

Sky-Watcher's New Dual-Mode Mount

This hefty mount can operate as either an altazimuth or an equatorial, promising accurate GoTo and tracking. We put it through its paces. *by Alan Dyer*

UNTIL A FEW YEARS AGO, the serious backyard astronomer looking for a solid telescope mount at an affordable price had little from which to choose. The next step up from a lightweight mount, best only for visual use with a small scope, was a big one: a premium mount costing \$4,000 or more. Thankfully, the market has responded to the rise in popularity of astrophotography with a selection of excellent midrange mounts, ranging from \$1,200 to \$2,500.

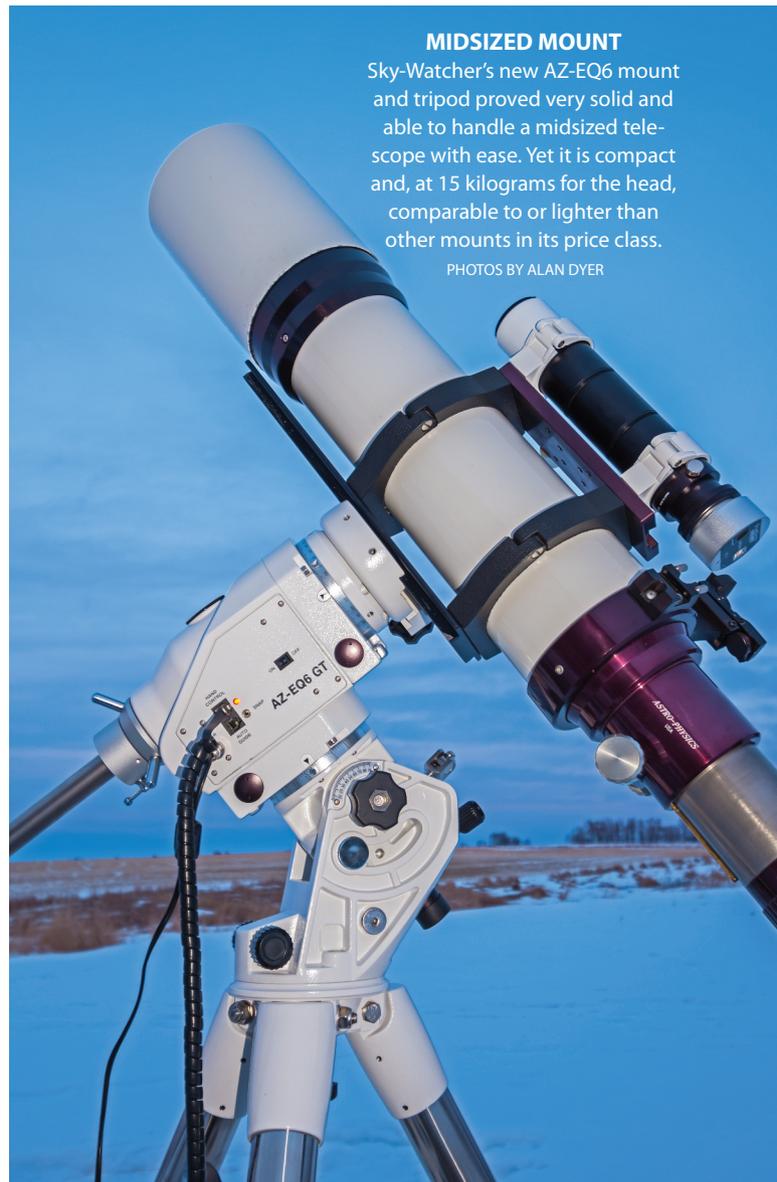
A new entry in the class of serious mounts is the AZ-EQ6 GT from Sky-Watcher. I was impressed back in 2006 with Sky-Watcher's groundbreaking HEQ5 and EQ6 mounts (to see our review, go to www.skynews.ca/pages/telescopes.html). Both set a new standard for solid, accurate tracking at an affordable price. The "hybrid" AZ-EQ6 goes one better by offering the option of operating as either a German equatorial mount or an altazimuth mount, with tracking and computerized GoTo pointing in either mode.

The equatorial mode requires accurate polar alignment but is essential for shooting deep-sky images. The altazimuth mode is just for the visual observer or a solar system imager. It does away with the fuss of polar alignment and the "meridian flips" that are peculiar to German equatorials, while offering the option of dual-scope mounting.

EQUATORIAL MODE

Accurately polar-aligning the mount was easy using its built-in illuminated polar scope. A nice feature of the hand-controller software (our test unit had v3.33 firmware) is a readout that indicates where Polaris should go on the polar scope's reticle. Even so, I would have preferred if the polar scope could be rotated independently of the polar axis for ease of lining up the reticle's Big Dipper and Cassiopeia markings with the real sky.

After polar alignment, the mount must be aimed at one, two or, preferably, three stars that the software selects for you, though you can skip through the choices to find alternative stars that may be more visible from your site. An included outboard GPS receiver plugs into the hand controller, feeding it time and location data to begin the process. But you do have to input daylight saving time



MIDSIZED MOUNT

Sky-Watcher's new AZ-EQ6 mount and tripod proved very solid and able to handle a mid-sized telescope with ease. Yet it is compact and, at 15 kilograms for the head, comparable to or lighter than other mounts in its price class.

PHOTOS BY ALAN DYER

status and your time zone—once. (Be careful to use minus numbers for North America.)

You place the mount in its home position to begin the three-star alignment. The mount then slews to each of the three stars, a process I found was quick and precise. After I centred each alignment star, the mount slewed to targets very accurately (Moon and planets included), placing them all no more than halfway from the centre to the edge of a medium-power eyepiece and often dead centre. Depending on the direction it was coming from, the mount sometimes performed a little centring dance as it micro-slewed back and forth a couple of times to take out backlash. But it always ended up with the target well placed.

I did encounter two software bugs: When slewing to the Moon, the hand controller switched automatically to Lunar Rate tracking speed. Good. But it failed to switch back to Sidereal Rate when subsequently slewing to stars and deep-sky targets. Also, when waking up from Park and using the stored alignment, the directional buttons were dead—you could GoTo new objects but not slew the mount to tweak the centring of objects. Sky-Watcher is aware of these glitches and promises a fix in an upcoming firmware update.

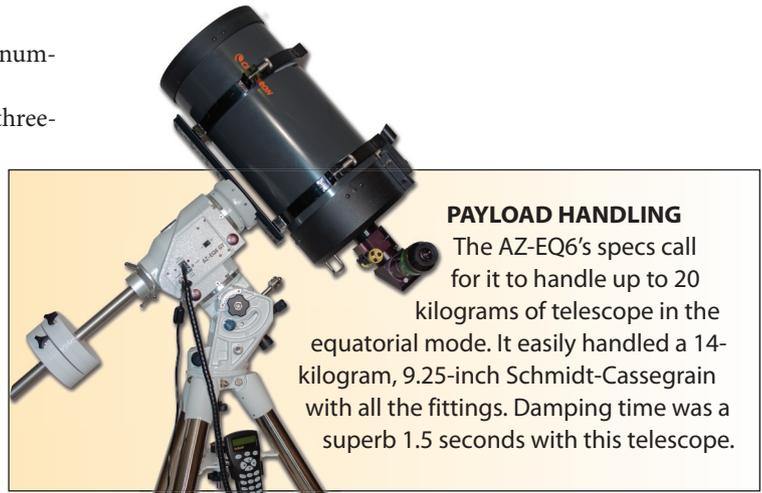
While the mount offers PEC—periodic error correction—I found it wasn't needed. The mount exhibited an excellent tracking accuracy of about 10 arc seconds of drift back and forth in right ascension that happened very slowly over several minutes. This is too small to be of concern when shooting wide-field piggyback shots and is dead easy for any auto-guider to handle when shooting prime-focus images.

I tested the mount's compatibility with auto-guiders by using it with Orion's popular StarShoot auto-guider camera and the latest PHD Guiding software (v1.14). The combination worked great—star images were consistently pinpoint in my test photos.

ALTAZIMUTH MODE

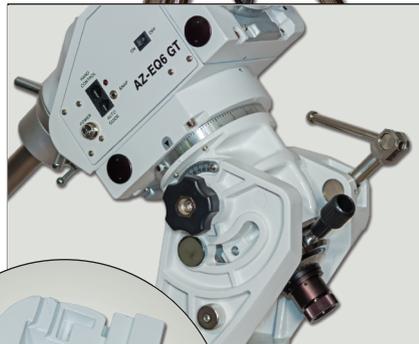
Converting to altazimuth mode requires angling the polar axis up to 90 degrees and inserting a bolt stored on the mount into a safety stop to prevent the head from falling back toward horizontal. I can't see the conversion process as something you would do often. Indeed, you might only ever use the mount in one mode or the other. But it is nice to have the choice. Just be aware, the 15-kilogram weight of the AZ-EQ6 head alone keeps this mount well out of the "grab-and-go" league.

In altazimuth mode, you can use the AZ-EQ6 with one telescope and counterweights or attach the supplied second saddle onto the end of the counterweight shaft. As it is held onto the shaft with just one central bolt and a setscrew, I would suggest using this second saddle to hold a



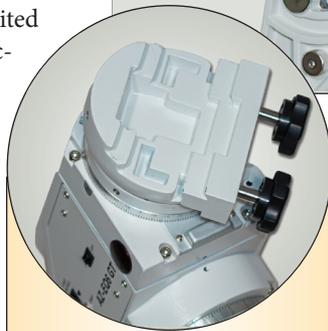
PAYLOAD HANDLING

The AZ-EQ6's specs call for it to handle up to 20 kilograms of telescope in the equatorial mode. It easily handled a 14-kilogram, 9.25-inch Schmidt-Cassegrain with all the fittings. Damping time was a superb 1.5 seconds with this telescope.

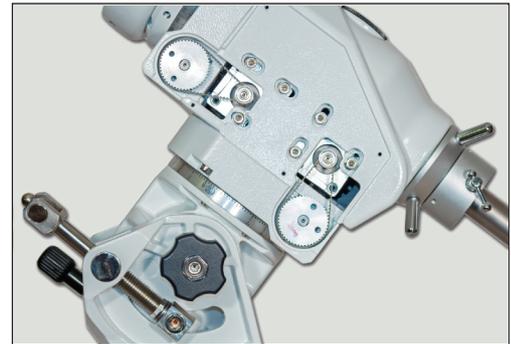


ALIGNING ON THE POLE

The big silver threaded bolt for tilting the polar axis in altitude was easy to turn to make precise but secure adjustments that stayed put. The black lever at right is the right ascension lock; the silver-spoked wheel at left is the declination lock. Both locked solidly.



SADDLING UP Each of the two saddles can accept telescopes equipped with either the industry-standard Vixen-style or the Losmandy-style dovetail plates. Both held telescopes securely, but for a heavy telescope, buy the wider Losmandy plate offered as a \$45 optional accessory.



BELT-DRIVEN The use of belts on both axes (shown here with the cover removed) is promised to minimize gear backlash and periodic error. No backlash or hesitation was visible at any of the slew speeds, including moving back and forth at the slowest 1x and 2x speeds. While you can dial in backlash compensation, none was necessary.

GETTING CONNECTED The 12-volt power cable attaches via a secure screw-on plug, a welcome feature. The SNAP jack and included cable allow the hand controller to automatically fire a sequence of long exposures using Canon EOS cameras (like the Rebel and 60D Series) that employ the Canon R3-style remote-release jack. It worked very well.



scope no bigger than an 80mm or a light-weight 100mm refractor.

Under the stars, aligning the GoTo system in this mode requires manually aiming at one star, then having the mount slew to a second star. Again, the process was quick and yielded impressively accurate pointing, no matter where the telescope was aimed. Once on target, the mount nicely tracked objects for hours.

An excellent feature unique to the AZ-EQ6 that worked very well in either mode is the inclusion of position encoders. With these activated (they were turned off in the hand controller's menu by default), you can loosen the mount's locks and physically swing the mount around the sky, then lock it up again. The encoders keep track of the mount's position, allowing you to resume GoTo finding. So if the mount accidentally moves or slips in right ascension or declination, you won't have to recalibrate on alignment stars, unlike with most other mounts.

Using the included RS232 serial cable and the SkyWire adapter from Southern Stars (www.southernstars.com), I was able to connect the AZ-EQ6 to the superb SkySafari software and run the mount flawlessly from my iPad or iPhone.

TANDEM TELESCOPES

In Alt-Az mode, the counterweights can be replaced with a saddle for attaching a second smaller telescope for pairs of views, handy for eclipses, solar observing, public outreach or wide vs. high-power views. Having matching telescopes helps in looking stylish at the next star party!



My testing was done on nights with temperatures hovering around -5°C , which didn't faze the mount at all. It remained impressively quiet when slewing no matter the temperature or load. I found its gentle quietness one of the AZ-EQ6's most attractive features and evidence of excellent build quality.

RECOMMENDATIONS

At a retail price of \$2,200, the AZ-EQ6 is more expensive than Sky-Watcher's venerable EQ6 mount but offers unique features. While it may be larger and more costly than you initially might like, the AZ-EQ6's good payload handling will allow you to upgrade to bigger and better optics as your needs expand. However, the 9.25-inch SCT I used is the largest telescope I'd be comfortable putting on this mount, at least for imaging.

A quality mount is the most important component in an astrophotography system and should not be skimmed on. If you're serious about getting into astrophotography or simply want a GoTo mount capable of handling a wide range of telescopes, the versatile AZ-EQ6 GT will be a superb choice. ♦

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