RECOM

Innovation. Quality. Perfection.

Product Trainings Module

RAC03-SCR/277

DC/DC CONVERTERS

AC/DC MODULES

LED DRIVERS

SWITCHING REGULATORS

RAC03-SCR/277 Introduction

Welcome to the RECOM introduction to the RAC03-SCR presentation. This presentation will discuss the trend of integrating DC voltage supplies in home and office power systems. The objective is to understand the advantages of converting existing AC systems into DC voltage sources directly at the outlet.

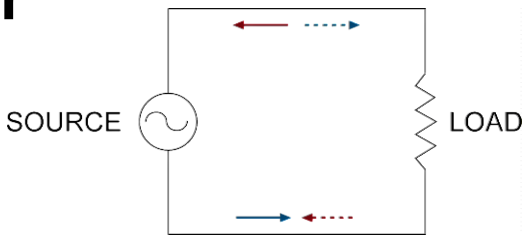
Content:

- Explore how RECOM's RAC03-SCR/277 meets new trends in reducing energy consumption and increasing energy efficiency
- Round shape means that this power supply can be used to provide DC voltages from the existing AC power supply directly from the wall socket
- Examples of applications

What is AC Power?

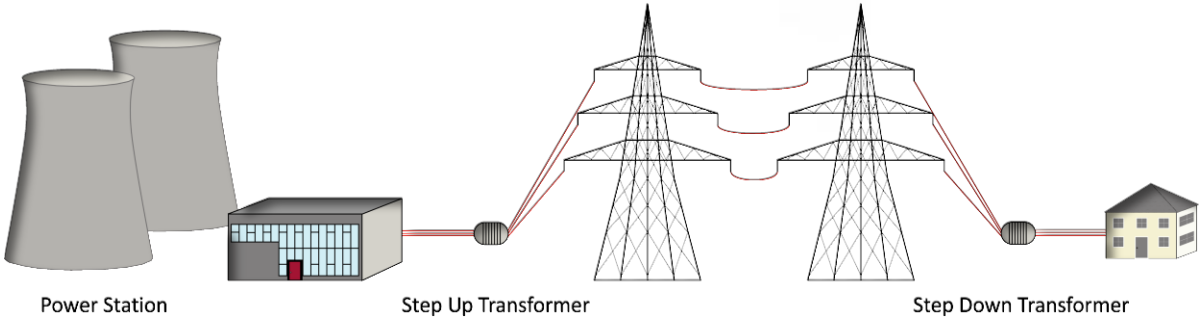
AC (Alternating Current) Power

AC, or alternating current is used by power companies to transmit power from the source to the user.



Because power loss is proportional to the square of the current, it makes sense to transmit power at very high voltages and very low current in order to minimize transmission losses. Transformers are used to increase the voltage at the power plant for transmission and again at the customer side to reduce the voltage to a safe, usable level.

Currently, it is cheaper and more efficient to transform AC voltage than DC voltage to different voltage levels.



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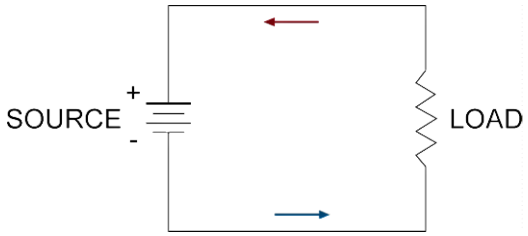
What is DC Power?

DC (Direct Current) Power



DC, or direct current power is used by many household electronic devices such as laptops, cell phones, and TVs.

Since the power in most homes is AC, these devices normally contain an AC plug and transform this AC power into DC power in order to operate.

As an alternative, some of these devices run on batteries instead of being connected to the main power supply.

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Energy Efficiency Regulations

Wasted Power

- Due to the large amount of electronic devices now in homes and offices, concern is rising about the efficiency of these small AC/DC power supplies. World leaders have launched several initiatives and directives aimed at raising the energy efficiencies of the products we use and the places where we live and work.
- e.g.
  - Europe - 2012/27/EU, EuP, ECEEE, EPE, BER
  - America – Energy Star, ACEEE, BECP, RMI
  - World – IPEEC, IEA (One-Watt Initiative), IIEC

These policies are targeting every aspect of our power consumption in order to form a more sustainable future.

Energy Efficiency Regulations

Wasted Power

In order to meet the ecological regulations, it will be necessary to rethink the power distribution systems in homes and offices.

One option is to have separate AC and DC power distribution systems: for example, AC for the wall sockets and DC for the LED lighting in the ceilings. This is possible for some large offices and new buildings, but impractical for many small offices and homes with existing wiring.

Advances in wireless technology (Bluetooth, WLAN, ZigBee, etc.) mean that many systems can communicate with each other without signal wiring and need only a local, low power AC/DC supplies that can be fitted into standard wall wiring boxes. These are called Smart Solutions.

RECOM RAC03-SCR/277

It is now possible to create localized DC power right in the outlet box. RECOM has released the new RAC03-SCR/277, which allows a simple, quick conversion of a wide range of AC voltages into DC voltage, right behind the switch or outlet. Now it is possible to effortlessly retrofit existing, less efficient AC powered homes with DC smart solutions without performing a complete overhaul of the existing electrical system.

- Ideal for retrofitting existing AC networks to incorporate localized DC solutions
- Small enough (10mm height / 50mm diameter) to fit in switch and outlet boxes behind faceplate

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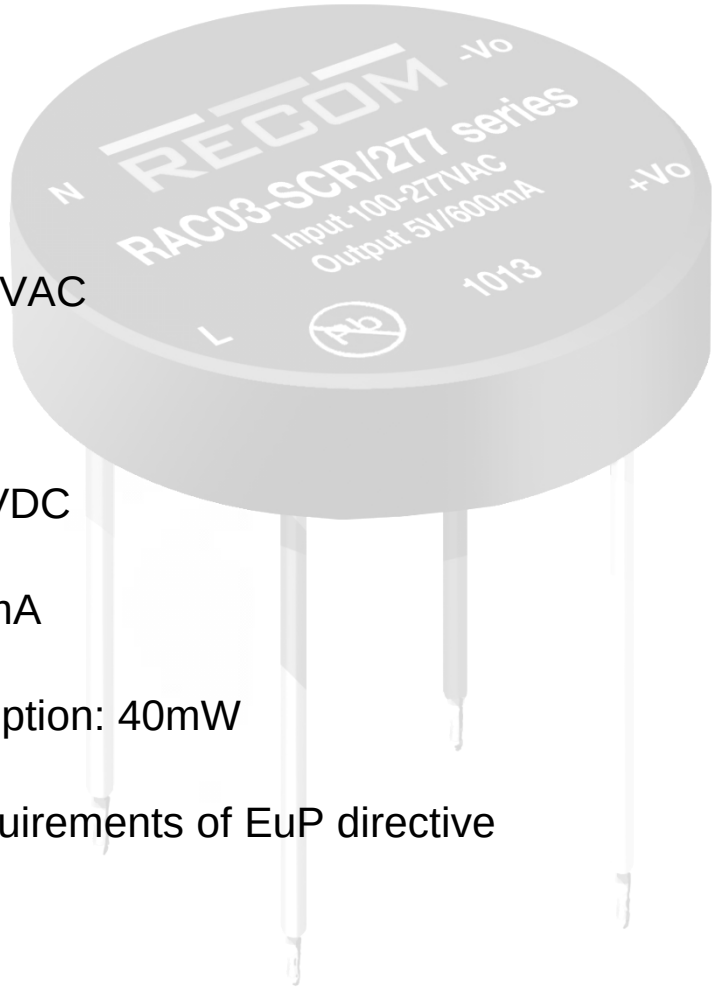
RECOM RAC03-SCR/277

Main Features

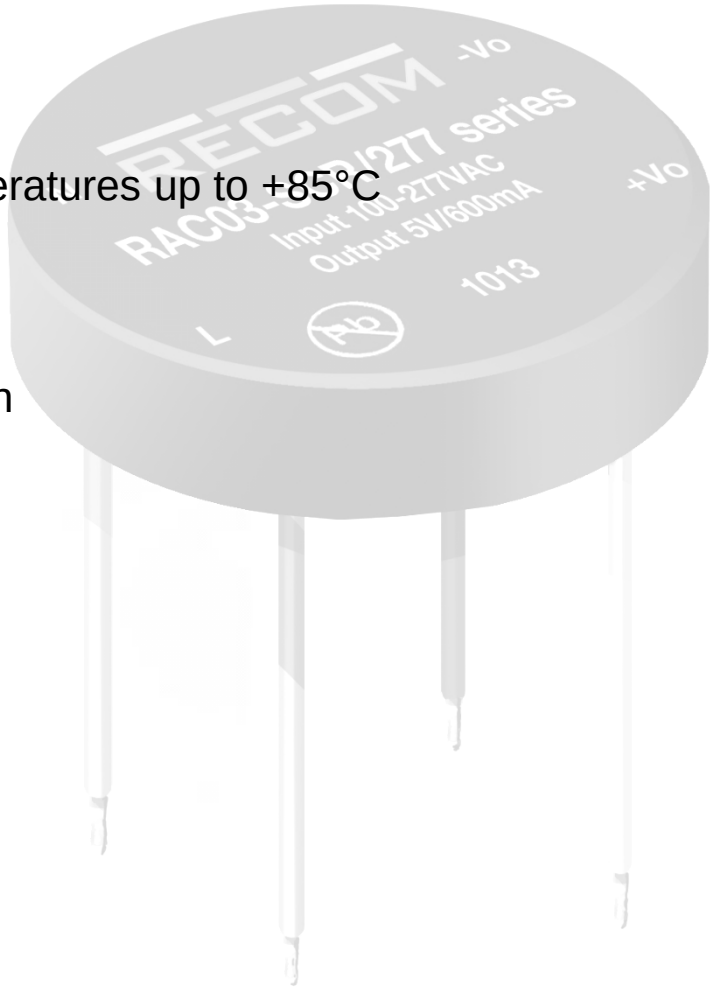
- 3 watts
- High efficiency: up to 78%
- Wide input voltage range: 85-305VAC
- Input frequency range: 47-440Hz
- Output voltages: 3.3, 5, 12 or 24VDC
- Available current: 125mA to 900mA
- Ultra low stand-by power consumption: 40mW
- Consumes less than 1/12th of requirements of EuP directive



RECOM RAC03-SCR/277

Main Features

- 3kVAC isolated output
- Operate reliably in ambient temperatures up to +85°C
- Up to 95% relative humidity
- Continuous short circuit protection
- UL certified
- CE certified
- 3 year warranty



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Part numbers

Part Number	Input Voltage (VAC)	Output Voltage (VDC)	Output Current (mA)
RAC03-3.3SCR/277	85-305 VAC	3.3V	900mA
RAC03-05SCR/277	85-305 VAC	5V	600mA
RAC03-12SCR/277	85-305 VAC	12V	250mA
RAC03-24SCR/277	85-305 VAC	24V	125mA

For further information please visit our website:
www.recom-electronic.com

Smart Solutions

In order to reduce the use of energy a home or office building uses, smart solutions have been developed. These systems rely on programming and sensors in order to automate many processes in our homes and offices such as heating, cooling, and lighting.

Additionally, renewable resources such as solar power have been incorporated into smart solutions to supplement our power grid.

In general, smart systems are very dependent on DC power.

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Smart Solutions - Possible Applications

With DC voltage available directly in the wall, a whole ocean of possibilities is opened. Devices that have formerly relied on batteries to operate can now be plugged directly into a DC power source.

Also, many products that previously converted AC to DC themselves can now be plugged directly into a DC power source.

There are so many possible applications that can be integrated into offices, hotels, theaters, and other intelligent places where reduced energy consumption is becoming a major theme.

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Smart Solutions - Possible Applications

- **Sensors**
  - Temperature and humidity sensors for air conditioners
  - Light sensors for automated lighting solutions
  - Motion detectors for lighting and security
  - Smoke and fire detectors

- **Communication systems**
  - Intercoms / Doorbells
  - Video cameras / Security systems
- **USB-powered devices**
  - 5VDC for USB powered devices (phones, cameras, mp3 players, etc.)

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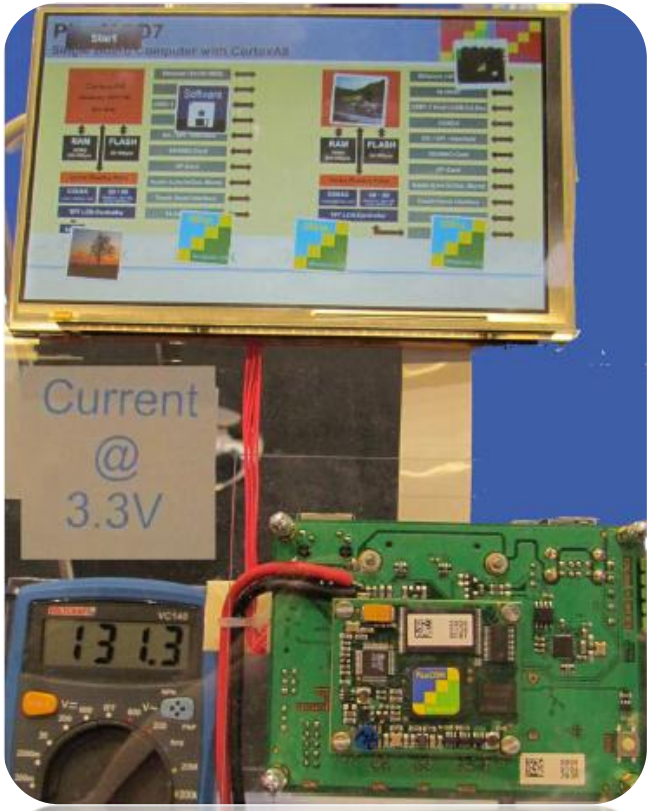
Smart Solutions - Possible Applications

A full color touch screen display with a micro-PC needs less than half a Watt of power.

RECOM's RAC03-SCR/277 is designed to offer a flat efficiency curve over the full load range from 500mW up to 3W, thus it can be used to power both touch screen control panels and have enough spare power capacity for panel backlighting or peak current loads during wireless data transmissions without compromising average efficiency.



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Summary

- Worldwide power consumption initiatives are driving power systems to integrate high-efficiency smart solutions
- Smart solutions are starting to integrate intelligence into the home and office to interconnect control, warning and actuator systems to maximize efficiency and reduce power wastage
- With **RECOM's RAC03-SCR/277**, existing AC systems may be easily retrofitted to provide DC power at the light switch or wall socket to integrate smart solutions into an existing system

For more information on the **RAC03-SCR/277**, visit the RECOM Power website:

www.recom-electronic.com

or have a look at the datasheet:

http://www.recom-international.com/pdf/Powerline-AC-DC/RAC03-SCR_277.pdf

Thanks for your attention!

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