

ASTROPHOTOGRAPHY

Take your photography to a new realm.



Welcome To The Celestron Universe



Orion and The Running Man Nebula by Alvaro Vaquero

This publication is designed to reveal the exciting world of astrophotography to anyone who may be interested in imaging the night sky. Astrophotography combines the magnifying and light gathering capabilities of a telescope with the camera's ability to record that light into an image. In the following pages, we will introduce you to various techniques for capturing images of celestial objects. From the easy and inexpensive to the precision long exposure imaging that requires more advanced equipment. We hope the information presented in this booklet will have you as intrigued with this fascinating hobby as many of us are, here at Celestron.



Rosette Nebula (cover) & Equipment by John Buonomo



AstroMaster™ 90AZ
with Universal Digital Camera
Adapter and Compact Digital Camera

Digiscoping

Attach your compact digital camera to your spotting scope or telescope to capture incredible images. Our universal digital camera adapter creates a steady platform for a compact digital camera to take images through the eyepiece of your spotting scope or telescope, effectively creating a telephoto lens for your camera. Take incredible shots of the moon or dramatic photos hundreds of yards away from the subject matter.

Essential Equipment: Compact Digital Camera, Universal Camera Adapter, Tripod and a Spotting Scope or Telescope.

Optional Equipment: Additional Eyepieces to vary magnification.



Full Moon by Kevin Kawai



Birding by Kevin Kawai



NexStar 127SLT™
with NexImage® Web Cam
and Laptop Computer

Web Cam Imaging

A web cam is connected to your telescope's prime focus. Once the cam is attached to your telescope and the included software is installed on your computer, it is possible to image a multitude of objects in the night sky. This is done by capturing streaming video with the web cam and then the software converts the video into individual frames. Once the frames are converted the software then compiles the best frames into one final image.

Essential Equipment: Tracking Telescope, Laptop Computer, and NexImage® Web Cam Kit.

Optional Equipment: Reducer Lens for wider field of view, Barlow Lens for increased magnification.



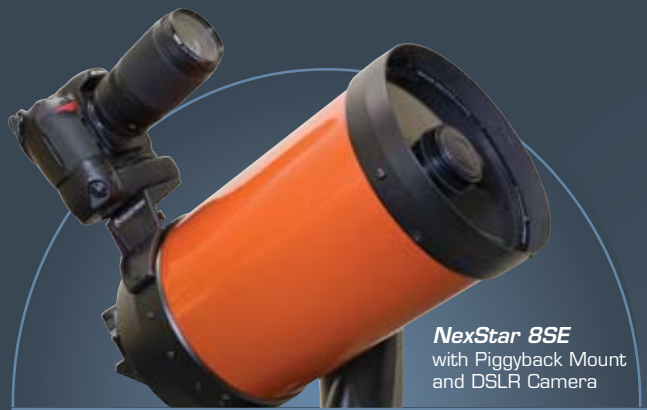
Sun by Sean Davies



Mars by Jason Fournier



Milky Way (Galactic Center) by Efrain Sanchez



NexStar 8SE
with Piggyback Mount
and DSLR Camera

Piggyback Camera Setup on a Computerized Telescope

An easy way to take advantage of your SLR or DSLR camera. With this setup your camera mounts on top of the rear cell of the telescope. Once the camera is mounted to your scope it's time to align your computerized telescope and then select an object. Once an object is located, start experimenting with different lenses and exposure times. This setup is also great for taking wide field images of meteor showers or the Milky Way. If you want to take longer exposures you will need a wedge to avoid field rotation.

Essential Equipment: Computerized Telescope, SLR or DSLR Camera and Lens, Piggyback Mount Accessory.

Optional Equipment: Vibration Suppression Pads, Remote Shutter Release, Wedge Accessory.



Orion Nebula by Kevin Kawai

Fastar® F/2 Imaging or Hyperstar Setup on a Schmidt-Cassegrain Telescope

This setup requires mounting a CCD camera and lens assembly where the secondary mirror of a Schmidt-Cassegrain telescope is located. The key advantage of this configuration is the fast exposure time. At the f/2 focal ratio, exposure times are 25 times faster than at f/10 and require only 20-30 seconds to capture many deep sky objects.

Because the exposure time is so low there is no need for guiding or polar alignment. A word of warning, not all Schmidt-Cassegrain telescopes are Fastar or Hyperstar compatible. There are after market conversion kits available for many models.

Essential Equipment: Compatible Schmidt-Cassegrain or EdgeHD™ Telescope (conversion kits are available for many models), F/2 Lens Assembly (Starizona.com), CCD Camera, Image Processing Software (may or may not be bundled with CCD camera), Laptop Computer.

Optional Equipment: Vibration Suppression Pads.



NexStar 6SE
with Hyperstar
and CCD Camera



Whirlpool Galaxy by Frederic Caron

Prime Focus with DSLR Camera Setup on a Computerized Telescope

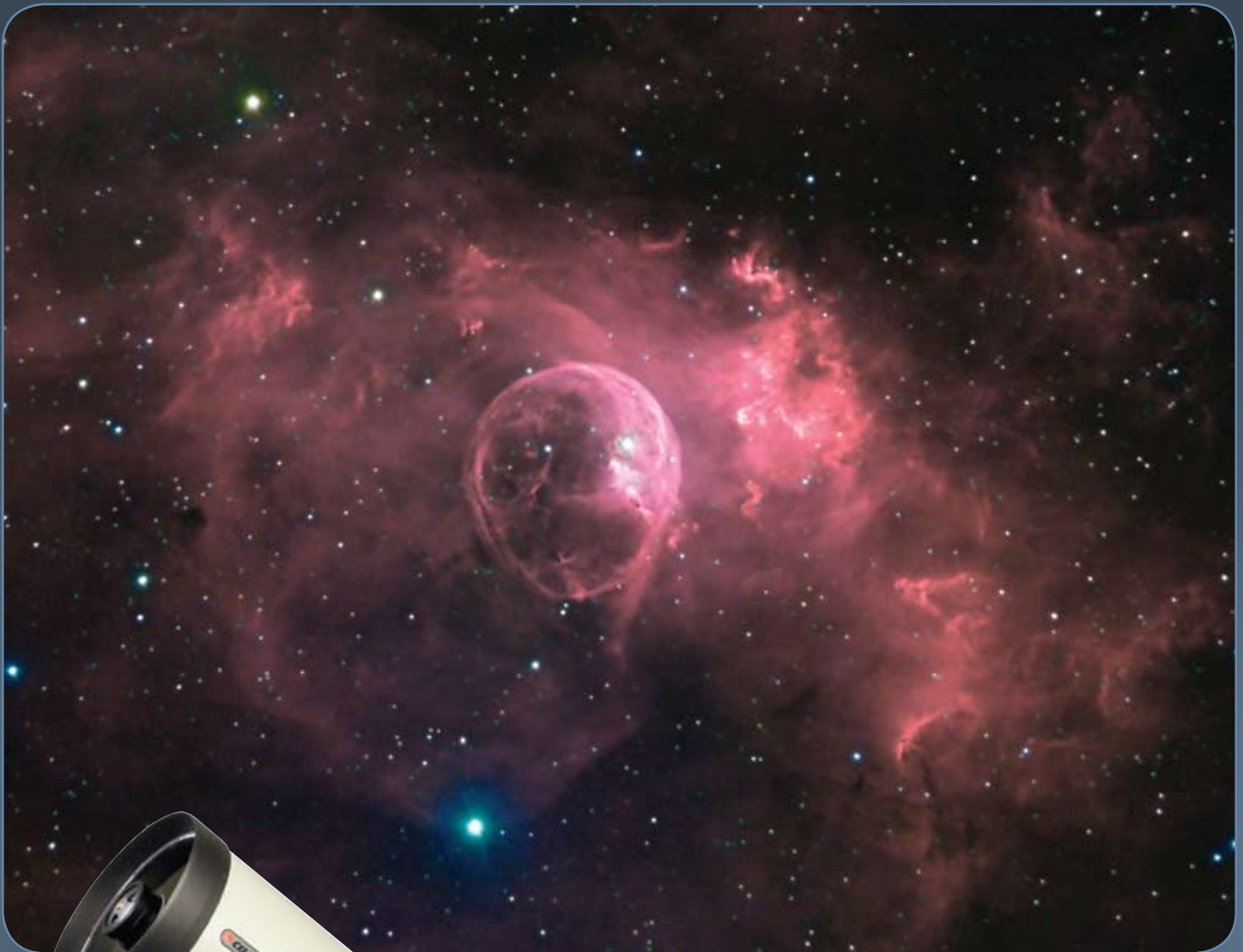
Here is where your telescope becomes the lens for your camera. Remove the eyepiece and diagonal from the rear cell of the telescope and attach the appropriate T-ring and T-ring adapter for your camera. Guiding and precision alignment become more important with this setup as exposure times become longer. A wedge accessory may be necessary for altazimuth mounts to track accurately through certain portions of the sky.

Essential Equipment: Computerized Telescope, Stable Mount and Tripod, DSLR Camera, T-ring and T-adapter.

Optional Equipment: Wedge Accessory, Vibration Suppression Pads, Remote Shutter Release.

CPC 925 GPS
with DSLR Camera
and Wedge Accessory





Bubble Nebula by Marc Jousset



CGE™ Pro 1400 HD
with EdgeHD™ Optics and
High End CCD Camera

High End Imaging Setups on a German Equatorial Mount

The German equatorial mount allows better tracking accuracy for much longer exposure times through a greater portion of the sky than the altazimuth mount. As exposure times get longer it usually becomes necessary to have the mount guide on a star to ensure tracking accuracy while imaging. Guiding can be accomplished either manually with an off-axis guider (94176) and crosshair eyepiece (94171), or automatically with the use of an additional guiding camera, and commonly, a guidescope mounted on top of the telescope. Users of this type of mount will often invest in a top of the line CCD camera which will be mounted to the prime focus of the telescope to capture images. Some may also piggyback a small refractor style telescope to image with a CCD or DSLR camera. The payload capacity of the German equatorial mount allows for a number of different setups to be used.

Essential Equipment: Computerized German Equatorial Telescope with precision tracking ability, High End CCD Camera, DSLR Camera, T-ring and T-adapter.

Optional Equipment: Vibration Suppression Pads, Reducer Lens (94175) for wide field of view, Radial Guider, Microguide Eyepiece.



Andromeda Galaxy by Chuck Cundiff



Heart Nebula by Martin Bernier



Saturn by Andrea Maniero

About Celestron

Celebrating fifty years of innovation in 2010, Celestron is recognized as the world's leading designer and manufacturer of high quality telescopes, binoculars, spotting scopes, microscopes, and related accessories.

Celestron is committed to the latest product designs and fresh, innovative engineering, backed by our long-standing ability to manage and control all aspects of the design-to-market process. Celestron's in-house staff of engineers, industrial designers, and optical experts are consistently challenging themselves to improve and refine our existing products, as well as develop bold new product designs that feature the latest innovations for our customers.

Celestron's passion for astronomy stands superior to all competitors as we strive to make our telescopes easier to use while maintaining the high standards we set for our quality optics. Continuous product improvement, award-winning innovations, and design excellence ensure that all products we sell to our customers are packed with years of enjoyment, reliability, and most important –VALUE .

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