Abstract

To build an autonomous measuring station, the different components have to be carefully selected. These components comprise of different sensors, a Raspberry Pi 3B+ as brain and a battery module to keep the entire station autonomous. To be able to use these sensors, they have to be programmed in Python and then be placed on the measuring station in such a way that there is no interference possible from external factors. To be able to generate reliable and accurate data, all the sensors have to be calibrated. This measuring station has made more than 14000 measurements. A part of these measurements is made whilst the station ran on battery power; another part of the measurements is made whilst it was connected to the mains power. The data retrieved from the measuring station tells that the battery is the biggest limiting factor, because of the low charging rate of the battery and the high energy consumption of the station. Furthermore, the accuracy of the measurements, whilst under battery power, cannot be guaranteed.