Using TCL for simple Hardware-Interfaces

Todays computers no longer have „userports, centronic interfaces etc.“ to get simple connections to selfmade circuits.

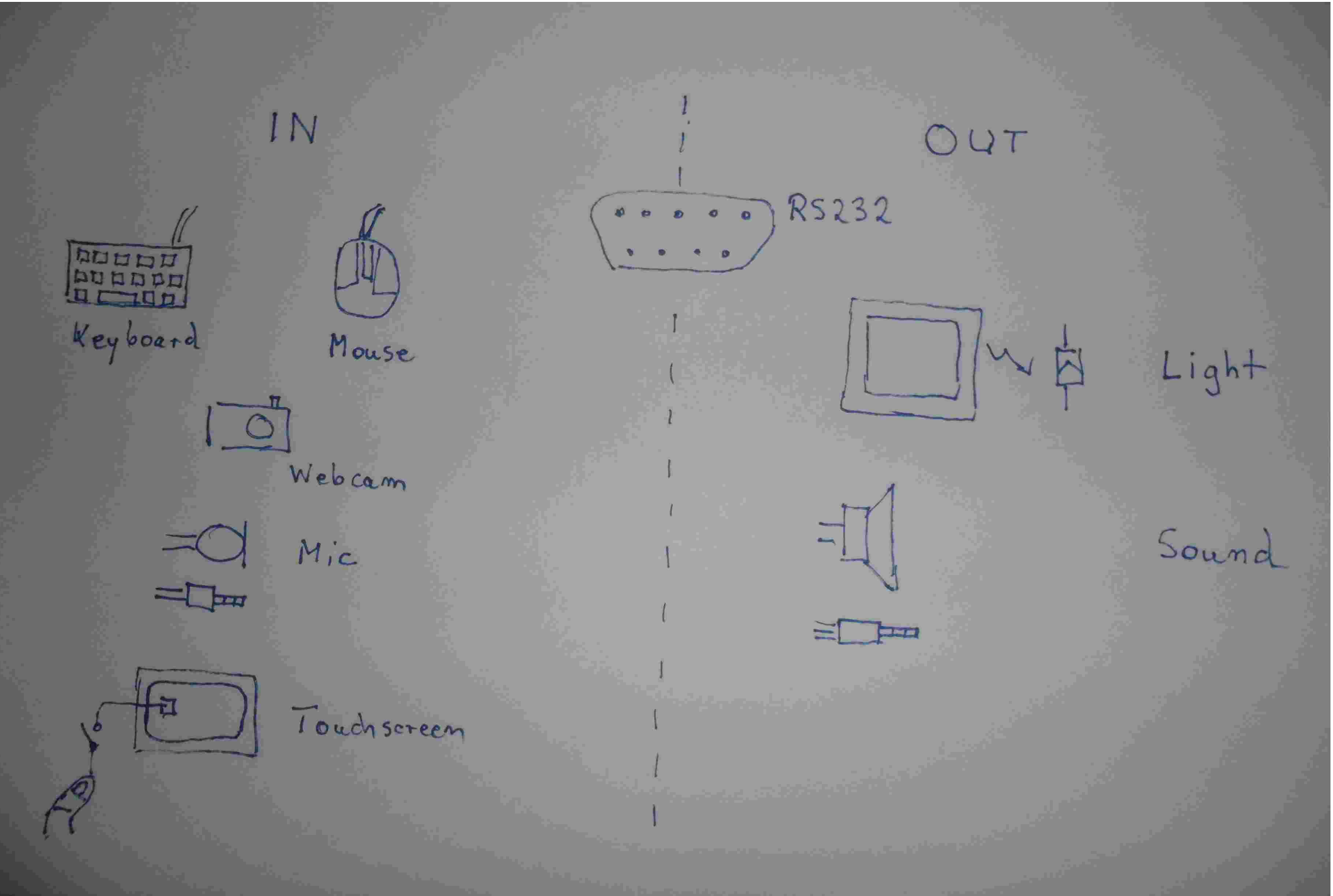
In my talk I want to show some very simple interfaces and demonstrate how to control them with TCL.

These interfaces use

- Handshake-lines of serial-interface adapters
- Input of modified keyboard and mouse
- Light input by webcam and light output by display
- Sound input by microphone and audio in- and output
- Finally some applications

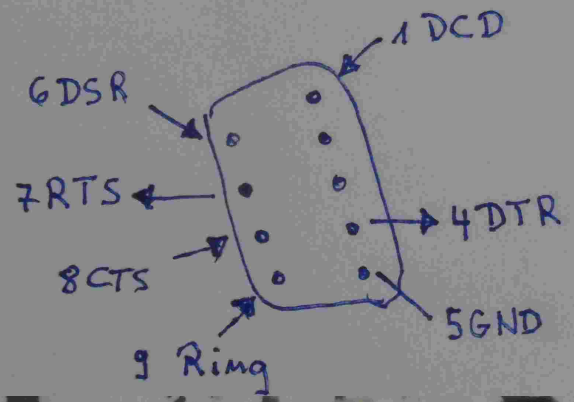
gamma-radiation, heart-pulse-measurement, uses of the I2C-bus

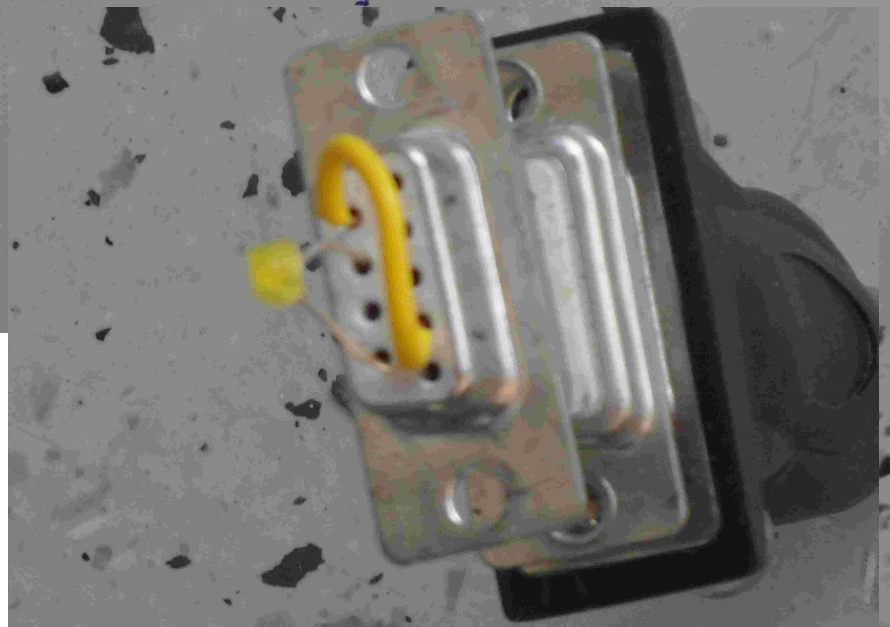
Overview

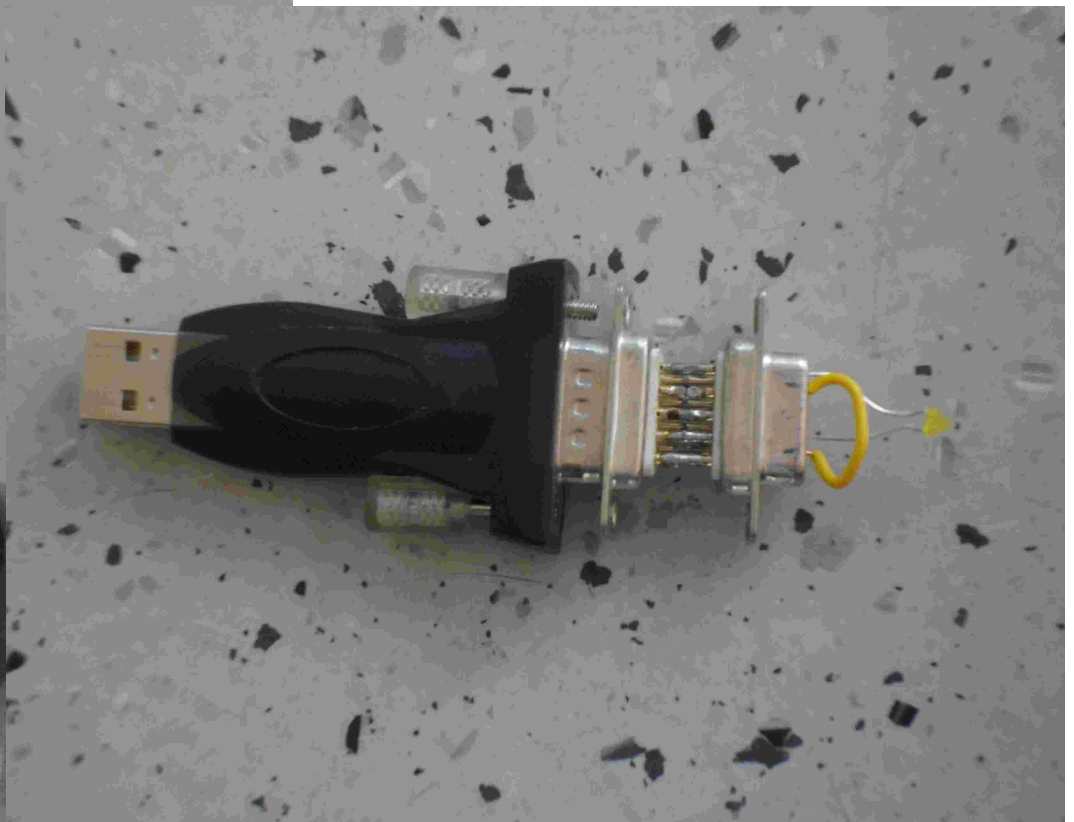

IN
OUT
RS232
Keyboard
Mouse
Webcam
Mic
Light
Sound
Touchscreen

RS232

- FTDI USB serial converter

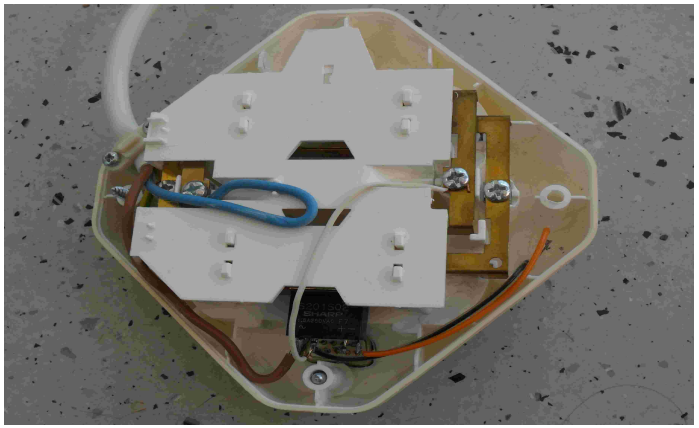


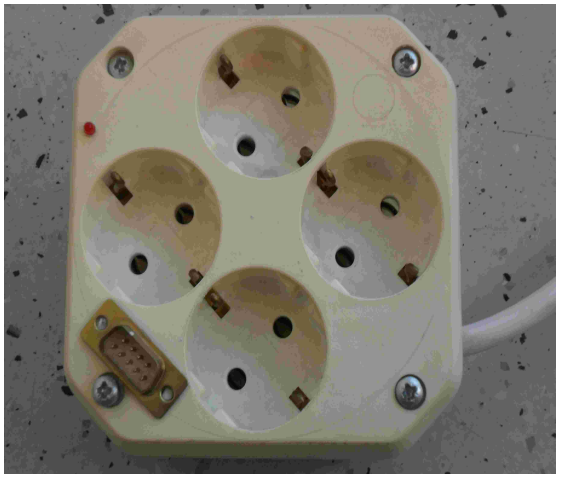




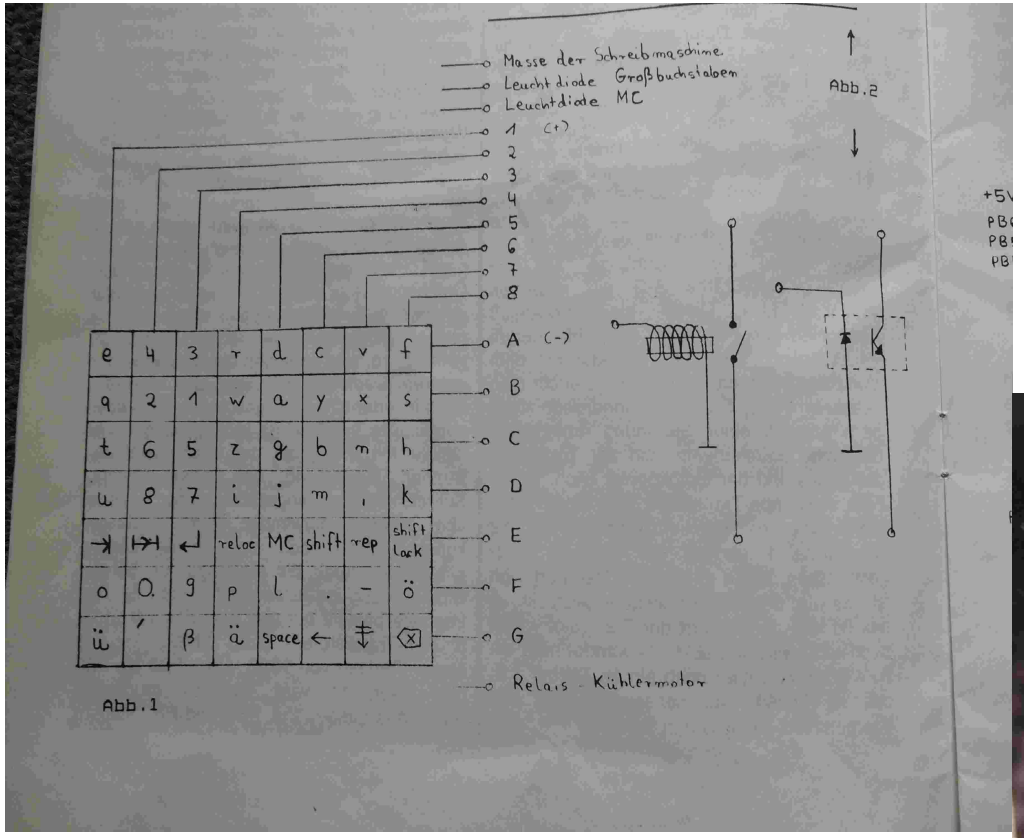
Controlling high currents

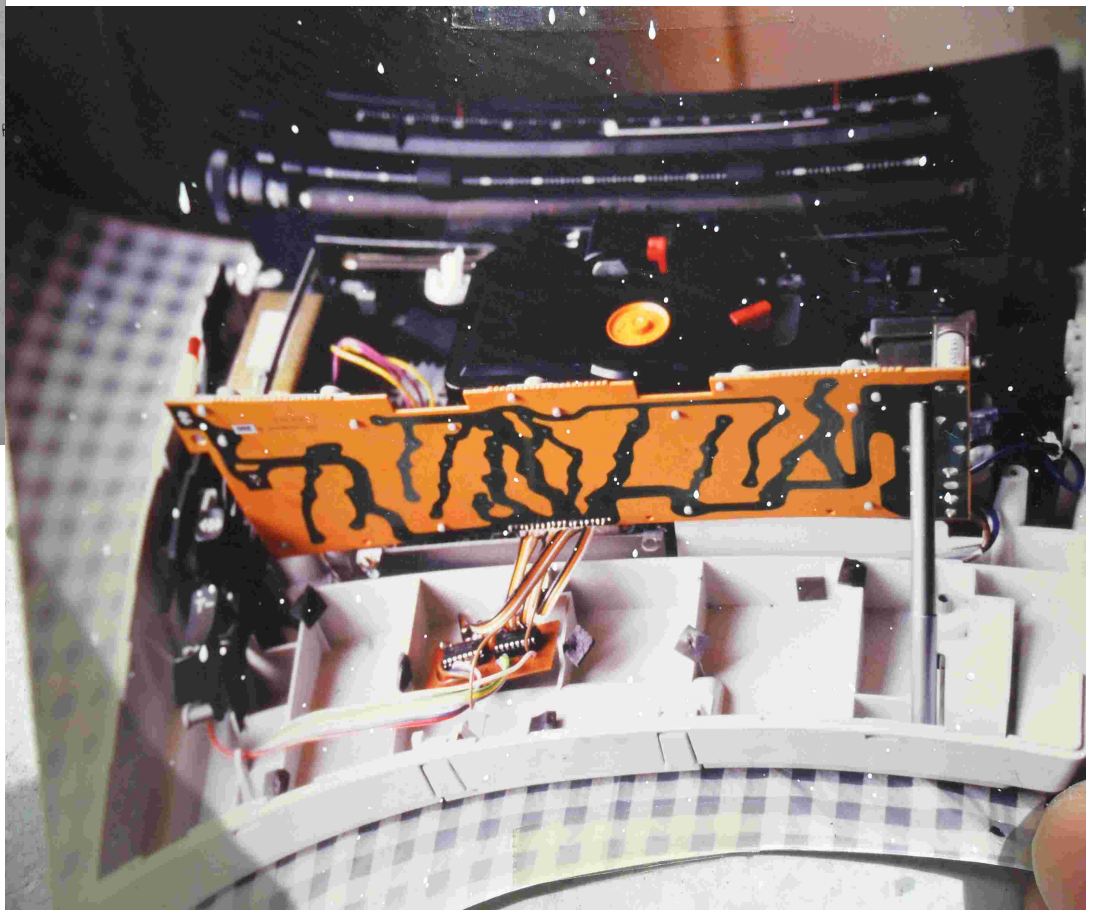
- PL2303 serial USB-converter +
- S201S02 solid state relay





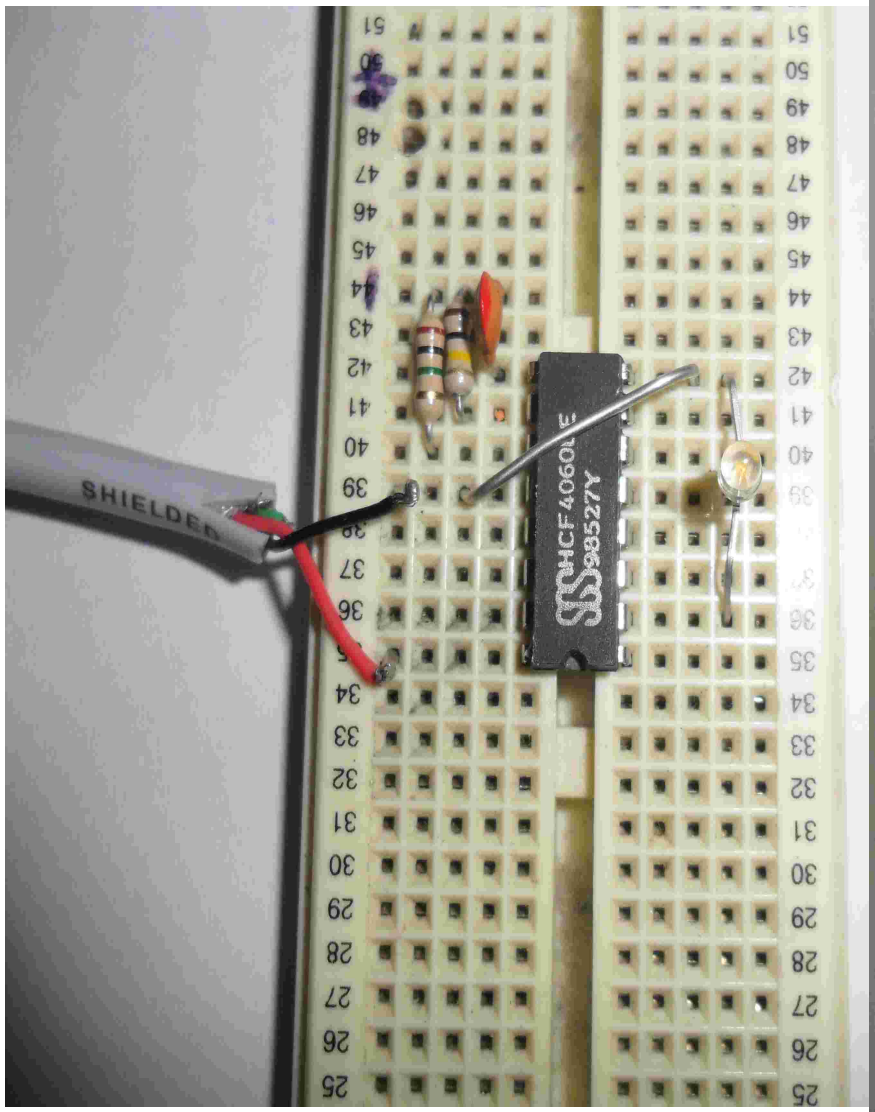
Modifying a keyboard

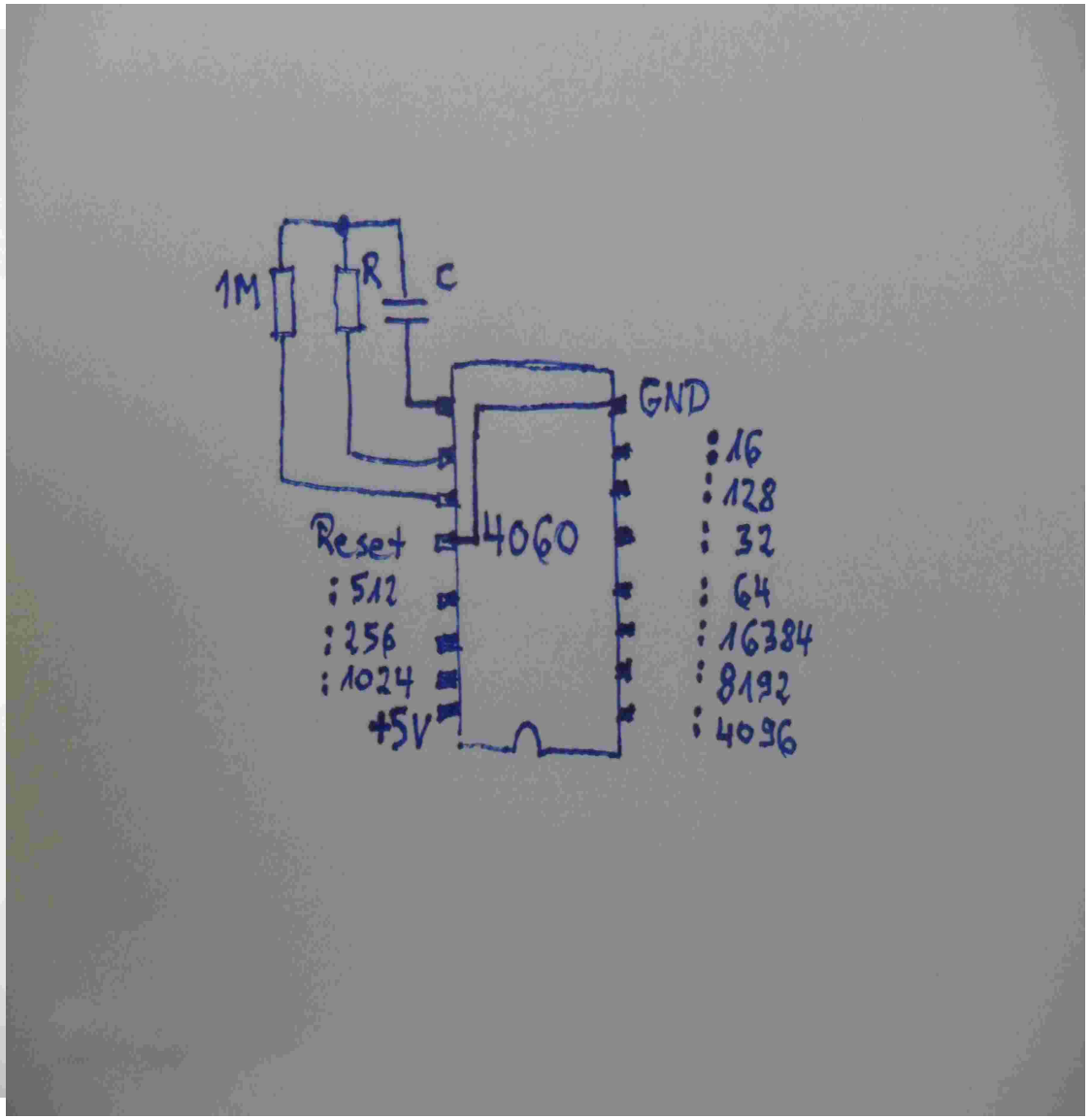




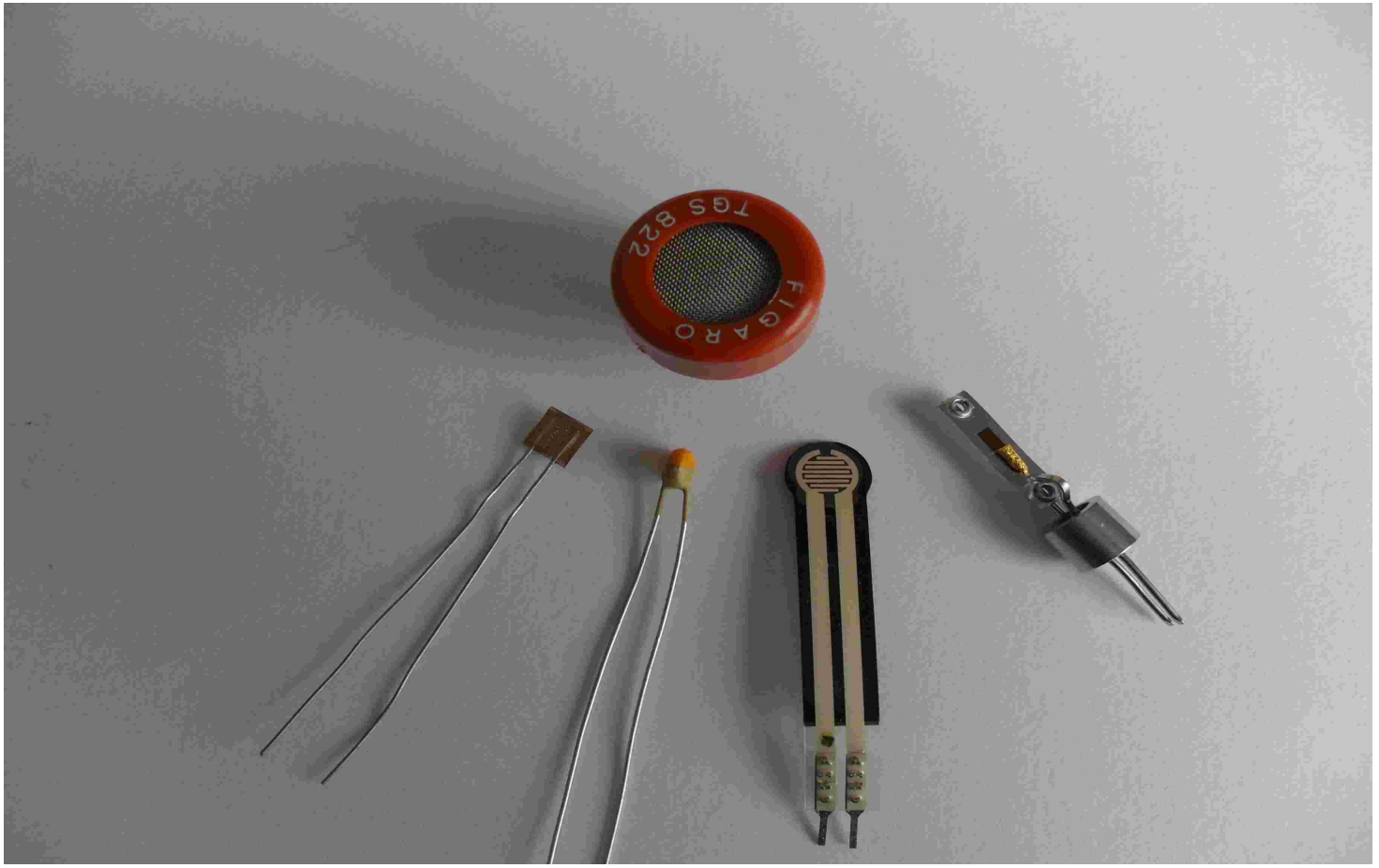
Modifying a mouse

RC-Oscillator to test inputs

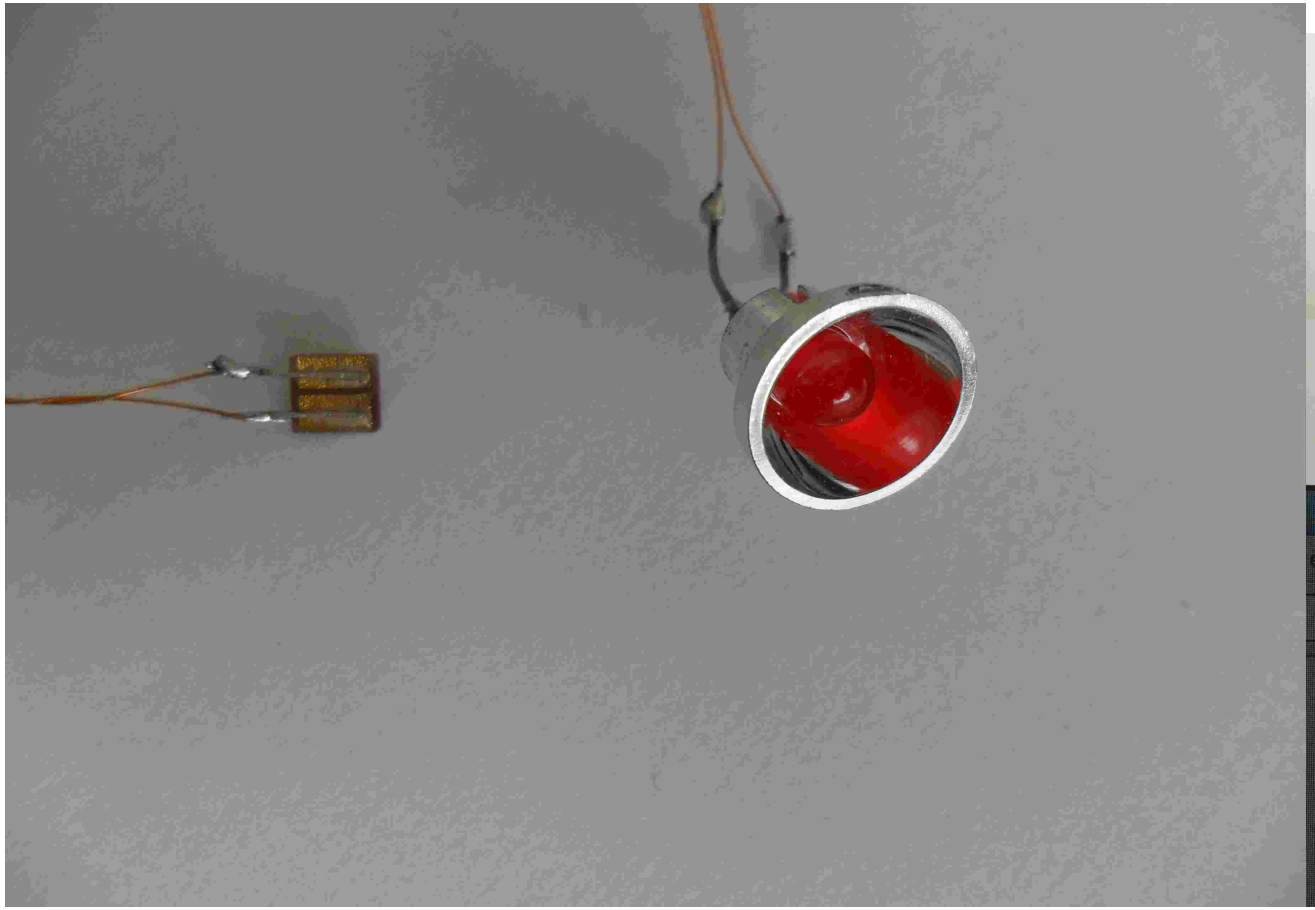


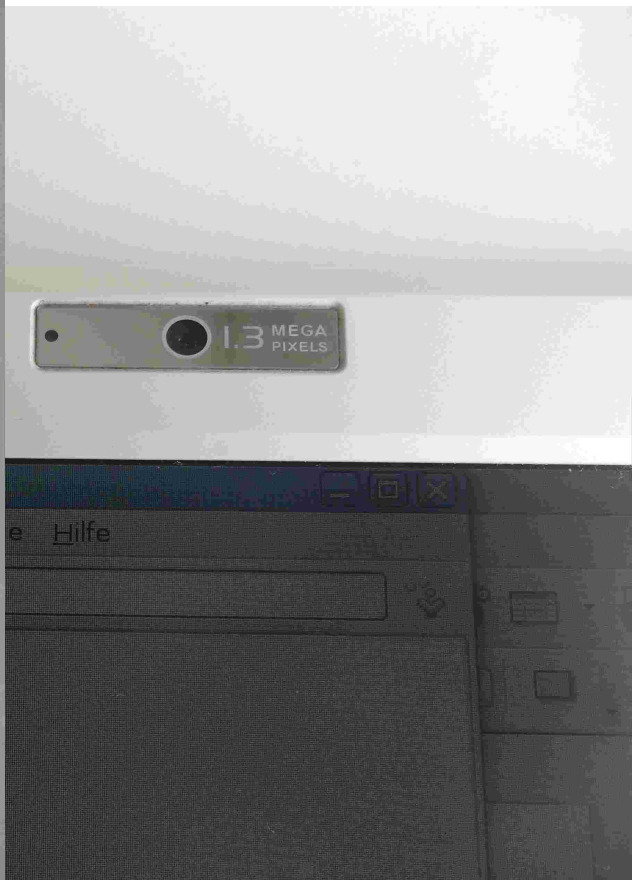


Some sensors to use with RC-oscillator

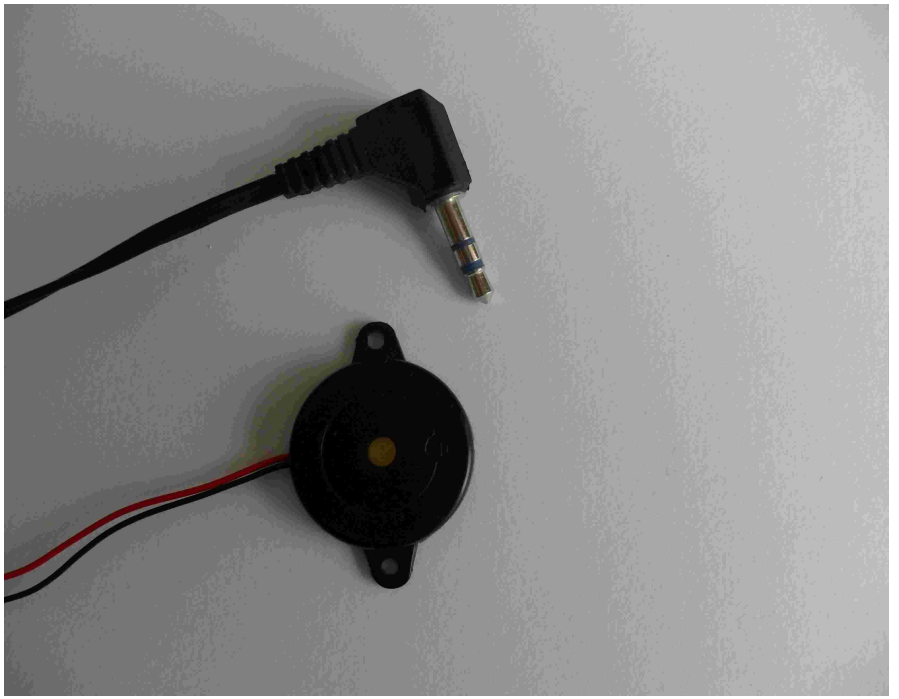


Light input and output





Sound input and output

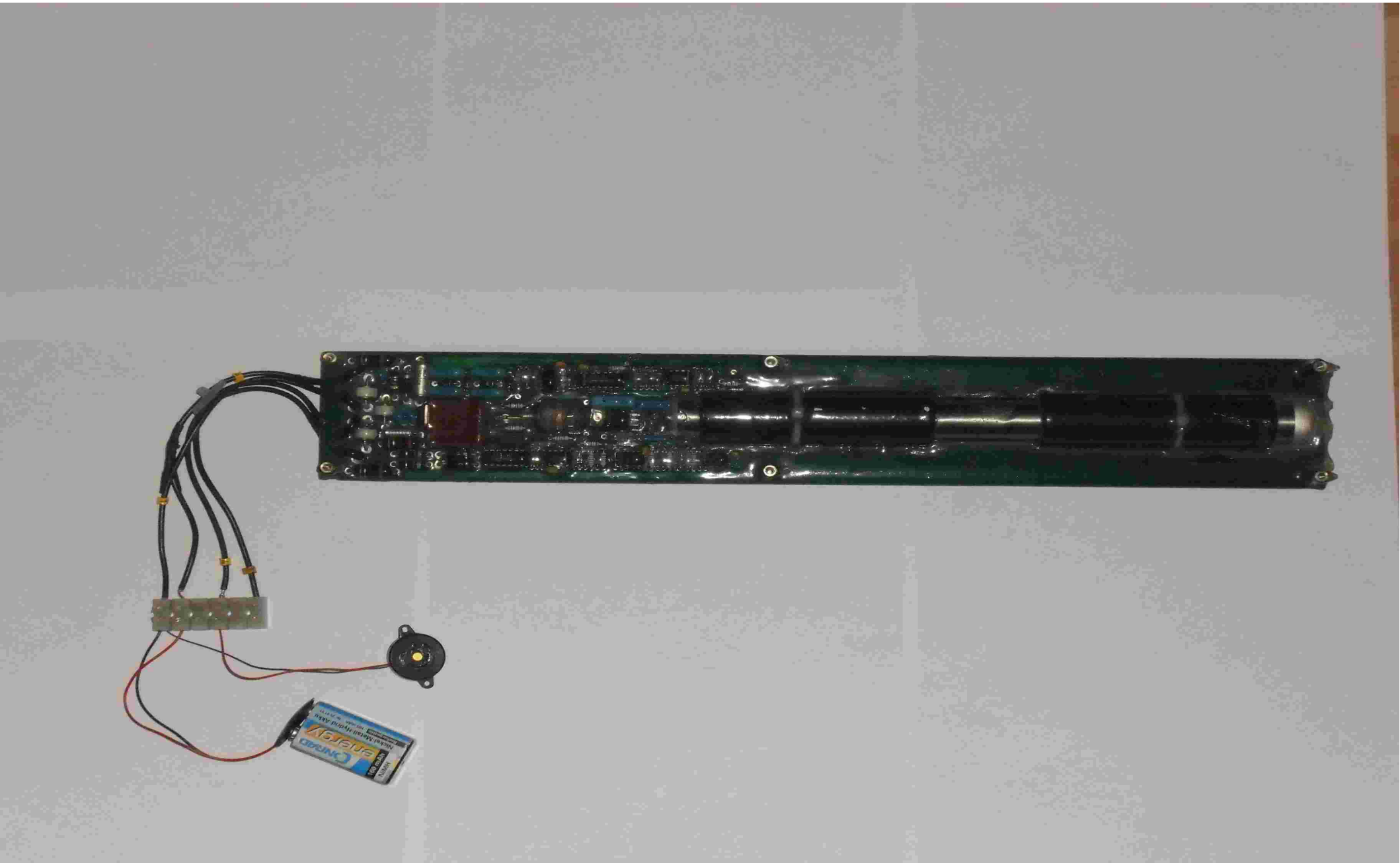


Touching touchscreen

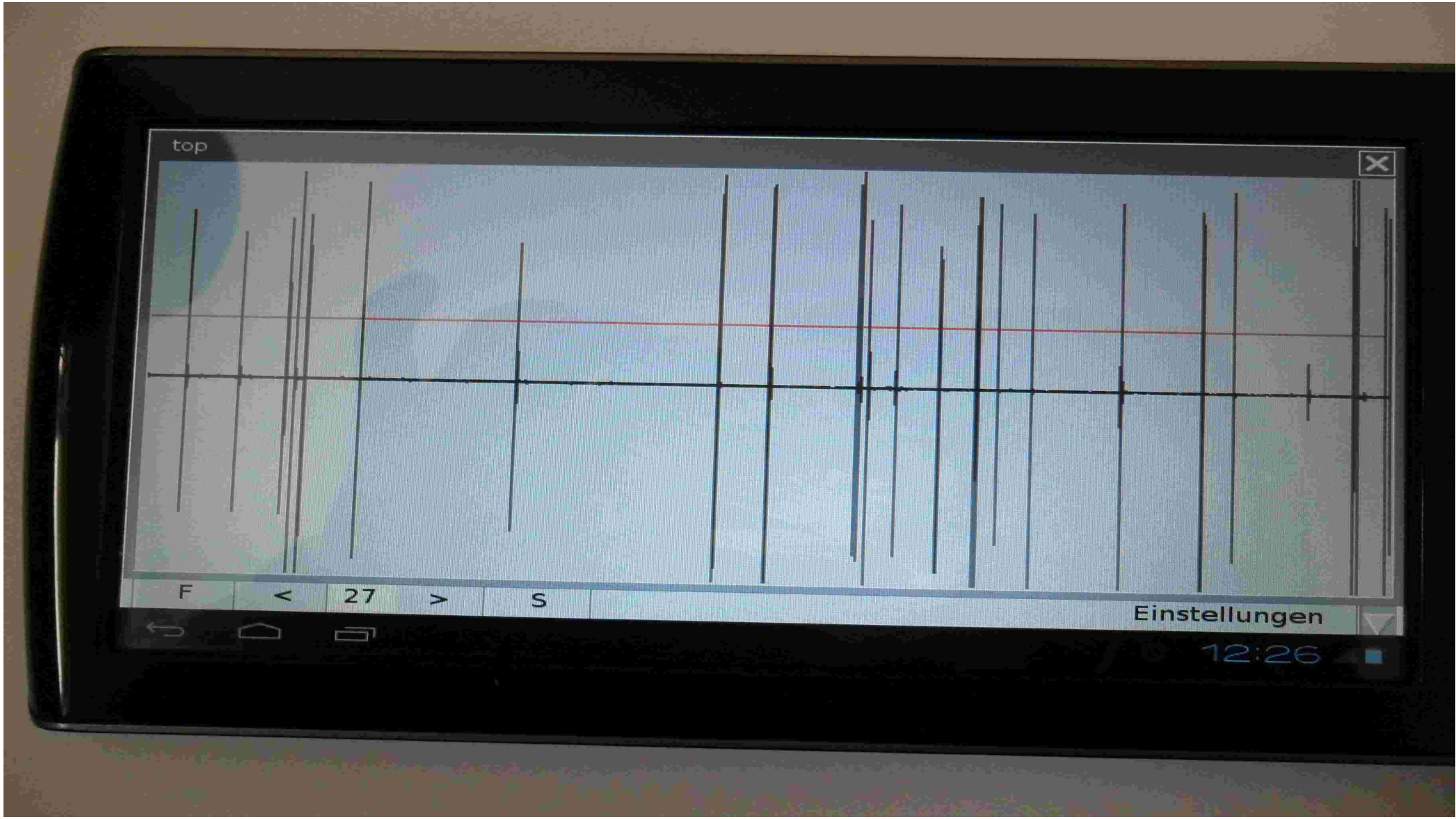
- Do you have an idea???

Some applications

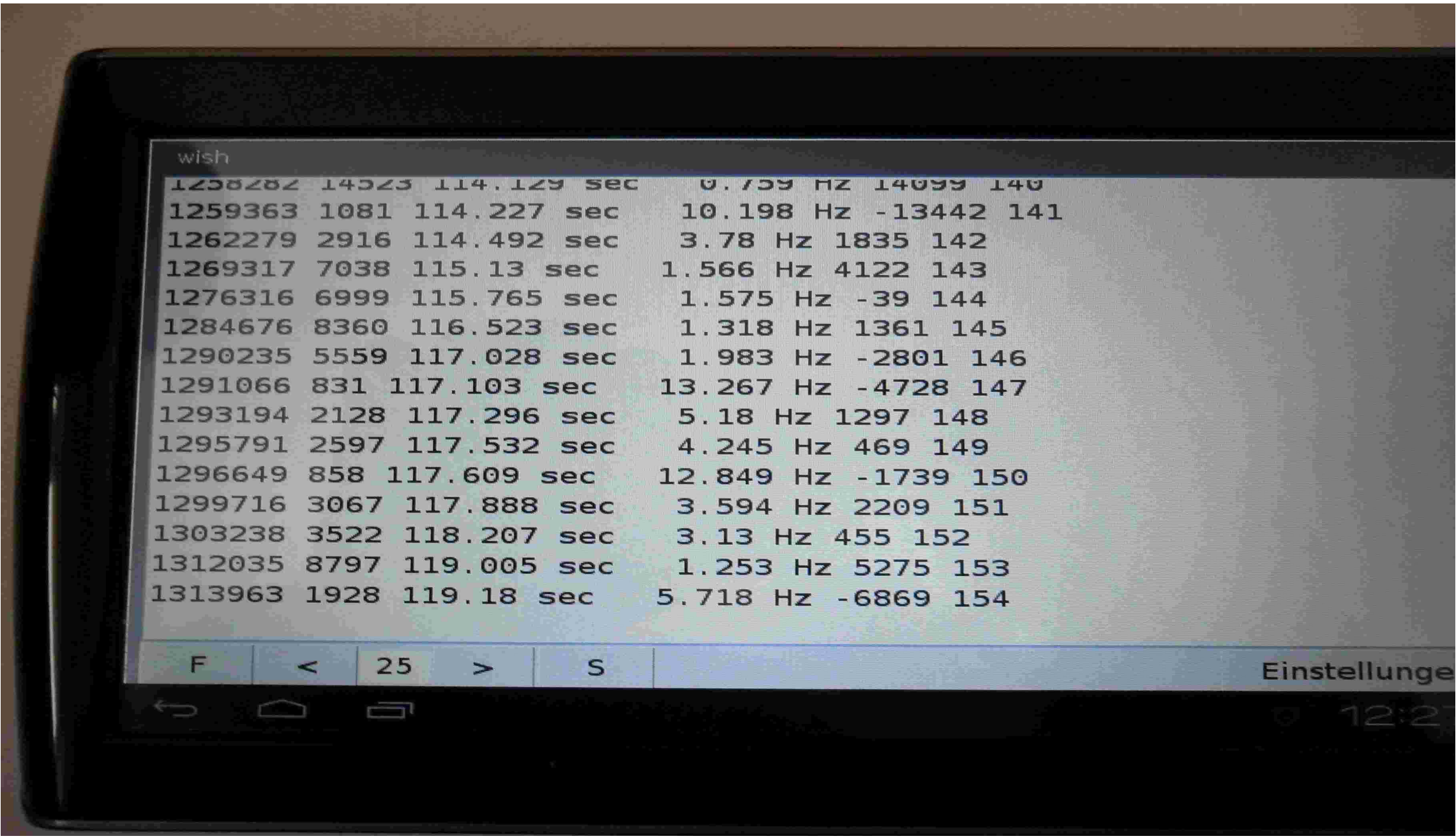
Gamma counter



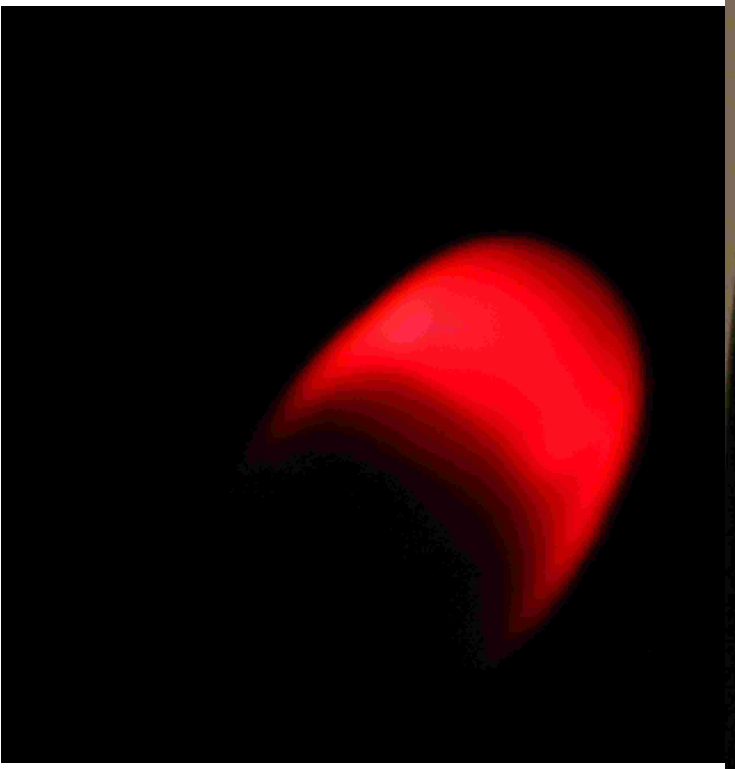
oscilloscope

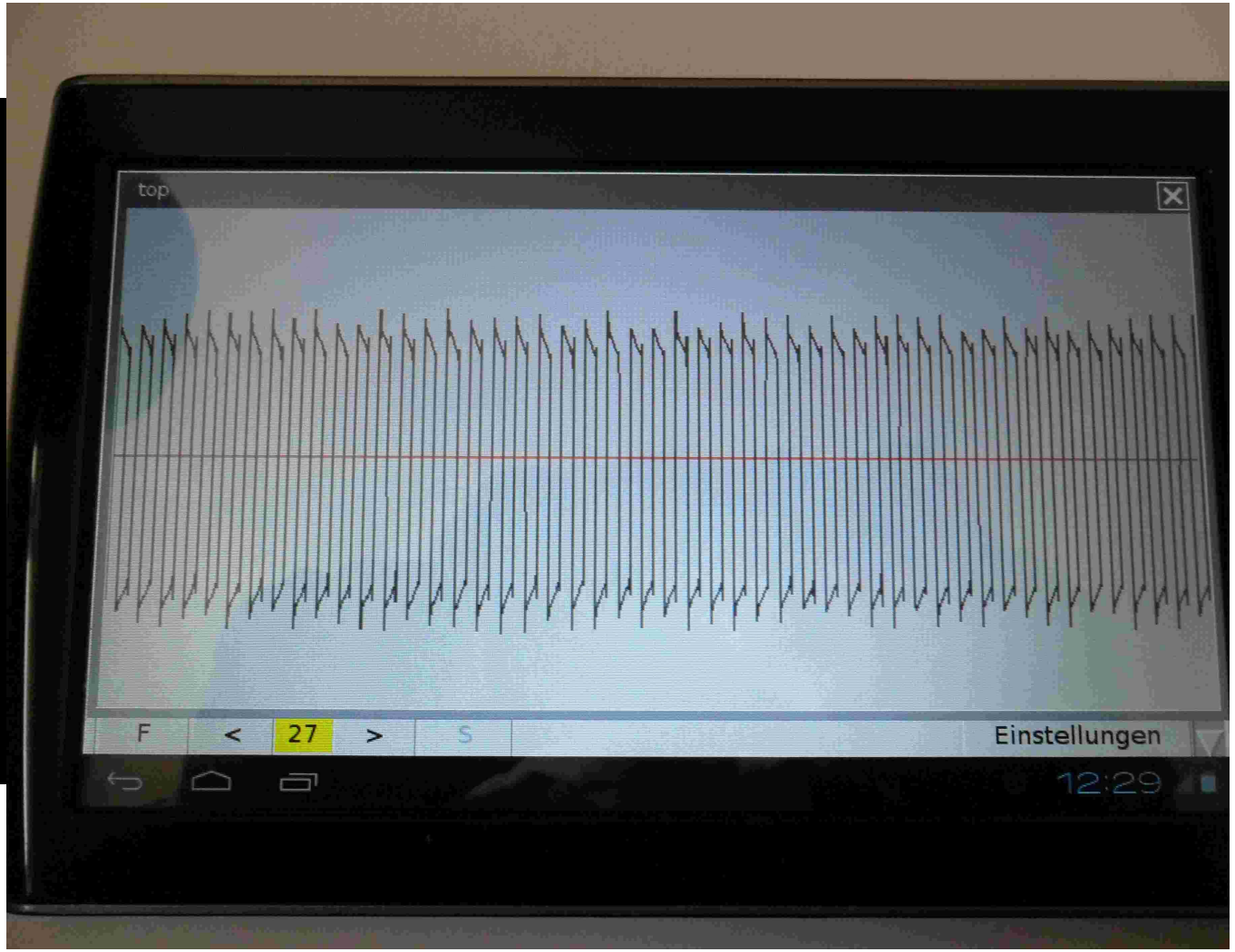


Counting of clicks

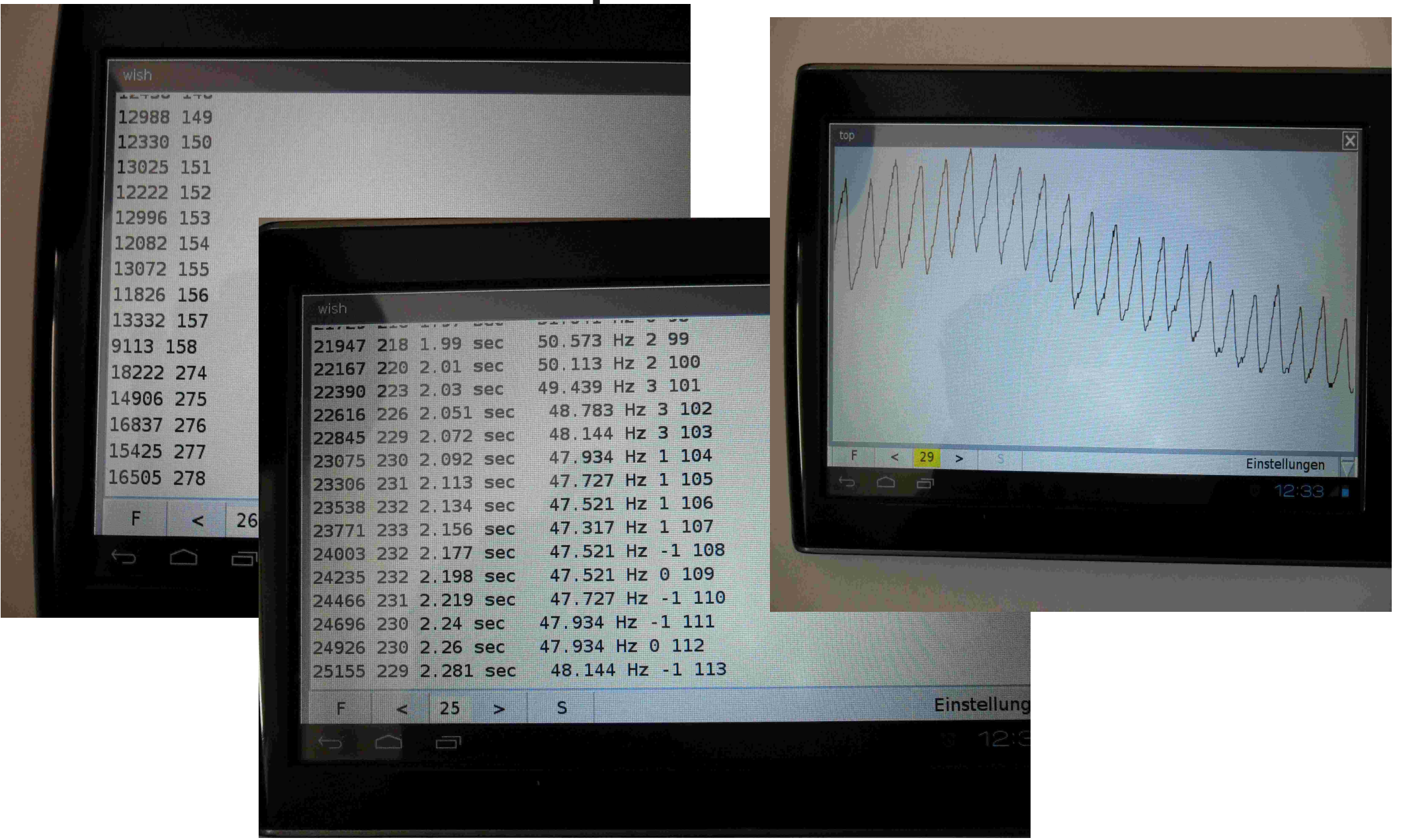


heart-pulses

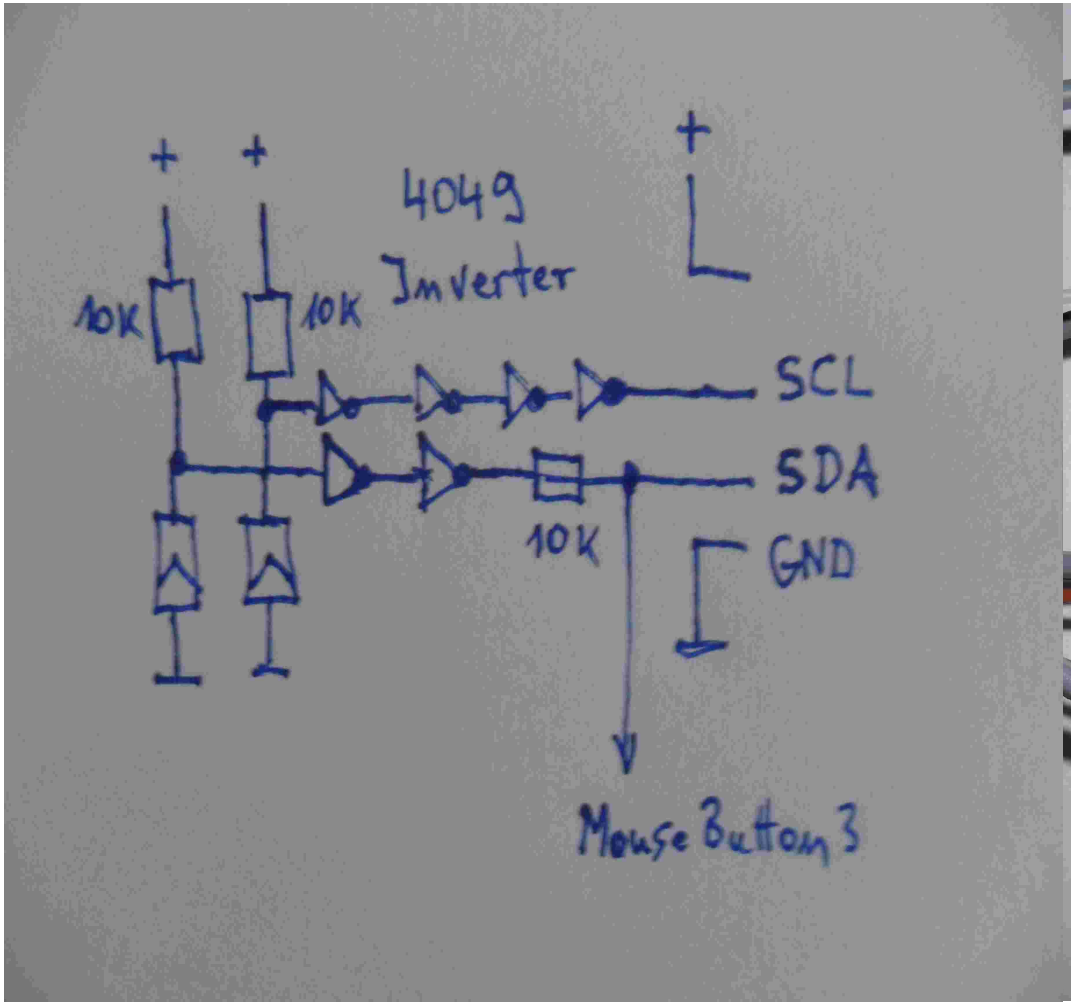


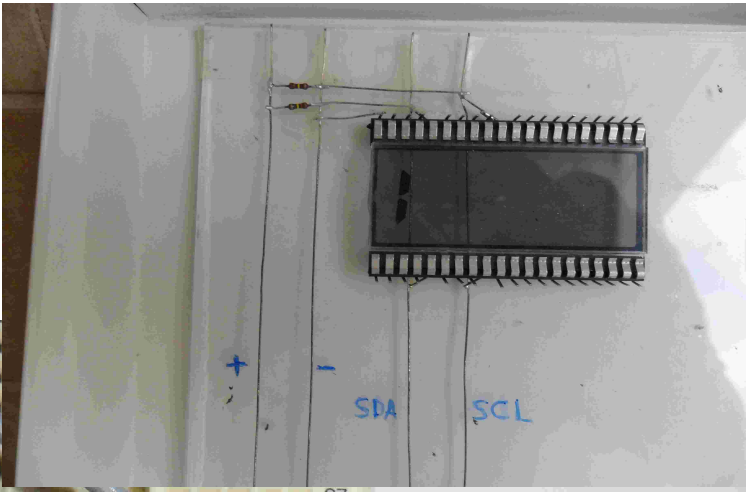


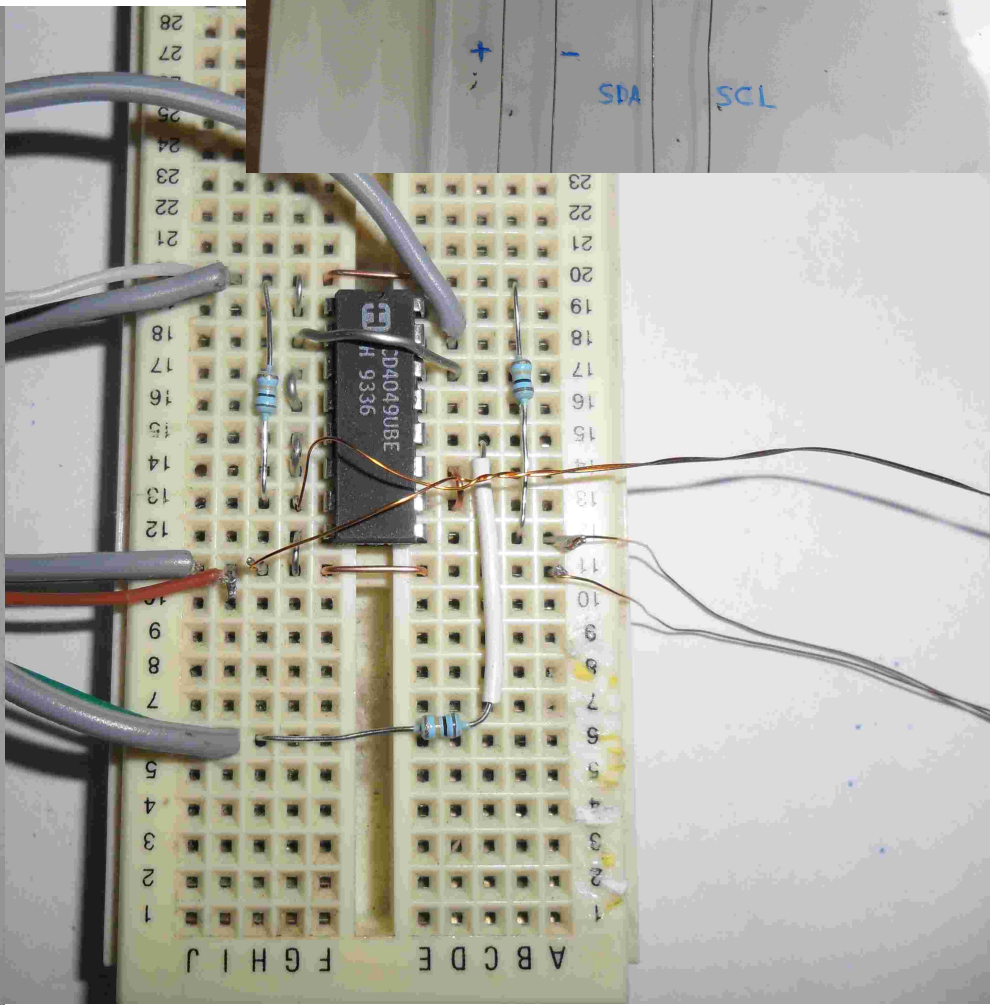
Calculations and resulting heart-pulses



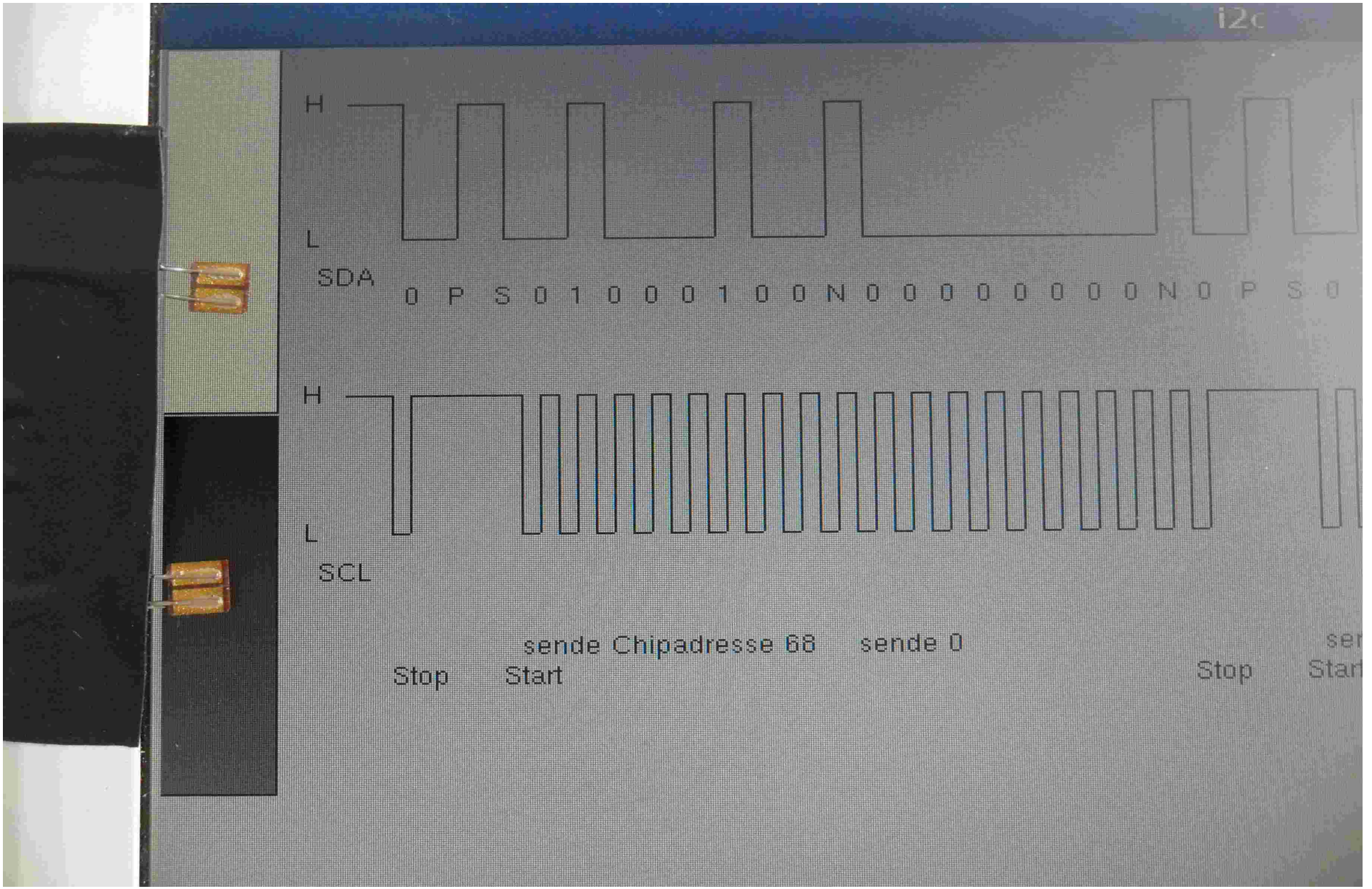
I2C-Bus


+
+
4049
Inverter
+
10K
10K
SCL
SDA
10K
GND
Mouse Button 3

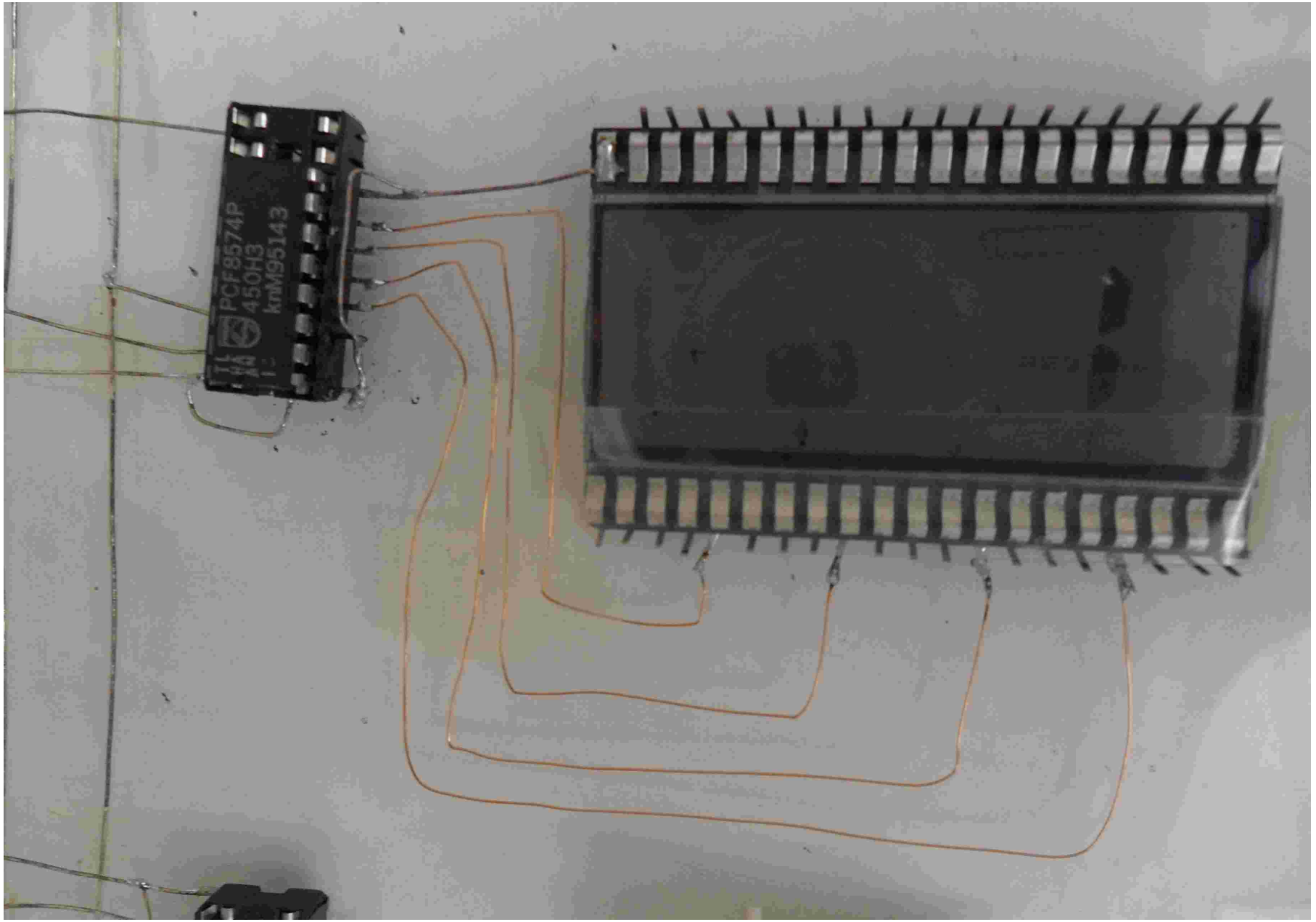

+
−
SDA
SCL


CD4049UBE
H 9336

I2C-program and photoresistors



PCF8574 i/o-expander



PCF8591 D/A-A/D-converter