

# Orion TrueTrack Single-Axis DC Motor Drive System

#7831

*Thank you for your purchase of an Orion TrueTrack motor drive system. The TrueTrack allows convenient hands-free sidereal tracking of the night sky for SkyView Pro mounted telescopes. The motor drive system features a push button hand controller that can move the telescope along the right ascension (R.A.) axis at speeds 2x and 8x the sidereal rate. This provides an easy way to center objects in the eyepiece. The TrueTrack single-axis drive is also a useful component for doing short and medium-exposure astrophotography. The electronic hand controller allows positional corrections to be made in the right ascension (R.A.) during an astrophotographic exposure.*



Figure 1. The R.A. motor cover.

## Parts List

- 1 R.A. motor assembly
- 1 Manual clutch assembly (brass gears)
- 1 Hand controller
- 1 Battery pack
- 1 4mm socket-head cap screw
- 2 Velcro strips (1 "hook" strip, 1 "loop" strip)

## Attaching the R.A. Motor Drive

Remove the telescope tube, counterweight, and counterweight shaft from the mount before attaching the motor drive.

1. Remove the R.A. motor cover from the mount by loosening the Phillips head screw on the bottom of the cover (Figure 1). Slide the cover off the mount.
2. The R.A. motor assembly (Figure 2) is attached to the mount by a socket-head cap screw that goes through the hole in the rear of the equatorial mount, just above the rear latitude adjustment L-bolt (Figure 3). Attach the 4mm screw to the end of a 4mm hex key and push it up through the hole in the rear of the equatorial mount. Hold the R.A. drive in your hand so that its threaded hole meets up with the screw as it comes out the other end of the hole. Thread the screw into the threaded hole of the R.A. motor assembly until secure, but do not overtighten. This attachment process is tricky, and it may take you several tries before you get it right.

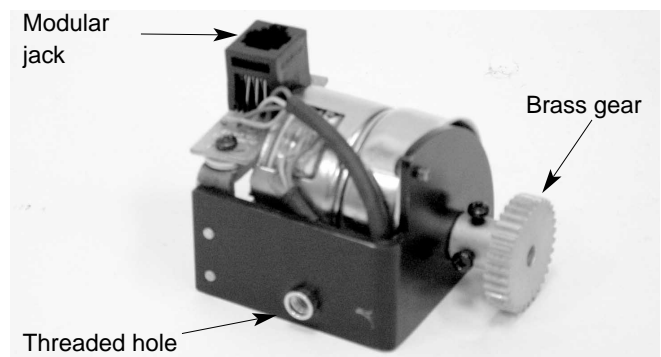


Figure 2. The R.A. motor assembly.

3. Remove the R.A. slow-motion control knob from the R.A. worm gear shaft if it is on the side of the mount that the



Figure 3. The motor is attached to the front of the mount by a socket head cap screw pushed up through the hole in the rear of the mount.

motor assembly's brass gear is on, and attach it to the opposite end of the worm gear shaft.

- Slide the open end of the manual clutch assembly (Figure 4) onto the wormgear shaft. Rotate the manual clutch assembly so that the setscrew will press against the flat on the R.A. worm gear shaft. Secure the manual clutch assembly by tightening the setscrew with a 2mm Allen wrench.

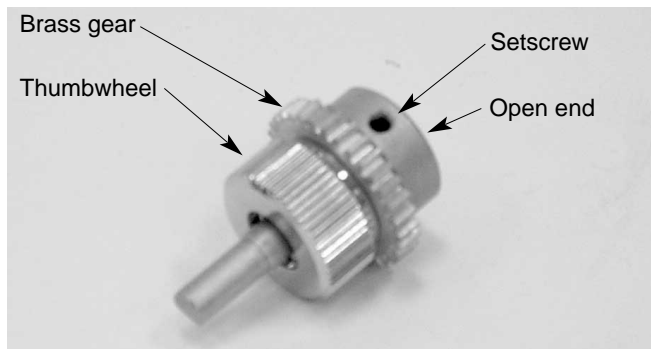


Figure 4. The manual clutch assembly.

- Make certain that the teeth of the motor assembly gear mesh with the teeth of the manual clutch assembly gear. Also, make certain the gears are not too tightly pressed together. You can adjust the way the gears mesh by tightening or loosening the socket-head cap screw that is used to attach the R.A. motor assembly to the mount. If the gears are not meshed correctly or are too tightly pressed together, then the drive will not track properly, or at all.

When finished, the assembled R.A. drive should resemble Figure 5. You can now replace the R.A. motor cover and secure it with the Phillips head screw.

**Please note that if you wish to use the slow-motion control knob to move the telescope in R.A. with the R.A. motor drive attached, you must first loosen the thumbwheel on the manual clutch assembly. Failure to do so may result in damage to the motor.**



Figure 5. The assembled R.A. motor drive.

## Using the Velcro

Two strips of velcro (one strip of “hooks” and one strip of “loops”) have been provided so you can create a place to keep the hand controller out of the way when not in use. Place the “hook” strip of velcro on the back of the hand controller and the “loops” strip on a tripod leg or on the mount where it will be in a conveniently reached spot. Simply hang the hand controller by the velcro when it is not in use. Make certain when you attach the velcro that the hand controller will not interfere with the motion of the mount.

## Operating the Single-Axis Drives

For the motor drive system to track properly, the equatorial mount must be polar aligned. This involves aligning the R.A. axis of the mount so it is parallel to the Earth's axis of rotation (polar axis). Consult the manual that came with your SkyView Pro equatorial mount for details on how to polar align it.

The telescope must also be precisely balanced for the motor drive system to properly track the night sky. Consult the manual that came with your mount for details on balancing your telescope on the R.A. and Dec axes.

Insert four D-cell batteries into the battery pack. Orient the batteries as indicated on the white plastic battery holder. Connect the end of the battery pack's power cord to the DC power input on the hand controller.

A cord is permanently connected to the hand controller; connect the modular plug on the end of the cord to the modular jack on the R.A. motor assembly through the hole in the bottom of the R.A. motor assembly cover.

When observing in the Northern Hemisphere, the N/S switch on the hand controller should be set in the “N” position. For the Southern Hemisphere, it should be in the “S” position.

Make sure the thumbwheel on the manual clutch assembly is engaged (i.e. tightened against the brass gear), and turn the

power switch on the hand controller (Figure 6) to the “ON” position. The LED in the center of the hand controller should be shining green. If properly polar aligned and balanced, the mount will now be tracking the motion of the night sky, and the telescope should hold any astronomical object steady in its eyepiece over time.

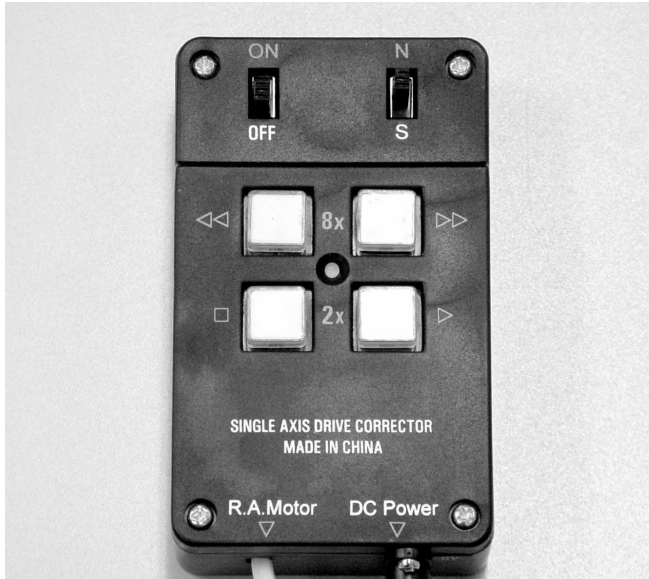


Figure 6. The hand controller.

To move your telescope to a new object, loosen both the R.A. and Dec. lock levers and move the telescope until it is pointed in the general direction of the object you wish to view. Retighten the R.A. and Dec. lock levers. Loosen the thumbwheel on the manual clutch assembly and use the R.A. and Dec. slow-motion control knobs to center the object in the eyepiece’s field of view. Retighten the thumbwheel, and the motor drive system will keep the object centered over time. Remember, never use the slow-motion control knobs when the manual clutch is engaged or you could permanently damage the motor.

There are four buttons on the hand controller. If no buttons are pressed, the motor will turn the R.A. axis of the mount at sidereal rate. If the bottom right button is pressed, the drive will turn at 2x sidereal rate, which will cause objects viewed in the telescope’s eyepiece to move slowly eastward. If the bottom left button is pressed, the drive will stop turning, which will cause objects in the eyepiece to move slowly westward. The bottom two buttons are most useful for guiding purposes during long-exposure astrophotography.

Similarly, the top right button on the hand controller moves objects in the telescope’s eyepiece quickly eastward at 8x the sidereal rate, while the top left button moves objects quickly westward at 8x the sidereal rate. The top two buttons are most useful for centering an object in R.A. within the field of view of an eyepiece.

Note that whenever any of the four buttons on the hand controller are pressed, the LED in the center of the controller will shine red; when the button is released, the LED will be green. Also, when the LED starts to blink at a constant rate, its time to change the batteries in the battery pack.

## Specifications

Power requirements: 6V DC

Battery type: Four D-cells

Operation: Northern or Southern hemisphere

Guiding rates: Sidereal  $\pm 100\%$  sidereal

Centering rates:  $\pm 8x$  sidereal

Manual clutch: External