31015 Introductory Project

Smart Control of LED lighting

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1 Project description

1.1 Project goals

According to the EPA 93% of an average American spends his life indoors. A lot of that time is spend with the light on. The introduction of wireless smart lighting in homes enables power consumption cuts through automation and brightness control, as well as easing the users control of their lighting to maximise 'hygge'. With our lamp, we furthermore seek to provide entertainment, by providing more advanced and easy-to-use light show-like features than existing smart lighting solutions, at little-to-no extra cost.

1.2 Product specifications

The product should consist of an LED matrix smart lamp, powered through a wall socket at mains voltage (230 V AC). The lamp should be controllable from a web-based user interface, offering several basic and advanced control features. The control features shall be as listed in the following:

- Simple colour controls:
  - White/Colour
  - RGB colour
  - White colour temperature
  - Brightness
- On/Off timers
- Artificial sunrise
- Time zone calibration
- Advanced grid control:
  - Easy-to-use matrix-based lighting programming interface
  - Export/Import of lighting programs

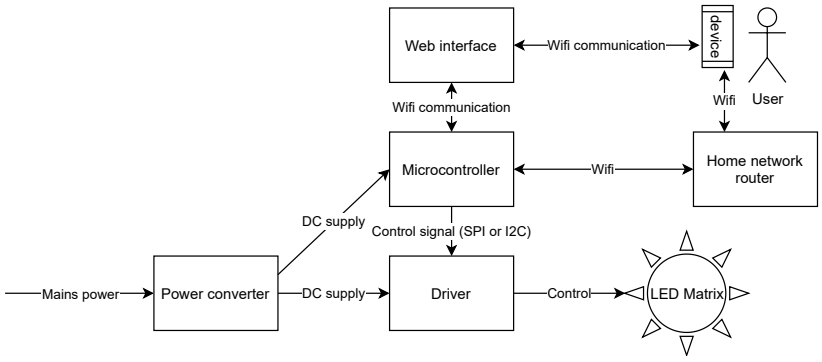

Figure 1: Basic functional block diagram

1.3 Market segment

This product is meant for private consumers. As the product can both be used as any other lamp and as a more personalized way of lighting, the target group for this product includes people who enjoy quirky gadgets for a low price, while also appealing to consumers with a more basic interest in smart lighting. It allows people with no knowledge of programming to be able to play around with customizing the LED grid in an easy to use interface through a web-browser. The lamps wide functionality enables a wide target group.