

# **Test Stations for Silicon Detectors and STT Electronics**

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(Juelich)**

## **Task - two telescope must be ready for November beam-time**

### **Three Test stations are needed:**

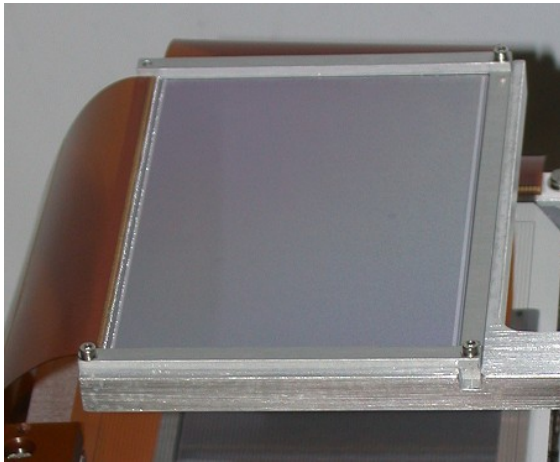
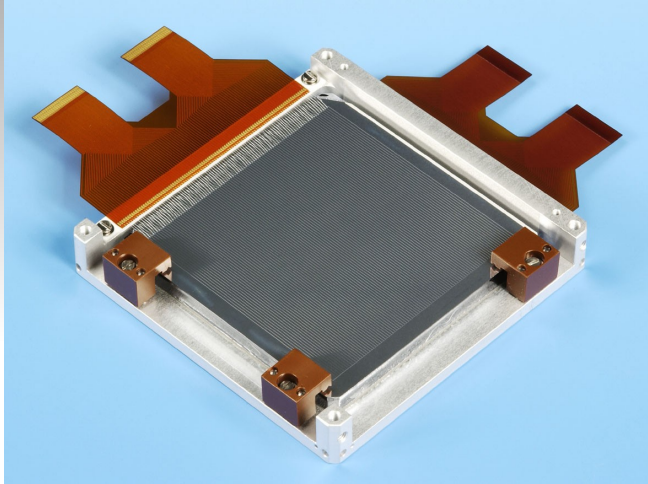
1. **Test station** for checking new Vertex ADCs (ZEL).
2. **Test station** for investigation of temperature gradient in the detectors and finding the optimum parameters of cooling and HV bias.
3. **Detector Test station** : measurements of strip leakage current, inter strip resistance and capacity to select detectors.

### **Electronics for STT.**

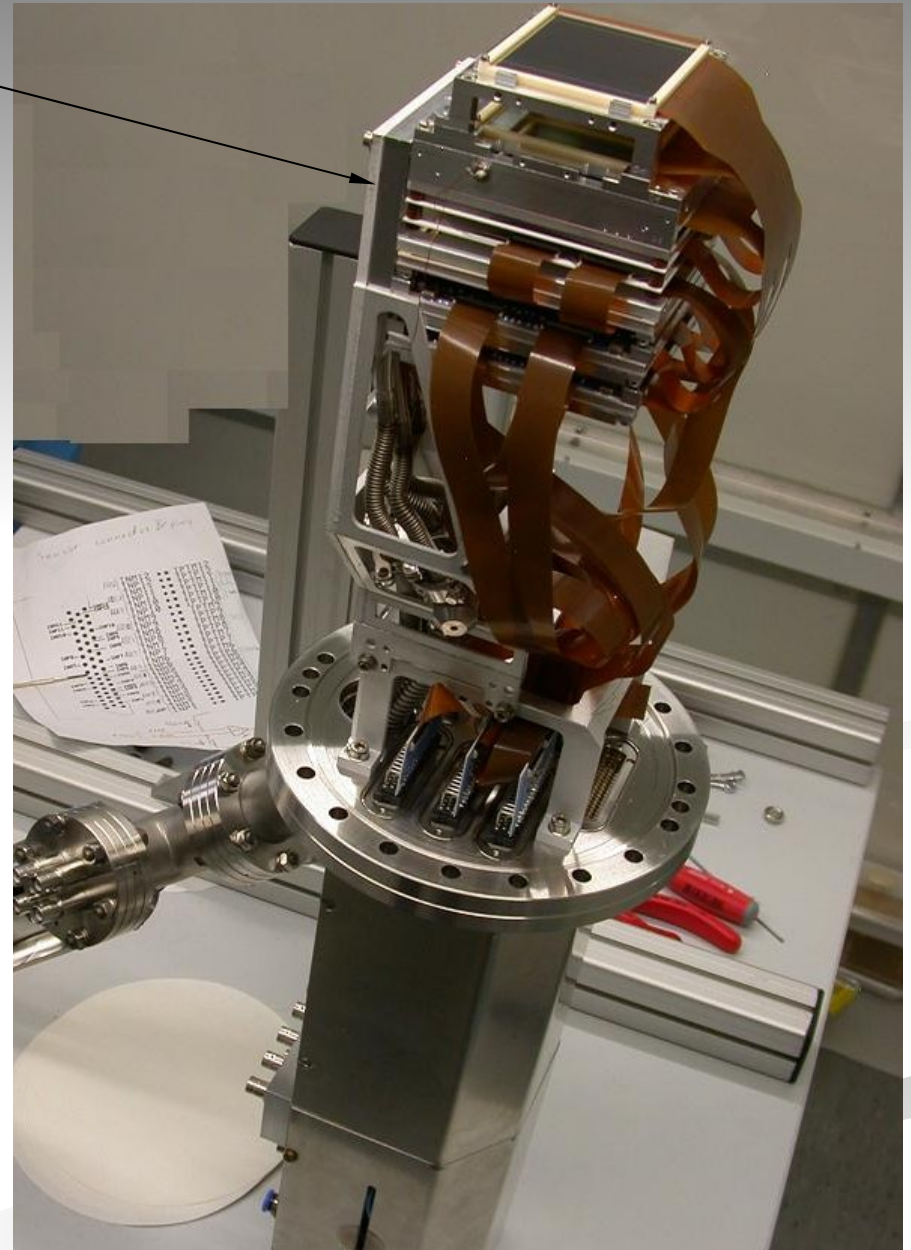
- VME DAQ
- Modifications and approximate production time schedule.

## **Summary/Outlook**

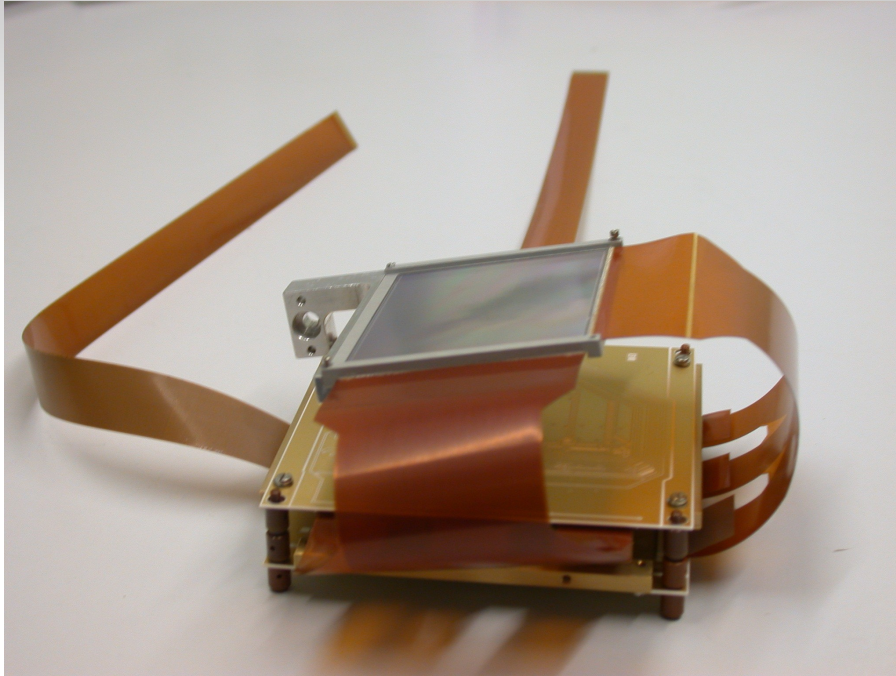
# Silicon Tracking Telescope, photo of prototype



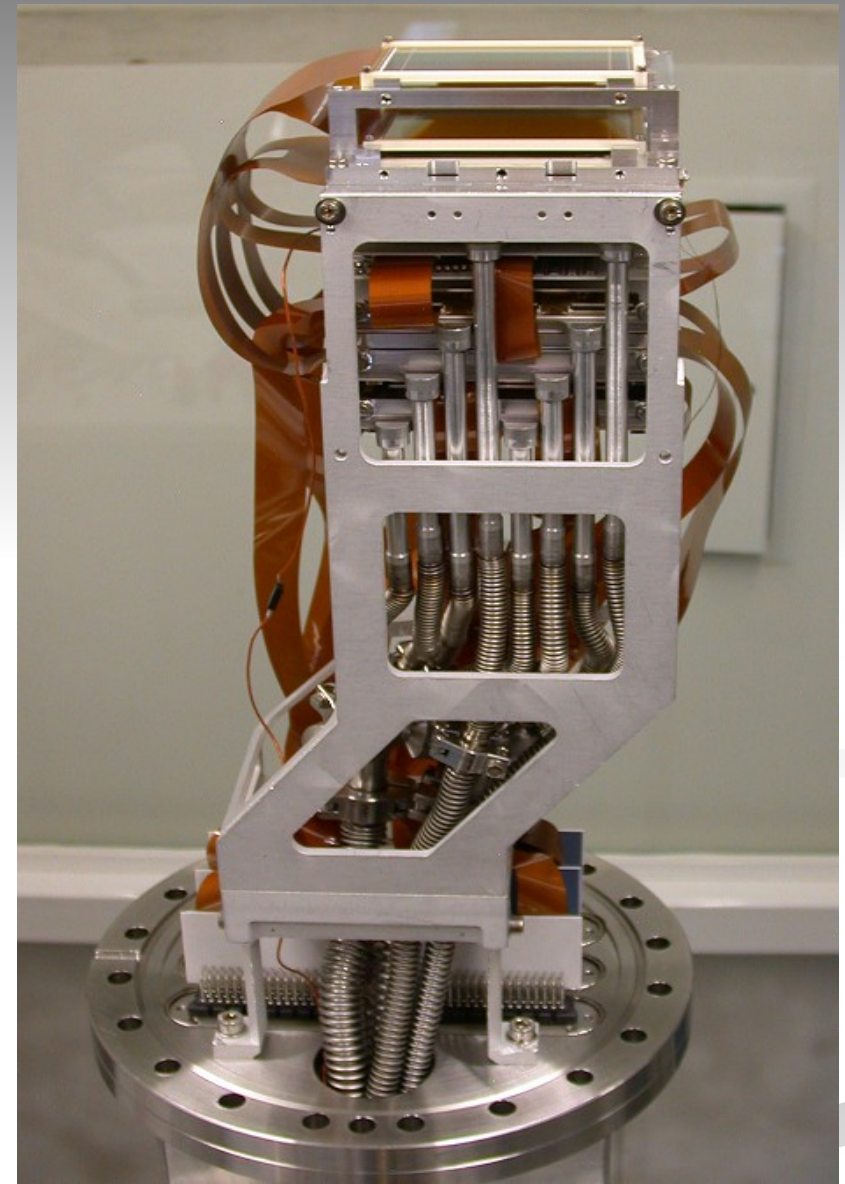
5100-10000 $\mu\text{m}$  thick Si(Li)  
detector  
and 69 $\mu\text{m}$  Si detector of STT



## Test stations 2



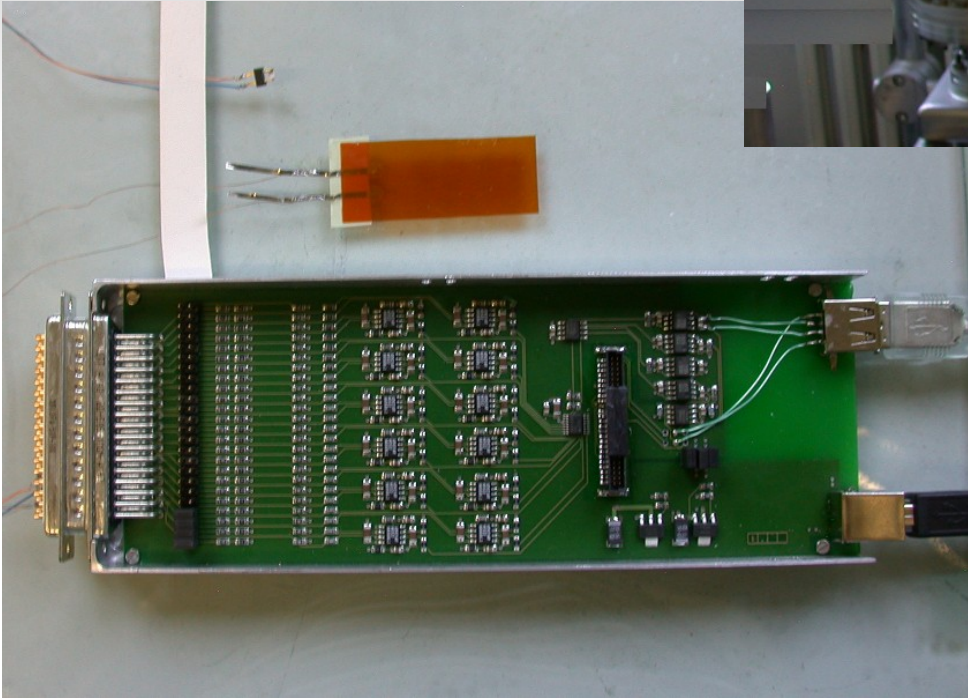
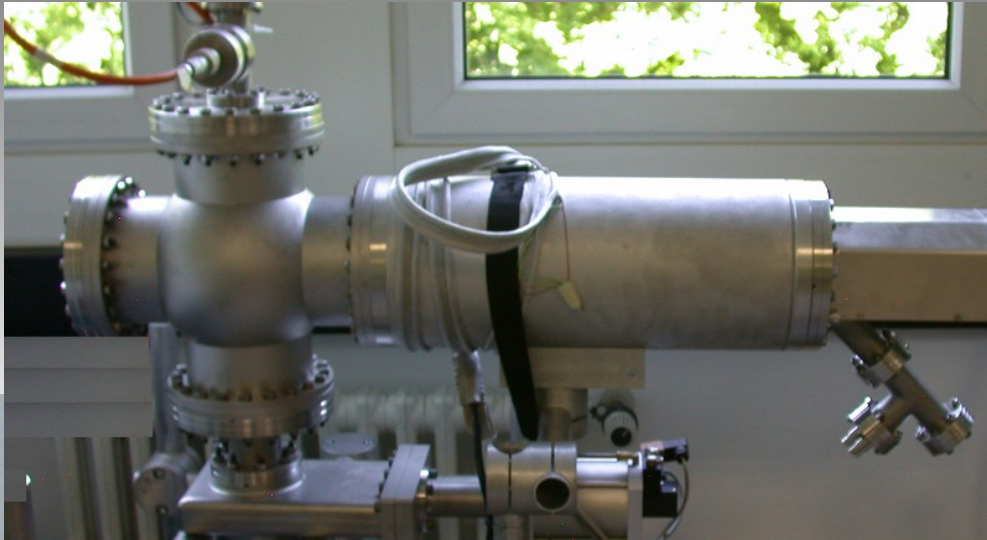
- Heat sources:
- detector current
  - vacuum electronics
  - environment.



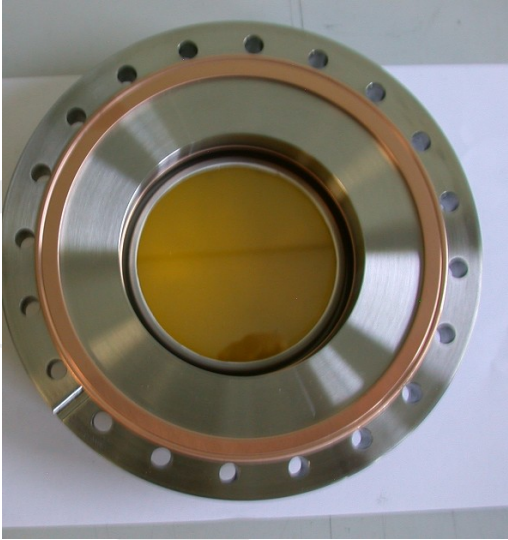
STT Cooling system

# Test stations 2

Test station for investigation of temperature gradient in the detector



12 channels I2C-bus ADC for PT100 temperature sensors (top of the picture)

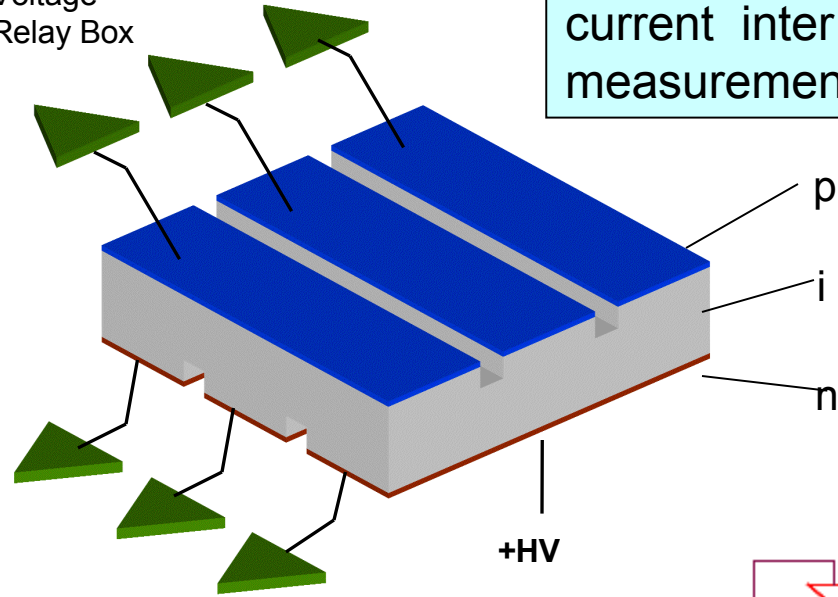


Flange with window for infrared camcorder

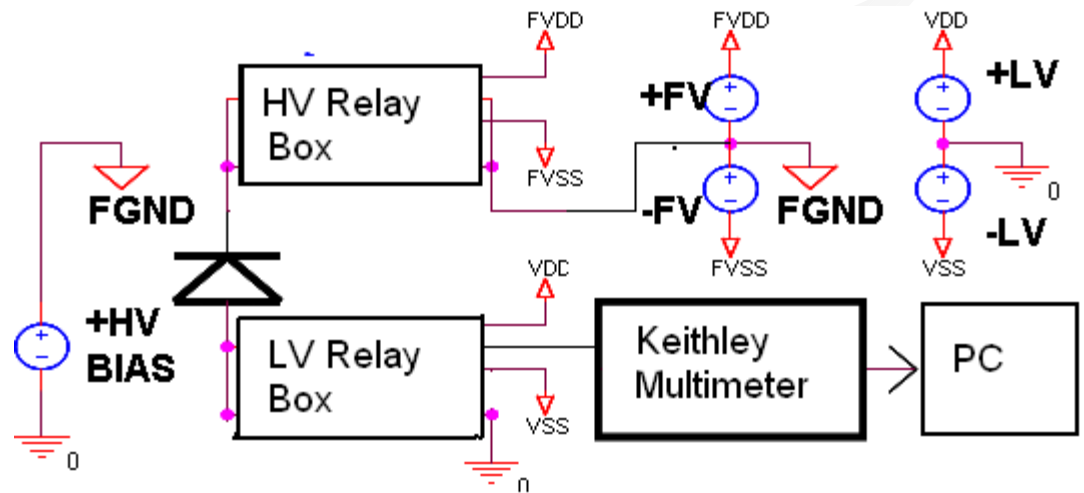
# Test stations 3

To Low Voltage Relay Box

Block-schema of test station for leakage current inter strip resistance and capacity measurements (HV bias 0 V - 2,5 kV)

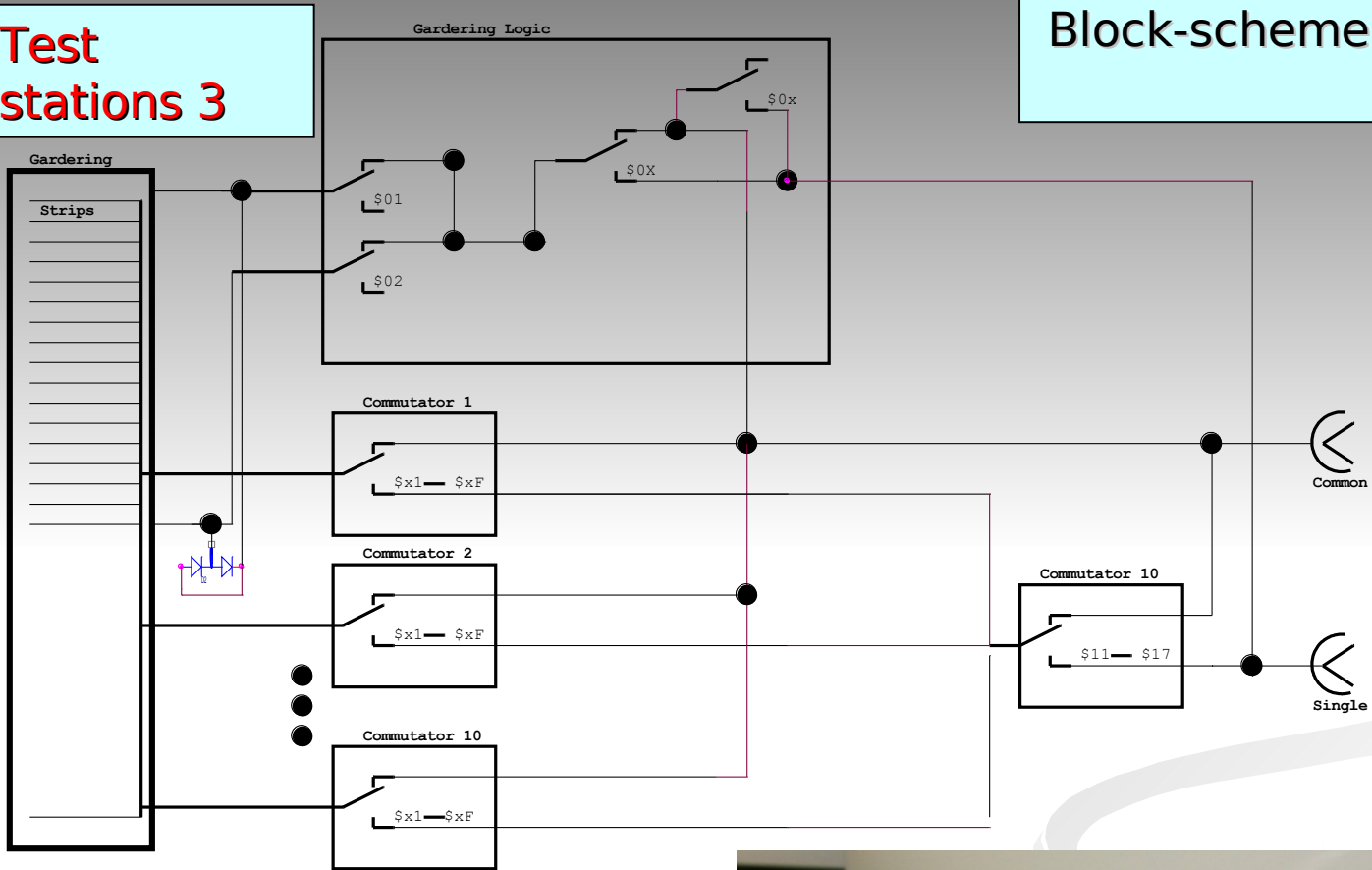


To HV Relay Box



# Test stations 3

# Block-scheme of Relay Box



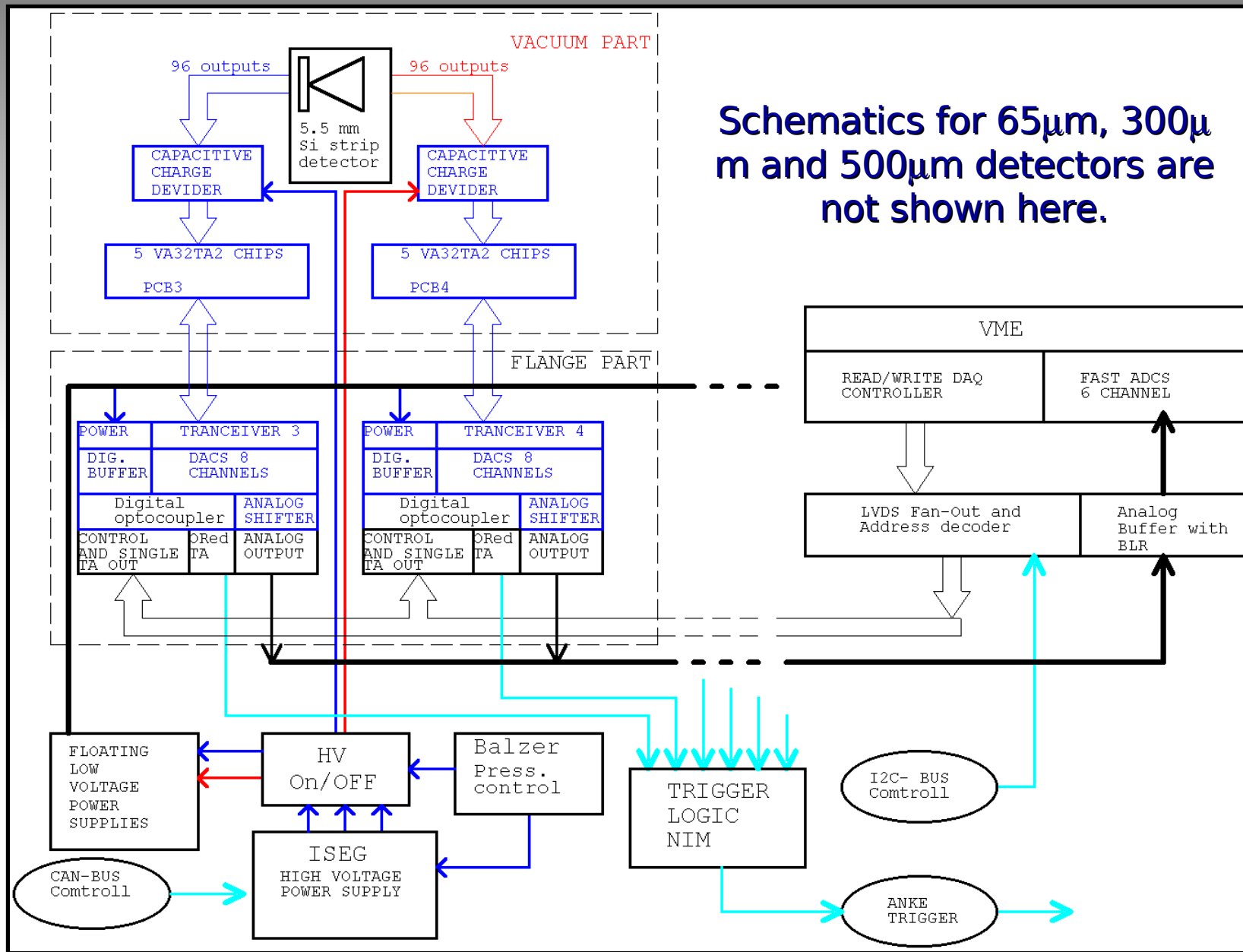
Test station on base Keithley 2700 multimeter



## Test stations. Conclusion

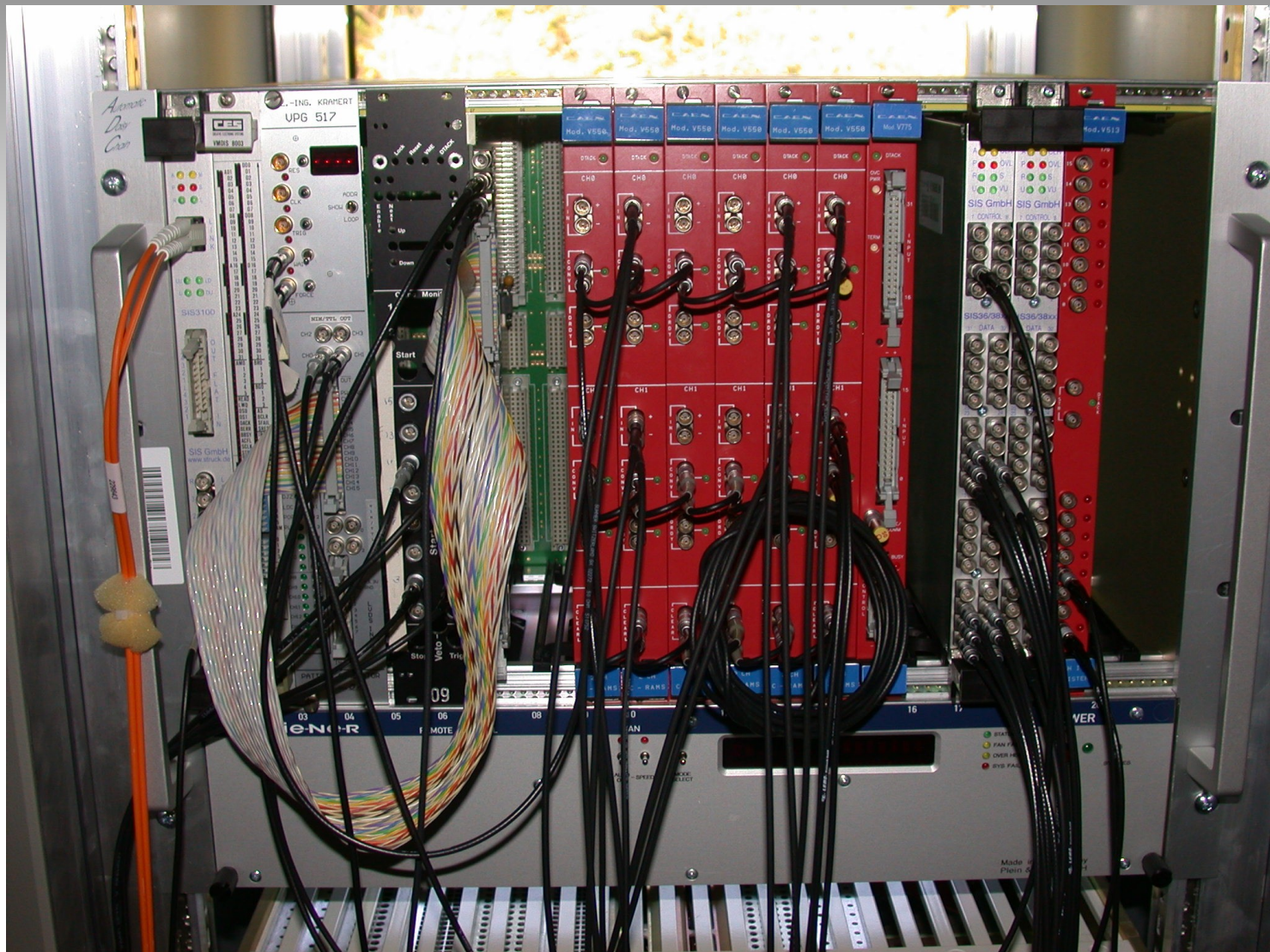
- **Test station 1** for checking new ADCs (ZEL) was prepared and used. Results will be presented by L. Barion.
- **Test station 2** for investigation of temperature gradient in the detector is now under preparation. In June it will be mounted and in July – August all measurements will be made.
- **Test station 3** for measurements of leakage current and inter strip resistance and capacity will be ready in the middle of July. This test station together with VME read-out system will be used for selection of silicon detectors for STTs.
- On base ADCs **test station 1** will be assembled new telescope for November beam-time. It will be mounted directly in the **target chamber** in the laboratory and tested.





Schematics for 65 $\mu$ m, 300 $\mu$ m and 500 $\mu$ m detectors are not shown here.

**Electronics for STT/VME read-out**



VME read-out system

# Manpower

## Forschungszentrum Juelich

- IKP2 - STT group: Ralf Schleichert, Andreas Erben, Alexander Klingler, Sergey Merzliakov, Sergey Mikirtytchians, Alexander Ramseger.
- IKP – Electronic workshop: Robert Nellen.
- ZEL – SMD laboratory: Giovanni Fiori.

## Universita' di Ferrara

- Team of Angelo Cotta Ramusino

## Modification of electronic and approximate production time schedule.

- The temperature measurement – searching optimal parameters of cooling.  
(June-July).
- Bounding and testing of 10 Front-end cards with VA32TA2 chips.  
(May – August).
- Modification and producing of 10 repeater (flange) cards for VA32TA2 front-end chips.  
(May – August).
- Modification and producing of 10 new ADC for fast read-out system.  
(May -September).
- For change NIM-trigger electronic - developing and producing main VME Trigger module of DAQ.  
(May-September).

## Summary/Outlook.

- We will have electronics for two STT with fast read-out system to November beam-time.