Silicon detection setup n_TOF EAR-2

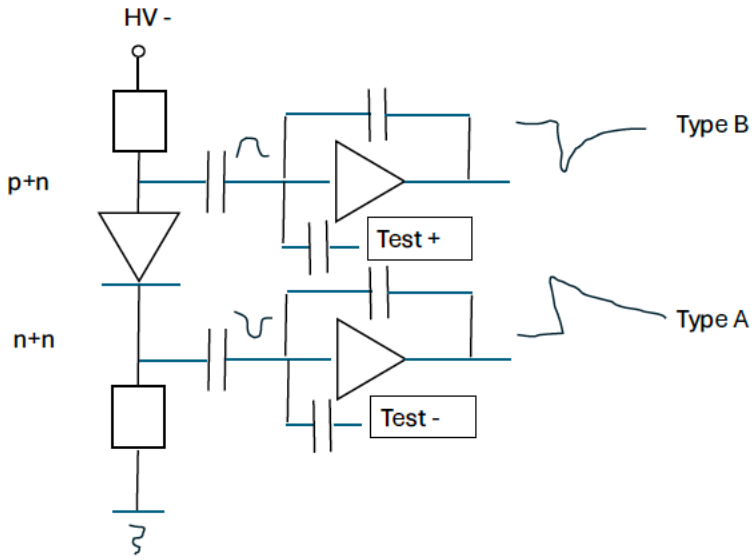
Silicon strip detectors:

n-n side collects electrons →(-) signal
p+n side collects holes → (+) signal

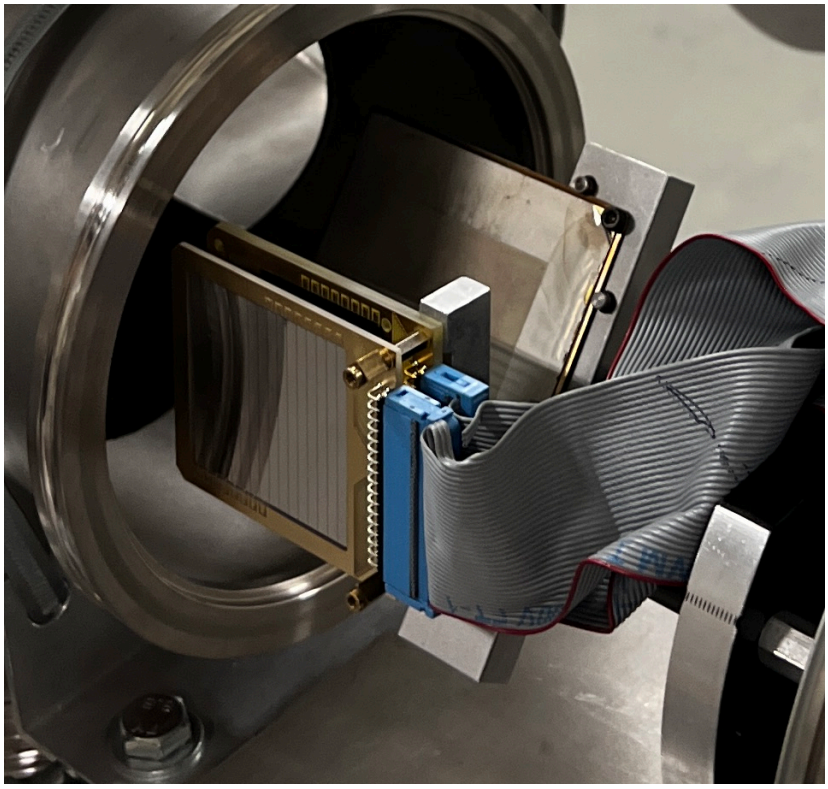
We bias p+n side with neg. voltage

for single sided silicon strip detectors we get only the signal from the p+n (junction) side

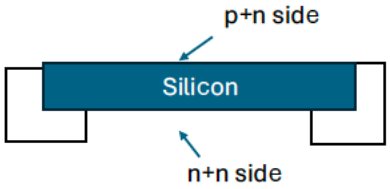
Detector + preamplifier scheme . p+n needs Type B preamp, n+n need type A:



First challenge: connecting flat cable the correct way round to get detector biased correctly



By convention, the bit with a bit more silicon is the p+n side:

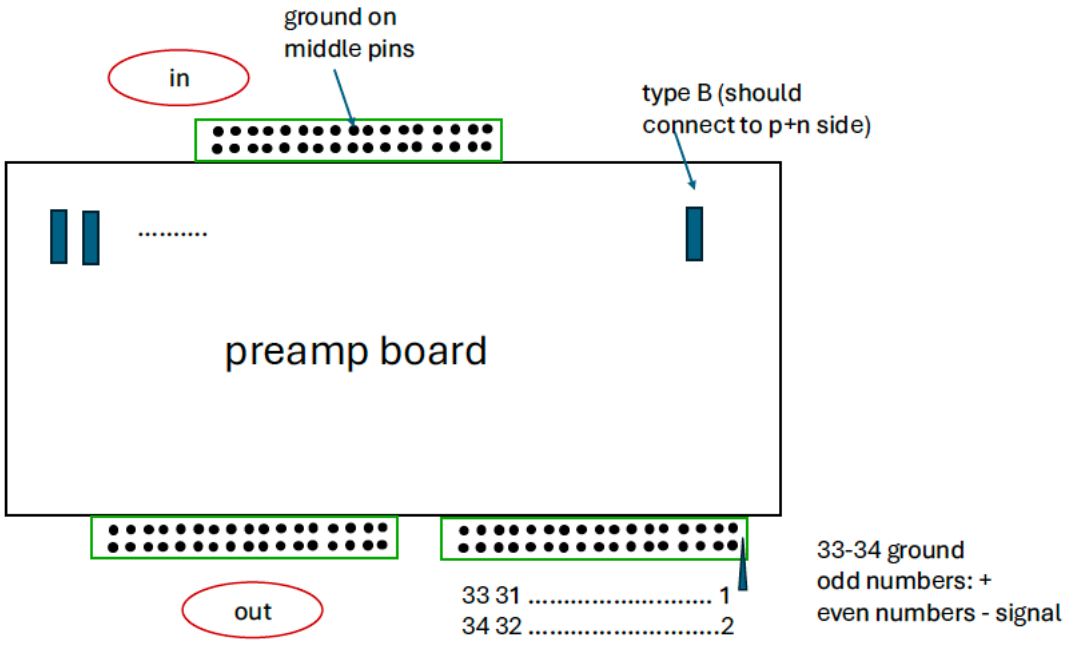


Preamplifier stage

Detectors are biased through connections on preamp box:

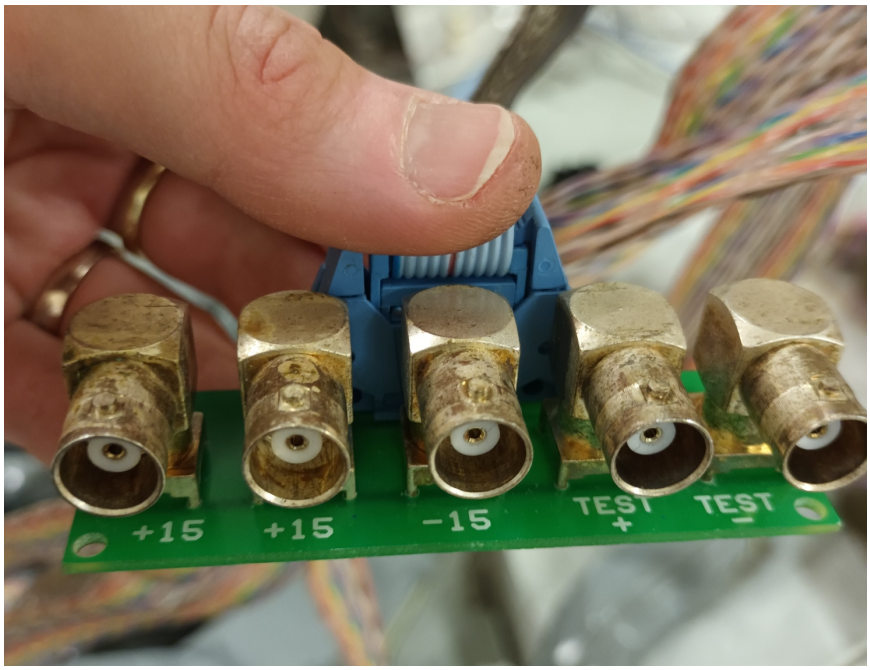
Detector bias voltage depends on detector and Tom should have a list for that or knows where to find the information.

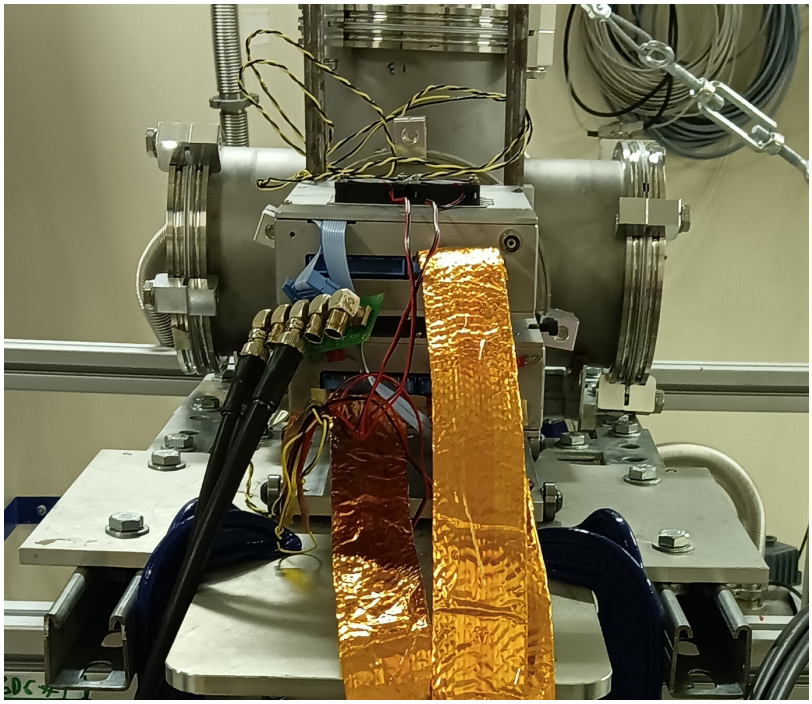
Detector connection to preamplifier:



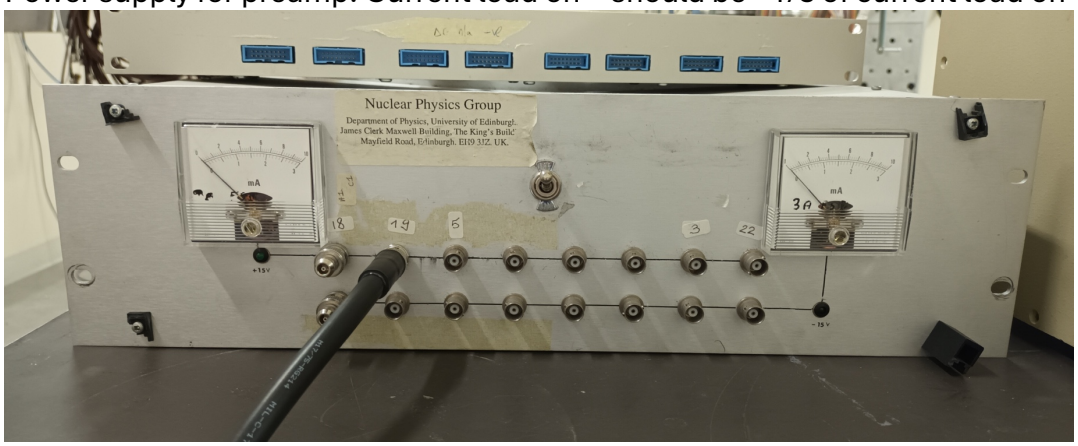
→ need to check which pin connects to type B preamplifier and then can deduce correct cabling for detectors

Both preamplifiers are powered through the green connectors, connect +15 and -15V.





Power supply for preamp. Current load on + should be ~1/3 of current load on -.



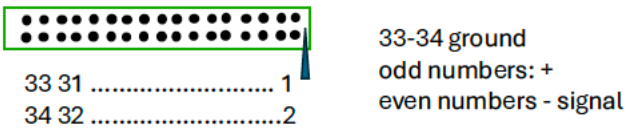
Just switch on and connect to one of the + and one of the – connectors, it does not matter which one.

The green connection plate has also test inputs. This can be used to check if the signals get through from the preamplifier to the lemo/bnc cables.

We should see signals in front side (p+n) when putting a positive pulse signal in the (+) test input. The signal that should then appear in the lemo cable is (-) as preamplifier inverts signal
We should see signals corresponding to the back strips when putting a (-) pulser signal in the (-) test input, which will appear as (+) signal at the lemo cable stage.

Flat cabling up to patch panel

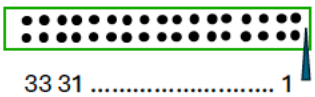
Flat cables from preamplifier go to a junction box. Junction box is needed to move the signal to the correct pin so it goes to the core of the Lemo cable, i.e we go from:



33 31 1
34 32 2

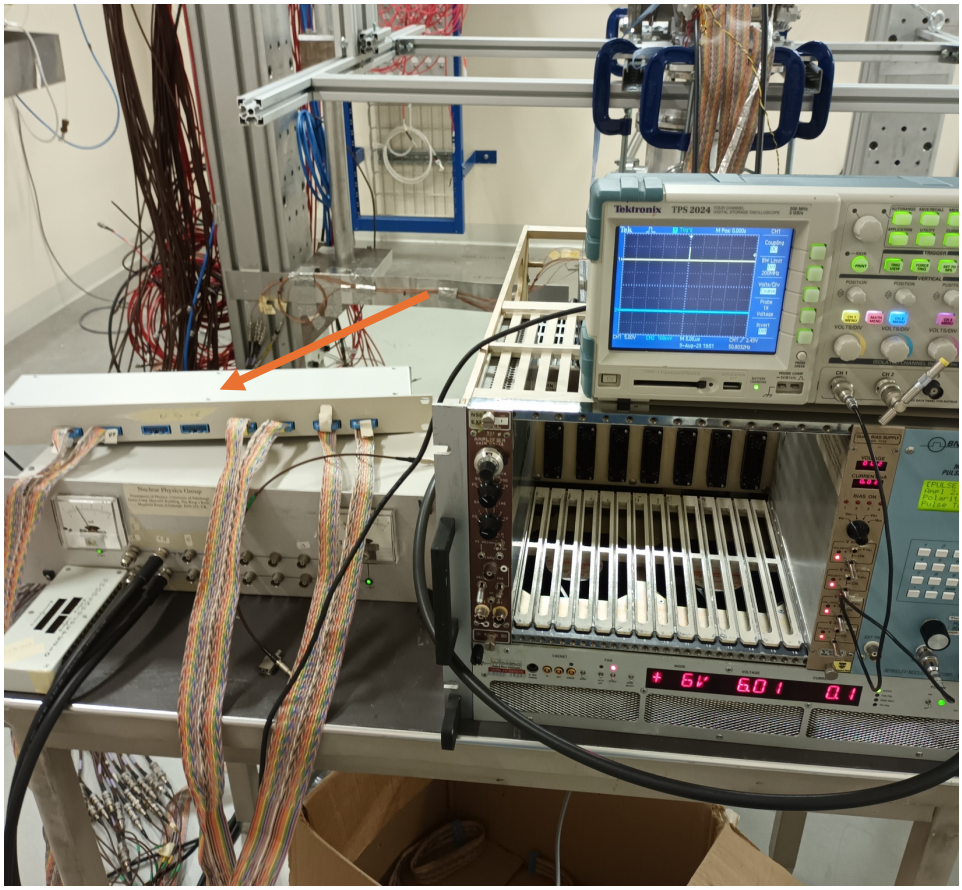
33-34 ground
odd numbers: +
even numbers - signal

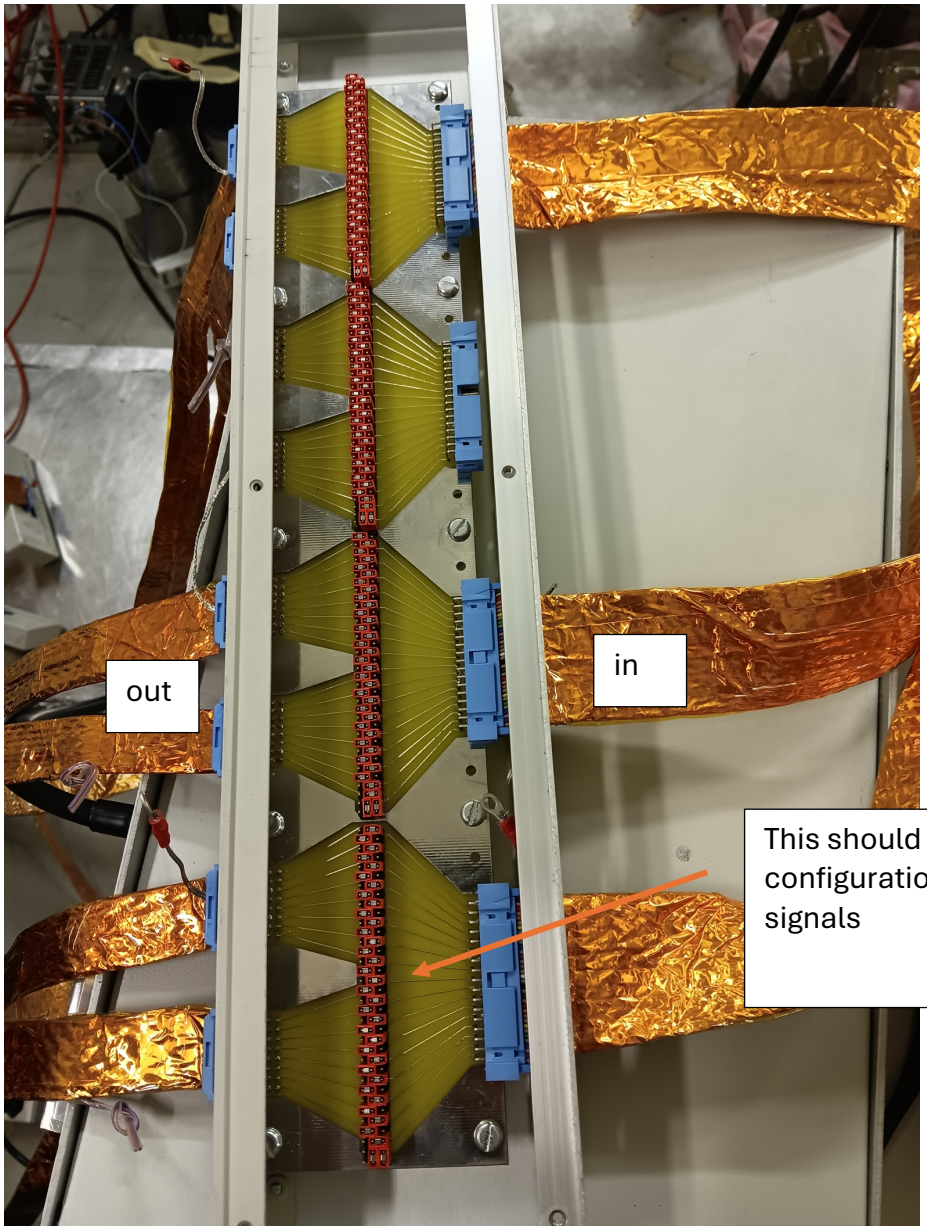
junction box



33 31 1
34 32 2

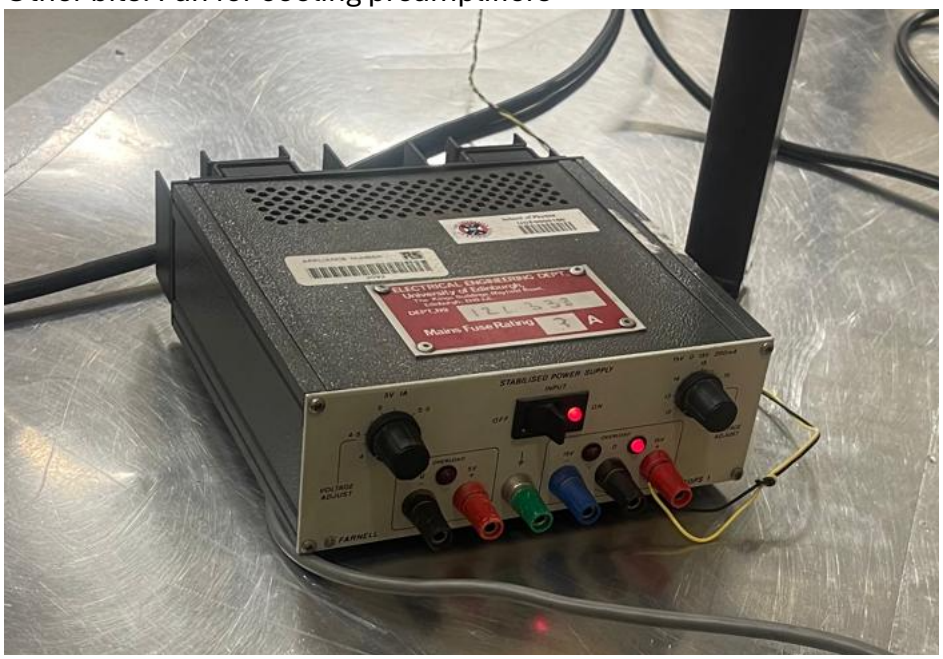
33-34 ground
odd numbers: signal
even numbers ground



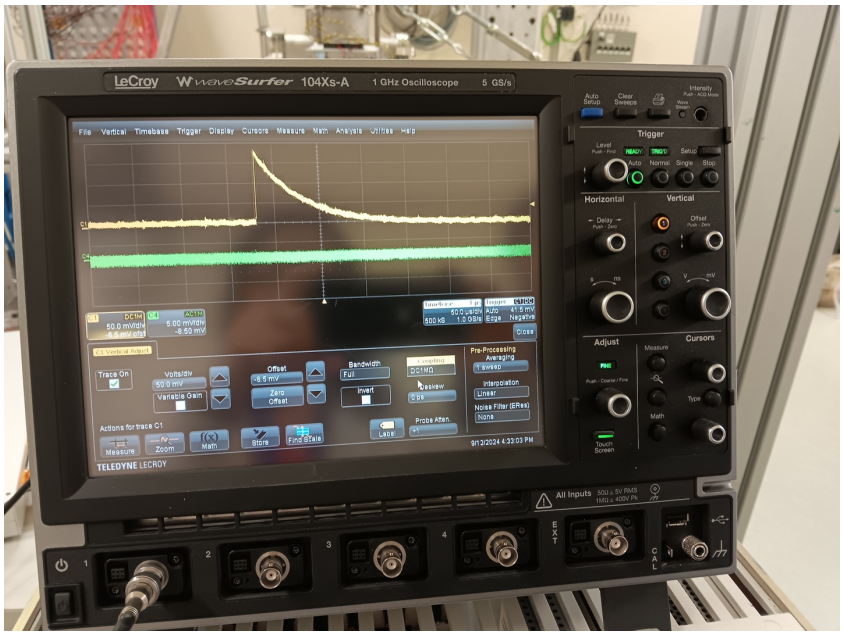


After this box the signals are sent to a flat to Lemo converter and then Lemo is converted to BNC using a connector.

Other bits: Fan for cooling preamplifiers



Expected Signals / pulser settings:
Typical signal:



Pictures of Chamber setup: