Quick Start Guide

HAE Strain Wave Gear AZ/EQ GoTo Mount with iMate[TM]
Models: HAE29B/EC, HAE43B/EC, and HAE69B/EC

PACKAGE CONTENTS[1]

- Dual strain wave gear altazi/equatorial mount with built-in iMate computer
- High precision optical encoder on RA axle (for EC version)
- AC adapter – 100-240V, 12V 6A DC output for mount (for indoor use only)
- Carrying case

OPTIONAL PARTS (not included)

- #8411 handset with OLED display
- iPolar[TM] electronics polar scope (#3339)
- Tripod/Tri-pier
- External iGuider for autoguiding (#3360)
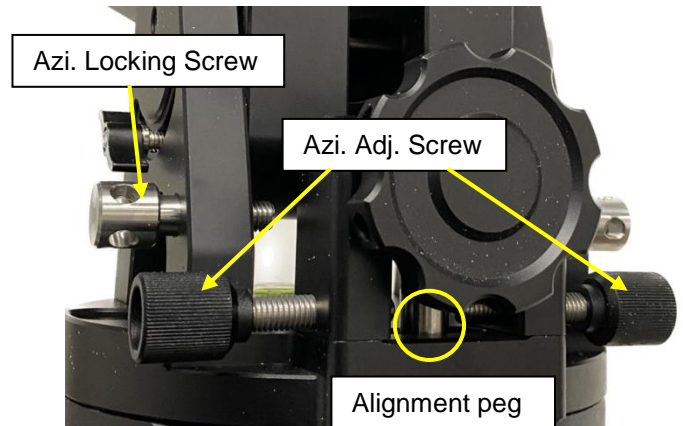- Counterweight shaft(#P-SGP-CWS) and counterweight (#3006-10)

ONLINE RESOURCES (www.iOptron.com)

- User's Manual
- Hand controller and mount firmware upgrades (check online for the latest version)
- Computer control

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[1]Contents and design may change from time to time without notice. An HAE69 mount is used here for illustration.
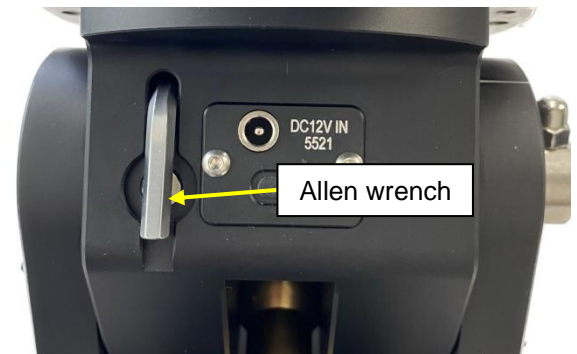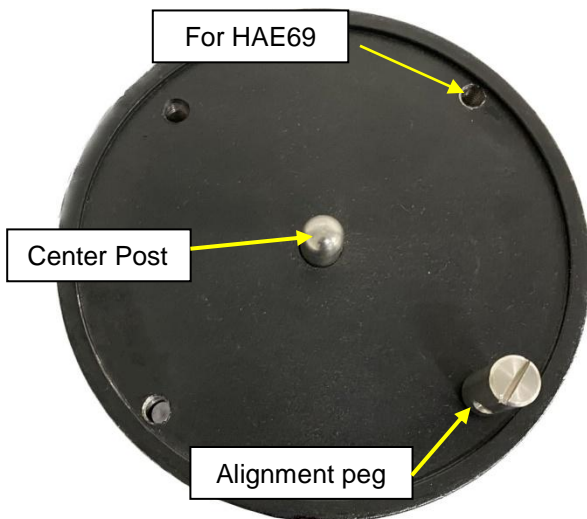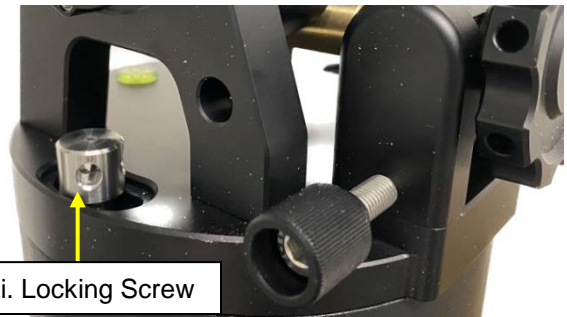
HAE is operated under unbalanced condition and could be tipped off if tripod is not secured.

1. **Remove mount head from package**.

2. **Set up tripod**: An HAE69, as shown here, has a 150mm base. An optional LiteRoc tripod #8023ACC or a tri-pier #8034 may be used. Setup and level the tripod. Adjust the tripod height. Tighten tripod locking knob to secure the tripod. Remove the **Alignment Peg** from the mount base and thread it onto the tripod head, on top of a tripod leg or between two legs depending on the latitude. Use two outside threaded holes to secure the mount head.

For HAE69

Center Post

Alignment peg

3. **Attach mount head:** Retract the 2X Azimuth (Azi) Adjustment Screws from both sides to leave ample space for the alignment peg to be fitted in between the 2X Azi Adjustment Screws.

Azi. Locking Screw

Azi. Adj. Screw

Alignment peg

Remove Azi Locking Screws from the mount altitude arm. Secure the mount head by tightening the Azi Locking Screws into the M8 holes on the tripod. There is an Allen wrench stored on the mount base for tightening the screws.


Azi. Locking Screw

Allen wrench

Level the mount by adjusting the tripod legs. Use the built-in Bubble Level Indicator on the mount base or an external leveler for this purpose.

4. **Adjust latitude:** The HAE69 has three latitude range settings: 0°~34°, 28°~62° and 56°~90°. To adjust the latitude, loosen both the Primary and Auxiliary Alt. Locking Lever on the RA base. *An HAE29B or HAE43B does not have the auxiliary locking lever.*

Alt. Adj. Knob

Auxiliary Alt. Lock. Lever

Lat. Mark

Primary Alt.. Lock. Lever
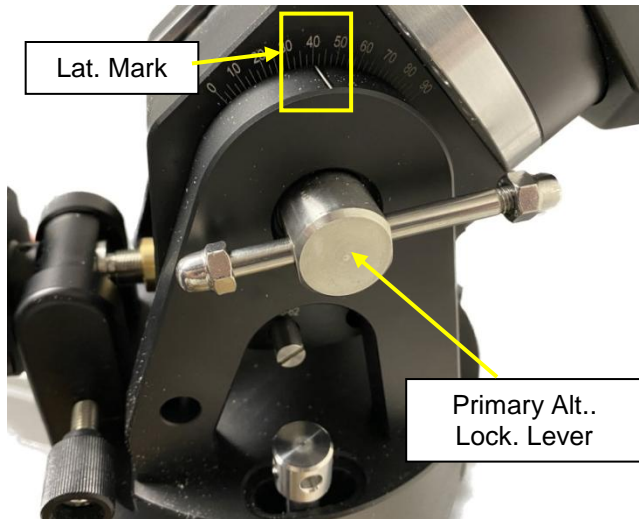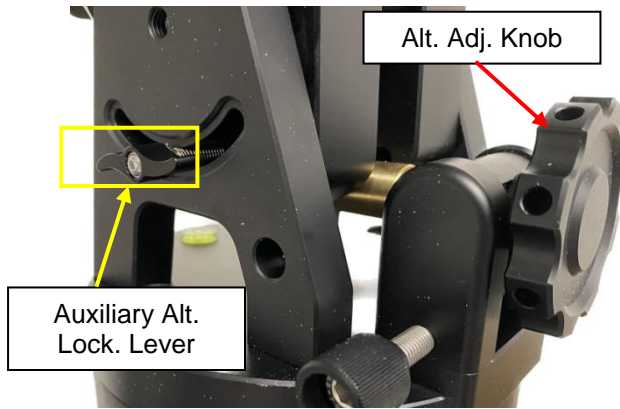
Use the Altitude Adjustment Knob to move the mount to the desired latitude by aligning the scale to the Latitude Mark Line. Tighten both Primary and Auxiliary Locking Lever.

There are holes on the Altitude Adjustment Knob. An Allen wrench may be inserted for increased adjustment torque, if needed.

To use the mount near the equator, change the latitude range settings to 0°~34°. To use the mount at AA mode, change the range to 56°~90°. Please refer to on-line instruction for detailed procedures.

5. **Install telescope**: An HAE69B is equipped with a Vixen/Losmandy-D dual dovetail saddle. It accepts a Vixen or a Losmandy-D dovetail mounting bar.

6. **Install counterweight bar and CW:** The mount is designed to operate without a counterweight (CW). If you want to use an optional CW, the CW shaft mounting hole is 3/8"-16 threaded. Thread in a CW shaft and install a 10 lbs CW.

7. **Connect DC power and hand controller:** Plug in a 12V DC power supply to the **DC12V IN** socket on the base.


If you have an optional Go2Nova® 8411 handset, plug it into the **HBX** port on the mount.

8. **Mount control via a on-board iMate computer:** The HAE69B has a built-in iMate computer which has an open source Kstar/EKOS, an advanced cross-platform (Windows, OSX, Linux) observatory control and automation tool with particular focus on Astrophotography.


A computer/tablet/SmartPhone can be connected to the iMate using NoMachine Remote Access via WIFI connection.
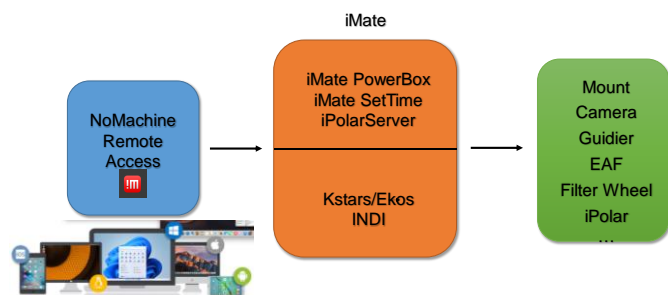
Turn the mount power on. From your computer WIFI network list, choose iMate_XXXXXX. Enter password 12345678 to connect the computer to iMate Wi-Fi network.
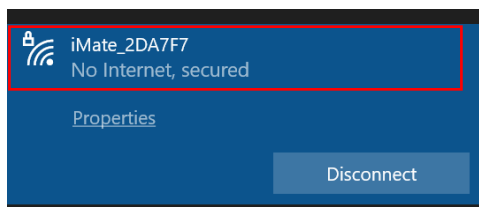
Download, install and launch NoMachine, connect it to iMate. Now you can use the iMate for power management, Polar alignment using iPolar and astronomy imaging via KStars!
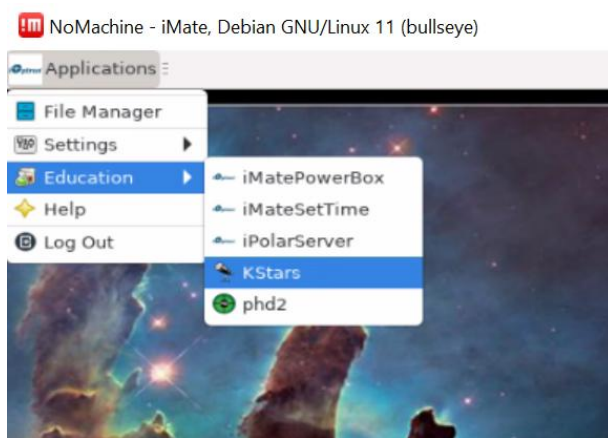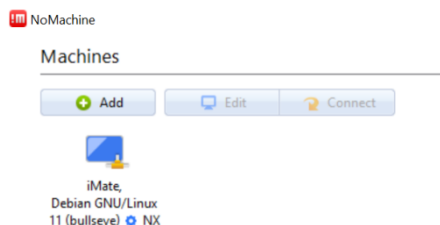
9. **Mount control via an 8411 handset:** An HAE mount uses an optional 8411 handset. Press **MENU** button, then **Settings** =>**Set Time and Site** to set the hand controller.

```
Daylight Saving Time    Y
UTC -300 Minute(s)
2024-03-09 10:19:18

Longitude:W071d08m50s
Latitude:  N42d30m32s

Northern Hemisphere
```

Enter the current date. Enter the time zone offset to the UTC; for example:
- Boston is "UTC -300 minutes"
- Los Angeles is "UTC -480 minutes"
- Rome is "UTC +060 minutes"
- Sydney is "UTC +600 minutes"

Enter longitude and latitude coordinates according to your GPS information. Toggle the Daylight Savings Time (DST) between N(No) and Y(Yes) using the arrow key. Move the cursor to the end of the screen to select the Northern or Southern Hemisphere.

 [TIPS: All time zones in N. America are "UTC -XXX minutes". Latitude and longitude coordinates can be obtained from GPS-equipped devices (navigator, phone), or from the internet, if you are entering them manually. "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.]

10. **Mount control via a computer:** If you want to use your own planetarium software to control the mount, you can connect your computer to the USB-C port on the HAE69B mount base. It supports ASCOM for

Windows, third party INDI driver for MacOS or Pi. Some software also has an iOptron mount driver embedded. *The WIFI of the iMate is not for this purpose.*

11. <u>Zero Position:</u> The **Zero Position** is the mount GOTO reference. Without setting the mount zero position properly, it may cause a large GOTO error or even cause the scope to hit the tripod leg. The simplest way to find the mount Zero Position of the EQ mode is using the zero position sensors. If you have an 8411 hand controller, press **MENU=>Zero Position =>Search Zero Position**, then press **ENTER.** Follow the online instruction to complete the process. The Zero Position also can be set via the iOptron Commander or the built-in iMate computer (Home Position).

Check the online manual for AA mode Zero Position.

12. <u>Polar alignment:</u> When an HAE mount operating at EQ mode, if no iPolar is installed or the pole star is not in sight, you may use two bright stars for coarse polar alignment if you have the optional handset.

You may also use Kstars/EKOS polar alignment routine from the built-in iMate computer or planetarium software for polar alignment.

An HAE mount may use an external iPolar^{TM} electronic polar scope. Just place the iPolar over the bubble level on top of the mount and secure the thumb screws.

Make sure that the arrow key is facing upward:

Refer to the iPolar Operation Manual from iOptron's website to perform the polar alignment, or steps briefly outlined below:

- Download and install iPolar Software (first time use);
- Connect a miniUSB cable between the iPolar USB port and a computer USB port;
- Click Connect and start polar alignment by following on screen instructions.

The built-in iMate computer has an integrated iPolar software.

13. <u>Manual operation:</u> Now **t**he mount can be used to observe astronomical objects with the HC. Use the arrow keys (►,◄,▼, and▲) form your hand controller, Commander or Mount Control Panel from Kstars/EKOS to point the telescope to the desired object. Use the number keys to change the slewing speed. Press the **0** button on hand controller, or click on the Tracking box in Commander to start tracking.

14. <u>Go to an object:</u> The mount is now ready for GOTO and tracking targets. Press **MENU** on the hand controller, select and ENTER **Select and Slew**. Select a category (e.g., **Solar System**), then select an object of interest (e.g., **Mars**). Press **ENTER** and the telescope will slew to the object and automatically start tracking. You may also using iOptron Commander or Kstars/Ekos from the built-in iMate computer to perform GOTO function.

15. <u>Sync to Target:</u> If the object is not in the center of the eyepiece, use this function in hand controller or Commander to center and synchronize the object to improve local GOTO accuracy. You may use Plate-solving from Kstars/EKOS.

16. <u>Put the mount back into the package/carrying case:</u> It is recommended to return the mount to Zero Position at the end of the observing session. Thread the dovetail saddle locking screws all the way in. You may need to adjust the latitude a little bit to fit the mount into the carrying case.

Use support@ioptron.com for technical supports.

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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 Number must be obtained from iOptron in advance of return. Contact iOptron at support@ioptron.com 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.

This warranty is automatically void if it is sold as an open box, used, auction, or discount over 20%; unless specified by iOptron.

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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:

iOptron Corporation
Customer Service Department
6F Gill Street
Woburn, MA01801
www.ioptron.com
support@ioptron.com

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 whopurchased from an iOptron Distributor or Authorized iOptron Dealer in the specific country. Please contact them for any warranty.