

FIRST LIGHT

See an interactive 360° model of this scope at www.skyatnightmagazine.com/omegon104



Omegon AP 104/650 ED apo refractor

A well-built 4-inch scope that delivers good contrast

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VITAL STATS

- Price £2,300
- Optics FPL-53 & FPL-51 apochromatic triplet
- Aperture 104mm (4 inches)
- Focal Length 650mm (f/6.25)
- Focuser 2.9-inch dual-speed hybrid Crayford with 1:10 reduction
- Extras 2-inch field flattener, tube clamps, transport case
- Weight 6.5kg
- Supplier Omegon
- www.omegon.eu
- Tel +49 (0) 8191 940490

WWW.THESECRETSTUDIO.NET X 6

There is no doubt that the Omegon AP 104/650 ED apochromatic refractor stands out from the crowd. The glossy black tube is stylishly complemented by the red metallic fittings, and the solid build inspires confidence in the quality of the telescope. The fit and feel is certainly that of a professional instrument.

The Omegon AP 104/650 is packaged with a separate 2-inch field flattener, an accessory that prevents the effects of coma at the edges of photographs. The spacing between a flattener and a camera depends on the focal ratio of the telescope. The Omegon 140/650 ED is f/6.25, so we set our full frame DSLR camera to the specified 113mm spacing using our own adaptors.

Our first optical test was to check focus and colour correction across the imaging circle. We found that with the flattener in place the telescope provided sharp round stars to the majority of the field. At the very edges of the full frame picture a little distortion was visible. Cameras with smaller sensors (like CCDs) should be unaffected and produce pictures of crisp stars with tight colour correction.

SKY SAYS...

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With limited clear skies we used a more sensitive colour CCD camera with a smaller sensor to acquire the night-sky images you see over the page. The scope's multicoated optics, internal baffling and extending dew shield all assisted in creating good contrast in our images and views, and despite the skies being decidedly murky during our photography

sessions we were still able to use the scope to produce some reasonable photos in a short time.

The working focal length of 650mm is useful for a wide range of deep-sky objects – powerful enough for larger galaxies and wide enough for extended nebulae. We were pleased to see that even small, faint objects and stars were well resolved, such as the little cluster NGC 206 in the outer arms of the Andromeda Galaxy.

The proof is in the fitting

Astrophotography with the Omegon is straightforward. The geared, 2.9-inch Crayford focuser allows you to attach a camera via a standard 2-inch nosepiece. Removing the end of the focuser reveals an M74 thread, which offers a more solid fitting for larger cameras. ▶

FRINGE-FIGHTING OPTICS

To enjoy views or photographs of the night sky in natural colour is a real pleasure. However, achieving those images requires an apochromatic telescope with special lenses designed to remove chromatic aberration. The Omegon 104/650 ED uses a triplet lens system with air-spaced elements constructed from FPL-53 and FPL-51 glass to bring the major colour wavelengths of light to a matching focus point.

At the eyepiece the effectiveness of the triplet lens was easy to see. We observed bright targets including the Moon, Jupiter, Venus and Mars, carefully checking for any tell-tale blue haloes or green and purple fringing. At the centre of the view we found the colour correction of this lens to be excellent, allowing observation of smaller details in Jupiter's bands and even on Mars, which was not best placed for observing. Our cameras confirmed the findings from the eyepiece, a full frame DSLR and colour CCD camera producing images of stars without bloated blue haloes, ably demonstrating that the Omegon 104/650 ED deserves its 'apochromatic' badge.

FIELD FLATTENER

Correcting distortions, or coma, at the edge of the field of view is taken care of by the included field flattener. Camera chip spacing behind the flattener is a generous 113mm (±4mm), allowing for the use of accessories such as filter wheels or off-axis guiders. The rear male thread is M48.



TUBE CLAMPS

The CNC-machined tube clamps provide a solid base for attaching the dovetail of your choice. The clamps are threaded for metric bolts on both sides, with multiple fixing points.

ROTATORS

Framing the perfect astrophoto is made easier by the camera rotator, which is fitted to the focuser. Loosening a single locking thumbscrew allows the camera and equipment to be positioned appropriately for the view at hand. The entire rear section also rotates, enabling the user to find a comfortable position for focusing.

BAFFLES

The telescope's baffles minimise reflections of stray light inside the tube, which in turn increases contrast at the eyepiece or camera, ensuring optimal views and photographs of the fainter objects in the night sky.



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TRANSPORT CASE

Protecting your investment is made easier with the custom transport case supplied with the telescope. Constructed from aluminium and reinforced at the corners, the case enhances portability and makes safe storage easier. There is space within the foam cut-out for the tube rings and coma corrector.



SKY SAYS...

Now add these:

1. Omegon 2-inch star diagonal (99 per cent reflection)
2. Omegon Vixen-style finder shoe
3. Omegon prism rail

► We were a little hesitant to entrust our cameras to the single thumbscrew lock when using them with a nosepiece. With the temperature dropping through our imaging session we checked focus every few exposures, and had to slightly adjust it each time. Movement using the right-hand coarse focus knob was stiff and jerky, whilst the left-hand knob

was loose and completely ineffective.

Thankfully the fine-tuning control was working properly. With so much attention given to the rest of the telescope, it seemed slightly odd to have had issues with the focuser; it did not appear to have been correctly set up.

With pictures in the bag we replaced the camera with our eyepieces and enjoyed a few hours of observing. Our target list included planets and faint galaxies, the high contrast of the optics making it possible to pick out some detail in the Whirlpool Galaxy (M51) and good resolution in globular clusters M13 and M3.

At times during the observing session we noticed a little flaring in the stars. Checking back on the photos we had taken revealed that on some of them there was the same issue. We also noticed that within the tube there is a bright brass component of the focuser that has not been blackened, which could cause unwanted reflections.

Aside from those niggles, the Omegon AP 104/650 ED offers impressive views and pictures in a well-made and well-presented package. **S**



The Orion Nebula, stacked from 150 30-second frames that were captured using an Atik 460EX colour CCD



▲ The Monkey Head Nebula, stacked from 30 10-minute exposures (left), and the Pleiades, stacked from 24 10-minute captures (right), both taken with an Atik 460EX colour CCD

VERDICT

BUILD & DESIGN	★★★★★
EASE OF USE	★★★★★
FEATURES	★★★★★
IMAGING QUALITY	★★★★★
OPTICS	★★★★★
OVERALL	★★★★★