

TCSng Operating Notes 7/08/16

Cold Start Up

Follow the steps below to bring the telescope out of lightning shutdown:

1. Turn on main power at the two white breakers on the south west side of the building.
2. Follow the steps in the Normal Start Up section.

Normal Start Up

1. Plug in the twist lock AC power cable to the dome shutter motor on the west wall.
2. Switch "dome power" to the ON position at the observatory control box (middle black button) located on the south wall of the dome.
3. Open the upper shutter by pressing and releasing the OPEN button on the shutter control box. Be ready to hit the STOP button until the shutter is fully open. When the dome is stowed this box is to the south.
4. Switch "telescope power" to the ON position at the observatory control box located on the south wall of the dome.
5. Unplug the twist lock AC power cable to the dome shutter motor on the west wall, when the shutter is fully open (or the dome won't move).
6. Power on the TCS console/GUI computer in the rack along the west wall.
7. When the dual boot screen comes up, choose Ubuntu. Note: you have only 10 seconds to do this before it will login Windows.
8. When prompted login as "21inch observer", password - scopes4dopes. Hit Enter.
9. Switch "telescope control" to the remote position on the observatory control box.
10. Open the mirror covers using the handles on the side of the telescope (in the correct order, south side first then north side).
11. Start INDIserver.
12. Start Xephem.
13. It is highly recommended that you initialize the telescope before you start your observations.
14. Record weather conditions before you start observing so you can complete the trouble report later.

Starting TCSng

1. Xephem
 - Click "RT" button under looping if Xephem is not updating the time.
 - Click "View" and Select "Sky View".
2. In the "Sky View" window click on the "telescope" tab and select "INDI Panel"
3. In the "INDI Panel" window that opens connect to each of the following modules:
 1. Expand "TCS-NG-INDI"
 - Telemetry → Connection → On
4. Click "Enable" (red light next to "TCS-NG-INDI" turns green)

Stopping the Telescope

Only one way to stop the telescope:

1. In the "Indi Panel" window
 1. TCS Module
 - Telemetry → Actions → Cancel

Moving the Telescope

- YOU MUST LOOK AND MAKE SURE IT IS CLEAR TO MOVE THE SCOPE (ladders out of the way, etc).
- Telescope must be enabled.

Ways to move:

1. With the Sky View window
 1. Right click on the desired object.
 2. Click Telescope GOTO
 - The Coordinates should populate in the NEXT section of TCS telemetry
 3. Under "Actions" Click "Go Next"
 - Watch the telescope move and make sure to move the dome!
2. Equatorial Coordinates
 1. In Indi control Panel:
 1. Under TCS-NG-INDI
 1. GOTO Functions
 2. Enter Desired RA, Dec and Epoch
 3. Click "set" or hit the enter key
 4. Then under "Actions" "hit Go Next"
 - Watch the telescope move and make sure to move the dome!
 - When moving with the Sky View Window or Entering Equatorial coordinates, the telescope will start tracking automatically.
 - Remember the telescope moves much faster than the dome, and you need to watch to make sure telescope does not hit the staircases or platform attached to the dome.
3. Alt/Az coordinates:
 1. In Indi Control Panel:
 1. Under TCS-NG-INDI
 1. GOTO Functions
 2. Alt Az Goto
 3. Enter the desired Altitude and Azimuth.
 4. Click "Set" or hit the enter key.
 - Watch the telescope move and make sure you move the dome
 - Note: the telescope will start moving after you clicking Set or hitting enter. There is no Go Next Button for Alt/Az positions.

Observing

Initializing:

1. Send the scope to a bright star close to the zenith.
2. Using the paddle, center the star in the finder scope.
3. Center the star in the eyepiece using the finderscopes and paddle.
4. In the "Actions" menu under TCS-NG-INDI Click "Init Next".
 - Don't Click "Init Commanded" unless you are a very experienced user!

Focus:

- Focus is achieved by looking through an eyepiece and adjusting it using the paddle.

Limits:

- For this telescope there is no autodome function. Because of the design of the dome and telescope you need to keep a good eye on where the scope is in relation to the dome. There are many situations where the scope can run into the dome.
- Currently there is no indication (flashing etc) on the TCS screen that you have hit a limit or that you have run into the dome.

Catalogs:

1. Selecting a catalog
 1. In Xephem Main Window
 - Data
 - Files
 - The Files window will pop up you can add catalogs in the "Files" menu and remove them with the "Delete" button.
2. Catalogs in list form
 1. In Xephem Main Window
 - Data Menu
 - Index
 - The Index window will pop up. You can select an object by name.
 - If you click Telescope GoTo the "Next" coordinates will be populated in the Indi Panel.
 - You can then click Go Next to move to that object.
 - To use the search function, you must type in the name of the object exactly or it will return no results.

Normal Shutdown

1. Stow the telescope. In the TCS GUI click on the "Telescope GoTo Functions" tab. Click on the "Stow" service position.
2. Disable the telescope: TCS-NG-INDI → Actions → Enable

- Note: green light will turn red
- 3. Close the telescope mirror covers (in the correct order - north first, then south).
- 4. Stow the dome. Use the hand paddle to center the shutter over the eastern dome rotation wheel above the main entry door to the dome.
- 5. Plug in the twist lock AC power cable to the dome shutter motor on the west wall.
- 6. Close the shutter by pressing and releasing the CLOSE button on the shutter control box. Be ready to hit the STOP button until the shutter is fully closed. When the dome is stowed this box is to the south.
- 7. Unplug the twist lock AC power cable to the dome shutter motor on the west wall.
- 8. Shutdown TCS using the "X" in the upper right corner of the GUI.
- 9. Fill out and send a 21" Trouble Report even if there weren't any problems during the night!
- 10. Shutdown the TCS computer in the rack along the west wall by clicking "Start" in the lower left hand corner of the computer screen. Click "Shutdown".
- 11. Switch "telescope power" to the OFF position at the observatory control box located on the south wall of the dome.
- 12. Switch "dome power" to the OFF position at the observatory control box (middle black button) located on the south wall of the dome.
- 13. Switch "dome control" to the local position on the observatory control box.

Lightning Shutdown

1. Complete "Normal Shutdown"
2. Turn off main power at the two white breakers on the south west side of the building.

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