hayesey / srf_lightswitch

240vac lightswitch controlled by a TI CC1110

13 commits 2 branches 0 releases 1 contributor

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hayesey added registers spreadsheet Latest commit e5bc1e6 on 23 Nov 2017

SRF Light Switch	added filter veroboard eagle layout	3 years ago
firmware	rewrite of radio register settings, matches smartrf now	2 years ago
.gitignore	readme	3 years ago
README	info about filter add-on board	3 years ago
radio_registers.ods	added registers spreadsheet	2 years ago
srf_light_switch_BOM.ods	adding to github	3 years ago

README

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srf_lightswitch
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Originally written sometime in 2015
2016-11-17 put on github
2016-11-21 added filter info
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This is my home-made "IoT" light switch.  The idea is that you can retrofit this into a lamp or ceiling light to turn the light on
and off remotely.  In addition you can connect up the existing bistable switch (i.e. the light switch) to also operate the light
in order to maintain the operation people expect of a light & light switch.

It's based on a Texas Instruments CC1110 System-on-Chip.  The module I use is actually an SRF module from the sadly now defunct
Ciseco/Wireless Things company.  This and all other components are mounted to a PCB of my own design.

It uses a PCB mounted mains voltage transformer, this actually powers the microcontroller and other parts of the circuit from the
mains voltage going to the light itself.  No batteries are needed or any other means of power.

Files:

'SRF Light Switch' folder contains the design, layout and gerber files for the PCB.  The software I use is Cadsoft Eagle.  I used
Seeedstudio Fusion PCB online service for the production of prototype boards.  They are very cheap but since the work is done in
China, delivery takes weeks.

'Firmware' folder contains the C code for the CC1110 chip to make the light switch work.  I would definitely call it a prototype,
it is probably full of bugs.  It has some basic LLAP commands to control the light switch from other devices such as Ciseco XRF
modules.

To use this you'll need the Small Devices C Compiler (sdcc) and some way burning the compiled firmware on to the CC1110 device.  I
use a proper TI CC-Debugger, they are under £40.  I believe a Raspberry Pi can also be used to bit-bang it.  See this:

http://paulswasteland.blogspot.co.uk/2015/01/building-your-own-firmware-for-ciseco.html

Use at your own risk anyone who finds this.  I only ever intended this to be for experimentation or fun.

Note - there was an error by me with the PCB layout that didn't come to light until after I had them produced.  This is that I
hadn't included the low pass filter on the output of the 3.3v transformer.  Without this the radio performance is very poor.  I
made a small veroboard circuit to add the filter, there is an eagle schematic and layout showing this and the parts are included
in the BOM.  Values are from the datasheet for the Vigortronix transformer.

Paul Hayes.
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