

# AAG Pyxis Software

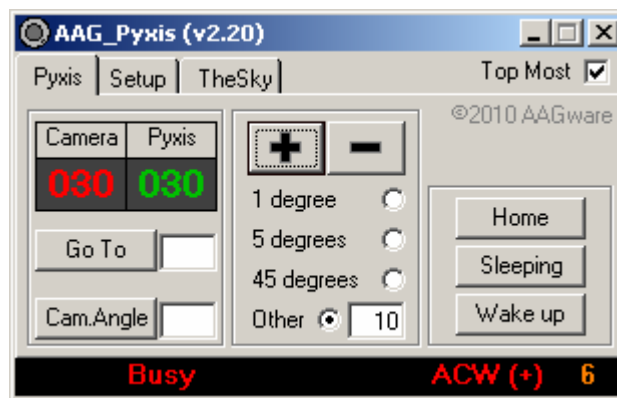
(Version 2.32)

The AAG\_Pyxis is a module that allows the user to interact with the Pyxis rotator. It also provides a link to the TheSky6/X allowing the synchronization of the TheSky FOVI (field of view indicators) with the *Camera Angle* of the Pyxis.

This module is also used by the AAG\_AutoCenter Maxim DL plug-in when the Pyxis option is selected.

## Pyxis TAB

The *Pyxis TAB* (figure below) provides the user with a number of controls to interact with the Pyxis.



Pyxis TAB

This panel contains the following information and controls:

**Camera Angle** (red display) – This angle corresponds to the angle of the camera with respect to the sky. It is usually obtained from a sky image by measuring the roll angle with the help of an astrometric tool (e.g. Pinpoint, TheSky, etc.).

**Pyxis Angle** (green display) – This angle corresponds to the Pyxis' internal angle measured from its home position and it is controlled by the device's electronics. It cannot be directly adjusted by the user.

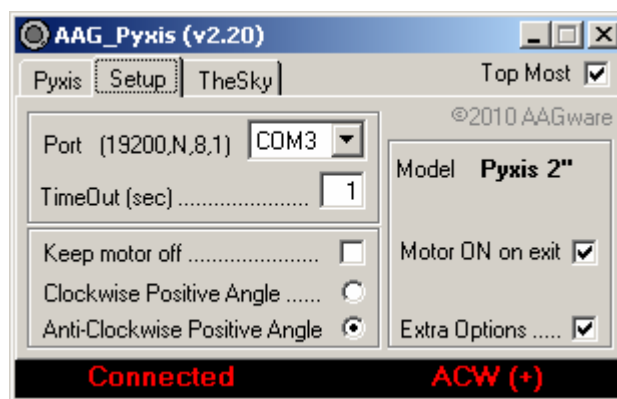
**Go To Button** + adjacent **Field** – This button permits the user to rotate the Pyxis to an angular position entered in the adjacent field, i.e. the Pyxis will rotate until the Camera Angle is equal to this value.

**Cam. Angle** + adjacent **Field** – This allows the Camera Angle to be set at a particular value. For example, it should be used to set the camera angle to the angle measured from a sky image with the help of an astrometric tool.

**Button +** and **Button -** – These allow the rotation of the Pyxis by increments (anti-clockwise or clockwise) according to the option selected below the buttons.

## Setup TAB

The *Setup TAB* (figure below) provides the basic system configuration.



Setup TAB

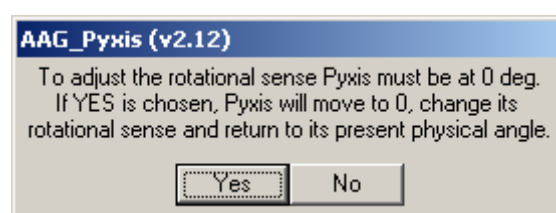
**Comm.** – It defines the serial port number to which the Pyxis is attached. The baud rate, parity, number of bits and stop bits are automatically adjusted to 19200 baud, No-parity, 8 bits and 1 stop bit.

**Time Out** – It defines the serial communications time out period in terms of seconds.

**Keep motor off** – when selected, Pyxis will automatically enter *Sleeping Mode* whenever the motor is not moving.

**Clockwise / Anti-Clockwise Positive Angle** – defines the relationship between the sense of rotation and the sky angle.

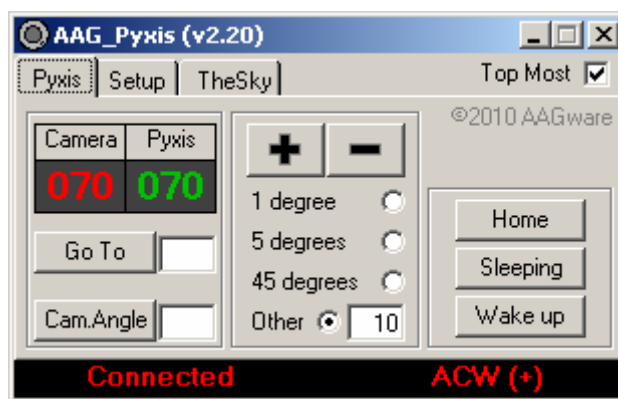
Note: To change the rotational sense, Pyxis must be at an angle of 0°. If its angle is not 0, the system will ask to confirm the operation informing the user that it will rotate to its 0° position, change the sense of direction and then return to the same physical angle it was before.



The Pyxis model being used is displayed as **Pyxis 2''** or **Pyxis 3''**.

When **Motor ON on exit** is selected, Pyxis is turned ON just before exiting the program.

When **Extra Options** is selected under the **Setup TAB**, the following buttons become available:



Pyxis TAB

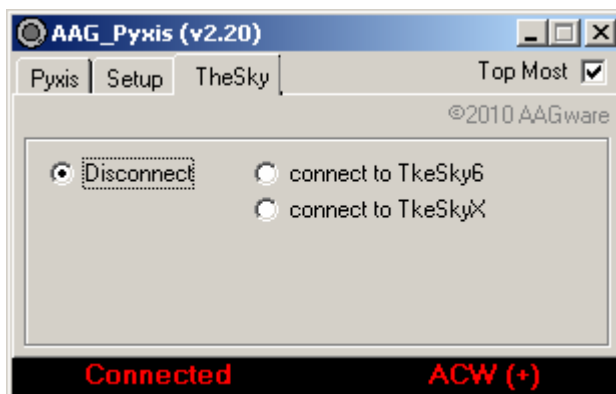
**Home Button** – It homes the Pyxis, i.e. the Pyxis will rotate until the Pyxis Angle becomes zero.

**Sleeping Button** – The Pyxis enters sleeping mode by turning OFF the motor.

**Wake up Button** – The Pyxis comes out sleeping mode by turning ON the motor.

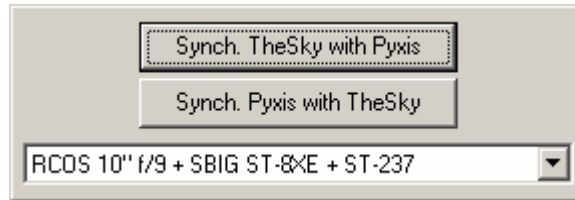
## TheSky TAB

This TAB provides the user with means to choose the FOVI (field of view indicator) which will be synchronized with the Pyxis.



## TheSky TAB

**connect to TheSky6 / connect to TheSkyX** – when selected, the following window is displayed allowing the user to select which FOVI will be synchronized with the Pyxis.



TheSky Synchronize Window

**Synch. TheSky with Pyxis** – This will set the FOVI angle to the Pyxis *Camera Angle*.

**Synch. Pyxis with TheSky** – This will set the Pyxis *Camera Angle* to the TheSky FOVI angle.

**Dropdown List** – It allows the user to choose which TheSky FOVI should be used.

## Operational Considerations

Every time the Pyxis is connected it automatically performs a homing operation.

After this initial homing operation, the AAG\_Pyxis moves the Pyxis to the position it had before AAG\_Pyxis was last disconnected.

### Suggested Setup

In view of this behaviour which may give rise to some confusion, it is recommended the following:

- Set the Pyxis so that the **Pyxis Angle** (green display) of **0** degree corresponds to the **Camera Angle** (red display) of **0** or **180** degree. This is done by
  - Home the Pyxis (select *Extra Options* in *Setup TAB* and use *Home* button of *Pyxis TAB*);
  - Release the Pyxis' camera screws;
  - Adjust the camera such as its horizontal axis is in-line with the counter-weight axis;
  - Re-tighten the Pyxis' camera screws;
- Take a sky picture;
- Measure the roll-angle using an astrometric tool;
- Enter this value in the *Cam.Angle Field* and press *Cam.Angle button*;

### Camera slips out of position

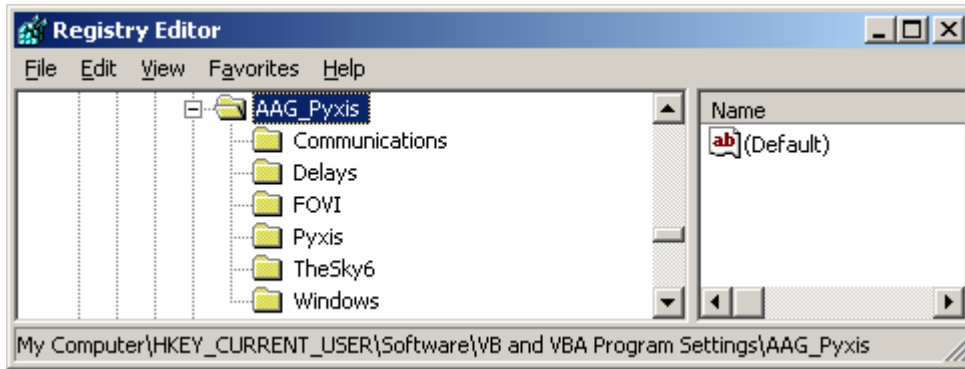
If the camera is not symmetrically balanced around the center of the CCD (e.g. SBIG cameras) keep the motor ON by un-selecting option *Keep Motor Off* under *Setup TAB*, otherwise the Pyxis will not be able to hold the camera in position.

### Internal Parameters Storage

The AAG\_Pyxis stores information in the Windows Registry under the key

...\\HKEY\_CURRENT\_USER\\Software\\Vb and VBA Program Settings\\AAG\_Pyxis

This key is illustrated in the figure below.

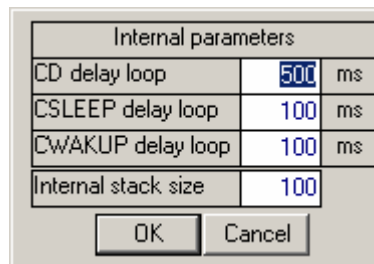


AAG\_Pyxis' Registry Keys

NB: To reset the internal stored values, this key (plus respective sub-keys) may be deleted. They will be automatically re-created by the AAG\_Pyxis.

### Adjusting Internal Parameters

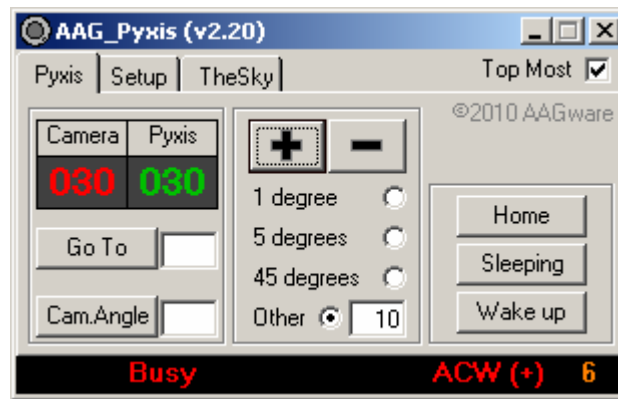
Some other internal parameters may be adjusted. In order to access these internal parameters one must press the key combination **<Ctrl>K** and the following window is displayed:



Please do not adjust these parameters without being advised to do so. They correspond to certain internal delays to ensure synchronization with the hardware.

The internal stack parameter corresponds to the size of the internal stack which stores commands that are awaiting execution.

The number of commands awaiting execution is shown at the bottom right hand side corner of the main window as illustrated below:

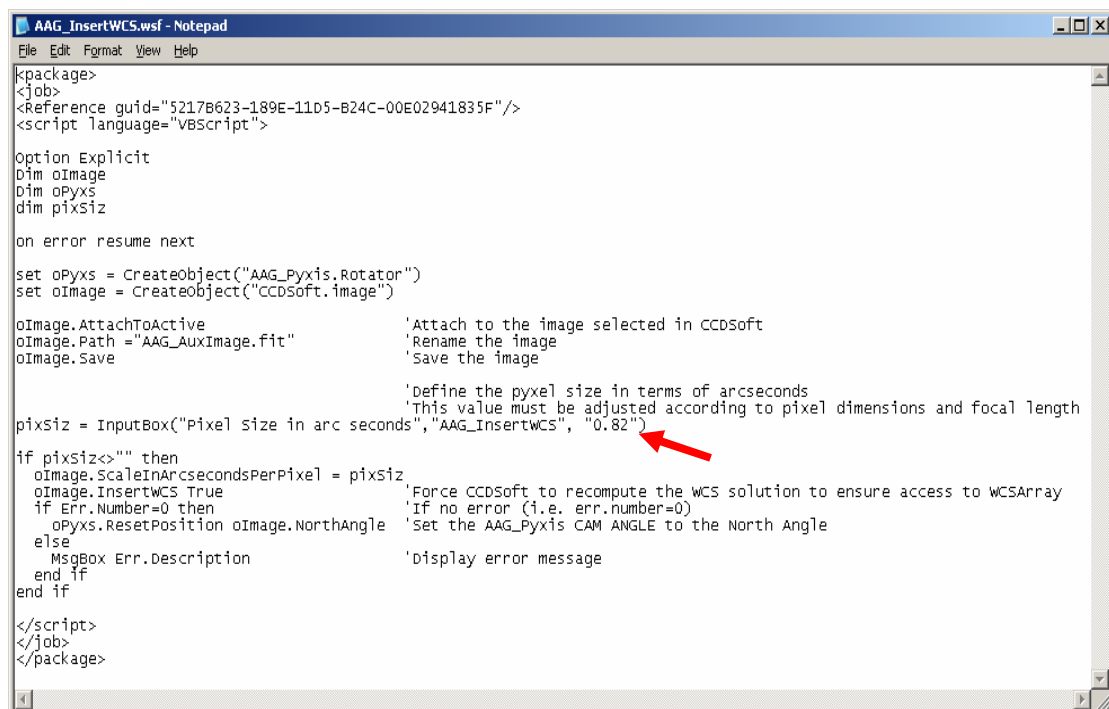


By **double clicking** over this number, the stack is immediately wiped out and the commands not yet executed are cancelled.

### File AAG\_InsertWCS.wsf

File AAG\_InsertWCS.wsf is a script file designed to be used with CCDSoft. This script file uses the astrometry tools of CCDSoft / TheSky to measure the sky angle of the image that is active in CCDSoft and it adjusts the Cam.Angle of AAG\_Pyxis to this value.

During the process it prompts the user for the effective pixel size in arc seconds. The effective size of the pixel is a function of the physical size of the pixel, the binning and the focal distance of the optical tray. The system uses a default value of 0.82 and this value may be changed by simply editing this file using an ASCII editor (e.g. Notepad editor as illustrated below).

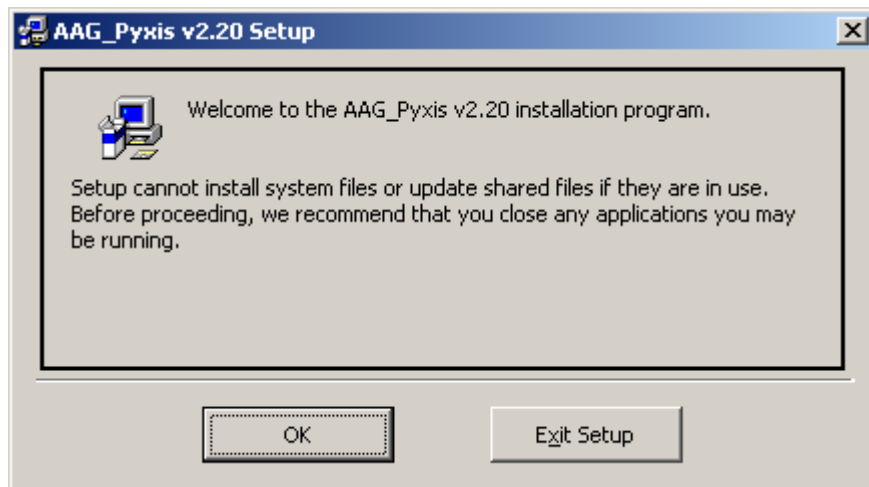


## Setup procedure

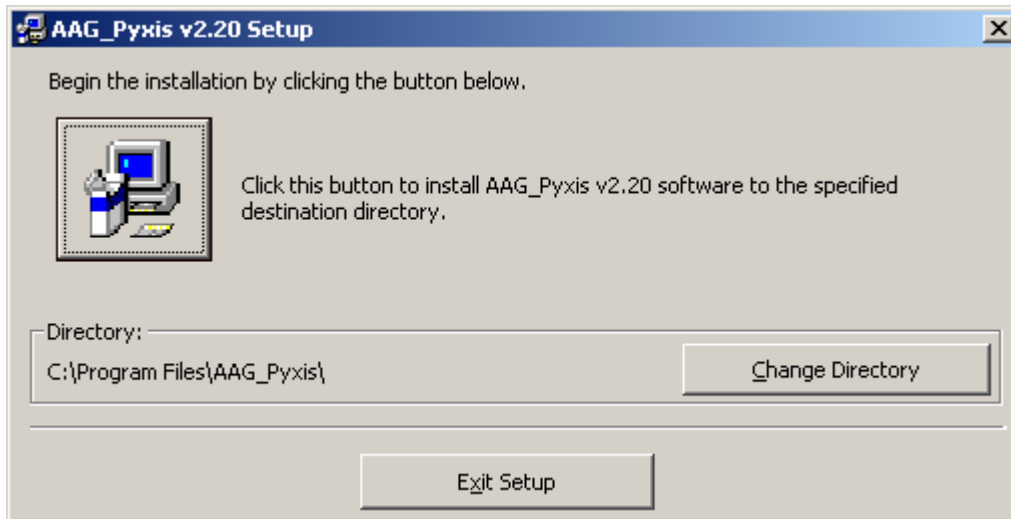
### Important Note

If a previous version of the **AAG\_Pyxis** is installed, one must un-install it before proceeding with **SETUP**.

Run *Setup.exe*

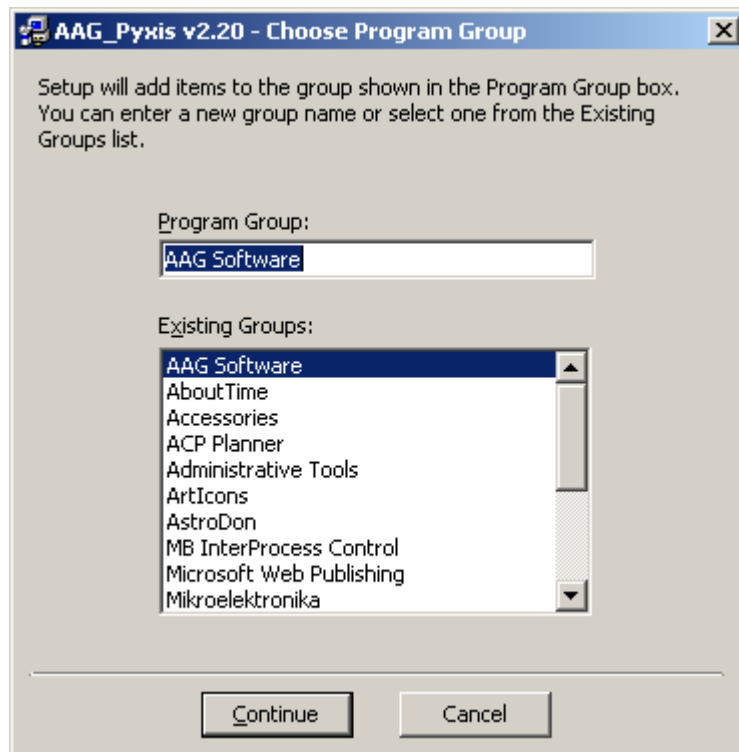


Welcome screen



The default directory where the files will be installed, is  
**c:\Program Files\AAG\_Pyxis\**





The default program group

After installation, two new menu options will be available under *AAG Software* in the *Start / Programs* menu:

- *AAG\_Pyxis v2.32*
- *AAG\_Pyxis v2.32 Information*