Hall C User Howto

Experiment: HKS

Operation of the Caen High Voltage System

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Abstract

This manual describes how to operate the Caen High Voltage system in Hall-C from both the front panel and from the GUI.

1 Related *Howtos*

Reference Documents-

C.A.E.N. SY403 High Voltage System User's Manual [1]

2 Normal HV Operation - using the Graphical User Interface

2.1 Starting the Control Screen

The detector High Voltages can be set from any counting house workstation logged into the `cvxwrks` account. Typically, the workstation at the right end of the console (`jeffylab`) or the workstation on the shelf on the left end of the console (`cdaql5`) as the CPUs are located next to the monitors allowing alarms to be heard.

To start the HV Control GUI, pop up an terminal window on a counting house workstation that is logged into the cvxwrks account. If you want to run from a screen that is not logged on as cvxwrks, or a machine that is not a counting house workstation, then connect with `ssh cvxwrks@cdaql4`. Then follow this procedure:

1. %cd $EPHKSHV/tk
2. %./hv.tcl
3. *After several seconds the GUI screen will be displayed.*

If nothing happens for a while, and then hv.tcl terminates with some error messages, reboot g0ioc3, the EPICS IOC used to communicate with the CAEN power supplies.

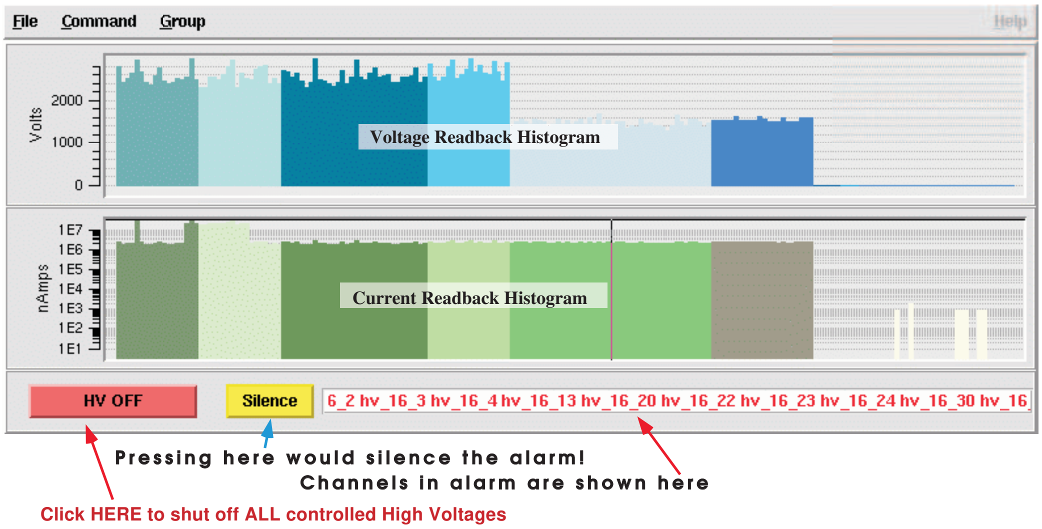

Figure 1: A snapshot of the SOS Main High-voltage GUI Screen

2.2 Operation

The operation of the HKS HV screens is menu driven. The main GUI window includes a pair of histogram-style charts, with each bar indicating the readback voltage or current for a channel. It also provides drop-down menus and two control buttons.

To turn on or modify the high voltage, use the "Group" menu to pull up a control screen for the desired detector subsystem. A global ON option exists for each "group". (There is no ON button that turns on all the high voltage for the whole spectrometer.) Turning on the high voltage will set the voltage last stored in the Caen High Voltage mainframes. If these voltages are incorrect, they can be set with the group screens, or the restore menu item on the main screen may be used to retrieve a previous set of high voltage settings. To set a new operating voltage, click the cursor in the `Vset` box of the appropriate channel and change the entry to the desired setpoint. Be certain to press `Enter` while the cursor is still in the box in order to actually enter the new voltage. Similar changes may be made to the trip current (Itrip), maximum allowed voltage (Vmax), and the Ramp-Up and Ramp-Down rates (Volts per second).

2.2.1 GUI Menu Items

- File
  - **Backup** *Initiates a* `Backup` *of the current settings*
  - **Restore** *Starts a* `Restore` *of saved settings.*
  - **Quit** *Terminates the GUI*
- Command
  - **Trip RESET** *Resets all* `Tripped` *channels. Use freely.*
  - **IDLE** *Stops the GUI's communication with the HV supplies*
  - **unIDLE** *Restarts the communication with power supplies*
  - **IDLE** beep ON/OFF *Start/Stop audible IDLE warning*
  - **TRIP** beep ON/OFF *Start/Stop audible TRIP warning*
- Group
  - One entry for each detector group presently defined. Select the one you want to manipulate.

2.2.2 GUI Buttons

- **HV OFF** *Turn off all high voltage channels*
- **Silence/Unsilence** *Press to silence or unsilence the audible alarm*

2.3 Monitoring the Status and Resetting Trips

The column labeled "Vset" contains the setpoint for the voltage, and the column labeled "Vmon" contains the actual voltage as read back from the power supply. The "Imon" column contains the current drawn by the channel. The "Status" column shows whether the channel voltage is actually set or not. Occasionally a channel may trip off for some reason. This is indicated by the word "Tripped" in the Status column. To correct this, select **Trip Reset** under the **Command** menu.

The GUI includes a system to automatically monitor the status of all channels. When not silenced, an audible alarm will sound if any of the high voltage channels is found with a voltage far away from its setpoint. **This alarm feature should never be silenced unless an operator is manually monitoring the high voltages!** The yellow button on the GUI should always read `Silence`, indicating that the silence function has not been selected. Channels which are in alarm state are listed on the bottom line of the main GUI window. They are identified in the format `hv_CR_CH`, where `CR` is the Caen crate number and `CH` is the high voltage channel number. If necessary to identify the bad channel(s), you can refer to the automatically generated high voltage map file `$EPHKSHV/perl/channel_map` discussed in references [?].

2.4 Backup and Restore

If permanent changes are made to the high voltages, these new settings should be saved with the **Backup** menu item. Similarly, you can **Restore** setpoints that have previously been backed up. Note: Backup and restore operations take an extremely long time (several minutes).

3 Caen Power Supply Operation from the Front Panel

Modifications to the parameter settings should in general not be made at the front panel or through a locally connected terminal if the EPICS system is in operation. This mode of control is meant for diagnostics and testing of a detector system prior to running. There are only two features which must be set at the front panel before initiating an EPICS control session - the crate number and the RS232 configuration (suggested defaults are 9600 baud, no parity, 1 stop bit).

If unfamiliar with the operation of the HV system in local mode, one should get experienced personnel or review Chapter 4 of the Caen Technical Information Manual [1]. Operation is generally straightforward, however. Use the arrow and menu buttons to get the desired channel on the LCD display, then use the arrow buttons to select the parameter you wish to change. Use the `Modify` and `Change` menu items to initiate the change; use arrows or numeric keypad to set the new value. To turn a channel `ON`, for example, display the channel, move the cursor over the word `OFF`, and press `MODIFY`.

4 Outside Influences

Each Caen mainframe has an *Interlock* input on the front panel which may be used to disable high voltage output unless desired external conditions are satisfied. For example, if the gas system is in alarm the wire chamber high voltage will be shut off. Because they share a common crate, the high voltage supplies for both the HMS Gas Č erenkov counter and the HMS drift chambers will be disabled. If you discover that you cannot get certain high voltage channels to come up, try to find out if they are interlocked.

References

[1] C. A. E. N. *C. A. E. N. SY403 High Voltage System Users's Manual*, December 1993. `http://hallcweb.jlab.org/document/vendor_manuals/sy403manual_rev0.pdf`. Describes firmware version 1.45.