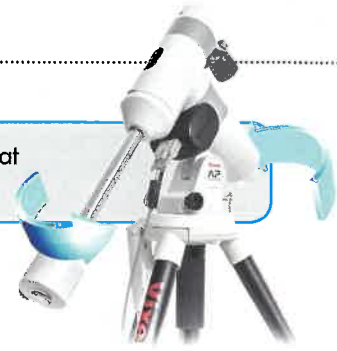


FIRST light

Vixen AP-SM mount

See an interactive 360° model of this mount at www.skyatnightmagazine.com/VixenAPSM



A no nonsense portable mount with a flexible modular design

WORDS: PETE LAWRENCE

VITAL STATS

- **Price** £929
- **Load capacity** 6kg
- **Latitude adjustment** 0°-65°, northern and southern hemisphere
- **Coupling** Vixen/Synta dovetail
- **Hand controller** Star Book One
- **Autoguider port** ST-4 compatible
- **Weight** 3.9kg without counterweight, 4.9kg with counterweight
- **Supplier** Opticron
- **www** www.opticron.co.uk
- **Tel** 01582 726522

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This month we've got our hands on a Vixen Advanced Polaris SM (AP-SM) mount, an equatorial tracking mount that combines elegance and grab-and-go functionality. Its modular design means it is a mount that can grow with your needs, and with its sleek appearance it will never look out of place at a star party.

The base AP-SM kit consists of the mount head, controller, connecting cables and counterweight. It needs something for it to sit on and for this task we used a Vixen APP-TL130 tripod. This is strong, lightweight and works beautifully with the AP-SM. Even with the 1kg counterweight attached, the AP-SM on this tripod is really easy to lift.

The base kit comes with a right ascension (RA) drive module installed but the declination (dec.) module is manual. A slow motion knob is provided for dec. adjustment. An optional upgrade is available which replaces the manual module with a driven version. Clever integrated connections in the mount then allow both modules to be controlled by a Star Book One hand controller.

The mount has a stated load capacity of 6kg and is stable enough for most operations in calm conditions. The drive units are powered either by 4x AA batteries inserted into the main body or via an external USB power source. The cover for

SKY SAYS...

We were impressed with how the mount kept its tracking accuracy without the autoguider

the internal batteries is easy to remove and also gives easy access to the mount's safety fuse.

Straight out of the box, the mount is fine for basic visual observing where a rough alignment on the pole star will do. The RA drive does a very good job of keeping things

in view but for more demanding tasks such as astrophotography you'll need to make a more precise polar alignment.

Sighting on Polaris

There are a couple of optional extras to help. The inexpensive route is a simple compass/altitude indicator that fits on an accessory shoe on the back of the mount body. More accurate alignment can be achieved using an excellent illuminated polar alignment scope which screws directly into the AP-SM's polar axis. This isn't a cheap option though.

The mount can be PEC (periodic error correction) trained to remove repeating errors inherent in the drive system. The PEC function isn't perfect though because the training data is lost when the mount is turned off. There's also facility to extend its tracking accuracy further by connecting its Star Book One controller to an external autoguiding unit. ▶

MODULAR DESIGN MAKES FOR EASY UPGRADES

The Vixen AP-SM is a beautifully designed modular mount. If you need to upgrade it for driven dec. movement, all it takes is a bit of DIY with a hex key and the default manual dec. module can be swapped with the optional driven version. Electrical connectors built into the mount ensure there are no unsightly wires to worry about either.

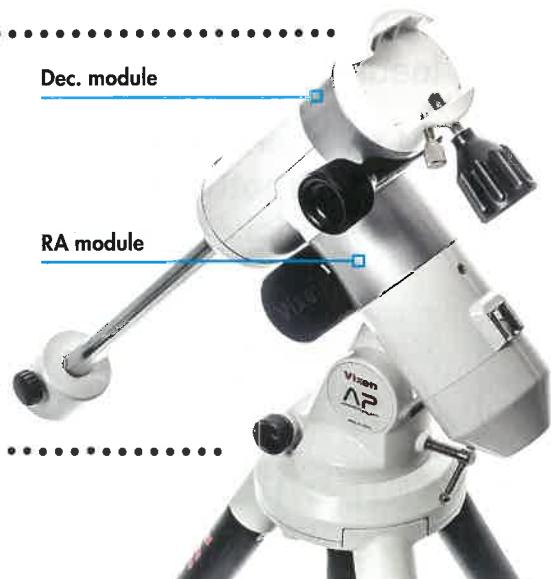
The mount is great with cameras and a simple Vixen tabletop tripod can be purchased in case you don't require the

more expensive APP-TL130 tripod we used for the review. It's worth mentioning that there's also an altaz version of the mount.

The design aesthetic is good across the board here. Little details such as the opening that allows the polar axis to see through the mount has a sliding cover on it and the hole in the mount is always open irrespective of the orientation of the dec. axis. The overall look of the mount system is elegant right down to the vanity cover that caps the end of the polar axis.

Dec. module

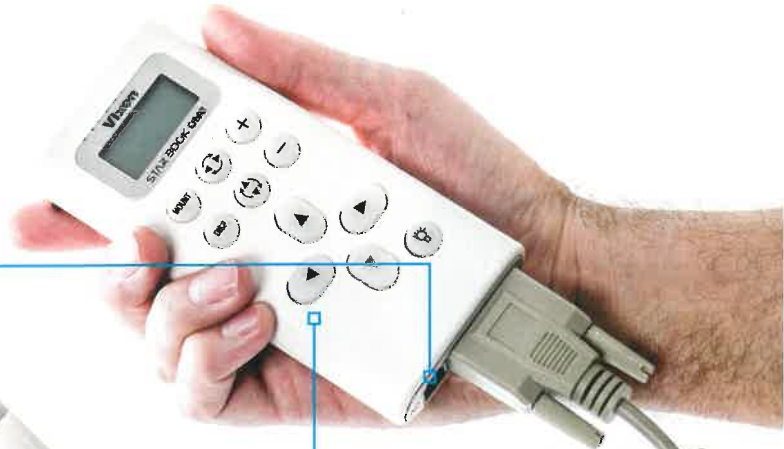
RA module





AUTOGUIDING

The Star Book One hand controller has an ST-4 compatible autoguider port at its base. An external autoguider needs to be plugged into this port for autoguiding functions to commence. Unless the optional dec. drive module is fitted, autoguiding only occurs in RA. The controller allows autoguiding adjustment speeds from 0 (off) to 99 (9.9x sidereal).



HAND CONTROLLER

The lightweight Star Book One controller complements the minimalist and elegant design of the mount. A clear, backlit LCD display makes it easy to read and interface with all the mount's functions. Buttons on the handset provide slewing controls. Tracking speeds of star, solar, lunar and 'king' (sidereal but accounting for refraction) are provided.

RA DRIVE MODULE

The RA drive module provides two connection ports and an on-off switch. One port is a nine-pin D-plug that connects the mount to the Star Book One hand controller. The other is a micro USB port into which external USB power can be supplied. The mount is very quiet, even when slewing at top speed.



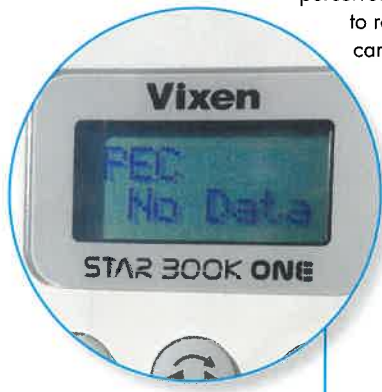
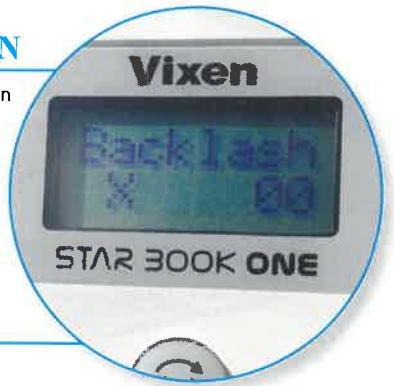
FIRST light

SKY SAYS...
 Now add these:

1. Vixen APP-TL130 tripod
2. Motorised dec. module
3. Polar axis alignment scope

BACKLASH COMPENSATION

Backlash is an effect caused by the small gap between the gears that allow the mount to move. However, when reversing direction in RA, the gap may introduce a perceived delay before the mount appears to respond – this is backlash. A value can be defined in the Star Book One controller to compensate for this.



PERIODIC ERROR CORRECTION

The mount can be periodic error correction (PEC) trained. This involves pointing a telescope fitted with a crosshair eyepiece of 200x or greater magnification at a star, and keeping the star on the crosshair for at least 10 minutes. Adjustments to RA are recorded and used when tracking. PEC data is lost when the mount is turned off.

► The Star Book One controller is a neat and easy to use handset. Its four direction keys allow you to navigate the various menu options, as well as providing facility to adjust the mount's position. As we only had the RA drive module fitted on our review version, only the RA slew buttons lit up on the controller. Standard slewing rates are 0.5x, 1.0x, 8x and 60x sidereal rate, although there's an option to select 'VariSpd', which gives finer adjustment up to 60x should that be required.

Clutch control

The RA and dec. axes both work with friction clutches. If there's a motor unit installed, even with this engaged it's possible to manually slew the mount to another position without problem. Although the clutches work well, we found that they were a bit too stiff to allow us to feel when accurate balance had been achieved during the setup phase. Despite this, the mount seemed happy enough even with a scope close to its load limit.

We performed both visual and photographic tests with the AP-SM mount and were impressed with how it maintained its tracking accuracy even without the autoguider. After an accurate polar alignment with the optional polar alignment scope, we used a high-powered crosshair eyepiece to check the mount's tracking. After two hours, the star was still in the crosshair alignment box.

This is a great mount for grab-and-go wide- and mid-field astrophotography and for a no-nonsense, portable solution it's superb. However, its price rivals that of some mid-range mounts with far greater load capacities and advanced functions such as Go-To. At the end of the day, it boils down to how much you're prepared to pay for portability.

If this is a very important concern then the AP-SM is a solid choice. **S**

VERDICT

ASSEMBLY	★★★★★
BUILD & DESIGN	★★★★★
EASE OF USE	★★★★★
MOUNT TRACKING ACCURACY	★★★★★
STABILITY	★★★★★
OVERALL	★★★★★

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