

Orion Atlas™ II EQ-G Equatorial GoTo Mount

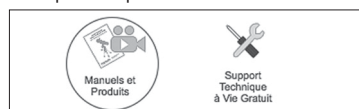
#8269

Français

① Pour obtenir le manuel d'utilisation complet, veuillez vous rendre sur le site Web **OrionTelescopes.eu/fr** et saisir la référence du produit dans la barre de recherche.

Mon compte • Suivi de commande • Chat • Aide • Français EUR
 Connexion
 Entrez le mot clé ou le numéro du produit Recherche

② Cliquez ensuite sur le lien du manuel d'utilisation du produit sur la page de description du produit.



Deutsche

① Wenn Sie das vollständige Handbuch einsehen möchten, wechseln Sie zu **OrionTelescopes.de**, und geben Sie in der Suchleiste die Artikelnummer der Orion-Kamera ein.

Mein Konto • Bestellstatus • Chat • Hilfe • Deutsch EUR
 Anmelden
 Geben Sie das Stichwort oder die Produktnummer ein. Suchen

② Klicken Sie anschließend auf der Seite mit den Produktdetails auf den Link des entsprechenden Produkthandbuchs.



Español

① Para ver el manual completo, visite **OrionTelescopes.eu** y escriba el número de artículo del producto en la barra de búsqueda.

My Account • Order Status • Chat • Help • English EUR
 Sign In
 Enter keyword or product number Search

② A continuación, haga clic en el enlace al manual del producto de la página de detalle del producto.



Italiano

① Per accedere al manuale completo, visitare il sito Web **OrionTelescopes.eu**. Immettere the product item number nella barra di ricerca

My Account • Order Status • Chat • Help • English EUR
 Sign In
 Enter keyword or product number Search

② Fare quindi clic sul collegamento al manuale del prodotto nella pagina delle informazioni sul prodotto.



Figure 1. The Atlas II EQ-G Mount

ORION
 TELESCOPES & BINOCULARS
 AN EMPLOYEE-OWNED COMPANY

Corporate Offices: 89 Hangar Way, Watsonville CA 95076 - USA
 Toll Free USA & Canada: (800) 447-1001
 International: +1(831) 763-7000
 Customer Support: support@telescope.com

Copyright © 2019 Orion Telescopes & Binoculars. All Rights Reserved. No part of this product instruction or any of its contents may be reproduced, copied, modified or adapted, without the prior written consent of Orion Telescopes & Binoculars.

1. Unpacking

Be careful unpacking the boxes. We recommend keeping the boxes and original packaging. In the event that the mount needs to be shipped to another location, or returned to Orion for warranty repair, having the proper packaging will ensure that your mount will survive the journey intact.

Make sure all the parts in the Parts List are present. If anything appears to be missing or broken, immediately call Orion Customer Support (800-676-1343) or email support@telescope.com for assistance.

2. Parts List

Qty.	Item
1	Equatorial mount
1	Tripod
1	SynScan GoTo hand controller
1	Cable for SynScan hand controller
2	Counterweight, 11 lbs.
1	Accessory tray
1	Polar scope (installed)
3	Adjustment knob, 116mm (4.6") (end to end)
1	Handle (with two M8 bolts and 6mm hex key)
1	Hand controller bracket
1	Counterweight shaft extension, 184mm
1	12V DC Power cable
1	Shutter release cable (for Canon EOS)
2	Hex key (1.5mm and 4mm)

3. Assembly

- Stand the tripod legs upright and spread the legs out as far as they will go. Make sure the leg lock levers are tightened. Keep the tripod legs at their shortest (fully retracted) length, for now; you can extend them to a more desirable length later, after the mount is fully assembled.
- Attaching the handle to the mount will make it easier to lift the mount for installation on the tripod. To attach the handle, first lay the mount on its side on a clean floor or sturdy table (**Figure 2**). Locate and remove the two setscrews in the housing, using the supplied 4mm hex key.
- Now attach the handle to the housing by threading the two black socket head cap screws bundled with the handle into the holes, using the large hex key that was also included with the handle (**Figure 3**). Tighten the cap screws.
- To install the mount on the tripod you will need to orient the mount so that the opening on the bottom of the mount (**Figure 4a**) lines up with the post on the top of the tripod. To do this, grasp the mount by the handle with one hand,



Figure 2. Remove the two setscrews on the mount housing to install the handle.

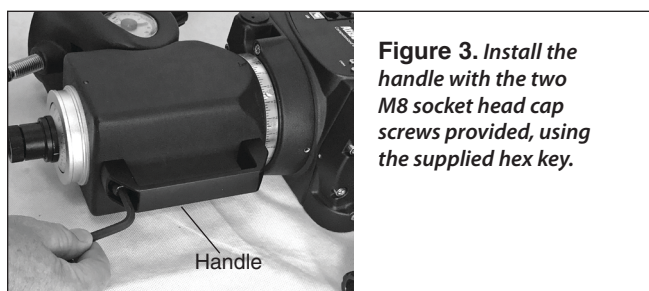


Figure 3. Install the handle with the two M8 socket head cap screws provided, using the supplied hex key.

and with your other hand under the mount for support as shown in **Figure 4b**, lift the mount and set it gently on the tripod so it seats snugly.

- Once the mount is properly seated on the tripod, thread the center support shaft up through the tripod head and into the bottom of the mount. Rotate the mount attachment knob on the center support shaft clockwise until it is tight (**Figure 5**). The equatorial mount should now be firmly connected to the tripod.

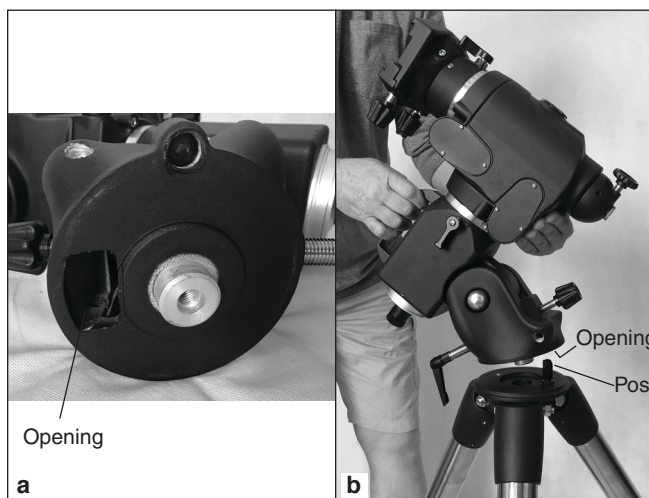


Figure 4. a) Locate the opening on the bottom of the mount. b) Lift the mount as shown and set it on the tripod so that the opening on the bottom of the mount aligns with the post on the top of the tripod.

6. Remove the knob and washer from the bottom of the center support shaft. Slide the accessory tray up center support shaft until the three tray arms are contacting the legs of the tripod. The flat side of the tray should be facing up. Make sure the “V” of each tray arm is pressing against a tripod leg. Place the washer on the center support shaft against the tray, and follow it by threading the knob all the way up the center support shaft until it is tight against the tray (**Figure 6**).

The accessory tray holds up to five 1.25" eyepieces and two 2" eyepieces. It also provides additional stability for the tripod. **DO NOT use the mount without first installing the accessory tray!**

7. Now install two of the 116mm adjustment knobs at the base of the mount as shown (**Figure 7**). From here forward they will be called the “azimuth adjustment knobs”. Lightly tighten the two azimuth adjustment knobs. Note that when removing the mount from the tripod and then



Figure 5. Thread the center post into the mount by turning the mount attachment knob to the right until it is tight.

re-installing it for future sessions, you will want to first loosen the azimuth adjustment knobs enough to create a sufficient gap between them to clear the tripod post.

NOTE: The third 116mm adjustment knob should be used

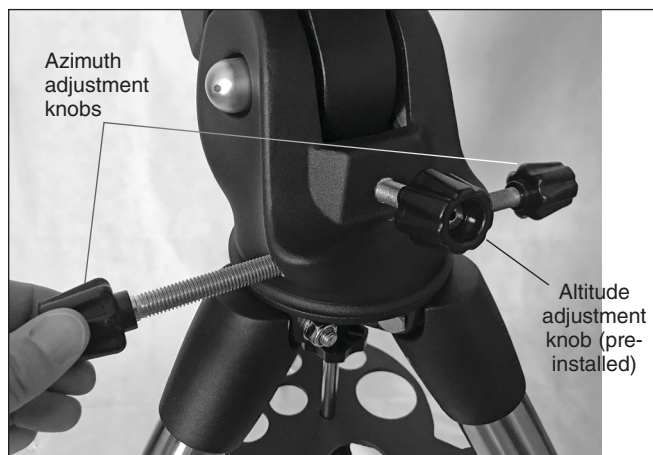


Figure 7. Thread two of the 116mm knobs into the mount as shown; they are the azimuth adjustment knobs.

only if your location is at a latitude less than 18 degrees. In that case it replaces the shorter (101mm) altitude adjustment knob that comes pre-installed. (See Figure 7.)



Figure 6. Install the accessory tray, flat side up, as shown. The three tray arms should press against the tripod legs.

8. Fasten the hand controller bracket to one of the legs between the accessory tray and the upper casting of the tripod leg. Use the hook-and-loop strap to fasten the bracket snugly to the leg (**Figure 8**).

9. Loosen the counterweight shaft lock knob and fully extend the recessed counterweight shaft. Retighten the lock knob (**Figure 9a**).

10. Remove the knurled “toe saver” retaining screw on the bottom end of the counterweight shaft. The Atlas II EQ-G mount comes with a 184mm counterweight shaft extension, which can be installed at this point if needed (**Figure 9b**). Ensure the extension is tightly secured before installing the counterweights.

11. Slide one or both counterweights onto the shaft, depending on the telescope load you need to counterbalance. Make sure the counterweight lock knob



Figure 8. Wrap the hand controller bracket strap snugly around a tripod leg.

is adequately loosened to allow the counterweight shaft to pass through the hole. Position the counterweight about halfway up the shaft and tighten the lock knob. Replace the retaining screw on the end of the shaft or extension (**Figure 9c**).

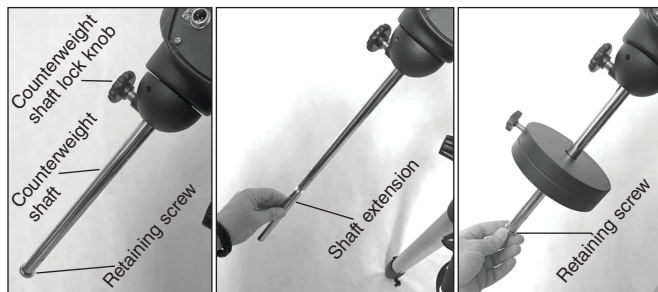


Figure 9. a) Loosen the counterweight shaft lock knob and fully extend the shaft. b) The included shaft extension can be threaded into the end of the counterweight shaft if needed. c) After securing the counterweight(s) onto the shaft, replace the safety stop on the end of the shaft.

Your Atlas II EQ-G mount is now fully assembled and should resemble **Figure 10**.

4. Attaching the Telescope

The Atlas II EQ-G equatorial mount is designed to hold telescope tube assemblies weighing up to 44 lbs. For heavier telescopes, the mount may not provide sufficient stability for steady imaging. The dual-width saddle of the Atlas II EQ-G mount is designed to accept either a narrow or a wide dovetail plate (**Figure 10**). The narrow (lower) slot is designed for a 45mm-width dovetail plate and the wide (upper) slot grips a 75mm-width plate.

Before mounting your telescope, please make sure:

- The counterweight shaft is pointing toward the ground.
 - The counterweight(s) are positioned the end of the counterweight shaft.
 - The R.A. axis is secured by tightening the R.A. clutch lever.
1. Loosen the Dec clutch lever and rotate the saddle until the dovetail slot runs side to side, with the two saddle lock knobs pointing to the rear of the mount, as in **Figure 10**. Then tighten the Dec clutch lever.
 2. Loosen the saddle lock knobs until the width of one of the dovetail slots is wider than the dovetail plate attached to your telescope.
 3. Now install the telescope by seating or sliding its dovetail plate into the saddle. For now, center the plate lengthwise in the saddle. Then, while still holding the telescope with one hand/arm, tighten the two saddle lock knobs to secure the dovetail plate in place.

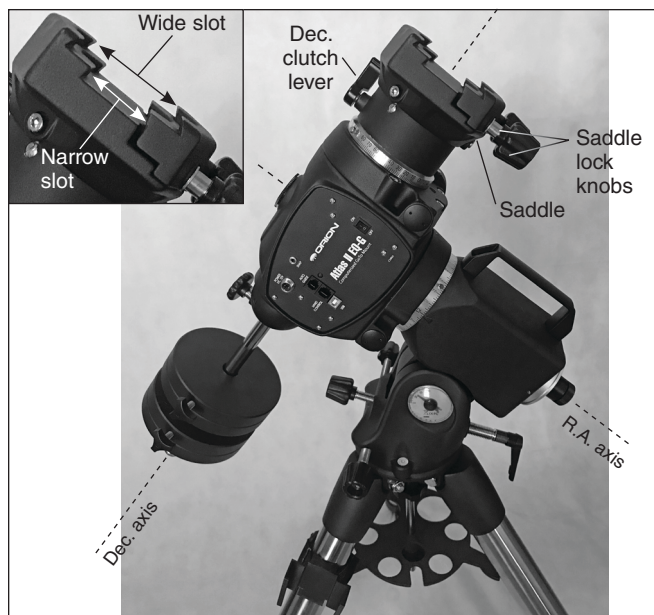


Figure 10. The Atlas II is assembled and oriented properly for mounting of a telescope optical tube

5. Balancing the Telescope

To ensure smooth and accurate operation of the mount, and to prevent stress on the motor drives, the optical tube must be properly balanced on both the R.A. and Dec axes. We will first balance the telescope with respect to the R.A. axis, then the Dec. axis.

1. Keeping one hand on the telescope optical tube, loosen the R.A. clutch lever (**Figure 11**). Make sure the Dec. clutch lever is locked, for now. The telescope should now be able to rotate freely about the right ascension axis. Rotate it until the counterweight shaft is parallel to the ground (i.e., horizontal).
2. Now loosen the lock knob on the counterweight(s) and slide the weight(s) along the shaft until they exactly counterbalance the telescope. That's the point at which the shaft remains horizontal even when you let go with both hands. If the telescope won't balance than you have either too much or too little counterweight. Remove a counterweight, or add an additional counterweight if needed. (If you need more weight, remember to install the counterweight shaft extension and move the counterweights all the way to the end of the extension. Extending the lever arm in this way is the equivalent of adding more weight.)
3. Retighten the counterweight lock knobs. The telescope is now balanced on the R.A. axis.
4. To balance the telescope on the Dec. axis, first tighten the R.A. clutch lever, with the counterweight shaft still in the horizontal position.

5. With one hand on the telescope optical tube, loosen the Dec. clutch lever. The telescope should now be able to rotate freely about the declination axis. If it wants to rotate on its own, you need to slide the telescope forward or aft in the tube rings until it remains horizontal when you carefully let go. Alternatively, you could slide the dovetail plate attached to the telescope forward or aft in the saddle to move the balance point. Just be sure you are supporting the telescope when you loosen the saddle lock knobs to do this! And retighten them before checking the balance!

The telescope is now balanced on both axes. When you loosen the clutch lever on one or both axes and manually point the telescope, it should move without resistance and should not drift from where you point it.

6. Operating the Atlas II EQ-G Mount

Moving the Mount Manually

Loosen the clutch levers on the R.A. and Dec axes to rotate the mount by hand (**Figure 11**). Both levers should be tightened for electronic operation of the mount via the hand controller.

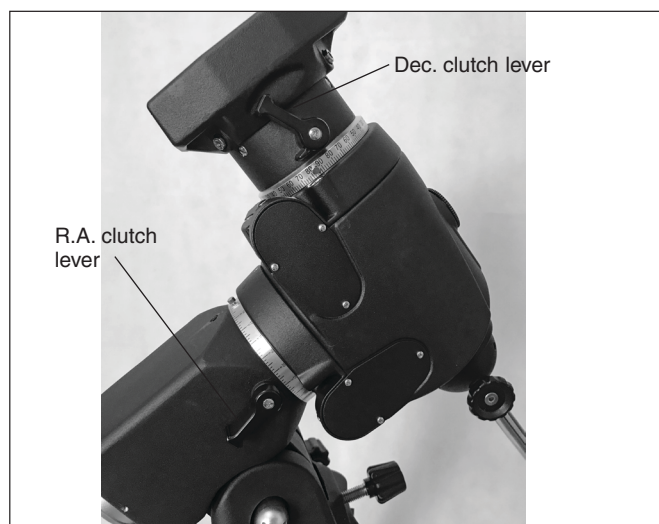


Figure 11. The R.A. and Dec clutch levers

Locating Objects Using the Setting Circles

With a computerized GoTo mount like the Atlas II, you do not need setting circles to locate objects. The SynScan computerized object locator will do that for you! But should you wish to find objects “the old fashioned way,” or need to locate an object that is not in the SynScan database based on its celestial coordinates, you can use the R.A. and Dec. setting circles to pinpoint the desired object (**Figure 12**).

First, you will need to calibrate the setting circles. Do this by simply pointing the telescope at a celestial object with known R.A. and Dec. coordinates, which you can look up in a star atlas or on the internet. Then loosen the locking thumbscrew on each set-

ting circle and turn the setting circles so the values for R.A. and Dec. line up with the arrow marks just below each setting circle. Then re-tighten the setting circle locking thumbscrews.

For the R.A. setting circle, note that there are two sets of numbers above the hash marks. Use the lower set of numbers when operating the mount in the Southern Hemisphere; use the upper set of numbers when operating the mount in the Northern Hemisphere.

The Dec. setting circle scale features four quadrants from 0 to 90-degrees each. Users should use the proper quadrant when calibrating the Dec. setting circle.

Adjusting the Mount’s Latitude and Azimuth

Setting the R.A. axis to the correct latitude is necessary for accurate polar alignment and tracking. Refer to the latitude scale while rotating the latitude adjustment lever and knob to the proper tilt (**Figure 13**). Loosen one while tightening the other. Push the spring-loaded lever toward the bolt to turn the bolt. The latitude should be set to the same latitude at which you are located.

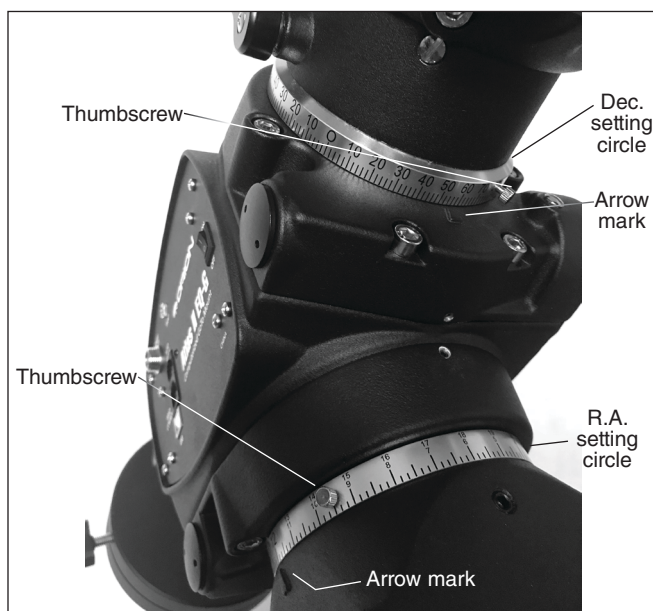


Figure 12. The R.A. and Dec setting circles can be used to locate objects “the old fashioned way”.

The two azimuth adjustment knobs allow fine movement of the mount in azimuth (side to side). This is useful in polar alignment for placing Polaris (or Sigma Octantis) in the correct position on the polar scope’s reticle. Make sure the mount attachment knob (see **Figure 6**) is ever so slightly slightly loosened to permit the mount to rotate when turning the azimuth adjustment knobs.

7. Polar Alignment

An equatorial mount is designed to compensate for the Earth’s rotation, allowing you to easily “track” the movement of stars and

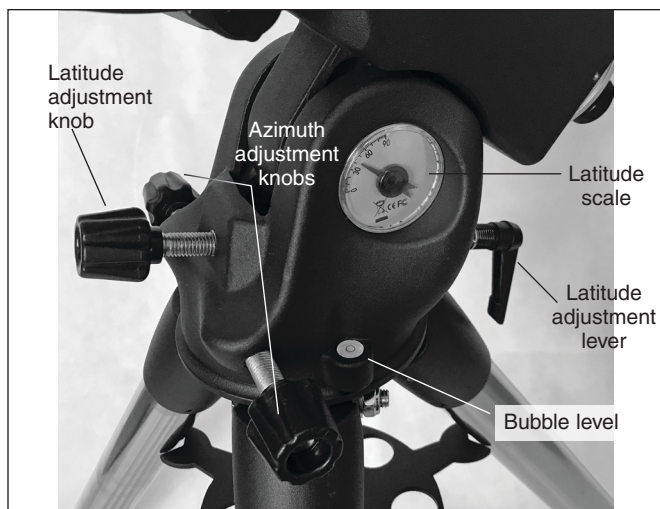


Figure 13. The altitude and azimuth adjustment knobs and lever are used in polar alignment.

astronomical objects across the sky, thereby keeping them from drifting out of your telescope's field of view while you're observing or imaging. This is accomplished by the slow rotation of the mount on its right ascension (R.A.) axis, using the built-in R.A. motor drive. But first the R.A. axis of the mount must be aligned with the Earth's rotational (polar) axis—a process called polar alignment.

The Atlas II EQ-G mount comes with a polar axis finder scope (Figure 14) housed inside the R.A. housing of the mount. When properly aligned and used, it makes accurate polar alignment quick and easy to do. Remove the cover at the rear of the mount's R.A. housing (by loosening thumbscrew) and the cap on the front opening of the mount (Figure 15) to view through the polar axis finder scope.

1. With the Atlas II EQ-G mount assembled and the telescope tube installed on the mount, move the tripod so the mount's R.A. axis points roughly in the direction of the North Celestial Pole (for Northern Hemisphere) or South Celestial Pole (for Southern Hemisphere).
2. Set the mount's latitude to the local latitude (Refer to "Adjusting the Mount's Latitude and Azimuth" in Section 6)
3. Level the mount by adjusting the tripod leg lengths while checking the built-in bubble level (see Figure 13).
4. Loosen the Dec. clutch lever and rotate the Dec. axis until the hole in the Dec. shaft is fully open (Figure 16), which



Figure 14. The built-in polar alignment scope works in both the Northern and Southern Hemispheres.



Figure 15. Before polar aligning the mount, you must remove the polar scope cover and the cap on the front of the mount.

will allow an unobstructed view of the sky through the polar scope. Then re-tighten the Dec. clutch lever.

5. Make sure that the polar scope is aligned with the R.A. Axis. If it is not, follow the procedure in the following section, "Aligning the Polar Scope to the R.A. Axis."
6. Turn on the power on the mount. An internal red LED light will illuminate the polar scope's reticle (Figure 17), which should be visible in the field of view (FOV) of the polar scope. If the reticle appears blurry, you can focus it by rotating the polar scope's knurled eyepiece.
7. Look into the polar scope and find Polaris (for Northern Hemisphere) or the Octans 4-star asterism (for Southern Hemisphere). If it is not in the field of view, move the mount left or right using the azimuth adjustment knobs, and adjust the latitude up and down using the altitude adjustment lever until Polaris or the asterism appears somewhere within the field of view of the polar scope.



Figure 16. To view through the polar scope, you must rotate the Dec axis of the mount until the hole in the Dec shaft is fully open to transmit light to the polar scope.

For observing/imaging in the Northern Hemisphere: The circle with fine graduations in the center of the reticle is for polar alignment in the Northern Hemisphere. Use the latitude adjustment lever and the two azimuth adjustment knobs on the mount to move Polaris to the proper position in that graduated circle (See next section: "The Orientation of Polaris"). Polaris's orbit around the NCP—which is represented by the intersection of the two perpendicular crosshairs—changes gradually. The three central circles in the polar scope reticle are the orbits for the years 2012, 2020, and 2032. Refer to these circles and the current year to put Polaris at the proper radius.

For observing/imaging in the Southern Hemisphere: In the polar scope's field of view, locate the four dim stars of Octans that conform to the pattern shown on the reticle. Loosen the R.A. clutch lever and rotate the R.A. axis until the orientation of those four stars in the sky roughly matches that of the four stars on the reticle. Then use the latitude adjustment lever and the two azimuth adjustment knobs on the mount to move those stars into the four small circles labeled "Octans" on the reticle.

The Orientation of Polaris

Polaris is not located exactly at the North Celestial Pole; it is offset from it by less than 1 degree. The "Polaris circle" seen in **Figure 17** is a representation of Polaris' orbit around the NCP. When polar aligning the Atlas II mount, you'll need to determine where Polaris should be positioned on that circle, relative to the NCP, for the current time and date. Here's how:

At the end of the initialization of the SynScan hand controller, after entering the proper local longitude, latitude, date, time, and Daylight Saving time, the SynScan hand controller will display the message: "Polaris Position in P.Scope=HH:MM". Imagine the graduated circle in **Figure 17** as a clock's face with 12:00 at the top, with the current time pointing to the "HH:MM". The orientation of the hour hand of the clock represents the orientation of Polaris in the polar scope.

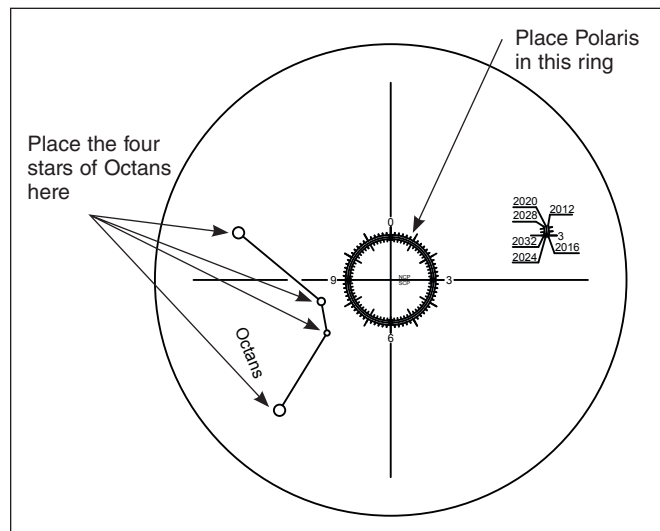


Figure 17. The polar scope's reticle, illuminated by an LED light inside the mount when it's powered on, should be visible when you look into the polar scope.

Put Polaris in the same orientation on the graduated circle to finish the polar alignment.

Polaris' position relative to the NCP changes slightly over the course of years. The polar scope reticle displays three circles to represent Polaris's "orbit" around the NCP in the year 2012, 2020, and 2028. There are also tiny hash marks at the 0, 3, 6, and 9 o'clock positions representing the years 2016, 2024, and 2032. Refer to the "key" to the right of the Polaris circle. When polar aligning in the Northern Hemisphere, you should place Polaris on the correct circle (or gap between them) corresponding to the present year.

Aligning the Polar Scope to the R.A. Axis

Before using the polar scope for polar alignment, the polar scope itself must be aligned to the mount's R.A. axis. At the center of the reticle is a cross, which you'll use in the procedure below to align the polar scope to the R.A. axis.

1. Loosen the Dec. clutch lever and rotate the optical tube about the Dec. axis until you have a clear view through the polar axis finder scope. Then retighten the Dec. clutch.
2. Look through the polar scope at a distant object (during the day) or at Polaris (at night, in Northern Hemisphere) and center it on the cross in the middle of the reticle. You may need to turn the latitude adjustment lever and the azimuth adjustment knobs of the mount and even move the tripod itself to do this.
3. Rotate the mount 180° about the R.A. axis. It may be convenient to remove the optical tube and counterweight(s) before doing this. If the object remains centered on the cross after the rotation, then the polar scope is properly aligned to the R.A. axis and no adjustment is needed.
4. If the target deviated from the cross, then use the 1.5mm Allen wrench to adjust the three small Allen screws on the polar scope (**Figure 18a**) to move the target half the distance back to the cross (**Figure 18b**). Then you will re-center the object on the cross as in Step 2 using the mount's azimuth adjustment knobs and the latitude adjustment lever (without moving the tripod this time).
5. Repeat Steps 2 to 4 until the object stays centered on the cross of the reticle when rotating the mount on the R.A. axis.

Note:

- When adjusting the Allen screws, first loosen one screw only ¼ of a turn, and then tighten the other two.
- Do not over tighten the Allen screws as it might damage the reticle plate in the polar scope.
- Do not loosen one screw completely or loosen more than one screw at a time, or the reticle plate in the polar scope will be disengaged and further adjustment is impossible.
- If the reticle plate does disengage, remove the polar scope's eyepiece by turning it counterclockwise and engage the reticle plate again.

8. Drive Panel Interface

The drive panel of the Atlas II EQ-G is shown in **Figure 19**.

Panel Interface Components:

POWER: This is a threaded 12V DC power input jack that provides a secure connection to the power source. The 12V DC "cigarette lighter" power cable provided with the mount has a matching threaded connector for the input jack.

HAND CONTROL: This RJ-45 8-pin jack is for connecting the coil cable of the SynScan hand controller.

USB: This USB-B type port can be used to update the mount's firmware from a computer or to control the mount from a computer running a third-party software program. (USB cable sold separately.)

to the camera. Cables for other cameras can be sourced optionally or custom made.

ON/OFF Switch: Turns on and off the power to the mount and hand controller.

POWER LED: The power LED next to the Auto Guide port serves as a power-on indicator and provides other status information:

- Steady on: Power voltage is normal.
- Slow flashing: Power voltage is low; continuing to operate the mount may damage the battery (if a 12V lead-acid battery is in use).
- Fast flashing: Power voltage is extremely low; continuing to operate the mount may damage the battery and the motor controller in the mount.
- Intermittent single flash: The PPEC training routine has been triggered, but the controller board in the mount has not received the worm index signal and the PE correction recording has not started yet.
- Intermittent double flash: The PPEC training routine has been started and the controller board in the mount has received the worm index signal and started to record the PE correction. When the intermittent double flash stops, it means the PPEC training has finished.
- Intermittent triple flash: Sidereal tracking with PEC is now enabled.

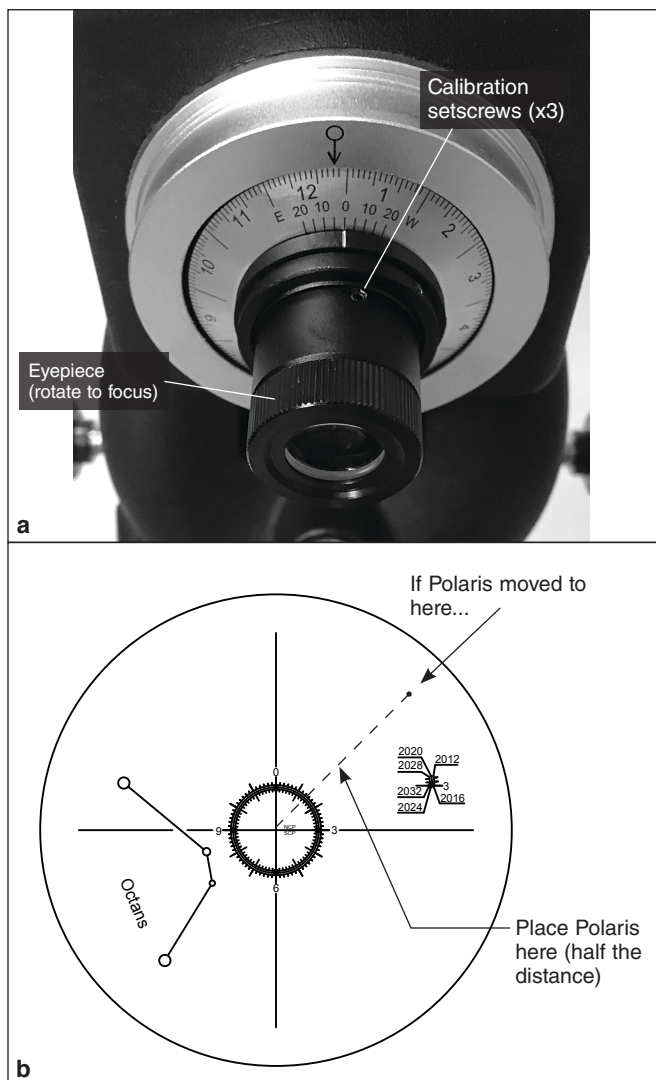


Figure 18. a) To calibrate the polar scope, use the included 1.5mm hex key to adjust the three calibration setscrews. **b)** If the target moved off the center of the reticle, use the calibration setscrews to move it halfway back toward the center.

AUTO GUIDE: A 6-pin RJ-12 jack is for connecting an autoguider. It is compatible with any autoguider with an ST-4 type interface.

SNAP: This 2.5mm stereo jack allows connection to a camera's shutter control port. The SynScan hand controller can control a camera to take pictures automatically via this interface. The camera control cable included with the Atlas II mount is compatible with select Canon EOS series DSLR cameras. It has a right angle 2.5mm stereo plug on one end for connection to the drive panel and a straight 2.5mm plug on the other end for connection

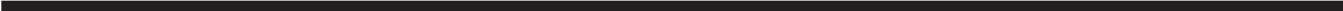


Figure 19. The drive panel of the Atlas II EQ-G

9. Specifications

Mount Type	German Equatorial
Payload (<i>Counterweights excluded</i>)	44 lbs. (20kg) for astrophotography)
Latitude Adjustment Range	5° to 65°
Azimuth Adjustment Range	About ±9°
Mount Weight (<i>Tripod excluded</i>)	39.7 lbs. (18.0kg)
Counterweight	11.5 lbs. (5.2kg) x2
Tripod	2-inch stainless steel, 16.3 lbs. (7.4kg)
Counterweight Shaft	18mm Diameter, Length 270mm + 184mm Extension
Power Requirement	DC 11~16V, 4A
Motors	1.8° Hybrid Stepper Motor
Transmission	180:1 Worm Drive + 48:12 Timing Belt Drive + 64 Micro-step/1.8° Stepper Motor Drive
Gear Ratio	720
Resolution	9216000 Counts/Rev., ~ 0.14 arc-second
Maximum Slewing Speed	4.2 degrees/second
Tracking Rates	Sidereal, solar, lunar
Tracking Mode	Equatorial
Auto-guiding Speeds	0.125X, 0.25X, 0.5X, 0.75X, 1X
PEC	100 Segments Permanent PEC
Hand Controller	SynScan
Database	>42000 Objects
Celestial Object Catalogs	Messier, NGC, IC, SAO, Caldwell, Double Star, Variable Star, Named Star, Planets
Pointing Accuracy	Up to 5 arc-minutes (RMS)

This page left blank intentionally.



This page left blank intentionally.



One-Year Limited Warranty

This Orion product is warranted against defects in materials or workmanship for a period of one year from the date of purchase. This warranty is for the benefit of the original retail purchaser only. During this warranty period Orion Telescopes & Binoculars will repair or replace, at Orion's option, any warranted instrument that proves to be defective, provided it is returned postage paid. Proof of purchase (such as a copy of the original receipt) is required. This warranty is only valid in the country of purchase.

This warranty does not apply if, in Orion's judgment, the instrument has been abused, mishandled, or modified, nor does it apply to normal wear and tear. This warranty gives you specific legal rights. It is not intended to remove or restrict your other legal rights under applicable local consumer law; your state or national statutory consumer rights governing the sale of consumer goods remain fully applicable.

For further warranty information, please visit www.OrionTelescopes.com/warranty.



Corporate Offices: 89 Hangar Way, Watsonville CA 95076 - USA
Toll Free USA & Canada: (800) 447-1001
International: +1(831) 763-7000
Customer Support: support@telescope.com

Copyright © 2019 Orion Telescopes & Binoculars. All Rights Reserved. No part of this product instruction or any of its contents may be reproduced, copied, modified or adapted, without the prior written consent of Orion Telescopes & Binoculars.