Detector Control System for the 2017 Run

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Contents

Detector Control System for the 2017 Run

1 PCs Identification

The DCS uses two main <u>Linux PCs</u>:

- **pccompass07**, main computer, located in the 888 control room.
- **pccompass04**, located in the 888 control room.

4 other Linux PCs are used for front-ends (CAEN control using SLiC/DIM):

- **pclip05** (BMS barrack),
- **pclip07** (DCS & Saclay barrack),
- **pclip09** (RICH barrack),
- **pclip06** (Trigger barrack).

3 other Windows PCs are used for front-ends (all controls from OPC servers):

- **pccompass03**,
- **pccompass06**,
- **pccompass08**,

all located in the DCS & Saclay barrack, in the left racks.

The Linux PCs pccompass04, pccompass07 and the 3 Windows PCs are connected to **UPS units**. In case of a **power cut**, these units start powering the PCs, while producing a "bip" sound. Automatic procedure of stopping WinCC OA[1] and safe shutdown of the PCs occurs in the following minutes. DCS experts should be called when the power is back, to restart the PCs and the DCS project.

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[1]Previously called PVSS.

Detector Control System for the 2017 Run

2 PCs Accounts

All the DCS PCs are in the COMPASS domain. To access them from outside, first log in to one of the COMPASS gateways (**pccogw01** or **pccogw02**), using the personal lxplus usernames/passwords. Each computer is then accessible via ssh, using the accounts given below.

The main PC pccompass07 has 3 local accounts:

- **dcs** (for use of all COMPASS members – for DCS visualization, detector experts access, etc). The password is the old "onl" password.

- **compassdcs** (for exclusive use of the DCS group – for project development only).

- **root** (for exclusive use of the DCS group – for system maintenance only).

A remote session on the **dcs** account in **pccompass07** with a DCS UI is to be opened at all times in **pccorc36** for use of the shift crew during the Run.

The default **pccorc36** account is **dcs**. The COMPASS DCS icons will not be available if logged with a different account. The "**cuckoo**" sound will also not work.

The Front-end Linux PCs for SLiC have only one local account **root**. These are to be accessed by the DCS group only.

The Front-end Windows PCs for OPC have 1 local account with administration rights: **compassdcs**. These are to be accessed by the DCS group only.

Detector Control System for the 2017 Run

3   DCS Project Visualization

The DCS project is running in the main computer **pccompass07**. During the Run, a **dcs login session** (with the old "onl" password) must always be open and the WinCC OA **User Interface** (UI) must be running.

If no UI window is visible (and it is not minimized – check in the horizontal menu bar, on the bottom of the screen), start it by clicking on the COM-PASS DCS logo in the Desktop of pccorc36.

Alternatively, ssh to pccompass07 and open the UI from a terminal window, by typing in the prompt:
>**ssh dcs@pccompass07 -XC**
>**dcsUI**

A WinCC OA login window should open. Choose
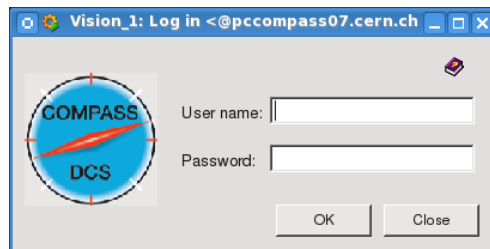Username: **operator**
Password: [**EMPTY**]

Figure 1: COMPASS DCS login window.

If the login panel does not open when typing "dcsUI":

- Check first if WinCC OA is running, by typing in the prompt of a terminal window:
  >**ps -ef | grep WCC**
  There should be as answer a long list of WinCC OA processes running, like: WCCILdata, WCCILevent, WCCOActrl, WCCOArdb, etc.

- If at least the above mentioned processes are not shown, it means that the DCS project was stopped, and no equipments are being monitored nor controlled anymore. In this case, call a DCS expert: **#164872**. The restart of the project must be done by a DCS expert only.

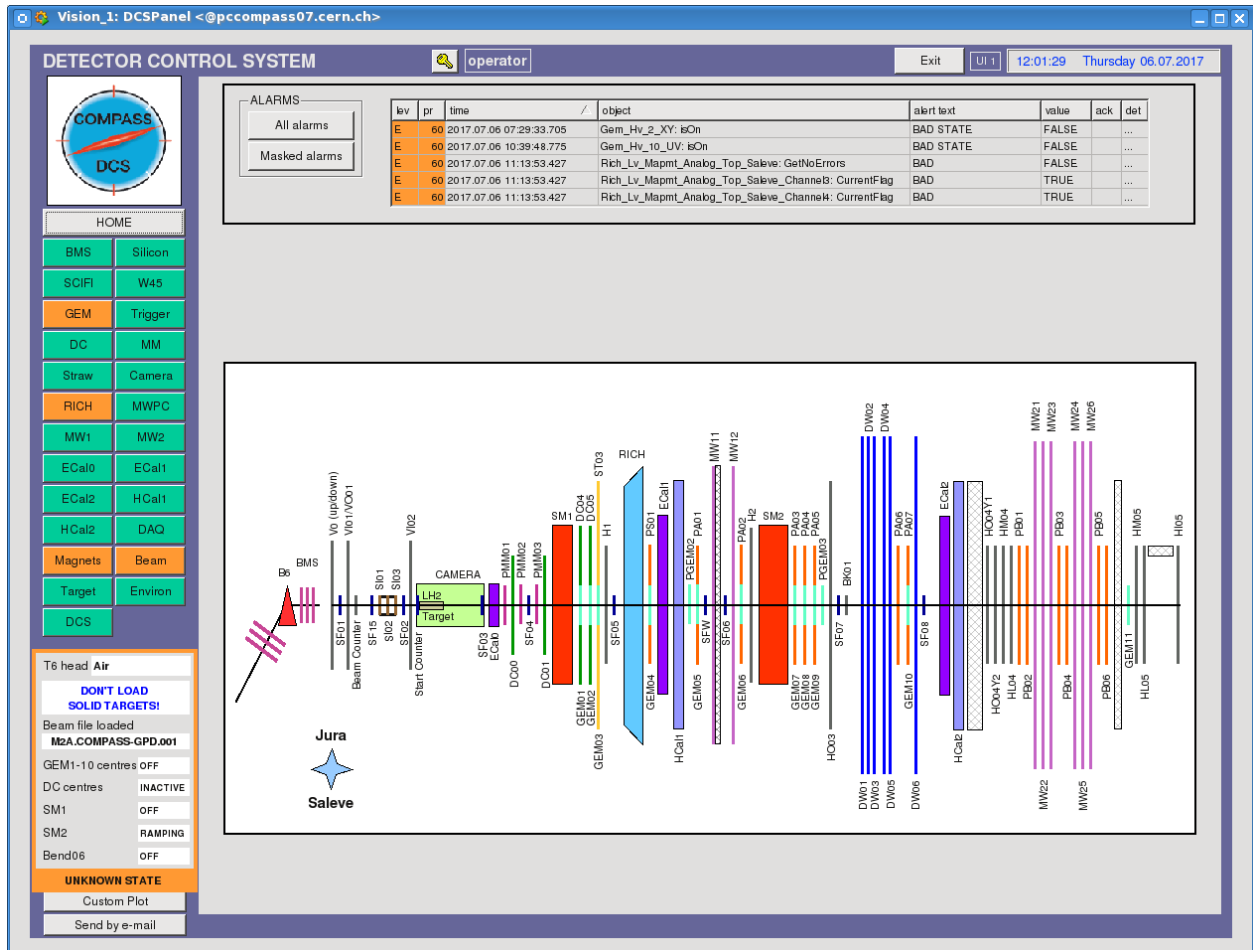# Detector Control System for the 2017 Run

4 DCS Entrance Panel

Figure 2: DCS entrance panel.

The UI opens with the main COMPASS control panel.

On the top center, the UI ownership is shown – usually it is "**operator**". Click the yellow key to change UI ownership (for example if you are a detector expert and want to change settings). If this area is showing "**NO USER**" in red, click the key and login to regain "**operator**" ownership.

On the top right there is an "**EXIT**" button. Use it to close the UI – then, restart the UI clicking in the "dcsUI" logo in the Desktop of **pccorc36** or with the command 'ssh -XC dcs@pccompass07 "dcsUI"' from a terminal.

The DCS UI #1 should be open at all times in **pccorc36**. Check the UI number on top of the DCS panel, on the right of the exit button.

On the <u>left</u> there are buttons to access the detectors information and a summary of COMPASS actual status. The color of the detector buttons is inherited from the equipments belonging to the respective detector subsystems that are controlled/monitored by the DCS. The <mark>color code</mark> is as follows[2]:

- **GREEN**: all OK

- **ORANGE**: some alert is present

- **RED**: some fatal alert is present

- **DARK GREY**: an alert has come, but state went back to normal again. The grey color is displayed until a user **"acknowledges"** the alert.

- **LIGHT GREY**: no alert limits defined, or they exist but the alerts were masked.

- **WHITE**: no alert limits defined.

On the <u>center top</u> there is the <mark>alerts table</mark>. It shows the most recent 5 alerts in the system. If more than 5 alerts are active at the moment (which is probable), they can be viewed in detail from the <mark>All alarms</mark> button: "All alarms": choose "Time range: Current" and check that "filter" has "alert state: All" and "Dpe filter: *" (or blank) selected. The <mark>Masked Alarms</mark> button opens a list of all the alarms that are presently masked in the system (thus, if one of these will be in alert state, it will not show up, neither in the detector buttons color, nor as a line in the alerts table), nor will it trigger a sound alarm ("cuckoo").

The <mark>!!!</mark> in some lines of the alerts panel indicates that this alert is waiting for <mark>acknowledgement</mark>. The shift crew can do it by clicking on it. This should be done after evaluation of the cause of alert and report to the expert of the corresponding detector (if judged necessary).

The <u>center</u> area of the Entrance Panel shows the current detector selected. Use the <mark>HOME</mark> button on the left to go back to the spectrometer view in the central area of the panel.

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[2]**PURPLE** superimposes to other colors in cells displaying values of individual parameters but is not related to alarms, and therefore doesn't propagate in the nodes hierarchy. It is instead related to the fact that there are no updated values of that parameter or the data was flagged as "invalid" by some other reason (desynchronization, corruption of data, etc.).

Detector Control System for the 2017 Run

5   Alert Handling

Alerts are displayed as a **color**, and also as a **"cuckoo" sound** (sound only in the control room).

In general, fatal alerts are displayed in **RED**, and require human intervention. This is the case for HV channels trips, losses of communication with HV or LV equipment, RICH vessel alerts, DCS computers and/or managers stopped, etc.

Several alerts also send **sms and email notifications** to detector experts.

Some alerts require "**acknowledgement**", meaning that even if the alert state condition is no longer present, the alert will remain as **DARK GREY** color, until acknowledged. This is the case for gas system alerts, for example. Acknowledgement can be done either from the alerts table, by clicking in the **!!!** marks; or from the specific detector subsystem panel, by clicking the "**A**" button (sometimes also called "**Action**" button), and clicking "**Acknowledge**".

Masking is used to avoid too many alerts being displayed at the same time, a situation that can distract the shift crew from new important alerts. Alerts can be masked, by clicking the "**A**" button (also called "**Action**" button), and clicking "**Mask**". Unmasking can be done with the same process. Only the shift crew or detector expert should mask alerts, if the alert reason is already known and is being taken care of. **A comment should be written in the Run Logbook**. A button "**Masked alarms**" in the Entrance Panel can be used to view and print the list of currently masked items.

In case a new alert has come but no "**cuckoo**" sound was produced, this can be due to another alert of the same type for the same detector subsystem being already present (this is then the normal behaviour). If this is not the case, check that the **loud speakers** are ON. If they are ON, go to the "main menu" (left bottom corner of the screen), select "Multimedia", then "Kmix", and check that "Master" and "PCM" are not at minimum level.

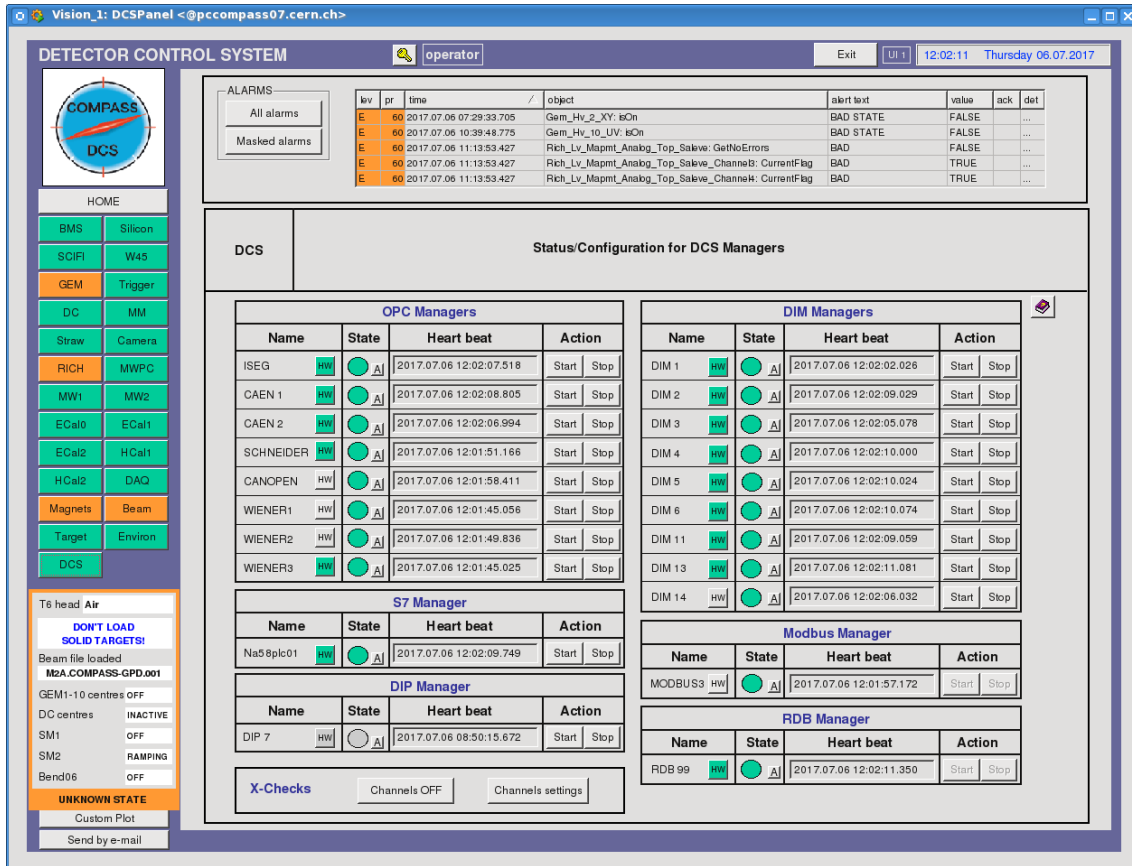# Detector Control System for the 2017 Run

6 DCS Panel

Figure 3: DCS panel.

The DCS panel, accessible by clicking the "**DCS**" button on the left, shows the state of the servers used for monitoring/control of equipments (**GREEN**: running; **RED**: stopped). "**Start/Stop**" buttons can be used by the shift crew to restart managers that stopped for some reason. One should wait a few minutes until the manager is restarted and the circle turns **GREEN**. If this does not work, call a DCS expert (**#164872**).

The correspondence between managers and equipments they control is:

- OPC Managers

  - ISEG: Straws HV (@pccompass03)
  - CAEN1: RICH MAPMTs HV; RICH Hybrids HV; Silicon LV; H1 HV; H2 HV; Camera HV; Middle Hm4v, Hm5v HV; Scifi 55 HV, BMS HV (@pccompass03)

9

- CAEN2: DC0-4 HV; MM HV; DC5 HV (@pccompass08)

- SCHNEIDER: all detectors gas systems; RICH vessel, CsI THGEM and CsI MWPC; ECal0 cooling and ventilation (@pccompass06, from PLCs 1, 2, 3 and 4)

- CANOpen: detectors and environment temperatures and humidities; atmosferic pressure; magnets fields (B6 and SM1); LV of MW1, MW2, W45, MWPC, ECal1, ECal2 and DC5 (@pccompass08, from ELMbs)

- WIENER1: DAQ VME crates (@pccompass08)

- WIENER2: RICH LV (@pccompass06)

- WIENER3: Straws LV; Scifi LV; DAQ VME crates (@pccompass03)

- DIM Managers

  - DIM 1: BMS HV (@pclip05)

  - DIM 2: Veto Up, Down, Inner, Out, Beamline; Inner; Middle; Outer; BKiller1 (@pclip010)

  - DIM 3: MWPC 7 to 11 HV; MW2 HV; Scifi 5 to 8 HV and Booster (@pclip010)

  - DIM 4: GEMs 5 to 11 HV, LV and Centre; PixelGems 2 and 3 HV and Centre; W45 HV; MWPC 2 to 6 HV; MW1 HV (@pclip07)

  - DIM 5: GEMs 1 to 4 HV, LV and Centre; SciFi 1 to 4 HV and Booster; MWPC 1 HV (@pclip09)

  - DIM 6: RICH PDs HV (@pclip09)

  - DIM 11: DAQ machines disks and remote control; ECals and HCals LED update timestamps

  - DIM 13: DC0 to DC4 thresholds; MM LV status and control

  - DIM 14: spill structure

- MODBUS 3: Silicons cryogenics

- Na58plc01: LH2 Target

- DIP 7: Beam, Collimators, Obstacles, Detectors and Magnets information from beam line; radiation levels; Silicons LN2 information

- RDB 99: connection to CERN Oracle DB

At the bottom of the DCS Panel, there is an area for "**Cross-checks**". A button **OFF Channels** is available, to provide the list of all the CAEN and ISEG HV and LV channels that are presently OFF, as well as the Wiener crates that are OFF.

There is also a button **Channels Settings**, to compare the settings from reference files and the readback values of settings from hardware. Only items with differences greater than some percentage (limits are shown in the panel) are displayed. Aliases inconsistencies are also checked.

From the "**HW**" buttons, it is possible to access panels with a description of the hardware monitored by each manager. For some of the managers of HV and LV, it is possible to know the state of communication of the equipment with the WinCC OA project, which is shown as a color (**GREEN** means the communication is OK; **RED** or **PURPLE** means the communication with the equipment has been lost or that the values received cannot be trusted).

Detector Control System for the 2017 Run

7   Trends

Trends (graph of values as a function of time) can be accessed from the buttons displaying a graph or in some tables by double-clicking a line of the table.

On the top of the trend panel there is a line with tabs for commands. In the big central area, the graph is displayed. And in the bottom, a legend of the displayed trend appears, with the name of the channel, the present value, and the timestamp of the reading.

By positioning the mouse pointer on top of some data point in the graph, and clicking, one obtains the timestamp of the measurement, as well as the exact value.

The tab for commands on top starts with a button "**Time Range**", which allows to modify the timescale. By default this is set to 8 hours. An option for "user specified" timescale is also available. The time range of the plot can also be changed by placing the mouse pointer on the x-axis and moving the mouse wheel to compress/expand the scale.

The tab "**Y Axis**" offers the possibility to display or not the y scale in the graph. By default, only the scale for the first curve is displayed. If there is more than one curve superimposed in the graph, the following ones will be normalized with respect to the first. Use the tab to display also other curves scales.

The tab "**Other**" allows to select the "**Plot configuration**" and the option, from where an absolute scale for the graph can be set (by inserting values in the **Y axis: Min** and **Y axis: Max** fields). This tab offers also the "**Export plot to CSV...**", "**Print plot**" and "**Snapshot**" options.

Clicking the right button of the mouse allows the access to "**Undo Last Zoom**", "**Goto Now**" and the tab options.

All the modifications done to the display of a trend will be lost when the trend panel is closed. Some permanent modifications can be done by DCS experts, on request.

From the "**Other**" tab, one can also take snapshots of the current trend and save them to disk (@pccompass07 /tmp/ folder) and/or send them by e-mail.

Custom Plot panel, accessible by clicking the "**Custom Plot**" button on the bottom left, allows to plot, save and import trends with custom parameters, time ranges and starting times. To add a parameter to the Custom Plot, move the mouse on top of the parameter, right click and select the option "**Add to custom Plot**".
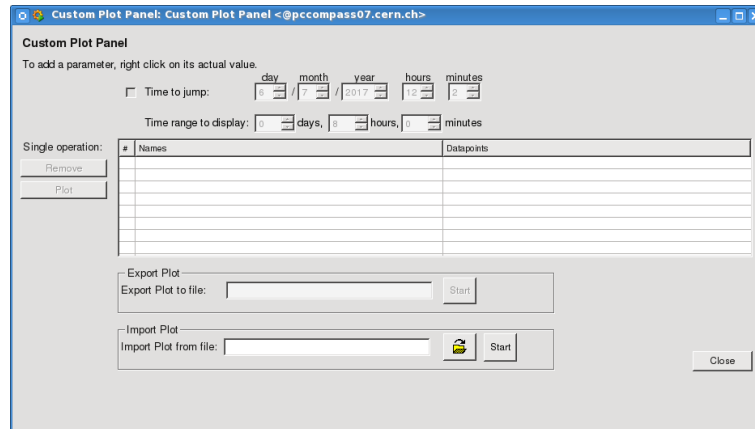

Figure 4: Custom Plot panel.

Send by e-mail panel, accessible by clicking the "**Send by e-mail**" button on the bottom left, allows to transfer trend snapshots and other files saved in pccompass07 by e-mail.
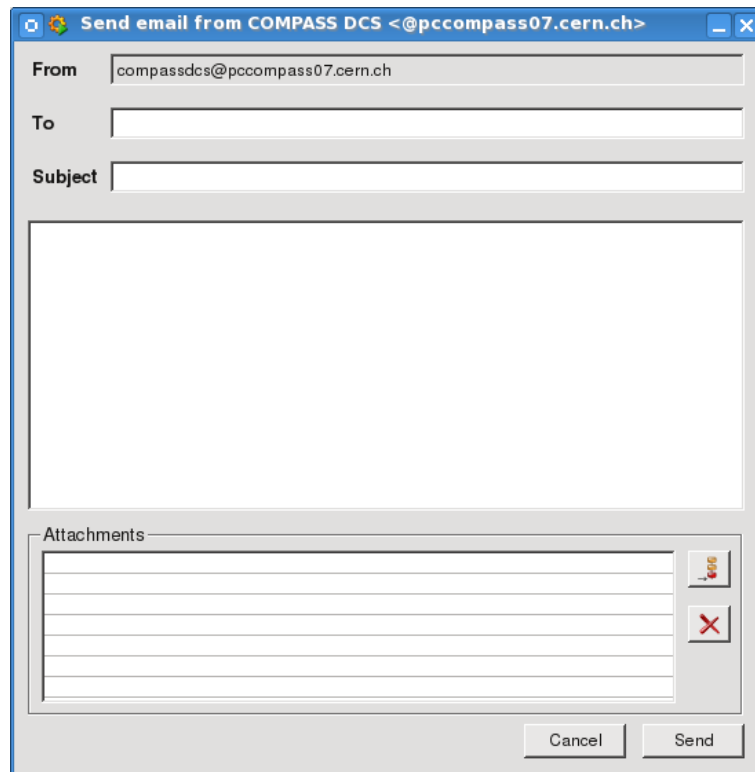

Figure 5: Send by e-mail panel.

Detector Control System for the 2017 Run

8 HV Systems

For the HV systems of each detector provides tables with the set voltage (**v0**), monitored voltage (**vMon**), monitored current (**iMon**), ON/OFF state (**isOn**) and hardware alarms (**HwAlarms**) for channels in the group. The 2 last columns have alerts defined. **isOn** displays **GREEN** color if the requested state equals the readback state from the channel; it displays **ORANGE** color otherwise[3]. The **HwAlarms** is a summary of the possible hardware alarms for HV channels: OverVoltage, OverCurrent, UnderVoltage and Trip (all displayed in **ORANGE**, except for trip, displayed in **RED**).

For ISEG equipments, two additional columns are displayed in the table: the maximum allowed voltage of the channel (vMax) and the current trip limit (i0).

If a channel trips, one will see the alarm in the "isOn" column (requested state $\neq$ readback state); and usually also the "Trip" information in the "HwAlarms" column. In this case, the channel must be ramped up by a shift crew action.

The **PURPLE color** in the "v0", "vMon" and "iMon" columns of the table means the reading of the item from the hardware was not succesful (in this case, the value displayed is the last value the system could read). If all cells in these columns are **PURPLE** simultaneously for all channels, it means the SLiC server or the OPC server for this control stopped. If this happens, call a DCS expert (**#164872**).

More details on a channel can be obtained by double-clicking in the corresponding table line. A new panel opens, with more information on settings, etc for that channel. The channel can be switched **ON/OFF** from the corresponding buttons in the panel. Channel settings can be changed (by detector experts only) by clicking the corresponding "**Settings**" cell. Alarms can be masked/unmasked from the "**Action**" button on top. A button to "**Load settings from hardware**" (to import the readback setting values in the crate into the DCS system) is also available for detector experts use.

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[3]For ISEG equipments and GEM HV, the isOn column is always **ORANGE** when the channels are switched OFF.

Together with the channels summary table in each HV group, there are some **Group operation** buttons: "ON/OFF", "settings" (only for detector experts) and "Pop window". The Group operation will act in the selected channels of the table. To select channels, click in a line to mark it, then press "Ctrl" key and click with mouse in other lines to select them also. If no line selection was done in the table, the Group operation will act in ALL the channels of the table. The "Pop window" button is used to open the table in a separate window, from where printing is possible.

If a crate, or some modules in the crate, lost its settings, this will show in the channels summary table as $v0 = 0$ in the first column. By double-clicking one of the lines with $v0 = 0$, one can see, in the right-hand side table, the column for WinCC OA settings (1st column) with the last value set, and the column for readback settings from hardware with $v0 = 0$. In this case, contact the detector expert. The standard settings can be recovered by importing the corresponding Reference recipe, if advised by the detector expert. To do this, from the detector panel on top, in the area with buttons for stations voltages, click the "tools" button, and a panel for export/import will open. When logged in as "operator", only limited actions are available. You can view the contents of the saved recipes for the detector (including the Reference recipe), but you cannot modify its contents. You can also import the Reference recipe. By doing this, you will send the settings from the recipe into the hardware. After this, you should go back to the channels summary table and check that the readback settings are $v0 \neq 0$.

RICH HV Hybrids general panels have two extra tables, one that shows the general information of all sectors and a second one for extra channels.
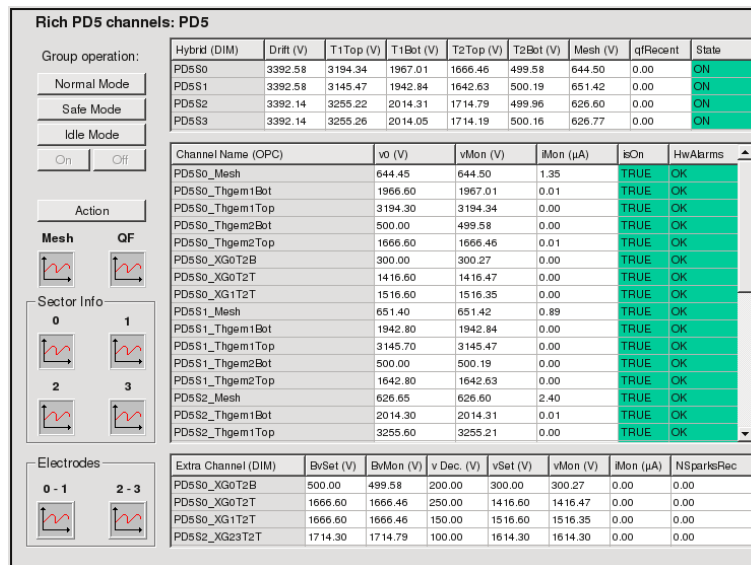

Figure 6: RICH HV Hybrids.

Double-clicking an entry of the first table will open a new panel with more detailed information about the selected sector.
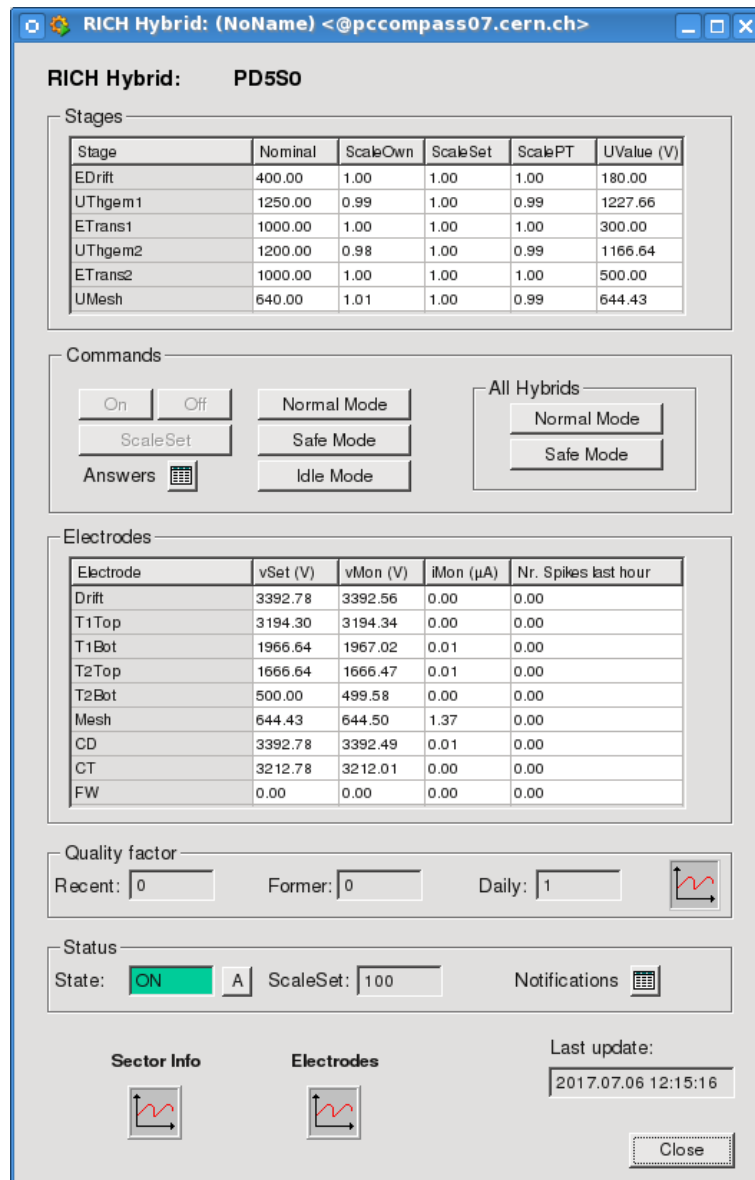

Figure 7: RICH HV Hybrid sector details.

9 Power switches and Ethernet to Digital IO Relays

Power switches are used to powercycle GEM ADC LV and Pixel and Silicons ADC LV. These power switches are monitored and controlled in the DCS via http requests to the power switches.

MM and DC0 to DC4 LV system is monitored and controlled in the DCS via DIM (DIM 13). The DIM servers run on pccompass07 and connects directly to Ethernet to Digital IO Relays via TCP/IP. If one DIM server stops running, the corresponding alarm will be displayed in the DCS. In this case, the DCS expert shall be contacted (**#164872**).

Detector Control System for the 2017 Run

10   DC0 to DC4 Thresholds

DC0 to DC4 thresholds are monitored and controlled in the DCS via DIM (DIM_13). The DIM servers are running on the VME CPUs **lnxpool25** (DC00-01 thresholds) and **pccofe20** (DC4 thresholds).

Only the detector experts can set new values for the thresholds.

If the communication with the VME(s) is lost, the corresponding alarm(s) will be displayed in the DCS. In this case, the detector expert shall be contacted. After such alarm(s), the detector experts need to check if the thresholds have the correct values set.

11 ECals and HCals LED monitoring

The DCS has an **indirect LED monitoring of ECal0, ECal1, ECal2, HCal1 and HCal2**. The responses from each calorimeter block are read from COMPASS MySQL database which is filled by processes running on the DAQ machine pcconl06.

To check if the processes are running do the following:
>**ssh daq@pcconl06**
>**ps ux | grep DB**

There should be as answer ten processes called: **ecal0DB**, **ecal1DB**, **gamsDB**, **hcal1DB**, **hcal2DB**. If not:
>**cd /online/detector/calo/dcsDB**
>**./start_dcsDB_all.sh**
>**ps ux | grep DB**

For more details, one can also check logfiles:
>**cd /online/detector/calo/dcsDB**
>**tail -n 20 ecal0DB.log**
>**tail -n 20 ecal1DB.log**
>**tail -n 20 gamsDB.log**
>**tail -n 20 hcal1DB.log**
>**tail -n 20 hcal2DB.log**

In the DCS, if more than a certain number of blocks (defined by the detector experts) are shown as "bad" or "broken", an alarm appears in the alerts table and propagates to the buttons of the detector and subsystem. If more than a certain threshold of blocks, also defined by the detector experts, have old times-tamps (displayed in **PURPLE**), this also raises an alarm. This can happen because the application responsible to write the values in the MySQL database is not running or if there is a problem with the MySQL database itself. In such cases, inform the detector experts about it.

Detector Control System for the 2017 Run

12 ECal0 HV and Temperature monitoring

The DCS performs an **indirect monitoring of ECal0 HV status and temperatures** via http requests to ==ecal0server==.

Bus status information:

- last timestamp update;

- bus number (0 or 1);

- bus status (On→1, Off→0, Undefined→-1);

- number of cells online.

HV status information:

- HV status (On→1, Off→0, N/A→-1, Error→>1).

Temperature information:

- Temperature.

13   ECal0 Cooling and Ventilation monitoring

The ECal0 cooling and ventilation system is monitored and controlled in the DCS via the Schneider OPC Server.
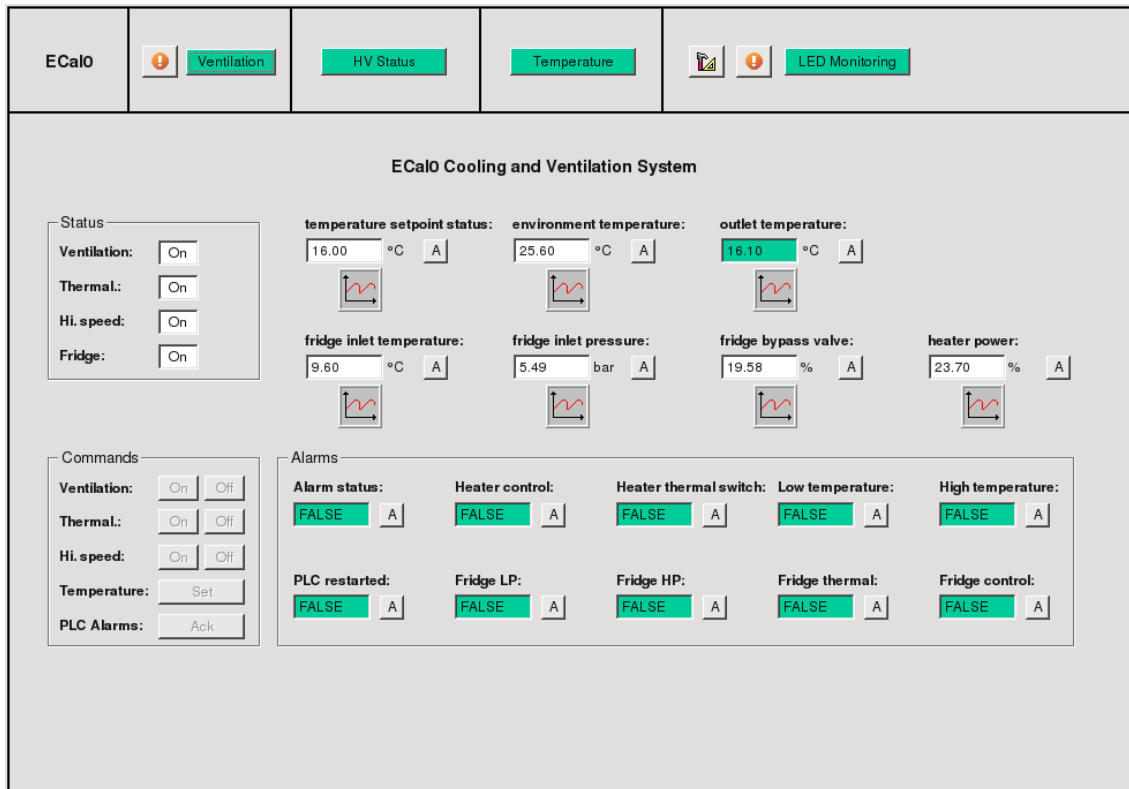

Figure 8: ECal0 Cooling and Ventilation panel.

Only the detector expert can send commands to this system.

In case of alarms, detector experts shall be contacted.

Detector Control System for the 2017 Run

14 DAQ VME Crates and Wiener LV Units

By clicking the **DAQ** button, a summary table with all the VME crates used for the data acquisition is shown. The columns show the current for each voltage channel. There is also a column "Power On"; and a column "Alarms", grouping all the hardware alarms for the voltage channels. Only the "Alarms" column has alert handling defined. It will show the **ORANGE** color in case of alarm from a channel, from the power supply or from the fan tray. It will also show the **ORANGE** color in case the crate is switched OFF (and voltage settings $\neq 0$ – in that case, the voltages monitored and set will differ, thus triggering alarm). The column will show **GREEN** color if no alarm is present. By double-clicking one line (i.e. one crate), a detailed panel for the specific crate will be displayed. For some crate types, the monitoring of fan tray parameters is not possible, and in that case the fan trays fields will display the **PURPLE** color.

The **PURPLE** color indicates that either the reading of the parameters failed (loss of communication), or a bad quality flag was assigned to the item by the server, for some reason. Cells in the summary table that show occasionaly the **PURPLE** color, alternating with white is a normal condition. If you observe persistent **PURPLE** color for an entire line (crate) in the summary table, inform a DCS expert.

The implementation of WIENER fan trays and LV units in the DCS does not allow to change settings, but only switch ON/OFF crates and monitor their parameters. If an expert wants to adjust Wiener low voltage settings, the DCS expert needs to be contacted (**#164872**).

Detector Control System for the 2017 Run

15 ELMBs

The **ELMBs** monitor temperatures, humidities, pressures, magnetic fields, gas flows (if not connected to PLCs), some LVs, etc. Access these measurements from the detector buttons in the Entrance Panel.

DC5 LV channels are also controlled via **ELMB** and they can be switched **ON/OFF** from the corresponding panel.

Value fields with WHITE background color indicate that no alert limits were defined for this measurement. **GREEN** color indicates the value is within the defined alert limits. **ORANGE** and **RED** indicate it exceeded the limits and is in alert state. **LIGHT GREY** indicates an alarm is defined but was masked – it can be unmasked from the "A" button next to the value field. The **PURPLE** color indicates the last reading was not successful (loss of communication), or that a bad quality was assigned to this item by the server.

If all the value fields show the **PURPLE** color, check in the DCS panel if the OPC manager "CANOpen" is running. If it is not running, restart it clicking the "Start" button. In case this doesn't work, call a DCS expert (**#164872**).

Detector Control System for the 2017 Run

16 DIP monitoring

The monitoring of the beam line and radiation levels in the DCS is done via CERN DIP servers.

If a **RED** alarm appears in the "DCS" button, coming from the "DIP_7" manager, and an indication of "DIP_7: TimeAlarm" in the alerts panel of the DCS (on top) is visible, this means that some parameters stopped being updated. In case there is a Machine Development ongoing, mask the DIP_7 alarm and make a comment in the Run Logbook. If not, and the alarm is related to the beamline, do the following:

- Wait approx. 10 minutes. If the alarm disappears, no more action is needed. Just check that there are new points appearing in the trending plots (value vs. time).

- If the alarm does not disappear after 10 minutes, call the **CCC (77500)** and **ask the operator to check the status of the DIP gateway called CMW-DIP-NORTH running on the cs-ccr-cmw1 host and the timing events**.

- After a while, the alarm should disappear, and new regular updates should be visible in the trending plots.

The operator can call the CMW support if it is a critical issue.

One can click the DIP_7 "HW" button and click the buttons for more details on the last updates of parameters.
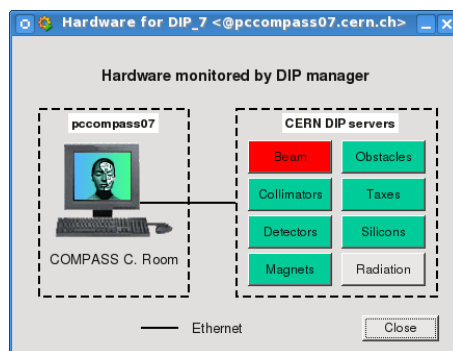

Figure 9: HW DIP_7 panel.

17   Triggers and Vetos monitoring

The monitoring of Triggers and Vetos is done every spill from MySQL database "beamdb2014".

18   LH2 Target Monitoring

The monitoring of the LH2 target in the DCS is done connecting directly to the Siemens S7-1200 PLC na58plc01.

Figure 10: LH2 Target panel.

In case of alarms, the detector experts shall be contacted.

Detector Control System for the 2017 Run

19   Detector Experts General Instructions

Some actions, like changing parameter settings, exporting and importing settings from/to recipe, or loading settings from the hardware, can only be done with a detector expert login, except for the Reference recipes that can be imported by the shift crew (user "operator"). Use the yellow key button on the top of the Entrance Panel to login as expert.

If you are a detector expert, but were not given a password yet, contact a DCS expert to obtain one, or check with your colleagues if this password was given to one of them. It is recommended that the detector expert password remains secret, and it is the responsability of the expert to decide to whom he gives it. In case you forget your password, the DCS experts can reset it for you.

After you finished expert actions in the DCS system, do not forget to logout, by clicking the yellow key, and giving ownership of the UI back to "operator".

COMPASS members can open remote sessions of the DCS project, both for viewing the status of the DCS (login with username: "guest" and password: [EMPTY]) or for changing settings (login as detector expert, with detector password). Opening remote sessions with login "operator" outside the control room is also possible, but not recommended. To open a remote session, login first in the COMPASS gateway, with your lxplus username. Afterwards, do:

>ssh -XC dcs@pccompass07
>dcsUI

and login with detector expert username and password (or guest, without password). Remote sessions expire after 1 hour, after which the DCS UI asks you to insert again your password, for security reasons. If no password is inserted, the UI remains open, but without most of the privileges ("NO USER").

19.1   Settings of HV and LV Equipment

Detector experts can change settings for their detector only, from the "Settings" button in the Group operation, or by clicking in the specific setting cell of a table when viewing a single channel. When using Group operation always check that only the channels you want to modify are included in the table for changes. Insert the new set value and press the "Set" button.

Check in the table that all the values you wanted are readback – if they are not, wait until you see them in the table, or press the "Set" button again.

After you have changed settings, save the new values into a file, for security and reference. To save HV and LV settings into a file, click the "Tools" button for **export/import of settings**, located on the top of the detector entrance panel.
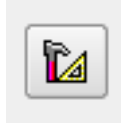

Figure 11: "Tools" button for export/import of settings.

To export the settings to a recipe, which can later be imported by the shift crew in case the hardware looses its settings, simply click the "Start" button. If you want to save some special settings, change the name of the recipe in the name field (keep the file extension=[detector name] as proposed), then click the "Start" button.

You can edit or view the contents of any of the saved recipes for your detector from the "Edit" area. Click the yellow "folder" button to choose the recipe, then click the white "editor" button to view/modify it.

If the equipment (for example, a crate) lost its settings, these can be imported from the Reference recipe, and sent as commands to the devices using the "**import settings**" functionality. Special settings can also be imported from recipe and sent as commands to the equipment (by detector experts only), from this "import" area.

19.2   Settings of Alarm Limits

To export alarm limits into a recipe, click the "Alarm limits" button for **export/import of alarm limits**, located on the top of the detector entrance panel, and simply click the "Start" button.
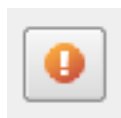

Figure 12: "Alarm limits" button for export/import of alarm limits.

You can edit or view the contents of any of the saved recipes for your detector from the "Edit" area. Choose the recipe from the combo box, then click the white "editor" button to view/modify it. You can also print the content of a recipe by clicking the "print" button or delete a recipe simply clicking the "delete" button.

Recipes for alarm limits can be imported using the "**import**" functionality (see next section 20).

Detector Control System for the 2017 Run

20 Detector Experts Instructions for Recipes

Recipes are sets of parameters (limits for alarm) that can be saved, viewed, edited and loaded from the WinCC OA project to and from a dedicated Oracle database, as described in subsection 19.2. The procedures to perform each of these operations are described in the following sections.

20.1 Instructions for Alarm Limits Recipes

20.1.1 Export a Recipe (only for detector experts)

- In the "**Export**" section, choose the name of the recipe and click the "**Start**" button.

- Select the devices to include in the recipe.

    - Clicking the "**All**" button will select all devices from the list.
    - Clicking the "**None**" button will unselect all devices from the list.

- Insert a description for the recipe. (optional)

20.1.2 Visualise a Recipe

- In the "**Edit/Visualise**" section, select a recipe from the combo box and click the "**Edit/View**" button.

- In the next panel, double click the items you want to view.

20.1.3 Edit a Recipe (only for detector experts)

- In the "**Edit/Visualise**" section, select a recipe from the combo box and click the "**Edit/View**" button.

- Edit the content of the recipe.

- In the next panel, double click the items you want to edit.

    - Click "**OK**" to save the changes.
    - Click "**Cancel**" to cancel the changes.

- Click "**OK**" to save the changes.

- Click "**Cancel**" to cancel the changes.

- Change the name of the recipe. (optional)

  – Insert a description for the recipe if you inserted a new name for the recipe. (optional)

20.1.4 Import a Recipe

- In the "**Import**" section, select a recipe from the combo box and click the "**Start**" button to apply it. The user "**operator**" can only import the last created Reference recipe.

21 F.A.Q.

1. **What does a dark gray color in a detector button mean?**

   The DCS showed an important alarm ("Fatal", red color), but the condition for the alarm has disappeared in the mean time. Still, the alarm should be acowledged by the shift crew, by pressing the "!!!" cell in the Alerts Table, or the "Action" button next to the value field in alarm. This is to ensure that the alarm did not pass unnoticed and that any needed action was taken.

2. **What does the purple color in a cell mean?**

   It means that the value displayed is "invalid". The invalid condition may be due to no new values received (client/server stopped) or because the values are not to be trusted for some reason (corruption in the data received, desynchronization, etc).

3. **There are red alerts in the "DCS" panel. What do they mean?**

   It means there are alerts in the DCS panel, due to a failure in some part of the monitoring. For the manager showing the alarm, see if the "Heart beat" is updating the timestamp. If it is, there is a problem with the equipment being monitored (which can be identified by pressing the "HW" button). If not, check which kind of alarm is displayed in the Alerts Table: "ManagerDisconnected" or "TimeAlarm". For "ManagerDisconnected", click the respective "Start" button and wait for some time; if the alarm persists and there are no new values for the heart beat, call a DCS expert. For "TimeAlarm", wait for some time; if it's DIP7, check section "DIP server restart (for Beam monitoring)" of these instructions, otherwise, if it does not disappear in 5 minutes, call a DCS expert.

4. **There was an alarm seen in the Alerts Table, but no "cuckoo" was heard. Why?**

   Either there was an alarm already present for the same subsystem of the same detector, or the loudspeaker was off, or was set to a low volume. If this is the case, please correct it.

5. **The "ON"/"OFF" buttons (for HV/LV channels) are disabled. Why?**

   To have these buttons enabled, one must be logged in as "operator". If they are disabled, probably a detector expert logged off but forgot to login again as "operator". Check it in the center top of the main window.

6. **The DCS UI in the Control Room shows the login panel every hour, whithout apparent reason. Why?**

   Only the UIs #1 and #2 don't have auto-logout. Therefore, if there are auto-logouts each hour, the UI has a different number. You can try to recover the UI #1 or #2 by exiting the current UI and opening a new UI. If the problem persists, call a DCS expert.

7. **Where did the DCS UI go?**

   Maybe someone minimised it? If you don't see any UI window opened, start it from a terminal window, either by clicking the "dcsUI" logo in the desktop of **pccorc36**, or by typing in the prompt of a terminal:
   >**ssh -XC dcs@pccompass07 "dcsUI"**.
   A WinCC OA login window should open. Choose
   Username: **operator** Password: [**EMPTY**]

8. **The HV channels of Straws are orange. Why?**

   These are Iseg modules, and it was requested by detector experts to have different rules for this kind of equipment: everytime they are off, they are in alarm.

9. **The v0 (readback set voltage) column is displaying zeroes. Why?**

   The equipment lost its settings!!!

   If you're the detector expert, don't "Load Settings from hardware"! (This would only cause the loss of settings also in WinCC OA.) Instead, put the settings back to the equipment from a set previously saved in WinCC OA, by importing a recipe.

10. **I am a detector expert and I need to change settings/alarm limits, but I cannot remember my username/password. What should I do?**

    Before asking a DCS expert to reset the password, please check that no other element of the group knows the password.

11. **The keyboard of pccorc36 isn't working. What to do?**

    Logout and login again to the dcs account of pccorc36.

Detector Control System for the 2017 Run

22   List of DCS login users

- Camera
- Coordinator
- dc5
- Drift
- Gandalf
- Gem
- guest
- Ecal0
- Ecal1
- Ecal2
- Hcal1
- Hcal2
- Mm
- Mw1
- Mw2
- Mwpc
- **operator**
- Rich
- Scifiw
- Scifig
- Silicon
- Straws
- Tgt
- Trigger
- W45