REVIEWED

THE SKY-WATCHER AZ-GTI ALT-AZ AND SKYMAX 102

Sky-Watcher's new dream team

Steve Ringwood tests the dual package of the Sky-Watcher AZ-GTi alt-az mount and the new SkyMax 102 Maksutov telescope and finds that smooth motions and crisp views are their stock in trade.

AZ-GTi

Design:
WiFi GoTo alt-azimuth Mount (3/8-inch screw thread)
Controlled by free SynScan app (Android and iOS) or SynScan hand controller (available separately)
Can be interfaced with third-party planetarium software
SynScan app alignment method:
brightest star alignment, north-level alignment
Features Freedom-Find Dual-Encoder technology
Pointing accuracy:
up to 10 arcminutes (RMS)
Tracking rates:
sidereal, lunar, solar, alignment-free solar tracking
Power supply:
8AA batteries or external power supply (DC 7.5–14V, 0.75A)

SkyMax

Design:
Maksutov
Aperture:
102mm
Focal ratio:
f/12.7
Focal length:
1,300mm
Supplied eyepieces:
25mm and 10mm (52× and 130×)
Finder:
unity – red dot
Package price:
£419 SRP

► A general view of the Sky-Max 102 on the AZ-GTi, showing the eyepiece configuration and red dot finder.

Unless you are into long-duration astrophotography, the development of alt-az GoTo systems has almost obliterated the need for the sometimes entangling equatorial mount. Simple, intuitive pointing and easier instrument balancing means that such mountings are ideal for many observers – particularly those using telescopes for the first time.

In this package, the advantages of an alt-az configuration have been mated with a 102mm (four-inch) Maksutov telescope – an ideal compact optical system that is easy to deploy – with an aperture that will yield most of what the sky has to offer at a focal length that can deliver fine detail. It seems a dream team – and I was eager to see whether it was a marriage made in heaven.

The AZ-GTi GoTo mount

Out of the box, it looks almost too small to be a GoTo mechanism. Yet I found that the neatly styled L-shaped mounting was easily capable of throwing its two-kilogram SkyMax around the sky with not a quiver of strain, even when I used large eyepieces. Indeed, sporting a 45mm Sky-Watcher/Vixen type dovetail saddle, it is capable of hefting five kilograms.

I was sent no hand controller, for the best trick this mount has to offer is that it can be controlled cable-free through its own WiFi connection with a smart device (iOS or Android), using the free Sky-Watcher SynScan application. It took only moments to download and install this app on my Samsung Galaxy S5. (It is also capable of interfacing with third-party planetarium software.)

Initialising SynScan, there is a brief partnering procedure to connect the mount to your device. The software's main screen then offers a plethora of functionality – not being a conventional hand paddle with limited text display, the screen is full of detail and options – and at night the screen switches to red-light mode. Of course, before I began the planned mechanical and optical challenges, stellar alignment was required to enable GoTo functionality.

Touching the 'alignment' icon presented me with options of 'brightest star' or 'north level', of which I chose the former. The software immediately provides a list of available stars. Some of these I thought were a little obscure – particularly to a novice who might need to run for a star atlas. Making it easy for myself, I chose Vega. Using the screen's directional 'pads' and the telescope's red dot finder, I was able to accurately slew the SkyMax to my prey in just a few seconds.

Pressing the panel's tick mark to indicate my alignment's arrival, nothing happened. Mentally shrugging, I veered off a little, returned Vega to the eyepiece field's centre and pressed the tick again (perhaps this time a little harder!). Again, the software refused to acknowledge my action and did not move on to further functionality.

> ***The tube livery is black, with embedded frosty sparkles, and looks quite smart.***

Burrowing into the help pages, I found that the tick confirmation is only enabled if the 'up' and 'right' direction buttons are previously pressed in sequence. Thus, you can only complete alignment when, once aligned, you mis-align it by short presses of these buttons – or you judge carefully a deliberate mis-alignment low and to the left, so that in enabling the tick confirmation you arrive aligned as a result. This is totally bizarre. If I centre a star, I should be able to simply press enter (tick-wise) – end of story. Pressing other buttons as an initiation sequence that results in movement from the position you are confirming makes no sense to a user – nor, I would have thought, to a software or hardware engineer.

Once the first star alignment has been confirmed, the mount automatically slews to the second star – where you repeat the minor corrections and confirm.

Apart from the oddity above, the SynScan GoTo system performs superbly; screens are easy to follow and wonderful to use. There are no battles of confusion; data is presented in a very user-friendly fashion and each screen almost strains to be helpful. When you alight on a target (there is a rather exciting proximity countdown as you do so), the screen is full of co-ordinates and other information. While observing a planet, you can even see its stellar co-ordinates slowly change dynamically. That's cool.

The AZ-GTi head atop the tripod and optional 254mm (10-inch) column extension. All images: Martin Ringwood.

▶ The control panel features a hand controller port, DC external power socket, SNAP port, power switch and power/WiFi LED indicator. The SNAP port, via an umbilical to a DSLR, allows control of camera operation.

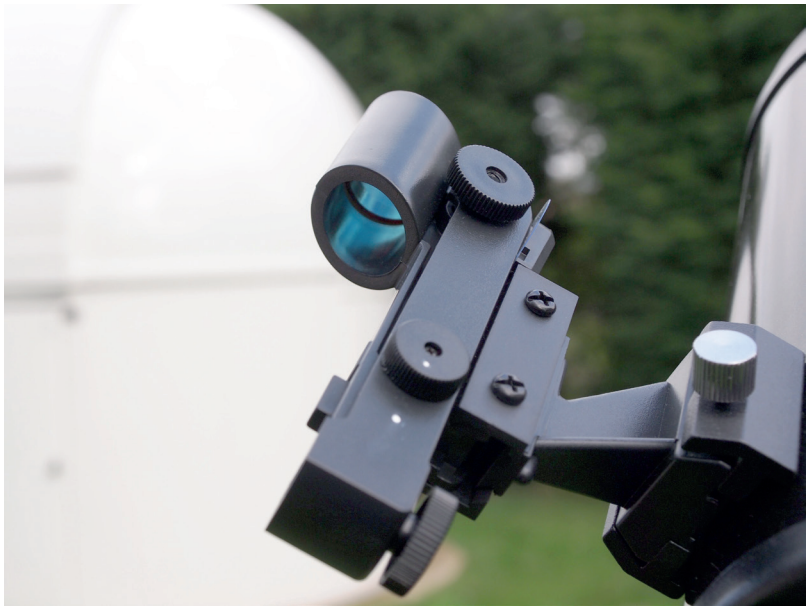
Hard to lose alignment

I used the stellar and deep-sky lists offered by SynScan to leap about the sky – but my efforts did not dizzy it for one minute. There were a few times when my target was not central, but it was always in the field of a moderate power eyepiece. That is impressive. What's more, it even alighted accurately on the Moon – a target that perversely is a problem for many GoTo systems.

The second feather in this particular cap is that the mount features Freedom-Find Dual-Encoder technology. This enables you to manhandle the telescope tube to any new position, without losing the captured alignment or GoTo facility. So even if your target is not in the object lists (or even if it is) you have the option of directing the telescope towards it without recourse to the SynScan control screen – and thence continue to use the GoTo functions regardless.

▼ Below: A close up of the red dot finder.

▼ Bottom: The tinny eyepieces are so light that initially I thought their cardboard boxes were empty!



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One unexpected discovery concerned the use of a smart device itself. In a conventional handset a finger is capable of feeling the raised 3D buttons and, with familiarity, which button is which. On a smooth glassy screen there is no positional feedback, so imparting instructions requires the screen to be looked at, particularly during navigation when I found that the screen and eyepiece field have to be viewed almost simultaneously. Although the SynScan screens are red light-illuminated, having to keep glancing between the eyepiece field and device screen can be quite irksome. In the winter, I wonder how stubby-fingered gloved hands will fare. It is worth noting therefore that along with the untethered advantages of WiFi, the mount can be used with a conventional wired SynScan hand paddle.

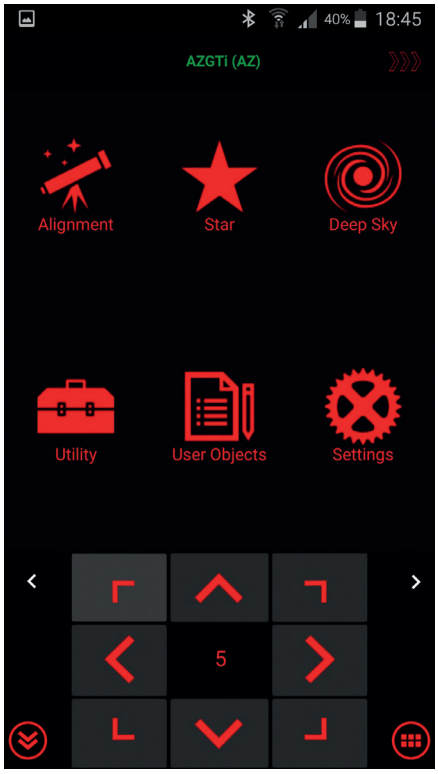
The telescope

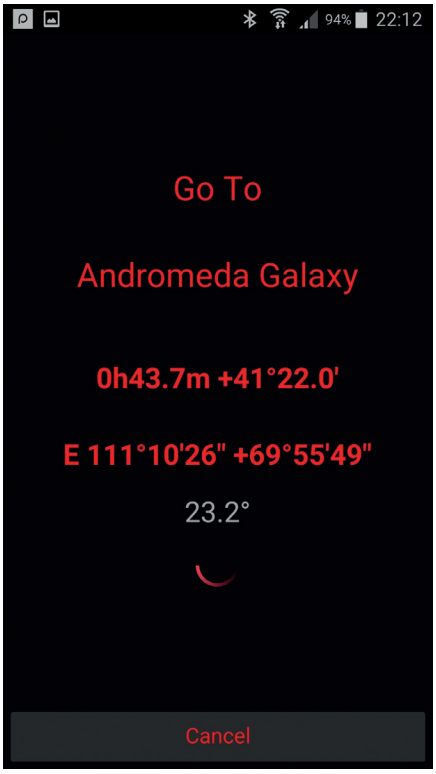
Maksutov optical systems are amazing. The folded light path enables astonishing focal lengths to be collapsed into very short and practical dimensions. In the case of this f/12.7 system, the light path is compacted into an instrument little more than a fifth of its 1.3-metre focal length.

The tube livery is black, with embedded frosty sparkles. It looks quite smart. However, I did notice that because of this colour's good infrared absorbance, just a few moments in sunlight heats the tube up quite quickly. It is probably wise to separate solar and night-time observing by quite a few hours. While I'm mentioning sunlight, I did test SynScan's safety credentials by directing the software to point at the Sun. A message appeared saying that my target was near the Sun and did I want to continue. Top marks for an earnest if slightly muddled caution.

The supplied star diagonal goes into a 1.25-inch focuser featuring the double thumbscrews that have been appearing on equipment lately. Someone somewhere must think this is a good idea; but I have to admit I have not 'got it', yet. Having to undo and retighten screws twice when changing eyepieces seems oddly overdone to me.

I began by using the supplied eyepiece; a 'Super 25 Wide Angle Long Eye Relief' according to its label. Filling it with a convenient field of





▲ Left: the SynScan splash screen with initial icons. I liked the fact that the directional slew pad included diagonal movement.

▲ Middle: during a slew towards its target, SynScan provides a proximity countdown in RA and Dec.

▲ Right: SynScan automatically lists objects currently available to the observer.

stars (provided by the Pleiades open cluster), their appearance at once prompted me to swap the eyepiece out for one of mine, a fairly average 25mm Meade Plössl. I have hardly ever seen such a stark difference between two eyepieces of the same focal length. Although not an especially expensive or exotic eyepiece, the Meade supplied a field that was so much cleaner, sharper and darker than the so-called Super-Plössl supplied. A pet irritation of mine, I simply do not understand the logic behind supplying an instrument with eyepieces that are unable to show the best of what the telescope is capable of. The inexperienced, especially, will assume the worst and condemn the whole telescope. How many of these, eagerly purchased, have ended up discarded shortly afterwards – along with a nascent scientific curiosity, perhaps?

In this respect I would much rather eyepieces were not included; since by this penn'orth of tar they ruin the whole ship. There was also a 'Super 10', but as a service to the telescope, I continued only with eyepieces of my own.

Deep-sky delights

I decided to begin the telescope's assessment with a few deep- sky objects. Hitting SynScan's deep-sky icon, the app obligingly supplied me with familiar objects that were currently above the horizon – exactly the list I wanted.

With an appetite whetted by the enhanced view I had achieved of the Pleiades, I opted for the twin stellar splash of the Double Cluster in Perseus as a challenging demonstration of the telescope's mettle. At 52×, my 25mm could not quite encompass both cores so I switched to 33× with a wider field, but rather heavier, 40mm eyepiece. The telescope took this on board with alacrity – no whine of straining gears or drifting field. The switch was rewarding. The sky now free of the seemingly eternal summer twilight, the star field's twin clusters veritably glowed against a velvety black background. Focusing very carefully, star images held very well to the field extremity – the clusters looking like a pair of molten shotgun blasts against the night.

Much closer to the zenith, the Andromeda Galaxy was an irresistible temptation. Despite the angular distance from my previous target, the AZ-GTi successfully navigated the gap and brought itself to a well-centred stop on the galaxy. I have to say that watching the angular countdowns on the screen while a slew was taking place became rather fun.

M31's lenticular glow was a joy – and bright; the core looked quite condensed and stellar. Looking for something more diffuse and challenging, I requested SynScan to take me to the Veil Nebula in Cygnus. I find this object often

▶ The AZ-GTi head can handle loads of up to five kilograms, attached to the dovetail saddle that allows trouble-free optical tube deployment.

eludes detection in small telescopes, but the SkyMax successfully presented it to me.

With the Solar System's most flamboyant members (Jupiter and Saturn) having deserted the sky during summer's death throes, the only planets available to me were the icy discs of Uranus and Neptune. Uranus, at least, was trying hard to please by being near opposition and reaching an orbital declination that raises it higher in the sky with each passing year.

Using an 8mm Hyperion (163×), I was very impressed by the clarity of the pale green disc. This was no doubt given a lift by our planet's closer approach to it during the October opposition, but nicely seen just the same. In SynScan's list of available planets, Neptune sat just beneath – so it took just a matter of seconds to swing east to the night's second planetary target. The difference in colour is marked; Neptune firmly sitting in the blue–green no-man's-land of turquoise.

Magnificent Moon

Low on the eastern horizon, spreading its light steadily further across the sky, was an old friend. The waning gibbous Moon was determined not to be left out.

I had no trouble in capturing the whole disc in a 40mm eyepiece. The descending arc of the Apennines abutted hard against the terminator and a familiar near-equatorial clutter of large craters jostled for attention.

Despite a low altitude, the crispness delivered by my 40mm promised more, so I moved again to the 8mm (163×). I was rewarded with rich detail within the daisy-chain peaks of the Apennines. Crouching against the terminator, the 130-kilometre crater Albateginus was in deep relief, an arena of inky black shadows and bright terminator incursions.

Seeing that the air was unusually stable – and so far the resolution so good – I replaced the 8mm with a 2.5mm Nagler (520×), straining all the rules of sensible magnification by at least a factor of two in doing so. Yet despite the fade of light from the additional workload, detail worth seeing was still being yielded. (Compliments to Al Nagler too, of course.) Using the delicate minimum slew speed offered by the SynScan, I drifted slowly southwards along the terminator and alighted on the mammoth 225-kilometre excavation of Clavius. Spending time there at 520× is something I will remember.

I really liked using this kit. It is rapidly deployable and the SynScan software is well designed. Zipping around the sky and visiting all manner of objects presented it with no challenges. It lends itself well as the choice of a first instrument, too.

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▲ The Maksutov is a beautifully compact and stable optical system.

▲ The combination of a compact Maksutov and a neatly engineered mount make for a great team.

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