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Deep Sky Tracking: iOptron's SkyGuider Pro Tracker

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By: [Alan Dyer](#)

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iOptron's SkyGuider Pro with a ball-mounted Canon 60Da

The SkyGuider Pro tracker has been widely publicized on YouTube as a great unit for deep sky imaging. Does it warrant the YouTubers' enthusiasm?

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Plus: Good tracking; rechargeable battery; electric RA motions

Minus: No declination slow-motion; confusing mounting options

Summary: The SkyGuider Pro can serve as a base for entry-level deep sky imaging, but with caveats on ease of aiming and framing.

Who Is It For? For beginning astrophotographers and those looking for a portable rig.

Deep sky photography has boomed in popularity in recent years, in part due to the ready availability of affordable cameras. But another reason is the decreasing costs of good mounts for tracking the sky in long exposures. One of the most popular low-cost “star trackers” is **iOptron**’s SkyGuider Pro (MSRP \$498, but typically sells for \$428).

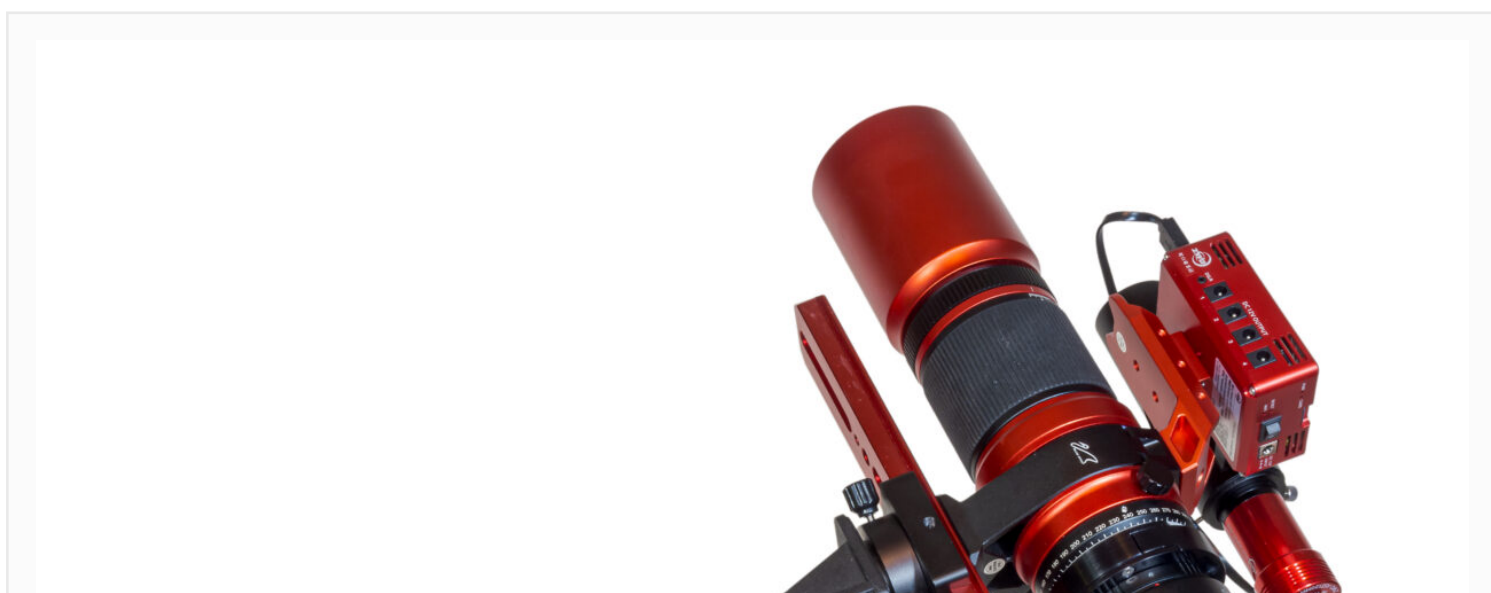
Evangelists on YouTube have promoted it as **THE** unit to buy to start out in long exposure astrophotography. I tested a unit purchased from a major dealer here in Canada, to see if it warranted the YouTubers’ enthusiasm.

Yes, it does work very well. But ... it also has some annoying deficiencies which, unless you’ve used other products, you might just accept.

On the Plus Side

Small trackers like the SkyGuider Pro are great for untrailed exposures of the Milky Way in nightscapes, and for constellation portraits with wide-angle and normal lenses. Where any tracker runs into trouble is when it is pressed to its limits by using long, heavy telephoto lenses, and certainly small telescopes.

First, a tracker has a limited load carrying capacity (the SkyGuider Pro is rated as handling 11 pounds or 5 kg). The heaviest load I burdened it with in my testing was the **William Optics** RedCat and **ZWO** autoguiding gear depicted below, totaling 7.7 pounds (3.5 kg) with the **Canon** EOS Ra camera. While the SkyGuider Pro handled the load reasonably well, it was at the limit, as I found it a bit bouncy.



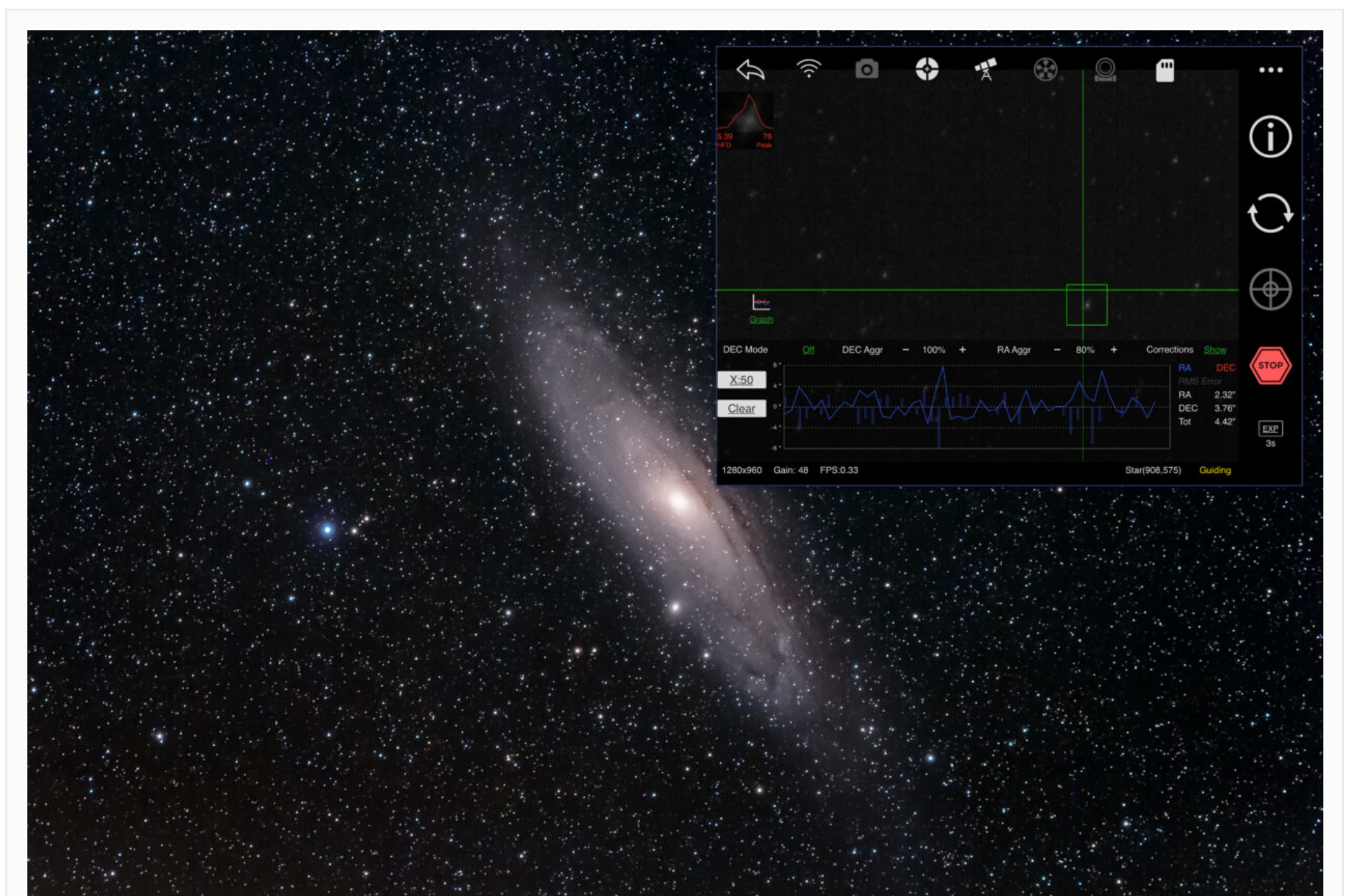


This is about the largest load the SkyGuider Pro can handle: a small astrograph with autoguider accessories. It does work, but precise aiming and framing is a challenge.

Second, all trackers have small gears which limits their tracking accuracy. While they certainly turn at the correct “sidereal rate” to follow the stars, mechanical errors in the gears inevitably cause the mount to wander back and forth, trailing stars in the east-west direction, or right ascension (RA). This mistracking will become more noticeable the longer the focal length of lens used. I generally restrict trackers to lenses no longer than 135mm.

However, YouTubers have promoted the SkyGuider Pro for use with small telescopes such as the William Optics RedCat, an astrograph with a 250mm focal length. In fact, the RedCat’s Quick Start Guide recommends it be used with the SkyGuider Pro.

I tested the combination and found that in a set of two dozen one-minute unguided exposures with the RedCat, about half were tracked well enough to be usable. The rest had stars trailed slightly or substantially in RA. This is typical performance for any star tracker.



M31 from a stack of 18 two-minute autoguided exposures using a Canon 60Da camera at ISO 3200. The graph shows the ASlair's autoguiding corrections, wandering over several arc seconds.

To improve the tracking, the SkyGuider Pro has an industry-standard “ST-4” autoguider port allowing it to be computer guided at least in the east-west direction; no autoguiding is possible in the north-south, or declination, direction.

Employing an ASlair Pro control box with a small autoguider camera and guidescope, all from ZWO, worked well and eliminated all mistracking in RA in two-minute exposures. The only trailing now was in declination due to the polar alignment being a little off. (I eyeballed alignment with the SkyGuider's polar scope and mobile app.)

While the SkyGuider's polar scope does work well, for precise alignment iOptron offers a version of the SkyGuider Pro equipped with their iPolar camera, for \$600. However, using the iPolar requires a Windows laptop in the field, defeating the grab-and-go portability of a tracker. I did not test the iPolar.

The SkyGuider Pro is conveniently powered by a built-in lithium battery that in testing lasted many nights. It can be re-charged by any 5-volt USB charger; one is not included.

The latitude base has good adjustments for performing polar alignment. I found it worked well, and I saw no need to spend the \$198 to upgrade to the aftermarket equatorial wedge offered by William Optics, despite some YouTubers' insistence it is essential.

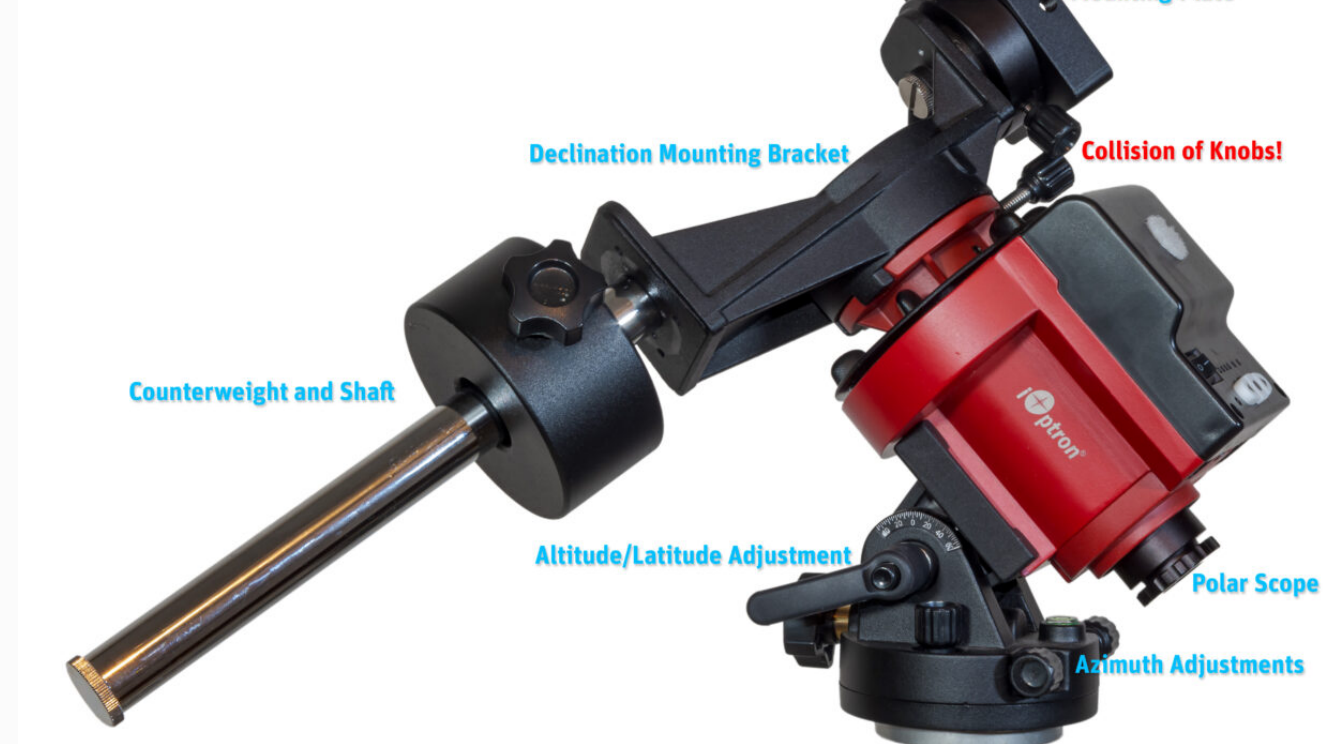
On the Minus Side

Using the SkyGuider Pro to shoot with a telescope exposes its main deficiency. While the SkyGuider has fast electric slow-motion controls in RA for centering and framing targets, there are none in declination. Not even a manual fine adjustment. You have to loosen the hand bolts that secure the mounting plate that in turn holds the scope and just turn it by hand as best you can, making framing fields an exercise in trial and error. It is crude to say the least.

While William Optics offers an upgraded mounting clamp for \$80, even it still lacks any fine adjustment in declination. [Sky-Watcher's](#) competing Star Adventurer tracker is much better in offering a precise manual slow motion in declination, though has slower, less useful electric slow motions in RA ([Star Adventurer 2i tracker review by Alan Dyer](#)).

The other challenge with the SkyGuider Pro is figuring out how to best mount the included brackets, counterweight and your camera. Using the configuration shown in the manual does place the camera closest to the polar axis and the counterweight farthest away, making it easier to balance heavy loads. But the bolts that secure the top mounting plate then collide with the bolt that clamps the mounting bracket onto the head, making it impossible to aim the camera to either the east or west, depending on which way you have the lens or scope mounted. It's a poor design.





This is the “correct” way to mount the declination bracket, but doing so invites a collision between mounting bolts, hampering aiming.

For my use, I reversed the declination mounting bracket to place the camera on the long end, providing free clearance for aiming anywhere in the sky. But now balance is more of an issue, though the SkyGuider can handle being somewhat out of balance, and achieving the best tracking accuracy with any mount often requires a slight imbalance in RA.

In addition, the polar scope is internally illuminated only when the polar axis is turned to one specific angle. So care must be taken to ensure the mounting hardware attaches so that the polar scope’s reticle is lit by the built-in LED with the camera and mounting hardware turned to where you normally would start a session, typically with the mounting bracket vertical.

If it all sounds confusing, it is — and tough to illustrate. YouTubers devote entire 20-minute videos just to showing how to mount gear on the SkyGuider Pro. Using a tracker shouldn’t be so complicated.

For my part, when shooting with shorter lenses, I prefer to forgo the long declination mounting bracket and counterweight and just place the camera with a ball head onto the other supplied “camera mounting block,” as the manual calls it. That configuration is all you need for most purposes, and makes it much easier to aim and frame a camera, plus minimizes the load.

In conclusion, the iOptron SkyGuider Pro does track and handle modest (under 6.6 pounds or 3 kg) payloads very well. Its design flaws become apparent when you press it into service with long lenses and telescopes. I would recommend using it with optics longer than 135mm only if absolutely needed, such as for an airline-portable setup for travel to exotic skies.

MSRP: \$498

Website: <https://www.ioptron.com/>



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Alan Dyer is an astrophotographer and astronomy author based in Alberta, Canada. His website at www.amazingsky.com has galleries of his images, plus links to his product review blog posts, video tutorials, and ebooks on astrophotography.

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