

Flip Flat - imager's best friend

Product Review by Charlie Warren

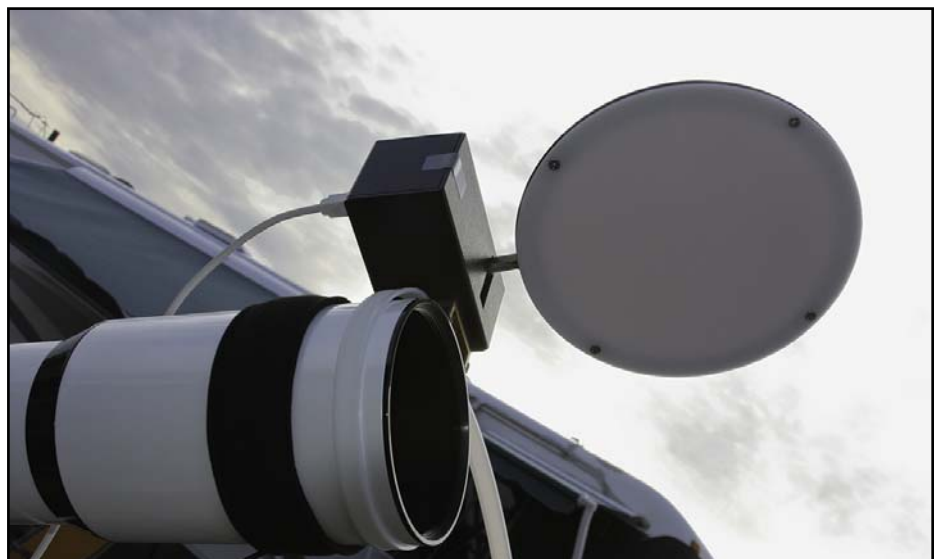


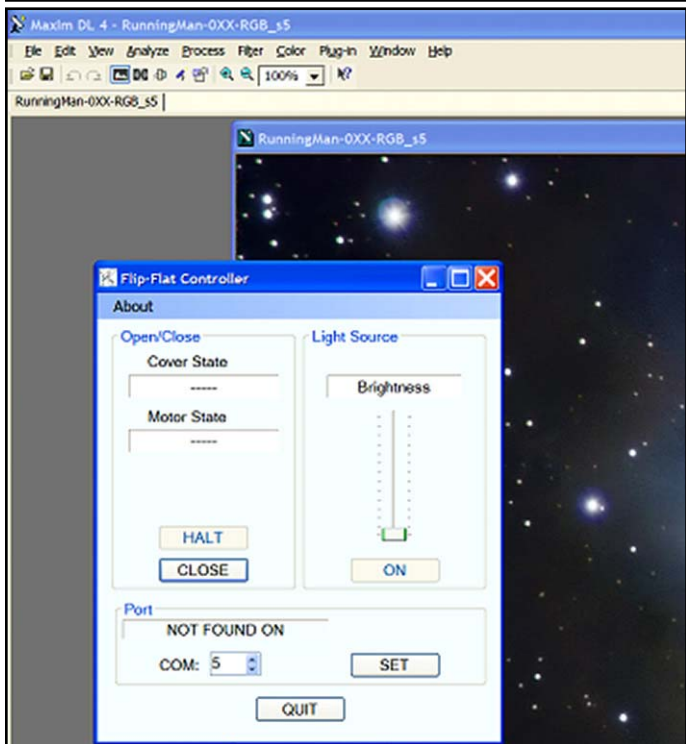
I heard about the potential release of this product and promptly emailed Pete Kalajian, one of the product developers to make some inquiries. As an imager, I have always struggled with flats. I have used sky or Tee shirt flats, both of which require some patience in order to develop well calibrated flat fields. The challenge is that with changing light conditions, it requires constantly altering the flat image exposure in order to hit the target 50% of the CCD's full well capacity. And as any of you imagers certainly know, this is different for each filter. I image with clear, red, green, blue, Ha, O-III and S-II filters, so this can really be a laborious practice. The other challenge is that the flat is only good for the current camera orientation, to be effective in removing any optical aberrations such as dust motes. I have always tried to frame my images creatively, so this can include reorienting the camera for each target. Each orientation means a whole new sequence of flats. This can be severely limiting when you shoot your flats at dusk or dawn. At most, I could use two camera orientations and plan my imaging carefully. It was for this reason that I wanted to built a flat box, or panel. Of course, like so many other astronomy (and non-astronomy) related projects, this was still on my To-Do list. Pete asked if I would like to preview the product and do a review for my readers, so I immediately took him

up on the offer. I told Pete that I would only have one good imaging opportunity to use the product before this issue was sent to the printer, so the product I received was a beta version. Beta testing can reveal a host of issues, but truly the only hitch I came up with was an issue with USB driver conflicts on my Windows XP (Service pack 2) laptop when running other USB applications simultaneously. The result was erratic controls for the illuminating panel. Shortly after my sending this feedback to Pete, he emailed me that they had improved the robustness of the firmware and software eliminating the issues I experienced. They were also working with John Smith at CCD Autopilot to

integrate with that program.

The instructions for mounting were straight forward enough. As the photos reveal, I simply placed the Flip Flat on the front of my scope (Stellarvue 102) with the panel in the closed position. With the panel snugly against the front of the dew shield, I tightened the nylon strap around the OTA. You can position the control in any orientation. The weight is negligible (1 lb 10.6 ozs). If conditions were windy, I would probably mount it with the controller on the bottom, or remove it during an imaging run after flats have been produced. It is a very simple task to remove the device taking no more than 30 seconds.





Top: Flip Flat mounted to 102 mm scope in the closed position as you can see, this unit can accommodate a larger (to 6") scope. Bottom: Screen print of simple software control Right: I radically stretched this flat to reveal all the imperfections that can adversely affect an uncalibrated image. Looking at the filter, you would never guess it was this nasty. Beside the dust notes, you can see the vignetting around the edge.

The product uses a single USB cable to connect to the laptop. Power is supplied via the USB port. The software has a very small footprint and installs in seconds. The software control is the essence of simplicity, which to me is a very good thing. I have enough complicated software to sort out. Choose a port on your computer and click "Connect". Once connected, a single button alternately allows you to "Open" or "Close" depending on the current status. This action did get some humorous attention on the imaging field as the flap moved. The other control is for the field illuminator, which is the beauty of this device - well apart from providing an extremely evenly illuminated field. I could not discern any variation in the illumination values other than, of course the optical or physical characteristics that a flat is intended to produce. I will spare the technical jargon, but suffice it to say, the product produced a perfect flat field. (For those interested, I essentially created a Master flat and then "flatted the flat" producing a very evenly illuminated field). As mentioned above, with sky flats you are constantly messing with exposure to tweak the flat. With this device, you can set your exposure and move the slider to provide the optimum ADU target exposure. Once you have these two parameters set for each filter, you never have to guess again. I made a simple table for these values after about 5 minutes of playing with the Flip Flat and my CCD hooked up to MaximIm. If you change your camera's orientation with a new target, just click the "close" button, dial in the appropriate filter parameters and run your flats. Of course with an automated program like CCD Autopilot, you can simply script this action.

There was a bonus with this device that I did not anticipate. If you use a CCD camera like mine (Starlight Xpress), or a DSLR, which does not have an internal shutter, it can facilitate taking darks as well. Because the device closes on the front aperture and seals fairly tight, you can use it to shoot darks. I would not try this in bright daylight, but at night, I got very nice darks during a period when some clouds rolled through. No need to move around front and cap the scope, just click on the "Close" button to drop the Flip Flat and run your sequence for dark frames with the illuminator off.

If you are looking for an out of the box solution for easy and consistent flat production, I can recommend this product. To find out more, check out their web site:

<http://www.alnitakastro.com/>
List price for the Flip-Flat is \$450 plus shipping

Charlie

