

# HyperStar Imaging Quick Reference

Step-by-step with CPC telescope, SXV-H9C camera, MicroTouch autofocuser, & MaxIm DL

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## Outline of Procedure

- *Install HyperStar Lens and Camera*
- *Align Telescope*
- *Find Target*
- *Focus Telescope*
- *Setup Imaging Sequence*
- *Capture Images*
- *Process Images*

## Install HyperStar Lens and Camera

- Position telescope with the nose up at a 45° angle, lock clutch
- Attach the counterweight to the 1.25" visual back
- Remove the secondary mirror and place into its holder
- Thread HyperStar lens onto the front of the telescope
- Remove 1.25" nosepiece from camera and thread camera onto the HyperStar lens
- Loosen screws with white washers on HyperStar and orient camera as desired, tighten screws
- Attach power and USB cables to the camera
- Plug USB into computer and power into outlet or battery (always do this *after* attaching cables to camera)
- Tie off cables to the handle on fork arm, leaving enough slack for scope movement
- Loosen altitude clutch to check balance, slide counterweight in or out as needed, lock clutch
- Turn on telescope and computer

## Align Telescope

- Launch MaxIm DL software
- Open Camera Control window and select **Setup** tab
- Connect to camera
- Select **Focus** tab, set **Seconds** to 1.0, **Binning** to 3, and make sure **Continuous** is checked
- Start **Focus**
- Use the MicroTouch hand control to roughly focus the telescope manually
- Right click on the image and select **Crosshairs** to display a set of crosshairs for centering alignment stars
- On the CPC hand control, select **SkyAlign** to begin alignment
- Point the telescope to the first alignment star
- Align the star using the finderscope, press **Enter**
- Center the alignment star on the crosshairs in MaxIm DL, press **Align**
- Repeat for the second and third alignment stars

## Find Target

- Use the CPC hand control to select an object to image
- Frame the object as desired in the focus window in MaxIm DL
- Stop **Focus**

## Focus Telescope

- Launch FocusMax software
- Press **Focus** button
- Watch the magic
- FWHM value after focusing will usually be 1.5-2.5, depending on seeing conditions
- If the focus procedure does not seem to work correctly, you may need to find a brighter star than is in the frame, then move back to the object
- Close FocusMax and resize MaxIm DL window to full screen

## Setup Imaging Sequence and Capture Images

- Select **Sequence** tab in the Camera Control window
- Type in a name for the file (usually just the name of the object)
- Select **Set Destination Path** under Options and choose or create a folder to put the images in (usually named after the current date)
- Select **Setup Sequence** under Options
- Choose the desired exposure time and number of exposures (30 seconds and 10-30 exposures is common)
- Start **Sequence**
- Have a snack. Enjoy being under the stars. Ponder the mysteries of life, the universe, and everything.

## **Repeat Imaging Procedure**

- Start **Focus** in MaxIm DL again
- Select new target with CPC hand control
- Frame object as desired
- It is recommended to run FocusMax on each new object
- Choose new file name in **Sequence** and reset **Start at** to 1
- Begin new sequence
- Repeat until the sun rises