



## SkyTracker Operating Guide

This guide is for the purpose of providing users with the basic information needed to operate the SkyTracker / Sky Commander system as installed on a Starmaster brand telescope. Questions concerning mechanics, motors, gear boxes, and electrical wiring should be addressed to Starmaster Telescopes, Phone (620)638-4743.

- Figure 1 is the basic wiring diagram for the SkyTracker / Sky Commander system. Check to make sure the various components are connected as shown. Note: AUX1 port is not used.

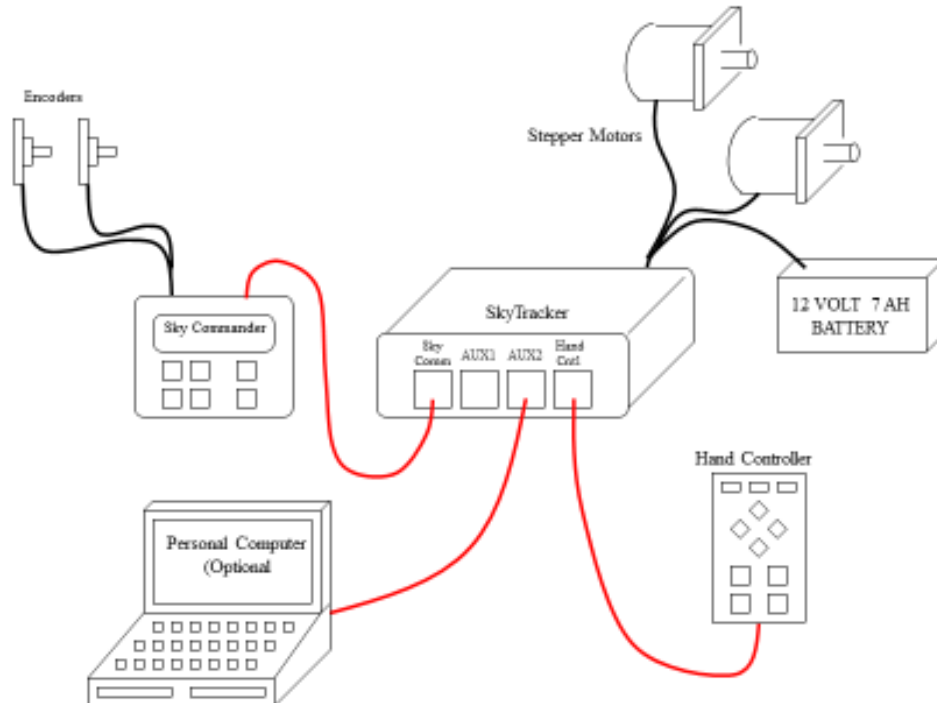
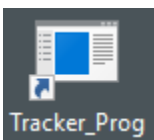


Figure 1 SkyTracker Wiring Configuration

- All 'serial' cables (shown in red) are 4-wire, 4-contact RJ-11 type, and must be wired straight (not twisted). The difference between straight and twisted is the orientation of the connector ends when they are crimped onto the cable. In a straight wired cable, the sequence of wire colors is the same on each end when the two ends are compared side by side in the same orientation.
- Ensure the 12V battery is fully charged and in good condition. Defective batteries are one of the leading causes of problems, and can easily be avoided. The voltage measured on an unloaded battery is NOT an indication of it's condition.
- The SkyTracker power switch should be OFF at this time, and motor gear boxes are disengaged.
- Turn Sky Commander ON and perform 2 star alignment as normal. See Sky Commander User's Manual. It is a good idea to ensure that the Sky Commander is functional, and able to locate objects. If not, the problem must be corrected before proceeding.
- Turn on the SkyTracker and engage the gear boxes. You should see all three lights [TRACK], [GUIDE], [UTIL] on the Hand Controller turn on for about 2 seconds, and then turn OFF. The [UTIL] light should then turn back ON. If this does not happen, there is a problem. Check battery, fuse, and wiring.
- In [UTIL] mode the Arrow Buttons will slew the scope up, down, left and right, ramping up and down in speed. The scope does not track in this mode.
- Press the [UTIL/TRACK] button once to change to [TRACK] mode. The [TRACK] light will turn on and the scope will begin to track celestial objects. In this mode the Sky Commander is continuously supplying drive rate information to the tracker box. If the scope does not track, there may be a problem with the connection between the Sky Commander and SkyTracker. Note: if no connection is present, the scope may move at constant 6 degrees/min (each axis). This behavior is used for calibration purposes, but should not happen in normal operation.

- While in [TRACK] mode, the arrow buttons are used for positioning the object in view. Speed is approximately 8 arc-minutes/sec on each axis.
- Pressing the [GUIDE] button will cause the [GUIDE] light to come on. Positioning speed is now slower, 2 arc-minutes/sec for finer positioning. It is possible to change this speed via PC connected to AUX2 port, but it is not persistent, it will revert to 2 arc-minutes/sec when the SkyTracker is turned OFF. The [GUIDE] button will toggle the mode ON and OFF.
- Pressing the [GOTO] button will cause the SkyTracker to drive the scope to the object that is currently displayed on the Sky Commander. The motors will ramp up and down in speed in order to overcome inertia. During the slewing operation the [UTIL] will flash on and off. Once the target is reached, [TRACK] mode will be entered. Note: If for some reason scope movement is not detected (by Sky Commander) while the motor is being driven, the slew operation will terminate abruptly. This is to prevent damage in the case the scope is stopped by an obstruction such as an observing chair.
- The [STBY] button is used to put the SkyTracker into Stabdbby Mode. In this mode, there is no drive to the motors and all lights are OFF. Pressing [STBY] again, or [UTIL/TRACK] will return the SkyTracker to normal mode. Standby conserves battery power, and it is strongly recommended that it be used whenever the scope will be unattended.
- SkyTracker Calibration: For mechanical reasons, the exact drive rate may not be precise, causing tracking errors. Specifically, the diameters of the ground board and elevation bearing directly effect the drive rates. This error can be calibrated out by using the 'Sky Tracker Calibration Utility', a Windows compatible utility program available at <http://www.skyeng.com> , on the 'Free Downloads' page. Download and install it to your Windows PC. An icon:



will appear on your desktop. Double click it to launch the program. At the top of the window you will see a 'Help' tab with an 'Instructions' selection. Click on that to see instructions and details.

- The SkyTracker box is programmed at the factory for the specific size Starmaster telescope it was shipped with. This is necessary since the drive rate depends on the dimensions of the ground board, and elevation bearing. This programming can be changed however by using the 'Sky Tracker Calibration Utility'. See the above bullet item for instructions on installing. When you launch the program you will see a pick list of different size Starmaster telescopes. Select the one you need and then perform the 'Write Values' operation. It is recommended that you then perform the calibration as described in the instructions under the 'Help' menu.

