

Quick Start Guide

ZEQ25GT™ Balanced GoTo Equatorial Mount Models: #7100, #7101, #7102



PACKAGE CONTENTS¹

- Telescope Mount – with GPS, and AccuAligning™ dark field illuminated Polar Scope (except Model #7101)
- Hand Controller (HC) – Go2Nova® #8408
- Tripod – 1.5-inch size (#7100) or 2-inch (#7102)
- Counterweight – 10.4 lbs X1 (4.7 kg)
- Polar Scope LED Cable (except Model #7101)
- Controller Cables – qty. 2
- AC Adapter – 100-240V

ONLINE RESOURCES (at www.iOptron.com, under “Support”)

- User’s Manual
- Tips for set up and using the products
- Hand controller and mount firmware upgrades (check online for the latest version)
- Reviews and feedbacks from other customers

REV. 1.04

¹ Packaging may change from time to time without notice.

CAUTION: This product uses a delicate tension-based clutch mechanism; DO NOT fully lock the 2 Tension Adjusters during operations. (Details in Step 7.)

- Latitude Range:** The mount is by default shipped with the **Long Latitude Adjustment Knob** installed (for 35-60°). At lower latitudes of 0-35°, the **Short Latitude Adj. Knob** needs to be used. To change this knob, remove the Latitude Locking T-bolts on both sides (do not lose the 4 washers). Unscrew Bottom Post Locking Screw to free the Bottom Latitude Adj. Post and remove the Latitude Adj. Knob. Thread in evenly the adequate Latitude Adj. Knob to Top and Bottom Latitude Adjustment Posts. Reinstall and tighten bottom locking screw. Lastly, with 4 washers all properly placed, insert and tighten Latitude Locking T-bolts into the upper threaded holes.



- Tripod Setup:** The **Alignment Peg** should be at the north side for northern hemisphere, and vice versa. Thread the tripod Center Rod through tripod head and insert the Accessory Tray and the Tray Locking Knob. Leave Tray Locking Knob slightly loose.

[**TIP:** The removable Alignment Peg may be placed at the opposite location on the tripod head should the scope hit the tripod leg at high latitudes. This does not change the setup configuration described above.]

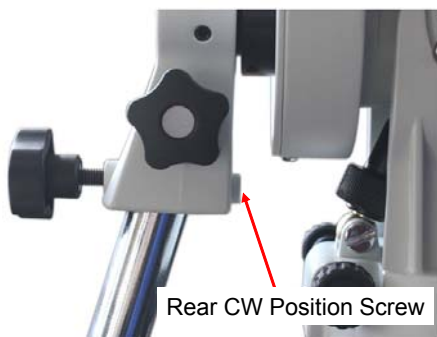
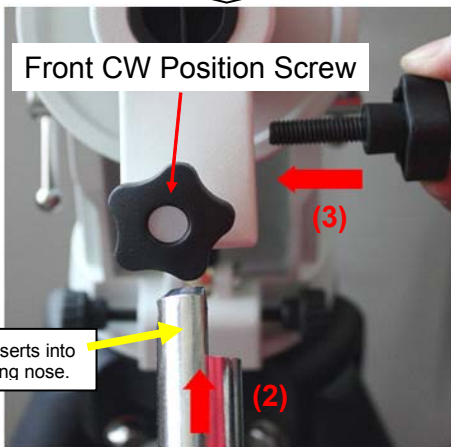
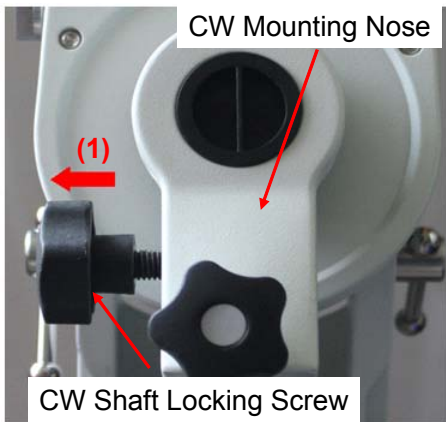


- Attach Mount:** Retract both Azimuth Adj. Knobs to allow enough clearance inside the chamber. Position the mount on the tripod head with the Alignment Peg in between the 2 Azimuth Adj. Knobs. Thread the Center Rod into mount to secure it with tripod. Tighten the Tray Locking Knob to fully spread the tripod legs. Adjust the tripod legs to level the mount using the Level Bubble.



- Adjust Latitude:** Loosen the 2 Latitude Locking T-bolts. Turn Latitude Adj. Knob to adjust the latitude until the arrow points to the current latitude on the Latitude Scale (2nd photo in Step 1). Tighten the Latitude Locking T-bolts when done.

5. **Install Counterweight (CW) Shaft:** (1) Remove CW Shaft Locking Screw. (2) Insert CW Shaft into the CW Mounting Nose. (3) Thread in the CW Shaft Locking Screw from the other side. (4) Tighten the Front CW Position Screw.



[TIP: At very low latitudes (<math><10^\circ</math>), to avoid CW bumping into tripod leg, turn the Rear CW Position Screw (a hex head set screw) further into CW Mounting Nose before tightening the Front CW Positioning Screw.]

6. **Install Counterweight:** Remove CW Safety Cap at the end of CW Shaft. With the wider opening towards

the shaft end, guide CW through the shaft. Use the CW Locking Screw to hold the CW in place. Place Safety Cap back onto the shaft.

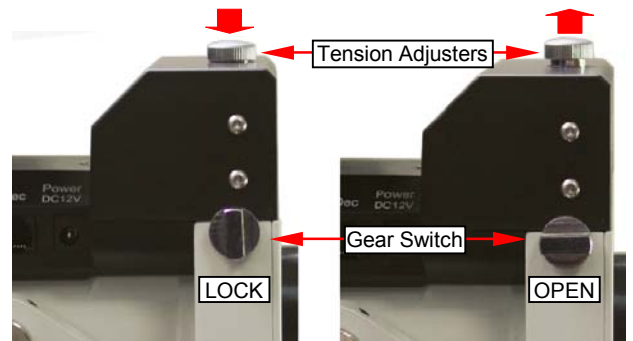
[TIP: ZEQt5 comes with a 10.4 lbs (4.7 kg) CW, which should be sufficient for payloads up to about 13 lbs (6kg). Use extra CW or CW Extension Bar to balance higher payloads.]

7. **Balance Payload:** After attaching scope and accessories, the mount head assembly must be balanced in both R.A. and DEC axes to ensure minimum stresses on the mount driving mechanism.

CAUTION: The telescope may swing freely when R.A. or DEC Gear Switch is open. Always hold on to the telescope assembly before opening the gear switches to prevent it from swinging, which can cause personal injury and/or equipment damage.

Turn Tension Adjuster *counterclockwise* to relieve the contact pressure. Turn Gear Switch Knob by 90° to the OPEN position to disengage the worm from the worm wheel.

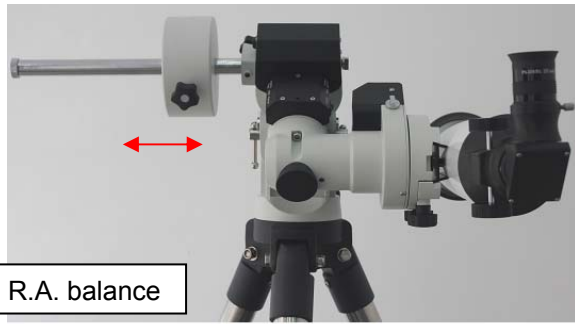
[TIP: Any hesitation in turning the knob by 90° usually means that the Tension Adjuster has not been loosened enough; turn the Tension Adjuster counterclockwise by one or more turns further.]



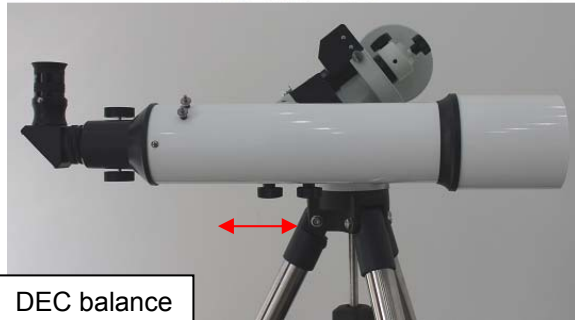
CAUTION: The balance process MUST be done with Gear Switch at OPEN position! Otherwise it might damage the worm system.

With the corresponding Gear Switch in the OPEN position, balance the assembly in R.A. axis by moving CW along its shaft, and balance in DEC axis by moving the scope with accessories back and forth (see photos below).

Only balance one axis at a time.



R.A. balance



DEC balance

Return the mount to Zero Position after balancing; i.e., CW Shaft points to ground, and telescope tip is at its highest position.

Turn Gear Switch Knob by 90° to LOCK position to re-engage the worm to the worm wheel. Retighten the Tension Adjuster as the last step to lock the gear (see Notes below).

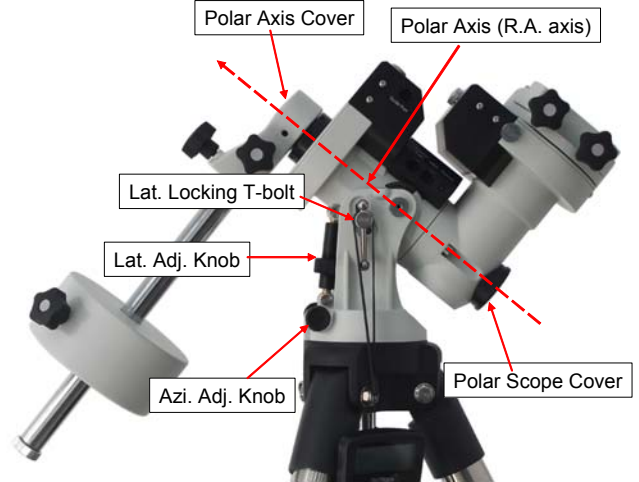
Important Notes on Tension Adjusters

The rule of thumb is to fully screw in the Tension Adjuster and then back out by about 2 turns. The optimum spot varies with actual conditions, but is mostly within 1-3 turns from the fully tightened position. Ideally, it should be at a position just deep enough to rid any free movements (plays), while force on the worm assembly is kept at a minimum. Please refer to User's Manual for more details.

8. **Connect Cables:** Use the straight RJ11 cable to connect DEC Control Unit to Main Control Unit. Connect Go2Nova® 8408 Hand Controller to the HC port on the main unit. Plug in a 12V DC power supply to the POWER socket.

9. **Polar Alignment:** Remove Polar Scope covers. Look through polar scope to locate *Polaris* (or *Sigma Octantis* at southern hemisphere). Slightly loosen Tripod Center Rod Knob. Use Azimuth Adjustment Knobs to center the pole star in the azimuth direction, followed by tightening the Center Rod Knob. Slightly loosen 2 Latitude Locking T-bolts, use Latitude

Adjustment Knob to adjust the latitude. Tighten the 2 locking T-bolts.



Quick Polar Alignment

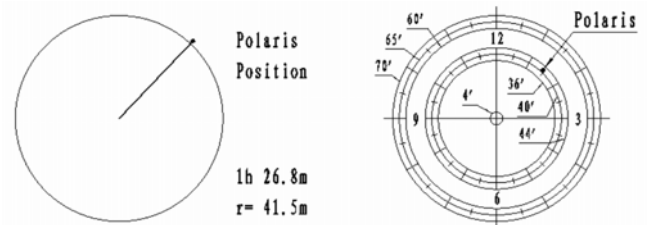
Fast and accurate polar alignment can be performed with iOptron's AccuAligning™ Polar Scope.

- (1) Connect Polar Scope LED cable between main unit's Reticle plug and LED socket under DEC axle. Use Hand Controller ("Set Up Controller" => "Set Polar Scope Light") to set illumination intensity.



Polar Scope LED

- (2) Use Hand Controller (MENU => "Align" => "Pole Star Position") to display the Polaris Position on the LCD screen, as indicated in the left side of the figure below. For example, on May 30th, 2010, 20:00:00 at Boston, US (lat N42°30'32" and long W71°08'50"), 300 min behind UT, the Polaris Position is at 1h26.8m and 41.5m



- (3) Use Azimuth and Latitude Adj. Knobs to adjust the mount in both directions and put the Polaris

in the location on the Polar Scope Dial (same as indicated on the HC LCD), as shown in the right side of the above figures.

BrightStar Polar Alignment

When without a polar scope or the pole star is not in sight:

- (1) Level the mount and set it at Zero Position. Align the telescope parallel to the R.A. axis of the mount. Set correct R.A. and DEC backlash values. An eyepiece with crosshairs is recommended.
- (2) Use HC (**MENU** => **"Align"** => **"Polar Alignment"**) to display the azimuth and altitude position of several bright stars near meridian. Select one that is visible and high in altitude as the Alignment Star A. Follow the HC instructions to move the Star A to the center of the eyepiece with the combination of using Latitude Adj. Knob and **"◀" / "▶"** buttons. Press **ENTER** to confirm the centering. Next, select a bright star that is close to the horizon as the Alignment Star B. Center it using Azimuth Adj. Knob and **"◀" / "▶"** buttons (*The **"▲"** and **"▼"** buttons are not used here*). Press **ENTER** to confirm.
- (3) The telescope will now slew back to Star A to repeat above steps. The iteration can be stopped when it is determined that the alignment error is at the minimum. Press **BACK** button to exit the alignment procedure.

10. **Manual Operation:** The mount can now be used to observe astronomical objects with the HC. Use arrow keys (**▶**, **◀**, **▼**, and **▲**) to point the telescope to the desired object. Use the number keys to change the slewing speed. Press **STOP/0** button to start tracking.

11. **Set Up Controller:** Press **MENU**; then **"Set Up Controller"** => **"Set Up Time & Site"**.



Enter current date and check for Daylight Saving Time using arrow and number keys. Enter time zone (in 60-minutes increment) by entering minutes "behind" or "ahead of" UT; for examples:

- Boston is 300 minutes "behind" UT
- Los Angeles is 480 minutes "behind" UT
- Rome is 60 minutes "ahead" of UT
- Sydney is 600 minutes "ahead" of UT

Move cursor to the end of screen to select Northern or Southern Hemisphere.

[TIPS: All time zones in N. America are "behind" UT. Latitude and longitude coordinates can be obtained from GPS-equipped devices (navigator, phone), or from internet. "W/E" = western/eastern hemisphere; "N/S" = northern/southern hemisphere; and "d" = degree; "m" = minute; and "s" = second. Use arrow and number keys to enter location information.]

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12. **One Star Alignment:** Make sure the mount is at ZERO position by press **MENU** => **"To Zero Position"**. Perform One Star Align to correct the Zero Position discrepancy. To further improve the GOTO accuracy, refer to the full manual for more details.
 13. **Go to an Object:** The mount is now ready for GOTO and tracking targets. Press **MENU**, select and **ENTER** **"Select and Slew"**. Select a category (for example, **"Planets, Sun, Moon"**), then an object (for example, **"Moon"**). Press **ENTER** and the telescope will slew to the object and automatically start tracking.
 14. **Sync to Target:** If the object is not in the center of the eyepiece, use this function to center and synchronize the object to improve local GOTO accuracy. Press **MENU** and select and **ENTER** **"Sync to Target"**. Use arrow keys to move until the object is centered in eyepiece. Press **ENTER** again to complete this function.

[TIP: "Sync to Target" can only function after a "Select and Slew" operation. This is most useful when looking for faint objects near a bright star. "Sync to Target" is similar to "One Star Alignment".]

[TIP: After slewing to an object, a list of nearby bright object(s) can be displayed by pressing **"?"** button.]

Reminder on Tension Adjusters

The Tension Adjusters are used as the last step to lock, and the first step to release the gears. Never fully tighten them during operations. The optimum position is one just deep enough to rid any plays. Hesitation in turning the Gear Switch by 90° means the Tension Adjuster has not been loosened enough.

Use support@ioptron.com for technical supports.

IOPTRON TWO YEAR TELESCOPE, MOUNT, AND CONTROLLER WARRANTY

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B. The Proper Return Merchant Authorization Number must be obtained from iOptron in advance of return. Call iOptron at 1.781.569.0200 to receive the RMA number to be displayed on the outside of your shipping container. All returns must be accompanied by a written statement stating the name, address, and daytime telephone number of the owner, together with a brief description of any claimed defects. Parts or product for which replacement is made shall become the property of iOptron.

The customer shall be responsible for all costs of transportation and insurance, both to and from the factory of iOptron, and shall be required to prepay such costs.

iOptron shall use reasonable efforts to repair or replace any telescope, mount, or controller covered by this warranty within thirty days of receipt. In the event repair or replacement shall require more than thirty days, iOptron shall notify the customer accordingly. iOptron reserves the right to replace any product which has been discontinued from its product line with a new product of comparable value and function.

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If warranty problems arise, or if you need assistance in using your telescope, mount, or controller contact:

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