ASTRONOMY TECHNOLOGY TODAY

Your Complete Guide to Astronomical Equipment

CELESTRON LUMINOS EYEPIECES • BRESSER SMARTPHONE ADAPTER
ADAPTIVE OPTICS FOR ASTROPHOTOGRAPHY
EASY TO USE ATMOSPHERIC CORRECTOR • ATM LASER FINDER

THE iOPTRON CEM120

Two Years In and Still in Love with the Mount!

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Contents

Cover Images

In his article John Crisp gets to do some serious imaging thanks to his iOptron GEM 120. John's cover astro image is of the Rosette Nebula – shot with a HyperStar and the Optolong l-enhance filter plus lots of other gear as outlined in his article.

In This Issue

Industry News/New Products

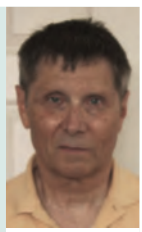
ATT Contributing Writers

John Crisp is the VP of Digital for Blade/Block Communications managing software architecture. His "Astro Product Reviews" website - www.astroproductreviews.com - provides informative product unboxing, reviews & how to videos for products relating to astronomy and astrophotography. His other hobbies include the design, building and flying of experimental aircraft and radio control aircraft - his main pride and joy is a kit built Fokker Dr-1 Triplane and has a Piper Cub (3/4 Scale that he is designing and building). His Private Pilots Certificate has been active since 1987 and photography and astrophotography are a few other passions.

James Dire has an M.S. degree in physics from the University of Central Florida and M.A. and Ph.D. degrees from The Johns Hopkins University, both in planetary science. He has been a professor of physics astronomy at several colleges and universities. He is the president of Methodist College in Peoria, Illinois. He has played a key role in several observatory projects including the Powell Observatory in Louisburg, KS, which houses a 30-inch (0.75-m) Newtonian; the Naval Academy observatory with an 8-inch (0.20-m) Alvin Clark refractor; and he built the Coast Guard Academy Astronomical Observatory in Stonington, CT, which houses a 20-inch (0.51-m) Ritchey Chrétien Cassegrain.

Larry Faltz is a physician and lives just north of New York City with his wife Elyse, who is also an astronomy enthusiast. Larry is a member and former president of Westchester Amateur Astronomers (www.westchesterastronomers.org) and currently edits the club's monthly SkyWAAtch newsletter.

Dr. Robert Majewski is a retired engineer living in Las Vegas. He has an M.S. and Ph.D. degrees in Physics from the University of Illinois. His career involved testing and calibrating a number of imaging electro-optical systems at the Hughes Aircraft Company and Raytheon Missile Systems. His hobbies include high-resolution planetary imaging and exoplanet transits.



Greg Marshall is an amateur astro-photographer and the owner of Wa-chur-ed Observatory, a small business that offers both astro-photo art and tools for astronomy. He has an MS degree in Computer Science and 35 years of experience in electronics engineering, specializing in image processing. Greg's observatory houses an AP Mach1 mount, QSI583wsg camera, and several scopes, including a 25 year old 5.6-inch AP triplet refractor.

Stuart Parkerson has been the publisher of Astronomy Technology Today since its inception in 2006. While working primarily in the background of the company's magazine and website business operations, he has recently taken a more active role in contributing content covering industry news and other company centric topics.

Mike Weasner started in astronomy at the age of six when his older brother, Paul, would show him the stars from their southern Indiana home. As a Christmas present in 1961, Mike's mother gave him an Edmund Scientific 3" Newtonian Telescope which he still uses today. When Mike was 14 Paul got him a subscription to Sky & Telescope which continues uninterrupted through today. He has a B.S. in Astrophysics from Indiana University and following college, he entered into the US Air Force, where he served as a fighter pilot, instructor, and a manager in the Air Force's Space Shuttle Program Office. He hosts the website "Cassiopeia Observatory" - www.weasner.com - where you can see reports of his sessions in his observatory, his astrophotography, and product reviews.

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Industry News/New Products

CELESTRON LUMINOS EYEPIECES

By Dr. James R. Dire

Celestron has been world renowned for their telescopes for a half century. I have owned several of them over the years, including a C5 5-inch Schmidt Cassegrain, a C14, 14-inch Schmidt Cassegrain, and an 11-inch EdgeHD flat field Schmidt Cassegrain. Most Celestron telescopes have come with Celestron brand eyepieces, but Celestron has not been known for being an innovative leader in eyepieces as they have with telescopes.

In recent year, Celestron has come out with a new eyepiece series they call Luminos which are their top of the line eyepieces. They all have a wide 82° field of view (FOV) which intrigued me to see how they compare to other 82° eyepieces.

The Luminos line contains 15mm, 10mm and 7mm focal length versions with 1.25-inch barrels, which list for around $120. Then they have three sizes with 2-inch barrels. They have focal lengths of 31mm, 23mm and 19mm with list prices from $275 to $175.

To achieve an 82° field of view, these eyepiece, like other brands with the same FOV, must have 6-7 elements. The entire series is parafocal, which means once you focus a telescope with one eyepiece, the telescope

Image 1

Image 2

should be focus with any other eyepiece in the series. The Luminos eyepiece body is made of polished and anodized aluminum. Each has a rubber grip strip running the circumference of the eyepiece. This is convenient especially on a cold night when handing an eyepiece with bare hands.

I decided to test the 19mm Luminos since it was in between sizes of other brand 82° FOV eyepieces I own. The 19mm Luminos is pictured in **Image 1**. The eyepiece comes in a Celestron box with lots of foam padding to keep it safe. It also has dust caps for the top and bottom. Like most current Celestron products, the Luminos eyepieces are adorned with some traditional Celestron orange trim. I really like that touch!

The Luminos eyepieces come

with retractable eyecups. **Image 2** shows the eyecup fully expanded and fully retracted. The eyecup is actuated by holding the rubber grip and rotating in one direction to expand, and the other to retract. Quite easy to do even with winter gloves! These eyecups won't fall off like flimsy ones found on other brand eyepieces.

For comparison I tested the Luminos against two other 82° FOV 14mm eyepieces that were considerably more expensive that the Celestron eyepiece. I tested and compared the eyepieces with my main visual telescope, a 190mm f/5.3 Maksutov-Newtonian reflector shown with the Luminos 19mm in **Image 3**. Don't let the clouds in this image fool you. It did clear up before sunset. I find that different eyepieces behave differently with different telescope designs. So I also tested the Luminos with the other two eyepieces in my 132mm f/7 Apo refractor.

In both telescopes, the views through the 19mm Luminos were excellent. Stars were pinpoint throughout the field of view. Star colors were obvious with no apparent chromatic aberration. For sharpness and color, the Luminos performed equally to the other two eyepieces in both the refractor and reflector.

The only difference I noticed between the Luminos and the other two eyepieces was in contrast. In both other eyepieces, the background dark sky was uniform in brightness throughout the field of view. With the Luminos, the sky between the stars was darker in the center of the FOV than near the edges. The contrast in the center was better than the other two eyepieces, but worse in the outer regions. I saw this with both telescopes, as did some of my observing companions. This effect might not be noticed by most Luminos users who, unlike me, wouldn't be comparing different brand eyepieces.

Image 3

This Lumnios eyepiece is by far the best Celestron eyepiece I have used. Anyone looking for a set of parafocal wide FOV eyepieces that don't break the bank should consider Celestron Luminos eyepieces. They are rugged and nicely crafted. ATT