



## **A User Guide to the ACAM High Level Software**

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Craige Bevil

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**Isaac Newton Group,  
Apartado 321, 38780 S/C La Palma,  
Tenerife, Canary Islands**

Telephone      +34 922 425400  
Fax              +34 922 425401  
Internet        [cb@ing.iac.es](mailto:cb@ing.iac.es)

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## Chapter 1 Document History

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0.2	12/06/09	Added details of agacam and acamcomp.  Also updated the details of the <b>acamwh1init</b> and <b>acamwht2</b> commands	Craige Bevil
0.3	15/06/09	Updated the screen grabs of the control panel after updating the positioning and the labels associated with the mirrors.  Added the <b>agmirror</b> command. Removed the <b>acamcomp</b> command and replaced it with <b>acamcal</b> .  Added the <b>acaminitall</b> command.	Craige Bevil
1.1	06/10/09	Added the <b>acamspec</b> and <b>acamimage</b> commands	Craige Bevil

## **Chapter 2 Introduction**

The purpose of this document is to provide a comprehensive user guide to the ACAM high level software which runs on the WHT instrument control system. The intended audience of this document are the visiting astronomers, ING support astronomers and engineers.

The document will describe the command line programs and the graphical applications through which the user can control and review status upon the ACAM instrument.

## **Chapter 3 Glossary**

This section contains a *glossary* of the terms which are used throughout the document.

### **3.1 MIMIC**

A MIMIC is graphical representation of a system which updates in real-time to continually reflect the current state of the underlying hardware system. There are many applications for such a tool at the observatory, much of the hardware deployed at the ING benefits from a graphical representation of it's state.

### **3.2 GUI**

A *graphical user interface* will permit the user to control and monitor the status of the mechanisms which comprise the ACAM PLC system via a windows/graphical based application.

### **3.3 PLC**

The mechanisms associated with the ACAM system are controlled by a *Programmable Logic Controller* (PLC) microprocessor system based upon the ControlLogix development platform. These controllers are characterised by their reliability and robustness. Communication between the high-level software control system and the PLC system is via Ethernet.

### **3.4 Controls**

In the context of a graphical user interface, a *control* is a *graphical device* upon the interface which can be used to *effect control* over some aspect of the ACAM PLC system. Controls can take many different forms depending on it's intended function. Drop-down menus, dial controls and buttons are some of the controls which are used throughout the system.

## Chapter 4 Starting the System

This chapter describes the configuring of the observing system that needs to be performed before the user can successfully run an ACAM-based observing system.

### 4.1 Host Machine Requirements

The ACAM software system can be run upon any Solaris host computer which has been configured to allow the observing system to run upon it. The computing group can verify the machines which are currently available for this purpose but at the time of writing this document, the following machines may be used :

- lpss39
- taurus
- lpss94

It is necessary to log onto these machines as user **whlobs**. The password for this account can be provided to you by the computing group or your support astronomer.

The operational machine which is used for night time science operations is **taurus**.

### 4.2 Configuring the Observing System

After successfully logging onto one of the observing system computers listed above as user **whlobs**, it is then necessary to set up the observing system using the **obssys** command. After executing the command, the current list of instruments configured into the observing system will be displayed upon the *taurus* console. In addition to any other instruments, the instrument ACAM **must** be included in this list.

If this is not the case, the following command should be executed in order to modify the configuration.

**obssys -c**

After executing the above command you will be provided with an option to edit the configuration file which can be done by entering option **c** and then pressing return.

A text editor will be started in which the observing system configuration may be edited. You **must** include one camera which is associated with the ACAM instrument. Note that the name of the instrument is **ACAM** and *not* AUXCAM. If you select AUXCAM as the name of the instrument, the headers will be incorrectly collected for integrations which are performed upon the ACAM instrument.

After saving the configuration file using the **Ctrl-s** key and closing the editor down using the **Ctrl-x Ctrl-c** key combination, keyboard focus will be returned to the pink window once again. You should then choose option **1**. A configuration summary will be displayed within the console window. If your modified configuration was a success, you will see that one of the instruments will now be listed as be ACAM.

### 4.3 Starting the Observing System

The user may run the observing system by executing the command **startobssys** from the pink taurus console window. The system will take in the order of about four to five minutes to start.

## **Chapter 5 The ACAM Command Line Programs**

The ACAM instrument control system can be driven using two distinct methods; graphically or via the command line.

There is a comprehensive suite of command line applications that will allow the control of all of the features of the ACAM instrument control system. This chapter provides an guide to the use of these commands.

All of the commands listed in the following sections must be exercised in the pink observing window on the observing system console computer **taurus** whilst logged in as user **whlobs**.

### **5.1 Slit mask control**

This section outlines the means by which the slit mask mechanism may be controlled from the high level control system.

#### **5.1.1 Moving the slit mask - acamslit**

The slit mask may be moved using the **acamslit** command from the whtics instrument control console.

The syntax of the command is as follows :

**acamslit** [-p <raw position in slit slide>] | *Slitwidth* | *Named Position*

The named position should be the name of the optical element as defined by the filter management system for the optical elements which are deployed in this mechanism.

Slit width may be one of the following expressed in arcsecs.

- 0.5
- 0.75
- 1
- 1.5
- 2
- 10

The command will return a non-zero exit status should it be unable to complete the action during the allocated time otherwise the command should return a zero exit status on successful completion.

#### **5.1.2 Initialising the Slit Mask Mechanism - acamslitinit**

The slit mechanism can be initialised using the **acamslitinit** command. The command takes no parameters and will return a non-zero exit status should it be unable to initialise the mechanism during the allocated time.

The command returns a zero exit status on successful completion.

The high-level control system will offload the focus offsets associated with any optical components deployed into the light path by the ACAM instrument to the telescope control system. The focus offset will **only** be applied if the feature is enabled in the ACAM instrument controller (see 5.9).

#### **5.1.3 Stopping the slit mask mechanism - acamslitstop**

Should it be required to do so, the operator can stop the slit mask mechanism from moving using the command :

**acamslitstop**

The command will return a non-zero exit status should it be unable to complete the action during the allocated time otherwise the command should return a zero exit status on successful completion.

**5.2 ACAM Wheel 1 Control**

This section describes the command line scripts which are provided to control the ACAM wheel 1 mechanism.

**5.2.1 Moving ACAM wheel 1 - acamwh1**

ACAM wheel 1 may be moved using the **acamwh1** command from the whtics instrument control console.

The syntax of the command will be as follows :

**acamwh1** [name of optical component | 1..7]

The optical component name corresponds to the name of a filter/disperser element which has been allocated to a position in this mechanism via the filter database. Alternatively the user can specify the desired position as an *integer* number between one and seven to indicate the *raw* position in the mechanism.

The command will return a non-zero exit status should it be unable to complete the action during the allocated time otherwise the command returns a zero exit status on successful completion.

The high-level control system will offload any focus offset associated with any deployed optical component to the telescope control system. The focus offset will **only** be applied if the feature is enabled in the ACAM instrument controller (see 5.9).

**5.2.2 Initialising the ACAM wheel 1 mechanism - acamwh1init**

The ACAM wheel 1 mechanism can be initialised using the **acamwh1init** command.

The command takes no parameters and returns a non-zero exit status should it be unable to initialise the mechanism during the allocated time otherwise the command returns a zero exit status on successful completion.

The high-level control system will offload the focus offsets associated with any optical components deployed into the light path by the ACAM instrument to the telescope control system after the command has completed. The focus offset will **only** be applied if the feature is enabled in the ACAM instrument controller (see 5.9).

**5.2.3 Stopping the ACAM wheel 1 mechanism - acamwh1stop**

Should it be required to do so, the operator can stop the ACAM wheel 1 mechanism from moving using the command :

**acamwh1stop**

The command takes no arguments.

The command returns a non-zero exit status should it be unable to complete the action during the allocated time otherwise the command returns a zero exit status on successful completion.

**5.3 ACAM Wheel 2 Control**

This section describes the command line scripts which will be provided to control ACAM wheel 2.

### **5.3.1 Moving the ACAM wheel 2 - acamwh2**

ACAM wheel 2 may be moved using the **acamwh2** command from the whtics instrument control console.

The syntax of the command will be as follows :

**acamwh2** [optical component name | 1..7]

The optical component name corresponds to the name of a filter/disperser element which has been allocated to a position in this mechanism via the filter database. Alternatively the user can specify the desired position as an *integer* number between one and seven to indicate the *raw* position in the mechanism.

The command returns a non-zero exit status should it be unable to complete the action during the allocated time otherwise the command returns a zero exit status on successful completion.

The high-level control system offloads any focus offset associated with the deployed optical component to the telescope control system after the mechanism has been moved. The focus offset will **only** be applied if the feature is enabled in the ACAM instrument controller (see 5.9 for more details).

### **5.3.2 Initialising the ACAM wheel 2 mechanism - acamwh2init**

The ACAM wheel 2 mechanism can be initialised using the **acamwh2init** command.

The command takes no parameters and returns a non-zero exit status should it be unable to initialise the mechanism during the allocated time otherwise the command should return a zero exit status on successful completion.

The high-level control system will offload the focus offsets associated with any optical components deployed into the light path by the ACAM instrument to the telescope control system after the command has completed. The focus offset will **only** be applied if the feature is enabled in the ACAM instrument controller (see 5.9).

### **5.3.3 Initialising all ACAM mechanisms - acaminitall**

After opening the ACAM access door it is necessary to re-initialise all of the mechanisms. The **acaminitall** command can be used to initialise **all** of the mechanisms simultaneously.

### **5.3.4 Stopping the ACAM wheel 2 mechanism - acamwh2stop**

Should it be required to do so, the operator can stop the ACAM wheel 2 mechanism from moving using the command :

**acamwh2stop**

The command takes no arguments.

The command returns a non-zero exit status should it be unable to complete the action during the allocated time otherwise the command returns a zero exit status on successful completion.

## **5.4 The agmirror Command**

The **agmirror** command can be used to deploy the mirrors located in the A&G box. The command takes a single argument which is the name of the mirror which is to be deployed.

The syntax of the command is as follows :

**agmirror <mirror>**

Following is a list of the mirrors which can be deployed :

- ACAM
- ACAMCAL
- ACQCOMP
- SLITVIEW

### **5.5 Deploying the ACAM Flat – agacam**

The *acam feed* position in the A&G box is now used to reflect sky light into the ACAM instrument. This can be done with the following command :

**agacam**

This command takes a short while to complete.

### **5.6 Deploying the ACAM Calibration Flat - acamcal**

The *acam calibration* mirror position in the A&G box is now used to reflect light from A&G calibration source into ACAM.

This flat can be deployed using the command

**acamcal**

The command takes a short while to complete.

### **5.7 Configuring for Spectroscopy – acamspec**

The **acamspec** command can be used to configure the ACAM instrument for spectroscopy.

The syntax of the command is as follows :

**acamspec [-h] <disperser> <slit> [filter name]**

Parameter	Notes
<Disperser>	The disperser specified must be a <i>disperser</i> which is currently deployed in wheel 2 of ACAM
<Slit>	This should be a valid slit position which can be one of 0.5, 0.75, 1, 1.5, 2 or 10.
<Filter Name>	Optional parameter. The name of a filter to be deployed in wheel one. If no filter is specified, wheel one will be set to a <b>clear</b> position.
-h	Display usage information

After all the mechanisms have been set to their demanded positions, the system will then *refocus* the telescope according to the focus offsets associated with the optical components that have been placed in the light path.

Examples of use :

acamspec V400 0.5

Select V400 disperser and position slit to the 0.5" position.

acamspec V400 1.5 GG495

Select V400 disperser and position slit to the 1.5" position and select the filter GG495 in wheel one.

## 5.8 Configuring for Imaging – acamimage

The **acamimage** command can be used to configure the ACAM instrument for imaging.

The syntax of the command is as follows :

**acamimage [-h] <filter name> [slit]**

Parameter	Notes
<filter name>	<p>This should be the name of a filter which is currently deployed in one of the ACAM wheels.</p> <p>The command will automatically position the other wheel to a <b>clear</b> position.</p> <p>If the user specifies <b>clear</b> for the filter position, a <b>clear</b> position will be selected for both wheel 1 and wheel 2.</p> <p>If the user specifies <b>nochange</b> for the filter position then the position of wheel 1 and wheel 2 will not be changed.</p> <p>If the filter specified on the command line is found deployed in the slit unit mechanism, wheel 1 and wheel 2 will be set to the <i>clear</i> position and the slit unit will be configured such that the demand filter specified is deployed into the lightpath. In this case, any slit position specified will be ignored.</p>
<Slit>	<p>This should be a valid slit position which can be one of 0.5, 0.75, 1, 1.5, 2 or 10.</p> <p>If not specified it will be set to one of the clear positions.</p>
-h	Print usage instructions for the command

After all the mechanisms have been set to their demanded positions, the system will then *refocus* the telescope according to the focus offsets associated with the optical components that have been placed in the light path.

Examples of use :

**acamimage RGOV2**

*Select filter RGOV2 and put the slit mechanism into the clear position*

**acamimage RGOV2 1**

*Select filter RGOV2 and put the slit mechanism into the 1" position*

## 5.9 Controlling the Telescope Focus

The ACAM instrument control system by default applies a focus correction to the telescope depending on the optical elements which have been deployed into the light path by the various ACAM mechanisms. This feature can be *enabled* and *disabled* using the following command.

**acam\_focus [enabled|disabled|<telescope focus value>]**

The user will be able to enable and disable the automatic telescope focus offsets by specifying the parameter **enabled** and **disabled** respectively. The user should note that an automatic telescope focus offset update *will* be applied when the focus offset feature is enabled. The focus offset applied to the telescope will be determined by the optical components which are currently deployed within the light path by ACAM.

Should the user wish to, he can specify an *absolute* telescope focus offset value which will be applied to the telescope.

When the ACAM control system is started, this feature is enabled by default.

## Chapter 6 The Graphical Applications

The ACAM instrument control system includes a number of graphical applications which can be used to determine status and control the instrument. The design intention was to ensure there was consistency with the existing instrument control applications thus providing a level of familiarity to any user who has experience of the instrument control system at the WHT.

### 6.1 The ACAM Control GUI

The application described in this subsection allows graphical control of the ACAM instrument. It is normally started by default by the observing system but should it be necessary to restart the application, the following command can be executed from the pink taurus console window.

#### **4MSControl -panels “ACAM CAGB” &**

Note that it is essential that the rest of the observing system is *already* operational when you execute this command.

The interface is divided up into instrument control panels. There are control panels for the CAGB instrument which is described in [1] in addition to the control panels for the ACAM instrument.

These panels are described in the following sections.

### 6.2 Colour Coding

When a *status value* associated with a mechanism is in an *error* state, the text associated with the status item will be highlighted in **red**.

When a mechanism is *moving*, the control associated with that mechanism will be *insensitive* to user interaction and any status text associated with it will be coloured **blue**.

Should there be an outstanding *warning* associated with a mechanism, any status text field associated with that mechanism will be highlighted with a **yellow** background.

### 6.3 Icons

A number of icons buttons are used throughout the GUI in order to perform specific tasks. Care has been exercised to ensure that the *meanings* of each of the icons is *consistent* across not just the control panels which are used to operate the ACAM instrument, but also the rest of the other WHT instruments.

A summary of the icons which are used within the application follows.

<i>Icon</i>	<i>Semantics</i>
	This icon signifies that when this button is pressed, the associated mechanism will be <i>initialised</i> .
	This icon signifies that when this button is pressed, the associated mechanism will <i>move</i> to the demanded position.
	This icon signifies that when this button is pressed, the displayed position of the associated mechanism will be updated to that of the <i>current</i> mechanism position and as such, will

<i>Icon</i>	<i>Semantics</i>
	override any <i>demand</i> position which may have been entered by the user.
	This icon signifies that when this button is pressed, the associated mechanism will be <i>stopped</i> should it be moving.

## 6.4 The ACAM Observer Panel

The purpose of the *ACAM observer panel* is to provide all of the facilities necessary to control any of the mechanisms associated with ACAM related observing.

The ACAM Observer panel is shown in Illustration 1: ACAM Observing Panel.

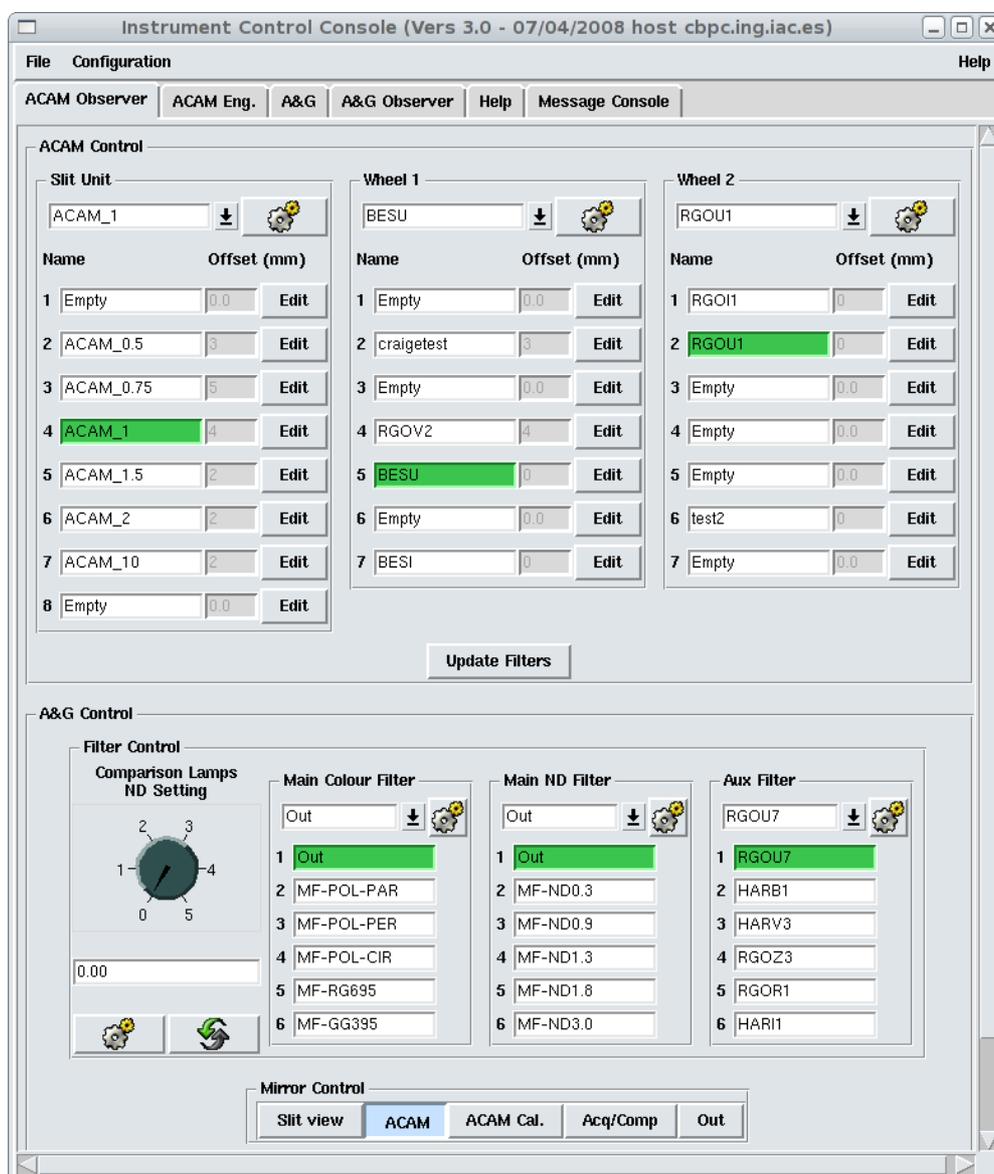


Illustration 1: ACAM Observing Panel

## 6.4.1 The ACAM Mechanism Control

From the ACAM observer control panel, the user may control **any** of the three ACAM mechanisms which are listed below :

- Slit unit
- Wheel One
- Wheel Two

In order to change the position of any of these mechanisms, the user should choose the demand position from the associated drop-down menu and press the *move mechanism* button (see below).



Illustration  
2: The Move  
Mechanism  
Button

Below each drop-down menu is a list of **all** of the positions in the respective mechanism and the optical elements which are assigned to them.

The *current mechanism position* deployed into the light path is highlighted in green.

The screenshot shows the ACAM Control panel with three main sections: Slit Unit, Wheel 1, and Wheel 2. Each section has a drop-down menu for the mechanism name and a table of positions with associated optical elements and focus offsets. The current mechanism position is highlighted in green.

Slit Unit		
Name	Offset (mm)	
ACAM_1	0.0	Edit
1 Empty	0.0	Edit
2 ACAM_0.5	3	Edit
3 ACAM_0.75	5	Edit
4 ACAM_1	4	Edit
5 ACAM_1.5	2	Edit
6 ACAM_2	2	Edit
7 ACAM_10	2	Edit
8 Empty	0.0	Edit

Wheel 1		
Name	Offset (mm)	
BESU	0.0	Edit
1 Empty	0.0	Edit
2 craigetest	3	Edit
3 Empty	0.0	Edit
4 RGOV2	4	Edit
5 BESU	0	Edit
6 Empty	0.0	Edit
7 BESI	0	Edit

Wheel 2		
Name	Offset (mm)	
RGOU1	0	Edit
1 RGOU1	0	Edit
2 RGOU1	0	Edit
3 Empty	0.0	Edit
4 Empty	0.0	Edit
5 Empty	0.0	Edit
6 test2	0	Edit
7 Empty	0.0	Edit

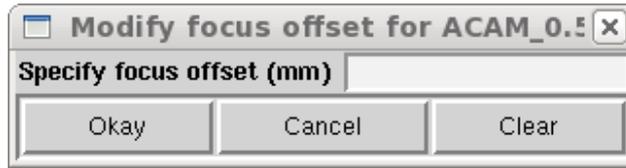
Update Filters

Illustration 3: ACAM Observer Mechanism Control Panel

Each position in each of the mechanisms has associated with it a **focus offset**. This represents the *focus offset* which will be *offloaded* to the telescope control system when this *specific* position in the mechanism is deployed into the light path.

The *focus offsets* associated with *each* of the optical elements deployed within the mechanisms are stored within the filter management system [2]. The user may *edit* a focus offset of an optical element by pressing the associated button labelled **Edit**.

The following dialogue window will be displayed through which the user may enter the revised *focus offset* value.



Once the user is satisfied with the new focus offset value, he should press the button labelled **Okay** to apply the change. This change will be stored permanently in the filter management system as the *focus override* value associated with that optical element.

Should the user wish to modify the focus offsets from the filter management system [2], he must modify the *focus override* setting associated with the optical element. It will then be necessary to press the **Update Filters** button (see 6.4.1.2) in order to synchronise the information displayed upon the panel with that which is in the filter management system.

### 6.4.1.1 Telescope Focus Offsets

When the user changes the position of any of the ACAM mechanisms, should automatic focus offsets be *enabled* (see 5.9), a focus offset will be calculated based on the characteristics of the optical components which are deployed by ACAM into the light path. This focus offset will then be applied to the telescope. The focus offset which is applied to the telescope is the *sum* of the focus offsets associated with the optical elements that are currently deployed in the three ACAM mechanisms.

It is possible to *disable* the automatic focus compensation by using the ACAM engineering panel (see page 18) or alternatively using the **acam\_focus** command (see page 12).

Telescope focus offsets are **enabled** by default when the ACAM instrument control system is started with the observing system.

### 6.4.1.2 The Update Filters Button

At the foot of the ACAM observer mechanism control panel is a button labelled **Update Filters**. Its purpose is to force the application to synchronise the details of the displayed optical elements and focus offsets with those that are currently defined in the filter management system.

This should be done **after** the user has modified the filter/disperser configuration of the ACAM mechanisms using the filter management system.

### 6.4.2 The A&G Box Mechanism Control

The lower half of the ACAM observing control panel is dedicated to the control of mechanisms located within the Acquisition and Guidance Box (CAGB). Although the A&G box is considered a separate instrument, both the former and ACAM are used in conjunction with one another to achieve scientific output. More information about the A&G box can be found in [1]

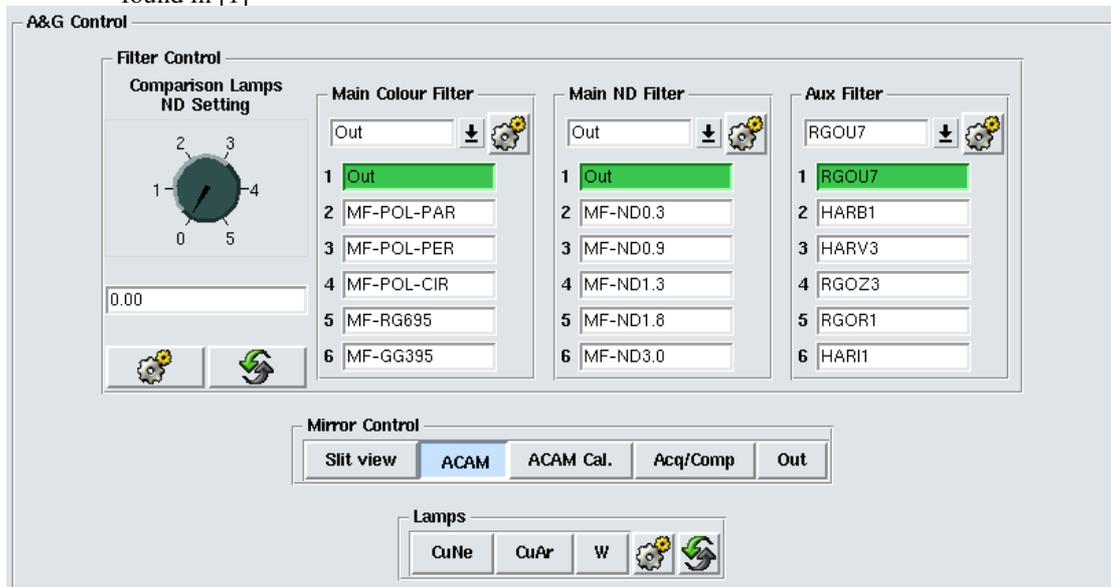


Illustration 4: A&G instrument control panel

### **6.4.2.1 Controlling the A&G Filters**

The control of the filters located in the A&G box is identical in manner to the control of the various mechanisms located within the ACAM instrument. The user should select the optical component that he would like to have deployed into the optical path using the drop-down menus. To instruct the mechanism to move to the selected position, the user should press the button which contains the *wheel* icon.

### **6.4.2.2 Controlling the Mirrors in the A&G Box**

There are four mirrors located within the A&G box.

- Slit view
- ACAM flat
- ACAM Cal
- Acquisition and comparison

The user may deploy only **one** of these mirrors into the optical path at a time. This can be done by pressing the button corresponding to the mirror he would like to be deployed into the optical path. This operation takes quite some time to complete.

The *ACAM flat* mirror will be used to direct skylight into the ACAM instrument. The ACAM cal. mirror will be used to reflect light from the calibration source in the A&G box into the instrument.

### **6.4.2.3 Controlling the lamps in the A&G box**

There are three lamps located within the A&G box which may be used for calibration purposes which are listed below :

- CuNe
- CuAr
- W

The user may switch on any one of the lamps by pressing the button with the label associated with the desired lamp.

### **6.4.2.4 Controlling the Neutral Density Filters**

Two of the filter wheels located within the A&G box are loaded with neutral density filters. By combining the effect of the various filters located in both of these wheels, the system can offer the user a *wide range* of neutral density settings.

The user can use the dial to select the desired neutral density setting and then the application will calculate which combination of filters will approximate to the *demanded* neutral density setting. To execute the change, the user should press the button with the wheel icon to apply the demanded neutral density setting.

## **6.5 The ACAM Engineering Control Panel**

The purpose of the ACAM engineering control panel is to provide status information and control to the engineers which is normally *outside* the scope of normal astronomical operations. It is not intended to be used by visiting astronomers or support astronomers during the evening.

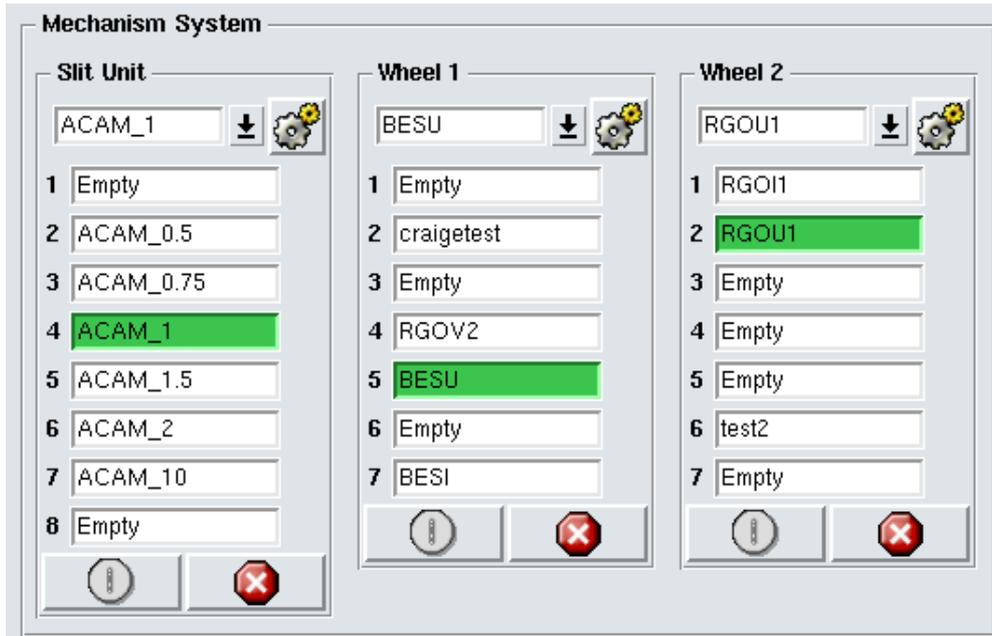


Illustration 5: ACAM Mechanism Engineering Control Panel

## 6.5.1 The ACAM Mechanism Engineering Panel

The ACAM mechanism engineering panel (see page 19) contains three mechanism controls that are used to change the position of the slit unit, wheel one or wheel two. If you change the position of these mechanisms through this control panel, **no focus offset** will be applied to the telescope.

In order to change the position of any of the mechanisms in this panel, the user should use the drop-down menus, select the new demand position and then press the *move mechanism* button.

### 6.5.1.1 Stopping a mechanism movement

Associated with **each** mechanism in the ACAM engineering panel is a button which may be used to stop the mechanism whilst it is in motion. The button contains a stop icon and looks as follows :

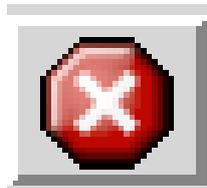


Illustration 6:  
Mechanism Stop  
Button

### 6.5.1.2 Initialising a mechanism

Associated with **each** mechanism in the ACAM engineering panel is a button which may be used to *initialise* the mechanism. It may be necessary to *initialise* the mechanisms after the ACAM PLC system has been restarted or after the access door has been opened.

The button contains a *power on button* icon and looks as follows :

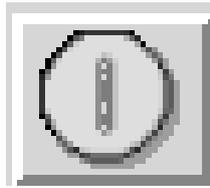


Illustration 7:  
Initialise  
mechanism button

## **6.5.2 The ACAM Engineering Status Panel**

The purpose of the ACAM engineering status panel is twofold.

- It provides engineering information from various sensors located within the ACAM PLC system.
- It provides information relating to the various modes of operation that are supported by the system.

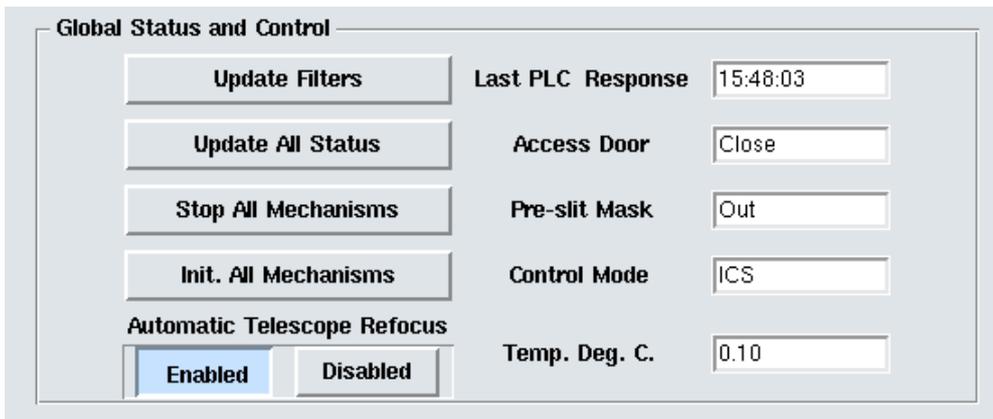


Illustration 8: Engineering global status

### **6.5.2.1 The Update Filters Button**

The **Update Filters** button may be used to update the lists of filters which are displayed in the panel. This should normally be done *after* a user has updated the filter management system [2] to ensure that the application is in *synchronisation* with the database.

This feature behaves in a similar manner to the one described in section 6.4.1.2. It is a limitation of the software that this button will need to be pressed on both panels after the optical element configuration of the mechanisms displayed in the panels has been changed.

Irrespective of the focus offsets which are displayed in the instrument control panels, the ACAM instrument control system **will always consult the filter management system database** in order to ascertain the focus offset associated with the optical element in question.

### **6.5.2.2 The Init. All Mechanism Button**

The Init. All Mechanism button can be used to simultaneously initialise all of the mechanism with ACAM at the same time. It is intended to be used after the user has opened the access

door and it is necessary to reinitialise all of the mechanisms before they can be moved once again.

### **6.5.2.3 The Update All Status Button**

The **Update All Status** button may be used to instruct the ACAM PLC system to return a status update for all of the mechanisms which it controls.

### **6.5.2.4 The Stop All Mechanisms Button**

The **Stop All Mechanisms** button may be used to instruct the ACAM PLC system to *stop* the motion of all currently moving mechanisms within the system.

### **6.5.2.5 The Automatic Telescope Refocus Control**

The **Automatic Telescope Refocus** control is used to instruct the instrument controller system to either *enable* or *disable* automatic focus offsets which are normally applied to the telescope whenever one of the ACAM mechanisms is moved from either the observer control GUI or the command line applications.

Each optical component deployed into the ACAM mechanisms has associated with it a *focus offset*. The normal mode of operation is that following a mechanism movement, the system calculates the *sum* of the focus offsets for the three optical components which are currently deployed into the ACAM optical path and then applies the offset to the telescope focus.

### **6.5.2.6 The Last PLC Response Status**

This status field indicates the time of the *last handshake* from the ACAM PLC system. It is an indication as to whether the ACAM PLC is responsive or not.

### **6.5.2.7 The Access Door Status**

This status item indicates whether the ACAM access door is either *open* or *closed*. Whenever this door is in the *open* state, all movement of mechanisms will be interlocked. All mechanisms controls will be displayed in red to indicate the interlock condition. After the access door has been subsequently closed once again, it will be necessary to initialise **all** of the ACAM mechanisms once again (see page 19).

### **6.5.2.8 The Pre-slit Mask Status**

This mechanism is located in front of the slit mechanism in the light path. It is used in conjunction with the slit mechanism and the user has no control over its operation. Whenever a mask is selected in the slit unit, the pre-slit mask should be in the **In** position.

### **6.5.2.9 The Control Mode Status**

From the ACAM engineering station which is located in the WHT control room, the operator can change the mode of the ACAM PLC such that it will **ignore** all mechanism movement requests from the high-level software. This status value indicates whether the ACAM PLC system is in *engineering mode* or whether it is in *ICS control mode*. Only when the system is in *ICS control mode* can the user control the ACAM PLC system from the high level system.

### **6.5.2.10 The Temperature Status**

Located within the ACAM PLC system is a temperature sensor. This status item reflects the current reading from that temperature monitor and is expressed in degrees centigrade.

## 6.6 The ACAM Mimic

The purpose of the ACAM mimic is to provide the user with a *real-time graphical overview* of the status of the system. The ACAM mimic encompasses both the ACAM instrument and the A&G box. In addition it provides a representation of the progress of the light throughout the system.

The mimic will automatically be started by the observing system when ACAM is configured into the observing system configuration.

### 6.6.1 Restarting the MIMIC

Normally the mimic is started automatically when the observing system is started. Should it be necessary to restart the mimic, the following command can be executed from the pink observing system window on the *taurus* console.

**mimic -mimic "ACAMINS" &**

It is a requirement that the observing system is currently running for this application to be started successfully.

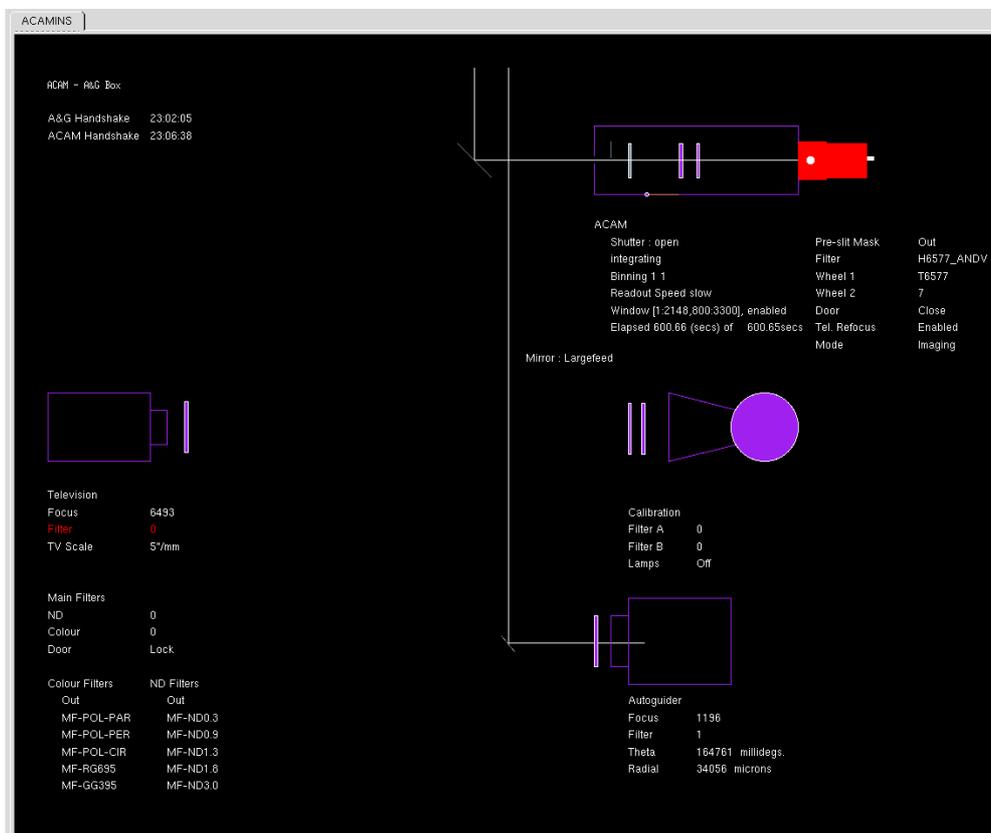


Illustration 9: ACAM Instrument Mimic

## Bibliography

- 1: Bevil, Craige, User Guide to the Filter Managment System,  
<http://www.ing.iac.es:8080/bscw/bscw.cgi/d99837/User%20guide%20for%20filter%20database%20wht-filtdb-2.pdf>
- 2: Bevil, Craige, A&G Software User Guide,  
<http://www.ing.iac.es:8080/bscw/bscw.cgi/92216>