FIRST light

An in-depth look at this month's hottest new product

WORDS: STEVE RICHARDS

Sky-Watcher SynGuider

VITAL STATS

- **Price** £229
- **Sensor** Sony ICX404AL CCD; 6.69mm diagonal; 510x492 pixels
- **Connections** 6-14V power; serial port; RJ12 ST4 output; RJ45 hand pad port
- **Weight** 200g
- **Supplier** Optical Vision Ltd
- **www.**opticalvision.co.uk
- **Tel** 01359 244200

SKY SAYS... The SynGuider doesn't need a laptop or software to operate; all that's needed is a second telescope.

The most popular way to accurately track a deep-sky object so that it can be imaged clearly is with an autoguiding system. This is normally a second telescope and camera, mounted on top of the main imaging telescope, that captures images of a guide star. These are monitored by software on a laptop to make sure that the star's position hasn't changed. If the position does change, the software sends correction commands to your mount to bring it back into position. As both the imaging camera and guide camera are attached to the same mount, errors are corrected for both cameras, ensuring accurate tracking while imaging. However, the SynGuider is slightly different. It is a stand-alone autoguider, one that doesn't need a laptop or software to operate; all that's needed is a second telescope.

We're looking at one of the first off-the-shelf retail SynGuiders here. It comes well packaged in a sturdy 23x15x9cm box. Inside there's a reasonably well-written and illustrated A6 manual, the SynGuider itself, a hand control pad, 1.25-inch nosepiece, T-adaptor, an ST4-compatible guide cable, battery case, serial cable, eyepiece extension tube and a parfocal eyepiece ring.

The SynGuider's stylish, silver-finished aluminium and plastic housing hides a secret – a built-in LCD screen. This screen gives you access to a range of menus that allow you to choose a suitable guide star. You then use the screen to focus on the star, set exposure, calibrate with the mount, adjust the aggressiveness of the telescope control and start autoguiding. Menus are navigated using the buttons on the hand pad. These have a rather soft, rubbery feel and don't always work on the first press, but the menus are simple to navigate and we soon got used to the feel of the controls.

Get connected

Setting up for an autoguiding session is straightforward and well explained in the manual. After connecting the cables for power, ST4 guiding (linking the SynGuider to the mount) and hand pad, you first have to find a bright star to focus the SynGuider on. You do that using your own eyepiece (we used a standard 25mm Plössl) in the guide scope, carefully centring and focusing the chosen star in the field of view. You then replace the eyepiece with the SynGuider and fine-tune focus on the star on the built-in screen.

With a good focus, the telescope can be slewed to the object you want to image. You now choose a suitable guide star near the centre of the field of view and select 'lock' from the menu using the hand pad. Once the SynGuider is successfully locked on the star, 'auto-calibration' is selected. ▸

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ADAPTORS

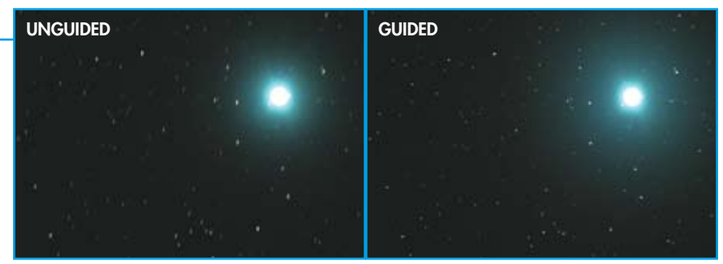
Using the 1.25-inch nosepiece supplied with the SynGuider makes it simple to attach to the guide scope, although with the majority of refractors – the telescope of choice for autoguiding – you'll need an extension tube on the nosepiece to allow focusing after removal of the star diagonal.

HAND CONTROL PAD

The lightweight hand control pad connects to the SynGuider using an RJ45 cable, and with only nine clearly labelled buttons, it is intuitive to use. Once the guider is configured and autoguiding has started, the pad can be removed so that no mechanical movement is transferred to the camera.

GUIDING QUALITY

The SynGuider's ability to guide a setup for deep-sky imaging is excellent, and allowed us to capture the North America Nebula with fine detail. We also captured some test images of the region around Vega, pictured right, to compare 5-minute unguided and guided images. The improvement using the SynGuider was very obvious.



STARS ON DISPLAY

The SynGuider is very different from most other autoguiding systems in that it is very much a stand-alone unit. This gives it an immediate advantage over other autoguiders in that you don't need a PC or guiding software to operate it, so there is less equipment to carry around and set up.

What makes the SynGuider unique is its built-in display screen. This not only gives access to a comprehensive set of options for controlling the camera and the guiding parameters, but it also displays the actual guide stars.

Once you have chosen a suitable guide star with your own eyepiece and replaced it with the guide camera, the display immediately shows the guide star. It's a subdued white-on-red display to help maintain your night vision. The screen is divided into two zones, the left half displays the various menus and text data and the right half shows a real-time 1-bit image of the star in the field of view.

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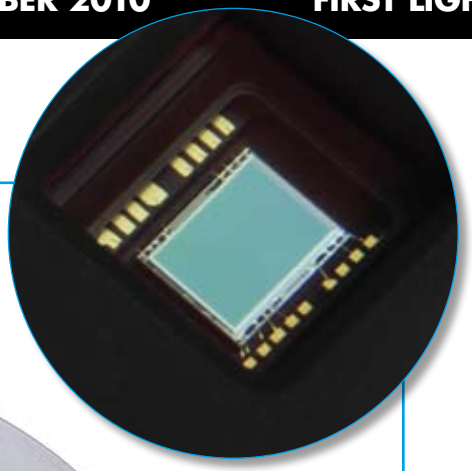

CAMERA SENSOR

The Sony ICX404AL CCD is 5.59mmx4.68mm (6.69mm diagonally) in size, giving a 48x40-arcminute field of view with our 80mm aperture, 400mm focal length refractor guide scope. With 510x492 pixels, total resolution is over 250,000 pixels, which is low for imaging but perfectly adequate for autoguiding.

PARFOCAL RING

This makes it easy to focus the SynGuider on different guide stars. After finding a guide star, focusing and centring with the eyepiece, and swapping in the SynGuider for fine focusing, you put the eyepiece back in with the parfocal ring on its barrel. It's then slid out of the eyepiece holder until the view is focused and then the parfocal ring is locked. Now you'll know that stars in focus with the eyepiece will be in focus in the SynGuider whenever you put it back in the focuser.

BATTERY BOX

To underline the stand-alone nature of the SynGuider, it comes with a battery box in a vinyl case that takes four D-sized 1.5V cells. Freedom from the need to connect to a bulky power source is very useful for portability, although you can connect the SynGuider to a 'powertank' if you use one.

SKY SAYS...

Now add these:

1. Sky-Watcher Startravel 80T refractor
2. Sky-Watcher guidescope mount
3. Sky-Watcher EQ6 Pro SynScan mount

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▸ Calibration determines the SynGuider's orientation and tests the sensitivity of the mount to guiding commands. This ensures that the SynGuider controls the mount correctly in response to any movement of the guide star. Once that has been carried out, the system automatically starts to autoguide and your imaging session can commence.

The autoguiding system works very well, but it isn't as easy to set up as a more conventional guide camera and PC system. This is because of the need to swap between the eyepiece and the camera, although you soon get into the routine. The position of the screen on the rear of the camera isn't ideal, especially for objects high in the sky: we had to do quite a lot of crawling around to view it properly. Using a star diagonal would make the system much more comfortable to use, but at the risk of introducing some instability.

The SynGuider is ideal if you use a DSLR from a dark site, since there's no need for a PC and both imaging and guiding cameras can be completely self-contained. Price has always been an issue with other stand-alone autoguiders – you previously had to spend a similar amount to a PC and a conventional guide camera combined. But the SynGuider changes all that: what we have here is a complete system that costs less than many conventional guide cameras on their own. S

VERDICT

BUILD & DESIGN	87%
CONNECTIVITY	88%
EASE OF USE	90%
FEATURES	88%
GUIDING ACCURACY	92%
OVERALL	89%