DHH Updates

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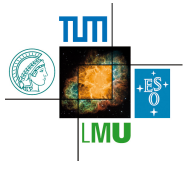
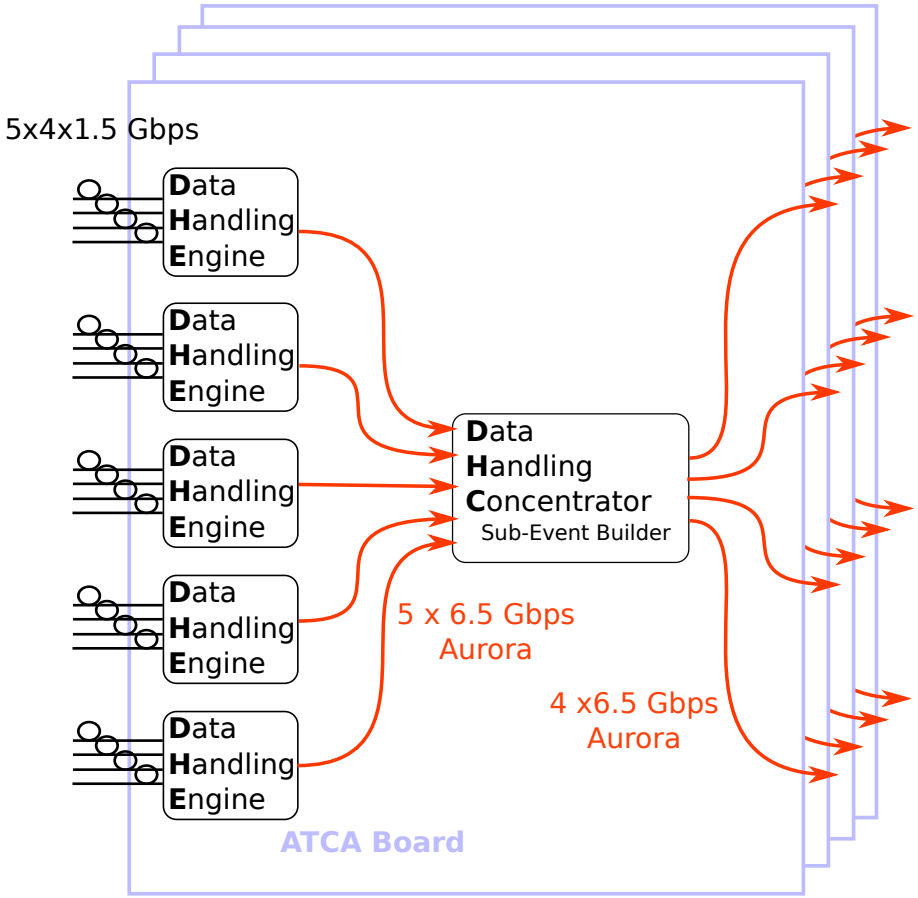


Outline

System Nomenclature

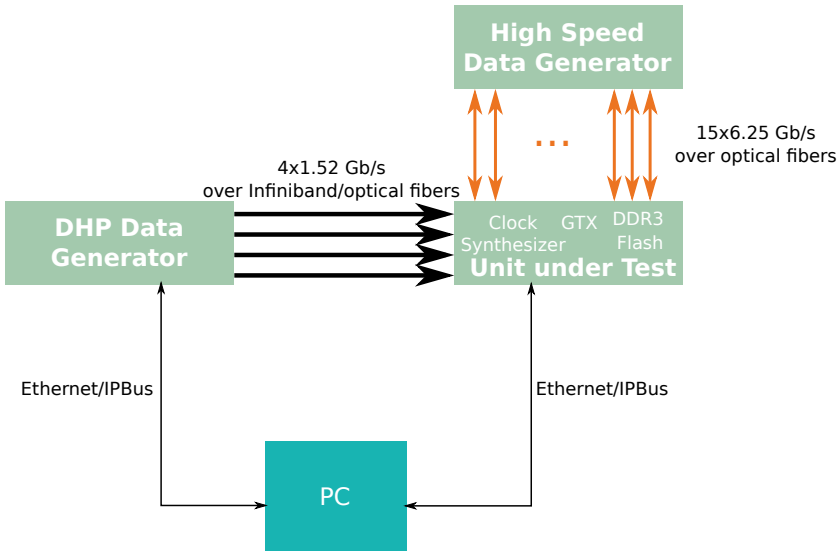


- Full system:
  - DEPFET Handling Hub (DHH)
- DEPFET interface module:
  - Data Handling Engine (DHE)
- Sub-Event builder:
  - Data Handling Concentrator (DHC)

Outline

Hardware Setup at CAD-UL

55 (Belle II) and 18 (Photon Factory) DHE/DHC modules v.3 are produced and will be tested by the board manufacturer (CAD-UL GmbH).
Test starts on the January 28th.



Hardware Setup

- 3 DHE/DHC module
- 3 carrier boards
- Fiber optics (4 SFP) to Infiniband converter board
- Hameg 4040 four channel power supply
- Ethernet switch
- A nettop PC

Test Environment

- Test environment based on python scripts and standard DHH programs
  - mostly automated, power supplies controlled by the script
  - results stored in log files and paper check lists
  - implemented return values in clock synthesizer and flash programmer:
    - **return != 0** - fail
    - should be used in PXD slow control state machines
- Time for test: 5 min / module
- Tested items:
  - **IPBus Ethernet link**: used for configuration and reading test results
  - **Flash programming**: return value of the program, revision check
  - **Clock synthesizer**: return value of the program
  - **DDR3 memory**: test core with error counter
  - **4 DHP high speed links**: 1.52 Gb/s aurora with error counter and signal eye amplitude, BER up to $6.8 \cdot 10^{-13}$
  - **15 high speed links**: 6.25 Gb/s aurora with error counter and signal eye amplitude, BER up to $5 \cdot 10^{-13}$
  - **Current source**: coarse test with resistive load

Outline

Powerdown Bug

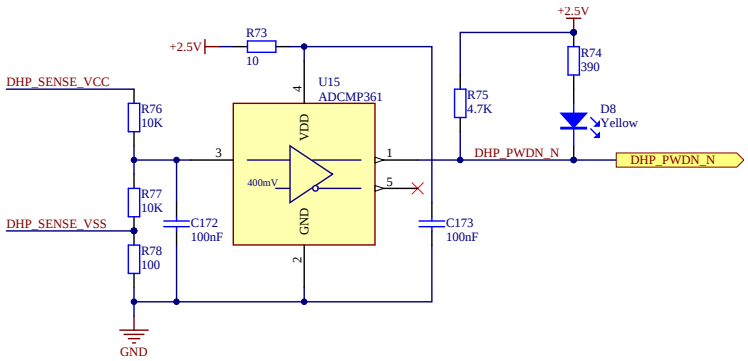


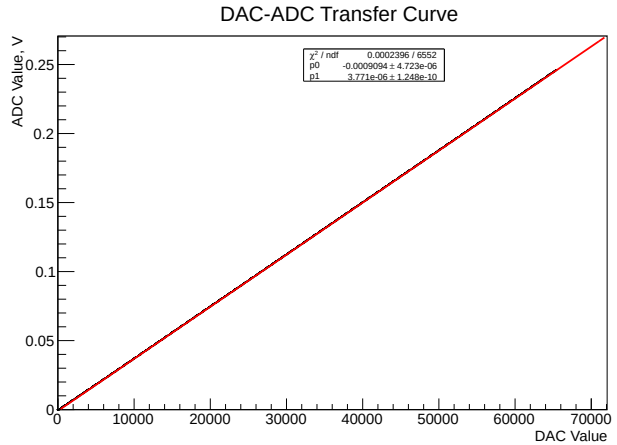
Figure : Generation of the powerdown signal

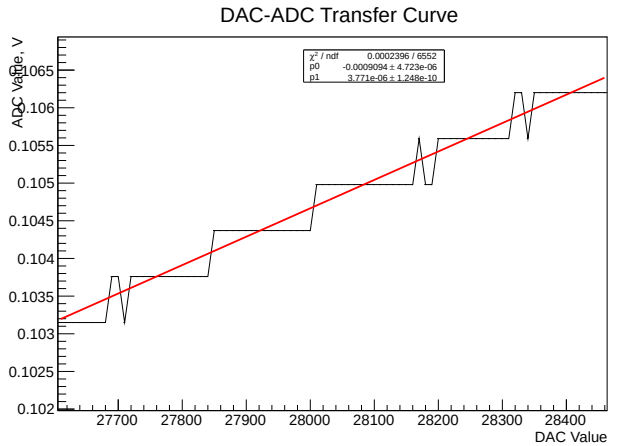
- Observation: 1 V on the DHP IO measured at the power supply
- Disconnection of the power supply by a relay at power down: slow capacitors discharge
- Backpowering of the DHPs by the control signals
- Solution: increasing the threshold to 1.3 V by replacing the resistor R77 with 3.6 kOhm

Precision Current Source

- Previous revision has wrong footprint for connector to PCB
  - adapter board was produced
  - mechanical contact between current source and DHH unreliable
- New revision produced with correct footprint
  - stable contact
  - reduced dynamic range by a factor 10
- In DHH v.3 current source is integrated into DHH PCB

Transfer curve at resistive load





Summary

- New nomenclature for system components
- Hardware tests of the new DHH modules
- Fixed bug that prevented correct power down of the DHP
- New revision of the current source produced

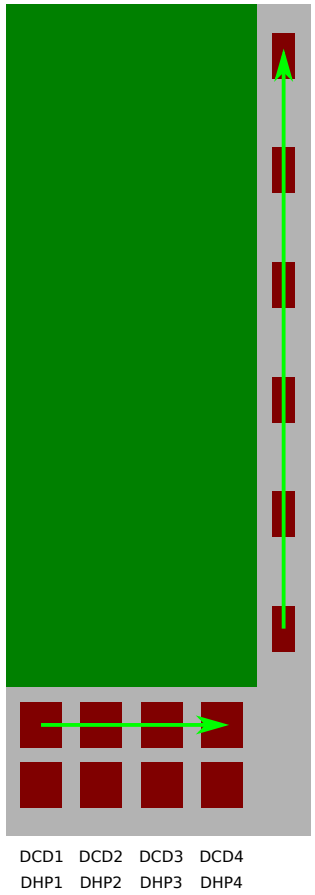
Thank you for your attention!
Questions?

Back Up

Back up slides

Back Up

Outer Backward



Outer Forward