

TCSng Operating Notes 2/04/15

Cold Start Power Up Sequence

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 (or the dome won't move).
6. Power on the TCS console/GUI computer under the table.
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", 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. Click ENABLE (comes up green, turns red when clicked)
14. It is highly recommended that you initialize the telescope before you start your observations.

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 "INDI Panel" window that opens connect to each of the following modules:
 1. Expand "TCS-NG-INDI"
 - Telemetry → Connection → On

Stopping the Telescope

Five ways to stop the telescope when moving

1. Use F9 key to cancel motion and ramp down speed (note: this does not stop the telescope from tracking) ??
2. Use the F10 Key to disable the telescope, this is a hard stop, only use in emergency! ??
3. 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).**

- To Enable Telescope:
 - In Indi Control Panel:
 - Enter TCS-NG-INDI module
 - Telemetry
 - Actions
 - Click "Enable"
 - Note red light next to the Actions tab turns green.

- Ways to move:

1. With the Sky View window
 - Right click on the desired object.
 - Click Telescope GOTO
 - The Coordinates should populate in the NEXT section of TCS telemetry
 - Under "Actions" Click "Go Next"
 - Watch the telescope move in the Dome Camera!

2. Equatorial Coordinates
 - In Indi control Panel:
 - Under TCS-NG-INDI
 - GOTO Functions
 - Enter Desired RA, Dec and Epoch
 - Click "set" or hit the enter key
 - Then under "Actions" "hit Go Next"
 - Watch the telescope move in the Dome Camera!

- When moving with the Sky View Window or Entering Equatorial coordinates, the telescope will start tracking automatically.

1. Alt/Az coordinates:
 - In Indi Control Panel:
 - Under TCS-NG-INDI
 - GOTO Functions
 - Alt Az Goto
 - Enter the desired Altitude and Azimuth.
 - Click "Set" or hit the enter key.

- Watch the telescope move in the dome camera
 - Note: the telescope will start moving after you clicking Set or hitting enter. There is no Go Next Button for Alt/Az positions

Observing

- **Turn off the TV camera while observing. The camera uses IR Leds which will interfere with the guider and science camera CCD's.**

1. Initializing

- Send the scope to a bright star close to the zenith
- Using the software paddle, Center the star in the finder scope
- Center the star in the science camera or guider.
- In the "Actions" menu under TCS-NG-INDI Click "Init Next".
- **Don't Click "Init Commanded" unless you are a very experienced user!**

2. Focus

- When starting up for the night it is usually a good idea to "Home" the focus
- Under FOCUS-NG-INDI Homing and Focus Positions click home. The Focus pos should decrease and you should see HOMING in the text box at the top of the panel. Eventually it will reach the home switch, stop moving and zero the focus position.
- Use the other Focus Instrument buttons to move to a nominal focus position.
- Use the Focus Pos box to move the focus to a more precise position.

3. Limits:

- Display The Limit Map:
 - In SkyView Window
 - Click "Control"
 - Click "Horizon"
 - Click "save"
 - click "close"
- Currently there is no indication (flashing etc) on the TCS screen that you have hit a limit
- Software Limits
 1. North
 - 60 Degrees Declination
 - 32 Degrees Elevation
 2. South
 - 5 Degrees Elevation
- Hardware Limits
 - North Limit ~62 degrees declination
 - South Slew Limit 10 degrees elevation (~-48 Dec)
 - South Hard Limit 5 degrees elevation (~-43 Dec)
- Catalogs
 - Selecting a catalog
 - 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
- Catalogs in list form

- 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.

Operating Mont4k

- Start the following programs by double clicking the desktop icon or typing there names in a terminal
 - Dataserver
 - Galilserver
 - fw-gui
 - DS9
- bigccd and soguider have not changed. Please refer to previous notes for their operation

Operating From the Dome

1. You can use Xephem and the Indi Panel on the laptop to control dome and telescope. In Winter Months the laptop is stored in the control room during the summer it is stored in the old TCS console in the dome.
 - Note: you must have the Indi server running on Gerard to use the Indi Panel in the dome.
2. Hardware Paddle
 - The hardware paddle can control the dome, focus and telescope. The default guide and drift (2 and 40 arcsecs/sec) rates are very slow for telescope operation. You can change these values in the rates section of the Indi Panel.

End of Normal Night of Observing

1. Stow the telescope and dome
 - TCS-NG-INDI → Goto Functions → Stow
 - DOME-NG-INDI → Dome Actions → Stow
2. Disable the telescope: TCS-NG-INDI → Actions → Enable
 - Note: green light will turn red
3. Close the Mirror Cover
4. Close the Dome slit
5. Close the Wind Screens
6. Fill the dewer
7. Complete the trouble reports

Lightning Shutdown

1. "Complete Normal Night of observing shutdown"
 2. In Dome
 - Turn off all instrument electronics and unplug from orange outlets under scope (Four Cables)
 - Turn off Telescope power
 - Lower Platform
 - Turn off main power
 3. In Control room
 - On bigaux double click "shutdown bigpop", and click Shutdown bigpop when prompted
 4. Shutdown and unplug all computers.
 - Gerard
 - BIGCCd
 - Bigguider
 - bigaux
- Turn Off printer.
 - Turn off and unplug powerstrip on west wall.
 - Unplug printer relay.
 - Unplug everything from orange outlets behind observer work station
1. In UPS Room
 - Turn off rack power.
 - Unplug
 - GPS
 - Emergency Stop Power 110 VAC
 - Rack Power 110 VAC
 - Rack ground
 - Shutdown UPS following instructions posted on board.

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