

Share Images Your Telescope Sees With Others

by Jürgen Hilmer, December, 2020

Time looking at objects through the eyepiece at the end of a telescope can be enjoyed by others even if gathering of people is not possible. Attach a camera at the end of the scope and create a picture file and send it to others. Smart phones, point and shoot, old lens type cameras (DSLR) and so many other types.

Smart phones can send the image to others. For other cameras, a computer is needed to ready the image to be emailed. Crop, lighten or darken and sharpen may enhance the image some. No complex processing. Fun and making it easy is the idea.

To get the stuff (the gear) to spend the time under the night sky with, can be in the dollar to thousands of dollars range. All the gear used in this article is used and mostly very old. An old smart phone should have WiFi and accept apps to alter exposure times to 30 seconds if needed. Old iPhones have good optics. This NASA astrophotography reference <<https://spacemath.gsfc.nasa.gov/SMBooks/AstrophotographyV1.pdf>> is a must see.

No smart phone was used for this article. The Sony Cyber-Shot DSC-P200 has an optical glass lens, manual exposure up to 30 seconds, f stop choices and self-timer. The LED viewing screen is very nice. The Canon EOS T4i body has an ISO 12800 with an articulated LED screen. It moves where you most need it.

As for optics, a 400mm camera telephoto lens, 900mm telescope (lens in front type) and a 2000mm telescope (mirrors inside the tube) depending on which camera is attached, the focal length changes. Example, using a T4i, $400\text{mm} \times 1.6 = 640\text{mm}$, or the 2000mm becomes a 3200mm telescope. The physical size of the camera sensor comes into play. The NASA link has all kinds of great information.

If the Sun is the object, careful attention is necessary. Protect the eyes from permanent damage. **EXTREME DANGER**. Never look through a scope, finder scope or binoculars at the Sun. It can melt the inside of the eyes. Use all the proper safety measures. And do not leave the scope unattended.

The optics with the camera on it needs a really sturdy mount. For some pictures (Moon and the planets) an old tripod can work. For fainter objects a German Equatorial mount with a clock motor drive that keeps the scope steady on target and in the same field of view is best. Astrophotography gets a boost with the best mount possible.

See the photos of the gear used and some objects taken with that equipment.

EQUIPMENT



PHOTO #1 Sony DSC-P200 with Unitron 900mm f 15 refractor. Orion camera bracket, eye pieces as needed, green laser pointer at top with on-off switch cable and finder scope at bottom.



PHOTO #2 Canon EOS T4i with 400mm f 6.8 telephoto, see adjustable viewing screen, remote switch (or interval timer) and tripod head on dovetail bracket under the lens.



PHOTO #3 Canon EOS T4i with Celestron C8 2000mm f 10, top of tube has bracket to mount other equipment.



PHOTO #4 Meade LX200 German Equatorial mount. See dovetail groove at top left. The remote hand controller helps in tracking the objects in the night sky.

NIGHT SKY OBJECTS



PHOTO #5 Solar eclipse with sun spots. Sony with Unitron scope. A sun filter is used. EXTREME DANGER. Please be very careful.



PHOTO #6 Saturn with its rings. Sony with Unitron scope.



PHOTO #7 Tycho Crater on the moon. See debris rays around its center like spokes on a wheel. Sony with Unitron and a higher magnification eyepiece.



PHOTO #8 M 42 in Orion, Orion Nebula. EOS T4i with 400 mm telephoto lens.



PHOTO #9 M 57 in Lyra, Ring Nebula. EOS T4i with Celestron C8.



PHOTO #10 M 42 Orion Nebula. T4i with C8. See PHOTO #8. The C8 has an 8" mirror. The large mirror gathers more light and helps resolve the image. (Our atmospheric condition plays a large part in the image quality one can expect)

To find the objects, a Smart phone or laptop with astronomy apps can be of help showing where and what one sees in the night sky. Being involved in astronomy and sharing it with others is one way to open up the Wonder and also see how Awesome the Cosmos really is. Remember to focus.