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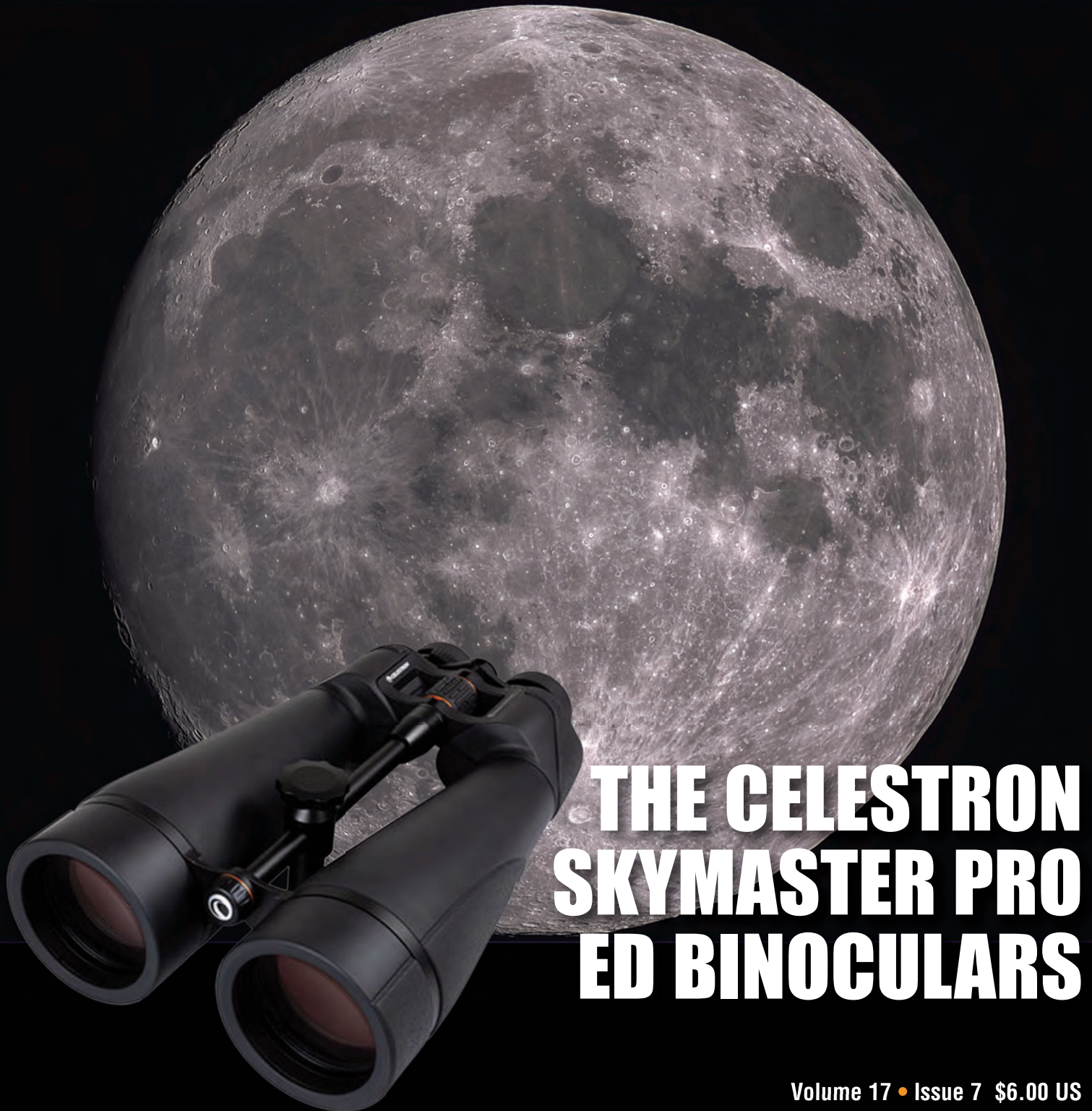
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THE CELESTRON SKYMASTER PRO ED BINOCULARS

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THE CELESTRON SKYMASTER PRO ED BINOCULARS



By Dr. James R. Dire

Celestron has just developed a new line of binoculars called the SkyMaster Pro ED. The “ED” means the binoculars are made with extra-low dispersion glass. This glass virtually eliminates chromatic aberration, the false color seen around bright stars, planets and the Moon.

There are three models of the SkyMaster Pro ED binoculars: 7x50mm, 15x70mm and 20x80mm. All three are Porro prism binoculars with BaK-4 prisms. BaK is a German abbreviation for BarileichKron, or barium crown glass. The glass is fully multicoated with Celestron XLT coating to boost light transmission.

All three SkyMaster Pro ED binoculars are rubber coated for durability. They are waterproof and sealed with nitrogen gas to ensure no moisture is con-

tained between the elements that could condense and hinder the performance. Each model is tripod adaptable.

For each the interpupillary distance can be adjusted from 56 to 72mm. They have a focusing knob on the bridge and can be adjusted for -3 to +3 diopters. Like most binoculars, they have a fine focus on the right eyepiece to correct for different focal distances between the eyes.

The eyepiece cups rotate out. Each eyepiece is threaded to receive 1.25-inch filters. The binoculars also come with a nylon carrying case, objective lens caps, eyepiece covers, a neck strap, a lens cloth and an instruction manual. **Table 1** shows a comparison of the features of each model.

I tested the binoculars starting with the smallest set and worked my way up

to the largest pair. **Image 1** shows the box for the 7x50mm binoculars. I think 7x50mm is the best all around binocular size to use for myriad purposes. My first serious set of astronomical binoculars was 10x50mm.

Fifty-millimeter objective lenses gather quite a bit of light for astronomical use. However, I found that holding 10x binoculars was difficult for me. Some people can hold them steady. I do much better with 7x50mm. They gather the same amount of light, but 7x provides a wider field of view.

These binoculars are great for spying the Moon, the Andromeda Galaxy, the Orion Nebula, and myriad star clusters. Panning the Milky Way from dark skies is quite a treat. Without the

Table 1

Model	FOV*	Exit Pupil (mm)	Eye Relief (mm)	Closest Focus (ft)	Weight (oz)	Weight (kg)	Price (U.S.)
7x50mm	7.8°	6.4	20.8	26.2	44.3	1.255	\$199.95
15x70mm	4.4°	4.4	15.7	47.2	73.7	2.089	\$329.95
20x80mm	3.4°	4.0	15.4	98.4	123.2	3.492	\$429.95

* Field of View

Table 1 - SkyMaster Pro ED binoculars models

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Image 1 – The smallest binoculars in the SkyMaster Pro ED series are the 7x50mm. These are the most portable and the best set to use hand held.



Image 2 – The 7x50mm binoculars come with covers for all the optics, a soft case, a neck strap, and a lens cloth.

need for a tripod, you can lie back on a lawn recliner, or on a blanket, and spend hours looking high overhead.

Everything that comes in the box is shown in **Image 2**. **Image 3** is a close-up view of the 7x50mm binoculars. All of the binoculars in this series have a touch of the Celestron orange trim, which I love. In **Image 3**, I have rotated the right eyecup all of the way out while the left eyecup is fully retracted. This shows the travel of the eyecups. I preferred using them rotated all the way out. The focuser is on the bridge and is serrated to make it easy to focus, even while wearing gloves. The right eyepiece has two large serrated knobs to adjust the right eye focus after focusing the left eye.

Image 4 shows the objective lenses. In this image I have removed the cover for the 1/4-20 threaded hole that allows the binoculars to be attached to a tripod. I did not test these binoculars on a tripod. I had no problem holding them steady in my hands.

The next pair I tested was the SkyMaster Pro ED 15x70mm binoculars (**Image 5**). This pair has more than twice the magnification of the first pair. When I think of all the times I have viewed through a 70mm telescope, I knew all the detail that I could capture with these binoculars. But now the light would be hitting both eyes. While each eye would see the same resolution and light gathering as a 70mm refractor, something about using two eyes registers the view in a more pleasing way inside my brain. Two eyes are always better than one!

The 15x70mm binoculars were well packed in ample Styrofoam inside the box (**Image 6**). **Image 7** shows the included soft case, while **Image 8** shows the pristine objective lenses. I definitely needed a tripod to use these binoculars. **Image 9** shows the 1/4-20 tap to connect this pair to my tripod adapter.

Image 10 shows a side view of the SkyMaster Pro ED 15x70 binoculars attached to a standard camera tripod. I used a tripod adapter that I already owned. Like most tripod adapters, there is a post with a 1/4-20 screw that connects to the binoculars. The adapter has a base to attach it to a standard camera tripod. A view from the eyepiece side of the binoculars is shown in **Image 11**.

I don't have a fancy astronomical binocular mount that allows me to lie back and look up through binoculars. But I did find it was not too uncomfortable to sit on a patio chair with the binoculars on my tripod (**Image 12**). I could point them up to 50 degrees above the horizon without straining my neck too much to look through them. Of course, I had to scoot up to the edge of the seat to see through them.

The first night out I tested them on a couple of globular

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Image 3 – The eyecups on the 7x50mm binoculars rotate in and out. The one on the left is fully retracted while the one on the right is fully extended. There is a large easy to grip focusing knob. The right eyepiece has large handles to adjust it individually.

star clusters. The first was M68 in Hydra. The cluster was resolved into a fuzzy blob. I then swung them around to M13 in Hercules, a bigger and brighter cluster. I could actually resolve some stars in this cluster. Venus and Mars were above the horizon. The poor seeing and extreme brightness of Venus did not allow me to see its phase. Mars

was clearly a planet disk, not a red star. Finally, I scanned the Milky Way in Scorpius to spy myriad unresolved star groupings.

A week later I turned these binoculars at the first quarter Moon. The detail in craters near the terminator was superb. I would have to say the Moon was my favorite target with the

15x70mm binoculars. Come fall I hope to try them on M31, the Great Andromeda Galaxy. We'll see if the view of M31 displaces the Moon as the best object for these binoculars!

One thing I noted about the SkyMaster Pro ED 15x70mm binoculars is that the position of the tripod receptacle, i.e. the threaded 1/4-20 tap, was placed to allow the binoculars to be perfectly balanced when attached to a camera tripod. I had no difficulty using these 4.6-pound binoculars on a standard camera tripod.

The largest pair in the SkyMaster Pro Ed series is the 20x80mm binoculars (**Image 13**). This behemoth set also comes nicely packed in Styrofoam (**Image 14**). To get a perspective of how large these binoculars really are, they are pictured side-by-side with the SkyMaster Pro Ed 7x50mm binoculars in **Image 15**! The 20x80mm binoculars weigh 7.7 pounds and are not meant to be used hand held. The 80mm objective lenses are pictured in **Image 16**.

A tripod adapter is not needed for the 20x80mm binoculars as one is built in. **Image 17** shows the 1/4-20 tap use to affix the binoculars to a tripod. The tripod adapter can slide up and down a rod in the center of the binoculars to balance the binoculars on the tripod as shown in **Image 18**. **Image 19** shows a side view of the binoculars balanced on the tripod.

The 20x80mm binoculars performed equally well to the 15x70mm for viewing star clusters and brighter deep space objects. With slightly larger aperture and magnification the objects appear larger and brighter. I especially enjoyed the views of globular cluster M13 with this set.

The Moon was splendid in these binoculars and not too bright to require

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Image 4 – This view shows the objective lenses of the 7x50mm binoculars and the removable cap over the 1/4-20 threaded hole for a tripod adapter.

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filters. But viewing the Moon at quarter or full phase will blow out night vision. For this reason it may be best to use a set of Moon filters (**Image 20**). These filters only pass 18% of the Moon's light making it more pleasing to view. **Image 21** shows the filters screwed into the eyepieces. The eyepiece cups must be fully retracted to thread on the filters. The cups slide right over the filters when expanded.

While I tested the 20x80mm binoculars using a standard camera tripod, I felt the binoculars were too heavy to use with this lightweight tripod. I would recommend a more robust binocular platform for the 20x80mm binoculars.

The SkyMaster Pro Ed binoculars performed similarly to a typical ED doublet refractor in removing chromatic aberration. I did not see any false color around bright stars or planets. For all three in the series, I did notice a thin yellow-green layer of false color around the Moon, similar to what I see in an ED doublet refractor. This slight false color did not distract from the spectacular views of lunar mountains, craters



Image 5 – The 15x70mm binoculars are the middle size of the three SkyMaster Pro ED models.

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and Maria. I own two high-end Nikon binoculars, 8x40mm and 7x50mm. The Celestron SkyMaster Pro ED binoculars had about the same amount of false color around the rim of the Moon as both my Nikon binoculars.

In conclusion, The SkyMaster Pro ED binoculars are all excellent for astronomical and terrestrial use. I love the waterproof, rubber coating; neck straps; carrying cases; and tripod adaptability. They are easy to use and provide sharp, crisp views. For general use without the need of a tripod, the 7x50mm is the correct choice. For higher magnification and resolution using a standard camera tripod, the 15x70mm are superb. With the investment of a heavy-duty binocular mount the 20x80mm set will provide the best views of the heavens using both eyes for under \$500. [AT](#)



Image 6 – SkyMaster Pro ED 15x70mm binoculars are shipped very securely in padded Styrofoam.



Image 7 – The soft case for the SkyMaster Pro ED 15x70mm binoculars.



Image 8 – This view shows the objective lenses of the 15x70mm binoculars and the removable cap covering the 1/4-20 threaded hole for a tripod adapter.

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Image 9 – This view shows the large focusing knob on the 15x70mm binoculars and the cap removed for the tripod adapter connection.



Image 11 – Another view of the 15x70mm binoculars on the camera tripod.



Image 10 – The author used his universal binoculars z adapter to attach the 15x70mm binoculars to a standard camera tripod. The tripod connection point is at the binoculars' center of gravity to provide perfect balance when attached this way to a tripod.



Image 12 – The author could comfortably view objects up to 50° altitude sitting on the edge of a lawn chair using a camera tripod.

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Image 13 – The largest in the SkyMaster Pro ED series are the gigantic 20x80mm binoculars.



Image 15 – The 20x80mm binoculars are more than twice as big as the 7x50mm binoculars.



Image 17 – The 20x80mm binoculars come with a 1/4-20 threaded adapter for use on tripods. The adapter can slide up and down a shaft and locked in place for balancing.



Image 14 – The 20x80mm binoculars are also shipped with lots of Styrofoam padding. They also come with a neck strap and soft case shown here.



Image 16 – This view shows the 20x80mm binoculars' objective lenses.



Image 18 – This view shows the hand-grip for locking down the tripod adapter in place to balance the binoculars on a tripod.

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Image 19 – The author tested the tripod using a standard camera tripod, but recommends a heavy-duty binocular tripod for use with these heavy binoculars.



Image 20 – Viewing a bright moon is more pleasing using a set of Celestron moon filters with the 20x80mm binoculars.



Image 21 – The eyepieces are threaded to receive 1.25-inch filters. The eyecups must be fully retracted to insert the filters, but then can be rotated out past the filters.