

ATLAS ITK Outer Barrel Pixel Modules QC

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Outline

- Introduction
- **Step 1** : Get the setup connected, PSU, Interlock, Cooling
- **Step 2**: Grafana for temperature and humidity monitoring
- **Step 3**: Tests using 1 Digital Quad in four jigs (no HV)

Step 1 : Get the setup connected, PSU, Interlock, Cooling

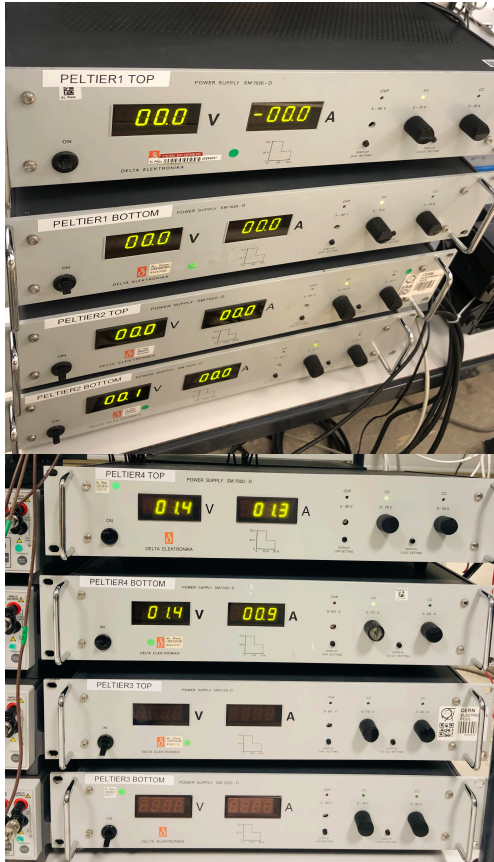
Setup description:



Step 1 : Get the setup connected, PSU, Interlock, Cooling

Setup description: PSUs

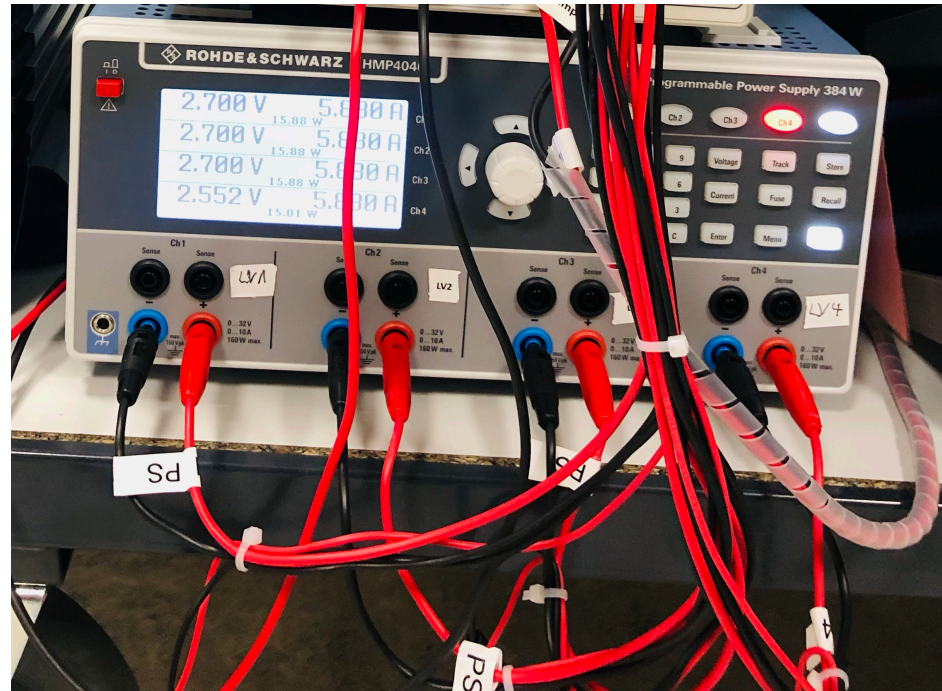
8 peltier PSUs (DELTA SM 7020):
each jig has two (top and bottom)



4 HV PSUs (Keithley 2410)



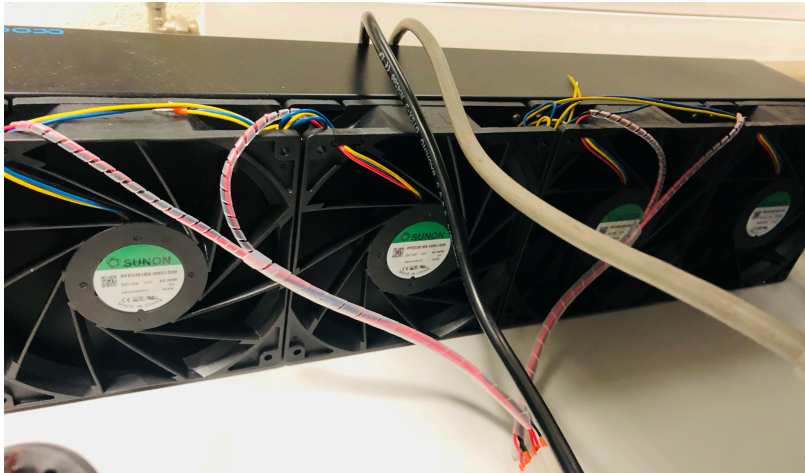
1 LV PSU (Rohde & Schwarz MHP 4040):
No sense wires connected



Step 1 : Get the setup connected, PSU, Interlock, Cooling

Setup description: Cooling

Fan



Cooling water tank

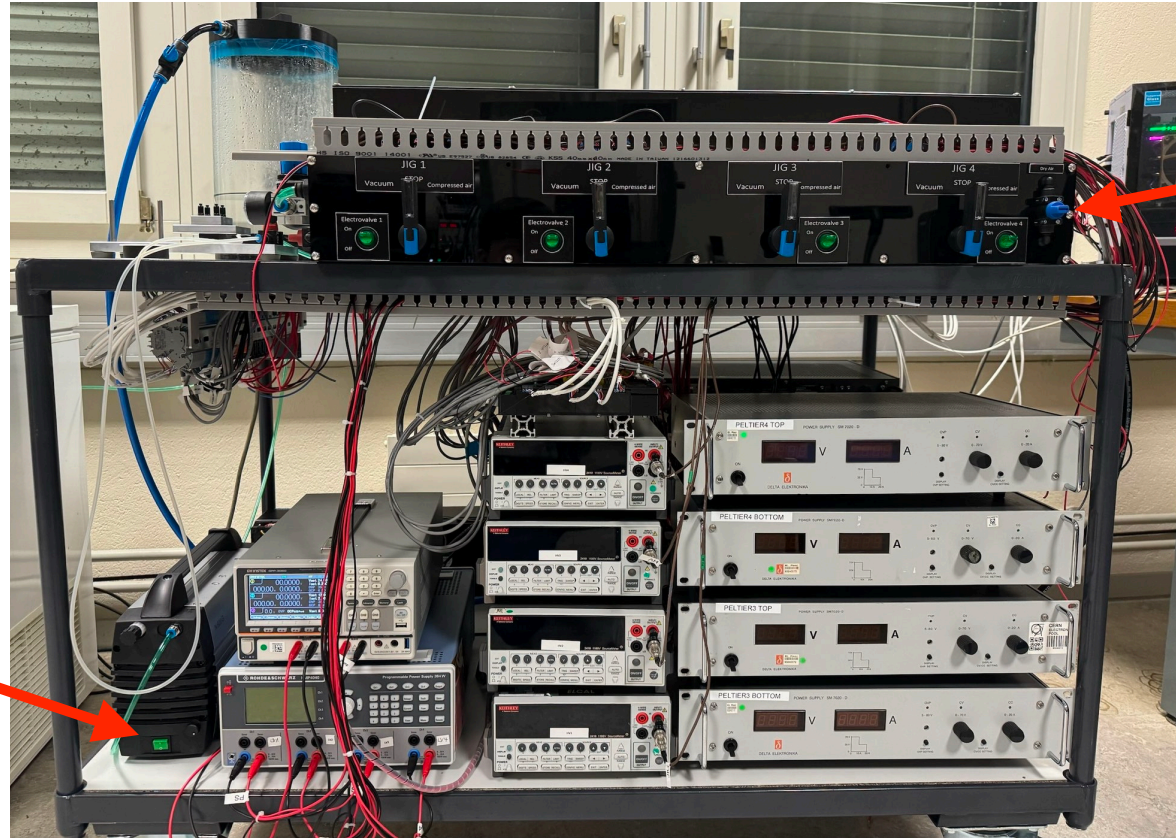


Cooling water tank PSU for the fan and the water pump



Step 1 : Get the setup connected, PSU, Interlock, Cooling

Setup description: In addition to continues dry-air flux in the lab and vacuum



Dry air switch

Pump for vacuum

Step 2: Grafana for temperature and humidity monitoring



Step 3: Tests using 1 Digital Quad in four jigs (no HV)

- DQ used: CERNPIXDQ27
- Cooling on (water and fan), peltier PSU on, monitoring through Grafana
- Apply LV (Set value), measure LV at the PSU(V_{out}) and at the power adapter board (PAB) (V_{in}).
- Issue: the interlock will prevent the PSUs to be on if the box is open (detectors involved: door switches and light sensors)
- Trick to be used: only open the small door instead of the whole box to measure the LV at the PAB, lock the door switch using a Kapton tape and cover the light sensor using a black cup.



Step 3: Tests using 1 Digital Quad in four jigs (no HV)

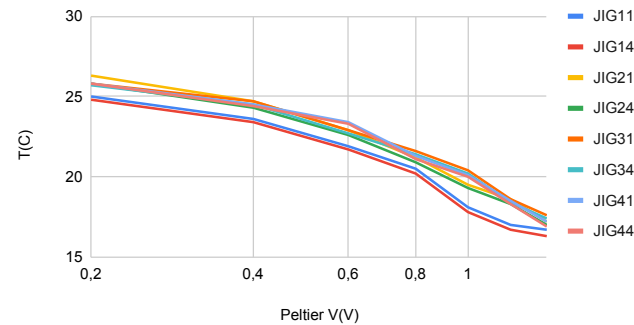
LV applied and measured:

	Jig 1	Jig 2	Jig 3	Jig 4
V_set (V)	2,6	2,5	2,6	2,6
V_out (V)	2,5	2,48	2,49	2,52
V_in (V)	1,77	1,76	1,76	1,77

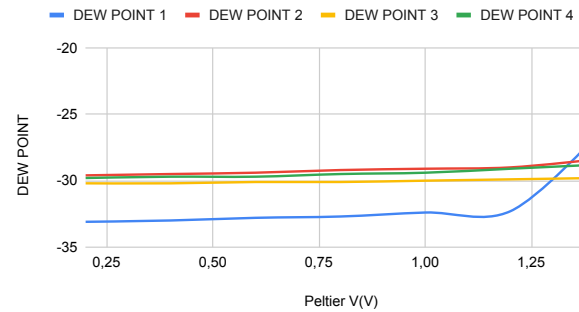
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Peltier power vs temperature and humidity:

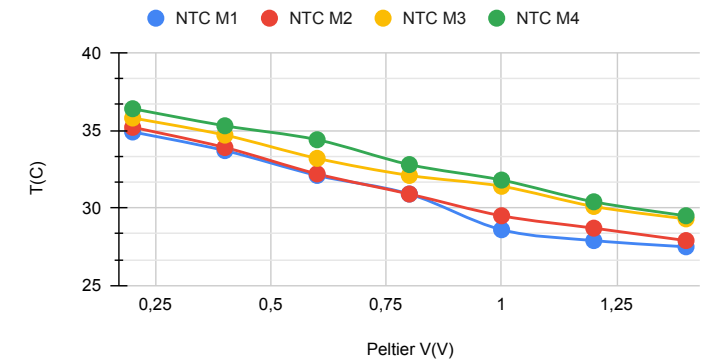
Peltier V(V) vs T(C)



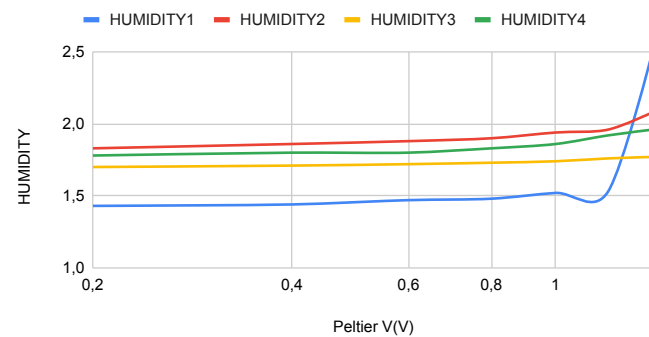
Peltier V(V) vs DEW POINT



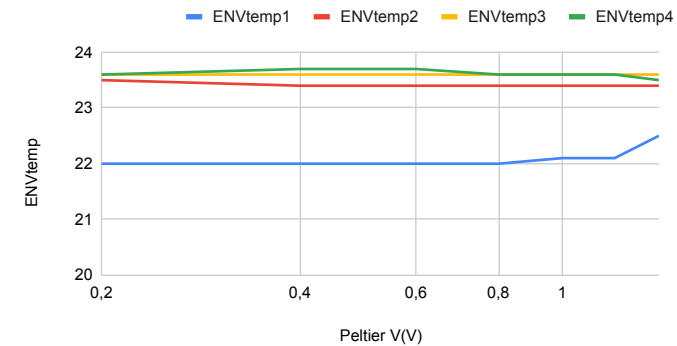
Peltier V vs NTC



Peltier V vs HUMIDITY



Peltier V vs ENVtemp



Conclusions

- First setup for cell loading QC at CERN with interlock, satisfying full reception test requirements.
- Remote control, temp and humidity monitoring implemented.
- Site qualification was presented using 1 Digital Quad and testing it in four jigs.

Next:

- Parallelisation to test four quads at the same time.
- Test itkpix modules.

Pictures



Thank you!



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