For Isabella: Getting Started with Scintillator-data

Montag, 12. Juni 2023 16:33

Hello! This is a write up for getting started with the scintillators histogram measurements.

- **Reprogram the microDAQs:** Once you are connected to the TAXI, you need to reprogram the microDAQs to communicate with them. This does not need to be repeated if you do not power cycle the TAXI again**.**
  - root@taxiV3no10:~/daq/firmware# ./reprogram_all_MicroDAQs_after_power_cycle_of_TAXI.bash -f udaq_20210202_TimBendfelt/uDAQv4.1-chw-tjb-3sec-to-20210202.bin (Just once when you reboot TAXI, or connect the panels, is enough)

- **Histogram measurements:** This is essentially how we do the calibration runs, so this measurement outputs a histogram data set of the hits in the 3 gain channels on the microDAQ without the timing info for each of the hits.

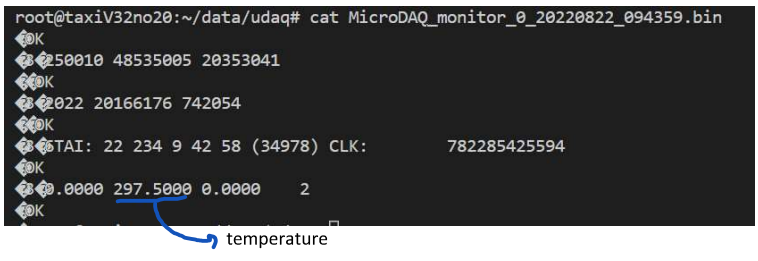
  - Configure : ~/daq/udaq/scripts: "./configure_MicroDAQ_005_histogram_fwd_1000_noah.sh channel number" example, ./configure_MicroDAQ_005_histogram_fwd_1000_noah.sh 0 (for channel 0)
    - Sub directory: This is the script in which you can change the DAC (threshold) and AUXDAC (SiPM bias voltage) and other parameters: ~/daq/udaq/conf: microDaqRun.conf_cobs_hist_settings_test_FWD_1000_noah? (used in the main config script to check which one is the related settings script!)

  - Run measurement: ~/daq/udaq/scripts: ./run_MicroDAQ_003_20seconds.sh channel no. OR for example `run_MicroDAQ_002_600s.sh` 0 (we used separate scripts for convenience. measurement time can be changed in the same script too)
    - Sub Directory: This is the script in which you can change the measurement time: ~/daq/udaq/conf: microDaqRun.conf_cobs_start-stop-run_20seconds (Again, check for the relevant name in the main run_MicroDAQ... script)

  - Save data: ~/daq/udaq/scripts: ./`save_MicroDAQ_002_histogram_noah.sh` 0 (The data gets saved in ~/data/udaq/ folder). These are .txt files, ending in _0(high gain),_1,_2 signifying the different ADCs. Example: MicroDAQ_histog_0_20220127_231603_hist_0.txt, where 20220127 is date in YYYYMMDD format and 231603 is the time of the measurement

- After running the config script, there is a config file that gets created which has some OK logs, and temperature seen by the microDAQ.

- We can also run a monitoring script, to quickly check the temperature and response of the microDAQs using:
  - ./monitor_MicroDAQ_003.sh 0 (0 is channel number, starting fro 0 to 7 marked on the TAXI): Generates a monitoring file in ~/data/udaq folder with the name of type MicroDAQ_monitor_channel no_date_time.bin, which should look like:



- To run measurements for all the panels simultaneously, you can start the config, followed by run meas scripts in different terminals simultaneously, or by adding an '&' sign at the end of the command in the same terminal, so the taxi knows you want to execute the next commands in a sub terminal ./configure_MicroDAQ_005_histogram_fwd_1000_noah_DAC1400.sh 0&. **IMPORTANT**: You can do this for config, and run. But always do the save data step, one panel at a time to avoid corruption.

MISCELLANEOUS INFO:

- Sometimes when we reboot the taxi, the time needs to be reset. This can be done using: ~/daq/scripts/setTime.sh (read the script to see the execution)
- For the histogram data files: always check if the header of the file looks like: Histogram of ADC2: and ends with OK (the adc numbers go from 0 to 4095. The middle entries which have 0 counts in a range are not printed): ~/daq/udaq/scripts: ./monitor_MicroDAQ_003.sh 0. It uses the standard config file - cobs command scheme to request the temperature. The output file is in the ~/data/udaq folder. IN the line "30.0000 463.4375 0.0000 2" the second value is the temperature, already converted to Kelvin by MicroDAQ firmware
- Everything is logged in the a log file called StartMicroDAQ.log. It is found in ~/daq/udaq/log/