

Drift Chambers and MicroMegas Integration

The current control for these two detectors uses two VME interfaces with ADAS boards, and CAENET connection, in an EPICS environment.

The Saclay group (Francoise Gougnaud, Saclay engineer, is responsible for the Drift Chambers and MicroMegas slow control) proposes to send the alarms from Drift chambers and MicroMegas into PVSS using Channel Access (CA). This communication software is installed in the main DCS computer (pccompass04). The trip state from each channel can now be displayed in the panels of PVSS.

1- The **numbers of channels** that are being read are 60:

- 36 channels in VME sigvm31 (12 channels for DC and 24 channels for MM):

PVSS Data Points names		
DC01U_BEAMTRIPcalc	MM01U1DRIFTRIPcalc	MM02X1DRIFTRIPcalc
DC01U_PLANTRIPcalc	MM01U1MESHTRIPcalc	MM02X1MESHTRIPcalc
DC01U_WIRETRIPcalc	MM01V1DRIFTRIPcalc	MM02Y1DRIFTRIPcalc
DC01V_BEAMTRIPcalc	MM01V1MESHTRIPcalc	MM02Y1MESHTRIPcalc
DC01V_PLANTRIPcalc	MM01X1DRIFTRIPcalc	MM03U1DRIFTRIPcalc
DC01V_WIRETRIPcalc	MM01X1MESHTRIPcalc	MM03U1MESHTRIPcalc
DC01X_BEAMTRIPcalc	MM01Y1DRIFTRIPcalc	MM03V1DRIFTRIPcalc
DC01X_PLANTRIPcalc	MM01Y1MESHTRIPcalc	MM03V1MESHTRIPcalc
DC01X_WIRETRIPcalc	MM02U1DRIFTRIPcalc	MM03X1DRIFTRIPcalc
DC01Y_BEAMTRIPcalc	MM02U1MESHTRIPcalc	MM03X1MESHTRIPcalc
DC01Y_PLANTRIPcalc	MM02V1DRIFTRIPcalc	MM03Y1DRIFTRIPcalc
DC01Y_WIRETRIPcalc	MM02V1MESHTRIPcalc	MM03Y1MESHTRIPcalc

- 24 channels in VME sigvm32 (all channels for DC):

PVSS Data Points names		
DC02U_BEAMTRIPcalc	DC02X_WIRETRIPcalc	DC03V_PLANTRIPcalc
DC02U_PLANTRIPcalc	DC02Y_BEAMTRIPcalc	DC03V_WIRETRIPcalc
DC02U_WIRETRIPcalc	DC02Y_PLANTRIPcalc	DC03X_BEAMTRIPcalc
DC02V_BEAMTRIPcalc	DC02Y_WIRETRIPcalc	DC03X_PLANTRIPcalc
DC02V_PLANTRIPcalc	DC03U_BEAMTRIPcalc	DC03X_WIRETRIPcalc
DC02V_WIRETRIPcalc	DC03U_PLANTRIPcalc	DC03Y_BEAMTRIPcalc
DC02X_BEAMTRIPcalc	DC03U_WIRETRIPcalc	DC03Y_PLANTRIPcalc
DC02X_PLANTRIPcalc	DC03V_BEAMTRIPcalc	DC03Y_WIRETRIPcalc

2- The **package EPICS Channel Access** is installed in the following directory (pccompass04):

`/home/gougnaud/EPICS`

Two executable files were built with CA (HT2Mon and HT2aMon). Each one need a list file with the channel names in order to make a CA call. The file *listTRIP* represents the sigvm31 channels names and the file *listDC2-3* is for the sigvm32 channels.

When a CA program runs it sends CA calls to the na58sun01 machine (CA Server) which will retrieve the respective channel values requested (service) back to pccompass04 (CA Client).

The two executable CA files and the channels lists are in the following directory:

`/dcs/packages/compass/mmdc`

3- A **Unix script (HT2MonLoop)** was created to call the CA programs (HT2Mon and HT2aMon).

It will read the VME values and write them in two files, one for sigvm31 channels (HT2MonRecord.inf) and other for sigvm32 channels (HT2aMonRecord.inf). Because only part of the information stored in the files is necessary, it is filtered into the *listTripRecord.inf* file, with the alarm values only (each time a write operation is executed, the file content is replaced by the new updated one).

The *listTripRecord.inf* file timestamp will be stored in *LastFileRecord.dat*. This is useful to check if the values are being updated.

The HT2MonLoop script will update information every 16 seconds.

HT2MonLoop, *HT2MonRecord.inf*, *HT2aMonRecord.inf*, *listTripRecord.inf* and *LastFileRecord.dat* are in the following directory:

`/dcs/packages/compass/mmdc`

4- In PVSS side, a **control manager (PVSS11ctrl)** was created. When PVSS is started it will automatically start this manager too.

What does PVSS11ctrl manager do?

- a) Start the *HT2MonLoop* Unix script from *RF_WDP0.ctl* PVSS script.
- b) Read from data system the file timestamp and the channel values (Channel value → if 0 no alarm, if 1 trip alarm) which are next stored in the PVSS Data Point System (cycle: 16 seconds).
- c) Check if HT2MonLoop process is still running. If not it will restart HT2MonLoop (a warning message is sent to the log file: "Warning: Restarting CA"). If for some reason HT2MonLoop fails to restart, it will send an email to the DCS group and a different message is sent to the log file: "Alarm: Failed to restart CA".

In case of pcompass04 shutdown and restart, HT2MonLoop does not need to be restarted by hand because it will automatically restart when the PVSS system is launched.

Technical Note: In order to create a new control manager (PVSS11ctrl) it was necessary to add two internal data points: *_Error_ctrl_11* and *_CtrlDebug_CTRL_11*. This kind of datapoints is needed to run a control manager. For instance, if a new control manager is needed (i.e. PVSS12ctrl) *_Error_ctrl_12* and *_CtrlDebug_CTRL_12* are to be created.

5- PVSS Panels

The alarms state for MM and DC channels are showed in two different panels:

Drift.pnl is the panel name for Drift Chambers and *MicroMegas.pnl* is the panel name for MicroMegas. Both can be accessed from the main control panel for the detectors (two buttons were added: MicroMegas and Drift).

David Sora, 25/03/2004