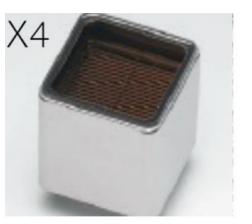
Slow Control and Data Acquisition systems Lab XeLab Team, LPNHE-Paris

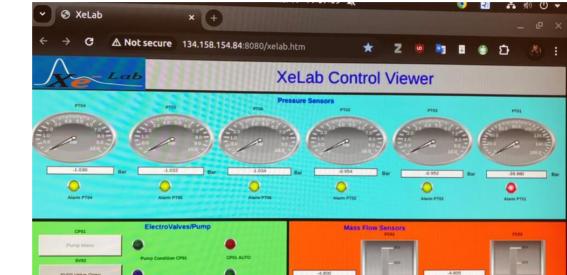
PMT



5× PMTs low temperature operation

Hamamatsu R8520-406

Visualisation





Sensors **Controlled with the RevPi**

Gas control 6× pressure gauges 2× gas flow meters



UV spectral range (LXe scintillation wavelength = 178 nm) PMT readout base from UZH (Zurich)

Hamamatsu R12699-406M4 Front



CAEN V1720 board (Subatech)

- 8 channels 12bits 250MS/s
- Optical to USB3 data transfer
- DAQ software inherited from UZH

Vacuum

pump and

Temperature

controller

DAQ board

High voltages

DAQ and Slow

control PCs

Gas system status with RevPi controlled instrument

Temperature and other slow control with Grafana display

Back

Revolution Pi

Connections

Temperature measurement

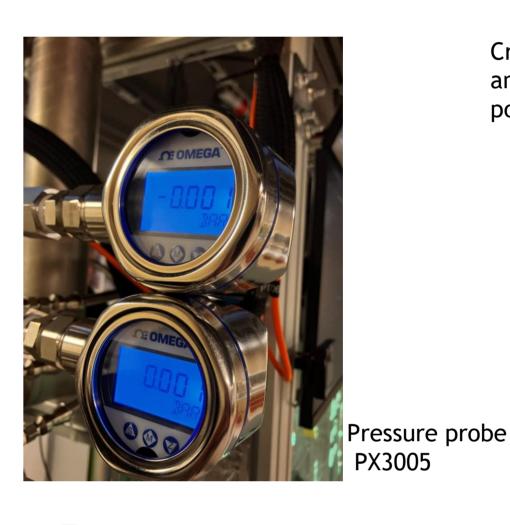
Alert system based on Grafana

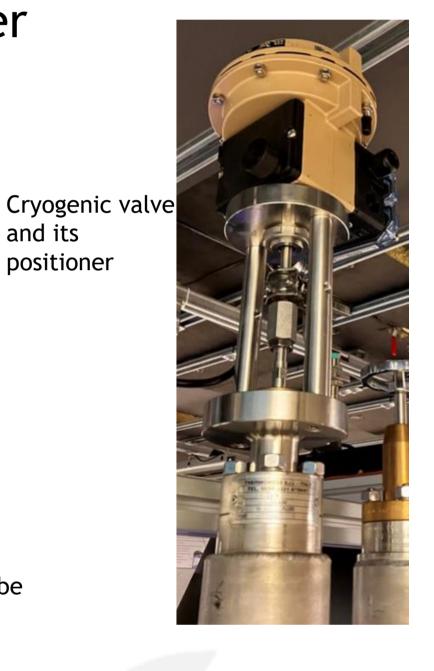
Front



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

LN2 flow 1x cryogenic valve positioner





High Voltage

Electrodes



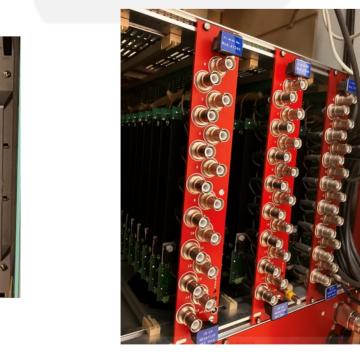
- CAEN NDT1471H
- 4 channels reversible polarity
- +/-5.5kV
- Flexible for electrode tests
- Modern interface (Ethernet. / USB)

Revolution Pi

PMT HV



CAEN Sy527

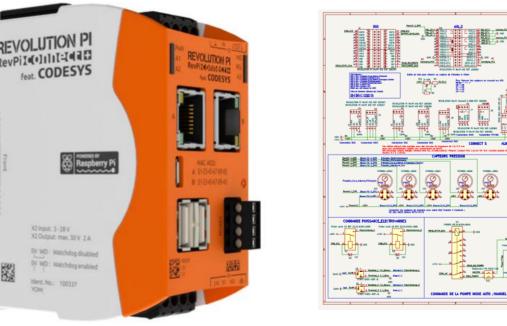


CAEN Module A374N

Cryostat & cryogenics fabrication,

Development of simulations framework

 $20\overline{2}\overline{3}$



RevPi Connect S

Wiring of the PLC and sensors

Testing of

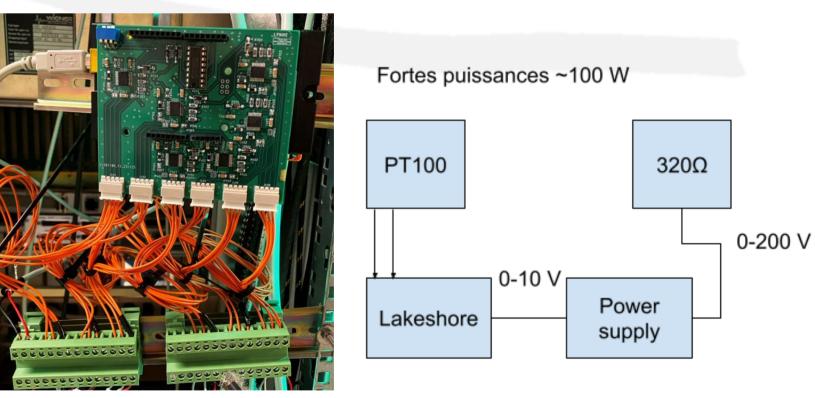
electrodes

2026

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

DARWIN

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

SORBONNE

UNIVERSITÉ

CNIS

LPNHE

- CAEN Sy527 Power supply system
- RS232 interface

Tender accepted,

Conceptual design

2022

2021

- Up to 48 channels
- Inherited from HESS

- 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

Commissioning,

Electrode design

2025

- Programmed with Codesys software to comply with industrial standards
- 2 additional Raspberry Pi for development

Installation of cryogenics,

Assembly of purification

system

2024