency vs. Input Voltage
(@ full load)



Output Power vs. Input Voltage

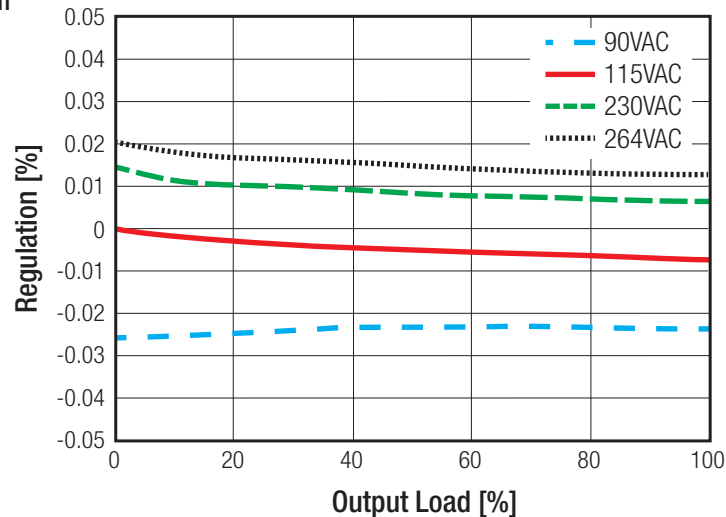


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Specifications (measured @ $t_a = 25^\circ\text{C}$, nominal input voltage, full load otherwise noted)

REGULATIONS			
Parameter	Condition		Value
Output Accuracy	-30°C to +70°C		±2.0% max.
Load Regulation	-30°C to +70°C, 0%-100% load		±0.2% typ.
Line Regulation	-30°C to +70°C		±0.1%
Transient Response	-30°C to +70°C	25% load step change recovery time	±5.0% V_{out} max. 200µs max.

Normalized Output Regulation



PROTECTIONS			
Parameter	Type		Value
Input Fuse	internal		T3.15A
Short Circuit Protection	below 100mΩ		continuous, Hiccup Mode, auto recovery
Over Voltage Protection (OVP)			105%-150% nominal voltage, Latch OFF
Isolation Voltage	I/P to O/P		3kVAC/10mA/1minute
	I/P to PE		1.5kVAC/10mA/1minute
	O/P to PE		0.5kVDC/10mA/1minute
Isolation Capacitance			3300pF typ.
Isolation Resistance	I/P to O/P; I/P to case; O/P to case		10MΩ min.
Leakage Current	240VAC, 63Hz		0.25mA max.
Insulation Grade			reinforced

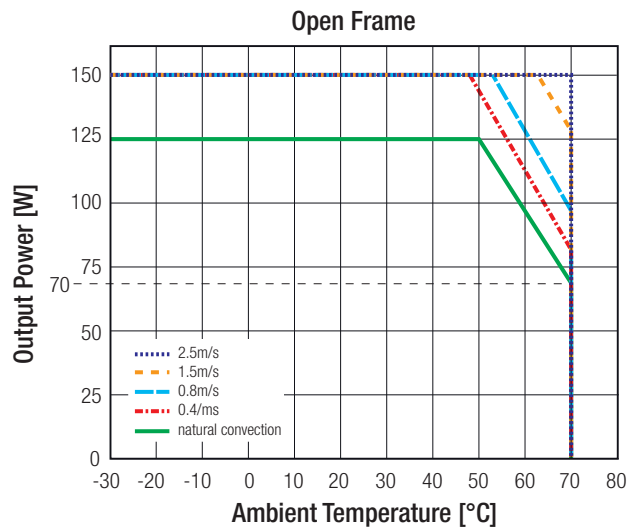
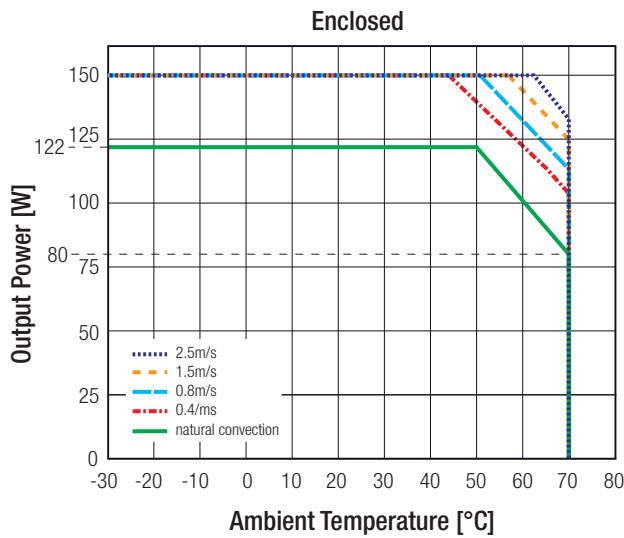
ENVIRONMENTAL			
Parameter	Condition		Value
Operating Temperature Range	with derating (see graph on next page)		-30°C to +70°C
Temperature Coefficient			±0.02%/°C
Operating Humidity	non-condensing		20% - 90% RH
Operating Altitude			3000m
Pollution Degree			PD2
Shock			20G, 11ms, 3 times for X,Y,Z axis
Vibration			10-500Hz, 3G, 10min. for each, 6cycles for each X,Y,Z
MTBF	MIL-HDBK-217F G.B. +25°C	natural convection (125W)	100 x 10 ³ hours
		forced cooling (150W)	200 x 10 ³ hours

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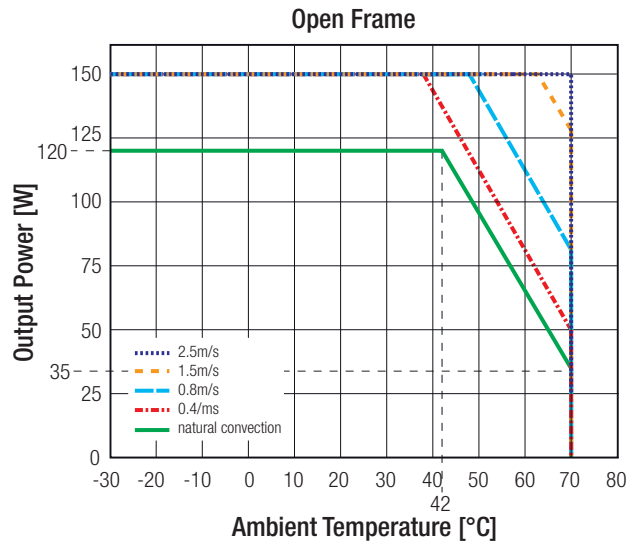
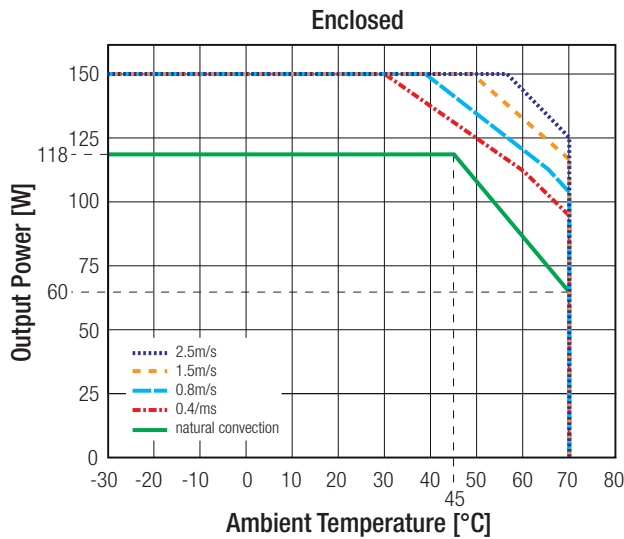
Specifications (measured @ $t_a = 25^\circ\text{C}$, nominal input voltage, full load otherwise noted)

Derating Graph

@ 230VAC, horizontal mount

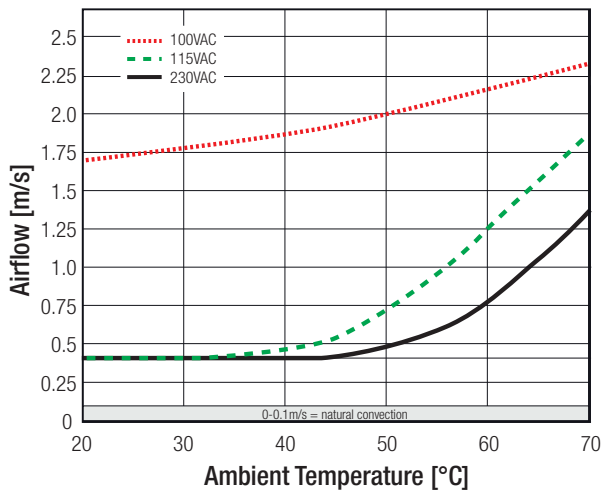


@ 115VAC, horizontal mount

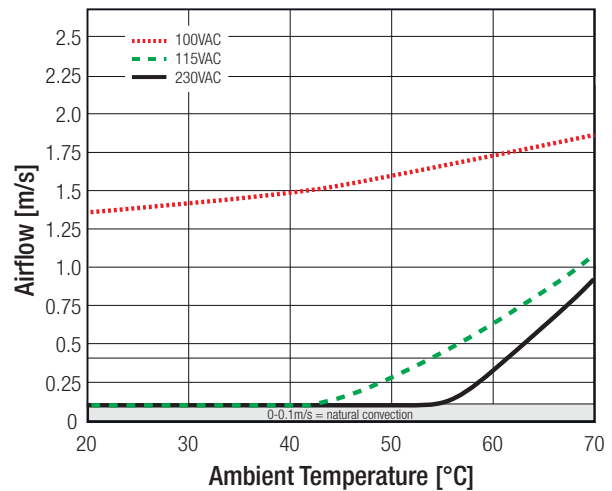


Required Airflow

150W



120W

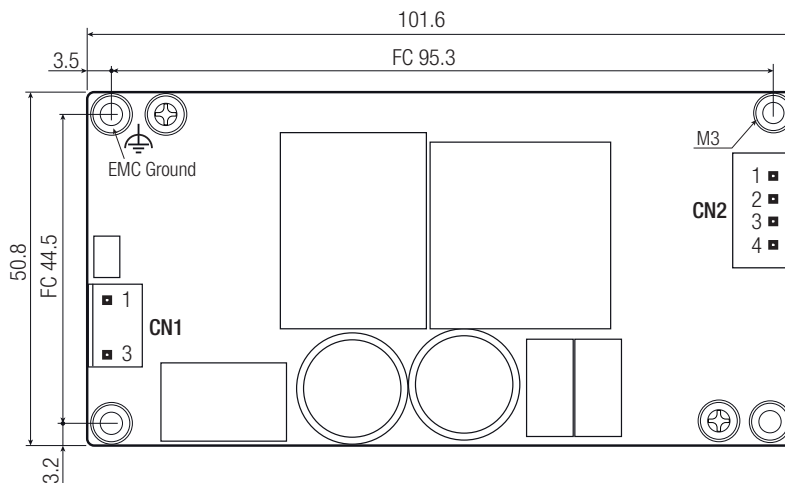


Specifications (measured @ ta = 25°C, nominal input voltage, full load otherwise noted)

SAFETY AND CERTIFICATIONS		
Certificate Type (Safety)	Report / File Number	Standard
Information Technology Equipment, General Requirements for Safety	pending	UL60950-1, 2nd Edition, 2014 CSA C22.2 No. 60950-1-07, 2nd Ed. 2014
Audio/Video, information and communication technology equipment - Safety requirements	pending	UL62368-1, 2nd Edition, 2014 CSA C22.2 Nr. 62368-1-14, 2nd Ed. 2014
Audio/video, information and communication technology equipment - Safety requirements (CB Scheme)	pending	IEC60950-1, 2nd Edition + AM2, 2013 EN60950-1, 2nd Edition, 2014
RoHS2	pending	RoHS 2011/65/EU + AM2015/863
EMC Compliance		
Conditions	Standard / Criterion	
Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement	EN55022, Class B	
Information technology equipment - Immunity characteristics - Limits and methods of measurement	EN55024, 2015	
Limitations on the amount of electromagnetic interference allowed from digital and electronic devices	47 CFR FCC Part 15, Subpart, Class B	
ESD Electrostatic discharge immunity test	±8kV Air; ±4kV Contact	EN61000-4-2, Criteria B
Radiated, radio-frequency, electromagnetic field immunity test	3V/m	EN61000-4-3, Criteria A
Fast Transient and Burst Immunity	AC Power Port: ±1kV	EN61000-4-4, Criteria B
Surge Immunity	AC Power Port: L-L ±1kV	EN61000-4-5, Criteria B
Immunity to conducted disturbances, induced by radio-frequency fields	AC Power Port: 3V	EN61000-4-6, Criteria A
Voltage Dips and Interruptions	Dips: >95% reduction Interruption: >95%	EN61000-4-11, Criteria B EN61000-4-11, Criteria C
Limits of Harmonic Current Emissions		EN61000-3-2, Criteria A
Voltage Fluctuations and Flicker in Public Low-Voltage Systems ≤16A per phase		EN61000-3-3

DIMENSIONS and PHYSICAL CHARACTERISTICS		
Parameter	Type	Value
Material	PCB	FR4 (UL94-V0)
	Case/Baseplate	Aluminium (UL94-V0)
Package Dimension (LxWxH)	OF -version	101.6 x 50.8 x 24.0mm
	ENC-version	105.0 x 62.0 x 35.0mm
Package Weight	OF -version	200g
	ENC-version	265g

Dimension Drawing Open Frame (mm)



Connection via Connector

AC Input (CN1)

Pin #	Pin Header
1 AC/N	LANDWIN 3961P0300TN2
3 AC/L	

DC Output Connector (CN2)

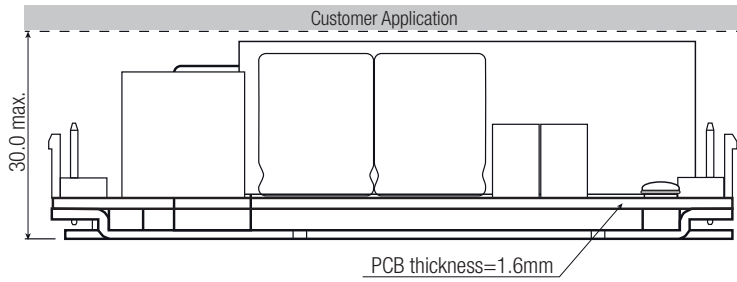
Pin #	Pin Header
1,2 V+	LANDWIN 3962P0400T
3,4 V-	

FC= fixing centers
Crimp Terminal AWG Range: 18-22AWG
Suggested Plug: RECOM Connector SET OF
Tolerance: xx.x= ±1.0mm
xx.xx= ±0.5mm

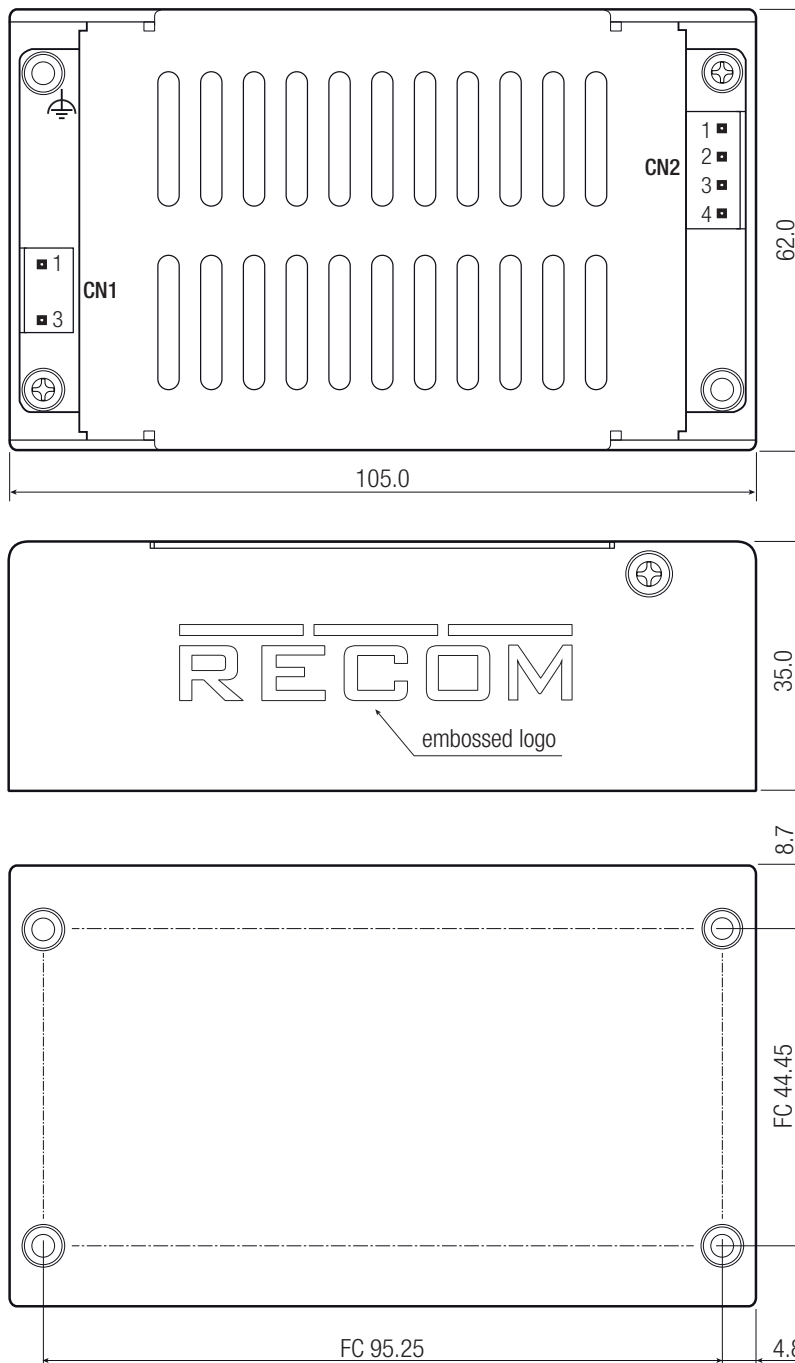
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Specifications (measured @ $t_a = 25^\circ\text{C}$, nominal input voltage, full load otherwise noted)

Dimension Drawing Open Frame (mm)



Dimension Drawing Enclosed Case (mm)



Connection via Connector

AC Input (CN1)

Pin #	Pin Header
1 AC/N	LANDWIN 3961P0300TN2
3 AC/L	

DC Output Connector (CN2)

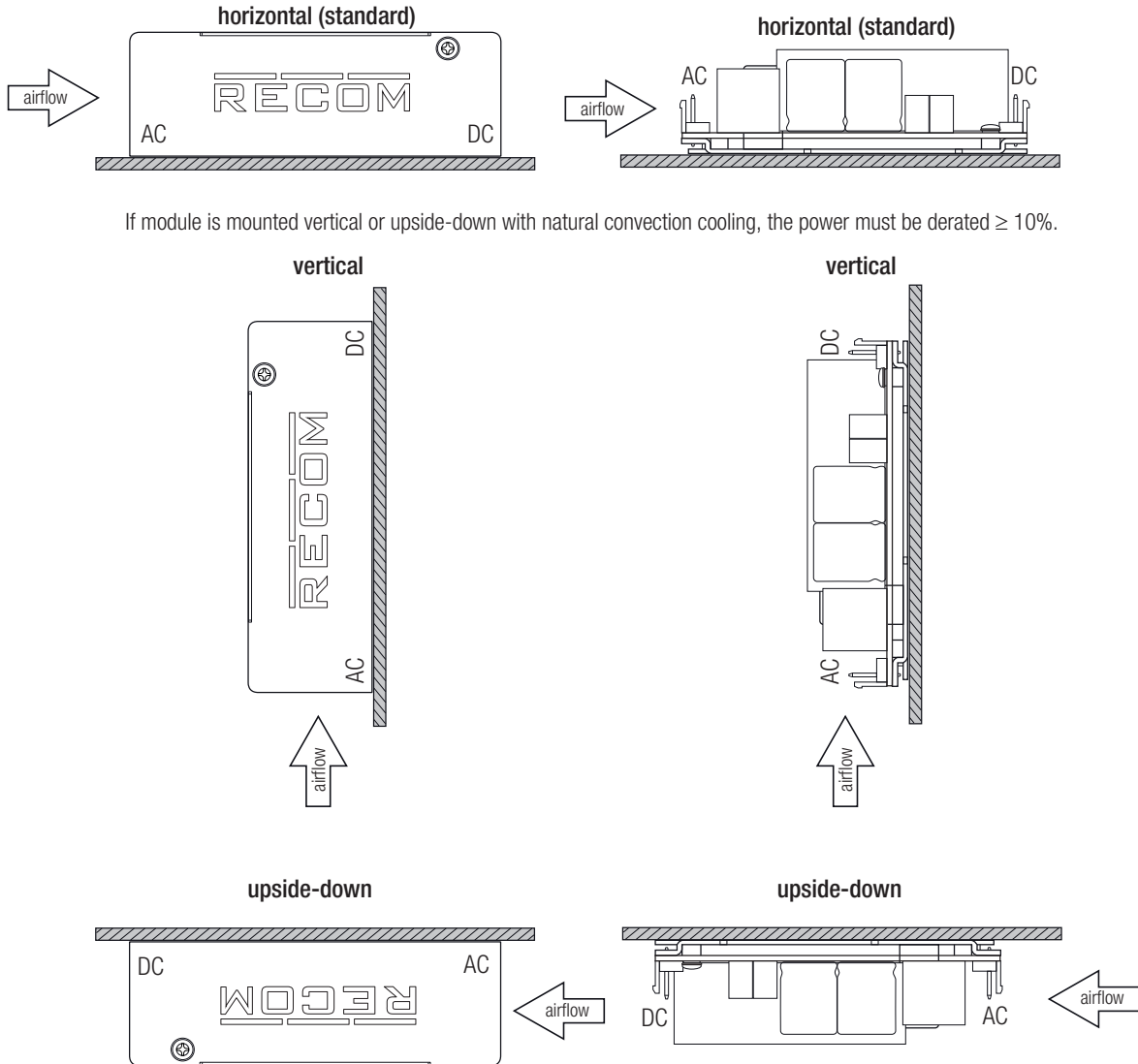
Pin #	Pin Header
1,2 V+	LANDWIN 3962P0400T
3,4 V-	

FC= fixing centers
Crimp Terminal AWG Range: 18-22AWG
Suggested Plug: RECOM Connector SET OF
Tolerance: xx.x= $\pm 1.0\text{mm}$
xx.xx= $\pm 0.5\text{mm}$

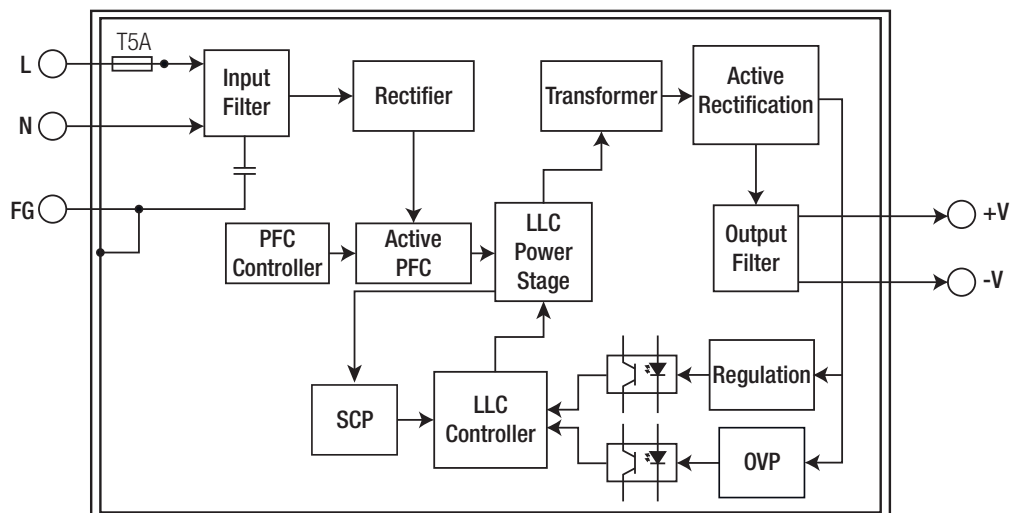
Specifications (measured @ $t_a = 25^\circ\text{C}$, nominal input voltage, full load otherwise noted)

APPLICATION and INSTALLATION

Mounting



Functional diagram



Specifications (measured @ $t_a = 25^\circ\text{C}$, nominal input voltage, full load otherwise noted)

PACKAGING INFORMATION		
Parameter	Type	Value
Packaging Dimension (LxWxH)	cardboard box	112.0 x 80.0 x 50.0mm
Packaging Quantity		1pcs
Storage Temperature Range		-40°C to +85°C
Storage Humidity	non-condensing	10% - 95% RH