

MVT readout electronics integration steps

on behalf of the Clas12 MVT electronics group

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- Non-exhaustive list of items

- Data taking

- Interface with the Clas12 trigger supervisor
- Interface with the Clas12 event builder
- Conformity with the Clas12 run control and data structure

- Slow control

- Interface with EPICS
- Monitoring and exception handling

- Hardware and software are of concern in both cases

- Data taking is prioritized

- We can control the system with standalone tools
- But we need centralized run control and data acquisition to take SVT/MVT data and check its quality

- Integration period in October will be extremely harsh

- Detectors, electronics, services, software

- Unpack, reassemble, cable, try, merge, retry ...

Our proposal: perform MVT integration in two steps

- Needs

- A fully equipped backend crate provided by Clas12

- Crate controller SBC, TI, SD, 2 SSPs

- No hardware is shipped from Saclay

- Saclay firmware is loaded in SSPs transforming them in MVT BEUs (Back-End Unit)

- FEUs (Front-End Unit) are emulated by BEU firmware

- A trigger supervisor

- Whatever hardware is needed to validate event builder interface

- Conformity with the Clas12 run control and data format

- Finalize CODA interface, ensure proper configuration, validate data integrity

- Validate trigger supervisor and event builder interfaces

- Ensure proper reception of triggers and their distribution to BEUs

- Test gathering of busies from BEUs and conveying of a combined busy to TS

- 10 Gbit/s Ethernet to event builder network?

- Suitable period needs to be identified beforehand and according to the availability of key people at JLAB and Saclay

Will greatly simplify integration in October leaving time for homework

This step is a common work both for MVT and for FTT

- MVT readout system for Forward and B2 stations
 - 6 frontend crates with 27 FEUs and services
 - LV, cooling, slow control network and its control PC
 - A fully equipped backend crate provided by Clas12
 - Saclay backend stays at Saclay for validation of B6 detectors

- SVT / MVT common data taking
 - With arbitrary triggers for pedestal / threshold runs and data integrity checks
 - With cosmic triggers for data quality checks

- Slow control : common for FTT
 - Deployment of the FE slow control network
 - Validation of EPICS interfaces
 - SNMP device for LV power supply – reuse of Hall D developments
 - Stream device for FE electronics – develop a bridge to the Saclay slow control software
 - On-going discussions with David Butler and Peter Bonneau

Obviously needs careful planning: we need to organize relatively long trips