

StarSync Trackers LLC

Thank you for purchasing StarSync Tracker. This instruction guide and software for the Arduino-compatible controller are available online at www.starsynctrackers.com. Software is also available at www.github.com under starsync tracker.

StarSync Trackers are crafted in the USA, and are made of high quality aluminum and stainless steel. All hardware is also stainless steel, which means the StarSync Tracker doesn't rust. Optional latitude-adjusting tabletop mounts are available at an additional charge, one is made of 1/4" steel plate and square tubing and are painted for rust protection. The other is slightly higher cost and is made from aluminum. The electronics, including the Arduino-compatible controller and stepper driver, compensate for the tangential difference between a straight line and a curved line. The LEDs on the controller and stepper driver are covered with black 'liquid' tape in order to keep the area dark.

Instructions

Getting Started

Your Tracker may arrive fully assembled or in two sections:

- the main Tracker body
- the camera swivel

Insert the long tube on the camera swivel into the hole on the camera mount. Using a 3/32 allen wrench, tighten the set screw on each side of the tube to hold the camera swivel tube firmly in place. Do not overtighten.

Mounting and Leveling the Tracker

Mount the Tracker to either your own tripod or the optional tabletop mount. **When using the tracker in the northern hemisphere - The plate axis should be on the left side of center and the motor on the right when facing north . (southern hemisphere is the same except facing south)**

If using a tripod, attach the Tracker using one of the three 1/4" threaded holes on the underside of the Tracker body. The center hole will work best for many camera setups. The holes on either side may work best if the camera weight is off-center. There is also a 3/8" hole for mounting on a tripod head for the larger 3/8-16 mounting bolt on some tripods.

If using the optional tabletop mount, bolt the Tracker to the mount using the two outermost threaded holes on the underside of the Tracker. .

Make sure the bottom plate of the Tracker is level when in use.

Attaching the Camera

Loosen the locking handle (counter-clockwise) on the camera swivel and rotate the swivel to an angle that provides easy clearance for attaching your camera. Tighten the locking handle. (clockwise)

Mount your camera on the 1/4-20 threaded bolt, rotating at least twice to secure it. Tighten with the 1.75 inch knurled camera lock to securely lock your camera in place.

Polar Alignment

Roughly align the axis of the two plates to the celestial north pole (near Polaris).

Set your green laser in the laser cradle. If your laser has a momentary switch, be sure to set the laser with the button up and directly over the center of the cradle. Turn the laser on and align as true to the North Pole as possible. You can increase the accuracy of alignment by offsetting from Polaris toward the stars in the handle of the Big Dipper by $\frac{3}{4}$ degree (about a pinky finger width at arms length).

It is even more important to have an accurate polar alignment with longer integrations and/or when using longer focal length optics.

Camera Alignment

While firmly supporting the camera, loosen the swivel lock handle enough to allow you to move the camera to your target field. Once there, re-tighten the swivel lock handle. Loosen the knurled camera lock to get the correct frame orientation. Be sure to tighten the camera lock afterward.

The Tracker allows you to adjust your camera to virtually any position and any angle. You may want to experiment with adjusting the camera position in daylight.

Tracker Operation

The Tracker can be powered with any 12 vdc power source (500 m.a. min.) The receptacle on the electronics accepts a 2.1 mm jack (center positive). The Tracker can

also be powered by a car battery with the appropriate adapter. LiPO batteries and 12 vdc plug to car receptacle are available through StarSync Trackers LLC.

When the Tracker is turned on, the plates will automatically close to within about $\frac{3}{4}$ inch. It then begins tracking. The Tracker can run 2.5 hours before it must be reset. To reset the Tracker, simply turn it off and wait a few seconds before turning it back on. The Tracker will begin a rapid rewind. It takes about a minute or less. When it reaches near the bottom of the lead screw it will automatically begin tracking again.

Caution : Don't disconnect the motor while the drive is powered. It **WILL** damage stepper driver. Also be careful when using a green laser and obey any local, state or federal laws concerning the use of your laser.