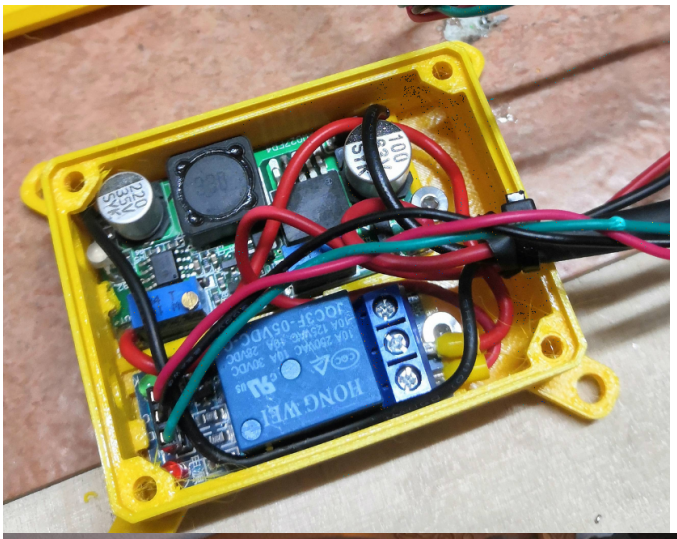
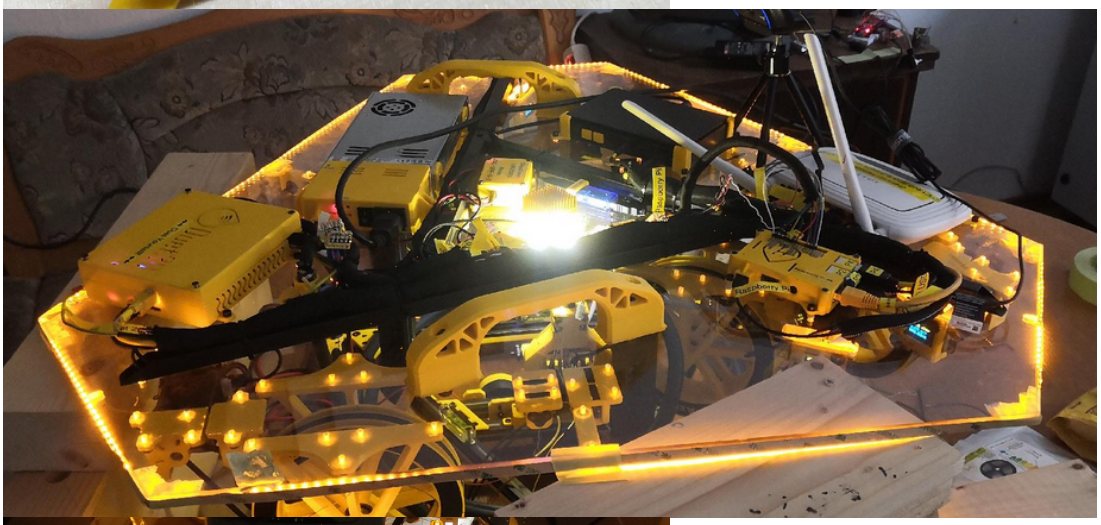
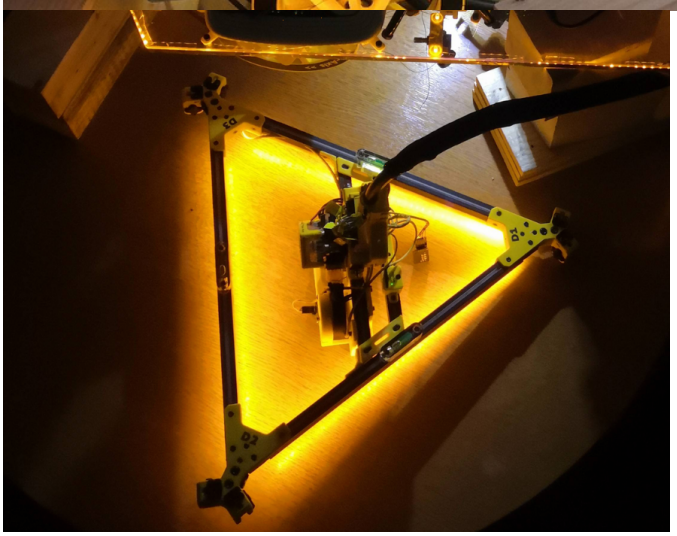
Monitoring and alerting | GPIO Status of Relays

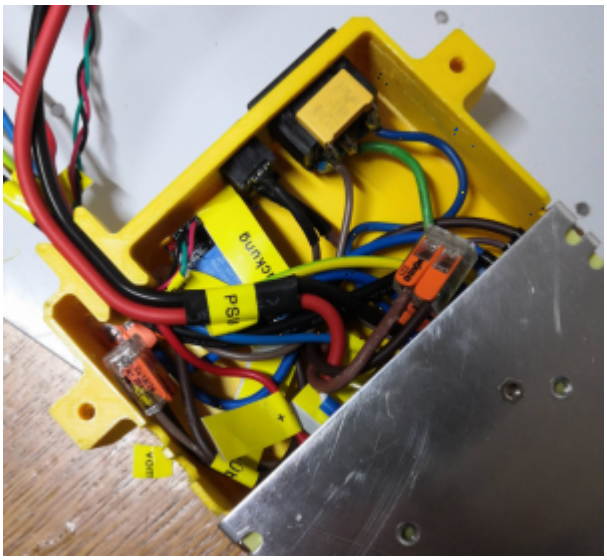
Relay for the LED lighting







Relay for the power supply unit



collectd Python plugin script

Use Python3 interpreter! It's not tested with old legacy Python 2.X. Please not that this script does not work by calling it manually with "python relay_states.py" because the register_* functions lead to execution error if not called by collectd.

Preparations

```
#install collectd library
pip3.7 install collectd
```

Create plugin file

```
mkdir -p /opt/collectd_plugins
cd /opt/collectd_plugins
vim relay_states.py
```

```
relay_states.py
import collectd
def read_func():
    try:
        with open ("/var/lib/Repetier-Server/GPIO_27.pinstate", "r") as GPIO_27:
            P27=GPIO_27.readline().rstrip()
        if P27 == '0':
            pin_psu = 0
        if P27 == '1':
            pin_psu = 1
```

```
        #collectd.info('relay_states GPIO pin plugin: pin_psu = %s' % pin_psu)
        collectd.Values(plugin='relay_states', type='gauge', type_instance='pin_psu',
values=[pin_psu]).dispatch()
        #print(pin_psu)
    except Exception as e:
        print('exception: %s' % e)
        pass

    try:
        with open ("/var/lib/Repetier-Server/GPIO_22.pinstate", "r") as GPIO_22:
            P22=GPIO_22.readline().rstrip()
        if P22 == '0':
            pin_ledspot = 0
        if P22 == '1':
            pin_ledspot = 1
        #collectd.info('relay_states GPIO pin plugin: pin_ledspot = %s' % pin_ledspot)
        collectd.Values(plugin='relay_states', type='gauge', type_instance='pin_ledspot',
values=[pin_ledspot]).dispatch()
        #print(pin_psu)
    except Exception as e:
        #print('exception: %s' % e)
        collectd.error('relay_states GPIO pin plugin: exception: %s' % e)
        pass

collectd.register_read(read_func,1) # read every 1 seconds
#read_func()
```

> Note that the states are written into /var/lib/Repetier-Server because the scripts to turn on/off PSU and LEDs are mostly called by Repetier Server frontend. Repetier Server cannot access directory /opt so just write the files to the user "repetierserver" home directory

Configure collectd to add the script

```
vim /etc/collectd/collectd.conf
```

Add the following lines to the end of the config (or at the according place where Python plugins are put)

```
LoadPlugin python
<Plugin python>
    ModulePath "/opt/collectd_plugins"
    Import "relay_states"
    <Module relay_states>
    </Module>
</Plugin>
```

Restart collectd

```
service collectd restart
journald -f -u collectd.service
```

The following warning can be safely ignored

```
python plugin: Found a configuration for the "relay_states" plugin, but the plugin isn't
loaded or didn't register a configuration callback.
```

Check out if values from collectd correctly flow into InfluxDB

If you have access to the influxdb server you can run on the server directly (localhost)

```
# /opt/influxdb/influx
> USE collectd
> SHOW SERIES
> SHOW MEASUREMENTS
```

If you want to send a remote curl command, do the following

```
curl -cacert /etc/ssl/certs/site.de.ca.crt --cert /etc/ssl/certs/site.de.crt --key /etc/ssl/priv
```

Grafana query testing

> some example queries

```
select last(value) from "relay_states_value" WHERE "type_instance" = 'pin_ledspot' AND "host" =~ /^$host$/ AND $timeFilter GROUP BY time($interval)
select last(value) from "relay_states_value" WHERE "type_instance" = 'pin_psu' AND "host" =~ /^$host$/ AND $timeFilter GROUP BY time($interval)
```

Purge old data

If you want to reset data you can send some API call for example.

```
curl -cacert /etc/ssl/certs/site.de.ca.crt --cert /etc/ssl/certs/site.de.crt --key /etc/ssl/private/site.de.key https://site.de:8086/query --data-urlencode "db=collectd" --data-urlencode "q=DROP SERIES FROM relay_states_value" --user admin:password| jq . | grep relay
```

Add some retention policy to keep clean your harddrive (optional)

Collecting a lot of data results in huge amount of needed memory. To avoid this think about adding some auto-clean policy (called retention policy) in InfluxDB.

This configuration is not part of Hangprinter project. At the moment the InfluxDB we use is one of the instances that FabLab Chemnitz uses. It's configured to keep 14 days of data

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