

# Quick Start Guide

## CEM120™ Center-Balanced GoTo Equatorial Mount Models: #7300, #7301



### PACKAGE CONTENTS<sup>1</sup>

- 1X Telescope mount
- 1X Hand controller (HC) – Go2Nova® #8407
- 1X Counterweight (10 kg/22 lbs)
- 1X Stainless steel counterweight shaft (4.6kg)
- 1X HC controller cable
- 1X RS232-RJ9 serial cable
- 1X 12V5A AC adapter – 100-240V
- 4X Base mounting screws
- 1X GPS external antenna
- 1X Wi-Fi external antenna
- Quick Start Guide (this document)

### ONLINE RESOURCES (at [www.iOptron.com](http://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)

---

<sup>1</sup> The design and packaging may change from time to time without notice.

# STOP!!!

Read the Instruction **BEFORE** setting up and using the mount! Worm/gear system damage due to improperly use will not be covered by warranty.

Questions? Contact us at [support@ioptron.com](mailto:support@ioptron.com)

## Instruction for CEM120 Gear Switch and Axle Locking Knob


Both RA and DEC have the same Gear Switch and Axle Locking Knob, the operations are the same.




Gear Switch

Axle Locking Knob

As an example, here are the positions for the Gear Switch and Axle Locking Knob for RA axis:

**Fig.1:** When transferring or installing the mount, lock the Axle Locking Knob and disengage the Gear Switch  (they are parallel to each other). So the RA won't swing and there is no force applied onto the worm/ring gear.

**Fig.2:** During mount balancing process, release the Axle Locking Knob and leave the Gear Switch at disengaged position  (they are perpendicular to each other). Now the mount will swing freely in RA direction.


**Fig.3:** During normal operation of the mount, *i.e.*, GOTO and tracking, turn the Gear Switch to locking position  to engage the worm/ring gear while leave the Axle Locking Knob released (they are parallel to each other again).



Fig.1 During transferring and installing...



Fig.2 During balancing...



Fig.3 During operating...

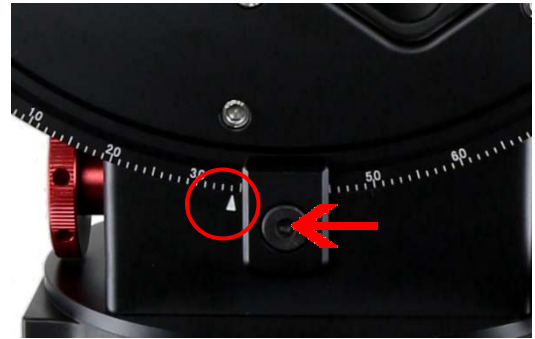
**ONLY** set the Gear Switch at locking position to engage the worm/ring gear during goto, slew or tracking.

**ALWAYS** lock the Axle Locking Knob during transferring and installing.

- 1. Attaching the Mount:** Make sure that the RA axle is at the locking position. Remove the mount from the package. Put it onto a pier/tripod top and secure it with four included Base Mounting Screws.



Turn the Latitude Adjustment Knob until the arrow points to your current latitude on the Latitude Scale. There are fine scales on the Knob, as shown in the photo.



- 2. Installing the Counterweight (CW) Shaft:** Hold the mount head with one hand, hand pull the RA Axle Locking Knob outward, slowly rotate the mount RA 90 degree to level position. Release the RA Axle Locking Knob to lock the RA axis again.



Tighten the Latitude Locking Clamps when done.

[NOTE: For those latitude is between 0° to 10°, a special CW shaft mounting block is need. ]

- 4. Installing the Counterweight(s) and Telescope:** Before installing the Counterweight(s), make sure that mount is at Zero Position, *i.e.*, CW shaft is pointing to ground. Both R.A. and DEC Axle Locking Knobs are at the locking position (refer to Figure. 1). Remove the CW Safety Cap at the end of CW Shaft. Guide the CW over the shaft. Tighten the CW Locking Screw to hold the CW in place. Place the Safety Cap back onto the shaft.

Remove the CW shaft from the package and threaded into the CW shaft mounting house.

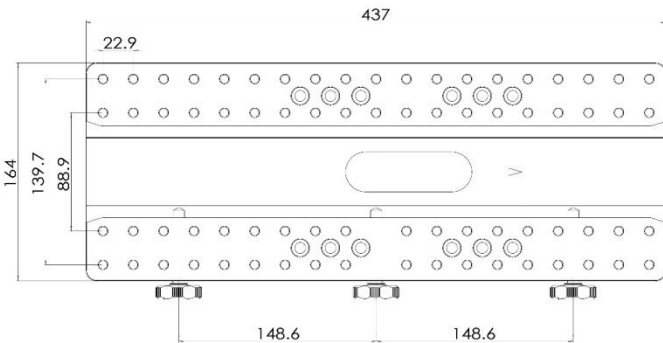


You may need more CW for heavier payload, or smaller size CW for lighter scope.

- 3. Setting the Latitude:** Loosen the Latitude Locking Clamps about a quarter (1/4) turn with a 5mm Allen wrench.



The CEM120 has a Losmandy D dovetail saddle, as shown below. Release the dovetail saddle locking knobs and slide the telescope dovetail plate into the saddle. Tighten the saddle locking knob.



**5. Balancing the Payload:** After attaching the 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 the R.A. or DEC during the balancing process. Always hold on to the mount and/or telescope assembly before releasing the Axle Locking Knob and/or Gear Switches to prevent it from swinging, which can cause personal injury and/or equipment damage.**

With the corresponding Gear Switch disengaged, balance in DEC axis by moving the scope with accessories back and forth in the mount saddle. Balance the assembly in R.A. axis by moving CW along its shaft.

Only balance one axis at a time and start with the DEC axis first. Double check the mount to make sure both the RA and DEC axes are balanced.

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

**6. Connecting Cables:** Plug in a 12V DC power supply to the DC12V POWER socket. Connect the Go2Nova® 8407 Hand Controller to the HBX port on the mount side panel. Install Wi-Fi antenna (right angle one) and GPS antenna.



Refer to the full User's Manual on how to use the cable management system.

**7. Performing Polar Alignment:** You may install an optional electronic polar scope, with an optional polar scope adapter, for polar alignment. Or you may use polar alignment software to do the job.

You may also use "Polar Iteration Align" in hand controller for polar alignment.

**8. 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.

**9. Setting Controller:** Press the **MENU** button; then "Settings" => "Set Time & Site".



Enter the current date and check for Daylight Saving Time using arrow and number keys. 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"

[**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. “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. Set Zero Position:** Set the mount to ZERO position by pressing **MENU** => “Zero Position” => “Set Zero Position”. Use the hand controller to, or manually move the mount to zero position, *i.e.* telescope on top of the mount and pointing to North Pole with CW shaft pointing to ground. Press the **ENTER** to confirm. Perform **Set Zero Position** if the mount lost its power during slew or after firmware upgrading.
- 11. One Star Alignment:** Perform a **One Star Align** to correct the Zero Position discrepancy and improve the GOTO accuracy. To further improve the GOTO accuracy, refer to the full User’s Manual for more details.
- 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 (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.

- 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”. Use arrow keys to center the object in eyepiece. Press **ENTER** again to complete this function.

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

- 14. Transferring the mount:** It is recommended to park your scope at the end of the observing session. Please refer to online instruction manual for more information. If you are dismounting and transferring the mount, make sure that both RA and DEC axles are locked by turning the Axle Locking Knobs 90 degree and the Gear Switches are unlocked.

Use [support@ioptron.com](mailto:support@ioptron.com) for technical support.

## 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 1.781.569.0200 or [support@ioptron.com](mailto: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, such as transportation, insurance and fees, 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.

IOPTRON DISCLAIMS ANY WARRANTIES, EXPRESS OR IMPLIED, WHETHER OF MERCHANTABILITY OF FITNESS FOR A PARTICULAR USE, EXCEPT AS EXPRESSLY SET FORTH HERE. THE SOLE OBLIGATION OF IOPTRON UNDER THIS LIMITED WARRANTY SHALL BE TO REPAIR OR REPLACE THE COVERED PRODUCT, IN ACCORDANCE WITH THE TERMS SET FORTH HERE. IOPTRON EXPRESSLY DISCLAIMS ANY LOST PROFITS, GENERAL, SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES WHICH MAY RESULT FROM BREACH OF ANY WARRANTY, OR ARISING OUT OF THE USE OR INABILITY TO USE ANY IOPTRON PRODUCT. ANY WARRANTIES WHICH ARE IMPLIED AND WHICH CANNOT BE DISCLAIMED SHALL BE LIMITED IN DURATION TO A TERM OF TWO YEARS FROM THE DATE OF ORIGINAL RETAIL PURCHASE.

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:

iOptron Corporation  
Customer Service Department  
6F Gill Street  
Woburn, MA 01801  
[www.ioptron.com](http://www.ioptron.com)  
[support@ioptron.com](mailto: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.