Setting up the Telescope

1. Remove the cover from the primary mirror

2. Turn on the telescope
   a. Flip the small silver switch on the base
   b. Flip the switch on the console to "On"

3. Wait for the hand paddle to turn on

4. Follow the directions on the hand paddle (see below).

1

Select "Telescope" (1) then "Align" (2)

Scroll down and select "Polar" (3)

Align the telescope to Hour-Angle 0 (due South) Declanation 90. NOTE: Finderscope will be upside-down.

Once at Dec. 90, press Enter and watch!

2

3

Aligning the Telescope

1. Locate Polaris in your finder scope
2. Center Polaris as much as possible
3. Attach the 40mm lens to the eyepiece, center Polaris again
4. Attach 20mm lens and center Polaris again
5. Attach 12mm Crosshair lens and find Polaris , then hit Enter
6. The telescope will reorient itself to a new star (such as Enif or Altair)
7. Repeat steps 2-5 for the new star, then press Enter.
8. The telescope is now ready to use!

Notes about opening the observatory:

-Checking that the cords are connected to the motor is very important; mice might get in and chew on them. If this happens, both you and the observatory are in danger when the roof moves!

- Absolutely no food is allowed in the observatory! This is how mice and other small creatures are attracted.

- Be sure to treat everything you use with care and respect. We all share this facility and want to get the most benefit out of it!

About the Telescope

This is a Meade LX200 EMC Schmidt-Cassegrain telescope with a 12'' mirror. It includes a 12" Schmidt-Cassegrain optical tube assembly with EMC Super Multi-Coatings (D = 305mm, F = 3048mm-f/10). You are about to exlore a world full of planets, stars, and galaxies - all you have to do is open your eyes!-

Shutting down the telescope

1. Make sure that all lenses are back in their case
2. Align the telescscope horizontally so that the roof won't collide with it
3. Put the mirror cover over the telescope
4. Turn off both power switches (console and base)
5. Close up the observatory!

Checklist:

☐ VERY IMPORTANT: Make sure the crosshair lens is OFF and the battery is REMOVED
☐ Before closing, make sure the hooks are properly secured

☐ Make sure the roof motor is unplugged
☐ Turn off all lights - both inside and outside
☐ Sign out in the log book and note any problems
　 Make sure that the exterior door is locked

Make sure that the telescope is at Declination 90. The telescope should now be pointing towards the warm room, just slightly above the roof line!

How to Use the Hand Paddle

Navigating the Hand Paddle
You'll want to use the Previous and Next buttons to scroll up and down through menus. To select an option, press enter. If you ever get lost, Mode will take you back to the main

Moving the Telescope:
The North-South-East-West buttons will move the telecscope in those directions. But be careful! As the telescope moves, the coordinates can become confusing.

Adjusting the Sensitivity
As you locate and find stars through the eye piece, it will become necessary to move the telescope by smaller increments. Buttons 0-1-4-7 will adjust the rate of motion, with 0 being the slowest.

Opening up the Observatory

1. Check all cables and connections to the roof/motor
2. Unscrew the hooks connecting the wall to the roof There are three hooks (two on the west wall, one on the east)
3. Make sure that the telescope is at an angle that won't collide with the roof
4. Plug the motor in the adjacent outlet
5. Push the button on the motor up until the roof stops moving
6. Don't forget to unplug the motor when you're done!
7. Complete these steps in reverse order to close the observatory

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Observatory User Guide

College of Wooster Physics Department

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Introduction: The Sky

The Sky will be your primary tool in quickly accessing different objects that the telescope can see in an automated way. This guide will show you how to use The Sky along with the telescope to explore the night sky!

Below you can see the toolbar used in The Sky. Throughout this guide, we will reference various buttons. You can find a couple descriptions of useful buttons below.
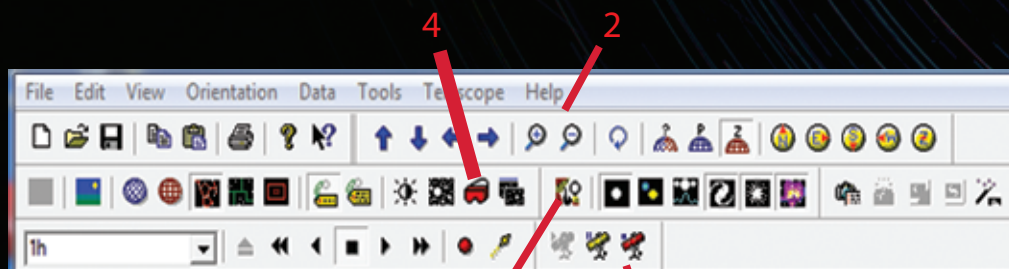
1. Find Star
2. Zoom In/Out
3. Establish/De-establish Link
4. Toggle Night Mode

Establishing Link
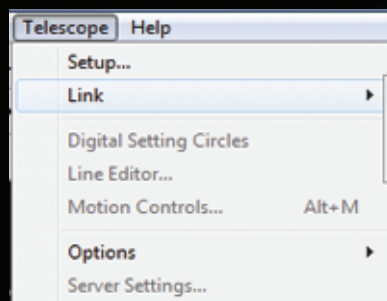
Establishing the Link
- Under the Telescope tab, find "Link"
- Click Establish and wait
- The computer will automatically sync the software to the computer on the telescope
- If your window turns red, you can toggle night mode from the toolbar

If the window turns red, don't worry! Reference the toolbar guide to find out how to change it back

Using CCDOps

When taking data, using a Charged Coupled Device (CCD) Camera can help you take snapshots of the night sky. This will enable you to quantitatively explain changes in the stars you observe. CCDOps is the companion software that will enable you to control the camera and take pictures.

Establishing Link
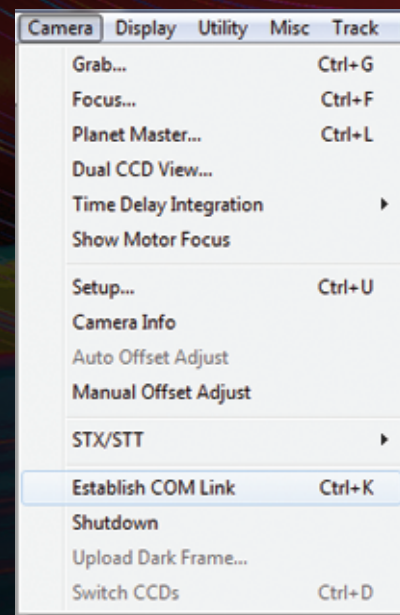
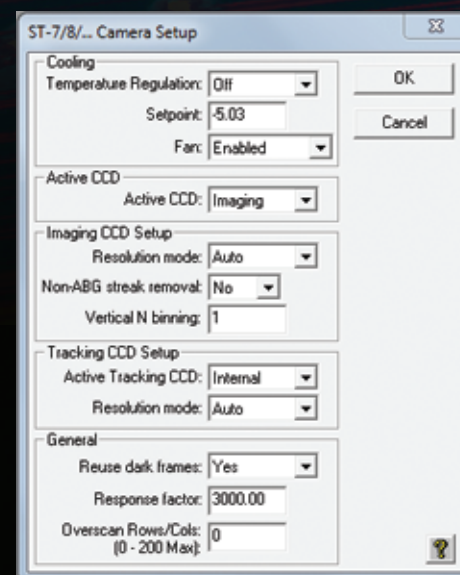- To establish a link, go to the Camera tab on the toolbar

-Select "Establish COM Link"

-Wait for the computer to detect the camera. If set up correclty, a window should prompt you with camera options

-In the bottom right-hand corner of the screen you can monitor the temperature (Celsius) of the camera. Make sure it stays 20 degrees below the ambient temperature!

Setting up the Camera

After you establish the link, a box will prompt you with Camera Setup Options. For general use, the only options you need to change are under Cooling. Temperature Regulation should be ON and the Setpoint should be 20 degrees below the temperature current temperature outside.

Using the Toolbar

A lot of the directions shown have hotkeys assigned to them.
1. This will quickly establish a link with the camera
2. Use this button to shut down the CCD camera before exiting CCDOps
3. You can click here to take snapshots of the sky from the camera
4. AutG (AutoGrab) can be used to take multiple exposures and take images in multiple filters.
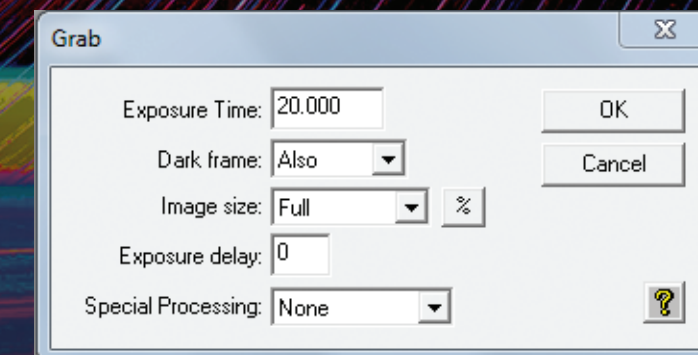
To take photos, click the Grab button on the toolbar. This will lead you to a window with several options for the picture.

Exposure Time: This is how long you want the camera to collect light for. The longer the exposure, the more detailed the photo. Howeve,r too long of an exposure will give a blurry picture due to imperfect tracking.

Dark Frame: These will help balance the light to dark ratio in the photo by removing thermal noise.
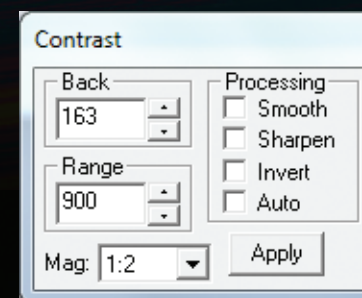
This window should appear after your image downloads. The Back and Range buttons can be used to change the visibility of the snapshot.
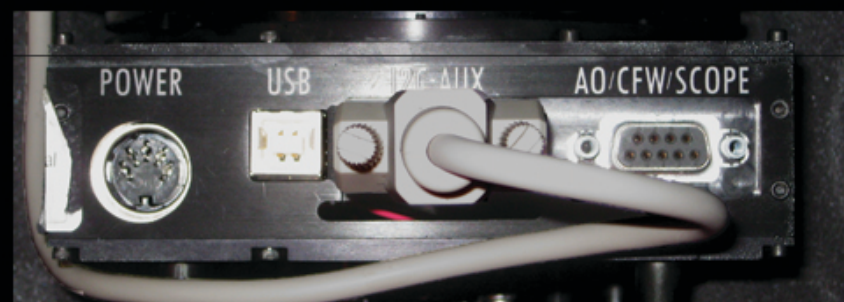
Disconnecting is easy - just click the ShtDn button and properly put away the camera!
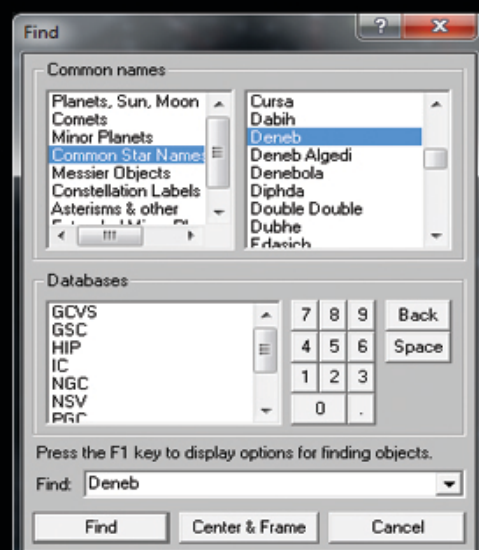
Find Object

Directions:
-Find a directory that may contain your object (such as common star names)
-Locate the object you need in the right-hand menu
-If you know the database the object is in, you can search using databases too!

After you locate the object, you should see this screen

Navigating with Motion Controls

The motion control window that appears can help you slew the camera from the computer. The Jog command can be changed to adjust the telescope in different increments. Be careful - the Cardinal directions are from the telescope's perspective, not yours.

Terminating Link

To terminate the link with the telescope, simply follow the directions for establishing a link. This time, click on Terminate instead of Establish

The connection panel for the CCD Camera The Power, USB, and A0/CFW/SCOPE ports are the ports you will need .
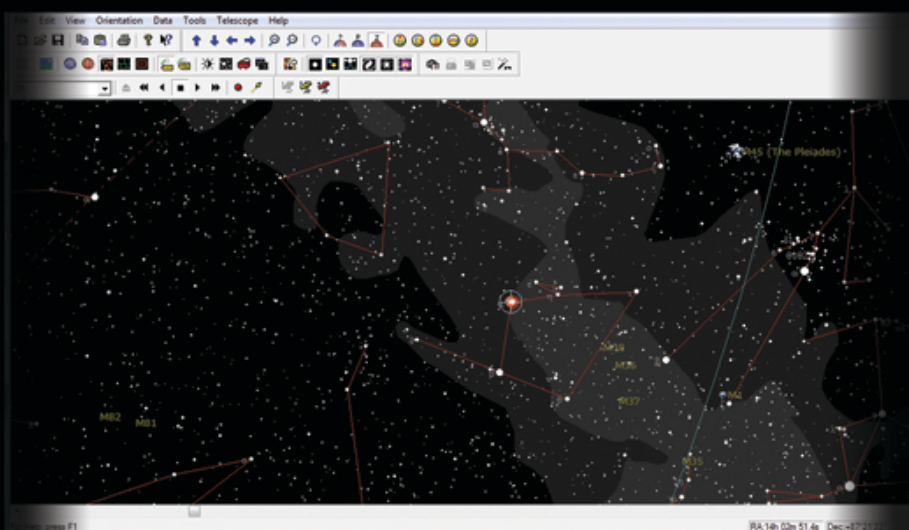

CCD connects to A0/CFW/SCOPE.

Physical Setup for the CCD Camera

1. Open the case containing the CCD camera and connection cables
2. Unscrew the cap from the camera and attach the camera to the telescope very carefully
3. Make all the appropriate connections between the cables and their respective inputs.
4. Make sure that the USB is connected to the adapter that goes through the ground.
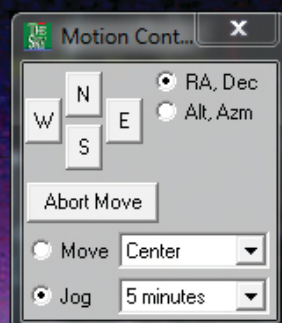
See above graphic for connections

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College of Wooster Observatory

Software User Guide

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