Features

LED DRIVER

- AC-DC LED Power Supply
- 60W Dual Mode CV and CC Output
- Power Factor Corrected
- Universal Input Voltage Ranges
- Low Cost Open Frame Design
- High Efficiency
- Adjustable Current Limit
- 5 Year Warranty

LIGHTLINE
AC/DC-Converter

RECOM

60 Watt PFC Single Output

RoHS 2002/95/EC 6/6

Description

A compact universal input voltage 60W constant voltage/ constant current switching power module suitable for driving high power LEDs. The LED drivers have a dual mode of operation: CV mode: at loads below the preset current limit , the RACD60 behaves as a voltage source. CC mode: at loads above the preset current limit, the RACD60 behaves as a current source. Thus the same power supply can be used with both CV and CC LED modules. The current limit can be set by the user. The RACD 60 series have a universal input voltage range and are fully protected against output short circuit, overload and over-temperature. The converters feature built-in power factor correction as standard.

Selection Guide

Part Number	Input Voltage Range (VAC)	Output Voltage (VDC)	Output Adjust (mA)	Minimum Load (mA)	Preset Limit (mA)	Efficiency (230VAC) (%)
RACD60-4200*	universal	11 - 13.5 max	3570 - 4200	3570	4200	85
RACD60-2400*	universal	17 -24 max	1700 - 2500	1700	2400	87
RACD60-2100*	universal	21 - 28 max	1400 - 2140	1400	2100	89
RACD60-1050*	universal	33.5 - 48 max	825 - 1250	825	1050	89
RACD60-700*	universal	38- 54 max	700 - 850	700	700	89

* add suffix /OF for open frame version (Standard)

Specifications (typical at 25°C and after warm up time unless otherwise specified)

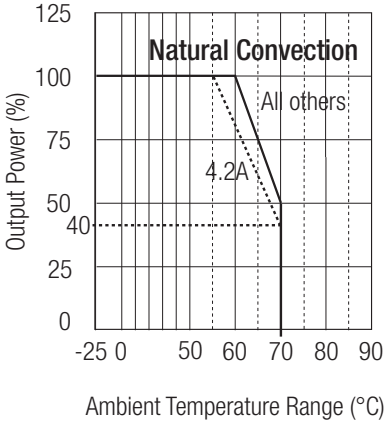
Input Voltage Range		90-264VAC
Rated Power		60 Watts max.
Input Frequency Range		47-63 Hz
Power Factor Correction	Full Load, 115VAC/230VAC	> 0.9
Input Current (full load)	115VAC/230VAC	0.8A / 0.4A max.
Inrush Current (cold start)	115VAC/230VAC	25A / 50A max.
Leakage Current	230VAC/63Hz	<0.75mA max.
Input Fuse	Built-in	3.15A Slow Blow
Output Current Accuracy	Full load	±5%
Output Current Adjust	Preset Potentiometer	75% to 100% approx.
Line Voltage Regulation	LL to HL at Full Load	±4% typ.
Load Voltage Regulation	60% to 100% Load	±5% typ.
Minimum Load Current		see table
Output Ripple and Noise	20MHz limited,with 0.1µF + 47µF	5Vp-p max.
Operating Frequency		65kHz typ.
Efficiency at Full Load		see table
RMS Isolation Voltage	input to output	3kVAC / 1 minute
	input to filter ground	1500VAC / 1 minute
	output to filer ground	500VAC / 1 minute
Temperature Coefficient		±0.02%/°C typ.
Overload Protection		105% typ.
Short Circuit Protection		Continuous, Hiccup, Automatic Restart
Output Overvoltage Protection		Zener Diode Clamp

continued on next page

RACD60

Derating Graph

(Ambient Temperature)



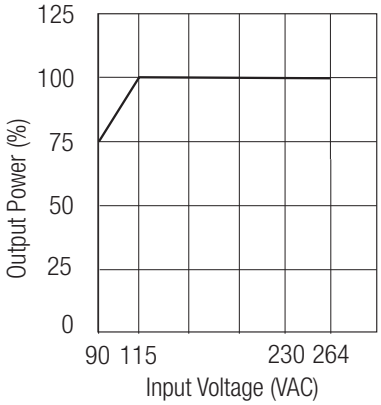
Please Read Application Notes

RACD60 Series

Specifications cont. (typical at 25°C and after warm up time unless otherwise specified)

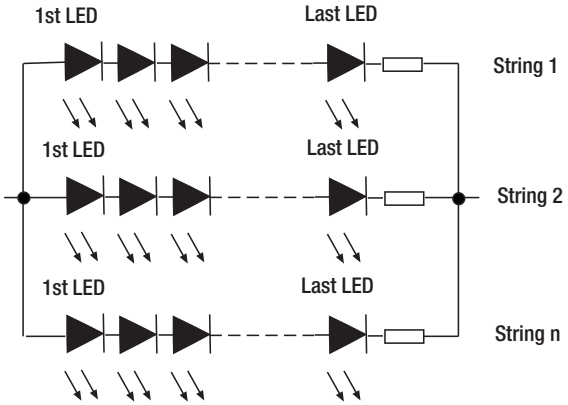
Operating Temperature Range	free air convection, with derating	-25°C to +70°C
Storage Temperature Range		-40°C to +85°C
Humidity	non-condensing	95% RH max.
PCB Material		Plastic Resin with Fibreglass (UL94V-0)
Weight		165g
Packing Quantity		1pc
EMC		Designed to meet EN 55015 / EN 61547
Harmonics		Designed to meet EN 61000-3-2 and -3
MTBF	(using MIL-HDBK-217F, 25°C)	583 x 10^3 hours
Input/Output Connections	Pin Header (suitable matching connectorJST VHR or similar)	

Input Voltage Derating (Ta=25°C)



Application Information

LEDs are typically wired in series to make a string of LEDs and then the strings can be wired in parallel to generate enough light. If only two or three strings are wired in parallel then it is recommended to add resistors (e.g. 0.5R) to each string to help balance out the LED currents in each string. All strings must share a common heatsink for better current matching.



A typical 1W high brightness white LED has a forward voltage of around 3.3V at its operating temperature and draws 350mA. Thus each LED actually draws about 1.15W. Similarly, 3W white LEDs have usually the same forward voltage but can be run at 700mA or more. Using the LED datasheet specification, the optimum LED arrangement and the best driver for each application can be worked out.

The tables below show some examples. Other LED combinations may have different forward voltages at their recommended operating currents.

1W LEDS	LED Arrangement	AC/DC Driver
24	2 Strings of 12	RACD60-700
26	2 Strings of 13	RACD60-700
28	4 Strings of 7	RACD60-2100*
30	3 Strings of 10	RACD60-1050
33	3 Strings of 11	RACD60-1050
35	5 Strings of 7	RACD60-2100
35	7 Strings of 5	RACD60-2400
36	3 Strings of 12	RACD60-1050
39	3 Strings of 13	RACD60-1050
42	3 Strings of 14	RACD60-1050
42	7 Strings of 6	RACD60-2400
42	14 Strings of 3	RACD60-4200
45	3 Strings of 15	RACD60-1050

3W LEDS	LED Arrangement	AC/DC Driver
12	12 in series	RACD60-700
14	2 Strings of 7	RACD60-2100*
18	3 Strings of 6	RACD60-2100
18	6 Strings of 3	RACD60-4200

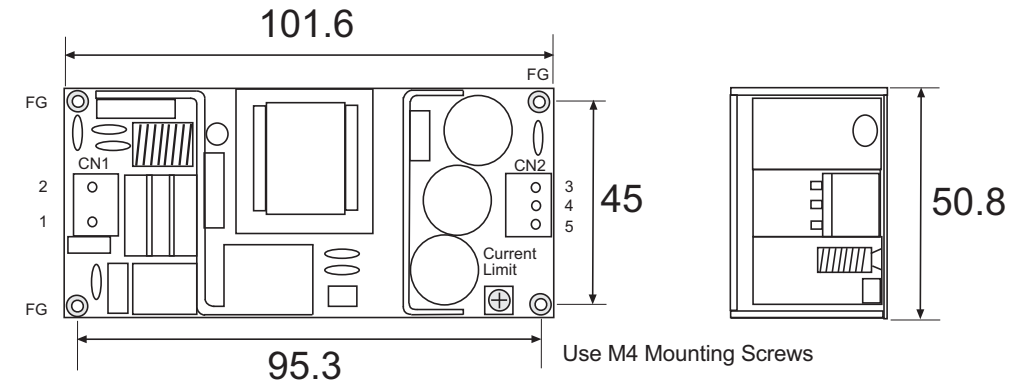
Power LEDs	LED Arrangement	AC/DC Driver
Cree MX-6	11 in series	RACD60-1050
Cree XP-G	3 in parallel	RACD60-2100
Lumiled Rebel	13 in series	RACD60-700
Lumiled Star	3 strings of 4	RACD60-2100
Bridgelux ES	3 in series	RACD60-1050
Helion	Single Module	RACD60-2100*

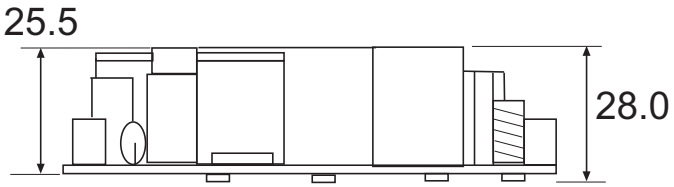
* Adjust output current to 1400mA

Package Style and Pinning

RACD60-xxxx/OF

3rd angle projection





Pin Connections – Single Output

Pin #	Function
1	VAC in (L)
2	VAC in (N)
3	NC
4	+VDC Out
5	-VDC Out

Filter Ground connection via mounting holes
Dimension Tolerance ± 0.25 mm