Stellarvue's 6.3-inch refractor field-tested

Superb optics, high-quality mechanical design, and a top-notch focuser place this apochromat high on any observer's want list.

by Jon Talbot

Stellarvue's SV160 APO Triplet is a 6.3-inch f/8 apochromatic refractor. The optical tube assembly comes in the company's "Stardust White" finish and has a retracting dew shield. *ASTRONOMY:* WILLIAM ZUBACK

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The eye end of the SV160 features a Starlight Instruments Feather Touch 3.5" focuser. This two-speed unit has a graduated scale and comes with a 2" compression ring and a 1¼" adapter.

The author shot the Wizard Nebula (NGC 7380) using Hydrogen-alpha and RGB filters. He attached a QSI 583wsg CCD camera and the Stellarvue SFF 7-21 field flattener to the SV160. JON TALBOT

Recently, I had the opportunity to review the largest telescope from Stellarvue, in Auburn, California — the SV160 triplet refractor. According to company owner Vic Maris, the SV160's initial design came out six years ago. Since then, it has gone through several iterations to optimize performance.

Well, the latest version promises to be another hit. And that statement holds true whether you are a visual observer or an astroimager, and whether your taste runs to galaxies or planets.

For example, the initial objective was an oil-spaced triplet lens, but in 2008, the company replaced it with an air-spaced one that optimizes imaging capabilities. Changes to the 2012 version include a lens set made in the United States.

First impressions

The optical tube assembly arrived safely packed in a custom foam-lined carrying case with the Stellarvue logo on the side. The 6.3-inch telescope's finish was the company's standard glossy white, and it was immediately evident that this instrument was built like a tank.

That said, its weight surprised me when I lifted it. I expected it to be much heavier than its actual 30 pounds (13.6 kilograms). I also noted that the case was compact because the design incorporates a sliding dew shield, which has a machined and threaded dust cap.

At the eye end of the tube, Stellarvue attached a massive Starlight Instruments Feather Touch 3.5" focuser. This unit is a proven performer with heavy loads. It also allows you to adapt large-format cameras and field flatteners for imaging. At the end of the focuser's drawtube is a one-piece machined and threaded 2" adapter, which allows the use of 2" accessories.

The SV160 revealed numerous belts and zones on Jupiter. The author used an f/ratio of 44 and his Canon 60Da DSLR set to ISO 640 to record a stack of one thousand 1/20-second images. JON TALBOT

Astroimagers can unscrew this adapter and thread camera accessories directly onto the drawtube. This valuable option can prove key to reducing flex and tilt within a large imaging system.

The SV160 features a focal length of 1,280 millimeters, which translates to a focal ratio of f/8. With it, the scope provides stunning high-power views of planets and deep-sky objects, but it's also fast enough for most imaging applications.

Visual impressions

I mounted the scope in my observatory, and during my first night with it I did a star test using eyepieces from 8mm (160x) to 3mm (427x) to assess the optics. After letting the instrument cool down for an hour, I took a quick view of a fairly bright star near the zenith; it showed nearly identical diffraction patterns inside and outside focus. A bit of atmospheric turbulence caused the star to jump around a bit, but it was obvious that the optics were excellent. When I focused the scope, several centered diffraction rings were evident around the star, a clincher for a high-quality lens.

Using Harold Richard Suiter's *Star Testing Astronomical Telescopes: A Manual for Optical Evaluation and Adjustment* as a guide, I noted no spherical or chromatic aberration, or any other oddity. I slewed to the Double Double (Epsilon [ε] Lyrae), and the scope easily split both pairs of stars at 145x. Each of the four stars appeared well-resolved, with pitch-black space between them. It was one of the most impressive views I've ever had of this object.

Next, it was on to globular clusters M2 and M15, also at 145x. Both were impressive, and each resolved into myriad faint suns. A quick slew to nearby Uranus showed the planet as a non-stellar blue orb.

Imaging impressions

Fortunately, I was able to assess the imaging performance of the SV160 using two different CCD camera setups: Quantum Scientific Imaging's (QSI) 583wsg CCD camera and Santa Barbara Instrument Group's (SBIG) STL-11000 CCD camera.

I used the QSI camera with Stellarvue's SFF 7-21 field flattener, which attached to the supplied 2" adapter. This combo worked well, although you will need a focuser drawtube extension to allow the camera to reach focus. The resolution with the small pixels of the QSI 583 is 0.8" per pixel, but because of my typical seeing, I shot a set of images binned at 2x2 (where four pixels act as one). This setup provided a resolution of 1.6" per pixel.

I used the larger 35mm-format SBIG camera with Stellarvue's SFF160 Large Field Flattener. This setup was a bit simpler because the flattener threaded directly into the focuser's drawtube — an extremely rigid connection from focuser to camera. The SV160 provided pinpoint stars across the entire chip. The STL-11000 gave a field of view just over 1.5° by 1° and a resolution of 1.5" per pixel in a non-binned mode.

Deciding what to shoot was a bit challenging. I live in the suburbs with plenty of light domes surrounding my home. Still, I wanted to see how much detail I could record in faint nebulae and also how the SV160 would image planets.

For the first, I imaged the Northern Trifid Nebula (NGC 1579) in Perseus and the Wizard Nebula (NGC 7380) in Cepheus. The scope worked wonderfully on these objects and provided a plethora of detail from my magnitude 4.5 sky.

Jupiter was my chosen planetary target. I used my Canon 60Da DSLR in "Live View" mode during predawn hours that had decent seeing. Using both a Barlow lens and a Tele Vue Powermate, I cranked up the f/ratio to 44. Wow! The telescope revealed many of the giant planet's numerous features in the stack of 1,000 frames I took, proving the sharpness of the SV160's optics. I wasn't expecting this much detail from 6.3 inches of aperture.

Overall impression

Stellarvue's SV160 apochromatic refractor is an impressive telescope for the discriminating amateur astronomer. It's rock solid and provides outstanding visual and imaging performance. Whether your forte is deep-sky or planetary work, this large refractor will satisfy your desires for as many years as you choose to use it.

Jon Talbot, *a meteorologist by trade, is an avid astroimager who resides in southern Mississippi and flies into hurricanes for kicks.*

PRODUCT INFORMATION

Stellarvue SV160 refractor

Type: Apochromatic triplet optical tube assembly
Focal length: 1,280 millimeters
Focal ratio: f/8
Length: 44 inches (112 centimeters)
Weight: 30 pounds (13.6 kilograms); tube rings add 3 pounds (1.4kg)
Includes: 3.5" dual-speed Feather Touch focuser, two tube rings, dew shield with cap, heavy-duty padded nylon case
Price: $10,999
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