**10ft Dome Remote Observing**

**Start Up**

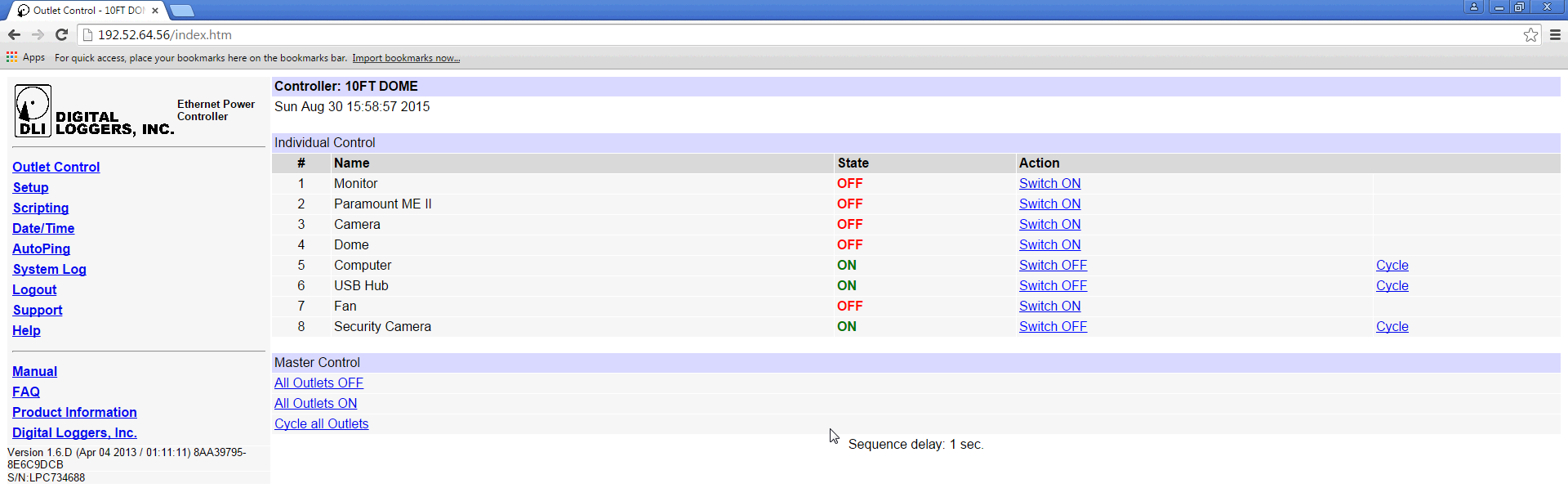
The 10ft Dome can be accessed and controlled remotely via Microsoft Remote Desktop. Microsoft Remote Desktop allows you to log in to a remote computer and view or access its files and programs.

To log into the 10ft dome computer, click on the Microsoft Remote Desktop icon. The 10ft dome should already be a default option, and if it appears in the list of available connections, select “10ft Dome”, otherwise, input mab@mit.edu. The screen should switch and display the Dome computer’s desktop.

From the desktop, open a browser (Firefox or Chrome recommended) and navigate to the IP address 192.52.64.56. This allows you to access the remote Power Controller. The Power Controller allows you to remotely control the on or off status of all of the equipment in the 10ft dome.

The login information should be saved by your browser allowing you to continue to the Power Controller immediately, but if it isn’t, enter the Username: Admin, and the Password: MST3000.

From here, the power status of all of the relevant observing equipment can be controlled.

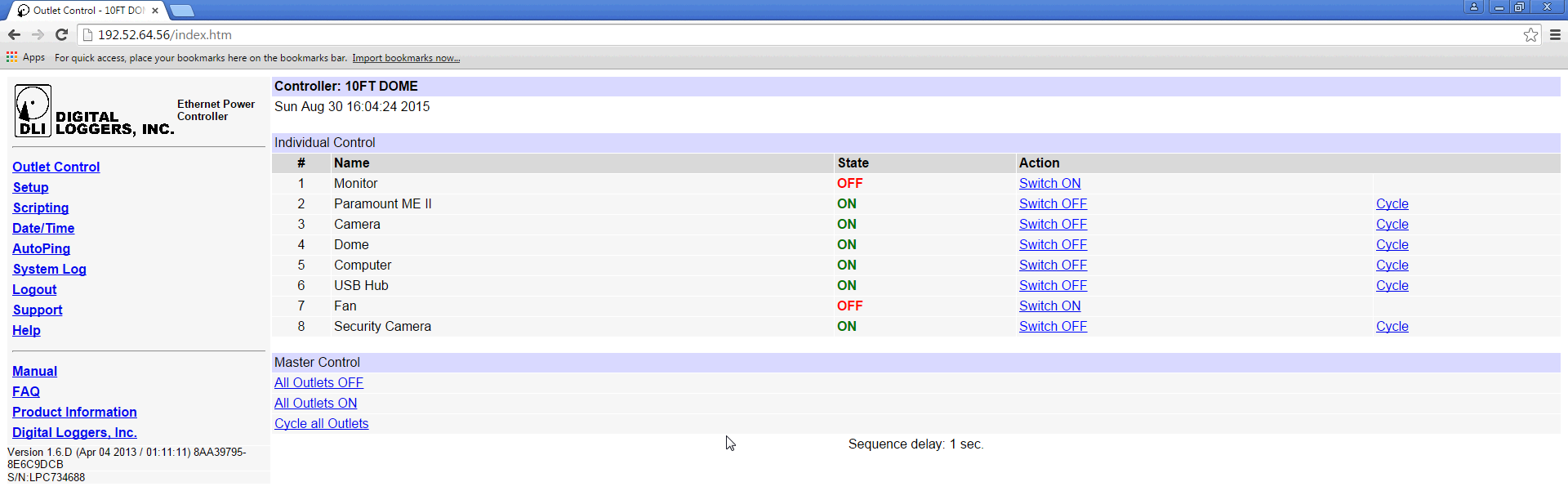


The screen should appear as above, with the Monitor, Paramount ME II, Camera, Dome, and Fan set to “Off”, with the Computer, USB Hub, and Security Camera set to “On”.

The Control Panel gives three options for the power status of the equipment in the 10ft Dome, it allows anything to be turned on, off, or power cycled. These actions can be accessed by clicking the relevant buttons under the “Action” header of the Power Controller. The “Cycle” function simply turns something off and back on again. Of course, the same result could be achieved by setting it to the “OFF” status and then to the “ON” status, but the power cycle function eliminates a step. You’ll mostly be switching them “ON” and “OFF”.

To begin observing, turn the Paramount ME II, Camera, and Dome to the “ON” setting by clicking the “Switch ON” option. Once complete, the screen should display green “ON” labels for the Paramount ME II, Camera, Dome, USB hub, Security Camera, and Computer. Feel free to leave the Fan and Monitor “OFF”.

The power control panel should appear as below.



Once everything is turned on, remote observing is very similar to regular observing, however care should be taken with the order in which things are connected to insure things work together as they should. Many of these steps are simply good practice, and the system will work fine if they’re done slightly out of order, but the whole system works best when these steps are followed. If these steps are followed every time, if/when something goes wrong, you can at least eliminate the startup order when troubleshooting.

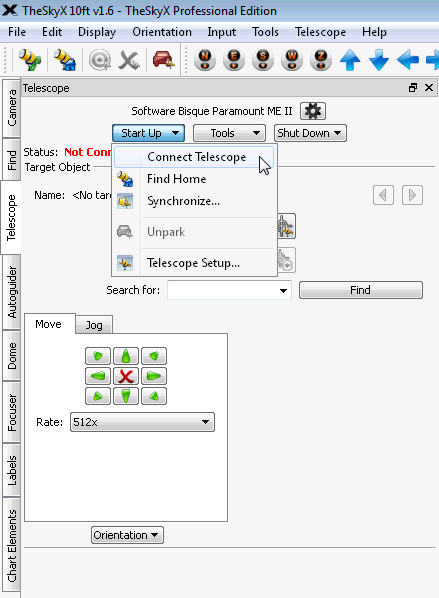
1. **Open TheSkyX**

Open TheSkyX by clicking the icon on the desktop. This step is no different from regular observing.

1. **Connect the Telescope**

Its important to connect the telescope before connecting the dome. When the dome is connected to TheSkyX, it automatically looks for a telescope to slave to. Without a telescope present, the dome has nowhere to point and errors can occur.

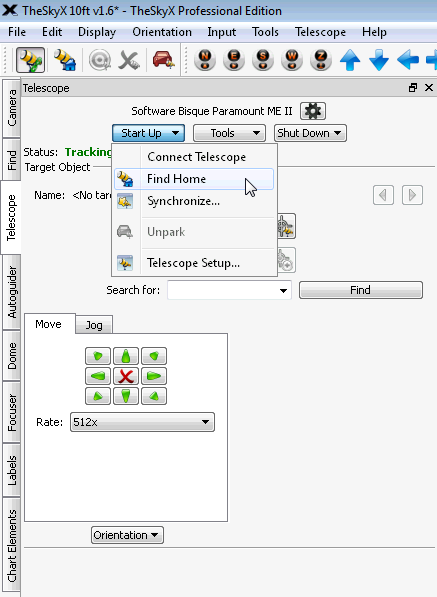
Connect the telescope the normal way through the “Telescope” tab of TheSkyX by clicking “Connect Telescope” under the “Start Up” drop down menu.



1. **Home the Telescope**

TheSkyX should automatically home the telescope upon connection. If this is not the case, home the telescope after connecting it before doing anything else. Its important to home the telescope before connecting the dome because the dome will not track the telescope when the telescope is parked. To the dome, a parked telescope is the same as a disconnected one. Homing the telescope not only ensures the dome will be in the correct place to open upon connection, but also ensures the dome has a trackable target.

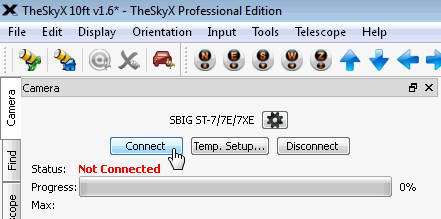
This can be done from the “Telescope” tab by clicking the “Find Home” button under the “Start Up” drop-down menu.



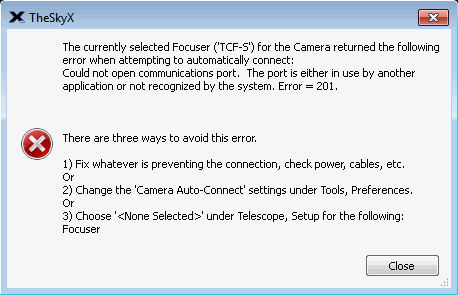
1. **Connect the Camera**

Next connect the camera. Its a good idea to connect the camera as early as possible in the start-up process to give it as much time as possible to cool down before observing.

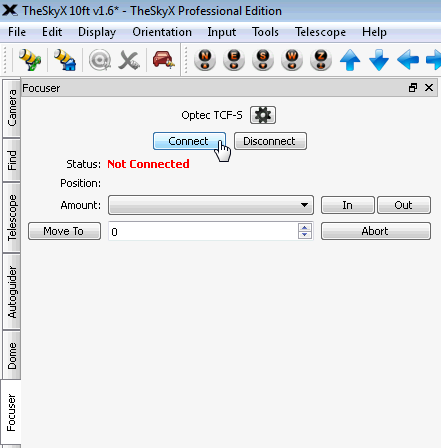
Do this the normally through TheSkyX by navigating to the “Camera” tab and selecting “Connect”.



Occasionally, the focuser won’t connect with the camera and will throw the following error:

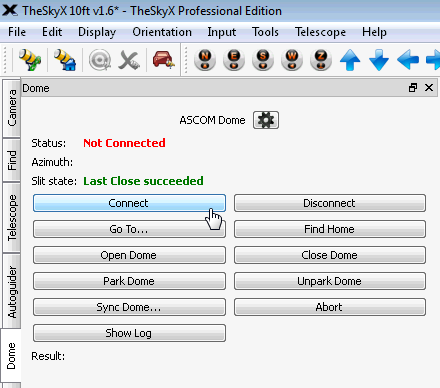


If this happens, the focuser can be manually connected from the “Focuser” tab in TheSkyX by clicking “Connect”.



1. **Connect the Dome**

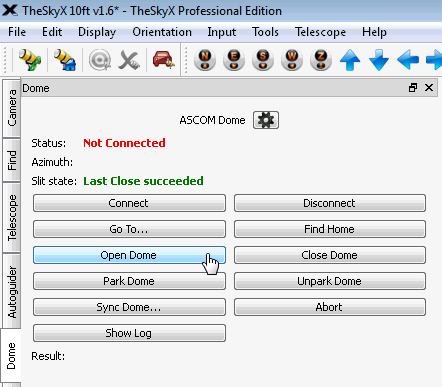
Next the Dome can be connected. The dome can be connected much like the camera or telescope by navigating to the “Dome” tab in TheSkyX and selecting “Connect”.



1. **Open the Dome**

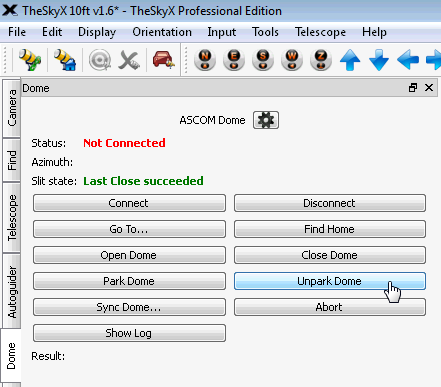
The dome can only be opened or closed when the dome is at the home location. Because of this, the dome will always be at the home location when you start. Unparking the dome officially tells the dome to follow the telescope, so its a good idea to open the dome before unparking it just in case it moves away from home to begin tracking the telescope. This shouldn’t be the case if the telescope was homed, but it's still very good practice.

You can open the dome using the “Open Dome” button in the “Dome” tab in TheSkyX.



1. **Unpark the Dome**

Now the dome can be unparked. Unparking it tells the dome software that it should prepare to move and follow the telescope, it can get confused without this step. The dome can be unparked with the “Unpark Dome” button under the “Dome” tab in TheSkyX.



1. **Observe**

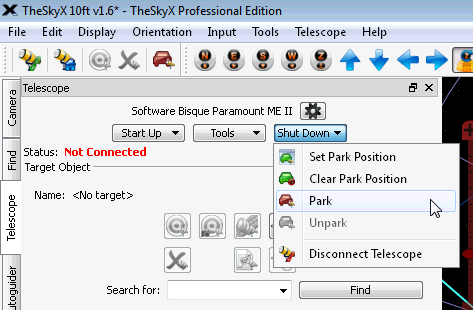
Now you’re ready to observe!

**Shut Down**

The order in which things are shut down and disconnected is just as important as the order in which they’re connected. Ensuring you do everything in the correct order will eliminate potential causes if problems arise.

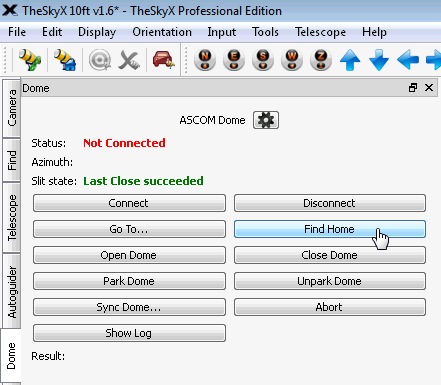
1. **Park the Telescope**

The first step in shutting down the system is to park the telescope. Not only does the telescope need to be parked before shut down, but parking the telescope stops telescope/dome tracking, allowing you to shut down the dome at the same time as the telescope. While the telescope is parked, you can also still take calibration images like darks and biases if need be. The telescope can be parked from the “Telescope” tab in TheSkyX by clicking the “Shut Down” drop-down menu and selecting “park”.



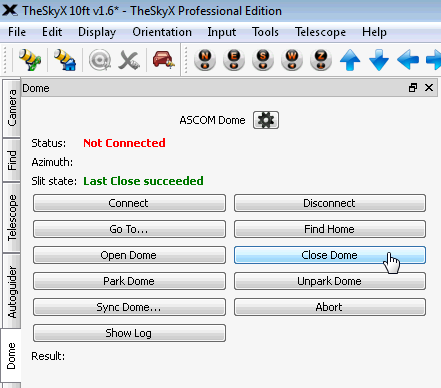
1. **Home the Dome**

Before the dome can be closed and shut down, it first needs to be homed. The slit only receives power when the dome is at home, so physically cannot be closed or opened at any other position. Send the dome to home by clicking “Find Home” on the “Dome” tab in TheSKyX.



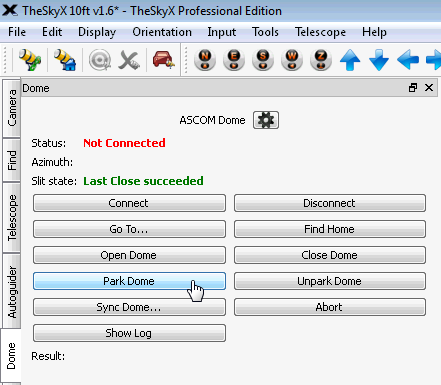
1. **Close the Dome**

After the dome is homed, it can be closed. Close the dome by clicking the “Close Dome” button in the “Dome” tab in “TheSkyX”.



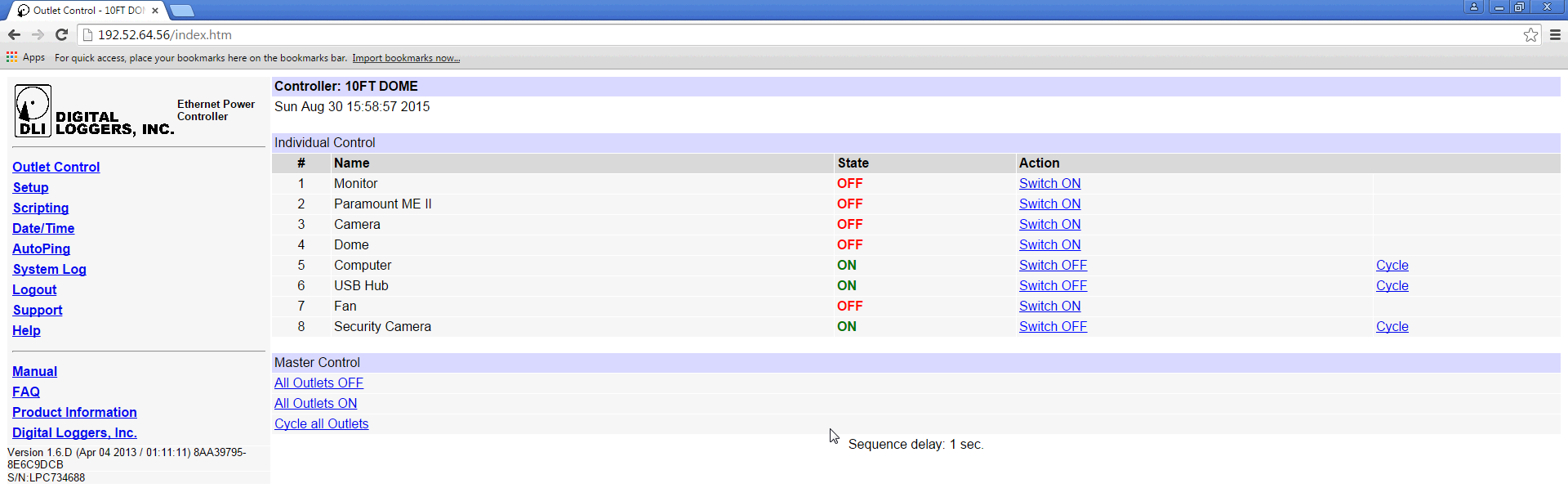
1. **Park the Dome**

Parking the dome communicates to the dome that it is done tracking and is about to be shut off. It stops looking for a telescope, ensures its at home, and ensures the dome is properly closed. Parking the dome can be accomplished from the “Dome” tab of TheSkyX by clicking “Park Dome”.



After the dome is properly closed and parked, and the telescope has stopped taking images, TheSkyX can be closed and the equipment turned off. Turn off everything from the Power Controller similarly to how it was turned on. Click the “Switch Off” action in order to turn off the Monitor, Paramount ME II, Camera, Dome, and Fan. Make sure to leave the Computer, USB Hub, and Security camera ON. The computer can’t be turned on remotely, so the 10ft dome can’t be used until someone physically turns it on again.

After everything is shut down, the Power Controller screen should look like the following.



Once everything is shut down, Microsoft Remote Desktop can be exited by navigating to the start menu and logging off.