

AzCamTool Manual

Michael Lesser

University of Arizona

Imaging Technology Laboratory

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Introduction

AzCam is a software image data acquisition system developed at the University of Arizona Imaging Technology Laboratory. It currently operates [Astronomical Research Cameras, Inc.](#) Gen3, Gen2, and Gen1 CCD controllers and [Magellan Guider](#) controllers.

The AzCam web site containing the latest version of this document as well as files for downloading is located at <http://azcam.itl.arizona.edu>.

This manual assumes AzCam is already installed and configured for a specific system. AzCam installation and configuration is described in another document, [AzCamInstallationManual](#). AzCam syntax and other command features are described in the AzCam User's Manual, [AzCamUsersManual](#).

AzCamTool

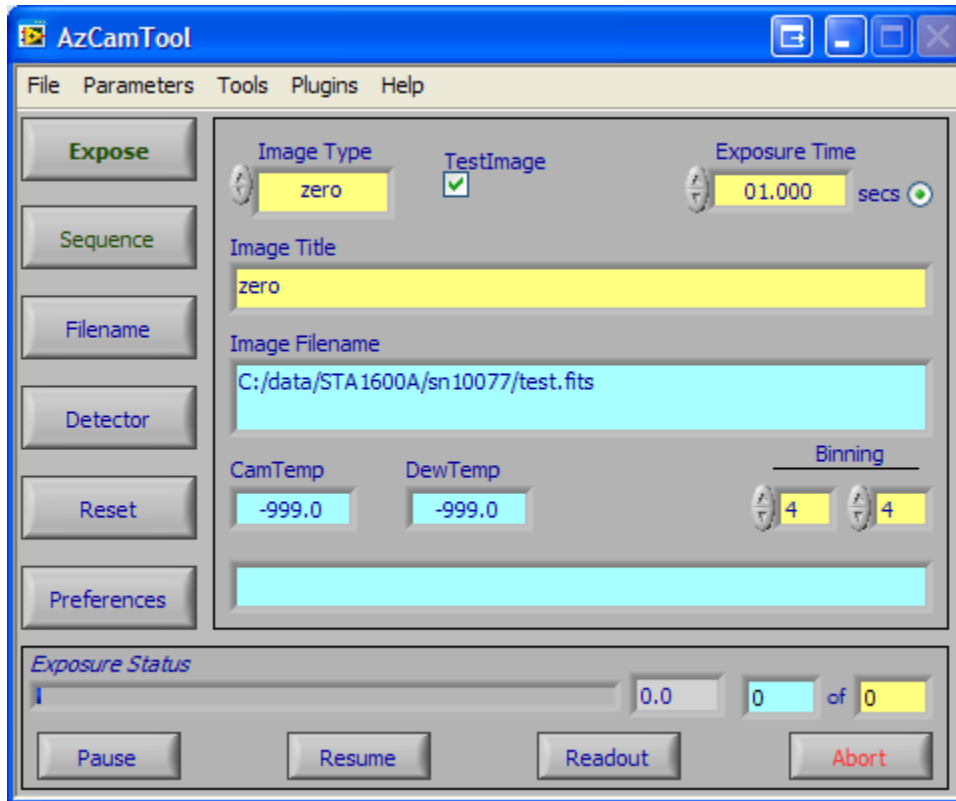
This section describes the basic operating concepts of AzCamTool when used as an observing tool for astronomical imaging. AzCamTool supports Astronomical Research Cameras, Inc. (ARC) camera controllers and ITL/Magellan Guider controllers with PCI data acquisition interfaces.

We use the forward slash "/" for filenames, which should be interpreted as reverse slashes "\" under Windows and forward slashes "/" under Linux. In most cases, forward slashes are operating system independent and are internally translated as needed.

Startup

AzCamTool is usually started automatically when AzCam starts. It may be started manually from the **StartAzCamTool()** command.

Main Window

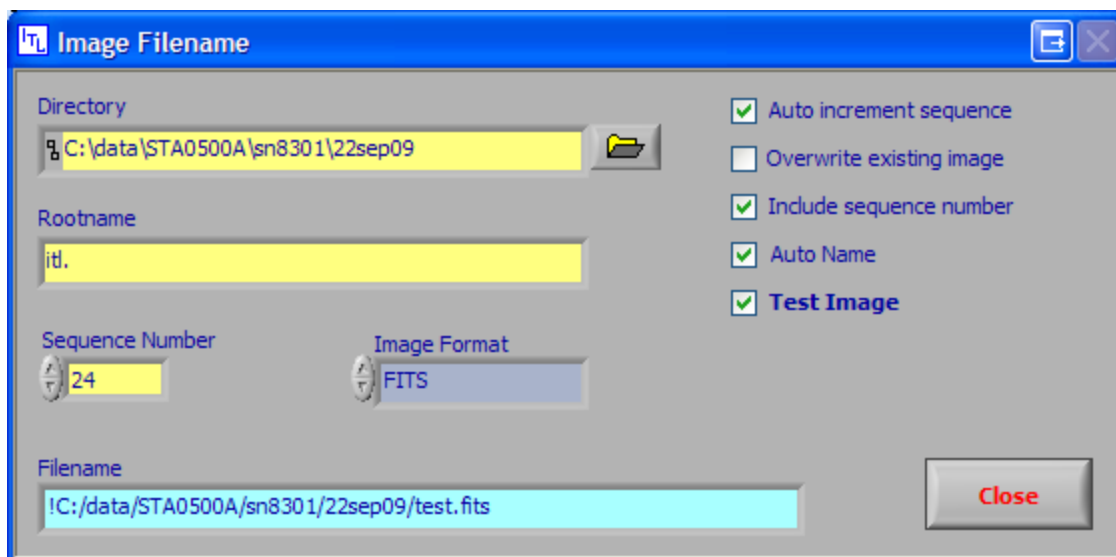


The main window of AzCamTool is shown above. Cyan colored fields are for display only and yellow fields are for data entry. There are some purple fields throughout AzCamTool which can be edited but are for expert use only. The CamTemp, DewTemp, Image Filename, and Message Display indicators are automatically updated. CamTemp typically refers to the detector temperature and DewTemp is the cooler (LN2) temperature, but the actual sensors and their locations are system dependent.

A typical image exposure is made by selecting the Image Type, setting the Exposure time, and pressing Expose. Image Type is used to set the image type in the image header, to enable comparison lamps for some systems, and to control the shutter during exposure.

Comparison lamps are used when the Image Type is set to a comparison exposure type, as determined by AzCamServer. The comp lamps are automatically turned on and off (when the instrument is enabled in Preferences).

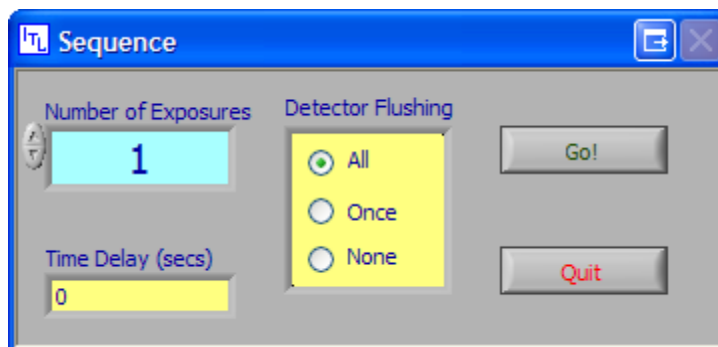
If AutoTitle is enabled (Preferences->Image File) then changing ImageType will also update the Title field to the ImageType string for non-object exposures, and to the last object title entered for object exposure types.



The Filename button opens the Image Filename window above which is used to set the filename, directory, and sequence information. If Test Image is checked in Image Filename or the main window then the image is written to file name test.fits, overwriting any existing test image. The Auto Name option names the image file with Rootname and the Image Type of the exposure. The LocalHost button sets the File Host Name to the local machine (on which AzCamTool is running). If images are not being sent to the local machine, make sure the directory specified exists on the File Host machine!

Image files are only written to disk if the Save Images checkmark is on in Preferences. The start-up default is to save all images.

FITS files from multi-amplifier detectors or mosaics are written in Multi-Extension FITS (MEF) format. Single amplifier data is normally written as normal or non-extended FITS files. The data writing mode is selected in the Filename window by the Image Format parameter.

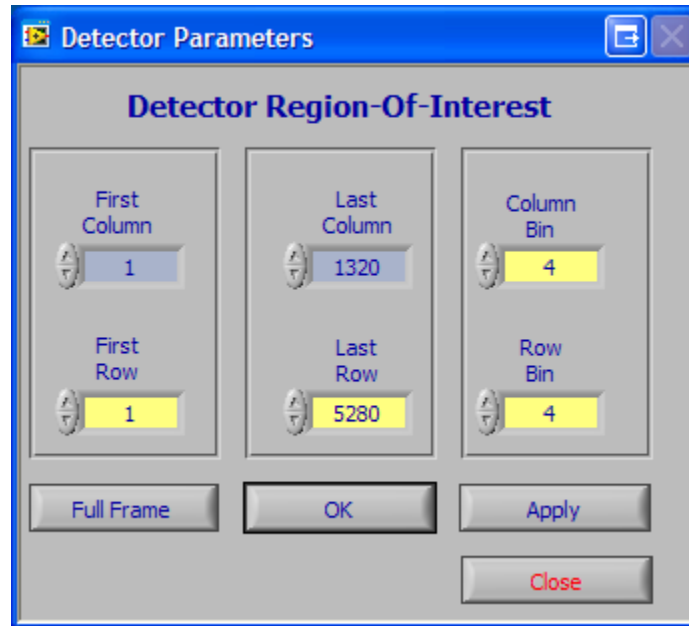


The Sequence button opens the Sequence window above which makes a series of exposures, all of the same ImageType. For a sequence, auto increment sequence in Image Filename should usually be turned on to increment the image sequence number by one after each exposure. For Comparison exposures, opening the Sequence window turns on the selected comp lamp and closing the window turns off the same lamp.

When the system power is turned off, the camera must always be reset using the Reset button once power is turned back on. If problems occur, resetting the controller is often a reasonable fix.

Exactly what happens during reset depends on both the system configuration and software parameters such as reset scripts and modes (engineering or user).

Detector Parameters



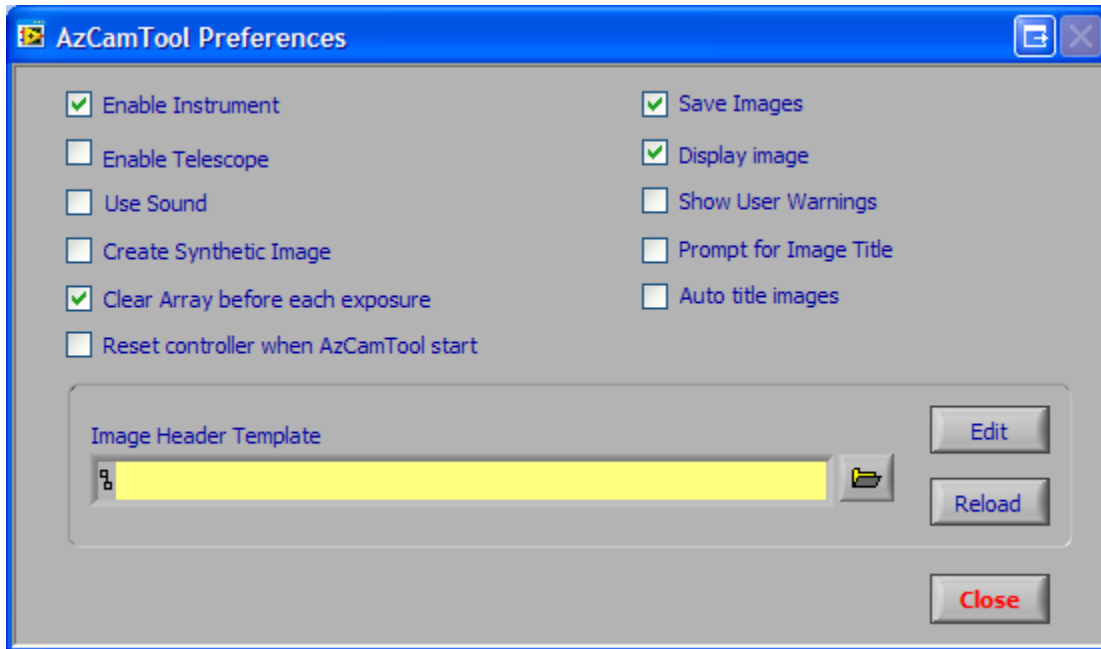
Pressing the Detector button opens the Detector Parameters window shown above. The row and column numbers are always specified in unbinned pixels. The binning may also be changed on the main window directly.

Multiple amplifier modes in general do not support regions of interest (ROI's), although first and last rows other than the full detector often are acceptable.

Parameter Files

AzCamTool uses parameter files to save configuration information. The current parameters automatically updated with the current parameters when AzCamTool closes. You may save the parameters at any time, or to another file, by using the Parameters Menu. This is normally not needed.

Preferences



Various options may be set in Preferences, activated from the main window. Enable Instrument and Enable Telescope must be checked for communication with instruments and telescope, such as for header keywords, focusing, lamp control, etc. An Image Header Template file containing image header information may be specified and edited. Keywords in this file are written to the image file exactly as found in the file. Usually a read-only master template file is initially specified, which you may Save-As another name in the editor and then change. It will automatically be loaded when exiting the editor. When the Use Sound box is checked a sound will play at the end of each integration and at the end of each readout. The sounds files are `snd_exposure_finished.wav` and `snd_readout_finished.wav`.

Help

Help for specific controls in AzCamTool is on-line. Under the Help menu, the Show Help Tips and Show Context Help may be turned on (checked) or off. The Context Help is a separate window with more detailed help while the Help Tips are one line explanations of control functions.

Display

Image display is performed through an image server program. AzCamTool does not directly support a display tool because it does not receive image data. The Display image flag in Preferences should be on to tell the imager server to display an image. AzCam has a built in image server which is used on some systems to locally display to SAO's ds9 program if **xpans** and **ds9** are running on the local machine. For Linux systems, **xpans** runs when **ds9** starts. For Windows, it must be started manually. A batch file named **StartDs9.bat** may be used to start **ds9** and **xpans**.

Tools

Some tools are available from the Tools menu to provide special purpose camera functions such as running local scripts and manual commands. These are for expert use only.

Plugins

The Plugins menu is customized for specific systems. Plugins are typically used for custom scripting such as image acquisition and instrument focus. A program called Engineering Tools is sometimes available to perform low level system functions for system checkout. Note these tools are for expert use only and could potentially damage the detector, instrument, or telescope.