# LongTermTestControl.py

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## Contents

# 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`

**openSUSE:** (tested on openSUSE Leap)

- `tcl-devel`

- `libftdi1-devel`

- `libftdi1`

- `fuse-devel`

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
```

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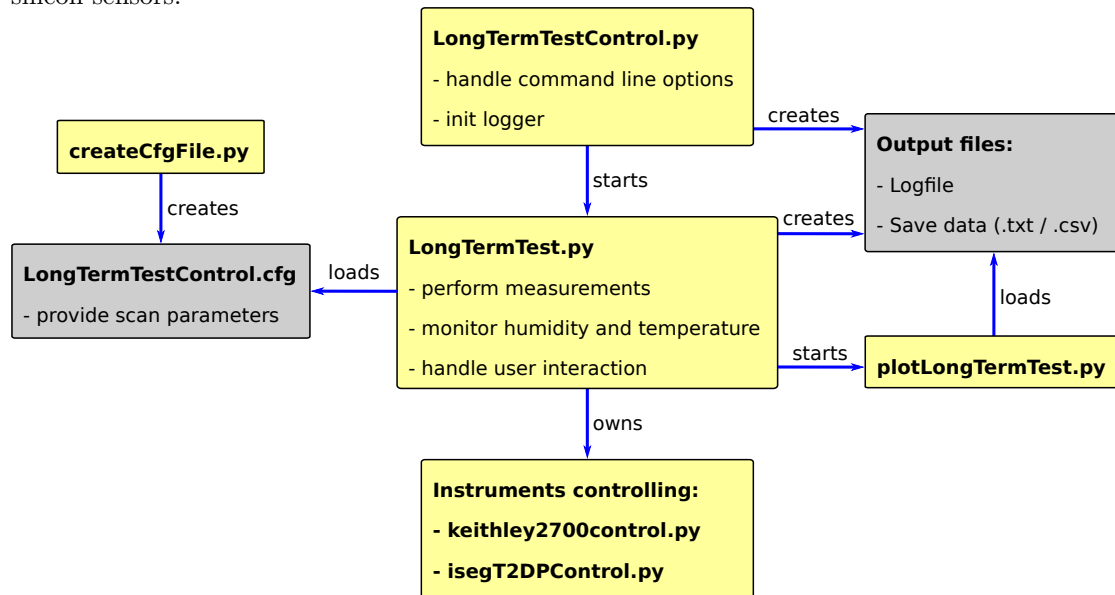


```
                    path  to  directory  where  the  log  files  will  be  saved
                    [output]
−f CDIR,  −−configfile=CDIR
                    path  to  config  file  for  Long−Term  scan
                    [config/LongTermTestControl.cfg]
```