Intelligent Home Controller

Background

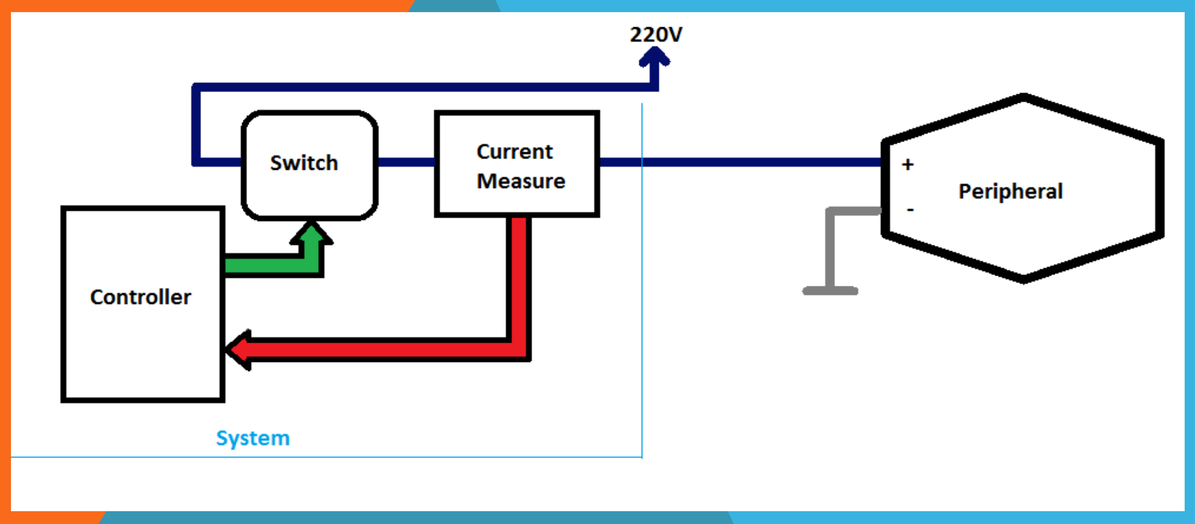
Many automation systems have been developed to assist users in controlling their home appliances. Mainly these products focus on monitoring the energy consumption and making it easier to control household peripherals from PCs or mobile devices.

Objectives

This project focuses on the problem of electric blackouts in Lebanon and tends to free the user from worrying about power status and from having to fear breakouts every time he wants to turn on a device, hence it will guaranty that no circuit breaks would occur and would maintain the electric bill reduced as much as possible.

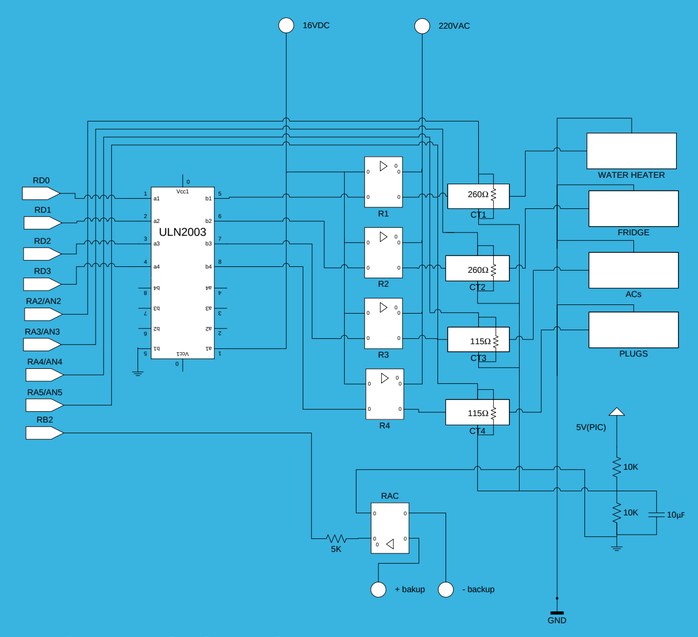
Design

The System consists of two parts: the hardware and the software.
The hardware is a small embedded system circuit that sits on top of the electric box. The device has two main utilities: measuring the consumption of each device and switching it ON or OFF.



Temperature and status (backup or main) are parts of the constraints for the synchronization.

The result is a simple circuit that interfaces a microcontroller to the house peripherals.



The Software part deals with the synchronization of the operation based on current measurements, temperature and power status making sure no overload occurs and reduces main electric bill.

Conclusion and Future work

The resulting device frees the user from interacting with the electric box, it is set up during the installation afterwards everything becomes automated.
This project opens a new field in automated houses in Lebanon: as a next project would be to incorporate the usual automation systems with this one to give more flexibility for users, and even for developers to interact with the options provided by the device.
And a more advanced topic would be a system that learns, this would be an artificial intelligent system that learns how the user interacts with the peripherals and remembers it for future use.

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