

General procedure to bias the E-front and E-back detectors :

Requirements:

A – cables inside the chamber are *properly* attached (see procedure “*how to connect cables inside the chamber*”)

B – chamber *is* under vacuum

C – you know *exactly* which channel of CAEN power supply corresponds to which slot on the motherboard and what kinds of chipboards are located in which slots (see procedure “*how to learn which CAEN channel biases which slot in which motherboard*”)

D – you know *exactly* which detectors are connected to which chipboards and on what slots

E – detectors have been used and found OK in the near past (~ days-weeks) – if not, look for procedure “*how to bias detectors for the first time*”

- 1) Check the vacuum in the chamber – it has to be below 5.10⁻⁵ Torr
- 2) Check that VME crate and Sparky is off
- 3) Check that the power cable is properly attached to the flange and Sparky distribution box (both ends with 2 screws !!)
- 4) Check that the BNC cable from the Tenelec power supply is properly attached at its backside and to the front box of the Sparky distribution box
- 5) Turn on the CAEN power supply
- 6) Login in
- 7) Check with detector database what are the nominal (Indiana University) bias voltages for the detectors which you have in the chamber – if you don’t know that this is the correct bias file STOP until this is verified

Biasing the E-fronts:

- 1) Check that the maximum allowed voltage for a particular channel “SV Max” is by 100 Volts *smaller* than nominal bias given by Indiana University (*remember – you are already supplying 100 Volts of bias through Tenelec power supply*) and corrected for leakage (see => *how to correct for leakage*)
- 2) Check that the maximum allowed current “IO Set” for the channels you plan to use is set to no more than 6 uA.
- 3) Check that the Rup (ramp-up) value is set to the lowest limit = 1V/s.
- 4) Set “V0 Set” to the desired bias voltage for a channel which corresponds to a proper E-front detector (*if you are biasing a detector after long time being idle –go better in steps of 50 V*).
- 5) Start ramping up the voltage by switching power “Pwr” to “on” by clicking spacebar. Ramp-up one detector at a time !!!

Biasing the E-backs:

- 1) Check that the polarity of the Tenelec power supply is set to “positive”
- 2) Check that the “voltage range” is set to “100 Volts” and reading of the “front knob” is “0”
- 3) Enable the Tenelec power supply by switching it on
- 4) Switch the display to read current
- 5) Start turning the knob SLOWLY and watch the reading of current. It should not exceed 1-1.5 uA per biased detector (i.e. 3 detectors means limit in ~3-4.5 uA).
- 6) Set slowly bias to 100 Volts – this can take a couple of minutes.
- 7) When bias reaches 100 Volts fix the knob with “black lever” so it cannot move.
- 8) Watch the leakage current !!! Check the leakage current values with the database !!! Put new values to the database.