2011 CORONADO SOLARMAX II 60 DOUBLESTACK-RICHVIEW TUNING

Review by Stephen W. Ramsden (sramsden@solarastronomy.org)

Sunday, January 30, 2011

Model:
SolarMax II 60 Double Stack Telescope
with RichView Tuning

Part Number:
SMT60DS-10

Aperture:
60mm

Focal Length:
400mm

F/Ratio:
F/6.6

Bandwidth:
<.5Å

Price:
$2,299.00(US)

SOLARMAX II 60MM RICHVIEW DOUBLESTACK PRODUCT DESCRIPTION FROM WEB SITE

Coronado by Meade SolarMax II 60mm Solar Telescope with RichView system. This double stacked unit excels at observation of solar surface details with a .5 angstrom bandpass. Features two fully tunable H-alpha etalon filters, one internal and one external.

Used around the world by serious solar enthusiasts and professional research facilities alike for observation of surface detail and prominences on the Sun in hydrogen-alpha (Ha) light. Powerful but very portable, this high resolution Solar Telescope offers dedicated visual observation of the Sun as well as high quality imaging.

The new Meade Coronado SolarMax II represents a breakthrough in solar observing with the new and revolutionary new RichView tuning assembly. This patented system allows direct tuning of the primary filter etalon. No other commercially available Ha telescope can provide the tuning range and accuracy of the SolarMax II. Now you can tune for the highest contrast views of active regions, flares, filaments, and other surface detail, or quickly and easily re-tune for prominences on the solar limb.

The stunning bright red views through a Coronado Ha telescope display astounding surface and limb detail especially when the Sun is in an active phase. The sun is now heading for Solar Maximum, when activity will be at its best. Don't miss out!!

This very high quality 60mm personal solar observatory features an 400mm focal length, f/6.6 focal ratio. Includes mounting rings, Cemax 25mm eyepiece, Sol Ranger solar finder and carry case. Weight is 8 pounds.

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REVIEW:

The Coronado SolarMax II 60DS is the middle sized dedicated solar scope in the new SolarMax II line from Coronado. The scope arrived packaged in a single ply cardboard box via UPS ground with no damage. Inside the box was a very thin and long case made of the same leatherette material that all of the Coronado cases use. The case is quite attractive but has little protection from rough handling. The case has 2 non-locking latches and a vinyl covered handle. I don't think you could make the case any smaller and still call it a case. This is the same case Coronado has used for years for its products.

The very first thing that struck me about this scope was the completely different finish on the OTA. The scope looks like it was spray painted sort of a dull yellow/gold rather than the beautiful shiny gold anodized finish on their previous scopes. It was very noticeable to me as I own several of their earlier scopes but I don't think it is a big deal to a new customer. I hated to see the drastic reduction in cosmetic appeal though. The blocking filter had the same finish as earlier but the tube and external etalon were very different.

Inside the case were the following items:

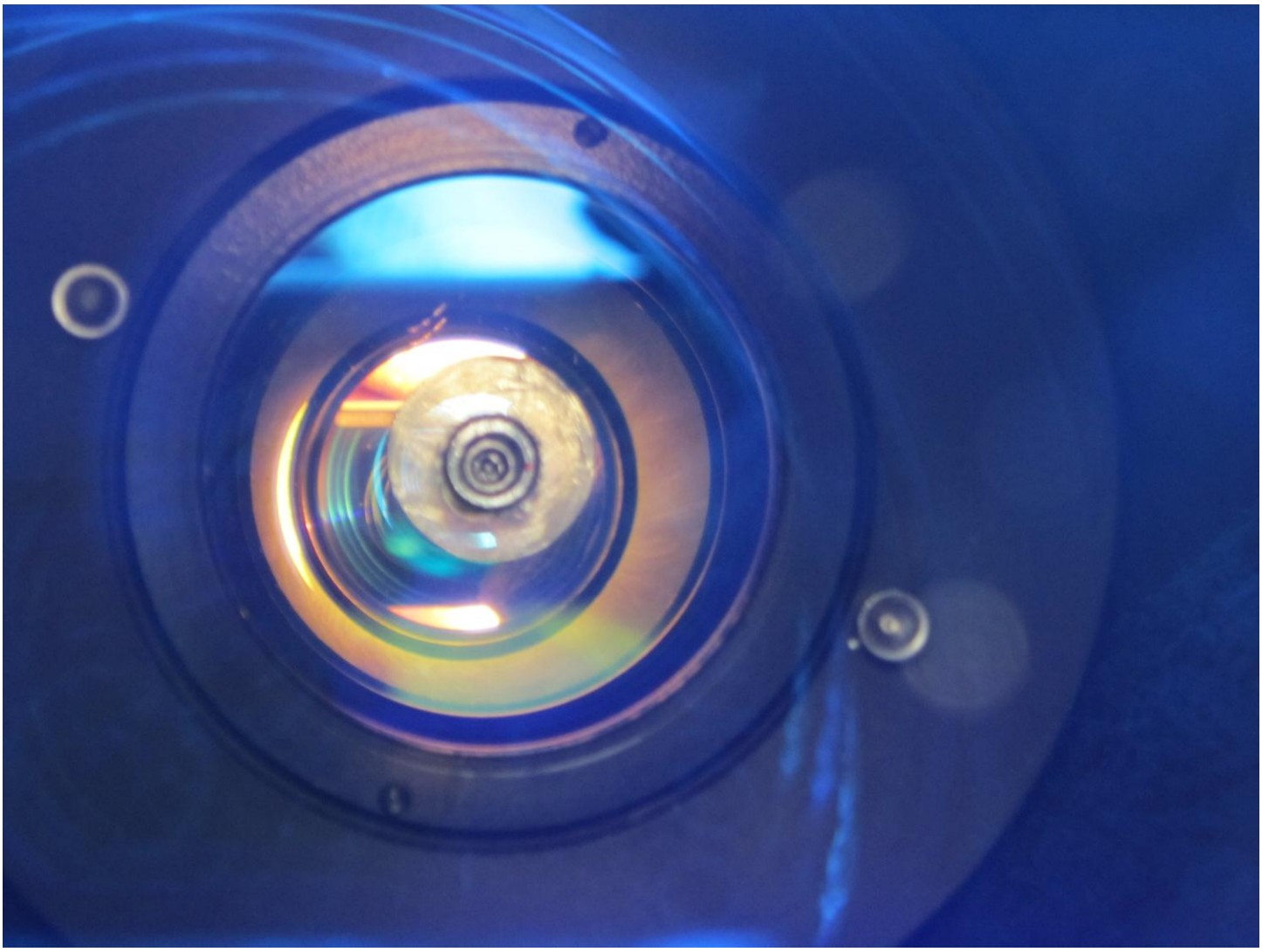
- Generic manual for H-Alpha viewing and directions for using all of the SolarMax II scopes.
  25mm CEMAX eyepiece

- SolarMax II 60 telescope with external etalon attached and a BF10 blocking filter

- Sol-Ranger attached to a clamshell that was secured to the telescope with two chrome plated screws.

The 60mm Richview Tuning external etalon was attached to a T-max tuner and screwed into the end of the F6.6 telescope. There was a second internal etalon inside the scope and then a 2 inch helical focuser which held a 1.25 inch drawtube containing a BF10 Blocking filter encased inside a 1.25 inch diagonal. The objective end had a plastic snap on cover and there was a white eyepiece plug in the diagonal. The scope looked like one of the earlier tubes and mechanics but without the additional expensive styling touches that made it so attractive to the novice user. I am sure this is so that the price could be drastically reduced to compete with the other scopes out there. All in all it is a nice looking scope with some attractive features. Not as awesome as it used to be but still a good looking piece of equipment.

I took off the user removable pieces to see what was inside. The internal etalon is tuned by a small metal bolt attached to a rotating collar which turns the internal etalon in a manner in which the surfaces are deformed to change the band pass. The etalon itself looks from the objective end like someone attached a washer and nut to the top of it. The obstruction is significant as around 20% of the etalon is blocked by this design but not anymore than the central obstruction in the previous design of this scope.



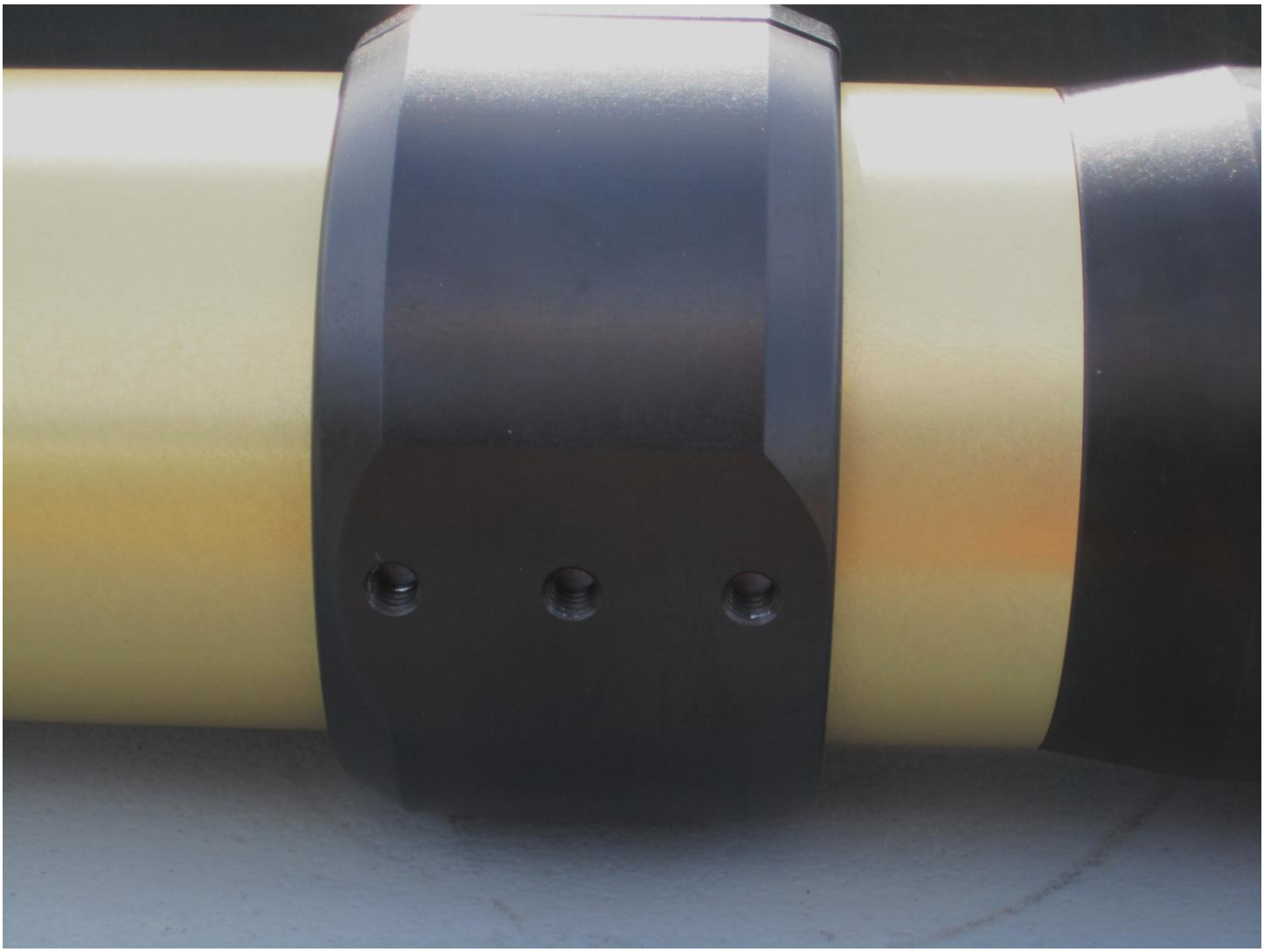
The rotating collar has several tapped holes to choose from for the tuning bolt apparently to compensate for different altitudes or temperatures. The movement of the tuning apparatus is smooth and it freely moves or stays in position well. It is extremely convenient to the imager or visual observer in its location as it is just a finger or two away from the focuser. The system always appears overdone to me when I see it but it does work pretty good and is very easy to operate without looking away from the eyepiece. The tuner has a very large range but lacks the precision and fine adjustment capabilities of pressure tuning systems.

The patented T-max tuner on all of the Coronado SolarMax II external etalons is a design that tilts the entire etalon assembly so that the wavelength sensitivity can be adjusted around H-Alpha to detect different solar phenomena. The brass tuning wheel was moderately firm and ended up on the underside of the scope when the etalon was fully attached. I'm not sure what is "RichView" about this system as it appears to be exactly the same as the previous non-RichView etalons and tuners used for years on their previous scopes. It produces a definite "on band" area or "sweet spot in the view but it does work well and definitely allows for a variety of different Doppler shifted features to be viewed.

Unfortunately this scope still uses the same aluminum drawtube/helical focuser assembly that is on all of the Coronado scopes above the PST. I am personally not a big fan of this system as it is not very strong and has no way to lock the focus in place. This particular focuser arrived in need of adjustment as it had a lot of sloppiness in its movement. Once adjusted it performed adequately and seemed to be able to hold a DMK camera or a large eyepiece easily.

The 1.25 inch drawtube is secured with 2 nylon screws. The blocking filter is secured in place by a 3rd large chrome plated screw. It was a beast trying to stuff all this into the little case without damaging it.

The BF10 blocking filter had a big glop of glue on the inside of it that gave the user the feeling that no one bothered to look this scope over too well when it shipped but it worked perfectly. I've have seen this glue before on different vendors scopes and it did not affect the image whatsoever, just looked a little out of place on a $2,400+ telescope.



I mounted the scope on a Celestron CGE mount attached to a Pinnacle portable pier alongside a Lunt doublestacked 60mm Pressure tuned scope and later with a Meade 80mm APO and Lunt CaK diagonal. The Coronado scope balanced easily and after attaching a 2 inch dovetail to one of its 3 ¼-20 holes in the clamshell it mounted easily and stayed in place. I very much like the clamshell that Coronado uses on its scopes as it is sturdy and easily removed and adjusted.

The SolRanger finding scope works very well and has always been a feature which I also like very much on their products. It never needs aligning and it is very cool looking on the clamshell. It is also very safe and cannot damage the eyes. Bravo on this well designed and included accessory.

I attached Baader Hyperion 8-24mm zoom eyepieces to both scopes and started observing. My friends Frank Garner and Theo Ramakers where with me to do the comparisons and comments.

[Click here for a time lapse of the scope setup and review (on youtube)]

VISUAL OBSERVING

The Coronado scope was certainly impressive in the eyepiece. I could easily see a large filament that wrapped around the edge of the Sun into a prominence. Surface details were clearly visible and the image was very well illuminated. There was a definite sweet spot and an on band area in the image. If you moved the scope around to put the on band area on different parts of the Sun the details were significantly enhanced. When using the 8mm zoom setting the sweet spot went away and the image was evenly illuminated although just on the verge of being too dark for me to see.

Figure 1 Frank Garner (left) says he likes the Lunt better ….ehh, I'll take 'em both! Says Theo Ramakers

In comparison to the Lunt version of the same size scope and conditions the Coronado was dimmer and less evenly bright. The details in the on band area were as good as or better than in the Lunt but the off band areas were significantly less detailed. The Lunt uses a pressure tuning system on its etalons which does not warp or move it in any way thus the entire FOV is (hopefully) always on band. The Coronado and its 2 separate warping or tilting type etalons just cannot avoid the problems inherent in their design enough to provide an evenly illuminated field of view large enough for a full disk. Still, anyone buying this Coronado scope would be getting a great scope with an incredible view at a value price. There is no way you can look in either of these scopes and not go "Wow!" Frank and Theo, both experienced solar observers and owners of H-Alpha scopes, picked the Lunt over the Coronado but they both appeared to be evenly drooling over both scopes so it seemed to be a pretty even match with the Lunt edging out the Coronado (but not by much) in every category, especially the focuser and cosmetic appearance.

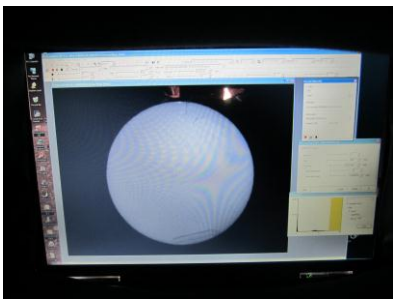
The boys left and I got on with the imaging…

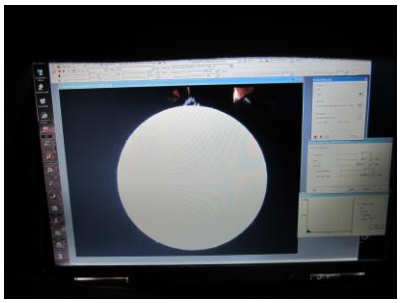
IMAGING

I then attached identical 8 bit Imaging Source DMK41 cameras to each scope and later a 12 bit PGR Scorpion camera to each scope to take images. The first day had a lot of high clouds and really put the scopes to the test but the second day was clear blue skies and exceptional conditions.

Here are the images from the Coronado. I believe that they show that the focus and the sweet spots are minor weak points in the Coronado. The scope is, however, easily capable of providing world class solar images in the hands of even a beginning solar astronomer with the right equipment.

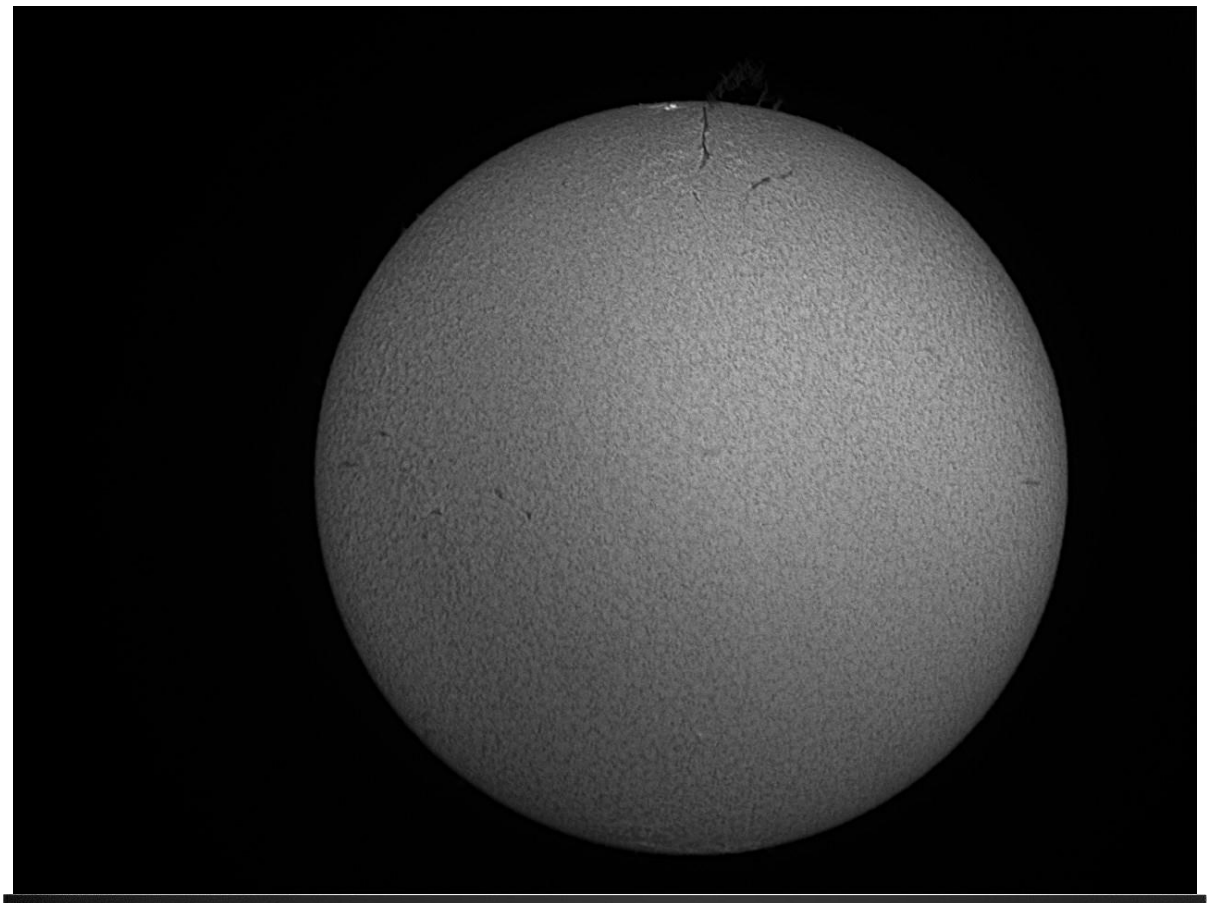
One thing about the Coronado scope that was great for imagers is that you could focus and image a full disk solar shot without any accessories in both cameras.

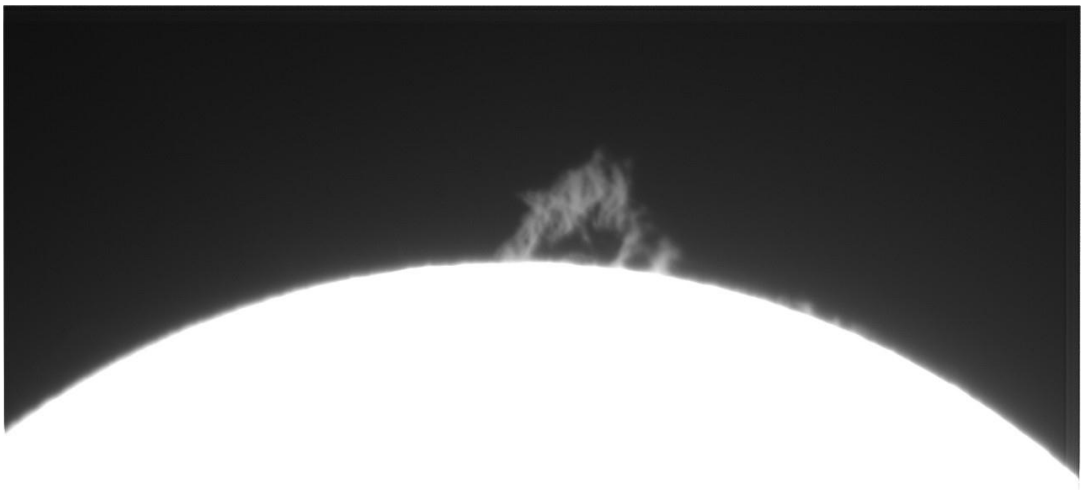




All images in raw black and white ran through Registax with light wavelets, no color or post processing.

Coronado SolarMax II 60DS/DMK41





[Click here for an actual raw data .avi file from the DMK41 camera (on you tube)]

THE BOTTOM LINE

The Coronado SolarMax II Richview 60mm DS scope is a high quality solar telescope and is competitively priced in comparison to other models. It has been cheapened up a bit from previous incarnations to compete with Lunt Solar Systems but it is certainly still an incredible piece of equipment capable of providing some of the best views possible of our nearest star. Don't forget to share it with others and help spread the hobby!

Weaknesses:

- poor focuser design
- unattractive, poorly applied finish
- tiny flimsy case
- almost obsolete etalon tuning system
- poor quality control
- noticeable sweet spot in all viewing conditions
- flimsy packaging during shipping

Strengths:

- unassisted full disk solar imaging with standard DMK41 or PGR cameras
- extremely good solar finder scope
- superior clamshell mounting system
- provides a breathtaking view of solar features
- relatively inexpensive
- clearly visible overall bright image
- It is actually in stock at several stores including my local retailer The Camera Bug in Atlanta

Thank you for reading,

Stephen W. Ramsden

www.solarastronomy.org

Charlie Bates Solar Astronomy Project