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Isaac Newton Group

WYFFOS Control System User Guide

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Chapter 1 Introduction

The purpose of this document is to provide a users guide to the WYFFOS control system which is hosted upon the W. H. T. UNIX based instrument control system. It outlines the syntax and the semantics of the command line scripts which can be used to retrieve status or effect control over the mechanisms which constitute the WYFFOS spectrograph. It also describes the use of a graphical control application which can be used to coordinate the operation of the WYFFOS instrument.

The intended target audience of this document is the observer who will use the system operationally and the operations team engineers.

Chapter 2 Glossary

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

2.1 MIMIC

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

2.2 GUI

A graphical user interface (GUI) which will permit the user to control and review the status of the mechanisms & software components which comprise the WYFFOS spectrograph system.

2.3 EPICS system

EPICS is a software framework which is used for developing embedded systems and the applications which will be used to control them. EPICS is used in a number of systems within the WHT including the WYFFOS embedded microprocessor unit.

2.4 Filter management system

This is a database system which is used to *track* the locations of all of the filters which are currently being used at the ING. Supports astronomers have the responsibility of ensuring that for each filter mechanism associated with the WYFFOS instrumentation, the details of the filters which are located in those mechanisms is accurate in the database.

For more information relating to the filter management system refer to the document [WHT-FILTDB-2]

2.5 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 instrument with which it is associated. These controls can take many different forms depending on the intended function of the control.

Chapter 3 Command line scripts

This chapter outlines the various command line based scripts which can be used from the instrument control system console (normally the *whtics* machine) to control be it hardware or software components of the WYFFOS spectrograph system.

3.1 Online Help Information

All of the commands listed in this chapter honour the **-h** option which, when specified, will result in help information for the command being printed on the console.

3.2 Error reports

Any errors which are encountered by the WYFFOS system in response to a request from one of the command line scripts will be relayed back to the console and the *talker* log.

On successful completion of a command line script, the script will return a status of *0*. Any *other* status value returned should be considered an *error* status.

Status relating to the progress of the commands will be sent to the *talker* log so there is a permanent record of what actions have been performed upon the WYFFOS system.

3.3 The *wcallamp* command

This command can be used to *switch on or off* a selected calibration lamp source. The syntax of the command is as follows :

```
wcallamp <off|none|1|2|3|4|W|Ne|He>
```

Should the lamp slide *position* be specified, it should be in the range of 1 to 4. Alternatively the user may specify the *name* of the calibration lamp which can be one of :

Lamp	***Description***
W	Tungsten/White
Ne	Neon
He	Helium

By specifying o*ff* or *none* as the demand position, the user may switch off *all* of the calibration lamps.

3.4 The *wcenwave* command

Permits the user to set the *central wavelength* of the spectrum to the demanded wavelength. The central wavelength should be specified as a positive *integer* value and be expressed in units of *Ångstroms.*

Optionally the *dispersion order* may be specified which should be a positive *integer* value. If the order is **not** specified then an order of 1 is assumed.

The syntax of the command is as follows :

```
wcenwave [-h] <central wavelength > [<dispersion order>]
```

An example of the use of the command follows :

```
wcenwave 4000 3
```

This will set the central wavelength to 4000 Ångstroms assuming a dispersion order of 3.

3.5 The *wcfilta* command

This command can be used to select a filter in the *calibration filter A* mechanism.

The syntax of the command is as follows :

```
wcfilta <1..6>|<filter name>
```

The *filter name* should correspond with one of the names of the filters which have been specified in the filter management system for this specific filter mechanism. Alternatively the position of the filter may be specified which can be a number in the range 1..6.

3.6 The *wcfiltb* command

This command can be used to select one of the filters in the *calibration filter B* mechanism.

The syntax of the command is as follows :

```
wcfiltb <1..6>|<filter name>
```

The *filter name* should correspond with one of the names of the filters which have been specified in the filter management system for this specific filter mechanism. Alternatively the position of the filter may be specified which can be a number in the range 1..6.

3.7 The *wchange* command

The *wchange* command allows the observer to change one or more of the constants which are used throughout the WYFFOS control system.

The command has the following syntax :

```
wchange [-h] [-grating <name of grating>] [-offset <offset>] [-order
<order>]
```

The following constants can be changed using the various options associated with the *wchange* command :

Option	***Description***
-grating	The name of the *grating* which is located within the grating mechanism. The name of the grating specified **must be** present in the *gratingdetails* table which is to be found in the ICS database. If the grating is not present in this table, you will need to contact somebody from the software group who will enter the details of the new grating into the database.
-offset	The grating offset is the *actual incident angle* when the grating encoder reads zero (expressed as a real number in units of degrees). Grating offsets are stored on a per grating basis.
-order	This is the demanded *dispersion order* and is used by the central wavelength calculation when a new central wavelength is specified. The *dispersion order* should be expressed as a positive integer.

3.8 The *wfibillum* command

The *wfibillum* command can be used to switch *on* and *off* fibre back-illumination. The syntax of the command is as follows :

```
wfibillum <on|off>
```

3.9 The *wfilter* command

The *wfilter* command will allow the user to insert into the optical path either the *main filter A* or the *main filter B filter*.

The syntax of the command is as follows :

```
wfilter [-h] A|B IN|OUT
```

The command takes two arguments. The *first* argument indicates which filter mechanism you wish to move which may be either *A* or *B*. The *second* argument indicates the *demanded position* of the filter in the light path and this can be either *In* or *Out*.

The *slit focus* position will be modified according to the *focus offset* associated with the filter in the selected filter slide. The source of the *focus offset* information can found in the filter management system (see [WHT-FILTDB-2])

3.10 The *wfiltera* command

The *wfiltera* command will allow the user to position *into* or *out* of the optical path, the main filter A slide.

The syntax of the command is as follows :

```
wfiltera [-h] IN|OUT
```

The command takes a single argument which is the *demanded position* of the filter in the optical path and this can be either *in* or *out*.

The *slit focus* position will be modified according to the *focus offset* associated with the filter in the selected filter slide if this feature is enabled.

The source of the *focus offset* information will be found in the filter management system (see [WHT-FILTDB-2]). Alternatively, the focus offset associated with the filter may be modified using the WYFFOS graphical engineering control panel.

3.11 The *wfilterb* command

The *wfilterb* command will allow the user to position *into* or *out* of the optical path, the main filter B slide.

The syntax of the command is as follows :

```
wfilterb [-h] IN|OUT
```

The command takes a single argument which is the *demanded position* of the filter in the optical path and this can be either *in* or *out*.

The *slit focus position* will be modified according to the *focus offset* associated with the filter in the selected filter slide if this feature is enabled.

The source of the *focus offset* information is found in the filter management system (see [WHT-FILTDB-2]). Alternatively, the *focus offset* associated with the filter may be modified using the WYFFOS graphical engineering control panel.

3.12 The *wgrating* command

The *wgrating* commands will be used to set the *position* of the grating in units of degrees.

The syntax of the command is as follows :

```
wgrating <angle in degrees>
```

3.13 The *wlamptimeout* Command

This command can be used to modify the *timeout* period after which the WYFFOS calibration lamps will automatically be switched off.

The syntax of the command is as follows :

```
wlamptimeout <timeout period in seconds>
```

3.14 The *whartmann* command

This command will be used to modify the position of the *hartmann shutters* which are located within the WYFFOS spectrograph.

The syntax of the command is as follows :

```
whartmann <l|r|lr|out>
```

The first argument is the *demanded position* of the shutters and is described in the following table :

Argument	***Description***
L	Insert the left shutter into the optical path
R	Insert the right shutter into the optical path
LR	Insert both the left and the right shutter into the optical path
Out	Remove both the left and right shutter from the optical path

3.15 The *wnitrogen* command

This command can be used to either *enable* or *disable* the nitrogen flush mechanism.

The syntax of the command is as follows :

```
wnitrogen <on|off>
```

3.16 The *wsetfocus* command

This command can be used to change the position of the *slit focus* mechanism.

The syntax of the command is as follows :

```
wsetfocus <Position in microns | enable | disable >
```

A description of the arguments to the command is outlined in the following table :

Argument	***Description***
Position in microns	This is the *demanded position* of the slit focus mechanism and should be expressed in microns as an integer value. Automatic slit focus correction will be enabled *automatically* should the user change the position of the slit focus mechanism.
Enable	When specified this instructs the instrument control system ***to perform*** automatic slit focus updates whenever one of the main filter slides is moved *in* or *out* of the optical path.
Disable	When specified this instructs the instrument control system ***not to perform*** automatic slit focus updates whenever one of the main filter slides is moved in or out of the optical path.

3.17 The *wsetgratingorder* command

The *wsetgratingorder* command can be used to set the demanded *dispersion order.*

The syntax of the command is as follows :

`wsetgratingorder <dispersion order>`

The dispersion order should be specified as a *positive* integer value.

3.18 The *wslittran* command

The *wslittran* command can be used to position the *slit translation* mechanism to the demanded position in microns.

The command accepts the following syntax :

`wslittran <Position in microns | init>`

The demanded position of the slit translation mechanism should be specified as a positive integer and expressed in microns. Alternatively, if the argument *init* is specified, the slit translation mechanism will be initialised by the WYFFOS EPICS system.

3.19 The *wyffos* command

This command can be used to *start* and *stop* all of the components in the observing system which will be required to perform night-time observational operations using the WYFFOS spectrograph.

The syntax of the command is as follows :

`wyffos <start|stop>`

Specifying *start* as the argument will result in the following WYFFOS related software being initialised :

- The WYFFOS light path mimic
- The graphical control system will be started which shall include a panel through which control can be exerted over the WYFFOS instrumentation.
- Packet collection tasks which will be responsible for collecting headers from the WYFFOS instrument control system during data acquisition.

3.20 The *wyffos_init* command

This command can be used by the user or engineer to *initialise* the mechanisms within the WYFFOS spectrograph system.

The syntax of the command is as follows :

`wyffos_init -m <WYFFOS mechanism>`

The mechanism specified should be one from the following table :

Mechanism	***Description***
GRATING	The grating mechanism
SLITFOC	The slit focus mechanism
SLITTRANS	The slit translation mechanism
CALLIBFILTA	The calibration filter A mechanism
CALIBFILTB	The calibration filter B mechanism
CALLAMP	The calibration lamp mechanism

3.21 The *wyffos_move* command

This command can be used to move *any* of the mechanisms in the WYFFOS spectrograph to the *demanded position*.

The syntax of the command is as follows :

```
wyffos_move -m <WYFFOS mechanism name> <Demand value>
```

The mechanism specified should be one from the following table :

Mechanism	***Description***	***Demand value***
GRATING	The grating mechanism	An integer value expressed in degrees
SLITFOC	The slit focus mechanism	An integer value expressed in microns
SLITTRANS	The slit translation mechanism	An integer value expressed in microns
CALIBFILTA	The calibration filter A mechanism	A valid filter position. This can be either the *name of the filter* which is located within the filter mechanism or a position in the range 1..6
CALIBFILTB	The calibration filter B mechanism	A valid filter position. This can be either the *name of the filter* which is located within the filter mechanism or a position in the range 1..6 within the filter slide.
CALLAMP	The calibration lamp mechanism	A valid calibration lamp name which can be one of *W*, *He*, *Ne*

Mechanism	***Description***	***Demand value***
		or *none*.
FILTERA	The main filter A mechanism	A valid filter position. This can be either *out* or the *name of the filter* which is located within the filter slide.
FILTERB	The main filter B mechanism	A valid filter position. This can be either *out* or the *name of the filter* which is located within the filter slide.
N2	The nitrogen flush mechanism	Either *on* or *off* depending on whether the nitrogen flush should be enabled or not.
HARTMANN	The hartmann shutters	Should be one of L,R,LR or OUT.
FIBILLUM	The fibre illumination mechanism	This should be either *on* or *off* depending on whether fibre illumination is to be enabled or not.
FOCUSUPDATESTATE		*Enable* or *disable* depending on whether automatic focus updates should be applied to the *slit focus mechanism* when one of the main filter slides has its position changed.
UPDATELAMPTIMEOUT		Allows the timeout period after which the WYFFOS calibration lamps will be switched off to be specified.

3.22 The *wyffos_stop* command

This command can be used to *stop* a mechanism which is currently moving.

The syntax of the command is as follows :

```
wyffos_stop -m <WYFFOS mechanism name>
```

A list of the valid mechanisms is provided in the following table :

Mechanism	***Description***
GRATING	The grating mechanism
SLITFOC	The slit focus mechanism
SLITTRANS	The slit translation mechanism
CALIBFILTA	The calibration filter A mechanism
CALIBFILTB	The calibration filter B mechanism
FILTERA	The main filter A mechanism.
FILTERB	The main filter B mechanism.

Chapter 4 WYFFOS GUI Control Application

In addition to being able to be controlled through the WHT ICS console command line, the WYFFOS instrument may also be controlled by means of a graphical user interface (GUI).

The following sections detail the GUI control application which can be used in order to do this.

4.1 Starting the Control GUI

Normally, as part of the startup sequence of the observing system, the control GUI for the WYFFOS instrument will be started automatically providing that the WYFFOS has been configured into the observing system by the engineers.

Should the user need to start the application manually, this can be done using the following command from the WHT OCS console command line *after* the observing system has been started.

```
4MSControl -panels "WY FFOS" &
```

4.2 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 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.

4.3 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 WYFFOS instrument, but also the rest of the other instruments which are controlled by the same application.

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

Icon	***Semantics***
	This icon signifies that when this button is pressed, the associated mechanism will be ***initialised***.
	This icon signifies that when this button is pressed, the associated mechanism will ***move*** to the demanded position.

Icon	*Semantics*
	This icon signifies that when this button is pressed, the displayed position of the associated mechanism will be updated to that of the *current* mechanism position and as such, will override any *demand* position which may have been entered by the user.
	This icon signifies that when this button is pressed, the associated mechanism will be ***stopped*** should it be moving.

4.4 The WYFFOS Engineering Panel

The intended purpose of the WYFFOS engineering display is to provide the operations team engineers with extensive control over *all* of the mechanisms which comprise the WYFFOS instrument. It is not intended that the observer will use this panel routinely during operations.

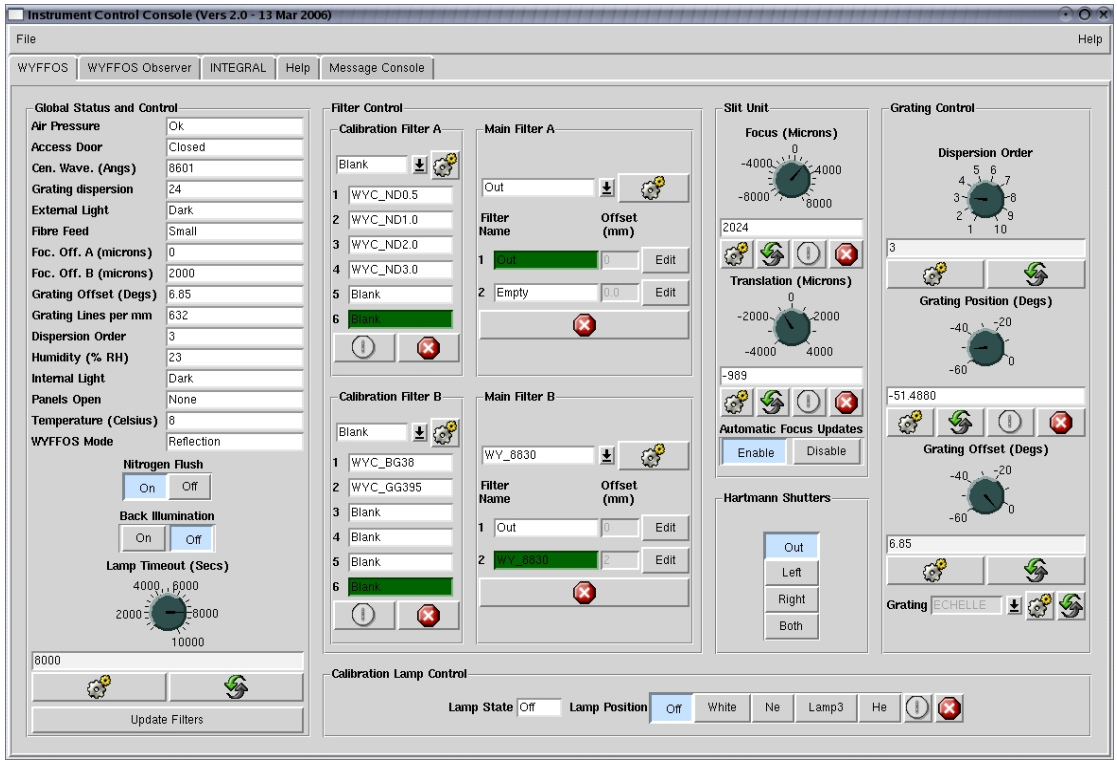

Illustration 1: WYFFOS engineering panel

The panel is broadly divided into groupings of logically related sections. The following chapters outline each of the sections.

4.4.1 The Global Status & Control Panel

From the *Global Status & Control* panel the user can review and control the global level commands and status associated with the WYFFOS instrument.

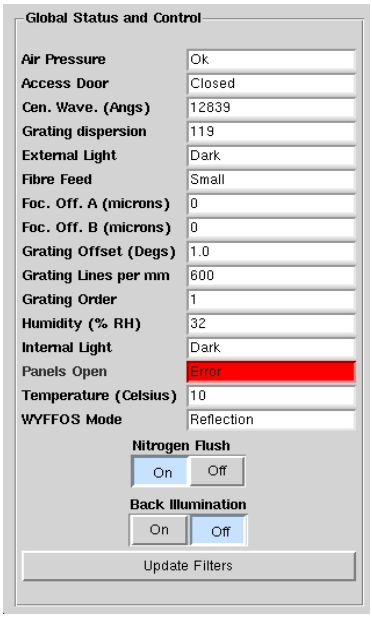

Illustration 2: The WYFFOS Global Status and Control Panel

4.4.1.1 The *Air Pressure* Status Item

This status item reflects the state of the *air pressure sensor* located within the WYFFOS enclosure and can be either *high* or *okay.*

4.4.1.2 The *Access Door* Status Item

This status item reflects the state of the *access door* of the WYFFOS enclosure and can be either *open* or *closed*.

4.4.1.3 The *Central Wavelength* Status Item

This status item reflects the current spectrum *central wavelength* as determined by the *grating position* , its physical characteristics such as its *ruling* and the specified *dispersion order*.

The *central wavelength* is displayed in units of *Ångstrom.*

4.4.1.4 The *Spectral Dispersion* Status Item

This status item reflects the current *spectral dispersion* due to the current *ruling* of the *grating* and its *position*. The value displayed is expressed in *Ångstroms* per *millimetre*.

4.4.1.5 The *External Light* Status Item

This status item reflects the state of the sensor which is responsible for detecting light external to the WYFFOS enclosure. The status item can either read *Dark* or *High*.

4.4.1.6 The *Fibre Feed* Status Item

This status item reflects the type of the *fibre feed bundle* which is connected to WYFFOS. This can be one of either *small* or *large.*

4.4.1.7 The *Focus Offset A* Status Item

This status item reflects the *current focus offset* expressed in *microns* which will be applied to the *slit focus* mechanism in the case that the filter in the main filter A slide is moved into the optical path.

4.4.1.8 The *Focus Offset B* Status Item

This status item reflects the *current focus offset* expressed in microns which will be applied to the *slit focus* mechanism in the case that the filter in the main filter B slide is moved into the optical path.

4.4.1.9 The *Grating Offset* Status Item

This status item reflects the current *grating offset* which is to be included into the calculation for the spectrum central wavelength. This value is articulated in *degrees*. The grating offset is the *actual incident angle* when the grating encoder reads zero (expressed as a real number in units of degrees).

4.4.1.10 The *Grating Lines per Millimetre* Status Item

The status item reflects the *number of lines per millimetre* which are associated with the current grating which is deployed within the WYFFOS instrument.

4.4.1.11 The *Dispersion Order* Status Item

This status item reflects the current *dispersion order* which is associated with the central wavelength calculation.

4.4.1.12 The *Relative Humidity* Status Item

The status item reflects the measurement from the *relative humidity sensor* which is located within the WYFFOS enclosure.

4.4.1.13 The *Internal Light* Status Item

This status item is used to show the measurement of the *internal light sensor* which is located within the WYFFOS enclosure.

The value of the status item can be either *Dark* or *High*.

4.4.1.14 The *Panels Open* Status Item

The *panels open* status item is used to display the *state* of the six panels which are connected to the WYFFOS enclosure. Should any of the panels be *open* then the panel number of the open panel will be reflected in this status item.

4.4.1.15 The *Temperature* Status Item

The temperature status item will be used to reflect the measurement from the temperature sensor in *degrees celsius* of the inside of the WYFFOS enclosure.

4.4.1.16 The *WYFFOS Mode* Status Item

This status item reflects the current mode of the WYFFOS instrument and can be either *reflection* or *echelle* depending on how the engineer has configured the instrument.

4.4.1.17 The *Nitrogen Flush* Control

This control allows the user to *enable* or *disable* the nitrogen flush mechanism.

4.4.1.18 The *Back Illumination* Control

This control allows the user to *switch on* or *switch off* the back illumination of the fibres to the fibre module e.g. AF2 or INTEGRAL.

4.4.1.19 The *Lamp Timeout* Control

This *lamp timeout* control will be used to modify the *timeout* period after which the calibration lamps will be **automatically** switched off by the WYFFOS EPICS system. The default timeout after the WYFFOS EPICS system has been rebooted is 500 seconds.

Any modifications to this timeout period will only be remain in place until the WYFFOS EPICS system is next reset.

4.4.1.20 The *Update Filters* Control

The details of the *filter names* which are contained within the *filter mechanism graphical controls* in the instrument control panel are located in the filter management system (see [WHT-FILTDB-2]). Should the support astronomer *change* a filter which is located in one of the mechanisms in the WYFFOS system in the filter management system, by pressing this button, the GUI application will *refresh the names of the filters* which are presented in the filter controls on the control panel such that they are syncronised with those in the filter management system (see [WHT-FILTDB-2]).

4.4.2 The *WYFFOS Calibration Lamp* Control Panel

From the WYFFOS calibration lamp control panel the observer or engineer can illuminate any of the calibration lamps within the WYFFOS calibration unit.

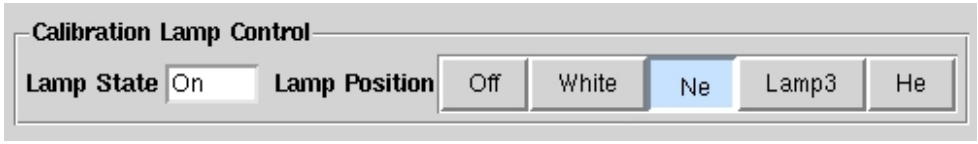

Illustration 3: WYFFOS Calibration Lamp Control

The user may select any of the lamp positions listed in the control panel and the lamp slide mechanism will move to the demand position and then illuminate the calibration source.

The actual state of the illumination of the lamp is reflected in the status item labelled *Lamp State*. The underlying embedded control system applies a *timeout* whenever a calibration source is illuminated and will automatically switch the calibration source off after the timeout period has expired. The purpose of this is to preserve the longevity of the calibration lamps.

This timeout period can be modified using the *lamp timeout* control in the *global status and control* panel (see page 19).

4.4.3 The *WYFFOS Filter Control* Panel

From the filter control panel located in the WYFFOS engineering page, the engineer will be able to monitor and control all of the various filters which are located within the WYFFOS instrument. Furthermore he will be able to adjust the *focus offsets* which will be applied to the *slit focus* mechanism in the case of either of the two main filters being positioned in or out of the optical path.

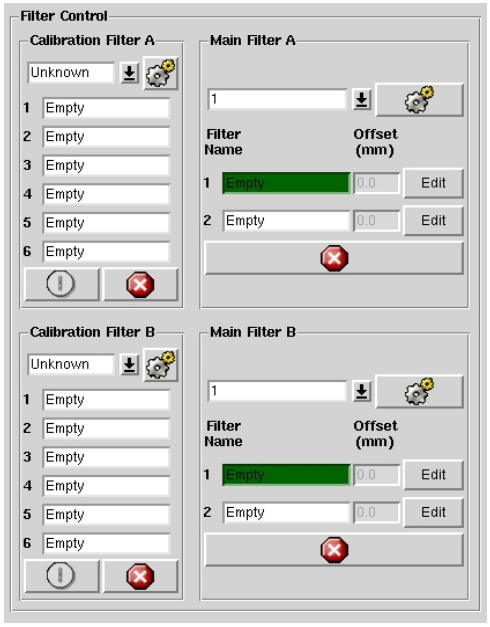

Illustration 4: The WYFFOS filter control panel

4.4.3.1 The Filter Controls

All of the filters mechanisms located within the WYFFOS instrument are controlled in an identical manner. Each filter mechanism has various possible positions and the drop-down menu associated with each filter contains the *names* of the filters which are located in that specific mechanism.

The names of the filters which are displayed are determined by the filter management system (see [WHT-FILTDB-2]). It is the responsibility of the *support astronomer* to ensure that the names of the filters associated with these mechanisms is up to date.

In the case of the *main filters A & B*, the engineer or observer can modify the *focus offset* which is associated with a particular filter. This can be done by clicking on the button labelled *Edit* which is located to the right of the filter name. This will allow the user to enter a new *focus offset* which should be expressed in *millimetres*. This *focus offset* will be applied to the slit focus mechanism whenever that particular filter is positioned into the optical path. The *focus offsets* defined by the user will be stored across restarts of the observing system.

4.4.3.2 The Hartmann Shutter Control

This control allows the engineer or observer to change the positioning of the hartmann shutters. The user may select either the *left* or *right* shutter or *both* of them by clicking on one of the buttons in the control and acknowledging the confirmation dialog that will subsequently be displayed.

It is important that prior to science operations, the observer or the engineer removes the Hartmann shutters from the optical path otherwise the amount of light reaching the science detector will be reduced considerably.

The mimic which is associated with the WYFFOS instrument highlights the fact that the Hartmann shutters are in the optical path by *outlining* the light which is going into the science detectors in red.

The control panel which can be used to modify the position of the hartmann shutters looks as follows :

Illustration 5: The Hartmann Shutter Control

4.4.3.3 The Slit Unit Control Panel

The *slit unit* control allows the *engineer* or *observer* to change the positions of the mechanisms which comprise the slit unit.

The user may modify the position of the *slit focus mechanism* or the *slit translation stage mechanism* using the two controls which are provided. Positions for both mechanisms should be specified in units of *microns*.

At the foot of the *slit unit control panel* is a small control panel which will allow the observer or the engineer to select whether *automatic focus offsets* are to be applied to the slit focus mechanism whenever the position of the main filter mechanisms is changed (see 4.4.3.1 for more details).

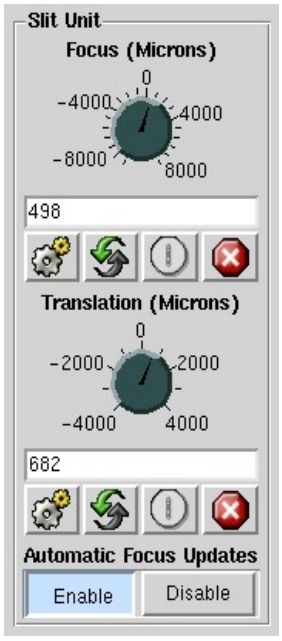

Illustration 6: The Slit Unit Control

4.4.4 The WYFFOS Grating Control Panel

The WYFFOS grating control panel can be used to control position and value of both the *grating* mechanism which is to be found within the WYFFOS instrument as well as the *constants* which are used within the calculation of the *central wavelength*.

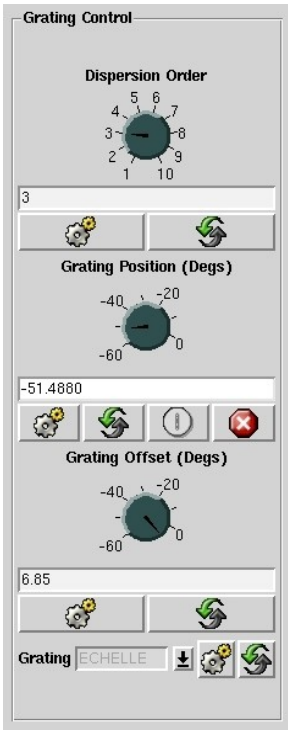

Illustration 7: The WYFFOS Grating Control Panel

4.4.4.1 The *dispersion order* Control

The *dispersion order control* allows the engineer or observer to select the *order* of the dispersion of the light. The value specified will be used as part of the calculation of the central wavelength of the spectrum. After the *dispersion order* has been updated, the *central wavelength* and *dispersion* values will be recalculated in the light of the new *order* constant.

Note that **no mechanisms will be moved** as a result of changing the dispersion order.

Should the observer want to maintain the same *central wavelength* with the new dispersion order he must reset the *central wavelength* to the previously *demanded central wavelength* which will then physically position the grating accordingly.

4.4.4.2 The *Grating Position* Control

The grating position control will allow the *engineer* or *observer* to position the grating in terms of engineering units rather than in terms of the central wavelength. The value which is input should be in the range of *0* to *-60* degrees.

4.4.4.3 The *Grating Offset* Control

The *grating offset* control will allow an engineer to specify a *grating offset* which is a constant value used within the calculation of the central wavelength. The grating offset is the *actual incident angle* when the grating encoder reads zero (expressed as a real number expressed in degrees).

After the *grating offset* has been changed, the values associated with the calculated *central wavelength* and *dispersion* will be updated to reflect the new *grating offset*.

Note that **no mechanisms are moved** as a result of selecting a new grating offset. Should the observer want to maintain the same *central wavelength* with the new grating offset, he must reset the *central wavelength* to the previously *demanded central wavelength* which will then physically position the grating accordingly.

4.4.4.4 The *Grating* Selection Control

The *grating* selection control allows the observer or the engineer to define which grating is currently deployed within the WYFFOS instrument. On selecting a new grating, the system will update the *central wavelength* and *dispersion* status values to reflect the ruling of the new grating.

Note that **no mechanisms are moved** as a result of selecting a new grating. Should the observer want to maintain the same *central wavelength* with the new grating as set with the previous grating, after inserting the new grating into the grating mechanism and updating the name of the grating using the *grating* selection control, he must then reset the *central wavelength* to the previously demanded central wavelength which will then physically position the grating accordingly.

4.5 The WYFFOS Observer Panel

The purpose of the WYFFOS observer panel is to provide a subset of graphical controls which will allow the observer to control and review status of WYFFOS mechanisms which are routinely used during night-time operations.

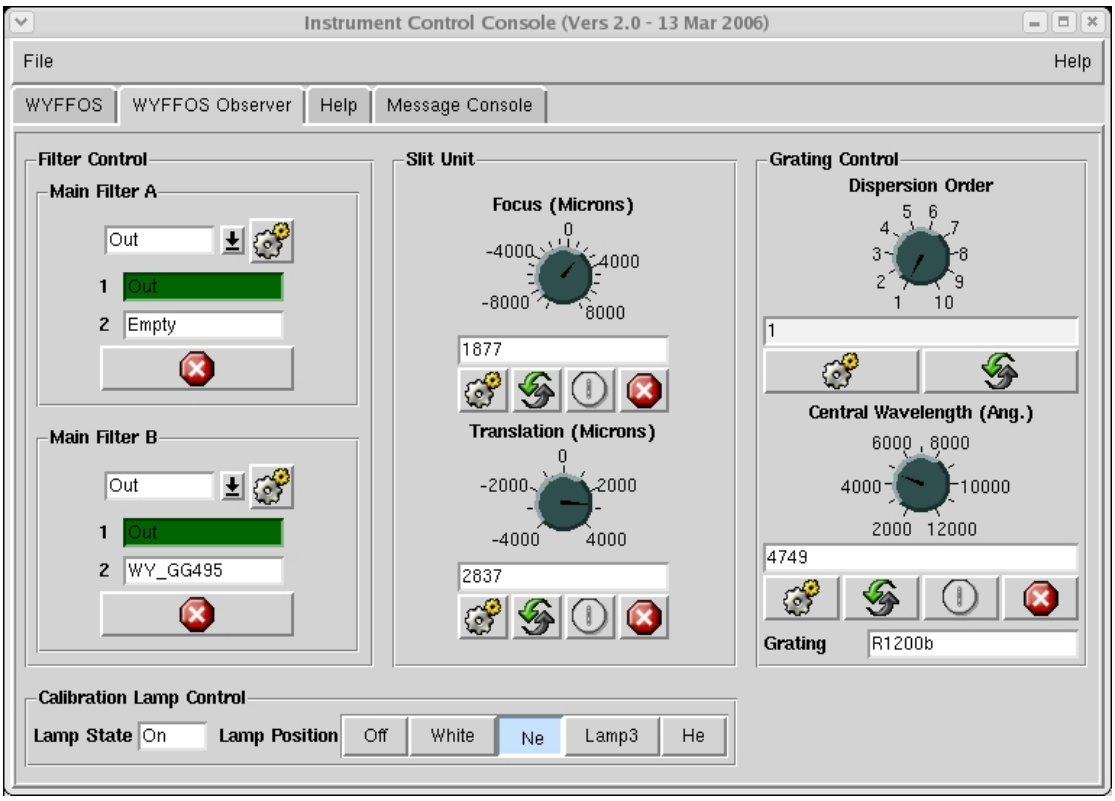

Illustration 8: The WYFFOS Observer Panel

4.5.1 The Main Filter Control Panel

The main filter controls allow the user to position the filter in the main filter A and main filter B slides into and out of the optical path. If configured from the engineering panel, when a filter is moved in and out of the optical path, an associated *focus offset* will be applied to the *slit focus* mechanism.

4.5.2 The Slit Unit Control Panel

The slit unit control panel will allow the observer to control both the *slit translation* and *slit focus* mechanisms. Demand values for both of these mechanisms are specified in units of *microns*.

4.5.3 The Calibration Lamp Control Panel

The *calibration lamp control panel* will allow the observer to illuminate any of the calibration lamps which are located in the WYFFOS calibration unit.

The user should note that there is a *time-out* associated with the calibration lamps and they will automatically switch themselves off once this time-out period has expired if there is no further activity on the calibration lamp mechanisms. The default time-out period is set to five minutes by the WYFFOS EPICS system. This can be changed using the *lamp timeout control* on the global status and control panel on the WYFFOS engineering panel (see page 19).

4.5.4 The Grating Control Panel

The grating control panel allows the observer to perform a number of functions associated with the grating mechanism.

4.5.4.1 The *Dispersion Order* Control

The *dispersion order* control will allow the observer to specify the *dispersion order* of the light. This value is a *constant* which is used within the calculation of the central wavelength.

Note that the current *central wavelength* will be recalculated once the value of the *dispersion order* has been changed.

4.5.4.2 The *Central Wavelength* Control

The *central wavelength* control will allow the observer to specify the *central wavelength* for the spectrum. Subsequently the position of the *grating mechanism* will be adjusted accordingly to the demanded wavelength.

A number of *constants* are used as part of the calculation of the central wavelength. The *dispersion order* and the *number of lines per millimetre* associated with the grating are two constants which are both used as part of this calculation.

4.5.4.3 The *Grating* Status Item

The *grating status* item displays the *name* of the *current grating* which is deployed within the grating mechanism.

Associated with a grating are physical characteristics which are utilised during the central wavelength calculation. These characteristics are normally stored in the WHTICS database which is maintained by the software group. Should there be a need to *change* the physical characteristics of an existing grating or add further gratings to the system, it will be necessary to contact a member of the software group.

Bibliography

WHT-FILTDB-2: Craige Bevil, User Guide to the Filter Management System, 2004