

PiHome – home automation done with Raspberry PI and Python

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PyMalta 5th December '17, Sliema



wojtek.sznepka

wojtek.sznepka Hello Raspberry pi :-)



Get a Mac! :)



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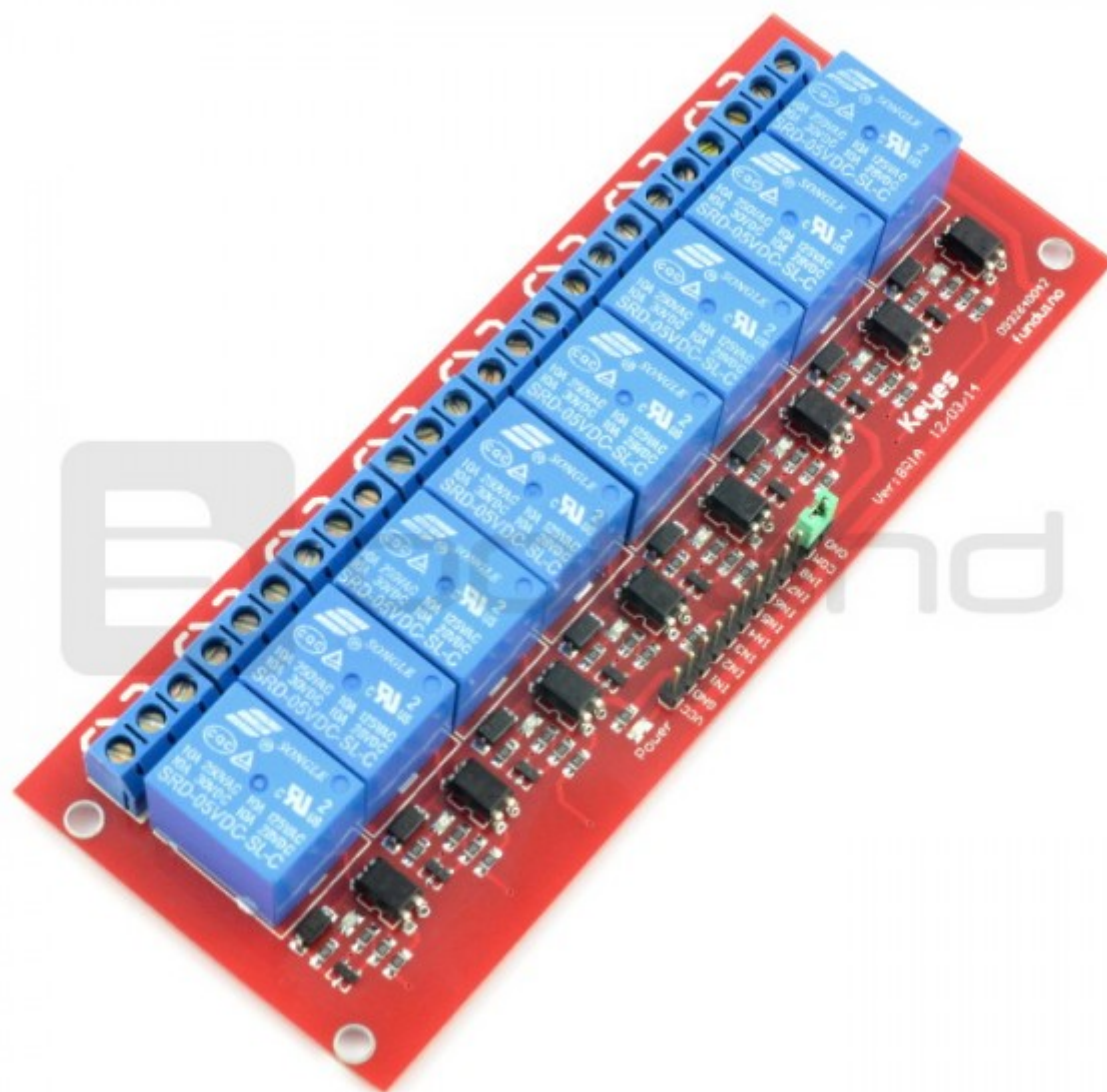
Features

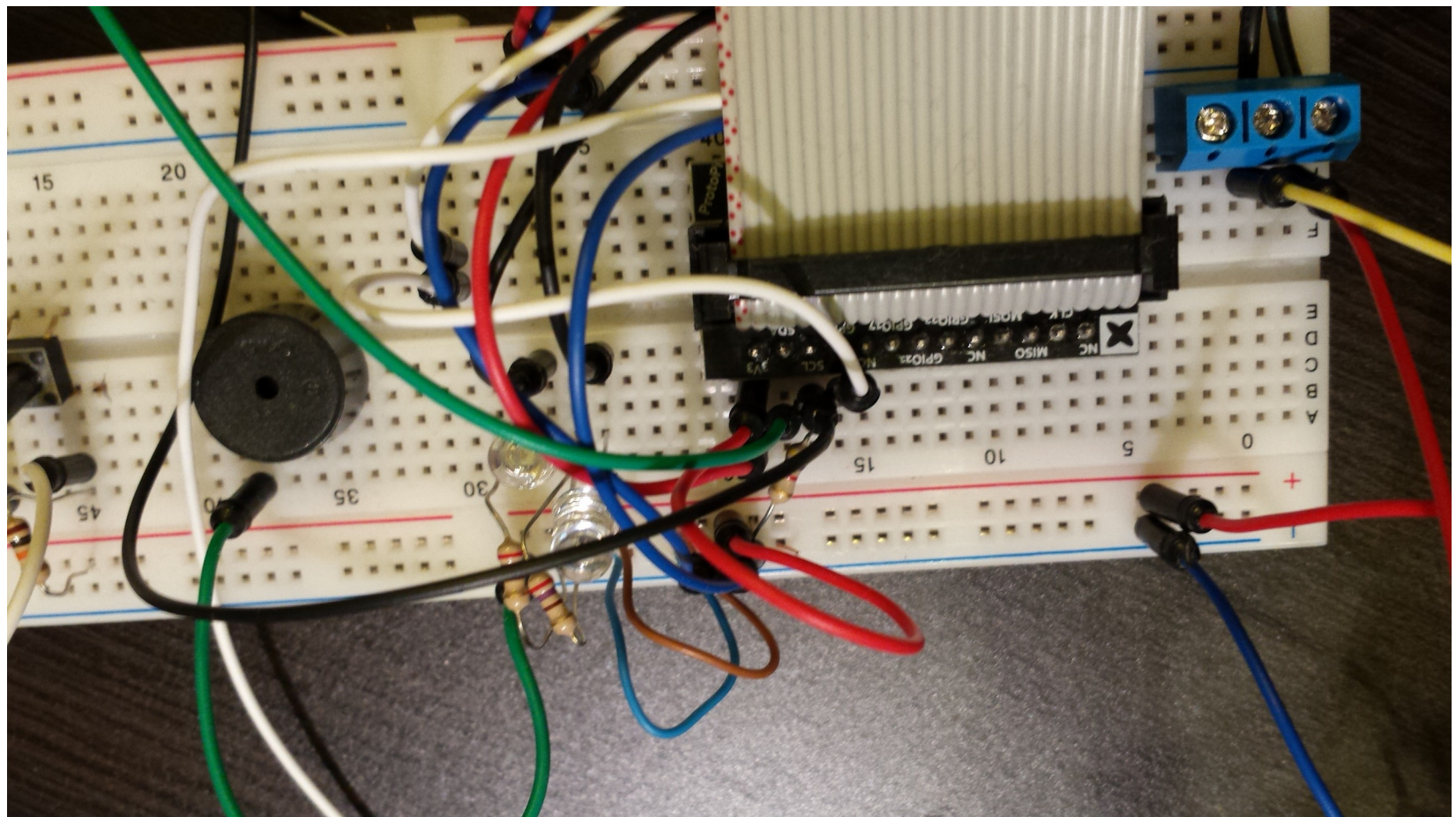
- Steering (switches):
 - Floor heating steering (on / off / delayed)
 - Hot water pump steering
 - Lights
 - Window blinds
 - Garage gate
 - Main entrance gate
- Scheduling:
 - Define schedules for any switch (with delay), eg. blinds up every 6AM
- Sensors:
 - Current temperature
 - Charts
- History:
 - Switches state
 - Temperatures

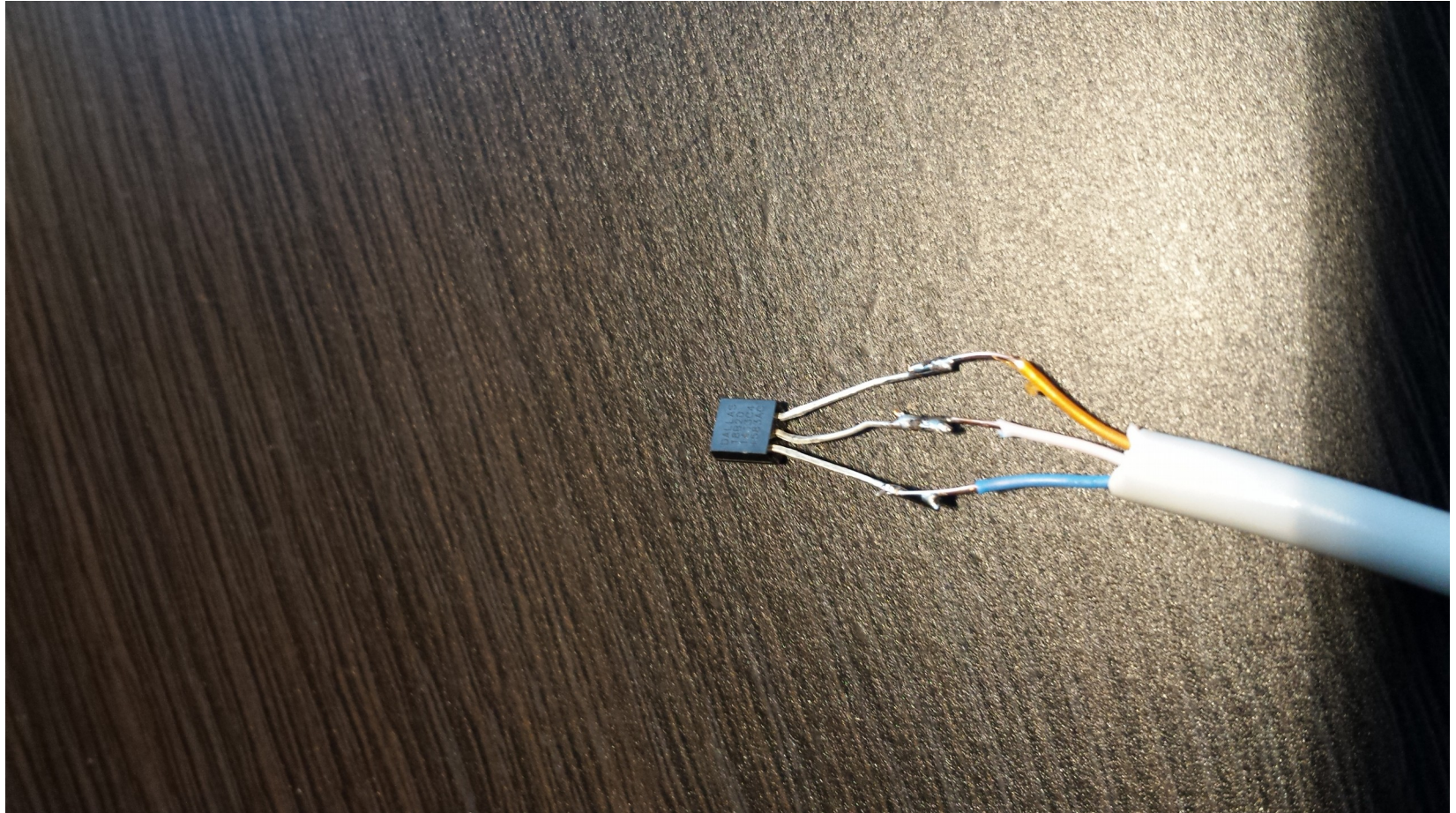
Hardware

- Raspberry PI B
- Switches module (230V) controlled via Ethernet (ready-made board)
- Switches module RM8 5V controlled via GPIO
- 12V relays for switching 230V in window blinds
- Dallas ds18b20 one wire temperature sensors
- Bread-board and bunch of wires









Software

- **Raspbian**
 - with GPIO modules
 - Supervisord
 - Apache + WSGI
- **Pihome-api**
 - Python
 - REST API built with Flask
 - Python-crontab
- **PiHome**
 - AngularJS as a SPA frontend
 - Twitter Bootstrap
 - optimized for mobile
- **CLI tasks**
 - Queue consumers
 - Celery tasks

Software

- **RabbitMQ** – relay “store” requests (failover)
- **Celery** - “delayed” on / off
- **MongoDB** – history of sensors and switches
- **Memcached** – cache switches status
- **Crontab module** to setup schedule (via internal curl to API)



PiHome

Main

Sensors

Schedule

History

Furtka



Garaż



Brama

Główna



Parter



Taras



Roleta

Jadalnia



Podł. parter



CWU



Pompa

Podł. piętro



Hall



Schody



Lampa

Przód



Tył



Led

Wiatrołap

24.7°C

Kuchnia

24.1°C













Zewnątrz

21.1°C

Piwnica

21.1°C

[Create](#)

Switch	Duration	Schedule	Actions
Lampa hall	5 hours	Every: Day at 0 : 30	 
Lampa schody	5 hours	Every: Day at 0 : 30	 
Roleta parter up	-	Every: Day at 5 : 55	 
Roleta parter down	-	Every: Day at 23 : 0	 
Led przód	6 hours	Every: Day at 21 : 10	 
Led tył	6 hours	Every: Day at 21 : 10	 

Lesson learned

- Don't rely much on WiFi (have fallback / queue)
- Don't play around with higher voltages unless you're pretty sure what're you doing...
- Be prepared for frequent and random restarts (and SD cards failures...)
- Don't use GPIO pins which have different initial (on boot) state than you like to use with your peripheral device
- There plenty of ready made components, soldering is often last thing, if you want to get things fast

Thanks :-)

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