

## iOptron® iGuider™ Integrated Guiding System Instruction

iOptron iGuider™ guiding system is an autoguiding system built inside a dovetail saddle of an iOptron mount, such as CEM70G, CEM40G and GEM45G. It includes a 30mm diameter and 120mm focal length guiding scope and a Windows based driverless guiding camera.

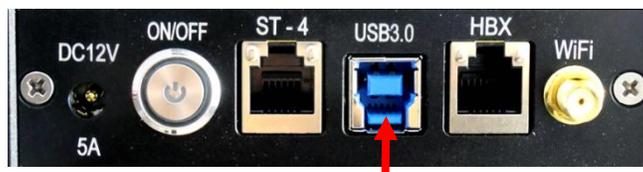


1. Focus adjuster locking screw (2mm hex), 2.Focus adjuster, 3.Lens cover

Currently, the iGuider only support ASCOM guiding. Please follow mount computer control reference to make sure that a proper iOptron Commander/ASCOM Drive is installed based on your mount type. CEM40G/GEM45G and CEM70G uses different Commander/ASCOM Drive. Test the mount computer control before setup the autoguiding.

### 1. Connect iGuider to a PC

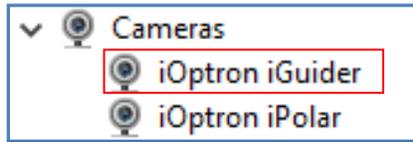
The iGuider guiding system is connected internally to the mount main USB port. For example, CEM70G is connected to the USB3.0 port on the main control board.



CEM40G (left) and GEM45G (right) is through main USB port on the back.



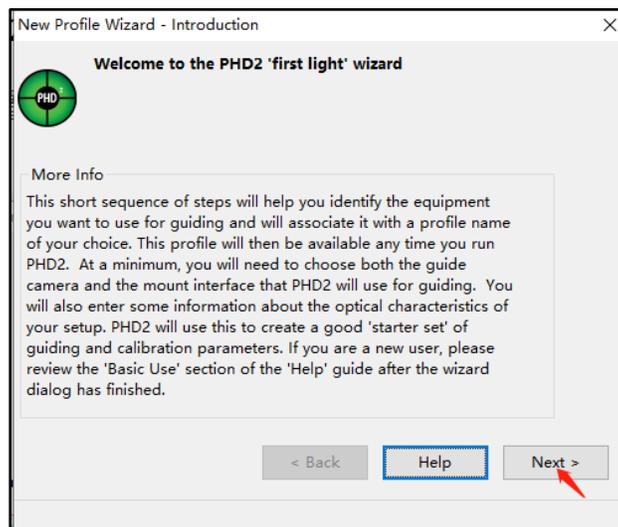
Connect the mount to a PC via main USB port. Check your PC device list via Device Manager, you should see an iOptron iGuider under the Camera.



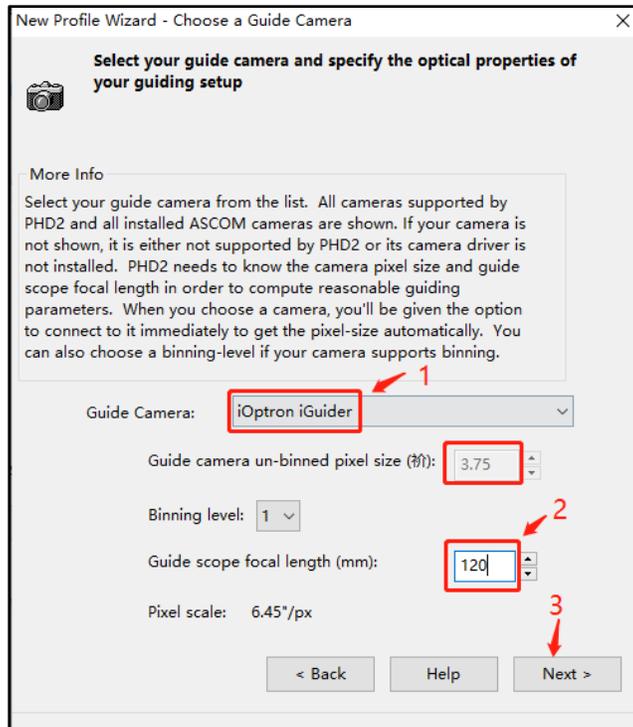
## 2. Setup PHD2 Guiding

Download freeware PHD2 autoguiding software from <https://openphdguiding.org/downloads/>. Please select V2.6.7 or later version.

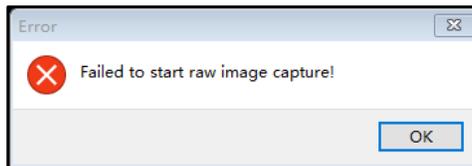
Start the PHD2 to start New Profile Wizard:



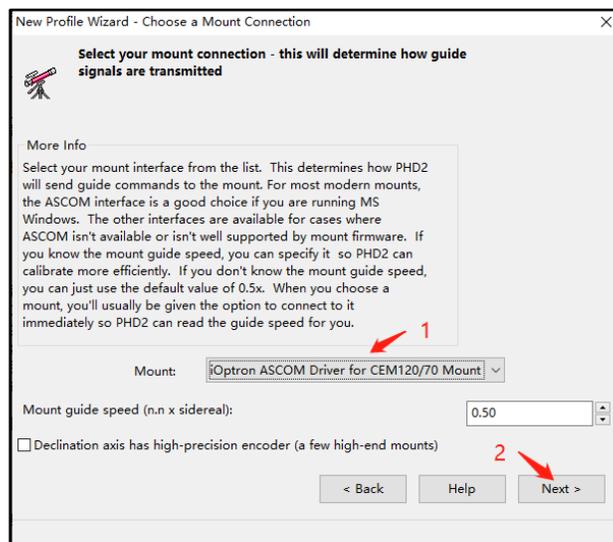
Select “iOptron iGuider” camera. PHD2 will fill the pixel size (3.75um) automatically. Enter 120mm into guide scope focal length tab, and click **Next**.



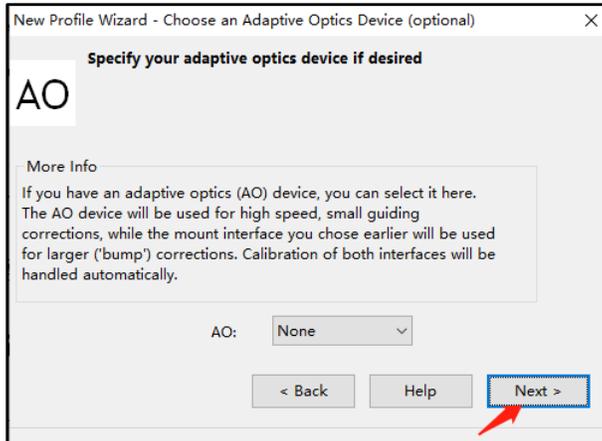
If the program displays the following error, please exit “iOptron iPolar” software.



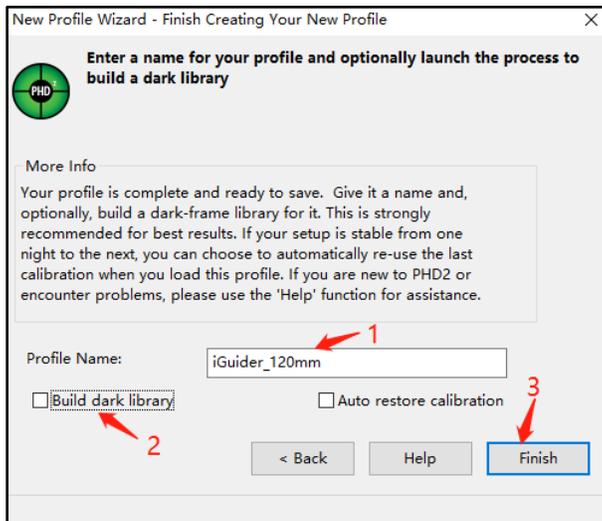
Select correct iOptron ASCOM driver from the dropdown menu. Here “*iOptron ASCOM Driver for CEM120/70 Mount*” was chosen for a CEM70G mount. Click **Next**.



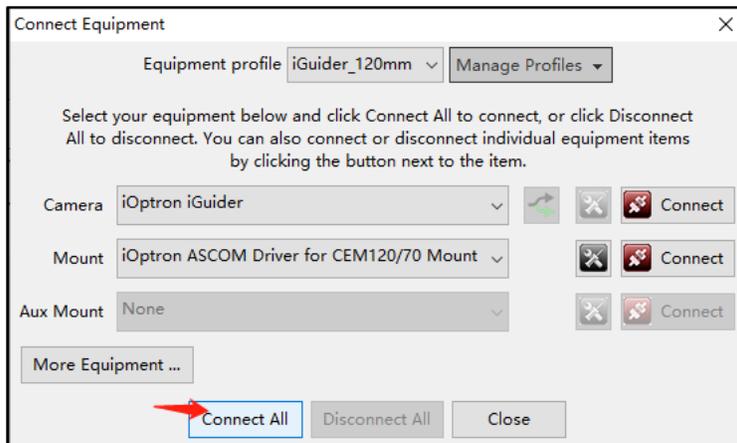
In next Adaptive Optics Device setting window, select **None** and go to **Next**.



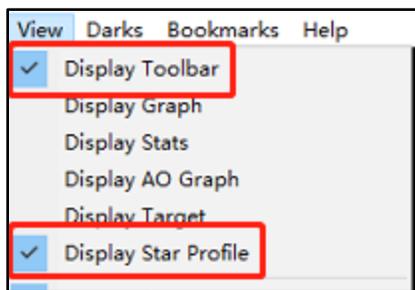
Save the Profile Name. Do not check **Build dark library**. You may do it at a late time. Click **Finish** to complete the Profile setup.



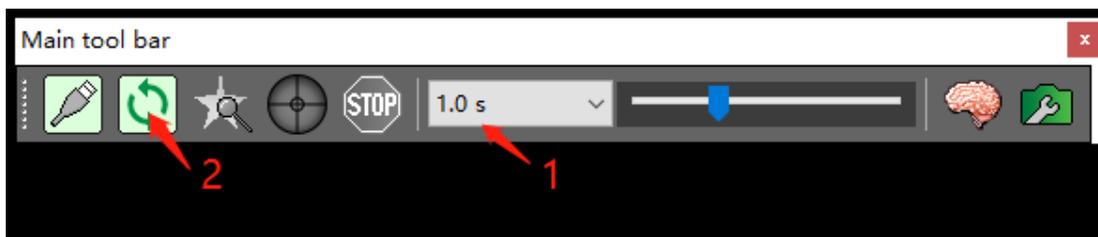
Connect all the devices.



To view the image via iGuider, check **Display Toolbar** and **Display Star Profile** in **View** menu.



Select proper "**Exposure Time**" in **Main tool bar** and click on "**Continues Exposure**", you should see star images in the main window. Make sure you remove the lens cover.



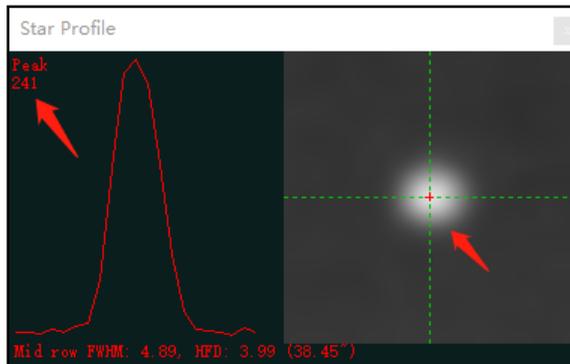
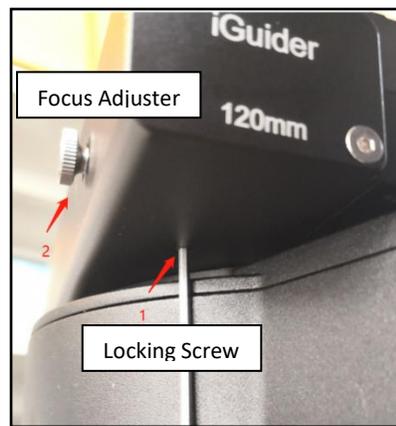
### 3. iGuiding Focus Adjustment

If you are using the iGudier the first time, you may need to adjust the guiding camera focusing.

Set up the mount. Connect the mount to a computer. Perform polar alignment. Set the Zero Position.

To adjust iGudier focus:

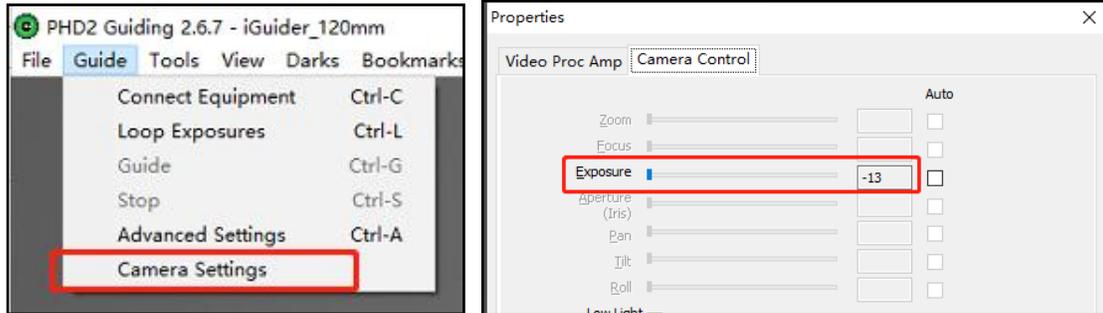
- (1) Remove iGudier lens cover.
- (2) Run PHD2 software and select iOptron iGudier
- (3) Go to a bright star
- (4) Loosen Focus Adjuster Locking Screw 1. Then adjust the Focus Adjuster 2 to bring the star to show in the main window.
- (5) Click on the star to look at the **Star Profile**. Further fine adjusting the Focus Adjuster to bring the **Peak** to maximum value.
- (6) Tighten the Locking Screw 1.



## 4. iGuiding Exposure Time Adjustment

When PHD2 has difficulty picking the guiding star due to a star in the interested area is not bright enough or weather condition, one can adjust the camera exposure time. **The camera exposure time change won't be kept when power is off.**

The **power on** default exposure value is -13, or 0.01 seconds. To adjust it, click on **PHD2 Guide => Camera Settings**.



Adjust the camera **Exposure** time to -7 (one second), or other numbers from the reference table. Make sure that the PHD2 exposure time and camera exposure time are set the same.

Please refer to the following tables for exposure number and exposure time:

Number	Exposure
-13	0.01s
-12	0.02s
-11	0.05s
-10	0.1s
-9	0.2s
-8	0.5s
-7	1.0s
-6	1.5s
-5	2.0s
-4	2.5s
-3	3.0s
-2	3.5s
-1	3.8s



## 5. Specifications

Guiding scope aperture	30mm
Focal length	120mm
Imaging sensor	1/3 in CMOS
Pixel size	3.75µm
Resolution	1280X960
Operation system	Windows (driverless)

## **6. iGuider ASCOM Driver**

<https://www.ioptron.com/Articles.asp?ID=328>

After install iGuider ASCOM Driver, you may connect the iGuider using any ASCOM compatible guiding software, not only the PHD2.

## **7. iGuider Firmware Upgrade**

<https://www.ioptron.com/Articles.asp?ID=327>