Coronado’s SolarMax II 60 Telescope

This compact Hydrogen-alpha scope will enhance your observing as solar maximum approaches, by Mike Reynolds

With solar maximum — the peak of activity in the Sun’s 11-year cycle — rapidly approaching, observers are spending more time viewing our daytime star. Any telescope with a properly filtered optical system will allow you to see the Sun in the relatively broad spectral range of visible light. However, for an exquisite view of our star, a dedicated narrowband filter lets you explore details such as active solar regions and prominences.

The SolarMax II is a subsidiary of Meade Instruments. Hydrogen-alpha (Hα) light is used by astronomers for solar observing is the peak of activity in the Sun’s 11-year cycle — rapidly approaching, observers are spending more time viewing our daytime star. Any telescope with a properly filtered optical system will allow you to see the Sun in the relatively broad spectral range of visible light. However, for an exquisite view of our star, a dedicated narrowband filter lets you explore details such as active solar regions and prominences.

The primary narrowband filter amateur astronomers use for solar observing is the Hydrogen-alpha (Hα). It only transmits light with a wavelength of 656.28 nanometers — the Hα line. For this review, I tested an excellent solar telescope you should consider if you would like to observe in Hα. The SolarMax II 60 Telescope by Coronado, a subsidiary of Meade Instruments, is a superb choice if you want to upgrade to a dramatic view of the Sun.

The SolarMax II is a Hydrogen-alpha telescope. Unlike a visible-light solar filter, which can show sunspots, the SolarMax II's filter reveals prominences, flares, and the Sun's chromosphere.

What makes it tick?
Coronado’s SolarMax II 60 Telescope is part of a new line of Hα telescopes and filters introduced in August 2010. This refractor features 2.4 inches (60 millimeters) of aperture, a focal length of 400mm, and a focal ratio of f/6.7. Its filter is a two-piece, full-aperture etalon — an optical interferometer that bounces light between two partially reflective mirrors. The etalon sits in front of the 60mm objective. The central wavelength of the light it transmits is the Hα line, and the width of the transmitted light is 0.7 angstroms (Å, 1 angstrom = 0.1 nanometer).

With this scope, Coronado also introduced its RichView System, which works by letting you tune the etalon. Tuning allows you to slightly adjust the central wavelength of the transmitted light. Altering it slightly one way or the other provides for the right combination of viewing either prominences or features in the solar chromosphere. When the telescope is in use, a threaded metal cover protects the objective and the etalon.

The SolarMax II system includes a blocking (energy-rejection) filter, the 0.7Å etalon, a diagonal, a 25mm Coronado Cemax eyepiece specifically designed for use with the telescope, mounting rings, and a Sol Ranger solar finder scope.

Believe it or not, finding the Sun safely can pose a challenge. I usually first roughly align the telescope toward the Sun and move it until it casts the smallest shadow. At that point, I transition to a special finder scope like the Sol Ranger.

The SolarMax II also comes with a hard-sided carry case suitable for travel as well as storage. Taking the instrument out of the case, I immediately noted its beautiful brass tube and black finish. A dovetail mounting plate connected to two Masheller rings made it simple for me to attach the scope to my German equatorial mount.

Observing and more
After attaching the diagonal and the 25mm eyepiece, I was ready to observe the Sun. The drawtube moves back and forth in the optical tube, which allows for easy rough focusing. Then I used the telescope’s helical focuser for fine focusing, and my first reaction was “What a view!”

Surface details were easy to discern, and I viewed several prominences along the Sun’s edge. Those features appeared structured, especially with slight focus adjustments and by tuning the telescope's etalon via the SolarMax II’s RichView lever. In addition to Coronado’s Cemax eyepiece, I used my personal zoom eyepiece, a medium-priced unit that varies its focal length from 25mm to 7mm. I was pleased with the views, and the ability to zoom in and out on solar features without changing eyepieces sure saved time.

In addition to observing, I also enjoy astrophotography, so I wanted to try shooting through the SolarMax II. Because the diagonal contains the scope's blocking filter, it needed to stay. I had to connect my camera, a Canon EOS 20Da, to it.

The camera is somewhat bulky compared to the telescope, so it made for an awkward combination. With a bit of fumbling, I was able to take some decent images. Coronado does produce a 70mm “straight-through” blocking filter. Although pricey ($1,599), I highly recommend this option for those interested in solar imaging through this telescope.

The SolarMax II 60 Telescope is available in a number of optional configurations. You can get 5mm, 10mm, and 15mm blocking filters (for telescopes of increasing focal lengths) and even a double-stack etalon. That option reduces the normal bandwidth of the telescope from 0.7Å to 0.5Å, which increases the visibility of certain solar features.