iOptron[®] iGuider[™] Integreted 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

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.



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**.

Select your guide camera and specify the optical properties of your guiding setup More Info	
More Info	
Select your guide camera from the list. All cameras supported by PHD2 and all installed ASCOM cameras are shown. If your camera is not shown, it is either not supported by PHD2 or its camera driver is not installed. PHD2 needs to know the camera pixel size and guide scope focal length in order to compute reasonable guiding parameters. When you choose a camera, you'll be given the option to connect to it immediately to get the pixel-size automatically. You can also choose a binning-level if your camera supports binning.	
Guide Camera: iOptron iGuider 🗸 🗸	
Guide camera un-binned pixel size (彻): [3,75] 🗧	
Binning level: 1 ~ 2	
Guide scope focal length (mm):	
Pixel scale: 6.45*/px 3	
< Back Help 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*.

*	Select your mount signals are transm	connection - this will determine how guide itted	
More Ir	fo		
Select yo will send the ASCO Windows ASCOM	our mount interface f guide commands to DM interface is a go s. The other interfac isn't available or isn'	rom the list. This determines how PHD2 to the mount. For most modern mounts, od choice if you are running MS es are available for cases where well supported by mount firmware. If	
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In next Adaptive Optics Device setting window, select *None* and go to *Next*.

New Profile Wizard - Choose an Adaptive Optics Device (optional)	×
Specify your adaptive optics device if desired	
More Info If you have an adaptive optics (AO) device, you can select it here. The AO device will be used for high speed, small guiding corrections, while the mount interface you chose earlier will be used for larger ('bump') corrections. Calibration of both interfaces will be handled automatically.	
AO: None ~	
< Back Heip 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.

Connect Equ	ipment	×	
	Equipment profile iGuider_120mm ~ Manage Profile	es 🔻	
Select your equipment below and click Connect All to connect, or click Disconnect All to disconnect. You can also connect or disconnect individual equipment items by clicking the button next to the item.			
Camera	iOptron iGuider 🗸 🗸	🔀 🜠 Connect	
Mount	iOptron ASCOM Driver for CEM120/70 Mount \searrow	🔀 🜠 Connect	
Aux Mount	None 🗸	🔀 💽 Connect	
More Equi	ipment		
	Connect All Disconnect All Close		

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 iGuider focus:

- (1) Remove iGuider lens cover.
- (2) Run PHD2 software and select iOptron iGuider
- (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.



(6) Tighten the Locking Screw 1.



4. iGuiding Exposure Time Adjustment

When PHD2 has difficult to pick 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**.

C P	HD2 Guiding 2.6.7 - iGuider 1	20mm	Properties	×
File	Guide Tools View Dar	ks Bookmarks	Video Proc Amp Camera Control	
	Connect Equipment	Ctrl-C	Auto	
	Loop Exposures	Ctrl-L	Zoom	
	Guide	Chille	<u>Focus</u>	
	Guide	Curo	Exposure -13	
	Stop	Ctrl-S	Aperture (Iris)	
	Advanced Settings	Ctrl-A	Pan I	
	Camera Settings		Iilt	
	control of the gr		Roll II	
			Low Light —	

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)