

Usage guidelines and procedures for SharpCap

This document is meant to describe the features and configuration items of interest to our project interior to the SharpCap camera control software.

Commonly used controls

Anything not discussed is generally not used for our experiment.

On Menu bar

File

See section on baseline settings for the “SharpCap Settings”.

Cameras

- *Rescan for Cameras* - If you do not see your camera listed below, unplug and plug back in the USB cable at the computer and then click this. In the cameras section, you will need to select the camera to begin using it. It will appear and be checked automatically if everything is connected properly prior to starting the program.

Options

Nothing here is recommended.

Capture

Nothing here is recommended. The “Start Capture” item does not work the same as the tool bar item of the same name. It immediately starts taking data with no chance to review what you are about to do. The tool bar item is equivalent to “Quick Capture” which should be avoided.

Tools

Nothing here is recommended.

Scripting

Nothing here is recommended.

Help

- *View Help* - What the heck? Why not give it a try? Where do you think this document came from...
- *Check for Updates* - Do not use this. Check the bottom of this document for our procedure on how to upgrade the software.

- About... - You can get the current version of the software here.

On top tool bar

- *Start Capture* - use this to take data. It will pop-up a window where you can specify the number of frames to take, or, the amount of time to collect data at the current frame rate. Always use “number of frames to take”. Don’t forget to use the right number of frames for the profile you are using. For July 17th, that is 13,500 frames for the FASTOCC profile (faster cadence of 5 frames/sec, or 5400 frames if you are using the original OCC profile (slower cadence of 2 frames/sec).
- *Zoom* - Auto shows the full frame but it has to scale the image down to get it to fit. The other useful option is to use 100% so you see an unscaled portion of the image and can scroll around as needed.
- *Image Histogram* - (this is just an icon button on the right). This opens a plot window showing a histogram of the portion of the image in the red box seen in the smaller minified version of the image being read. This is handy to assess the sky background level and any saturation. The tool tip that appears when hovering over the icon is “Show the Image Histogram”.
- *Focus Assistant* - (right-most icon, red magnifying glass). When you click on this, a dropdown list appears: select FWHM Measurement. This opens a plot window that shows a running stream of FWHM (in pixels) for the star that is in the red region of interest. The region can be generously sized but make sure the star is not saturated and the background is black, or nearly so. Usually while focusing, you want the offset set to zero.
- *Reticule/Graticule* - toggles either a bullseye or X overlay and is useful for centering or collimation.

Camera Control Panel

Capture Profiles

- There is a pre-defined standard profile called “OCC” that we set up to use the expected settings desired for the June 3 occultation opportunities. Select “OCC” from the drop-down, then click “LOAD”. This will do a lot of things including turning on the detector cooling. A second profile, “FASTOCC” is now available to be used for the brighter, July 17th star as long as the sky is clear. If there are clouds that make it impossible to see the target star with the “FASTOCC” profile (200 msec exposures), consider switching back to the “OCC” profile with its 500 msec exposures.

Capture Format and Area

All of these parameters are set by the OCC profile: MONO16, 1920x1200, 1x1, FITS.

Camera Controls

- *Exposure* - there is a box you can type into or use a slider to change the exposure time. Load OCC to get back to 500 ms. You will need to manipulate this during various setup steps. Quick Picks is useful if the precise value you want is listed. Auto should never be selected. Note: if you change the exposure time with the slider, it add crazy unnecessary precision to the header, eg 0.100000000998405 instead of 0.1, so typing is preferred when taking data to be saved.
- *Gain* - this sets the amplification. A larger number is more amplification and is inversely proportional to the usual gain we talk about for astronomical detectors. This can be useful when working with bright objects.
- *Offset* - This setting defaults to 0. Think of it as an additive bias to the signal. It brings the sky level to a higher DN level. If you make this too high you will compromise the dynamic range of the detector. Stay alert for last minute determinations of a good setting for this value. If completely unsure, 0 is a safe value.

GPS Controls

This is set by the OCC profile. GPS should be on. **AMZ note: As of May 20, Sharp Cap does not add the longitude, latitude and altitude of a site to the header or associated camera settings file that comes in the folder created by exposure set. You MUST write your location down on the log sheet (the white GPS pop up window has lat and lon only-- apparently altitude is not transmitted in the QHY firmware, if you can get altitude via another GPS, please write it down!).**

Image Controls

None of these controls should be adjusted. Gamma=1, Brightness=0, Contrast=0, Timestamp Frames=Off

Thermal Controls

This is set by the OCC profile. Cooler power is set to "auto" and the target temperature is set to 0 (deg C).

Preprocessing

These functions are not to be used. Both set to "None".

Display Controls

Do not use. Leave all controls set to 1.0

Useful tidbits

- The program has a “night vision” mode. Normal looking for day use, mostly red for night time use. To change this setting look in File -> SharpCap Settings and look for the entry “Display in night vision colours”. Select or clear as desired. Click “Apply” to affect the change and “Ok” to leave the configuration window. Do not change anything else on this screen.

Baseline settings

This information documents the configurable settings of the software, built from version 3.0.3906.0 (2017-05-13)

File->SharpCap Settings

General

- ✓ Automatically connect to camera when SharpCap starts
 - Display in night vision colours
 - ✓ Save Capture settings file alongside each capture
- “Default Zoom” and “Saved Target Names” are not important.
- Show tips when SharpCap starts
 - Start cameras with ‘Auto’ output format (for supported cameras)
- Preferred Video Format: **SER**
Preferred Still Format: **FITS**

Hardware

All settings should be “None”

Filenames

Save captured files to: **C:\Users\mu69\Desktop\SharpCap Captures**

- ✓ Organize captured files into subfolders
 - First by: **Date** Then by: **Target Name**
- Use UTC times in file and folder names
- ✓ Use sortable date format (YYYY-MM-DD)
- Create WinJUPOS Compatible File Names
- Include time in filenames
- ✓ Create subfolder for each sequences

Do NOT modify the sample filenames, let the options chosen dictate the form of the names.

DirectShow

Settings not relevant to the QHY camera.

Startup Scripts

None.

How to upgrade SharpCap in the field

If instructed by the team leader(s), an upgrade of SharpCap is handled by distributing a self-installing executable that will do the upgrade.

1. Make sure SharpCap is not running
2. Plug in USB stick containing new version of SharpCap, browser window opens
3. Open SharpCap folder
4. Double-click on version number as directed by team leader
5. Popup window will prompt if you want this program to make system changes, go ahead and approve
6. Upgrade takes just a few seconds. When done, close all related windows to the upgrade process and eject USB stick.
7. Open SharpCap and verify the new version is installed. If it didn't work, report the error