

# Getting in the spirit with the **Es**

In our second apo review, **Nik Szymanek** puts the astro-imaging capabilities of Sky-Watcher's Esprit-150ED super-apo refractor through its paces.

**F**or several years Sky-Watcher's range of apochromatic refractors has been frequently coupled with the popular HEQ5 and EQ6 Pro mounts by discerning astro-imagers. Sky-Watcher have now introduced two new apochromatic refractors in their Esprit Professional range and I was eager to find whether they exceed Sky-Watcher's previous telescopes.

Supplied with the Esprit 150ED (six-inch) triplet apochromatic refractor (the other telescope in the range is the Esprit 120ED model, a smaller version of the review telescope), I set about finding out.

## First impressions

The telescope arrived in the usual aluminium case that is lined with high-density foam providing a snug

and secure fit for the telescope, but nevertheless I was a bit concerned that the case's carrying handle was too small and lightweight for transporting the telescope any distance. Once removed from the case the telescope looked very attractive with its polished white aluminium tube and a new maroon Esprit logo emblazoned on the dew cap. Also supplied is an adequate set of tube rings matched with a Losmandy-style base plate for attaching to the mount.

## Under the bonnet

The Esprit 150ED telescope has some very impressive features. The 152mm (six-inch) objective lens consists of three elements: one Ohara FPL-53 component and two Schott lenses with high-transmission coatings. A quick peek into the telescope showed a series of knife-edge baffles. The retractable dew cap is secured with two thumbscrews and the metal lens cap fitted very snugly. At the opposite end is the 75mm (three-inch) dual-speed linear power Crayford focuser, a critical part of the imaging system. This features an index scale, allowing quick focusing with cameras or eyepieces, large knurled handles and the ubiquitous one-tenth speed reduction control for fine focusing. A separate accessory box contained an M48 doublet field flattener, a two-inch dielectric diagonal, a 9 × 50 right-angled finderscope, a 28mm two-inch eyepiece, a selection of extender tubes and a Canon-fit bayonet coupling for use with DSLRs.

The telescope also features a large metal ring with machined lugs that, when loosened, allows the whole focuser and imaging gear to be rotated for framing purposes. In use I found that loosening this turned the whole imaging rig and focuser as well so it required a bit of practice to get the required result but once completed everything was rock-solid once more. A second locking thread on the rear of the focus barrel can be loosened to rotate the camera independently of the focuser although for security I suggest ensuring that the three additional slotted screws are fully tightened once the desired position is attained.

## Under the sky

It was very straightforward to attach the tube rings to the telescope and then place and balance the whole assembly onto my Paramount ME equatorial drive. The telescope is designed to be used with the supplied field flattener so the next task was to install that and get the telescope focused. This caused a bit of head-scratching at first as initially it appeared that I had no way to physically attach the CCD to the rear thread of the flattener. The only way I could do this was to attach one of the supplied extension tubes and then screw the two-inch nosepiece of my CCD to that. I worried about the fact that the spacing distance from the flattener might be incorrect.

▼ The Double Cluster in Perseus shot with the author's Canon 5D Mk II DSLR and five three-minute exposures at ISO 800. Star images were exceptionally good across the whole frame and the brilliant red stars contrasted well with the main blue stars of the two clusters.



▼ The final processed image of the core of the Andromeda Galaxy. It consists of three hours of luminance data and 80 minutes per red, green and blue filters. Digital Development Processing was used in *Maxim DL* software to withhold the brightness of the nucleus region and enhance the faint detail in the outer spiral arms. The 60-arcminute wide view exhibits a highly-corrected flat field and even star images across the four filters.



# Esprit



▲ A view of the 152mm (six-inch) lens assembly. The green colouration is produced by the lens' high-transmission coatings. Just visible are a few of the interior baffles. The large retractable dew-shield is held in place with two thumbscrews and did a very good job of withholding dew formation. At no point during the review period, even on damp evenings, did dew ever form on the objective lens.

Happily, once I was able to attain focus it became obvious that not only was the mechanical coupling extremely secure but the field-of-view was superbly flat and produced great star images across the frame. Also nice was the fact that the focus drawtube was only extended a short distance when using the flattener.

The field-of-view of the Esprit telescope with my QSI CCD was  $60 \times 45$  arcminutes with a sampling rate of 1.08 arcseconds per pixel. My first target was the Andromeda Galaxy. The  $f/7$  focal ratio means that the telescope is relatively quick at gathering data and, although the field-of-view didn't encompass the whole of the galaxy, it managed to capture all the interesting structure around the nucleus. As the Moon was out of the way I was able to take a total of three hours of data with a luminance filter. I kept the individual sub-exposure duration to just five minutes to reduce the problems caused by satellite and aircraft trails. The weather deteriorated so it took quite a while to secure the rest of the colour data (which comprised of eighty minutes each through red, green and blue Astrodon filters). This, at least, gave me the chance to assess how the telescope's aluminium tube reacted to changing temperatures. I had to refocus every session, which suggested that there was quite a lot of thermal expansion and contraction. This also gave me a good opportunity to assess the focuser. From the outset it became apparent that it was of really good quality and a pleasure to use. I can't stress enough how important a good focuser is for astronomical imaging. During initial focusing tests I released the main locking thumbscrew just enough to stop any slippage yet to allow sensitive focus adjustments with the one-tenth speed fine focus control. Focusing was fast and easy and the whole procedure became second nature. I had to refocus slightly when changing filters but examination of the red- green- and blue-filtered exposures showed very evenly-sized star images making the production of colour images much easier. All acquired images showed great contrast and produced a very pleasing result.

### DSLR imaging

Next, I attached my Canon 5D Mk II DSLR using the supplied adaptor. I slewed the telescope onto a bright



■ The Esprit 150ED installed on the author's Paramount ME equatorial drive. The telescope is attached via the supplied foam-lined tube rings fixed to a Losmandy-style mounting plate. All images: Nik Szymanek.

### At a glance:

#### Sky-Watcher Esprit-150ED super-apo refractor

Aperture:	152mm
Focal ratio:	$f/7$
Price:	£5,499 all inc.
Details:	<a href="http://www.skywatcher.com">www.skywatcher.com</a>

or see your nearest Sky-Watcher stockist.

star and used the 5D's Live Preview mode to focus the telescope. The one-tenth focus control did a great job, with the focusing procedure only taking a minute. I shot five three-minute frames of the Double Cluster in Perseus, which is a lovely object but in this case I wanted to check the field flatness across the 35mm frame size of the DSLR's sensor. Star images were excellent across the full width of the sensor, which is very impressive considering the large field-of-view, while star colours were recorded very well, showing that the 150ED is a great telescope for use with large-sensor DSLR cameras. Moreover, the Esprit 150ED is an overall great performer offering excellent results. A price tag of £5,499 is not insignificant but is reasonable considering the premier optics and aperture and offers strong competition to the established refractors from Takahashi and TEC. The optics feature a high level of correction across the field and star images through all filters were tight and consistent thanks to its superb colour correction. The relatively lightweight construction means it will be suitable for use with all mid-range mounts and is certainly portable enough to carry out to darker skies.

*Nik Szymanek is a keen astronomical imager based in Essex and is the author of Infinity Rising.*