Displaying with CSS-BOY EPICS High Voltage Process Variables of Hall C's High Momentum Spectrometer

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This note describes steps taken to display with the CSS-BOY toolkit the high voltage EPICS process variables (PVs) for the controls and monitoring system of Hall C's High Momentum Spectrometer (HMS).

In all there are 1,488 EPICS PVs from the high voltage systems of the HMS detectors – Cherenkov, Drift Chambers, Hodo-1-X, Hodo-1-Y, Hodo-2-X, Hodo-2-Y, Shower Counter A, and Shower Counter B.

To monitor and control the EPICS PVs using CSS-BOY, first, a python script was written to convert the configuration file's *csv* format text data to *XML* format, and to save the file as an *.opi* file extension for accessibility by CSS-BOY.

Then, CSS-BOY in the editor mode was used to access the *.opi* file and use the stored *XML* data to create screen graphics, such as text boxes, labels, and buttons. For each detector's high voltage system, a list-view and a bar chart display screen of the EPICS PVs were generated.

Once the screen graphics had been created, the value-boxes were filled with the high voltage PV values transmitted by the CAEN crates using CSS-BOY in the runtime mode, Fig 1.

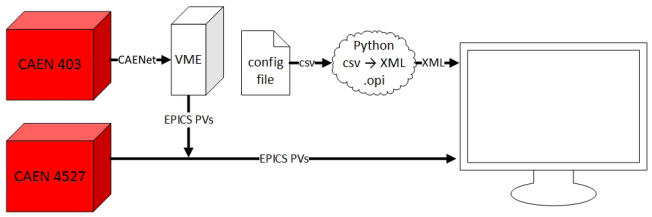

FIG. 1. EPICS PV data flow.

Figure 2 shows high voltage system PVs on the list-view screen for Hodo-1-X. On this screen, three read-only PVs are displayed—status, monitored voltages (Vmon), and monitored currents (Imon) . Because the other PVs have write permission they are not loaded to be displayed on the screen.

Figure 3 shows the same PVs shown in Fig. 2, but in the bar chart mode.

To conclude, EPICS toolkit CSS-BOY in editor mode generates the screens in ~3 s and screens do not have to be regenerated every time the program is opened. The python script automates the process of creating screens from the configuration file and can be used with other PVs that require generation of EPICS screens.

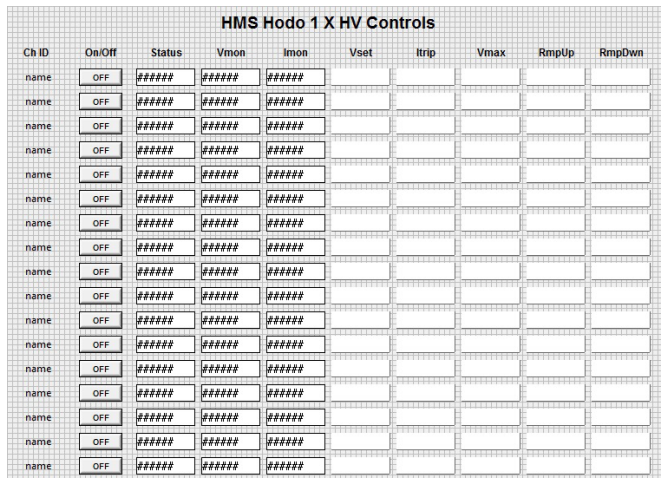

FIG. 2. List-view of status, monitored voltage, and current PVs for HMS-Hodo-1-X.

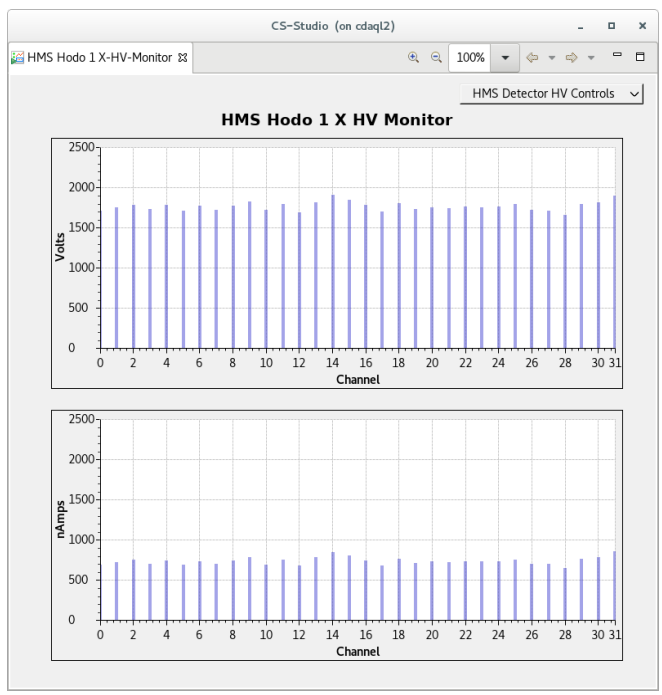

FIG 3. Bar chart of monitored voltage and current for HMS-Hodo-1-X.