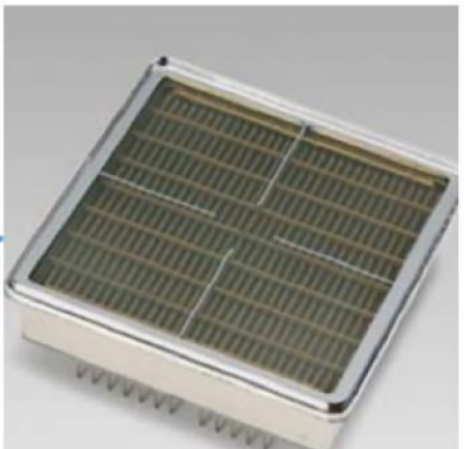


PMT



X4
Hamamatsu R8520-406



Hamamatsu R12699-406M4
Front

- 5x PMTs
- low temperature operation
- UV spectral range (LXe scintillation wavelength = 178 nm)
- PMT readout base from UZH (Zurich)

Visualisation



Gas system status with RevPi controlled instrument

Temperature and other slow control with Grafana display

Alert system based on Grafana

Sensors

Controlled with the RevPi

Gas control

- 6x pressure gauges
- 2x gas flow meters

Liquid level

- 1x level meter in MiniRestoX (LN2)
- 4x thermocouples and in-house made (Subatech) capacitive sensor for level monitoring in the TPC cryostat (LXe)

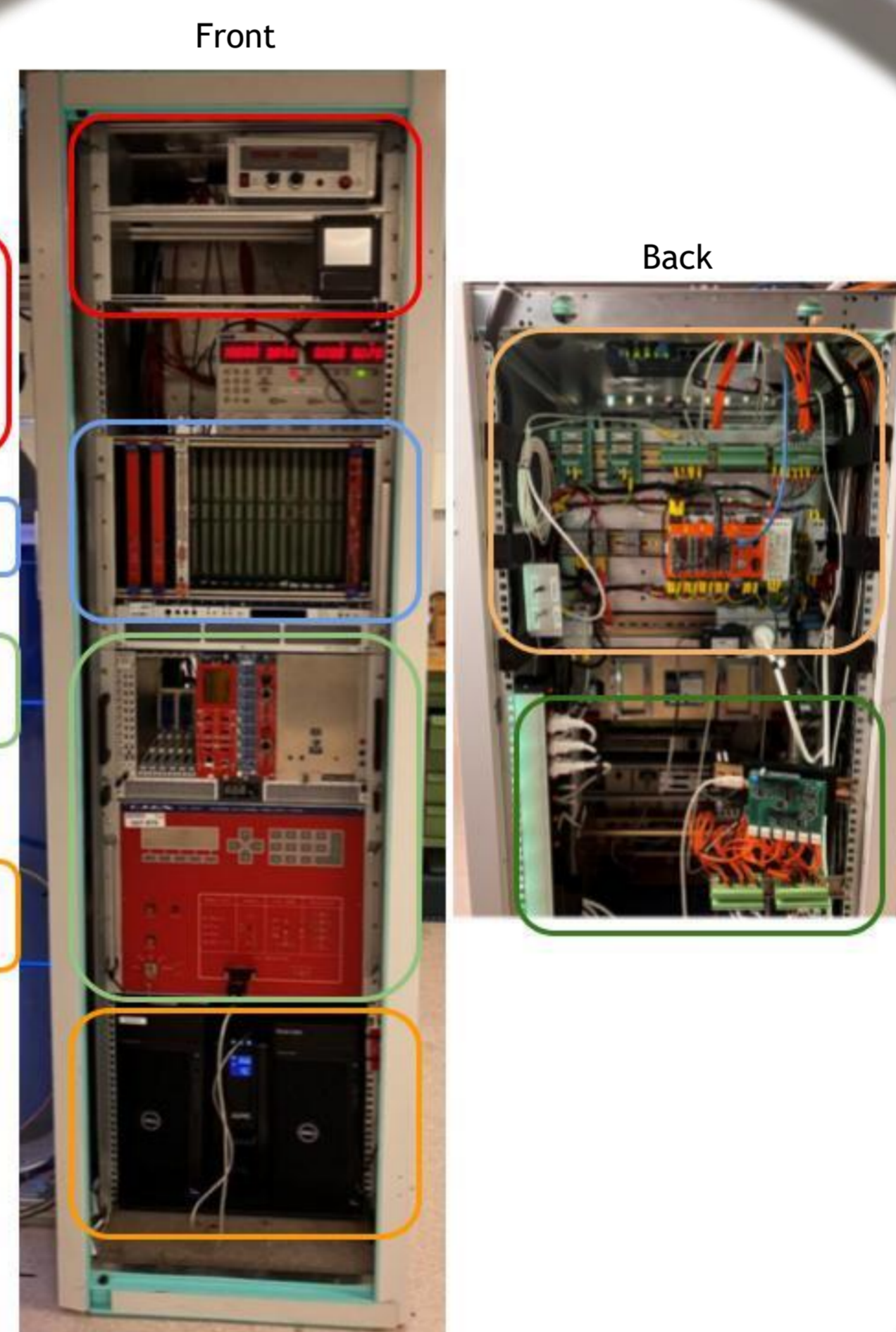
LN2 flow

- 1x cryogenic valve positioner

DAQ



- CAEN V1720 board (Subatech)
- 8 channels 12bits 250MS/s
- Optical to USB3 data transfer
- DAQ software inherited from UZH



Pressure probe PX3005



Cryogenic valve and its positioner

High Voltage

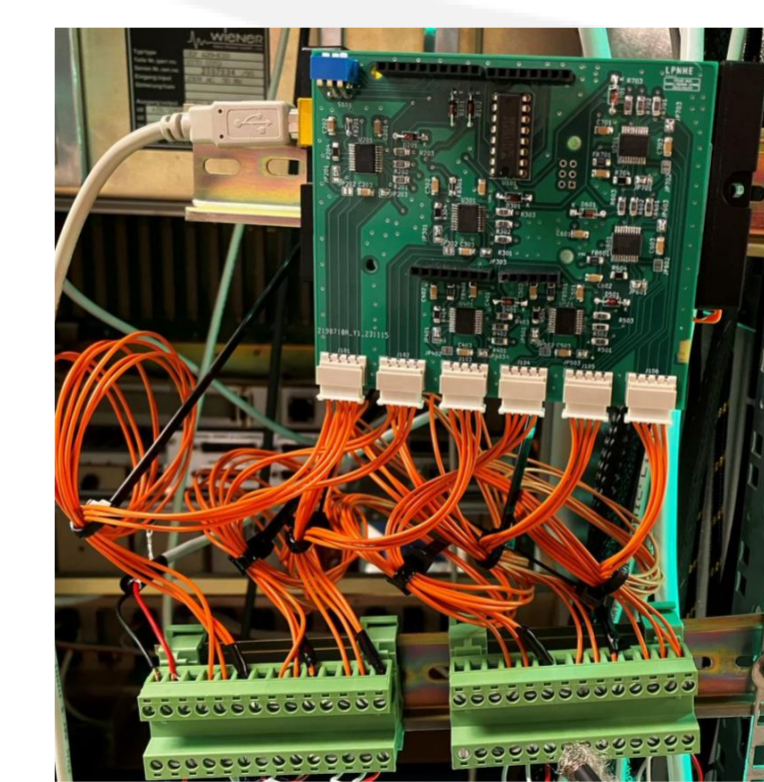
Electrodes



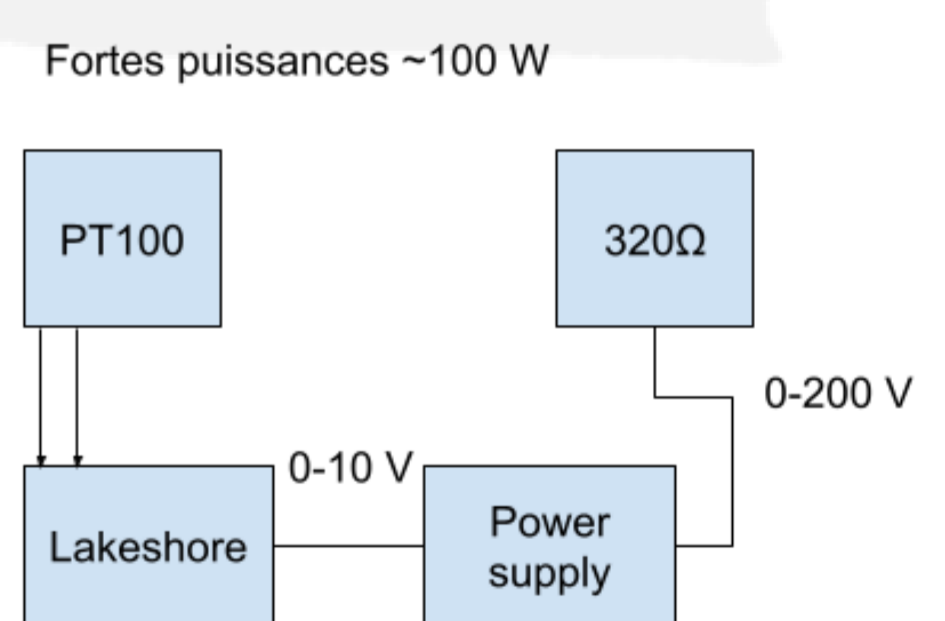
- CAEN NDT1471H
- 4 channels reversible polarity
- +/-5.5kV
- Flexible for electrode tests
- Modern interface (Ethernet./ USB)

Temperature

- In house made readout using Arduino and PT100/PT1000 readout chip (MAX31865xAP)
- 6 channels per Arduino mezzanine board (up to 3 stackable boards)
- Data saved to InfluxDB data base



Temperature readout board

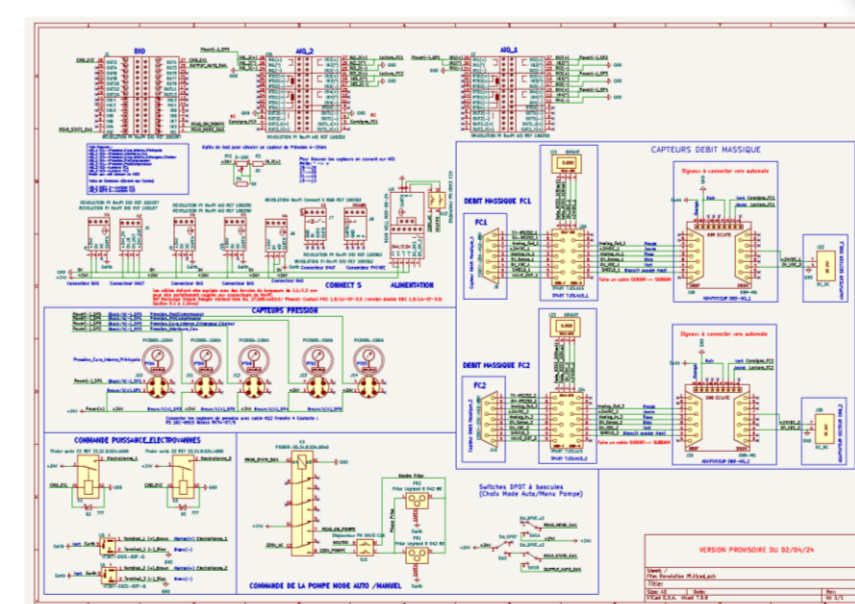


Temperature regulation will be done with a cryo-controller (Lakeshore 325) and additional power supply for larger power

Revolution Pi



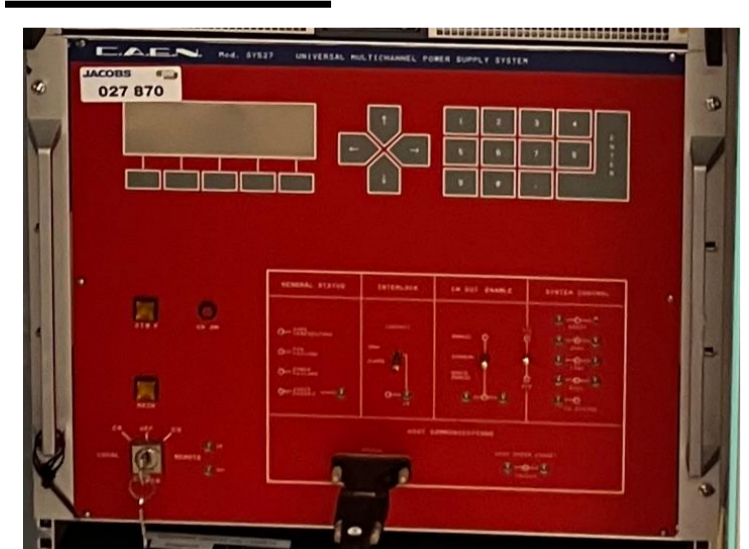
RevPi Connect S



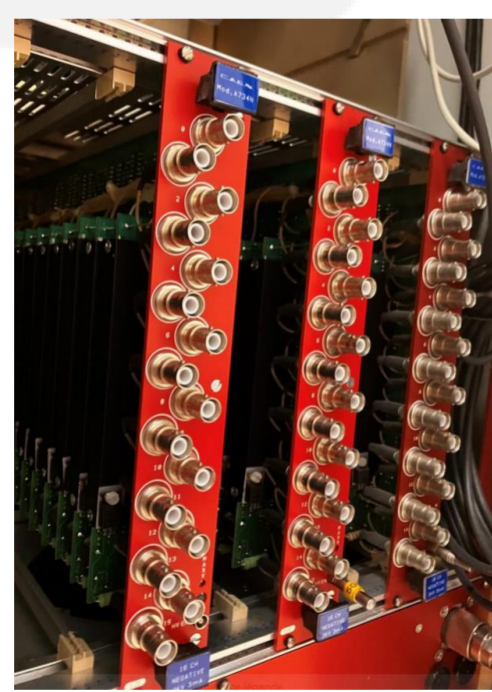
Wiring of the PLC and sensors

- RevPi Connect S 8GB: PLC based on Raspberry Pi hardware conditioned in industrial packaging, low-cost modular option.
- 3 analog modules for 4-20 mA signal, RTD, other analog signals
- 1 digital module for relays
- Programmed with Codesys software to comply with industrial standards
- 2 additional Raspberry Pi for development

PMT HV



CAEN Sy527



CAEN Module A374N

- CAEN Sy527 Power supply system
- RS232 interface
- Up to 48 channels
- Inherited from HESS

