Quick Start Guide

The iEQ45™ Pro GoTo German Equatorial Mount
#8000E, #8000EP and #8000E-AZ

PACKAGE CONTENTS[1]

- Telescope Mount (with built-in GPS)
- Losmandy/Vixen dual saddle
- Go2Nova® 8407+ Hand Controller
- Two 5 kg Counterweight
- Controller Cable X 2
- LED with cable for Polar Scope
- AC adapter (100V-240V)
- 12V DC adaptor cable with car lighter plug
- RS232 to RJ9 cable
- 2-inch Tripod (8000Z)
- Pier (8000E-AZ and 8000EP)
- AZ base (8000E-AZ)
- Vertical Locking Knob (8000E-AZ)

ONLINE CONTENTS *(click under "Support" menu)* **www.iOptron.com**

- Manuals *(you will need to refer to the full manual for details on set-up and operation).*
- Tips for set up
- Hand controller and mount firmware upgrades (check online for latest version)
- Reviews and feedback from other customers

[1.] Actual contents, specifications and color may vary. Please refer to iOptron website for latest information.

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Quick Setup

1. **<u>Removing the Mount from the Package</u>**: The mount is shipped with R.A. axis released to avoid gear damage. Please tighten the top two R.A. Locking Screws before pull the mount out of the package.

2. **<u>A. Setting Up Tripod</u>**: Expand the tripod legs and lock the Tripod Spreader so that the tripod legs stay open (**Figure 1**). Adjust the tripod height by unlocking and re-locking the tripod legs to desired height. Position the tripod so that the Alignment Peg faces north. ***(The Alignment Peg may be moved to the opposite position if used at latitude lower than 20º to avoid counterweights hitting the tripod leg)。***

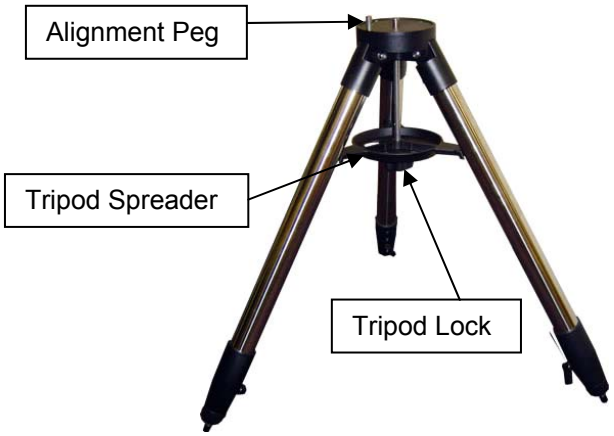


Figure 1

1. **<u>B. Setting Up Pier:</u>** Unthread the Pier Locking Screw (***This screw is only used for pier storage***). Separate the Pier Base with Legs from the Pier Tube. Remove the Pull Rods from inside the pier.

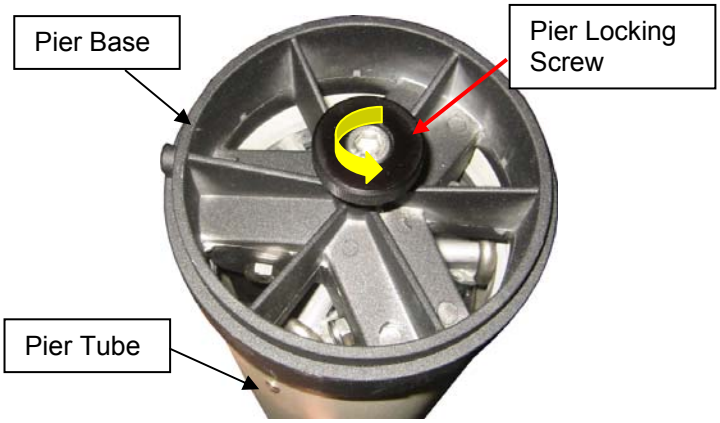


Figure 2

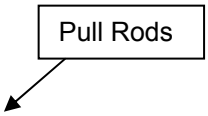


Figure 3

Move the Pier Foot from the end to the side.

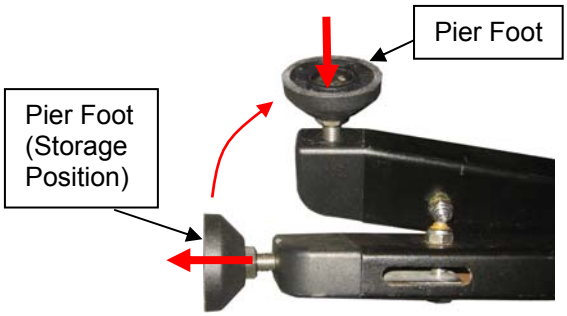


Figure 4

Spread the Pier Leg. Put the Pier Tube onto the Pier Base, with Pier Alignment Slot aligned over the Alignment Tab on the Pier Base.

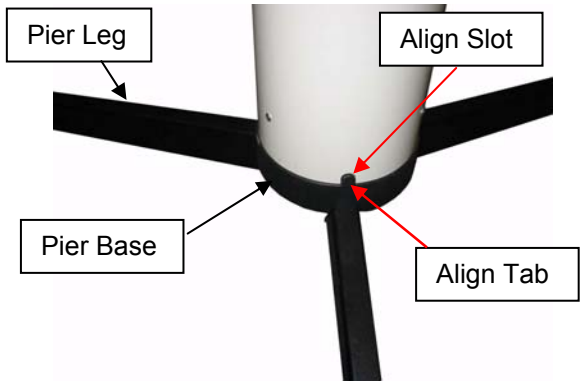


Figure 5

Adjust the length of the three Pull Rods. Hook one end of a Pull Rod onto a bolt located on the Pier Leg and the other Pull Rod end onto the mounting beam inside the Pier Tube. Evenly tighten the Pull Rods. Make sure there is no gap between the Pier Base and Pier Tube.

Figure 6

Position the pier with Alignment Peg face north.

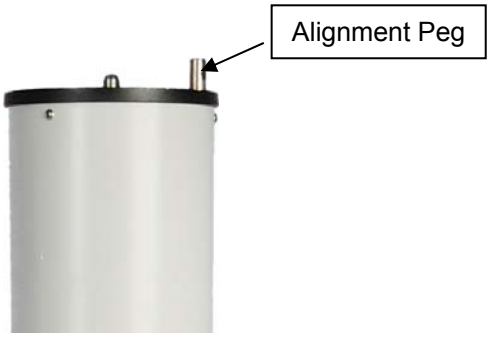


Figure 7

2. **<u>Attaching the Mount</u>:** Back out the Azimuth Adjustment Knobs (next to the Bubble Level Indicator) to prevent blocking the Alignment Peg (**Figure 8**). Put the mount onto the tripod head (or pier top) with bubble level on top of the Alignment Peg (**Figure 9**). Secure the mount head by tightening Azimuth Locking Screws. Level the mount by adjusting individual tripod leg (or pier foot). You may use the build-in Bubble Level Indicator or an external level to check leveling.

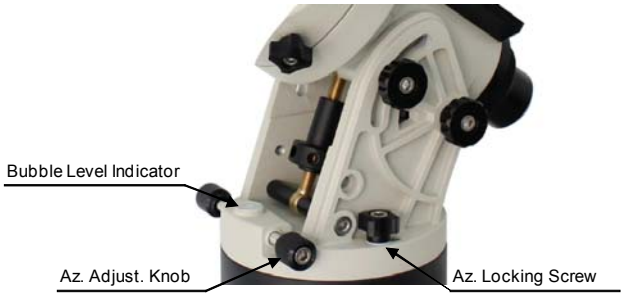


Figure 8

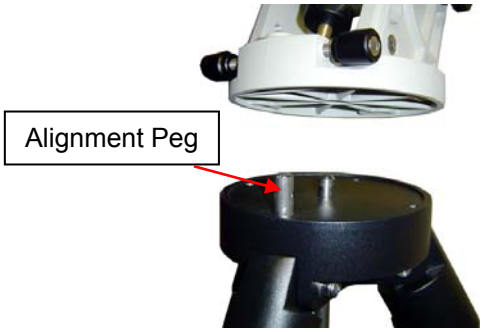


Figure 9

3. **<u>Setting the Latitude</u>:** Unlock the four R.A. Clutch Screws and rotate the mount 180º around the R.A. axis (**Figure 10**) to move the dovetail face upside. Tighten the R.A. Clutch Screws. Un-screw the Latitude Adjustment Lever from Latitude Adjustment Knob (**Figure 11**). Turn the Latitude Adjustment Knob to set your current latitude, which is displayed in Latitude Mark Window. Use the Lever for fine adjustments as needed. Always set the latitude without the load.

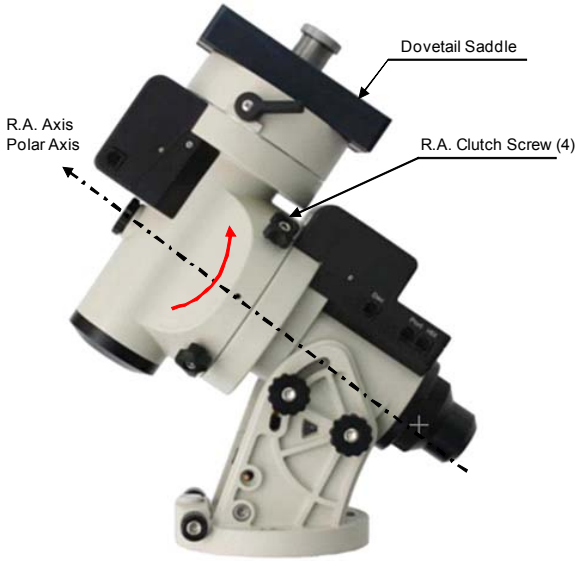


Figure 10

If your latitude is between 35º to 70º, set the Latitude Adjustment Knob to the upper position. The factory default position is set at 5° to 40°. A Latitude Safety Block has to be installed for low latitude setting (**Figure 11**)

If your latitude is between 35º to 70º, take the Latitude Safety Block off. Set the Latitude Adjustment Knob to the upper position. You should change the position before attaching the mount to the tripod head.

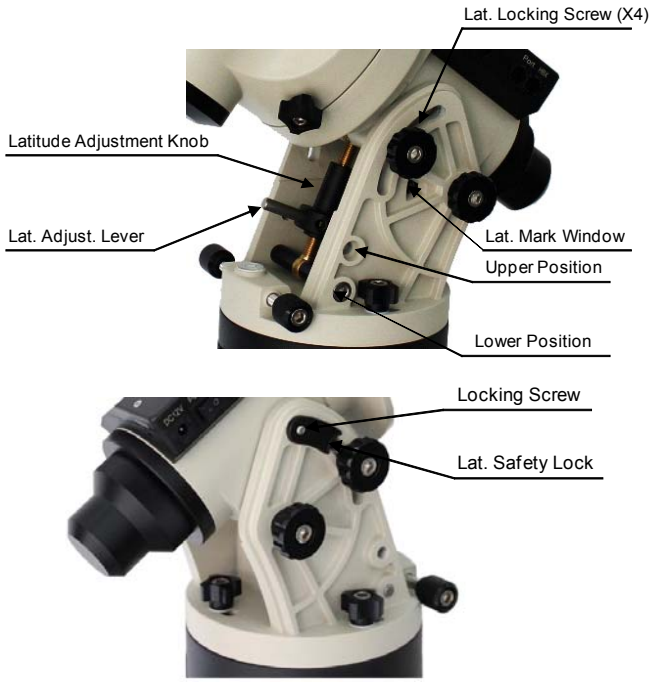


Figure 11

4. **Installing the Counterweight (CW) Shaft:** Unscrew the CW shaft from the top of the mount (**Figure 12** top) and thread it into the opening of the DEC axis (**Figure 12** bottom).

Figure 12

5. **Installing the Counterweight(s)**: iEQ45 Pro comes with two 5kg counterweights. Use one or both of them for your particular OTA (Optical Tube Assembly). ***Release all R.A. Clutch Screws to set the R.A. axis free before loading the CW***. An optional CW shaft extension or additional CW is available for purchase at www.ioptron.com if the payload is over 10kg.

6. **Balancing the Payload:** After attaching the scope and accessories, the mount must be balanced in both R.A. and DEC axes to ensure minimum stress on the mount driving mechanism. There are four (4) R.A. Clutch Screws and one DEC Clutch Lever. Please refer to the full manual for balance procedures/tips.

7. **Connecting Cables:** Attach one end of an RJ-11 cable into the socket on the side of the DEC unit and the other end into the DEC socket located on RA unit. Use another RJ-11 cable to connect the hand controller to the HBX socket located on the RA unit. Plug 12V DC power supply into the POWER socket on RA unit. The red LED will be on when the power switch is turned on.

8. **Setting Controller:** The time and site information of the observation location needs to be entered for precise GOTO.

   Turn the mount power on. Press the **MENU** button; then "**Settings**" => "**Set Time & Site**".

Figure 13

   You may enter the date using arrow keys and number keys or waiting for GPS OK. Check if it is Daylight Saving Time. Enter your time zone (add or subtract 60 minutes per time zone) by entering minutes "**behind**" UT or **"ahead of**" UT, such as:

   - 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

   All the time zones in North America are "behind" UT.

   GPS will update your observation longitude and latitude coordinate. Or you may find them from your GPS navigator, a GPS capable cell phone or from internet. "W/E" means western/eastern hemisphere; "N/S" means northern/southern hemisphere; "d" means degree; "m" means minute; and "s" means second. Use number keys and arrow keys to enter your location information.

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

9. **Polar Alignment:** Remove both Polar Scope and polar axis covers. Look through the polar scope to locate Polaris (*or Sigma Octantis at southern hemisphere*). Slightly loosen the Azimuth Locking Screws and Latitude Locking Screws. Use the two Azimuth Adjustment Knobs to center the pole star in the azimuth direction. Use the Latitude Adjustment Knob for the latitude adjustment. Tighten the screws after adjusting.

   Quick Polar Alignment:
   Fast and accurate polar alignment can be performed with iOptron's AccuAlign Polar Scope.

(1) Thread the dark field illuminating LED into the thread-in hole on a polar scope. Plug the LED cable into the Reticle socket located on the RA unit. Turn the mount power on. Use Hand Controller ("**Settings**" => "**Set Eyepiece Light**") to set the illumination intensity.

(2) Use the "▲" or "▼" button to turn the DEC axis to unblock the Polar Scope view (there is a hole on the DEC axis). You may loosen the DEC clutch to turn the DEC axis without rotating the telescope;

(3) Use the "◄" or "►" button to turn the RA axis to rotate the Polar Scope dial to a clock position where 12 is at the top, as shown in **Figure 14**. You may release the R.A. Locking Screws and hold the OTA while turning the R.A. axis;

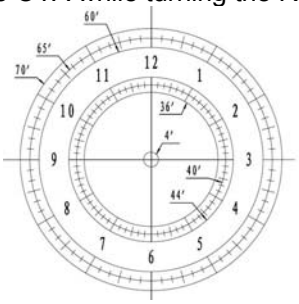
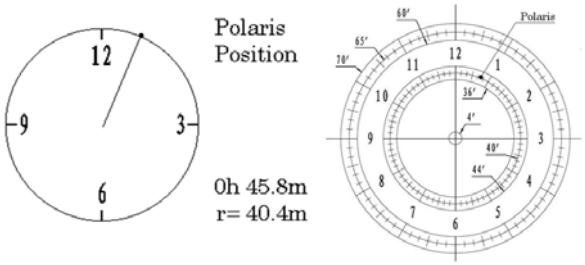


Figure 14

(4) Use Hand Controller (**MENU** => "**Align**" => "**Pole Star Position**") to display the Polaris Position on the LCD screen, as indicated in **Figure 15 (a)**. For example, June 22, 2014, 20:19:42 in Boston, US (alt N42º30'32" and long W71º08'50"), 300 min behind UT, the Polaris Position is 0h45.8m and 40.4m.



(a) (b)

Figure 15

(5) Use the 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 **Figure 15 (b)**.

BrightStar Polar Alignment

When 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. If a finder scope is used, adjust it to be parallel to the telescope optical axis. An eyepiece with crosshairs is recommended.

(2) Use the HC (**MENU** => "**Align**" => "**Polar Align**") to display the azimuth and altitude position of several bright stars near the 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 the 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 the above steps. The iterations can be stopped when it is determined that the alignment error has been minimized. Press the **BACK** button to exit the alignment procedure.

10. **Setting Zero Position:** The Zero Position is the position where the counterweight shaft points to ground, telescope is at the highest position with its axis parallel to the polar axis and the telescope is pointing to the Celestial Pole. Use Hand Controller (**MENU** => "**Zero Position**" => "**Set Zero Position**") to bring up menu. Loosen the DEC and R.A. Clutches to manually adjust the mount to the Zero Position, or use the Hand Controller to slew the mount to Zero Position and confirm the setting. Tighten the screws after each adjustment.

11. **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 the **STOP/0** button to start tracking.

12. **One Star Alignment:** Make sure the mount is at ZERO position by pressing **MENU** => "**Zero Position**" => "**Goto Zero Position**". Perform a One Star Align to correct the Zero Position discrepancy. To further improve the GOTO accuracy, refer to the full User's 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, "**Solar System**"). Then select an object of interest (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 center the object in eyepiece. Press **ENTER** again to complete this function.

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

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

15. **Putting the Mount back into the Package:** Loosen two locks facing the bottom of the package before put the mount back into the packing box. Then loosen the other two on the top.

    ALWAYS FULLY DISENGAGE THE R.A. GEARS BY RELEASE 4 R.A. CLUTCH SCREWS BEFORE SHIPPING/STORAGE.

Convert EQ to AA

1. Remove the iEQ45 mount from a pier or tripod and make sure it is positioned upright.

2. Remove Polar Scope Cover and unthreaded Polar Scope from the mount.

3. Lay down the mount head and unscrew top two (2) Latitude Locking Screws (**Figure 16**). Keep two metal washers in a safe place which will be needed when converting the mount back to EQ mode.

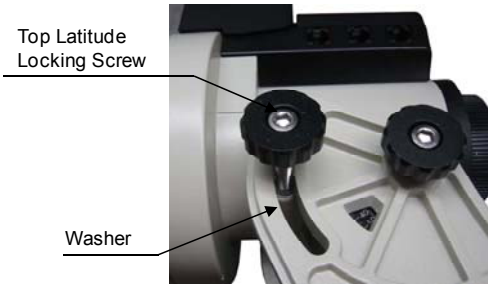


Figure 16

4. Remove Latitude Adjustment Lever. Turn the Latitude Adjustment Knob until it separates the top and bottom latitude posts **(**Error! Reference source not found.**)**. Remove the other two Latitude Locking Screws to separate the mount head from the EQ base.

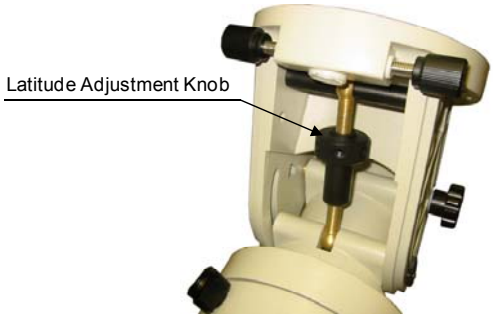


Figure 17

5. Remove the Latitude Scale, which is secured onto the mount with a Scale Fixing Screw, as shown in **Figure 18**. Do not break the plastic scale. These parts are needed when converting the mount back to EQ mode.

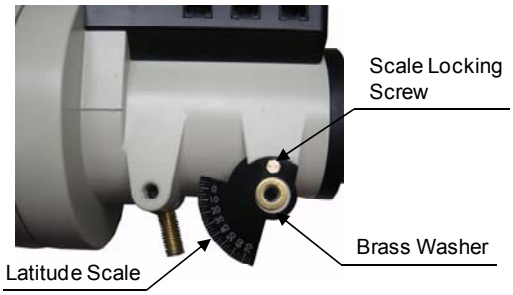


Figure 18

6. Thread Vertical Locking Nut onto the top brass latitude post of the mount (**Figure 19**).

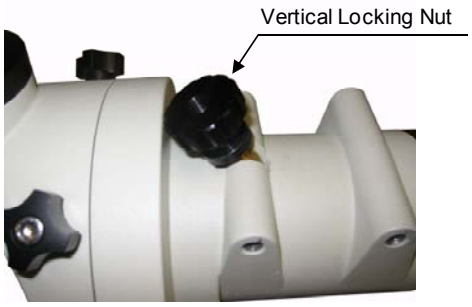


Figure 19

7. Retract two Adjustable Washers on the AZ base (**Figure 20**).

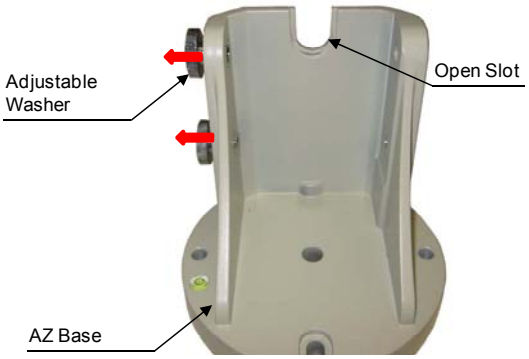


Figure 20

8. Place the AZ base onto the mount head with Vertical Locking Nut placed in the open slot on AZ base (**Figure 21**). Be careful that the mount will be bottom heavy.

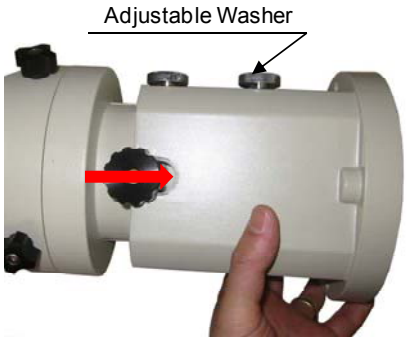


Figure 21

9. Align the mounting holes on the AZ base to the Latitude Locking Screw holes on the mount head. Insert 4 Latitude Locking Screws into them. Tighten the Adjustable Washers. Loosely tighten 4 Latitude Locking Screws. Tighten the Vertical Locking Nut. Then tighten the Latitude Locking Screws.

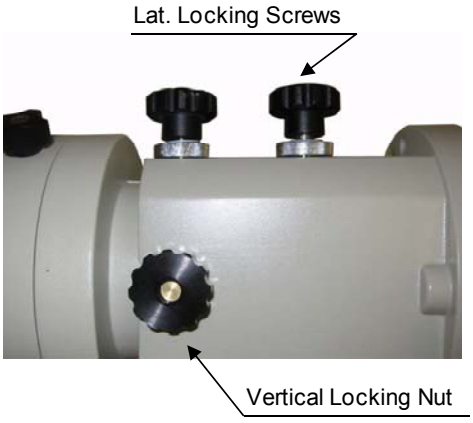


Figure 22

10. Install the mount onto the pier/tripod top. Level the mount by adjusting the tripod legs or pier feet (Refer to **STEP 1**). Use the spirit bubble level on the Polar Axis Cover.

11. Attach your telescope onto the mount. Add counterweight(s) to balance the scope. You may do a rough torque calculation to determine the CW quantity and position. Or if you're using in EQ mode -- mark the position. The mount can only hold a light payload without counterweight(s). Double check the leveling of the system.

12. Release four R.A. Clutch Screws. Adjust the mount so that the CW shaft is pointed to East and the telescope is on the West side of the mount. Adjust the telescope to point to Zenith. This is "Zero Position" for operating in AA mode.

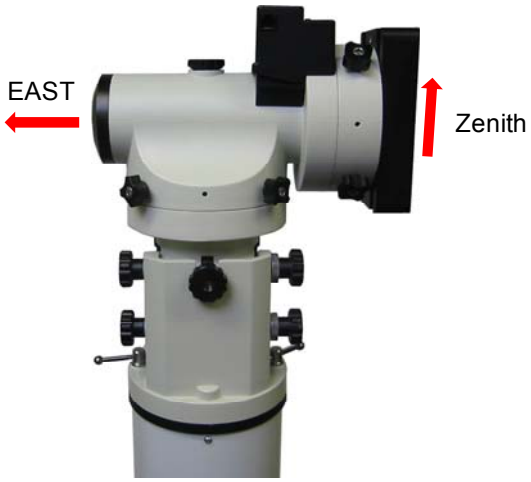


Figure 23

13. Connect the hand controller, DEC cable and power supply and turn the mount on.

14. Set the hand controller by following the iEQ45 Pro initial set up for time and site information. Use the Hand Controller (**MENU** => "**Settings**" => "**Enter Alt-Azi Mode**") to set the mount to AA mode. Power the mount OFF/ON to complete the mode switching.

15. Use "**One Star Align**" to correct any initial misalignment. Or use "**Select and Slew**" to a known star, loosen the AZ(RA) and ALT(DEC) clutch/screws, push the mount to center the star in the eyepiece, relock the clutch/screws. Now your mount is ready to go.

IOPTRON TWO YEAR TELESCOPE, MOUNT, AND CONTROLLER WARRANTY

A. iOptron warrants your telescope, mount, or controller to be free from defects in materials and workmanship for two years. iOptron will repair or replace such product or part which, upon inspection by iOptron, is found to be defective in materials or workmanship. As a condition to the obligation of iOptron to repair or replace such product, the product must be returned to iOptron together with proof-of-purchase satisfactory to iOptron.

B. The proper Return Merchant Authorization (RMA) number must be obtained from iOptron in advance of return. Contact iOptron via e-mail at support@ioptron.com or call 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.

This warranty shall be void and of no force of effect in the event a covered product has been modified in design or function, or subjected to abuse, misuse, mishandling or unauthorized repair. Further, product malfunction or deterioration due to normal wear is not covered by this warranty.

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This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

iOptron reserves the right to modify or discontinue, without prior notice to you, any model or style telescope.

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

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www.ioptron.com
support@ioptron.com
Tel. (781)569-0200
Fax. (781)935-2860
Monday-Friday 9AM-5PM EST

NOTE: This warranty is valid to U.S.A. and Canadian customers who have purchased this product from an authorized iOptron dealer in the U.S.A. or Canada or directly from iOptron. Warranty outside the U.S.A. and Canada is valid only to customers who purchased from an iOptron Distributor or Authorized iOptron Dealer in the specific country. Please contact them for any warranty.