

Equipment review

Astronomy tests Orion's color video camera

The StarShoot Deep Space Video Camera displays celestial objects in real time and captures video frames. **by Chris Schur**

As a broadcast video engineer by profession, I was keenly interested in giving Orion's StarShoot Deep Space Video Camera a shakedown cruise. And as a longtime amateur astronomer who's played host at many public viewing sessions, I couldn't wait to target my favorite bright deep-sky and solar system subjects to bring their images up live on a high-resolution television monitor.

Finally, from an astroimager's standpoint, I was excited about the photographic capability of this camera. I knew I'd have a chance to produce some shots through it on a steady night.

What's in the box

Orion has produced a rugged camera in an all-metal housing. A C-to-CS mount adapter allows the use of standard 1/2-inch format lenses for wide-field imaging. For use on a telescope, a C-to-1 1/4-inch adapter

The complete package features both AC and DC power adapters, output cables, a C-to-1 1/4-inch adapter, and Orion's Video Capture Device.

permits the camera to fit any 1 1/4-inch focuser (or a 2-inch focuser with a 1 1/4-inch adapter).

To provide power, Orion includes an AC adapter and a 12-volt DC standard automobile accessory ("cigarette lighter") plug. Both connect to the "Power in" jack at the rear of the camera. For my use, the composite video output connected directly into the back of my television set using the long cable the company provided. Finally, Orion's Video Capture Device and software allowed me to use this camera as a webcam to acquire images of solar system objects.

Video mode at the telescope

As the twilight deepened to a dark navy blue, I pointed my homemade 12.5-inch Newtonian reflector at the 50-percent-illuminated Moon. I had connected the StarShoot camera to a 12-inch Sony monitor in my backyard observatory. When the camera powered up, the Moon's face bloomed in pure white from overexposure.

I changed the exposure mode from "Auto" to "Shutter" and was able to get a perfect exposure when I set the camera to 1/1,000-second. The Moon's image on the monitor displayed myriad craters and dark-toned maria. Delicate craterlets, tiny rilles, and miniature mountain shadows popped in and out of view as the seeing (the steadiness of the air above my site) varied. The best part about this system was that both my wife and I were able to see the image at the same time.

Because 1/1,000-second is the minimum exposure this camera shoots, if the Moon had been brighter, I would have needed to create a round diaphragm for my scope to cut its glare. Our natural satellite is so bright that even a 3-inch (76 millimeters) hole would have provided plenty of light. But it looked great at that exposure.

Likewise, the images I captured of Saturn did not disappoint. We viewed it flanked by two of its moons and a few field



Orion's StarShoot Deep Space Video Camera employs a 0.5-inch Mintron color sensor with a 768x494 pixel array. Orion loaded the rear of its StarShoot camera with inputs, outputs, a power connector, and more. Equipment images: Astronomy: William Zuback

stars that clearly exhibited gold and blue colors. The planet stood low in the sky, however, so it was time to move on to what both of us really wanted to test: this product's performance on deep-sky objects.

Once I had centered the Ring Nebula (M57) in the camera's field of view, it was clearly visible but dim. By setting the software's "Sense Up" value to 128, the camera's gain increased, and after about 10

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seconds the view stabilized to a pale-green gem with red-tinted edges surrounded by a sea of scintillating red-colored noise. And yes, the central star was right there for both of us to see without difficulty. I judge this an impressive feat for a mere 4-second video exposure.

The StarShoot Deep Space Video Camera's ability to show both faint objects and star colors will be a major boon to astronomy clubs hosting public star party events. I'm certain it will greatly increase the level of interest among the public.



The author's astroimaging setup shows the StarShoot Deep Space Video Camera attached to his 12.5-inch f/5 homebuilt Newtonian reflector. Chris Schur

Product information

Orion StarShoot Deep Space Video Camera

Imaging sensor: Mintron 72S85HN-EX-R color

Sensor size: 0.5 inch

Pixel array: 768x494

Video frame rate: 30 frames/second

Exposure range: 1/1,000 to 4 seconds

Weight: 8.7 ounces (247 grams)

Dimensions: 2.6 by 1.9 by 2.5 inches (66 by 48 by 64 millimeters)

Software compatibility: Windows XP/Vista/7

Includes: Video Capture Device, AC adapter, DC "cigarette lighter" adapter, video cable, CD-ROM

Price: \$499.99

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Astroimaging with the camera

Orion also designed its camera for use with the provided Video Capture Device to record AVI videos to a hard drive for later processing with various image-stacking software (not included). I found installing and using the supplied software difficult. After several days of trying, I finally succeeded only because my laptop had a live Internet connection.

And perhaps because the product is so new, I also discovered that Orion had not yet put any updates on its website. Hopefully, that won't be a problem by the time you read this review. Once the software was functioning, I imaged the Moon again and the bright star Arcturus and processed them with *Registax 6* without any problems.

A real-time winner

This camera does one thing extremely well — it displays celestial objects in color in real time. The sensitivity is sufficient to reveal most of the Messier objects through an 8-inch or larger telescope. Use it and you'll be a guaranteed hit at public events.

On the other hand, when I imaged with this camera, I was somewhat disappointed. For that kind of use, you might consider Orion's StarShoot Solar System Imager. In video mode, however, Orion's StarShoot Deep Space Video Camera offers a high "wow" factor, and it's a lot of fun to use. ☺