Humidity & Temperature Sensor Interfacing

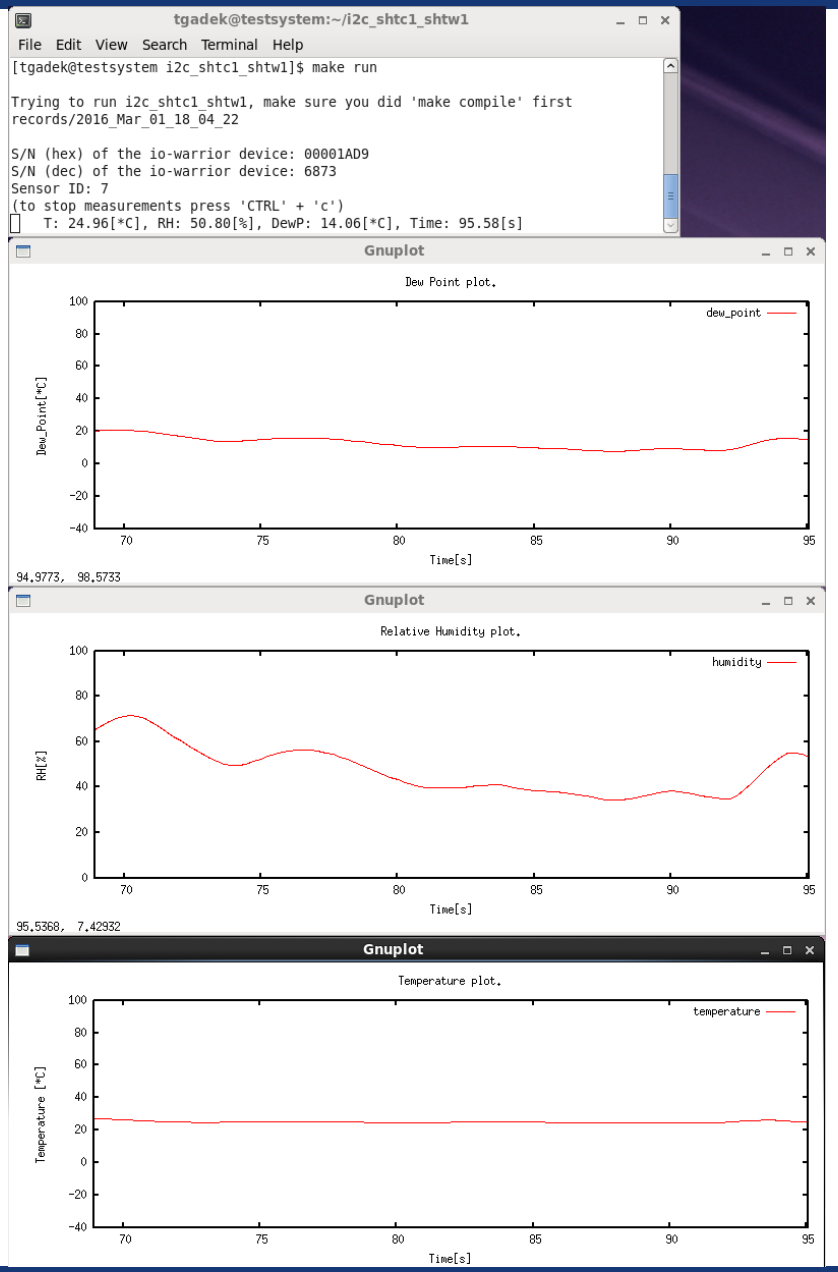
C program for Scientific Linux CERN 6 to interface Sensirion SHT(W/C)1 sensor through EK-H5 (modified io-warrior24 USB->I2C dongle)

https://github.com/tomasz-gadek/sensirion-shtw1-shtc1-ekh5

Temperature & Humidity Sensor Interfacing

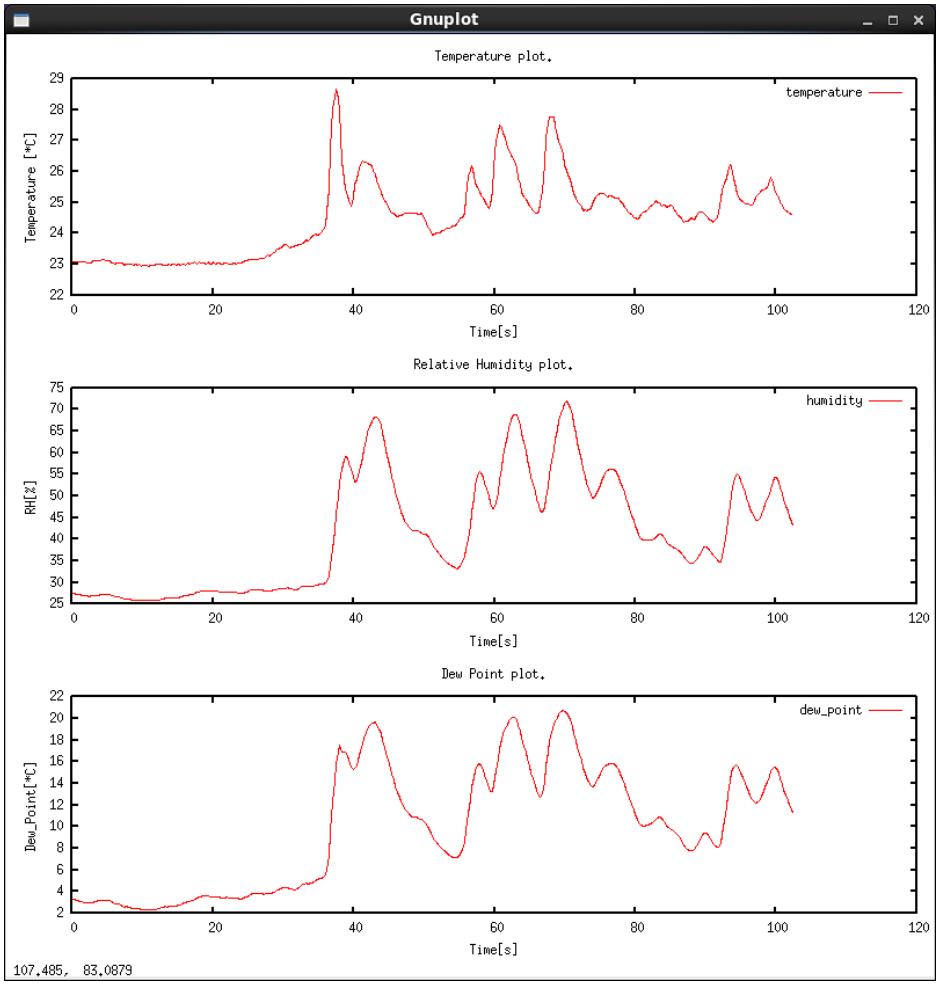
What the program does?

- On initialization:
  - creates result file in <current_dir>/records,
  - opens a pipe to the gnuplot,
  - then tries to open connection with USB Stick, if successful:
    - prints its serial number,
    - tries to get access to the sensor by I2C messages wrapped in HID reports, then asks for sensor ID (7 for SHTW1/SHTC1) and prints it, if it is correct jumps to infinite loop
- In the loop:
  - gets measurements from the sensor,
  - calculates dew point value and iteration elapsed time, prints them to both the result file and the terminal,
  - updates gnuplot sliding graphs (locked Y axis to avoid jumping of the plot)
- During runtime:
  - Catches interrupt signal, on interrupt breaks the infinite loop and displays a summary graph



Temperature & Humidity Sensor Interfacing

Summary graph automatically tunes X and Y axis scale. To close the program after sending interrupt signal user needs to hit ‘ENTER’ as instructed in the terminal. This action kills all invoked windows.




```
tgadek@testsystem:~/i2c_shtc1_shtw1
File  Edit  View  Search  Terminal  Help
[tgadek@testsystem i2c_shtc1_shtw1]$ make run

Trying to run i2c_shtc1_shtw1, make sure you did 'make compile' first
records/2016_Mar_01_18_04_22

S/N (hex) of the io-warrior device: 00001AD9
S/N (dec) of the io-warrior device: 6873
Sensor ID: 7
(to stop measurements press 'CTRL' + 'c')
^C  T: 24.60[*C], RH: 43.15[%], DewP: 11.24[*C], Time: 102.45[s]



(to terminate the program press 'ENTER')


Bye bye!

[tgadek@testsystem i2c_shtc1_shtw1]$
```

2016_Mar_01_18_04_22 (~/i2c_shtc1_shtw1/records) - gedit

File Edit View Search Tools Documents Help

Open Save Undo

2016_Mar_01_18_04_22

time	temperature	humidity	dew_point
0.02	23.06	27.48	3.28
0.28	23.06	27.44	3.26
0.54	23.06	27.38	3.23
0.81	23.07	27.27	3.19
1.07	23.07	27.15	3.12
1.34	23.07	27.06	3.07
1.60	23.06	26.97	3.02
1.86	23.07	26.91	3.00
2.13	23.05	26.87	2.96
2.39	23.04	26.84	2.94
2.66	23.04	26.86	2.94
2.92	23.10	26.88	3.01
3.18	23.11	26.98	3.07
3.45	23.13	27.04	3.11
3.71	23.13	27.10	3.15
3.98	23.13	27.20	3.20
4.24	23.15	27.24	3.23
4.50	23.15	27.25	3.24
4.77	23.10	27.23	3.18
5.03	23.10	27.21	3.18
5.30	23.11	27.14	3.15
5.56	23.05	27.05	3.05
5.82	23.05	26.94	3.00
6.09	23.02	26.83	2.91
6.35	23.03	26.72	2.86
6.62	23.05	26.60	2.82
6.88	23.03	26.48	2.73
7.14	23.03	26.41	2.69
7.41	22.98	26.29	2.59
7.67	23.02	26.26	2.61
7.94	22.99	26.18	2.54
8.20	22.99	26.12	2.51
8.46	22.99	26.07	2.47
8.73	22.98	26.04	2.45

Plain Text Tab Width: 8 Ln 1, Col 1 INS