Instructions for use of the VATT 4K Camera

Before You Begin:
 The intention of this document is to help visiting observers set up and use the vatt4k camera for the first time. This document does assume, however, that the observer is familiar with IRAF and linux. It is suggested that visiting observers first review the detailed documentation of the AZCam software which can be found on the AZCam website:
"http://www.itl.arizona.edu/AzCam/"

Getting Started:
There are two terminals, one on the right [RHX] and one on the left [LHX]. If neither is logged in:
>   1. log into "IRAF Host" on LHX as user "vattobs".
>   2. log into "CCD Server" on RHX   as user "vattobs".

After you are logged in:
>   1. On RHX: (Starting AZCam)
>>   1.1.   Double click "AzCam Server" icon to start the AZCam camera connection. A DOS window should appear and should indicate "now listening for client connections"
>>   1.2.   Double click on "AzCam Tool" icon a window should appear that resembles this:
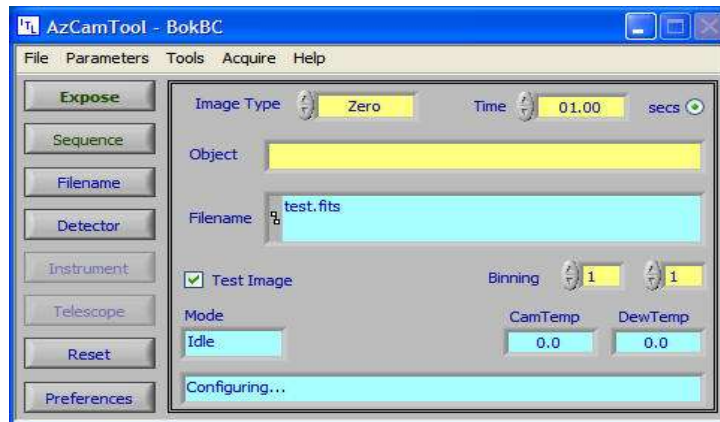
>   2. On LHX: (Starting Iraf)
>>   2.1. Bring up IRAF (under applications->graphics)
>>   note: In our environment, "/home/images" is where we store observer images. You will want to make a directory there for your own image storage. The default is to use your last name for the name of the directory.
>>   2.2. cd /home/images
>>   2.3. mkdir <your_own_directory>
>>   2.4. chmod 777 <your_own_directory>
>>   2.5. !ds9 &

3. On RHX: (Setting Up AZCam)
>   3.1. in AzCam Tool   click the filename button on LHS of window. A window that resembles this should appear:
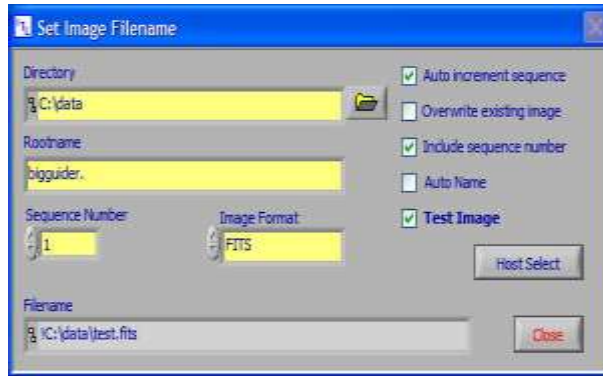
>   3.2.   Set directory
>   note: "z" is mounted as /home in Linux on LHX, so z:\images\<your_own_directory> will save images to your new directory.
>   3.3.   Set your preferred file root-name / sequence number
>   3.4.   Set Image format to "Extended fits".
>   3.5.   make sure the following settings are correct in the check boxes
>>   CHECK "Auto increment sequence"
>>   CLEAR "Overwrite existing image"
>>   CHECK "Include sequence number"
>>   CLEAR "Auto Name"
>>   CLEAR "Test Image"
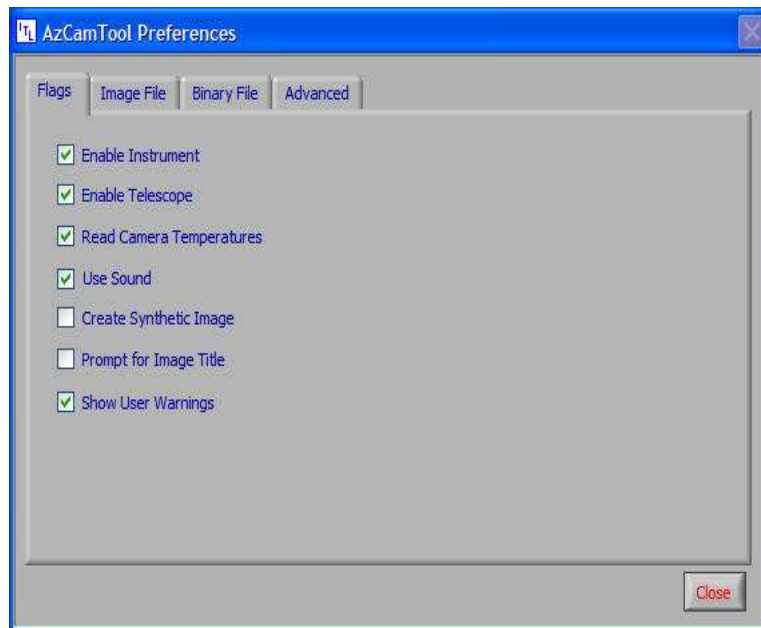>   3.7. Hit Close.
>   note: you are now returning to the main AZCam Tool window.
>   3.8. set image parameters (zero exp time, etc...)
>   note: Default binning is set as 4x4 but scientific images are better suited at 2x2 binning.
>   3.9. click the Preferences button on LHS of window. A window that resembles this should appear:

> 3.10. make sure the following settings are correct in the check boxes
> > CHECK "Enable Telescope"
> > CHECK "Read Camera Temperatures"
> > CHECK "Show User Warnings"
> > all other boxes should be clear.
> 3.11. Hit Close.

congratulations!! the camera should now be ready to take exposures. At this point, its recommended that you spend a moment looking at AZCam tool to familiarize yourself with all of its options.

Using the Camera:
On RHX, in the AZCam tool, you can control various aspects of your exposure. On the left you have buttons for Expose, and Sequence. Expose should be fairly self explanatory. Sequence allows you to perform a sequence of exposures.

Yellow boxes in AZCam are boxes that allow imput or have drop down menus that allow you to change settings. Image Type, Time(in seconds), and binning are examples of this.

Green boxes are fields that display data. Filename, Cam Temp, and Dew Temp are examples of this.

After you have made the necessary changes to the settings you should be able to take an exposure. To to this, simply click the expose button. When the readout is completed, the image will be stored in a location available to LHX.

On LHX, the image should now be available in /home/images/<your_own_directory>. This should now be viewable with DS9.

The 4K camera has one CCD , but its two amplifiers write to a FITS image that has extensions: Extension [0] is image header, no pixels; Extension [1] and [2] are the left and right half holding pixels data.

Two commonly used methods to display the fits image in DS9 are:
1. Using the DS9 application, use its file menu:
    File --> Open Other --> Open Mosaic IRAF
2. From the IRAF xterm, load and use package MSCRED
    cl> mscred # load it and see its many tasks
    cl> mscdisp <image> 1 #display a mosiac fits to frame 1
        note: the task images.tv.display could be used, but fits extension must be given, and only half of the image would be displayed. (display image[1], and display image[2])

    cl> mscexam #particularly handy for inspecting focus exposures

When Problems Arise:
symptom: AZCam Tool displays errors.
        Exit the AZCam tool and AZCam server programs and restart them. Remember to set AZCam tool up as needed. If this fails see "how to reset VATTCCD"

symptom: RHX becomes unresponsive.
        Press and hold the power button on RHX until the power resets. Go through the login process into CCD Server. If this fails see "how to reset VATTCCD"

how to reset VATTCCD:
        In the instrument room there is a rack of 3 unusually loud computers. One of them is labeled VATT CCD. The monitor and keyboard on top of this rack are by default connected to the VATT CCD computer. Press and hold the power button on this computer until you see indication on the monitor that this computer is rebooting.

If All Else Fails: Chris Johnson - cell phone 520 229 7617