

Astronomy tests Denkmeier's Binotron-27

High-quality optics and superb mechanics make this accessory a winner. **by Mike Reynolds**

A number of excellent accessories exist for today's visual observer, ranging from cameras to filters to incredible eyepieces. One of my personal favorites — and always a crowd-pleaser when I am doing outreach — is my binoviewer, and we'll take a close look at a good one in this review. Simply stated, a binoviewer turns your single-eyepiece telescope into a binocular-like setup, allowing you to use both eyes.

One of the major reasons for using binoculars is human physiology: We have two eyes. In fact, the word *binoculars* comes from the Latin words *bini*, meaning double, and *oculus*, which means eye. And using both eyes has real advantages.

First, more light reaches the brain. Some researchers have measured a 40 percent increase. Second, resolution — the ability to distinguish between two close objects — increases. Third, image contrast — the ability to see and differentiate fine details

— also increases. Fourth, many observers report an enhanced ability to detect color. And finally, using two eyes allows the brain to perceive near-stereoscopic images.

A bit of history

Denkmeier Optical has produced fine binoviewers since 2001. Company founder Russ Lederman designed his initial binoviewer based on those he used with microscopes. He noted, however, that the optical configuration afforded an “extra” magnification around 3.5x, whereas the ones in microscopes added none.

Such a system-wide power increase was great for the planets but not for deep-sky objects. This led Lederman to different innovations, such as a lower-magnification (1.3x) compound optical system.

For the Binotron-27, Denkmeier literally went back to the drawing board and came up with an all-new design. Engineers were able to incorporate several refinements to earlier binoviewer designs that make this model user friendly while still affording spectacular views. For a start, the Binotron-27 incorporates prisms 27 millimeters

PRODUCT INFORMATION

Denkmeier Binotron-27

Includes: Power x Switch system with all spacer tubes, aluminum caps and eyepiece holder plugs, aluminum case

Optional: 21mm D21 eyepieces (\$549/pair); 14mm D14 eyepieces (\$629/pair); Filter Switch (\$249); OCS-A45 (\$149)

Price: \$1,099; \$1,399 (SCTs and refractors)

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across, which affords each a 26mm-wide clear aperture.

Features

The Denkmeier Binotron-27 comes packaged in an aluminum case with custom foam inserts. The one I reviewed included all of the adapters, a pair of 21mm eyepieces designed specifically for this instrument, and various end caps. This set also had the company's Power x Switch system (which allows three magnifications with a single set of eyepieces) and the optional OCS-A45 optical corrector.

The first thing that struck me as I took the Binotron-27 out of the case was the high quality of the machine work and construction. This binoviewer looked and felt like top-notch gear. The important hinged interpupillary



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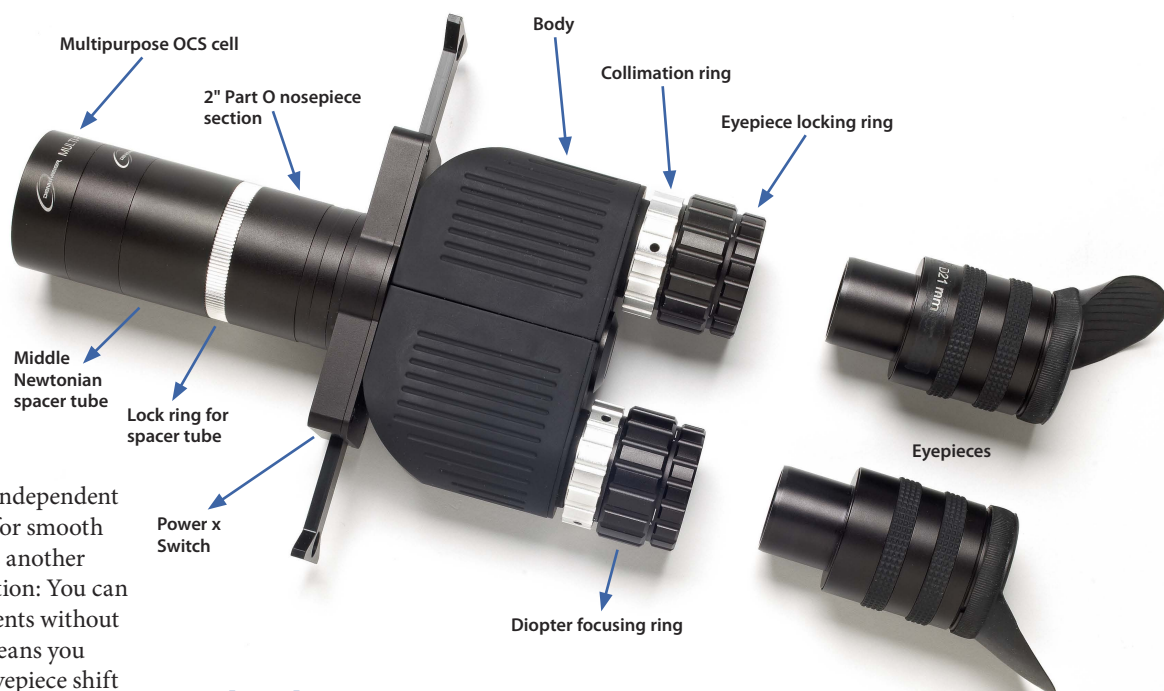
Denkmeier Optical's Binotron-27 is a high-quality binoviewer. The two push/pull levers on the unit shown here operate the included Power x Switch system. ALL IMAGES: ASTRONOMY: WILLIAM ZUBACK

distance adjustment — which allows observers to match the distance between their eyes — was smooth, yet stiff enough to stay in place once adjusted.

The Binotron-27 also has a lightweight rubber coating, which allows for a solid yet comfortable grip. Even the fully machined end caps display another example of excellent design.

The two eyepieces feature independent diopter adjustment, allowing for smooth individual focusing. But here's another important Denkmeier innovation: You can fine-tune the diopter adjustments without the eyepieces rotating. This means you won't experience any sort of eyepiece shift during focusing after you lock the eyepieces into place. And on that last note, the eyepieces of the Binotron-27 lock securely into place without thumbscrews.

A major innovation that Denkmeier has incorporated into its new binoviewer is the ability to quickly collimate the Binotron-27. And you can do this without the need for tools — or a telescope! I know how easily a binoviewer can lose its collimation, having used mine for many years with college classes and for outreach. Each time, that meant sending it back to the manufacturer. Not anymore.



Under the stars

I found that the optics Denkmeier put in the Binotron-27 performed superbly. I observed with the device connected to several different telescopes and viewed a number of celestial objects through each. I like first to test optics on a bright Moon, so I observed our satellite when it was nearly Full. With that much light passing through the unit, optical flaws, especially those related to color, are easy for me to see. In this unit, however, I detected none. And the Moon took on a near-3-D appearance, which seemed to get better the longer I observed.

I also made a visual survey through the Binotron-27 of several objects: Comet PANSTARRS (C/2011 L4), Saturn, and the Orion Nebula (M42). To say that Saturn was incredible would be an understatement — it appeared to be three-dimensional to me. I have viewed Saturn through my own binoviewer many times before, but this image was much sharper.

Jupiter and the four Galilean satellites also were a treat. Using the Power x Switch, I was able to select any of three magnifications. This option allowed me to easily view at different powers and glean what was best for each object considering the night's seeing (steadiness of the air).

Denkmeier supplies all the parts (eyepieces optional) that you'll need to use the Binotron-27 with your telescope.

One of the tests I like performing on optics is simply to note how bright stars appear. I observed numerous stellar standouts with different brightnesses and colors. I could see no optical flaws in the system regardless of which scope I used.

I also observed a number of deep-sky objects. Open clusters included the Double Cluster (NGC 869 and NGC 884) in Perseus and the Pleiades (M45). I marveled at how stars appeared as pinpoints right to the edge of the field of view while the background appeared like black velvet.

I hopped through a selection of bright galaxies in Ursa Major and Leo, and visited a variety of planetary and other nebulae. All views proved excellent. I didn't get the three-dimensional feel with deep-sky treats like I did with Saturn, but that could be due to the faintness of the objects or the age of my eyes. I choose the former reason!

You know you want one

Denkmeier has designed and produced a remarkable binoviewer, well worth the investment. Whether you are a deep-sky visual observer who uses a big Dobsonian-mounted reflector, a planetary observer with an apochromatic refractor, or just a person with the passion to share the universe with others, the Binotron-27 will certainly take your observational sessions to a whole new level. Two eyes and the Denkmeier Binotron-27 are certainly better than one eye at the telescope. ☿



The Binotron-27 comes with a sturdy, foam-lined aluminum carry case. Although the case measures a slim 14 by 11 by 5 inches (35.6 by 27.9 by 12.7 centimeters), it has enough room for a set of custom-made Denkmeier eyepieces.