IFR Prototipe

QC Pizza Box
DAQ, Monitoring Online and ODC

SuperB Meeting Frascati 2010

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Outline

- QC PizzaBox
- General setup for DAQ-ODC-Monitoring Online -> BIRO-TDC
  - DAQ
  - Monitoring Online
  - ODC

Preliminary on QC PizzaBox

- Goals of Quality Control test:

  ✓Check the integrity of chain *scint – fibers - SiPM*

  ✓ Check the uniformity of pizzabox in terms of singles rate at specific working points

- Setup and Method of QC:

  • Pizzabox will be connected to an ABC-board and it will be tested with cosmics

  • Fixed same Gain for all channel -> Vbias calculated with characterization parameters

  • a scan on threshold will be performed in order to “saperate” noise from cosmics

  • single rates will be measured and plotted to have realtime response

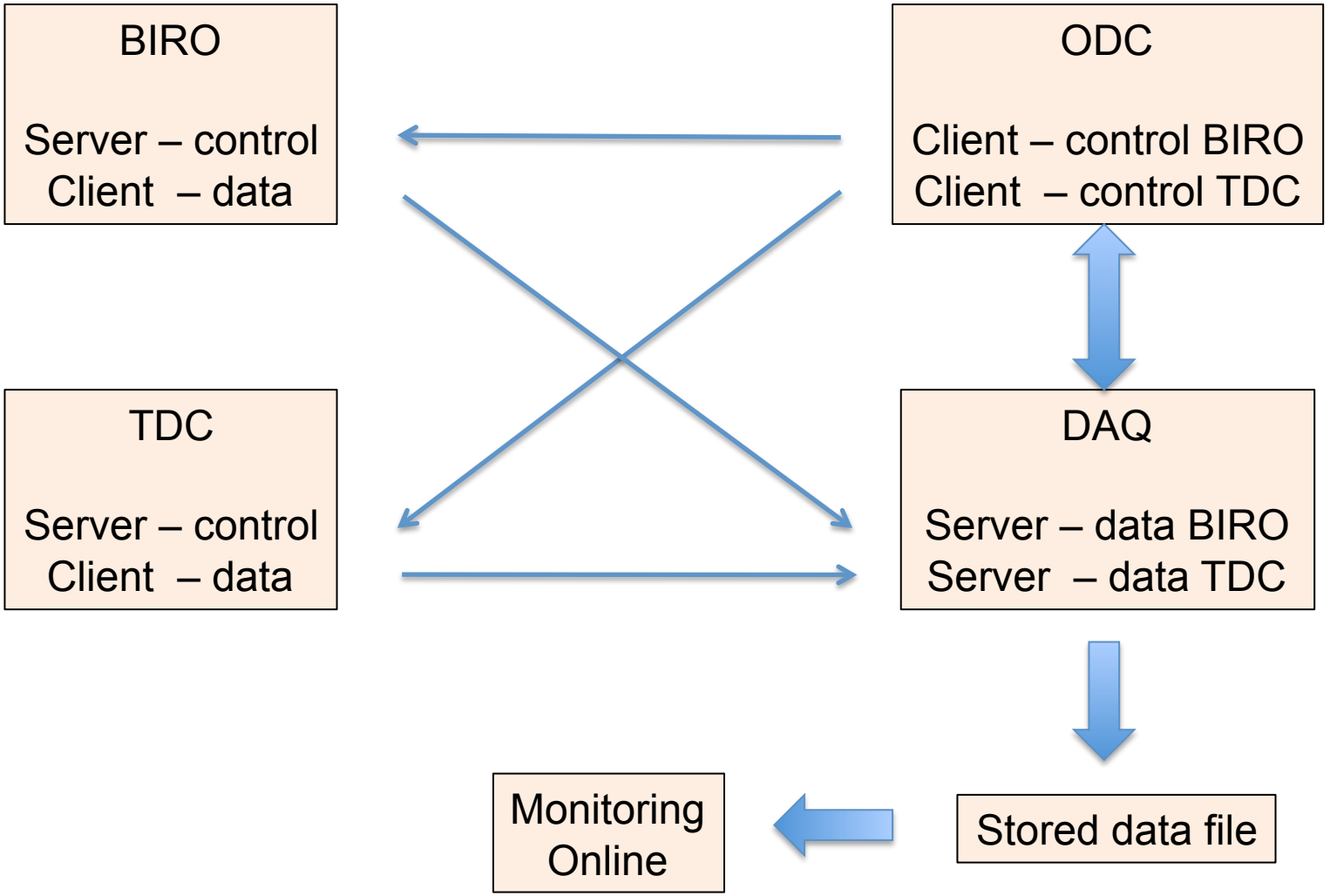
- Software: Labview or Qt?

  • ABC and PC connected via serial port

  • **Labview**: all function to control Vbias, Vthr and to measure singles rate are available and tested from characterization. Easy to plot histograms of singles rate.

  • Qt: all function have to be written and tested. To produce histogram, Qt needs Root libraries: this means a dedicated PC with specific configuration and a lot of work!!!

Overview of DAQ-ODC-Monitoring Online -> BIRO - TDC



DAQ Status

- DAQ Tested with a Simulated-BIRO-app running on different PC:

  - ✓DAQ send *Startrun* and *Stoprun* command via TCP/IP to BIRO/Odc
  - ✓ DAQ receives pack-events from BIRO via TCP/IP

- Performance

  - DAQ receiver follow the sender up to ≈ 4 kHz (events) with a local lan PC – hub – PC
  - DAQ preprocessing takes more time… depending on the operations to do:

  Find complete events and store into a file

- Next steps

  - ✓ test DAQ-BIRO with real BIRO
  - ✓ implementation of a second BIRO acq (for the second crate) and TDC
  - ✓ monitoring connection
  - ✓other on preprocessing…

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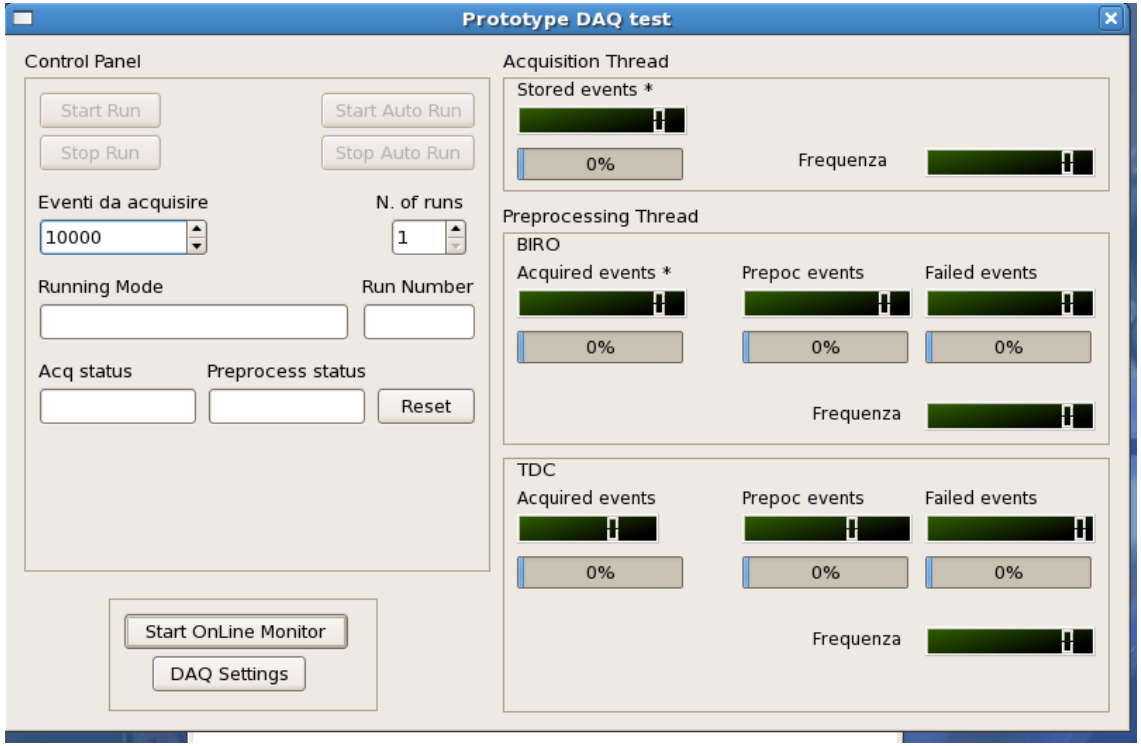
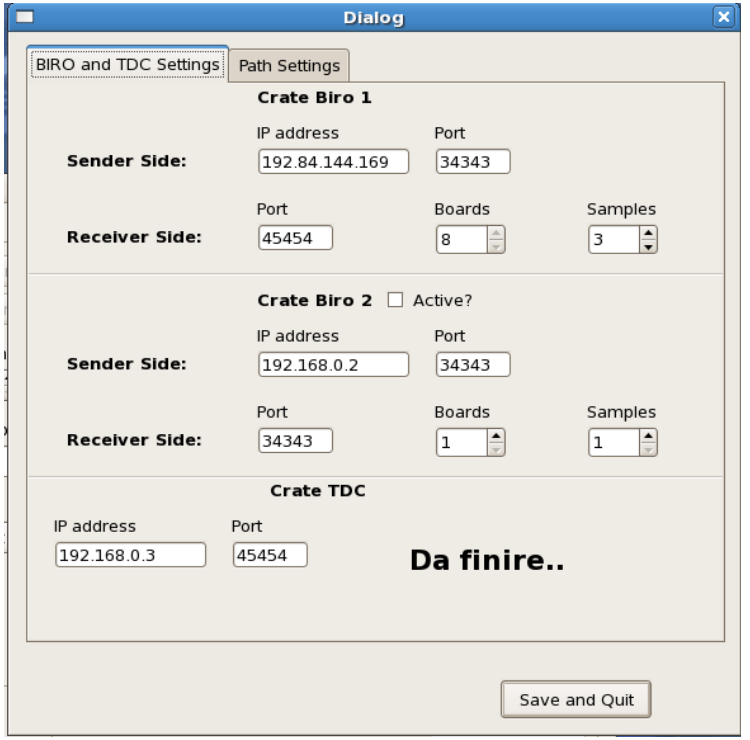
DAQ Screenshot





Monitoring Online Status

- General
  - will show hit occupancy of the detector accumulated in a fixed number of events/ every fixed time
  - will perform a processing of data and return rootuples
  - the application is independet from DAQ and Odc
  - the application will be realized with Qt recompiled with Root libraries

- Status
  - realization just started
  - decode of raw data files into hit information

Online Detector Control

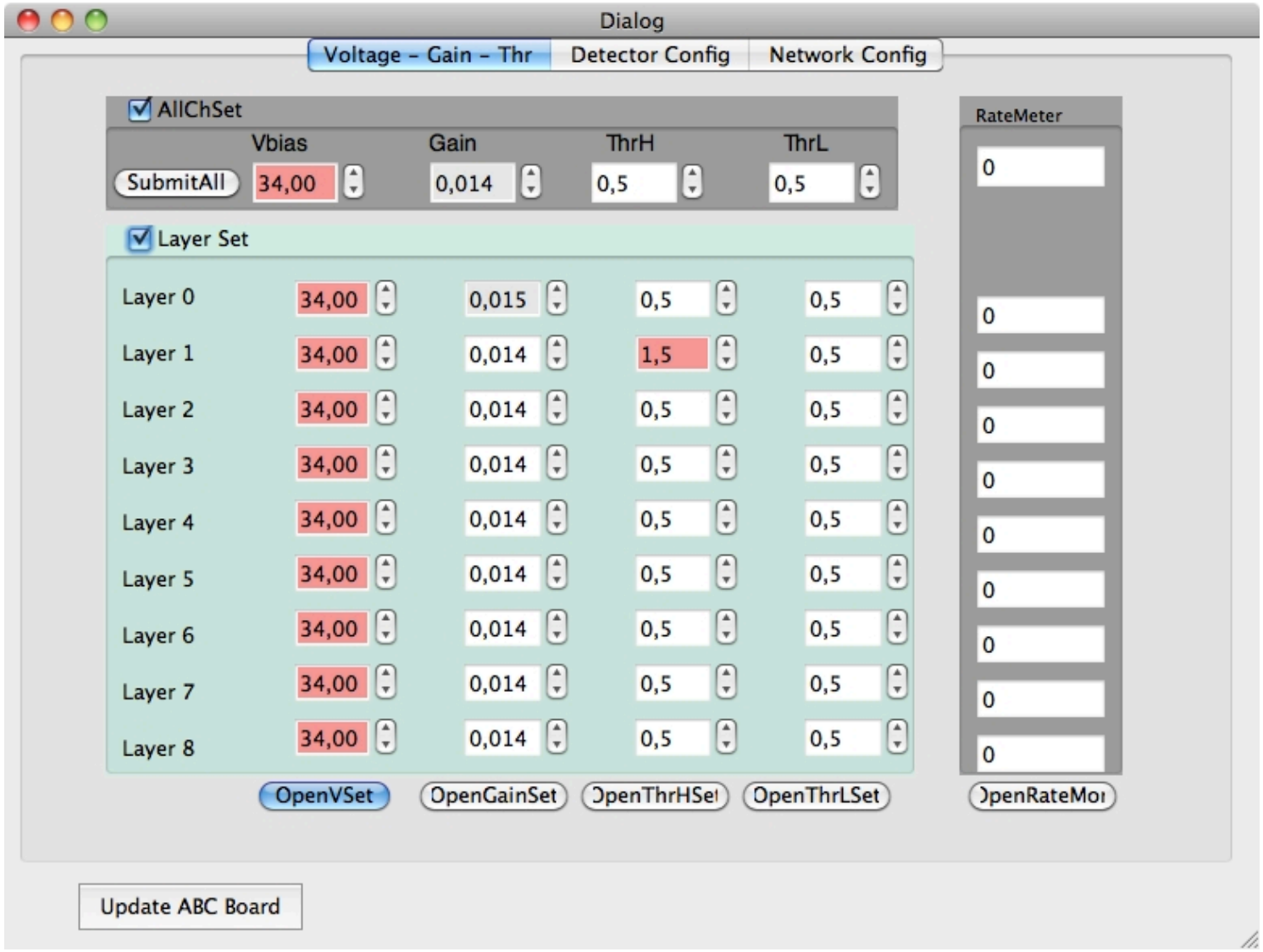
- Settings
  - ✓ Read Vbias, Vthrh, Vthrl from a Settings_File and read detector configuration from a Detector_Config_File
  - ✓ Store Vbias, Vthrh, Vthrl into a specific Settings_File, in order to be recalled and to have a correspondence between setting and acquired run
  - ✓Set Vbias:
    - Set all channel
    - Set single layer
    - Set single channel
  - ✓ Set Gain:
    - set same Gain for all channel: Vbias is calculated from the charateristic *Gain vs Vbias*
    - set Gain for single layer or channel
  - ✓ Set Vthr (presented as n.5 PHE):
    - set n.5 PHE for all channel: real value of Vthr is calculated from the charateristic *0.5PHE vs Vbias* and *Gain vs Vbias*
  - ✓ Different colors on cells give indication on parameters and on their status (changed, submitted, all channels with same values …)

- Rate monitoring
- Connection monitoring

- ODC and DAQ run together:
  - DAQ send *run_number* to Odc and a log file with *run_number* → *V config* → *Detector Config* association will be produced.
  - DAQ send status of data-connection

- Detector configuration file: will be edited and modified by a simple electronic sheet
  - different detector configuration will be predefined

Online Detector Control - ScreenShot



Online Detector Control - ScreenShot