Reconsidering
ILL Cryostats Electronics
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SANE

NEUTRON ENVIRONMENT

http://www.ill.eu/sane

Nothing on the market for a facility in the 70s

- ILL temperature controller
  - calibration curves stored in EPROM
  - programmable (ramps)
- Duhamel modules
  - for ILL liquid helium probes (superconductor)
  - for ILL liquid nitrogen capacitive sensors
- ServInstrum modules
  - for remote control of the cold-valve (compressed air)

Cryostats electronics - 1st generation

110W, 140 curves in memory,
2-sensor operation, auto-identification
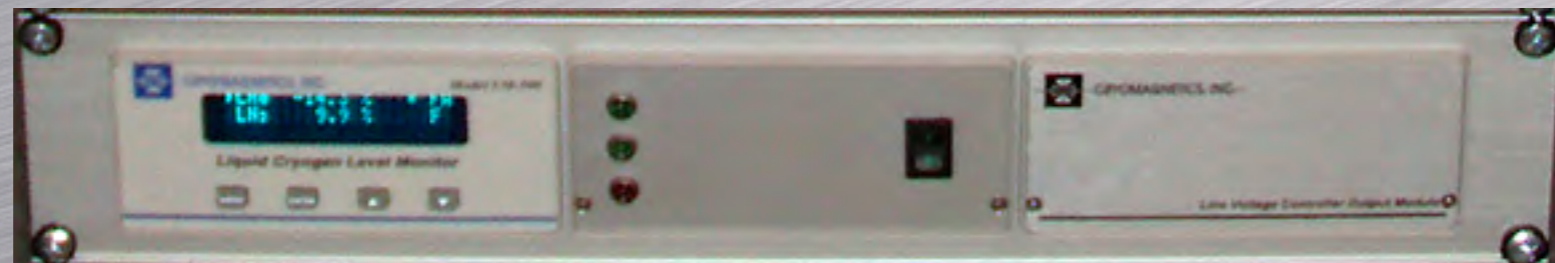
LN2 + LHe levels, auto-run-down,
RS232, GPIB, not programmable, 240V

Cryostats electronics - 2nd generation

- ## Previous generations are obsolete
  - electronic components unavailable
  - maintenance not organised and therefore difficult
- ## Strategy for the future
  - standardisation
  - risk management for reliability and durability
  - industrial approach (method)
  - customisation of commercial products
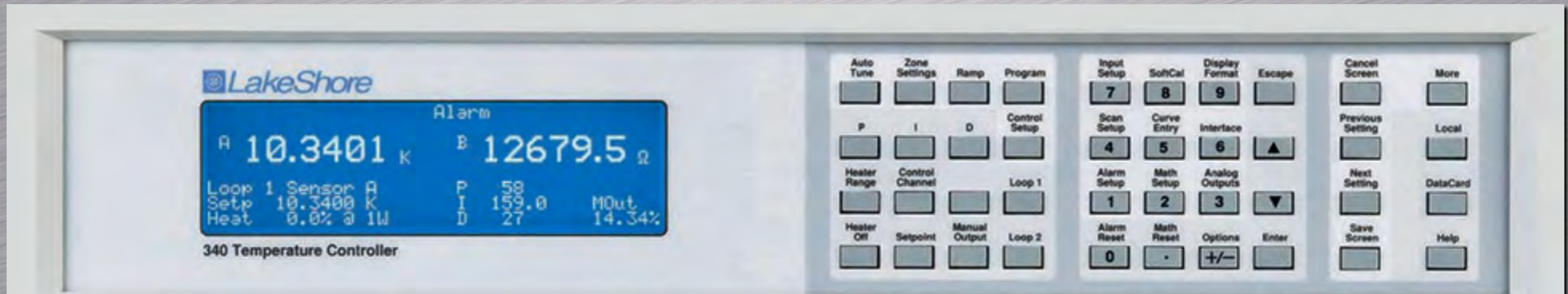
- ## But !

  - 40 calibration curves max ! We need 220…

  - 50W max - limited heating ! We need 120W…

  - no auto-identification !

  - only one sensor at a time !

- ## So we must…

  - replace C+PT with Cernox thermometers…

  - add a current amplifier, an auto-identification

Auto-identification

- MicroSD memory card added to each cryostat and each sample stick

- PIC microcontroller added to the LakeShore

- When a cryostat or a sample stick is connected to the LakeShore:

  1. the microcontroller uploads the calibration curves and the PID parameters in the LakeShore,

  2. the microcontroller sets the LakeShore

  3. that's it !

- # Cryogen level monitors
  - ## 30 LHe and 30 LN$_2$ units available and being installed
- # Cold-valve controllers
  - ## 30 units available and being installed
- # Cernox CX1050 thermometers
  - ## 220 are calibrated, almost 50% of the cryostats modified
- # Lakeshore 340 temperature controllers
  - ## 30 units ordered, about 10 installed, sensor auto-identification being tested

Thank you !