ALICE PC Rack
Cooling System Sensor

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ALICE PC Cooling System

- Horizontal cooling
- Water to air heat exchanger
- System mounted on door
- 3 fans per door
Objective

• Sense whether cooling system is functional
  – Door closed
  – Fans operational
• Provide clear UI to allow user to monitor situation
• Secondary method to sense cooling
  – Temperature sensors already in place
  – Allow action before temperature rises too much
Hardware

• Switch wiring on racks
  – Fans connected in series
  – Door connectivity

• 3 options:
  – ELMB
  – WAGO PLC
  – Siemens PLC

• I/O System: WAGO
  – Siemens PLC more expensive
  – Non-critical system
  – Moderately large-scale execution
Initial Proof of Concept

- Small-scale proof of concept
- Use available PFC
Larger scale extension

- Software-based
  - Materials lacking
- CTRL scripting
  - Specific to PVSS
  - mass parameterization
- JCOP Framework
  - Developed by CERN IT department
    - Naming conventions/guidelines
    - Software supporting common tasks
  - Standardizes controls development
  - WAGO not explicitly supported by fw
User Interface – Hardware View

Device Creation

Datapoint Monitoring

JCOP Device

Editor/Navigator

PLC Unit

Door Unit
UI – Other Modifications

Revise existing monitoring panels

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ELMB Monitoring

Rack: Name

Switch ON

Switch OFF

ELMB mode is not available.
Device Abstraction

- Logical View
- FSM
  - More intuitive for operators
    - Control/Logical Units, Device Units
  - Hides hardware details
  - Currently incomplete
    - sets up devices
    - Does not define states/actions
Acknowledgements

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