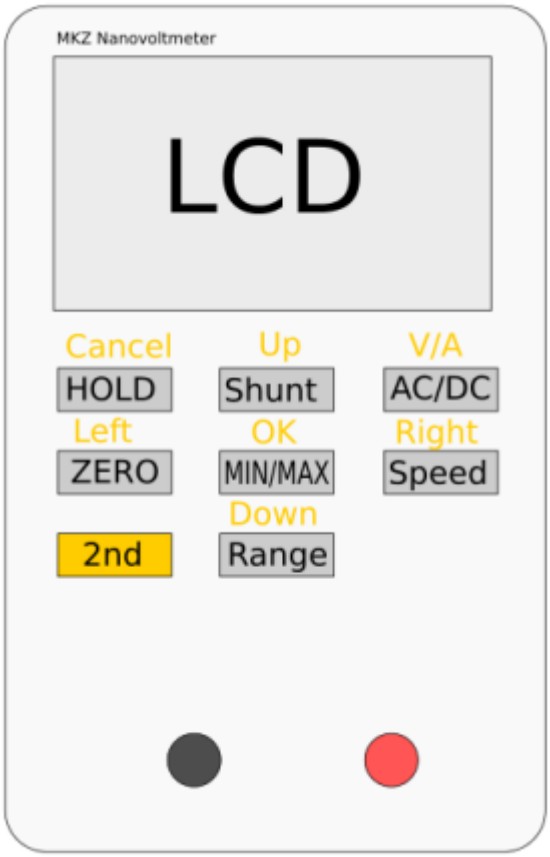
Concept for a handy Nanovoltmeter, 7.5 Digits

based on the AD7190, 24-Bit delta sigma ADC



Features

- Graphic LCD
- Bargraph
- DC/AC measurements with 0.1, 1 or 10 Updates per second
- Autorange:
  - Gain=1: ±4.096V
  - Gain=8: ±512mV
  - Gain=16: ±256mV
  - Gain=32: ±128mV
  - Gain=64: ±64mV
  - Gain=128: ±32mV
- Manual range with dedicated range-button
- zero-offset
- ratiometric measurements for strain gauges
- Min/Max/Average
- Integration over time (for Coulomb counting)
- Current sensing with possibility to specify a shunt resistance.
- BNC and 4mm banana socket

- battery powered
- USB charging
- USB interface, optically coupled

Components

ADC

- **AD7190**
- 24 bit
- delta sigma
- differential inputs
- external 1-5V reference

Reference

- **LTC6655**
- hermetically sealed LS8 package
- ±250ppm initial accuracy
- ±0.25ppm peak-peak noise (0.1-10Hz)
- 2ppm/°C temperature drift
- 4.096V
- optionally oven controlled @ 45°C
- dead bug mounting (–> more long term stability)

LCD

- **ILI9341**
- 2.2 inch
- SPI
- 240×320
- Backlight
- Colour

Buttons

- Hold
- AC/DC
- Speed (0.1, 1, 10 S/s)
- Range
- Zero
- Min/Max (implies Average and Integral)
- Voltage/Current
- Cancel
- 2nd
    - Up

- Down
- Left
- Right
- OK
- Shunt

english, electronics, concept, technical