

PHOS shift user manual

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PHOS at ACR tel. 77687

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To find out who is the PHOS On Call Shifter or ALICE shifters

go to the Shift Signup System (SMS), log in

- 1) click on Current Shift Crew (in left panel)
- 2) click on OnCall Shifters

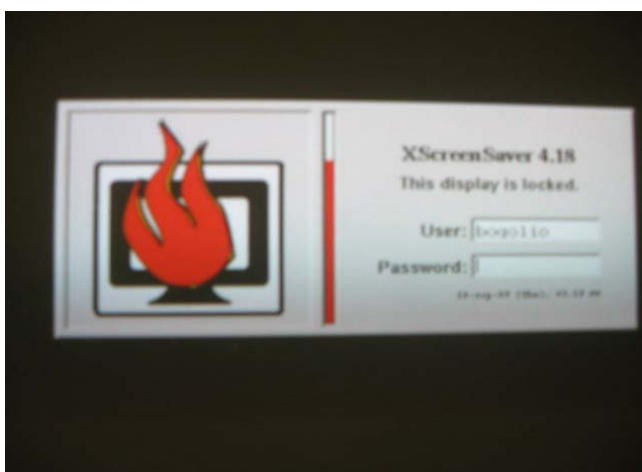
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1. General

PHOS is controlled from the two PCs **aldaqacr48** and **aldaqacr49** in the ALICE Control Room (ACR). The DCS system is run from the **Windows** machine **alidcscom072** and the front-end cards and RCUs are controlled from the **Linux** machine **alidcscom075**. One logs on to these machines from **aldaqacr48** and **aldaqacr49**. On **alidcscom072** each user logs on with his/her **own username** (CERN Nice username) and on **alidcscom075** the user is **phs (no password)**.

Login to aldaqacr48 and aldaqacr49



Login: **phos** Password:

(all passes are at the PHOS working place in ACR on the paper copy)

Each machine has double screen windows, if only one of the two screens is on – press **ctrl-alt-F1**, wait, and then press **ctrl-alt-F7**.

Connecting to DCS

1) Open **Xterm** on **aldaqacr49**, type the command:

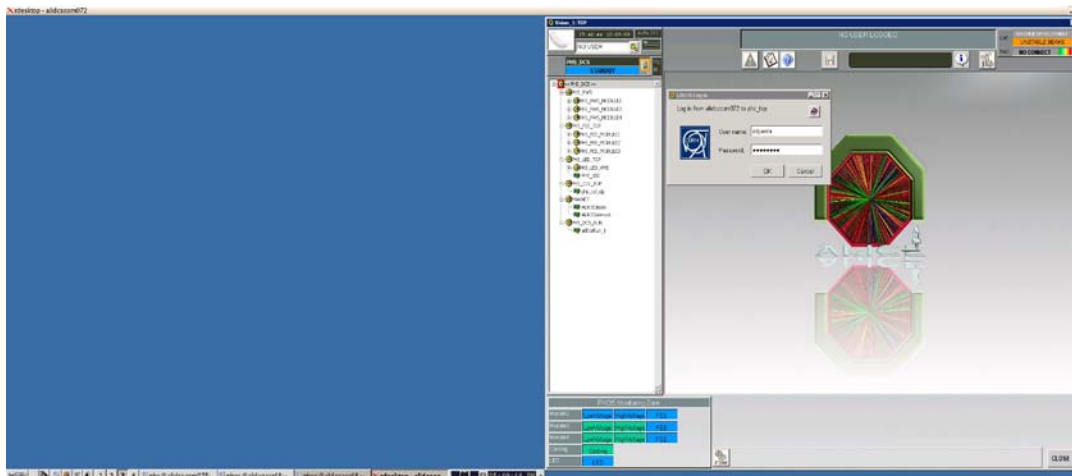
>rdesktop alidcscom072 -f

- login using **NICE username** and **password**.

If the authorization window is not opened automatically, go to the start panel and

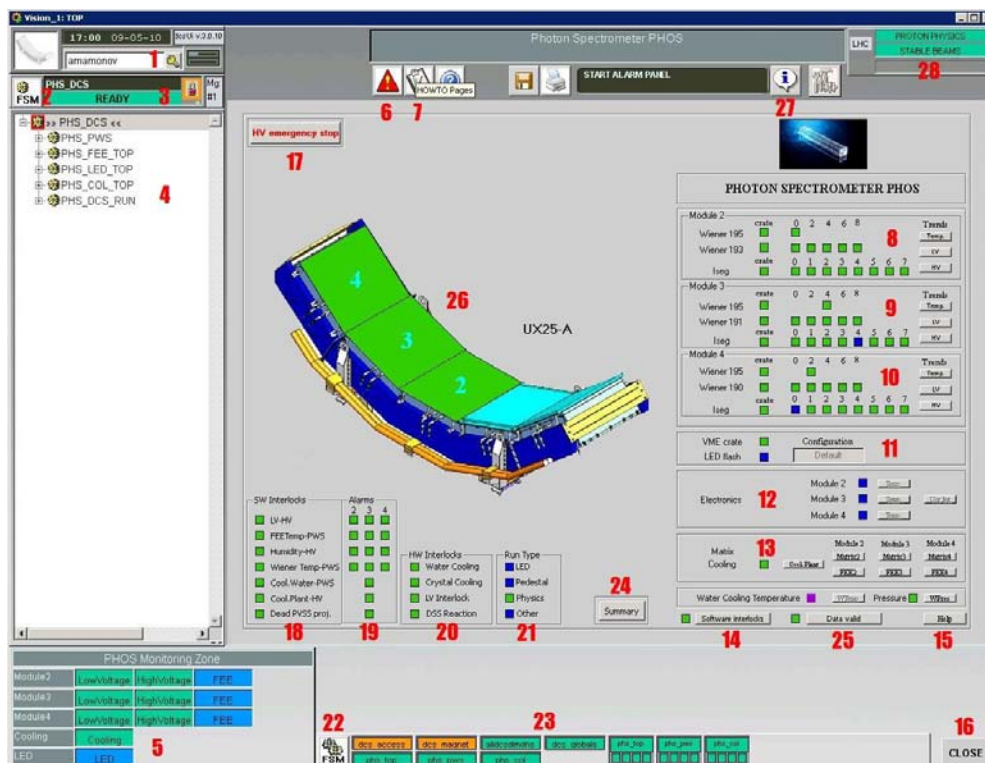
click **PHOS**. (To leave full-screen mode: **ctrl-alt-enter**.)

2) The **authorization Windows** panel will appear:



- You should use the **NICE login** and **password** here as well.

The following window will be opened - the ALICE Main User Interface (MUI) of DCS system for PHOS project.



The details of this window are described in **App. A**.

Configuring the electronics, turning on/off FEE cards

First, you must check FEE servers by **did** (see page 15) and program RCUs (page 22).

To start the **phosgui**, log in as user **phs** on Linux machine **alidcscom075**.

This is set up by **ssh** keys from **aldaqacr48** and **aldaqacr49**. Just do

```
> ssh phs@alidcscom075
```

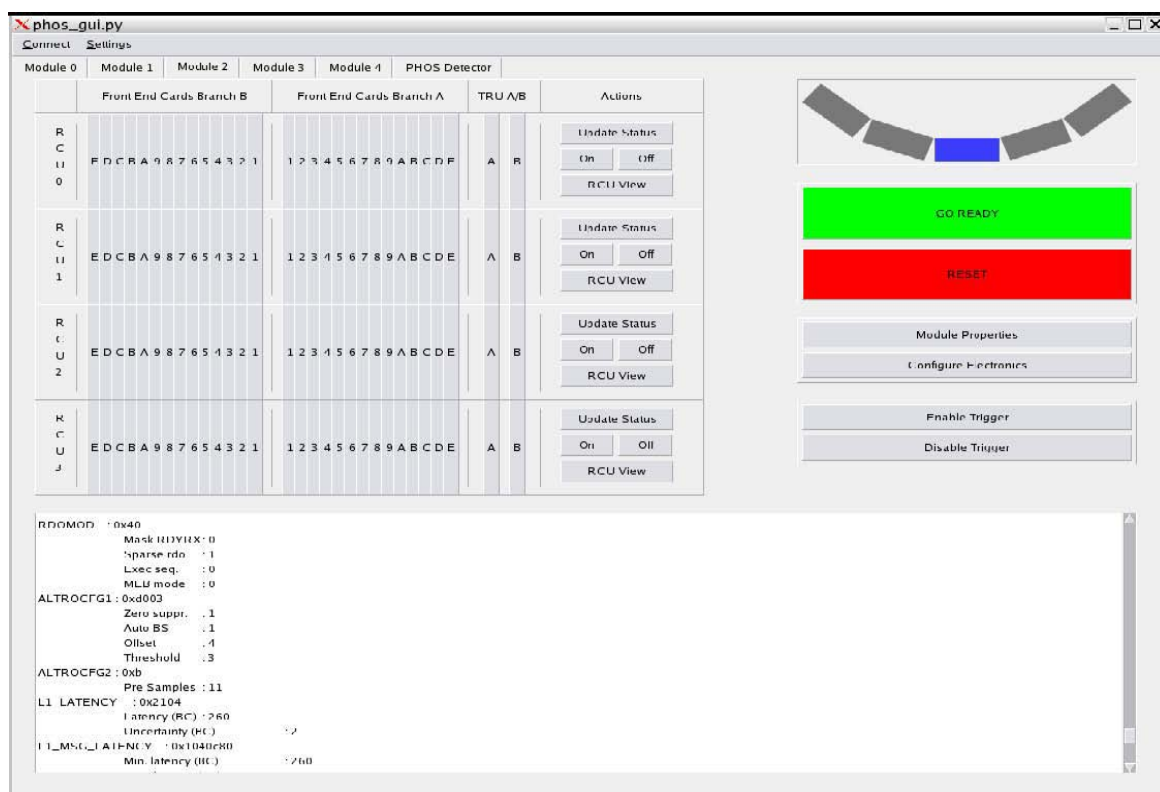
No password has to be given.

At **alidcscom075**, go to the directory **/home/phs/phos_dcs/bin** and start the gui:

```
>cd phos_dcs/bin
```

```
>.startgui.sh
```

The following window should appear – **phosgui**:



Advice: Open the similar windows for all 3 PHOS modules.

Before one can do anything with it, one has to connect to the RCUs.

To define which RCUs to connect to, do **connection** --> **Connection Settings**.

Choose RCUs to be controlled, then **OK** (and **Save**, if need).

Then do **connection** --> **Connect now**.

The **phosgui** shows the status of one module at the time. To select module, use the buttons at the top Module 2, Module 3, and Module 4.

When the **phosgui** starts, all cards appear **grey**.

To find out the status, one should click “**Update status**”.

Note: This should never be done during a run!

The color will change to White (Off), Green (On), Red (Error), or Black (no connection).

The buttons “**On**” and “**Off**” turn on/off all FEE cards on one RCU. Individual FEE cards can be turned on/off by clicking on the FEE card. The “**Go Ready**” button configures the electronics and disables, enables trigger. The “**Reset**” button resets the electronics, for example if PHOS goes to **busy** status. It should be followed by “**Go Ready**”.

The configuration settings can be modified by clicking **Configure Electronics**. The window on the **following page** will appear. One can select the configuration options (ZS on or off, mode for subtraction of pedestals, number of samples etc.) The same window is used to load the APD settings.

NOTE: One should never do anything with the phosgui when a run is ongoing. Not even clicking Update Status. The reason for this is that the information to and from the **phosgui** goes on the same data bus as the real data.

If the **phosgui** hangs, one can exit by pressing **Ctrl-Alt-** (Ctrl-Alt-backslash).

If there are problems connecting to some RCUs, check that the FEE servers are running using **did**, see page 16.

Cancel

7

2. Basic Operation

The normal state of PHOS during running (cosmics or collisions) is to have all Low Voltage (**LV**) and High Voltage (**HV**) channels on. The FEE cards should be on and the electronics should be configured. The PHOS OnCall shifter should make sure that this is the case and correct any upcoming problems.

Note: The HV should never be ON without the LV also being ON.

If something appears to be seriously wrong or the PHOS HV have to be turned off quickly for some reason, there is a simple button for moving PHOS into SAFE mode:

Moving PHOS into SAFE mode (emergency button)

- Click Right Mouse (RM) on **17 MUI** button **Go Safe** → go to red,
- then within 10 seconds click Left Mouse (LM) button and all PHOS will be in **SAFE mode**, which means: **HV will be switched OFF, Cooling, LV, LED, FEE will not change their status.**

Instruction for PHOS On Call

The PHOS On Call should be reachable by phone 24 h per day. He/she should be able to reach Point 2 within 30 min after a call. People who are On Call should be registered as “phos experts” in PVSS. This is necessary for being able to turn on and off the HV and LV. Here are some points to follow:

1. Be aware of what is going on at Point 2 and what the plans are for PHOS. Follow the e-mails on the **alice-p2info** mailing list, stay in contact with the PHOS Run Coordinator and the ALICE shift leader etc.

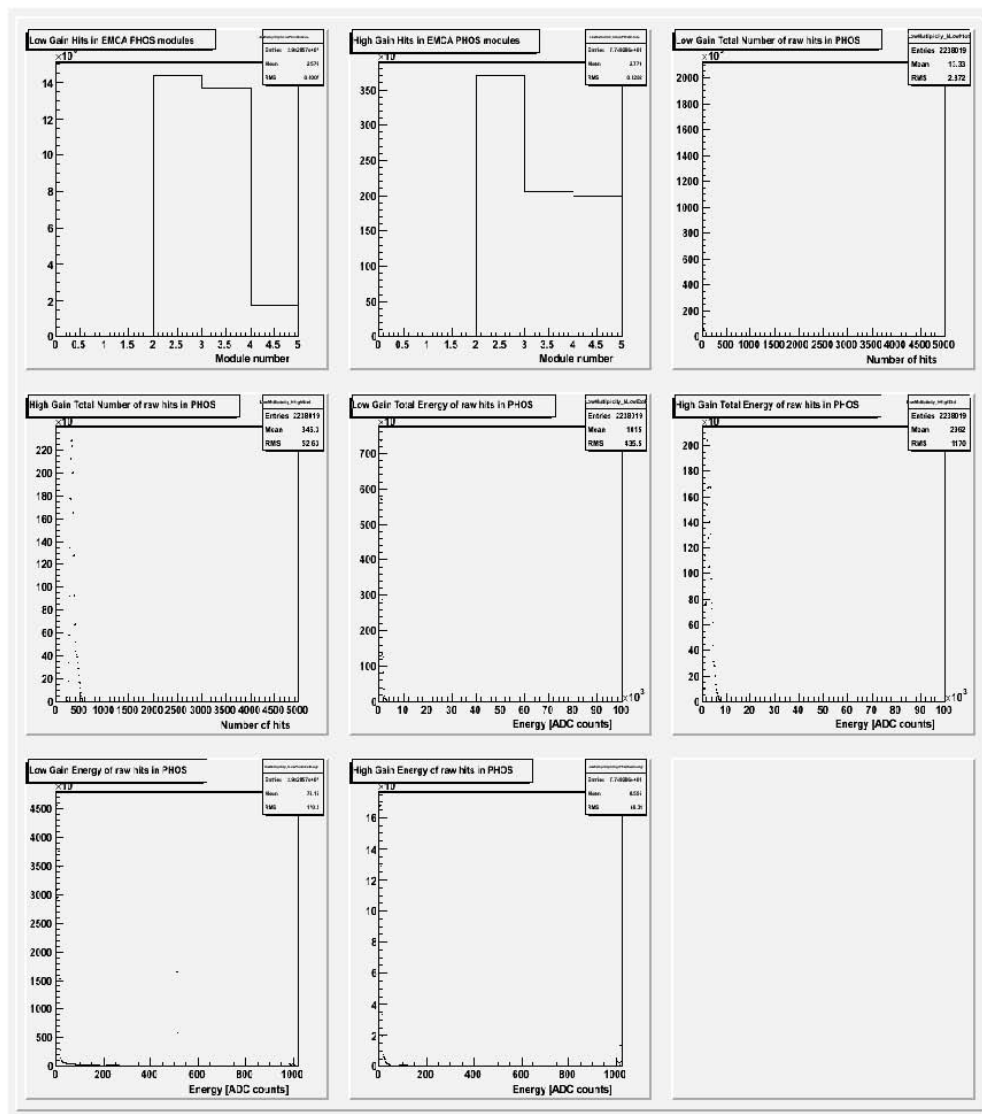
2. Make sure that PHOS is **READY** to take part in global runs when it should.

3. Monitor the quality of the data. Use the logbook to check the PHOS **event size**. It can be found by clicking on a run in the logbook and then clicking on “**Run Statistics**” The event size (in pp collisions) should be between 8.5 and 12.5 kByte per event. Deviations from this indicate problems. Either noise (too large event size) or that some part of PHOS are not read out (too small event size). One can see the amount of data recorded by each LDC by clicking on “**LDC statistics**”. Also check the **DQM plots** in the logbook. These can be found by first clicking on a run and then clicking DQM. An example plot is shown below. There should be entries for all 3 modules (2-4) in the first two histograms. The number of hits should not be the same. The number of hits is normally largest in Module 2 and smallest in Module 4. The following 6 plots should all have entries. The mean and RMS should be compatible with the example below. The DQM plots are monitored online by the DQM shifter, but an extra cross check should be done. These checks should be done at least once per day when there is Physics data taking. There are also **QA plots in HLT** that can be consulted during a run.

The **Busy Time** can be seen **during of Run only** on <http://alidcscom188.cern.ch/> from **alidcscom001** (from outside of CERN through cernts.cern.ch) on “Global run BUSY status” page. For PHOS busy time should be ~**1msec**.

4. Take **PEDESTAL** and **LED** runs when needed.

5. It is recommended that each On Call subscribes to the **phos-alarm@cern.ch** mailing list. This can be done from here <http://www.cern.ch/groups>. You will then get an e-mail when a software or hardware interlock is triggered. DQM Plots for PHOS from the logbook for a good pp run:



6. It is recommended that On Call shifter make PHOS monitoring by the following Web-shape Check List:

PHOS check list

Shifter					Date					
Alarms			HW interlocks			SW interlocks			LDC statistic	
Cooling water pressure			DQM (peak position)			RUN type			AVG EVT size	
			MODULE 2		MODULE 3		MODULE 4			
Matrix temperature (-25°C)										
Matrix humidity (%)			~43.2; ~47.6; ~26.9		~44.8; ~43.7; ~35.1		~39.7; ~27.5			
FEE temperature (+16°C)										
FEE humidity (%)			~7.7; ~4.8		~13.; ~1.2		~6.2; ~5.9			
Wiener temperature °C			Wiener 193		Wiener 191		Wiener 190			
Channel 0			~19		~17		~19			
Channel 2			~22		~20		~19			
Channel 4			~24		~21		~22			
Channel 6			~19		~17		~19			
Channel 8			~24		~21		~21			
Wiener 195	Temperature °C	Channel 0	~20		Channel 4	~20		Channel 2	~16	
	Current (A)		~15.2			~21.9			~13	
LV current (A)										
Channel 0		~23.35		~16.3		~25.4				
Channel 2		~49.8		~32.6		~41.9				
Channel 4		~65.6		~43.7		~56.02				
Channel 6		~11.9		~7.8		~10.22				
Channel 8		~45.6		~39.1		~39.6				
HV current (mA)										
Channel 0		~8.11		~7.94		0				
Channel 1		~8.11		0		~7.7				
Channel 2		~8.25		~7.91		~7.6				
Channel 3		~8.1		~8.2		~7.7				
Channel 4		~8.3		0		~7.1				
Channel 5		~8.3		0		~7.6				
Channel 6		~7.8		~8.2		~7.5				
Channel 7		~12.45		~8.01		~6.7				
Comments:										

Each point of the list should be checked carefully one by one and marked by “OK” or actual values in case of problems.

The blank Check list can be found on PHOS web site: <https://aliceinfo.cern.ch/PHOS/> on the Run coordination/PHOS On-call shift page.

After filling of the Check-list it should be sent to current SRC for publication on the PHOS web site.

How to solve some common problems

If PHOS goes busy during a global run, has a **CDH** (common data header) **error**, or has stopped a run because of an event size > 2 MB

If DAQ/CTP calls and says that **PHOS is busy**, has produced **CDH errors**, or has an **event size > 2 MB**, the following procedure should be followed:

1. If the **phosgui** is not running, log on to alidcscom075 (**ssh phs@alidcscom075**) and start it.
(See page 5).
2. In the **phosgui**, click **connect** → **connect now**.
3. For each module, Click “**Reset**” then Click “**Go Ready**”. **Note: If PHOS trigger is running, for M4 do “Configure” and “Enable Trigger” instead.**
4. Tell SL that PHOS is ready.

If PHOS continues to be **busy**, check with DAQ that the right LDCs are selected. See below. If the problems persist, call one of PHOS expert listed on the first page of this manual.

Association of DDLs with LDCs

To find which module a certain LDC/DDL belongs to, here is the **mapping between LDCs, DDLs and Modules** (see also Appendix D):

Module 2: LDC: M3-00-01 DDLs 1800, 1801
LDC: M3-02-03 DDLs 1802, 1803

Module 3: LDC: M4-00-01 DDLs 1804, 1805
LDC: M4-02-03 DDLs 1806, 1807

Module 4: LDC: M5-00-01 DDLs 1808, 1809
LDC: M5-02-03 DDLs 1810, 1811

If all modules should be read-out, all these should be included. If only one or two modules should be read-out, then only the corresponding DDLs / LDCs should be selected.

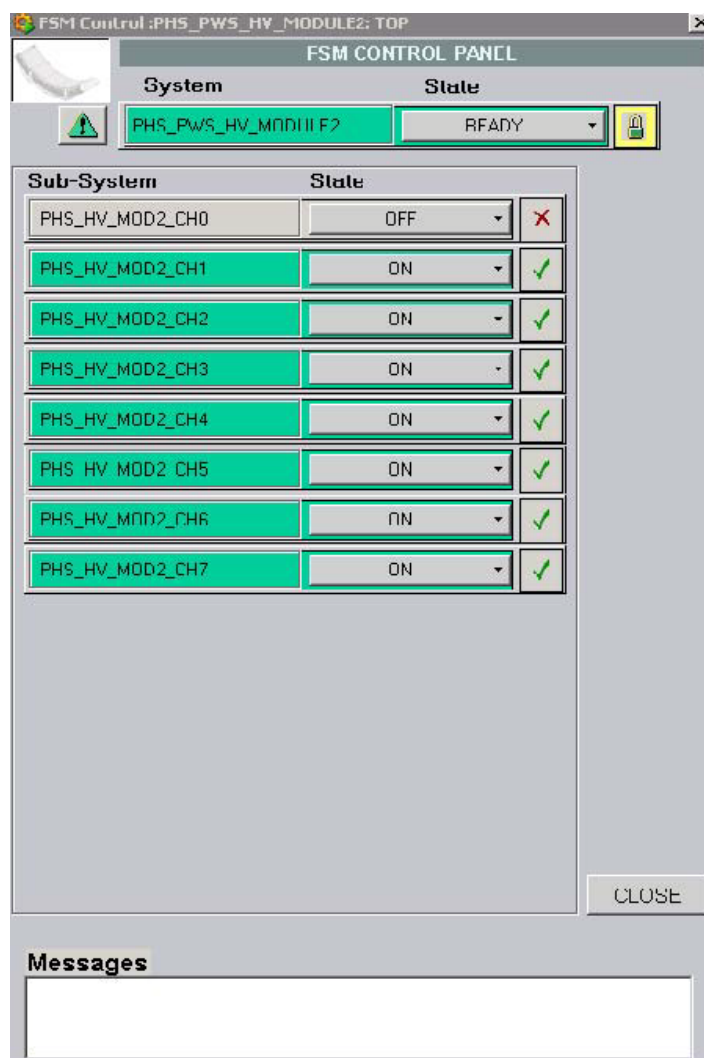
If one or several HV Channels trips

Only people who are registered as PHOS expert in PVSS can do this. Others have to call the PHOS OnCall.

Open the **FSM Control** panel for the HV of the relevant module, module 2 in this case. To get it, open **PHS_PWS --> PHS_PWS_MODULE 2 --> PHS_PWS_HV_MODULE2**.

The panel is shown below.

The top rectangle should be **red** if there was an **error**. To ramp down the voltage, click on the to rectangle and do **reset_emerg**. This is a fast ramp down. (If one clicks **reset**, the color might change to **green**. If that happens, **click again** and select **go off**.)



When the voltage is down, the **13 V** for that module **should be switched off and on again**. Open the PHS_PWS_LV_MODULE_* to do that. The 13 V channel is labeled PHS_PWS_WIE195_CH0/CH4/CH2 for Module 2,3,4, respectively.

When the 13 V has been turned on again, the APD settings should be loaded. How to do this is explained under 6) in the procedure for a Power Cycle (p. 26).

Before HV ramping up, the ramping settings may have to be modified. Go to PHOS Monitoring zone (5 in **MUI**), and click on High Voltage for the appropriate module. Click on settings. If the ramp is not set to 0.1 V/s, change it. Type “0.5” in the square Ramp and hit return. Then click set. Check that the readback value is changed to 0.1 V/s (yes, 0.1 V/s -not 0.5!). The voltages should be 395 V for Modules 2 and 3 and 350 V for Module 4. These are the default values. and should not have to be changed.

Then go back to the PHS_PWS_HV_MODULE_* and click on the top rectangle and select **Go Ready**. The ramping takes about 30 mins.

If channels trip repeatedly, the HV should be turned off and an expert called.

If one or more LV channels trip:

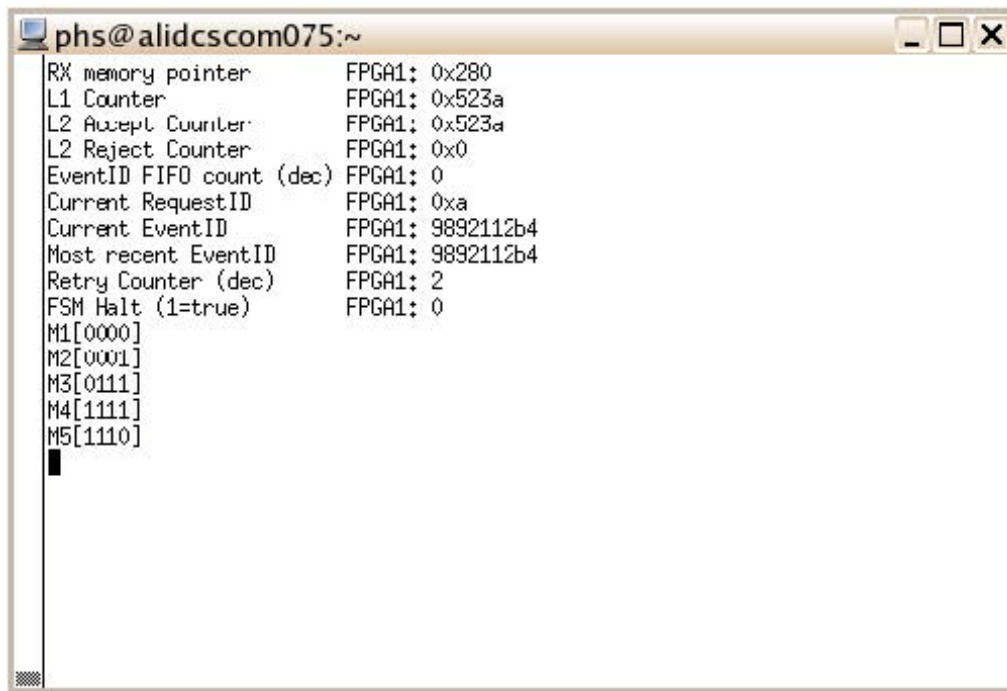
This is unusual. If it happens, an interlock should turn off the HV. If the HV is not turned off, turn it off manually. Then follow the procedure for “cold start” below.

If an interlock is activated:

Call an expert. Try to understand what caused the interlock to be activated. If it is not understood, don't do anything. To reset the interlock, click on “Software interlocks” in the **MUI**.

Monitoring the busy box:

The busy box window is shown below.



```
phs@alidcscom075:~  
RX memory pointer      FPGA1: 0x280  
L1 Counter             FPGA1: 0x523a  
L2 Accept Counter      FPGA1: 0x523a  
L2 Reject Counter      FPGA1: 0x0  
EventID FIFO count (dec) FPGA1: 0  
Current RequestID      FPGA1: 0xa  
Current EventID        FPGA1: 9892112b4  
Most recent EventID    FPGA1: 9892112b4  
Retry Counter (dec)    FPGA1: 2  
FSM Halt (1=true)      FPGA1: 0  
M1[0000]  
M2[0001]  
M3[0111]  
M4[1111]  
M5[1110]  
█
```

Note: Real window M3[1111], M4[1101], M5[1111] means Modules 2, 3, 4.

As events are coming in, the (hexadecimal) numbers following the L1 Counter and L2 Accept Counter should increase. The busybox is reset at the beginning of every run, so it is normally not necessary to reset it manually. To reset it manually, one should log in to **alidcsdcb1557**. This is done by the command **bb** from **alidcscom075**. Then go to the directory **/mnt/dcbw/busybox_files** and execute the following command **>. / reset_phos_bb.sh**

The new busybox window will be opened.

The busy box settings are defined in the file

/nfs_export/dcbw/busy/busybox_files/bbinit_phos.sh

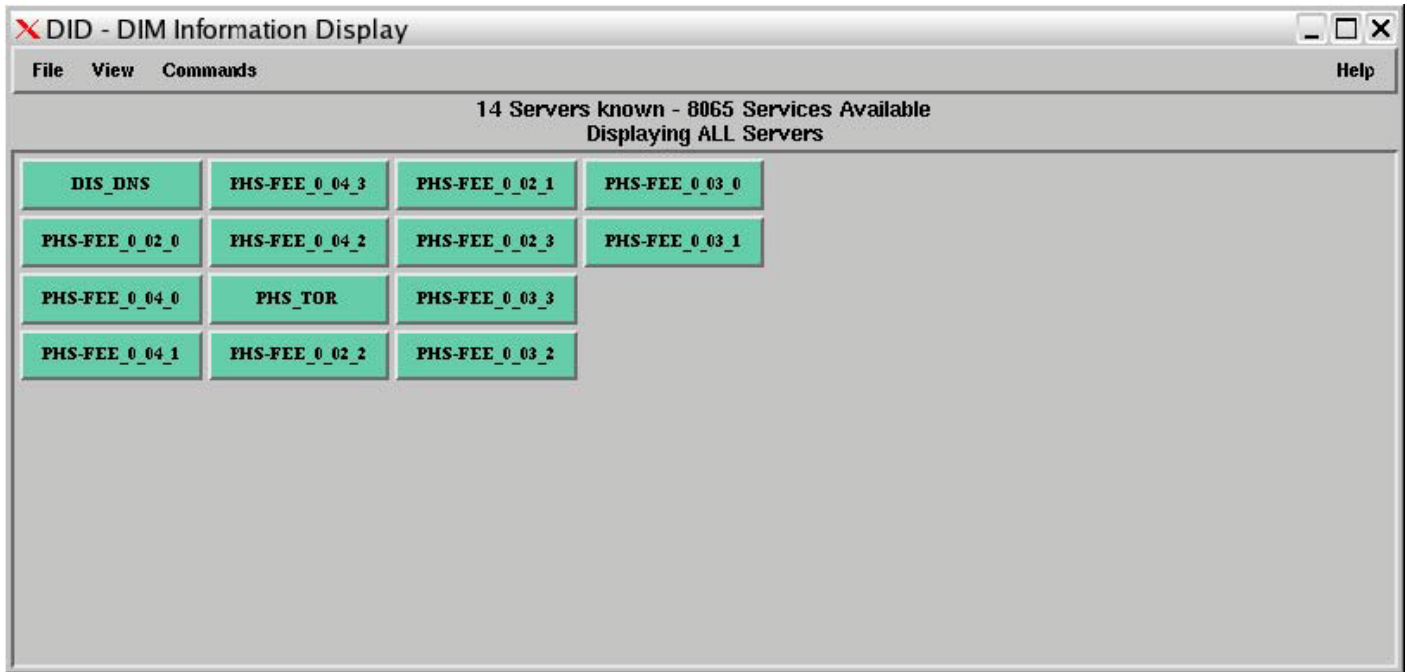
Checking the FEE Servers using did (before FEE switching ON and configuring)

If the did window is not running, it can be started from alidcscom075.

```
>ssh phs@alidcscom075
```

```
> did
```

Click **View** --> **All Servers**. The window is shown below:



There should be 16 buttons in this window. One DIS_DNS. One PHS_TOR. One PVSSSys91Man1::DIMHandler (not in Fig. above). One ztt_dimfed_server (not in Fig. above). 4 buttons for each module, PHS-FEE_0_0[2/3/4]_[0/1/2/3]. The first number indicates the module. If any of the PHS-FEE_0_0[2/3/4]_[0/1/2/3] buttons are missing, it means that the corresponding FEE servers are not running. To restart them, go to the directory **/home/phs/bin** on **alidcscom075** and run the script **all_phos_dcs_m2_reboot.sh** to reboot the FEE servers for module 2. The "m2" is replaced by "m3" and "m4" for modules 3 and 4, respectively. The PVSSSys91Man1::DIMHandler and ztt_dimfed_server are only there if the intercom layer is running. If the DIS_DNS button is missing one should execute **/usr/local/dcs/dim/linux/dns** on **alidcscom075**. **Note: After LV off long delay may occurred before the buttons will disappear.**

3. Global runs

Before PHOS can participate in a **global run**, the **DCS and DAQ locks** should be released from **aldaqacr48** and **aldaqacr 49**. The locks will be taken by the global DCS and DAQ shifters. Don't change the configuration or do anything with the phosgui when a global run is ongoing.

Before PHOS is handed over to global control, it should be checked that the detector is in good shape. A standalone run should be taken and there should be no errors. The **event size** for empty events should be consistent with **Appendix F**.

4. Standalone runs (Pedestal/LED)

Before starting, the control of the **DCS and DAQ locks** should be taken. Ask the shiftleader to release the locks if necessary. Make sure that all LV and HV channels are ON and that the **phosgui** is running. If it is not running, log on to alidcscom075 and start it:

```
>ssh phs@alidcscom075  
>cd phos_dcs/bin  
>./startgui.sh
```

Connect to the RCU/FEE cards by clicking **Connect --> Connection Settings** and select the RCUs to be read-out. Then click **Connect --> Connect Now**. Check that all FEE cards are ON by “**Update status**”. If they are not ON, check next section (“Cold start”) on how to turn them ON.

Select the number of pre-samples, samples, Zero-suppression (enable/disable), Sparse readout (enable/disable) according to the type of run. This is done by clicking on **Configure Electronics** in the **phosgui**. In the Configure Electronics window:

- Select number of pre-samples and samples, Zero-suppression (enable/disable), Sparse readout (enable/disable), threshold and offset (if applicable).
 - For pedestal run, select zero-suppression OFF and sparse read-out OFF. Select 11 presamples and 51 samples. **Do not set the threshold to 0.**
 - For LED run, select zero-suppression ON (threshold 3, offset 0) and sparse-readout ON. Select 11 presamples and 51 samples.
- Click Save and then Cancel.
- For each module, click “**Go Ready**”.

The configuration is done when information **stops flowing** in the **alidcscom075** window.

PHOS is now ready to take data. To take a **pedestal run**, proceed to start data taking.

For a **LED run**, the **LED system should be started** now.

This is done in the following way:

Click **FSM** panel on **MUI** – the **Top level DCS control** panel will appeared.

In Top level DCS control, click the button **PHS_DCS_RUN** (the lowest one) and choose the command “**CONFIGURE**”. In the window that appears, write “**LED**” in the space Value and click **Send**. This will start the LED system. In the Main GUI, the square LED flash at **11** should change **from blue to green** and the **run type** will change to **LED**.

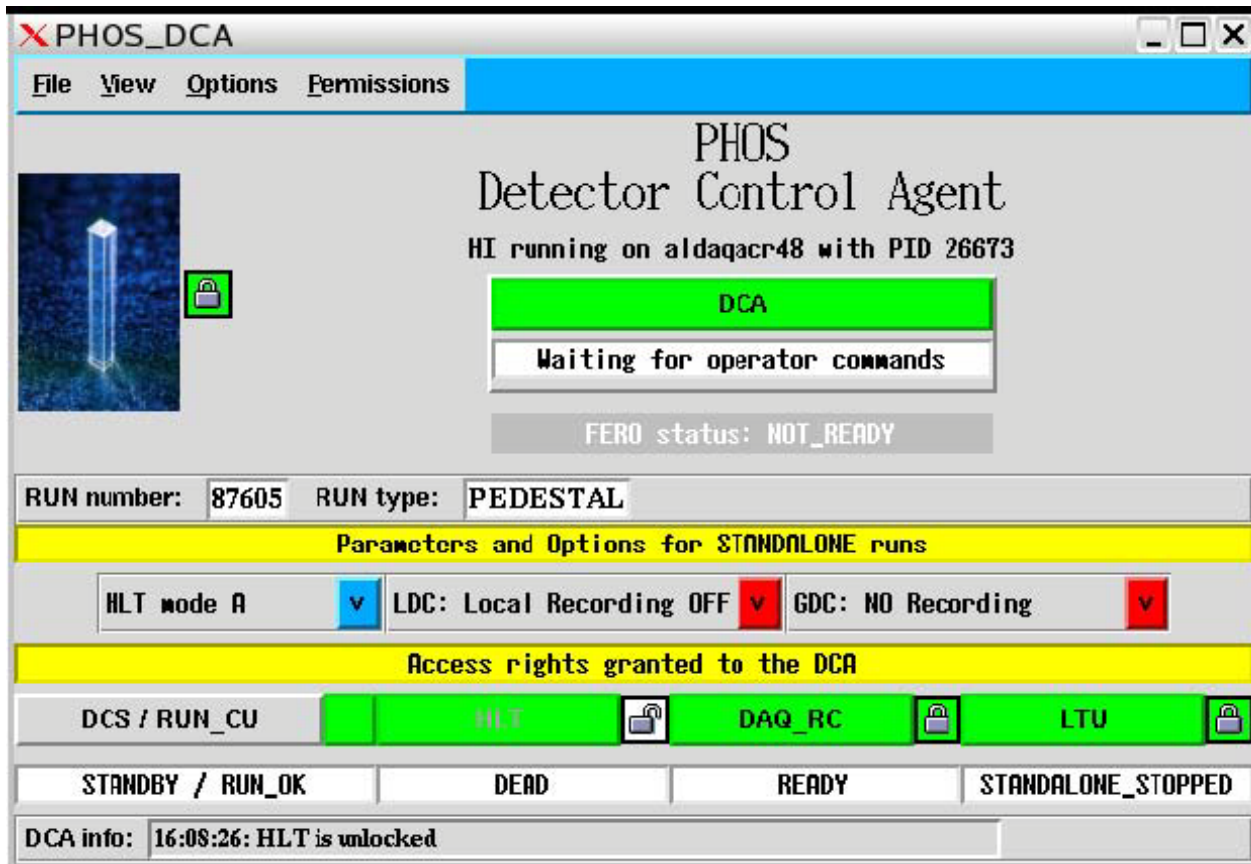
By default, the LED configuration will be **2554** (“saw” $f=200\text{Hz}$). To use a different one, open the LED-panel by clicking on LED at **5** in the Main GUI. Type the configuration at the top and select which modules to activate. Then proceed as above to start the LED system.

After finishing the LED run, you should click on the **PHS_DCS_RUN** button in the top level DCS control and select the command “**CONFIGURE**”. Type **PHYSICS** (or **PEDESTAL**) and click **Send**. The LED system will deactivated. The square LED flash at **11** in the Main GUI should change **from green to blue** and the **run type** will **change** to what is selected.

REMEMBER TO SWITCH OFF THE LED SYSTEM BEFORE STARTING ANY OTHER TYPE OF RUN.

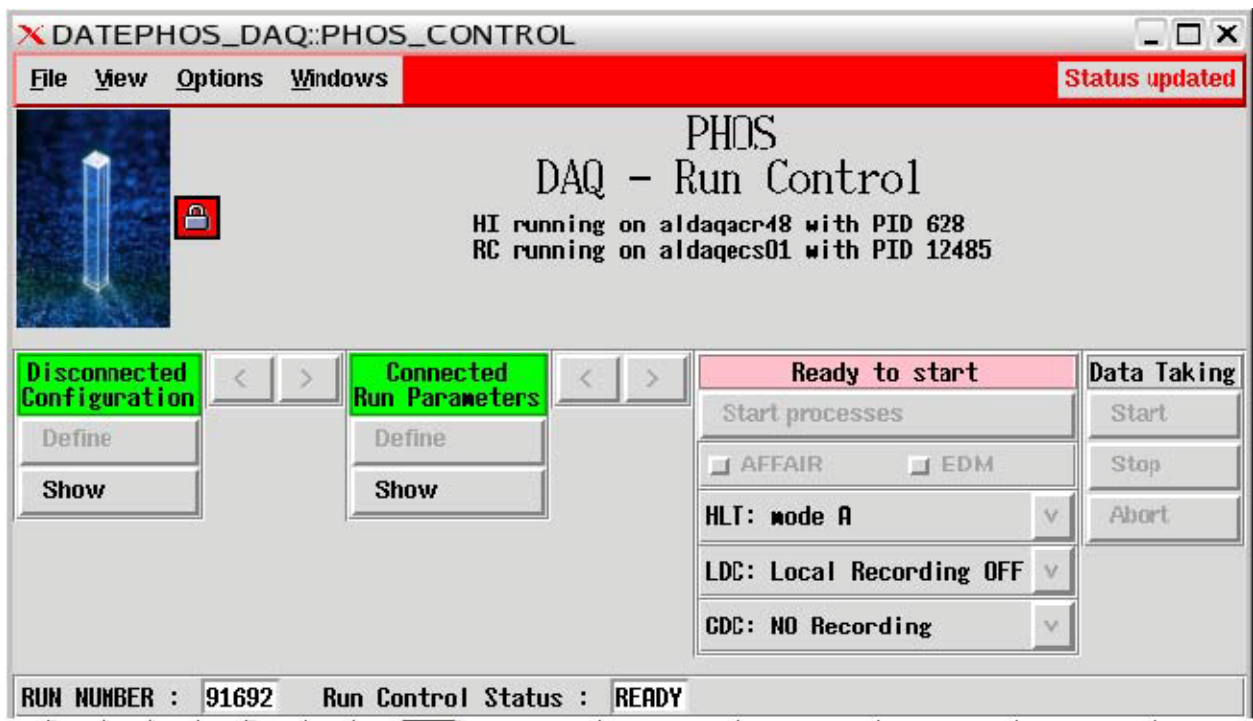
Start data taking

If the DAQ window (**PHOS_DCA**) is not open, open it by clicking on the 6th icon from the left in the lower panel (it's an Emacs icon and when the mouse hovers over it, it should say **DateHI**;



if there is no lower panel, do **ctrl-alt-enter** and it will appear). Choose **PHOS**.

If the padlock is red, ask the ECS operator to release DAQ control. Then click on the padlock and lock it. It should then be **green**, as in the figure above. Unlock the DAQ_RC padlock. Click on **view --> Show DAQ Control** to open the **DATEPHOS_DCA** gui (see below).



Lock the main **padlock** in this window (**DATEPHOS_DAQ**). Then, click the “>” arrow following “**Disconnected Configuration**”. Then click the “>” Following “**Connected Run Parameters**”. **Unlock the padlock** in this window.

Note: If one has to change which ddls that should be read-out, it can be done as follows (but this is something which should normally not be done by the shifter, more details are in the expert manual): click Define under “Disconnected Configuration”, then choose Detector, then choose PHOS. Select the LDCs that should be read-out. In the (small) ALICE DAQ window, click select equipment and mark the desired DDLs and click Commit. Login to alidescom075 and go to /nfs_export/dcbw/busy/busybox_files. Check that the right RCUs are included / commented out in the file bbinit_phos.sh.

Go back to the **PHOS_DCA** window. Lock the padlock **DAQ_RC**. **Unlock the HLT** padlock. The **DCA** frame should be **green**. Click on it **to start a Pedestal or LED** run.

When the run has started a new window will appear (**PHOS**). The number of events is shown under the **LDC status display** (number of subevents recorded).

To stop the run, click on **DCA** and select **stop_datataking**. It is recommended to run about 100 events for Pedestals and 10,000 events for LED runs.

To start the **transfer of data to alien**, click on “**File**” in the PHOS_DCA window and select **Start migration of data to Castor**.

To release DAQ control, click on DCA and select “**Release Resources**”, then unlock the main padlock in the PHOS_DCA window.

5. Switching on/off Power Supplies, “cold start”

Note: The HV should never be ON when any LV channel is OFF!

Switching **OFF power** should be done in the **following order**:

1. Ramp down the HV.
2. Turn OFF the FEE cards from the **phosgui**.
3. Turn OFF the LV (all channels, including 13 V).

Switching **ON power** should be done in the **following order** (note that this procedure normally takes 2-3 hours)

1. Switch ON LV and program the RCUs. For all Modules:
 - i) Switch ON the first **two** LV channels (**not the 13 V**).
 - ii) Program all the RCUs, 84-87, 92-95 and 88-91.
 - iii) Switch ON the remaining **three** LV channels (**not the 13 V**).
2. Open the **phosgui** and connect to all modules. Click “**reset**” and “**go ready**”.
3. Release the lock on the TOP level of DCS panel **PHS_PWS_TOP** – PHOS should be “**READY**” and **green**.
4. Do a test run (**PEDESTAL** or **LED**) and check that there are no **CDH errors**.
5. Turn ON the **FEE cards** (and **all TRUs**, if PHOS Trigger need).
6. Turn ON the **13 V** LV channel.

7. Stop **INTERCOM_LAYER** by commands on **alidcscom075** under **SU** (Super User) – “\$D111&phs”:

 >cd /etc/init.d

 >./jicl stop
8. Load and apply the APD settings (**311** by default). The process should be finished by “...success” messages.
9. Start **INTERCOM_LAYER** by command on **alidcscom075** under **SU**:
 >cd/etc/init.d (if need)
 >./jicl start
10. Configure electronics - “**GO READY**” for **M2, M3** and “**CONFIGURE**” and “**Enable Trigger**” for **M4**. (If need NO- default configuration – see point 7 on next page)
11. Turn ON HV.
12. If the TRUs did not turned ON earlier and should be read-out , they can be turned ON now.
13. Configure TRUs and TOR (see Trigger manual).

More details on how to Switch ON power:

1. Switch ON LV and program the RCUs.

Note that at this time all three PHOS Modules switch on the same way.

The Low Voltage (LV) is handled by the Main User Interface (MUI).

To open the LV controls, click on **PHS_PWS --> PHS_PWS_MODULE 2 -->**

PHS_PWS_LV_MODULE2 for LV of **M2**, and similarly for **M3** and **M4**.

Select the first **two** LV channels (**not the 13 V**). These are **WIE193_CH0, WIE193_CH2** for **M2**, **WIE191_CH0, WIE191_CH2** for **M3** and **WIE190_CH0, WIE190_CH2** for **M 4**.
Use the upper button of the **gui** and select “**Go Ready**”.

Note: all channels should be selected and turned on simultaneously using the top button; don't turn on each channel separately.

Program the RCUs by logging on to **alidcscom075** (ssh phs@alidcscom075). Go to the directory **/home/phs/bin** and run the script :

> **program_rcu_171109.sh [RCU]** , where [RCU] should be **84, 85, 86, 87** for **M2**
92, 93, 94, 95 for **M3** and **88, 89, 90, 91** for **M4**.

Go back to the LV control window and select the remaining **three** LV channels (**not the 13 V**). These are **WIE191_CH(4,6,8)** and **WIE190_CH(4,6,8)** for modules 3 and 4, respectively. Turn the channels ON using the upper button on FSM control panel and select **“Go Ready”**.

2. Start the **phosgui** if it is not already running.

To do this, log on to **alidcscom075** and go to the directory **/home/phs/phos_dcs/bin** and enter
> **. startgui.sh**

For more info on the **phosgui**, see page 5. In the **phosgui**, connect to all modules. Then click **“Go Ready”** for each module.

3. Do a **test run** (PEDESTAL run with NO- recording) and check that there are no **CDH errors**. How to do this is explained in the previous section **“Standalone runs”** under data taking. Take a pedestal run and check that at least 30 events are collected. Check the infoBrowser for CDH errors. If there is a CDH error, check which DDL produced it and restart the corresponding Module. If the module cannot be identified, all modules should be restarted. If after 3 attempts there are still problems, contact an expert.

4. The FEE cards are turned ON using the **phosgui**. If the **phosgui** is not already running, log on to **alidcscom075** , go to the directory **/home/phs/phos_dcs/bin** and enter

> **. startgui.sh**

For more info on the **phosgui**, see page 5.

Turning ON the RCUs should be done **one module at the time**.

- Click **connect --> connection** settings.

- Select the **DDLs** for one module.
- Click **connect-->connect now**.
- Click **reset**.
- To turn on the cards in one RCU, click “**ON**” in the **phosgui** (but check below for exceptions for **RCUs 0 and 2** in **M3** and **RCUs 0 and 3** in **M4**).

Repeat the steps above for all 3 modules. If the **phosgui** crashes, it can be restarted and the FFEs/RCUs that were turned ON will remain ON. To check which **RCU/FEE** that are **ON** use **Update Status** and continue to turn on the RCUs.

Note: Some of the RCUs and FEE cards in Module 3 and 4 require special attention

See Appendix K for actual FEEs status of all three PHOS Modules

For **M3, RCU 0**, turn ON the FEE cards in **Branch B** by hand, i.e. click on each card one at the time. The cards should turn **green**. Don't do anything with the cards in **Branch A**.

For **M3, RCU2** don't turn ON FEE cards in both brunches **at all**.

For **M4, RCU0**, turn ON the FEE cards in **Branch A** by hand, i.e. click on each card one at the time. The cards should turn **green**. Don't do anything with the cards in **Branch B**.

For **M4, RCU3**, turn ON all FEE cards *except card 7 and card A in Branch A* by hand.

5. To turn ON the **13V**, go back to the **LV window** on **alidcscom072**. Enable channel **WIE195_CH0** (for **M2**) and click “**GO READY**”. For **M3** and **M4**, the corresponding channels are **WIE195_CH4** and **WIE195_CH2**, respectively.

6. To load **APD settings**, go back to the **phosgui** and select one module. Then click **Configure Electronics**. In the new window:

- Select **APD settings** – The default is 311 for all modules (gain 50 at -25 C).
- **Load**.
- **Apply to module** (wait).

- status = 1 = **SUCCESS** should be seen in the bottom frame of the **phosgui** (it might be needed to scroll up to see this).
- click **cancel** .

Repeat the above for all 3 modules. Note that this may take up to 5 min per module.

7. Configure electronics (if need NO- default).

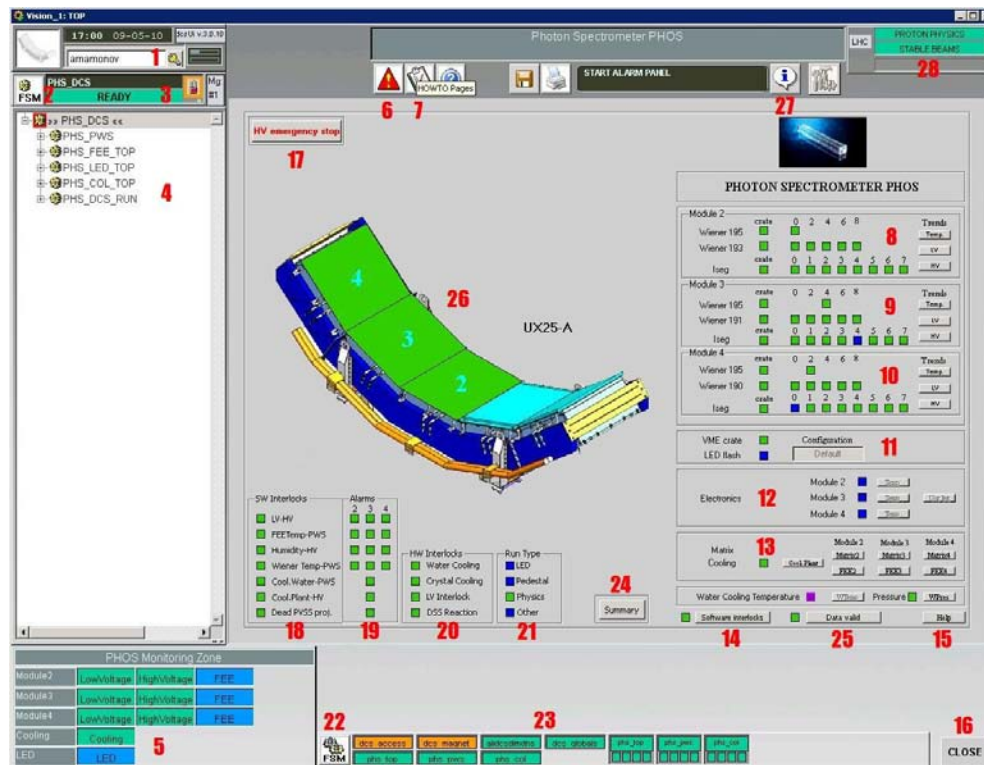
This can be done for all modules at the same time. Go to the **phosgui** and click **connection -> connection settings** and select all modules. Click **connect --> connect now**. Click **configure electronics**. In the Configure Electronics window:

- Select number of **pre-samples** and **samples**, **Zero-suppression (enable/disable)**, **Sparse readout (enable/disable)**, **threshold and offset (if applicable)**.
 - For **pedestal run**, select zero-suppression OFF and sparse read-out OFF. Select **11** presamples and **51** samples. **Do not set the threshold to 0.**
 - For **LED run**, select zero-suppression ON (threshold 3, offset 0) and sparse-readout ON. Select 11 presamples and 51 samples.
 - For **global (cosmics, collisions) runs**, select zero-suppression ON (threshold 3, offset 0) and sparse-readout ON. Select 11 presamples and 51 samples.
 - Click **Save** and then **Cancel**
 - For each module, click “**Go Ready**”.

8. Turn ON HV. This is done from the **MUI: PHS_PWS --> PHS_PWS_MODULE 2 --> PHS_PWS_HV_MODULE** for M2. (The panel is shown on page 12). **Enable** all channels and select “**GO READY**” in the top button. The similar commands for **M3** and **M4**.

The ramping takes about 30 mins.

APPENDIX A: Description of the Main User Interface (MUI)



Top left-hand corner:

- 1 User access window – for users' logins.
- 2 FSM-button (Finite State Machine) – Top level of DCS control – for controlling LV, HV (Power Supply - PWS), LED, FEE, Matrix Cooling Machine, Run Control Unit (in order to choose the type of run). Press **FSM** button to begin the process of controlling.
- 3 (PHS_DCS) - Info-window – describes the state of the system.

Left side:

- 4 <<PHS_DCS>> -the hierarchical tree of subsystems.

Bottom left-hand corner:

- 5 PHOS Monitoring Zone – quick access to the info about the state of the systems.

Top:

6 Alarm –current alarms information.

7 Manual -PHOS DCS Manual – 2007 ([1]).

Right side:

8 ÷ 10 - Indicators of PWS system state for 2, 3, 4 PHOS modules.

11 - Indicators of LED monitoring system state.

12 - Indicators of FEE electronics system state (which is now in progress).

13 - Indicators of Matrix Cooling system state & Temperatures and Humidity.

14 - Software Interlocks – Software Interlocks status.

15 - Help – general information about the status' colours.

Bottom right-hand corner:

- 16 - Close** -in order to close the Main User Interface. To start MUI once more after closing
- Start → PHOS**

Top center:

17 - PHS Go Safe – Moving all the PHOS modules to safe mode (turning off all HV channels).

Bottom:

18 -19 - SW (Software) Interlocks and their Alarms.

20 - HW (Hardware) Interlocks.

21 - Run Type.

22 - FSM (see below) – Stop/Start/Restart of all FSM - **ONLY IN THE LAST RESORT!!!**



PHOS FSMs Control Window, it appears after clicking LM on 22 - FSM

23 - ALICE DCS monitoring zone – is in progress

24 - DCS summary panel (see App.H)

25 - Data Valid panel – give the information about interlocks and alarms.

You should wait ~ 1 min before information will arise.

26 - PHOS modules general status.

27 - Message sender to other detectors.

28 - LHC Beam general status.

For more details – click on 7 (PHOS Detector Control System Manual - 2007([1])).

The status colours

Dark blue -system is not ready, switched off or is in standby state; HV/LV is off.

Yellow - system is in the intermediate state (ramping, cooling etc.).

Orange - no connection with the device.

Green - system is ready to work; HV/LV is on.

Red – an error or an incorrect operation of the device or system of devices.

Click **15** for **Help** – displays general information about status colours.

Getting info

T°, LV, HV currents over time-zone 8 ÷ 10 Trends, Temp. , LV , HV or zone 5

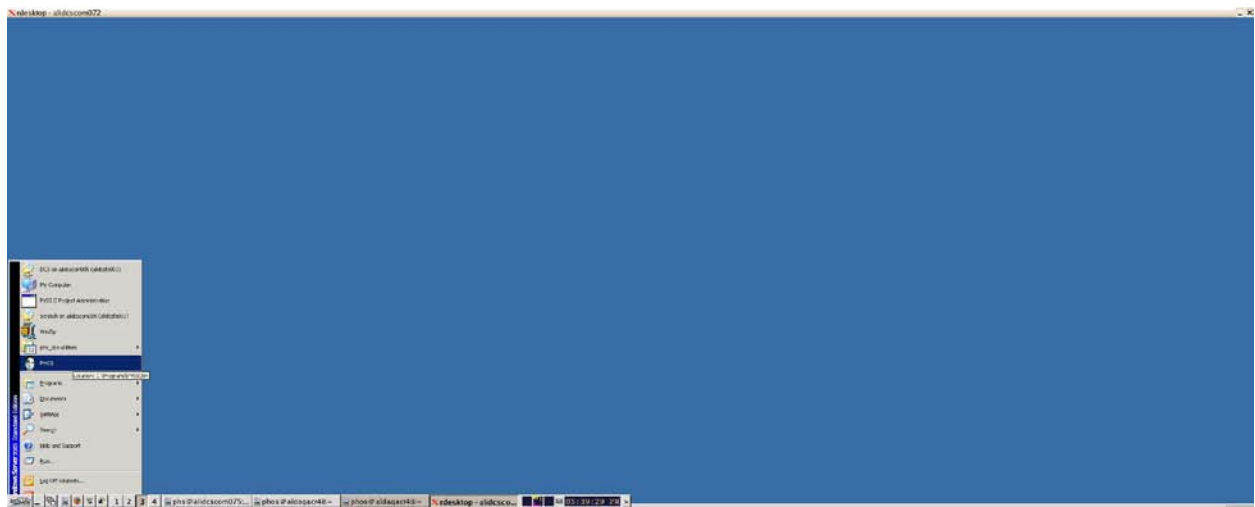
Matrix Cooling, Water Cooling Pressure -zone 13 or zone 5

LED -zone 11 or zone 5

Devices status – zone 4 – LM button, then RM button → View.

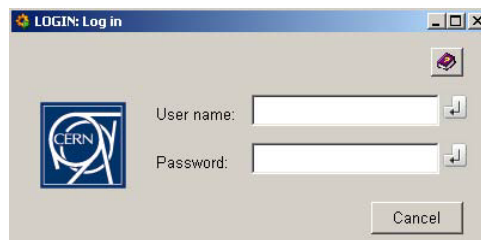
How to start Mui manually

Click **Start – PHOS** to start **MUI** manually:



For **automatic MUI start** put **D:\Shortcut to PVSS_startup_file.bat** into the **Start/Programs/Startup** folder.

Then you should be authorized once more by entering your **NICE login** and **password** into PHOS DCS access window NICE login NICE password :



APPENDIX B: The DCS Padlocks

DCS Padlocks

_Padlock is unlocked – it means that the control is free, and anyone can take over.

To take control - (LM button -**TAKE**)

To release control - (LM button - **RELEASE_ALL**)

Padlock is locked – it means that the system is under control.

In **yellow** frame – something excluded – control over part of the system.

In **orange** frame - something excluded – control over part of the system and/or shared control.

Green – only we have control.

Blue – we share control with someone.

Grey - nobody has control.

Orange (red) – someone takes control.

Strikethrough – if this mark appears on any of the padlocks, even after you have taken control, the subsystem corresponding to this padlock will still be uncontrolled. In order to take over this subsystem unlock the padlock.

APPENDIX C: The PHOS interlocks and alarms

Interlocks were made to save our detector in case of emergency state and/or incorrect operator reaction. In case of error the interlock switches the system into safe mode and informs the shifter.

1. HW-Interlocks

Water Cooling Plant Hardware Interlock.

Crystal Cooling Plant Hardware Interlock.

LV power crate Hardware Interlock.

DSS reaction on Hardware Interlock.

When an error occurs in any of these subsystems, all LV crates are blocking (switching off without the possibility to restart by the operator).

If any HW-Interlock is in action – the square changes colour (zones 18 ÷ 20).

Only ALICE DCS operators can unblock HW-Interlocks.

2. SW-Interlocks

LV-HV Interlock

If any PHOS module has HV without LV, interlock switches off the HV in emergency mode (50 V/sec) after 30 seconds delay.

FEE-Temp-PWS Interlock

If the temperature of any “warm” volume of the PHOS module is higher than 55 degrees Celsius, the interlock stops the HV of this module. If the temperature is equal to Dew Point Temperature, the interlock stops the HV of this module.

Humidity – HV Interlock

If the humidity in “warm” volume of the PHOS module is above 50%, interlock stops all HV (0.5V/sec) for this module.

Water Pressure-PWS Interlock

If water pressure of FEE water cooling is more than 1000 mbar, the interlock stops all HV (0.5 V/sec) and then LV for all PHOS modules.

Cooling Plant-HV Interlock

If the Matrix Cooling Plant is in state of an error or does not respond for 15 minutes, the interlock stops all HV(0.5 V/sec) after 15 minutes delay.

If any SW-Interlock is in action, the appropriate square changes its colour (zones 18 ÷ 20).

3. Description of the PHOS alarms conception and recommendations for shifter's actions

Alarm system works accordingly with a rule that for some representative variables (like voltage, current, power, temperature, humidity, etc.) there are 3 consecutive thresholds after which the messages are generated for shifter to attract his/her attention that an **error** state is incoming. Mentioned thresholds are ordered with increase of danger levels. If the value 1st of a variable exceeds the threshold the message is classified as "**warning**", after 2nd exceeding of the threshold - "**alarm**" and, at last, at reaching of the 3rd threshold "**danger**". An operator can see these messages with additional accompaniment of the description of needed actions.

The current list of alarms is as follows:

3.1. "Cold" volume temperature alarm.

- **Warning:** $+25^{\circ}\text{C} \leq t < +30^{\circ}\text{C}$; pay attention to the high temperature level inside the "cold" volume of PHOS module, check the state of the PHOS matrix cooling plant and the water cooling system.
- **Alarm:** $+30^{\circ}\text{C} \leq t < +35^{\circ}\text{C}$; switch off the power of the alarmed PHOS module, check the state of the PHOS matrix cooling plant and the water cooling system, inform the PHOS Run Coordinator.
- **Danger:** $t \geq +35^{\circ}\text{C}$; immediately switch off the power of the alarmed PHOS module, check the state of the PHOS matrix cooling plant and the water cooling system, inform the PHOS Run Coordinator.

3.2. "Warm" volume temperature.

- **Warning:** $+35^{\circ}\text{C} \leq t < +45^{\circ}\text{C}$; pay attention to the high temperature level inside the "warm" volume of PHOS module, check the state of the FEE temperature sensors, PHOS matrix cooling plant and the water cooling system.
- **Alarm:** $+45^{\circ}\text{C} \leq t < +50^{\circ}\text{C}$; pay attention to the high temperature level inside the "warm" volume of PHOS module, check the state of the FEE temperature sensors, PHOS matrix cooling plant and the water cooling system, inform the PHOS Run Coordinator.
- **Danger:** $t \geq +50^{\circ}\text{C}$; switch off the power of alarmed PHOS module, check the state of check the state of the FEE temperature sensors, PHOS matrix cooling plant and the water cooling system, inform the PHOS Run Coordinator.

3.3. Humidity in the "cold" volume.

- **Warning:** $70\% \leq h < 80\%$; pay attention to the high humidity level inside the "cold" volume of the PHOS module.
- **Alarm:** $80\% \leq h < 85\%$; pay attention to the high humidity level inside the "cold" volume of the PHOS module, inform the PHOS Run Coordinator.
- **Danger:** $h \geq 85\%$; pay attention to the high humidity level inside the "cold" volume of the PHOS module, inform the PHOS Run Coordinator.

3.4. Humidity in the "warm" volume.

- **Warning:** $40\% \leq h < 50\%$; pay attention to the high humidity level inside the "warm" volume of the PHOS module.
- **Alarm:** $50\% \leq h < 60\%$; pay attention to the high humidity level inside the "warm" volume of the PHOS module, inform the PHOS Run Coordinator.
- **Danger:** $h \geq 60\%$; switch off the HV power of the alarmed PHOS module, inform the PHOS Run Coordinator.

3.5. Dew point temperature (not implemented).

- **Warning:** the temperature inside the "warm" volume of the PHOS module is close to the dew point temperature (3 Degrees).
- **Alarm:** the temperature inside the "warm" volume of the PHOS module is close to the dew point temperature (2 Degrees), inform the PHOS Run Coordinator.
- **Danger:** the temperature inside the "warm" volume of the PHOS module is around or less than the dew point temperature, switch off the HV power for the alarmed PHOS module, inform the PHOS Run Coordinator.

3.6. LED VME crate.

- **Warning:** VME crate is off or doesn't respond, inform the PHOS Run Coordinator.

3.7. Cooling water pressure.

- **Warning:** $975 \leq p < 985$ mBar; pay attention to the high level of the water cooling pressure.
- **Alarm:** $985 \leq h < 995$ mBar; switch off the power for all PHOS modules, inform the PHOS Run Coordinator.
- **Danger:** $h \geq 995$ mBar; immediately switch off the power of all PHOS modules in the emergency mode, inform the PHOS Run Coordinator.

3.8. Wiener LV temperature.

- **Warning:** $45^{\circ}\text{C} \leq t < 55^{\circ}\text{C}$; pay attention to the high level of the Wiener channel temperature.
- **Alarm:** $55^{\circ}\text{C} \leq t < 65^{\circ}\text{C}$; switch off the power of the PHOS module, where the alarmed LV Wiener channel presents, inform the PHOS Run Coordinator.
- **Danger:** $t \geq 65^{\circ}\text{C}$; immediately switch off the power in the emergency mode of the PHOS module, where the alarmed LV Wiener channel presents, inform the PHOS Run Coordinator.

3.9 HV currents for each Iseg channel.

- **Warning:** $10 \leq I < 12$ mA; pay attention to the high level of the HV channel current of the Iseg HV power supply;
- **Alarm:** $12 \leq I < 14$ mA; be ready to get an error state because of the HV channel over-current, inform the PHOS Run Coordinator;
- **Danger:** $h \geq 14$ mA; switch off the alarmed HV channel, inform the PHOS Run Coordinator.

3.10. Wiener LV device doesn't respond (not implemented).

- **Warning:** Wiener PL512 LV crate doesn't respond for 3 minutes, pay attention to the Wiener LV crate connection problem;
- **Alarm:** Wiener PL512 LV crate doesn't respond for 5 minutes, inform the PHOS Run Coordinator.

3.11. Iseg HV channel doesn't respond (not implemented).

- **Warning:** Iseg HV device doesn't respond for 10 minutes, keep the LV power for the alarmed PHOS module, pay attention on Iseg HV device connection problem;
- **Alarm:** Iseg HV device doesn't respond for 20 minutes, keep the LV power for the alarmed PHOS module, inform the PHOS Run Coordinator.

4. Alarm screen

Alarm screen reflects full information about alarms in the ALICE setup.

PHOS shifter selects the messages with prefix "**PHOS**", all others ones are used for general information. To activate this screen click on the **red triangle banner** with exclamation mark in the top left part of the ALICE Main User Interface (**MUI -button 6**), you will see:

Sh	Device DP element	Logical name	Description	Alarm text	Dir	Value	Ack	Time
W	dcs_ui:SERVICESIDCS_GASIDCS_GAS.hasAlarms			FSM Remote Alarm	CAME	TRUE		2008/08/19 08:5
W	dcs_ui:SERVICESIDCS_GASIDCS_GAS.			FSM Summary	CAME	TRUE		2008/08/19 08:5
W	dcs_globals:L3BSF17.Temperature			NO CONTROL	CAME	0 °C	x	2009/07/07 18:1
Da	dcs_globals:FieldMap.FieldMapAvailable			Field Map NOT AVAILABLE	WENT	TRUE	!!!	2009/12/17 12:0
A	dcs_globals:Magnet/ALICEDipole.EmSDown			Dipole Emergency ShutDown	CAME	TRUE	!!!	2009/12/17 12:0
A	dcs_globals:Magnet/ALICESolenoid.EmSDown			Solenoid Emergency ShutDown	CAME	TRUE	!!!	2009/12/17 12:0
W	phs_col:Wiener/CAN8/Crate1.General.Status.GetPowerOn			PHOS: VME create is off.	CAME	FALSE	!!!	2009/12/17 14:0
A	dcs_globals:dip/ts/CSAM/SL-L02-AS-0703-ALARME.alarm		ALARME PX24	Level 3 Alarm	WENT	FALSE	!!!	2009/12/18 07:3
A	dcs_globals:dip/ts/CSAM/SL-L02-AS-0715-ALARME.alarm		ALARME PX24	Level 3 Alarm	WENT	FALSE	!!!	2009/12/18 08:2
A	dcs_globals:csamSummaryAlert.alert		CSAM	Level 3 alarm(s)	WENT	FALSE	!!!	2009/12/18 09:0
A	dcs_globals:dip/ts/CSAM/SL-L02-AS-0702-ALARME.alarm		ALARME PM25	Level 3 Alarm	WENT	FALSE	!!!	2009/12/18 09:0
W	dcs_globals:dip/ts/CSAM/Alive.connected			Alive counter stopped	WENT	TRUE	!!!	2009/12/21 12:5

Click Right Mouse button on any message on this screen, then choose **“alarm help”**, and you will see the window with instructions on what to do for this alarm:

Alarm Help

VME create is off.

Warning VME crate is off or doesn't respond, inform PHOS Run Coordinator.

Action

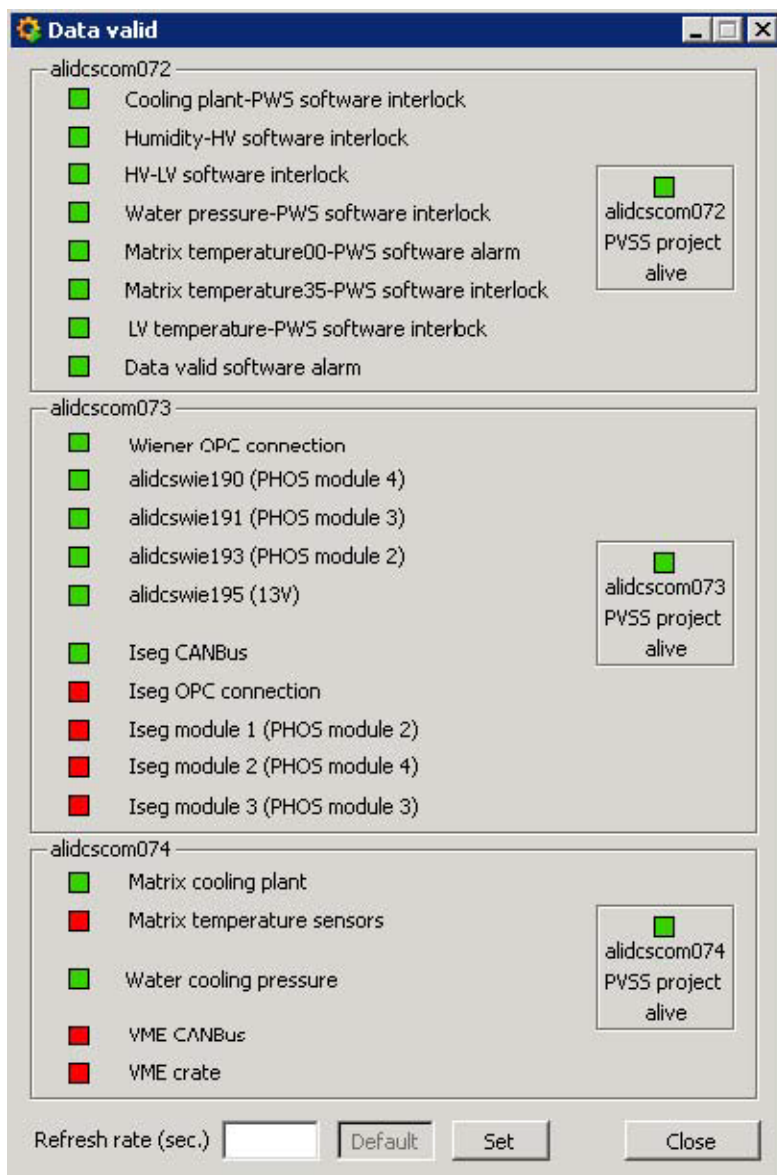
Read the description above.

Contact details

Name: Joakim Nystrand
Email: Joakim.Nystrand@cern.ch
Phone: Tel: 73601 GSM: 160273

5. Data valid screen

Data valid screen gives full information about status of the PHOS interlocks and alarms with control that different PVSS projects on machines 072, 073, 074 are alive and respond to the main DCS. Each item is presented by a color square. The color of correspondent square is green for normal situation, otherwise if the system does not respond for time greater than 5 s the square becomes red. To activate this screen push the virtual button "**Data Valid**" in the lower right part of the ALICE Main User Interface (MUI), you will see:



Appendix D: Association of RCUs with DDLs and LDCs.

Module	LDC	DDL	RCU	alidcsdcb15NN
2	M3-00-01	1800	0	84
		1801	1	87
	M3-02-03	1802	2	86
		1803	3	85
3	M4-00-01	1804	0, branch A excluded	95
		1805	1	94
	M4-02-03	1806 excluded	2, branch A&B exclud	93
		1807	3	92
4	M5-00-01	1808	0, branch B excluded	88
		1809	1	89
	M5-02-03	1810	2	90
		1811	3,FEE7&A in br.ex	91

TOR

72

Appendix E: PHOS Computers at Point2.

alidcscom001	DCS gateway, with external in-out connection
aldaqacr39	DAQ control
aldaqpc067	DAQ LDC
aldaqpc065	DAQ GDC
aldaqdqml6	DAQ monitoring, to run DAQ DA
alidcscom075	DCS linux, NFS server for alidcsdcbXXXX
alidcscom026	Trigger to run LTU emulator
alidcscom072	DCS windows Server for PVSS
alidcscom073	DCS PWS
alidcscom074	DCS Cooling Plant
alidcsdcb1557	BB
alidcsdcb1573	LED VME
alidcsdcb1584- alidcsdcb1587	RCU

Appendix F: Events sizes

The event sizes per LDC for empty events with Zero Suppression (threshold 3) should be

M3-00-01	M3-02-03	M4-00-01	M4-02-03	M5-00-01	M5-02-03	
2.3	2.4	2.0	1.1	1.2	1.2	kByte

Deviations up to ± 1.0 kByte are OK.

For pedestal runs without Zero Suppression the event sizes should be

M3-00-01	M3-02-03	M4-00-01	M4-02-03	M5-00-01	M5-02-03	
330	330	330	245	245	318	kByte

For LED runs, the event sizes will vary with the LED settings.

Appendix G: Voltages and currents

Typical LV voltages and currents (everything ON)

Module 2	Ch. 0	Ch. 2	Ch. 4	Ch. 6	Ch. 8	13.5 V
LV [V]	4.6	4.2	5.0	5.8	7.2	13.7
I [A]	22	51	64	12	45	15
Module 3	Ch.					
LV [V]	4.6	4.1	5.0	6.1	7.1	13.7
I [A]	20	44	60	11	45	19
Module 4						
LV [V]	4.7	4.2	5.0	6.1	7.0	13.6
I [A]	26	45	58	10	40	13

Typical HV voltages and currents

Module 2	V = 395 V*	I = 8 mA*
Module 3	V = 395 V	I = 8 mA
Module 4	V = 350 V	I = 7.0 - 7.5 mA

*except HV channel 7, V=350V, I \simeq 11mA.

Appendix H: PHOS DCS Summary panel

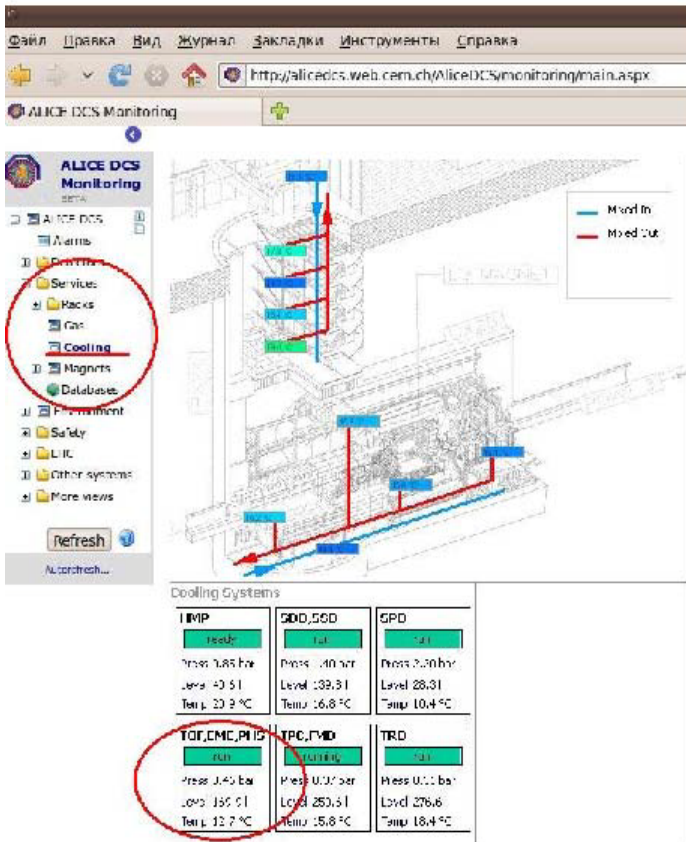
To be convinced that the detector is in a safe, efficient condition, the following parameters should be checked:

1. Check the list of urgent messages PHOS (panel “**Alarm screen**” , available from MAIN DCS GUI - 6)
2. Check the status of interlocks on panel “**PHOS DCS summary**” , available from MAIN DCS GUI - Summary
3. Check the status of **Cooling Plant (PHOS)** DCS summary.
4. Check the **temperature and pressure** of **FEE water cooling** Pressure - PHOS DCS summary. It should be ~ 500-800 mBar. Temperature and pressure are available from

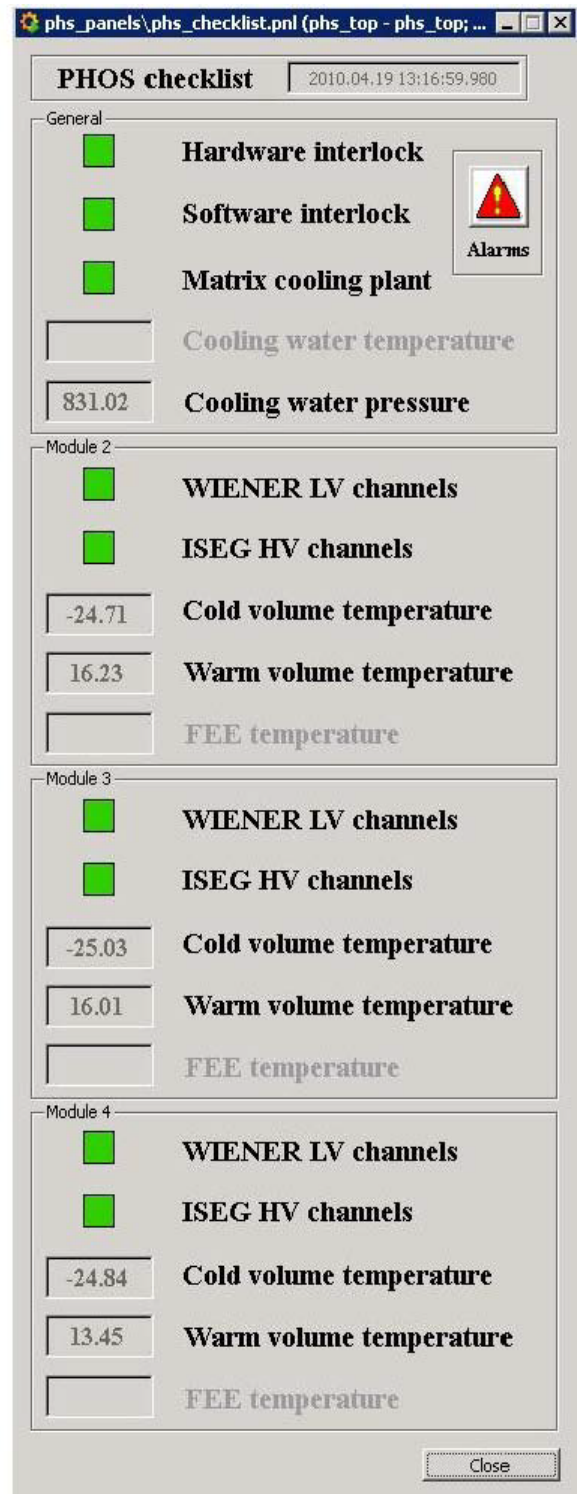
<http://alicedcs.web.cern.ch/AliceDCS/monitoring/main.aspx>

Typical values are **Press 0.45 bar, Level 216.7, Temp 8.6°C**

- Check the status of **LV** (PHOS DCS summary).
- Check the status of **HV** (PHOS DCS summary).
- Check an average **cold volume temperature** (PHOS DCS summary),
It should be -24°÷-26°C.
- Check an average **warm volume temperature** (PHOS DCS summary),
It should be 10°÷25°C.



Checking of the temperature and pressure of the FEE water cooling (ALICE cooling water plant).



PHOS DCS summary

Appendix I: Some information about PHOS construction

PHOS consists of two parts: **cold volume** and **warm volume**, that separated from each other by some isolated structure.

The **cold volume** for each module contains 64x56 crystals with preamplifiers (CSPs), Avalanche Photo Diodes (APDs) and Light Emitting Diodes (LEDs) for monitoring. The crystals and APDs show best production parameters by temperature -25°C , that is supported by Cooling Plant, that operates cooling liquid temperature and humidity. In the **cold volume** for each module there are 24 temperature sensors and 3 and humidity-sensors, which also show the temperature. *Average level of **cold volume** temperature should be around -25°C , average level of humidity should be about $\sim 40\%$.*

The **warm volume** for each module contains 28x4 Front End Cards (FEEs) electronic cards (for 32 channels each) in copper boxes. In phos_gui (see below) these cards are marked as $1 \div 9$, $A \div E$, and connected with 4 Readout Control Units $\text{RCU0} \div \text{RCU3}$ and with 8 Trigger Readout Units TRU. All electronics are cooling by water from the ALICE – contour under the negative pressure. *Water temperature data is not included in PHOS DCS GUI yet (but available from web form, see below).* There are FEE's own temperature sensors (*import in PHOS DCS GUI is in progress*) and 8 temperature sensors and 2 humidity-sensors, which also measure the temperatures. *Average **warm volume** temperature should be around $+13^{\circ}\text{C}$. However, when FEEs are switched off, temperature may reach $+6^{\circ}\text{C}$. When the temperature is around $+6^{\circ}\text{C}$, there is a danger of appearing water on FEE cards. Average humidity should be around 5% .*

There is ALICE water cooling cycle, which pass through PHOS modules and cools electronics. The same water passes through PHOS **warm volume**, **EmCal**, **TOF** and **CPV**. The **warm volume** and **cold volume** are separated by isolating partition. To minimize the humidity level, nitrogen passes through the PHOS module volumes. Independently from PHOS module volumes there are;

- Low Voltage power supplies – **WIENER** crates cooling by water from the ALICE contour. *Average temperature of each crate channel should be around 20°C .*
- High Voltages HV power supplies – **ISEG crates** cooling by air fan. *Average current level of each ISEG channel should be around 8mA (see Appendix F).*
- **LED** monitoring system, consists of VME crate and **LED** cards are situated in pit, cooling by air fan.
- **Matrix Cooling Plant. It's not the same with ALICE water cooling contour.**

Appendix K: Actual status of the PHOS modules FEEs

ConnectSettings

Module 0Module 1Module 2Module 3Module 4PHOS Detector

	Front End Cards Branch B	Front End Cards Branch A	TRU A/B	Actions
RCU 0	EDCBA987654321	123456789ABCDE	A B	<div>Update Status</div> <div>OnOff</div> <div>RCU View</div>
RCU 1	EDCBA987654321	123456789ABCDE	A B	<div>Update Status</div> <div>OnOff</div> <div>RCU View</div>
RCU 2	EDCBA987654321	123456789ABCDE	A B	<div>Update Status</div> <div>OnOff</div> <div>RCU View</div>
RCU 3	EDCBA987654321	123456789ABCDE	A B	<div>Update Status</div> <div>OnOff</div> <div>RCU View</div>

GO READY

RESET

Module Properties

Configure Electronics

Enable Trigger

Disable Trigger

11:32:37: INFO: Starting Logger...

11:32:37: INFO: DcsInterface::Init: Adding FeeServer with name: PHS-FEE_0_02_0. For Module #: 2 and RCU ID: 0. Coord: x = 0, z = 0

11:32:37: INFO: DcsInterface::Init: Adding FeeServer with name: PHS-FEE_0_02_1. For Module #: 2 and RCU ID: 1. Coord: x = 1, z = 0

11:32:37: INFO: DcsInterface::Init: Adding FeeServer with name: PHS-FEE_0_02_2. For Module #: 2 and RCU ID: 2. Coord: x = 2, z = 0

11:32:37: INFO: DcsInterface::Init: Adding FeeServer with name: PHS-FEE_0_02_3. For Module #: 2 and RCU ID: 3. Coord: x = 3, z = 0

11:32:37: INFO: FEE Client successfully started.

11:32:38: INFO: PhosDetector::DisArmTrigger: Disarming trigger for PHS-FEE_0_02_0

11:32:39: INFO: PhosDetector::DisArmTrigger: Disarming trigger for PHS-FEE_0_02_1

11:32:40: INFO: PhosDetector::DisArmTrigger: Disarming trigger for PHS-FEE_0_02_2

11:32:41: INFO: PhosDetector::DisArmTrigger: Disarming trigger for PHS-FEE_0_02_3

ConnectSettings

Module 0Module 1Module 2Module 3Module 4PHOS Detector

	Front End Cards Branch B	Front End Cards Branch A	TRU A/B	Actions
RCU 0	EDCBA987654321	123456789ABCDE	A B	<div>Update Status</div> <div>OnOff</div> <div>RCU View</div>
RCU 1	EDCBA987654321	123456789ABCDE	A B	<div>Update Status</div> <div>OnOff</div> <div>RCU View</div>
RCU 2	EDCBA987654321	123456789ABCDE	A B	<div>Update Status</div> <div>OnOff</div> <div>RCU View</div>
RCU 3	EDCBA987654321	123456789ABCDE	A B	<div>Update Status</div> <div>OnOff</div> <div>RCU View</div>

GO READY

RESET

Module Properties

Configure Electronics

Enable Trigger

Disable Trigger

11:32:37: INFO: Starting Logger...

11:32:37: INFO: DcsInterface::Init: Adding FeeServer with name: PHS-FEE_0_02_0. For Module #: 2 and RCU ID: 0. Coord: x = 0, z = 0

11:32:37: INFO: DcsInterface::Init: Adding FeeServer with name: PHS-FEE_0_02_1. For Module #: 2 and RCU ID: 1. Coord: x = 1, z = 0

11:32:37: INFO: DcsInterface::Init: Adding FeeServer with name: PHS-FEE_0_02_2. For Module #: 2 and RCU ID: 2. Coord: x = 2, z = 0

11:32:37: INFO: DcsInterface::Init: Adding FeeServer with name: PHS-FEE_0_02_3. For Module #: 2 and RCU ID: 3. Coord: x = 3, z = 0

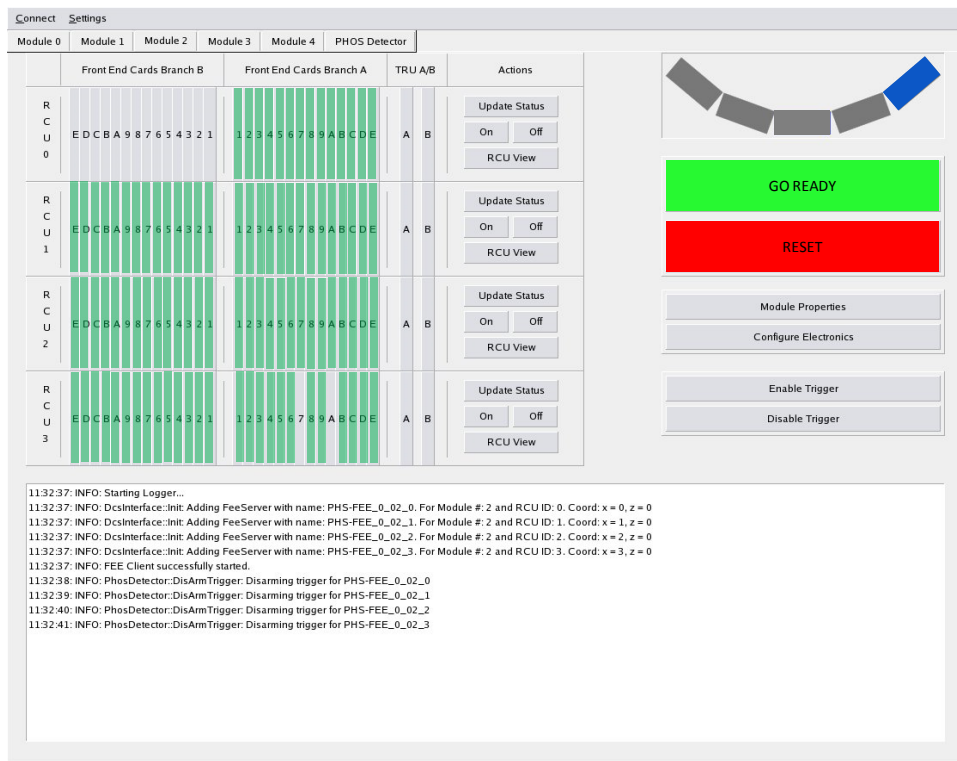
11:32:37: INFO: FEE Client successfully started.

11:32:38: INFO: PhosDetector::DisArmTrigger: Disarming trigger for PHS-FEE_0_02_0

11:32:39: INFO: PhosDetector::DisArmTrigger: Disarming trigger for PHS-FEE_0_02_1

11:32:40: INFO: PhosDetector::DisArmTrigger: Disarming trigger for PHS-FEE_0_02_2

11:32:41: INFO: PhosDetector::DisArmTrigger: Disarming trigger for PHS-FEE_0_02_3



GLOSSARIUM

MUI -ALICE Main User Interface

RM - Click Right Mouse Button

DRM – Double Click Right Mouse Button

LM - Click Left Mouse Button

DLM – Double Click Left Mouse Button

PWS – Power Supply

CDH – Common Data Header

REFERENCES

[1] PHOS DCS Manual – 2007 <https://aliceinfo.cern.ch/PHOS/Documents/manuals.html>

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