

LongTermTestControl.py

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1 Prerequisites

- Python 3.6.3: www.python.org/downloads
- Install `pyserial`, `numpy`, `matplotlib`, `pathlib` using `pip`

1.1 Readout of 1-wire sensors

1.1.1 Linux

Download *OWFS 1-Wire Filesystem* (<http://owfs.org/>). Before installing *OWFS*, make sure the following packages are already installed:

Ubuntu: (tested on Ubuntu 17.10)

- `tcl-dev`
- `libfuse-dev`
- `libftdi-dev`
- `pkg-config`

Fedora/CentOS: (tested on Fedora 25 and CentOS 7)

- `tcl-devel`
- `libftdi-devel`
- `libftdi`
- `check`

Run `./configure --enable-owfs --enable-usb` and check the output. The last lines should look similar like this (especially the line `USB is enabled` is important!)

```
Compile-time options:
  USB is enabled
  AVAHI is DISABLED
  I2C is enabled
  W1 is enabled
  Parallel port DS1410E is enabled
  FTDI (LinkUSB) is enabled
  Zeroconf/Bonjour is enabled
  Debug-output is enabled
  Mutexdebug is enabled
  Profiling is DISABLED
Tracing memory allocation is DISABLED

Module configuration:
  owlib is enabled
  owshell is enabled
  owfs is enabled
```

```

owhttpd is enabled
owftpd is enabled
owserver is enabled
owexternal is enabled
ownet is enabled
ownetlib is enabled
owtap is enabled
owmon is enabled
owcapi is enabled
swig is DISABLED
owperl is DISABLED
owphp is DISABLED
owpython is DISABLED
owtcl is enabled

unit tests are DISABLED

```

Install *OWFS* by `make install`.

Plug in the humidity sensor with USB adapter and mount it by `/opt/owfs/bin/owfs -u --allow_other --mountpoint=/mnt/1-wire/`. Using the option `--alias=` you can mount the 1-wire device by a user defined name in `/mnt/1-wire`. To change the readout time of the sensor (default value in volatile readout mode is 15 seconds) use the option `-c $PathToFile` and add the path to a file containing the following line

```
timeout_volatile = x
```

where `x` is the desired timeout value in seconds.

2 Configuring and Controlling of Long Term Scan

Clone project from the Github repository <https://github.com/koppenro/LongTermControl>. The subdirectory `src/` contains the source code, in `owfs/` the scripts to setup a specific 1-wire sensor are saved and the config files to control the software can be saved in `config/`.

A sketch of the software concept with the used Python modules can be seen in figure 1. A documentation of the class members is implemented in the Python modules itself.

To start a long term scan start the software by executing `python src/LongTermTestControl.py`. To set the scan parameters, a config file is used which is located at `config/LongTermTestControl.cfg`. Before starting the program you can pass the following options:

```

-h, --help                show this help message and exit
-d ODIR, --directory=ODIR
                           path to directory where the log files will be saved
                           [output]
-f CDIR, --configfile=CDIR
                           path to config file for Long-Term scan
                           [ config/LongTermTestControl.cfg ]

```

Figure 1: Software concept of the framework to control a long term measurement of currents of silicon sensors.

