



Quick Start Guide

HEM27™ Hybrid Strain Wave GoTo Equatorial Mount

Models: HEM27 (#H272 Series) and HEM27EC (#H274ECA Series)



PACKAGE CONTENTS¹

- Telescope mount with iPolar™ electronic polar scope
- Hand controller (HC) – Go2Nova®8409 with built-in WiFi
- 6P6C hand controller cable
- USB 2.0 cable
- AC adapter – 100-240V, 12V 5A DC output (for indoor use only)
- Carrying case
- Optional carbon fiber tripod (#8061)
- Optional external iGuider for autoguiding (#3360)
- Optional counterweight shaft (#8456SL) 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

¹Contents and design may change from time to time without notice.

STOP!!! Carefully read this Guide BEFORE setting up and using the equipment! Worm system damage due to user operation error will not be covered by warranty.

Please hold the telescope when disengaging the DEC Gear Switch

1. Remove mount head from package:



Remove the 2x Azi Locking Screws from the mount base. Secure the mount head by tightening the Azi Locking Screws into the M6 holes on the tripod. There is an Allen wrench stored on the mount base for tightening the screws or adjusting the latitude.



2. Set up tripod: Setup and level the tripod. Adjust the tripod height. Tighten tripod locking knob to secure the tripod. The mount has a 102mm base. Thread the **Alignment Peg** onto the tripod head, on top of a tripod leg or between two legs for low latitude.



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

4. Adjust latitude: Without any payload, slightly loosen the 4x Latitude Locking Screws. Use the Latitude Adjustment Knob to set the correct latitude value, as displayed in the Latitude Mark Window.

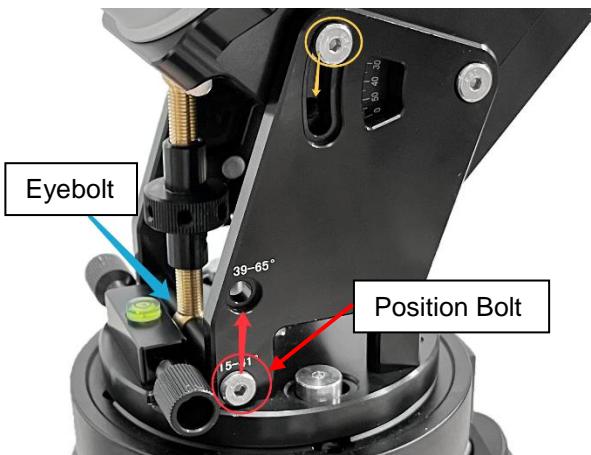


Insert the Allen wrench into the Latitude Adjustment Knob for more turning torque.

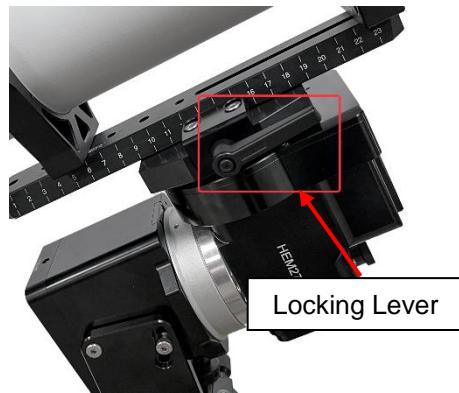
Two latitude ranges, 15~41° and 39~65°, can be set up for the mount head. To change the latitude range from one to the other, **both** the Latitude Position Bolt and the Latitude Locking Screws need to be moved to the correct locations.

To switch the latitude range:

- Loosen the Latitude Locking Screws just enough to adjust the latitude setting to between 39~41°. Tighten Latitude Locking Screws.
- Unthread and pull out the Position Bolt. Remove and do not lose the two black tubes. Insert the Position Bolt to a new latitude position with one black tube on.
- Adjust the Latitude Adjustment Knob while holding the brass eyebolt until it lines up with the Position Bolt. Insert another black tube and secure the Latitude Position Bolt.
- Move the Latitude Locking Screws (one on each side) to the new locations revealed.



- 5. Install telescope:** HEM27 accepts a Vixen or a Losmandy-D dovetail mounting plate. The default is Vixen-type one. Release the dovetail Saddle Locking Lever and slide the telescope dovetail plate into the saddle with Gear Switch disengaged. Make sure that the arrow sign on the saddle is pointing forward. Tighten the Saddle Locking Lever. Pull the lever and turn it to the position that the lever is parallel to the saddle to prevent it interfering with the DEC unit during mount GOTO and tracking.



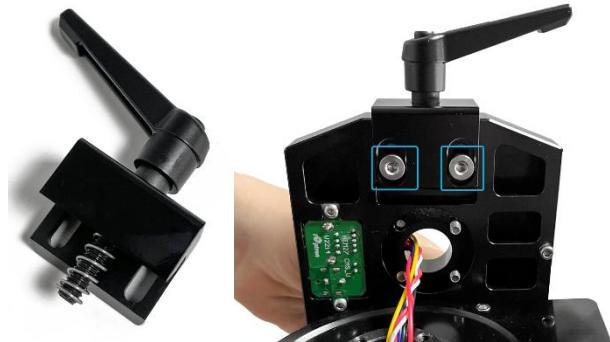
To convert dovetail saddle from Vixen-type to Losmandy-type.

- (1) Loosen the two socket screws (red circled), move the fixed block outward, then tighten the screws.



- (2) Remove the two blue circled screws and pull the dovetail saddle locking block from the saddle.

- (3) Release the four screws (yellow circled) to separate the saddle from the mount. Flip the dovetail saddle locking block and secure it onto the saddle from bottom of the dovetail saddle.



- (4) Put the dovetail saddle back and retighten the four yellow circled screws.

Here is a Losmandy-type dovetail saddle after converting.



- 6. Connect cables:** Connect the Go2Nova® 8409 Hand Controller to the **HBX** port on the mount back. Plug in a 12V DC power supply to the **DC12V IN** socket.



- 7. Balance payload:** No RA balance is needed for a HEM27 mount.

Turn the mount power on. Press number 9 to change the slew speed to max. Press **◀** or **▶** button to slew the telescope to one side of the mount. Hold the telescope and disengage DEC Gear Switch to check the balance. Release dovetail saddle locking lever and move the scope back and forth to adjust the position. Tighten the dovetail saddle locking lever and engage the gear switch after balancing completed.



Return the mount to Zero Position after balancing and engage DEC gear switch.

- 8. Set Zero Position:** The **Set Zero Position** command registers the current position as zero position. So before registering, the mount should be physically set at Zero Position either manually or slewed by hand controller. The Zero Position is defined as the telescope being on top of the mount head and pointing to the North Pole, with CW shaft mounting hole pointing to the ground. To register, press **MENU=>Zero Position =>Set Zero Position**. Press **ENTER** to confirm. One can also use **MENU=>Zero Position =>Search Zero Position** to set the zero Position.

- 9. Set controller:** Press the **MENU** button; then “**Settings**=> “**Set Time & Site**”.

2022-05-05 12:01:36
UTC -300 Minute(s)
W071d08m50s DST: Y
N42d30m32s Northern

Enter the current date. Enter the time zone offset to the UTC; for examples:

- 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 coordinate of your location in D:M:S format. Toggle the Daylight Saving Time (DST) between N (No) and Y(Yes) using arrow key.

[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 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. Polar alignment:** For a HEM27 mount without iPolar (H272) or the pole star is not in sight, you may use two bright stars for coarse polar alignment.

(1) Level the mount and set it to the Zero Position. Align the telescope to the R.A. axis of the mount. An eyepiece with an illuminated crosshair is highly recommended.

(2) Use the Hand Controller (HC) (**MENU => “Alignment” => “Polar Iterate Align”**) to display the azimuth and altitude position of several bright stars near the meridian. Select one that is visible at a high

altitude as Alignment Star A. Follow the HC instruction to move Alignment Star A to the center of the eyepiece using a combination of the **Latitude Adjustment Knob** and the “◀” or “▶” buttons. Press **ENTER** to confirm when the star is centered. Next, select a bright star that is close to the horizon as Alignment Star B. Center it using the **Azimuth Adjustment Knob** and the “◀” or “▶” button. Press **ENTER** to confirm the settings.

(3) The telescope will now slew back to Alignment Star A. Repeat the steps above. The iteration can be stopped when it is determined that the alignment error has been minimized. Press the **BACK** button to exit the alignment procedure.

For a HEM27 quipped with an iPolar™ electronic polar scope (H272A, H274A), refer to 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 port and a computer USB port;
- Click Connect and start polar alignment by following on screen instructions.

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 **STOP/O** button to start/stop tracking.

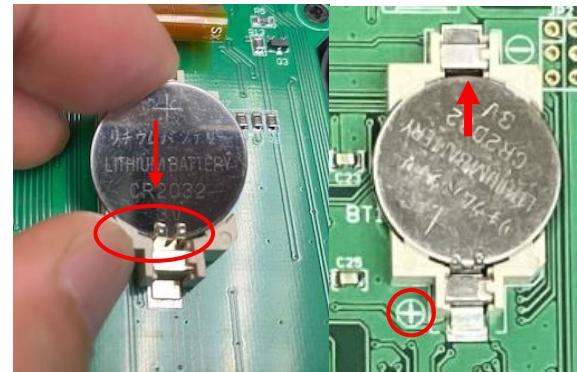
12. Go to an object: The mount is now ready for GOTO and tracking targets. Press **MENU**, select and **ENTER Select and Slew**. Select a category (e.g., **Solar System**), then select an object of interest (e.g.,

Moon). Press **ENTER** and the telescope will slew to the object and automatically start tracking.

13. 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**. Follow the on-screen instruction to perform the sync.

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

14. Install hand controller battery: The hand controller uses a CR2032 button battery to keep the Real Time Clock running. The HC is shipped without battery included/installed due to shipping restrictions. Open the HC back cover. With the battery + sign facing up, slide the battery under two small metal hooks on the positive side first (circled in red). Then push the battery down to make a good contact.



15. Mount control via a computer/SmartPhone/Tablet: One can control the HEM27 via USB on the 8409 hand controller or built-in WiFi. It supports ASCOM for Windows, third party INDI driver for MacOS or Raspberry PI, iOptron Commander Lite or SkySafari for iOS/Android. Some software also has iOptron mount driver embedded.

16. Put the mount back into the package/carrying case: It is recommended to return the mount to Zero Position at the end of the observation session. Lay the mount into the carrying case. Disengage the gear system for transportation.

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. 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.

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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Some states do not allow the exclusion or limitation of incidental or consequential damages or limitation on how long an implied warranty lasts, so the above limitations and exclusions may not apply to you.

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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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.