

One Telescope for Everyone?

This highly portable 5-inch reflector will please beginners and fill a niche for experienced observers.



Not just another tabletop telescope, the OneSky combines a long list of interesting and useful features with a budget price. As such, the highly portable scope is sure to appeal to beginners and experienced observers alike.

USUALLY I UNBOX

a telescope for a product review with mixed emotions. On the one hand, as a confirmed telescope nut and equipment junkie I'm always excited to try out a new piece of gear. But on other hand, I know that few commercial telescopes are perfect — shortcomings (sometimes disappointing ones) inevitably turn up. Rare indeed is the telescope that gets all the important stuff right. I'm happy to report, however, that the new OneSky portable Dobsonian from Astronomers Without Borders is one of those rare exceptions.

The OneSky has an unusual pedigree. Astronomers Without Borders (AWB) is an international organization based in California that operates with the motto "One People, One Sky." The telescope, on the other hand, is manufactured in China and imported by Celestron for sale in the United States exclusively by AWB. All profits from the sale go to helping fund AWB's global programs.

OneSky Reflector

U.S. price: \$200 including free shipping. Scope available only in the U.S. Astronomers Without Borders 26500 W. Agoura Rd., Suite 102-618, Calabasas, CA 91302 astronomerswithoutborders.org

WHAT WE LIKE:

- Solid mount with useful dovetail system
- Nicely executed collapsing tube
- Sensible choice of eyepieces and accessories

WHAT WE DON'T LIKE:

- Poor collimation instructions
- Incomplete baffling

ALL PHOTOGRAPHS BY GARY SERONIK

Although the 14-pound (6-kg) scope is shipped assembled (I only had to attach the red-dot finder) in a largish cardboard box, it did not survive its journey unscathed. At some point the box was dropped hard enough for the base of the focuser to leave a noticeable dent in the scope's metal tube. This damage was cosmetic, but the scope's secondary mirror was also badly out of position, certainly because of the impact. The mirror needed to be moved toward the primary mirror to be correctly aligned. This wasn't a big job, but it could have been tough for a beginner armed only with the information included in the instruction manual: the collimation directions are not only needlessly confusing, but they're also for a scope with a different style spider and focuser. This is a pity, since the OneSky comes with a nice, Cheshire-type collimation tool and a center-dotted primary mirror — features that make it easy to properly align the optics.

Sizing Up the OneSky

At first blush, the OneSky is straightforward. It's a short-focus, tabletop Newtonian reflector on an alt-azimuth mount. This description applies to several popular scopes currently available, but the OneSky's details and their implementation make it a standout among the competition. For example, the scope I tested had a 5.3-inch (135-mm) f/4.8 primary mirror, instead of the usual 4½-inch (or smaller) f/4 mirrors found in other popular tabletop scopes. The OneSky's longer focal ratio provides slightly better off-axis optical performance with basic eyepieces, and the extra aperture gathers 38% more light, yielding a brighter image.

My tests revealed the quality of the optics to be very good. Star tests showed the primary mirror to be slightly undercorrected (as many mass-produced mirrors are), but free from astigmatism and edge defects. The scope comes with 25- and 10-mm eyepieces of an unstated optical design. They cover a useful range of magnifications and, by any measure, provide very satisfying views. The 25-mm eyepiece yields a magnification of 26× and shows a nearly 2° field, which makes it a breeze to aim the scope with the red-dot finder. The 10-mm eyepiece boosts the magnification to 65×, which works well for many objects, including the Moon. Even when I boosted the magnification to 130× with my own Barlow lens and the 10-mm eyepiece, the scope gave pleasingly sharp views. On a night of steady seeing, it readily split all four stars in Lyra's famous Double Double.

In all, the OneSky delivered everything I would expect from a 5-inch f/5 reflector. But optics are only part of the story — it's the mechanical features that really set this instrument apart.



The 14-pound (6 kg) OneSky is a well-built, alt-azimuth reflector featuring a 5.3-inch f/5 primary mirror. It comes with a red-dot finder, two eyepieces, and a handy collimation tool.



The scope's optical tube attaches to the mount via a Vixen-style dovetail assembly, which locks in place with a hand knob. The dovetail lets you easily balance the scope on its altitude axis.

Mechanical Matters

The OneSky has several nifty features rarely found in similar scopes. Most striking is the collapsing optical tube assembly (OTA). The front section — a thick plastic ring that carries the secondary mirror, focuser, and finder — is attached to a pair of metal poles that slide within a set of bushings seated in a ring mounted to the front of the main tube. When collapsed for transport and storage, the OTA measures only 14 inches long. This opens the possibility of tucking the OTA inside a piece of airline carry-on luggage. The scope's base, however, would have to travel as checked baggage. For my purposes though, I appreciated that I could easily carry the collapsed scope in and out of the house without banging its tube into the doorway.

Fully extended, the OTA is 24 inches long. Nylon screws solidly lock the sliding poles into position, although there is enough friction in the bushings to prevent the front end from retracting under its own weight.

The collapsing tube is only a plus if it's rigid, and this was indeed the case. The tube proved to be satisfyingly robust and a champ at retaining optical alignment. There was not enough collimation drift to affect the views when I moved the scope from horizontal to vertical. And even after collapsing the tube multiple times, I didn't have to tinker with the optical alignment.

The open-frame tube is well done, but the baffling could stand to be a little bet-



A nifty retracting tube is a highlight in the scope's design. When collapsed for transport or storage, the 24-inch-long (61 cm) optical tube assembly shrinks down to only 14 inches. Mentioned in the accompanying text, the dent in the tube occurred from rough handling during shipping.

ter. The main baffle is a 4½-inch square flap of thin plastic positioned opposite the focuser. It really should be a little bigger and extend beyond the front of the scope to prevent stray light from reaching the eyepiece: when viewing near streetlights, I found that glare could sometimes intrude into the field of view.

The OneSky eschews the common rack-and-pinion focuser for a helical one made of metal. This choice is a mixed blessing. On the plus side, the helical threads allow precise fine-focus adjustments, which are important for an $f/5$ telescope. Another plus is that the focuser isn't gummed up with the thick, sticky

grease often used on low-cost scopes. It has just under an inch of travel, but this was more than enough for the eyepieces included with the scope, as well as for all the ones that I usually observe with.

On the down side, you need to be careful when focusing in the outward direction because there is no stop to prevent the drawtube from completely unthreading. The focuser also has some play in its threads. Generally, this isn't a problem, but when the scope is aimed near the zenith, the focuser can rock enough on its threads to move the eyepiece out of focus. The addition of a nylon-tipped tensioning screw on the focuser would do wonders to alleviate this problem.

The OneSky has a Vixen-style dovetail rail on the OTA, making it possible to balance the telescope by sliding it fore and aft on the mount. A nice hand knob locks the dovetail in position. This rail also lets

The two struts solidly lock in position with nylon thumbscrews. Nevertheless, even without the thumbscrews tightened there's sufficient friction in the bushings to prevent the upper tube from retracting under its own weight.

you use the OTA on any mount that has the same dovetail system. For example, I attached the OneSky to my iOptron Cube mount for some Go To observing. And thanks to a 1/4-20 threaded hole on the dovetail, you can easily attach the scope to a heavy-duty camera tripod — but the hole is not at the scope's balance point, making the assembly considerably back-end heavy when mounted this way.

The OneSky's alt-azimuth mount works very well, and I had no trouble making fine aiming adjustments even when observing at high magnifications. It's made of laminate-covered particleboard, and vibrations dampened out in only 2½ seconds. Although it's largely a matter of observer taste, I found that the mount was shipped with just the right amount of friction in azimuth bearing for easily

controlled motions. Altitude friction can be fine-tuned by tightening a large hand knob — a capability that comes in handy when the scope is aimed near the zenith, where the scope becomes slightly unbalanced if heavy eyepieces are used.

The mount's single-arm support is solid, and what jiggles I noted were traced to the rubber-tipped feet on the base. I found that the scope performed better when I removed these rubber inserts. This is a tabletop mount, which means to use the scope in comfort you need a sturdy table or some kind of platform (see page 64 of this issue for tips on building one).

Although I found a few nits to pick, on balance the OneSky is a real winner and manages to get all the big-picture stuff right. It's easy to aim, comes with a sensible set of accessories, has good optics,

and is highly portable. I can't imagine a beginner not being thrilled with the views it provides. It gets my vote for the best bang-for-the-buck beginner's scope currently available. Considering it sells for only \$200 (including free shipping), it's too bad that it's available for purchase only in the United States.

The OneSky also has much to recommend for seasoned observers looking for a highly portable grab-and-go scope well suited for travel. All things considered, this was one telescope I was very glad to have unboxed! ♦

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A key element in the telescope's baffling is a plastic shield located opposite the focuser. This worked reasonably well, but the shield was a bit too small to be completely effective in bright environments.



Unlike similar tabletop reflectors, OneSky has a nifty helical focuser rather than a rack-and-pinion model. It is excellent for fine-tuning the focus, especially at high magnifications, but there was enough play in the helical threads to let the eyepiece go out of focus when the scope was moved through a large sweep in elevation.



The OneSky consists of two main parts: the optical tube assembly and an alt-azimuth mount with a cutout forming a convenient carrying handle. Thanks to a clever dovetail system, these components can be quickly and easily separated for transport or storage.