CLAS12 Slow Controls Expert Manual - v0.0

(Dated: February 17, 2017)

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I. Hardware

A. DAQ Crates

B. HV/LV Supplies

C. Flasher Controllers

D. Chillers

E. Serial-Ethernet Converters

MOXAs scattered about the hall (`hallb-moxa1/2/3/4`).

F. Terminal Servers

These run from the tftp-server on `clon10`.

G. Harp Motors

H. Magnet Power Supplies

II. IOCs

A. Hard IOCs

Standard CLAS12 slow controls operations require only two VME IOCs, `classc1` (beam-right on the first level of the space-frame) and `classc4` (beam-right on the first level of the pie tower). Their vxWorks operating systems are booting from `clon10` with EPICS R3.14.12.5, the same software version as the rest of clas12 controls systems.

1. Motors

The motor controls for all three CLAS12 harps (`2c21,2c24,2h01`) and the collimator (located a couple meters downstream of `2c24` harp above the tagger magnet) are in `classc1`, all from the top driver box, beam-right on the first level of the space frame. The Møller target motor is controlled by the same IOC but the lower driver box on the space frame. The motor controls for the downstream beam viewer and beam blocker are in `classc4` and the driver box on the pie tower.

2. Magnet Power Supplies

Currently CLAS12 requires no magnet power supplies controlled from VME crates. HPS uses both `classc3` and `classc12` to control the Frascati and Pair Spectrometer magnets.

3. Scaler Boards

CLAS12 runs two (for redundancy) Jorger scaler boards in `classc1` (space frame) and `classc4` (pie tower). Each are 16 channels.

4. Struck Scalers

The Struck scalers for FSD studies are controlled by `classc8`, located in the same crate as `classc4` but not required for general operations.

B. Soft IOCs

1. Torus/Solenoid

All superconducting magnet IOCs are run on `clonioc1`.

2. High Voltage

We run one IOC per CAEN SY1527/4527 mainframe, all on `clonioc2`. The DC/CND systems run merged IOCs, one per CAENET card, currently on `dc13` and `dc33`.

3. Low Voltage

All low voltage IOCs are run on `clonioc2`, one per hardware device.

4. Scalers

JLab scaler IOCs are all run from `clonioc2`. Currently we run one IOC per sector for the forward carriage (ECAL/PCAL/FTOF), and another for the "central" detectors (CTOF/HTCC).

III. Alarm System

A. Software Dependencies

B. Alarm Server

C. Notifier

D. Messenger

IV. CSS-Workspaces

V. Burt Backups

Backup files are stored outside the software tree in /usr/clas12/DATA/burt

Requisition files are stored inside the software tree in scripts/burt

Standard burt utilities: burtrb burtwb

Wrappers for CLAS12 detectors: hvbackup.py

Burt file format: header pv restore value