Starlight Xpress MX5-C Colour CCD

Introduction

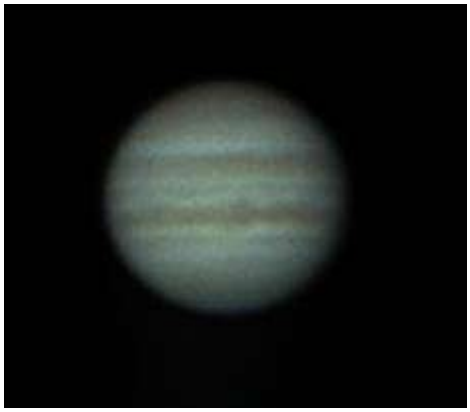
The Starlight Xpress MX5-C is the third CCD camera I have owned, the first was the Electrim EDC-1000, the second being a Starlight SX one shot colour (since converted to monochrome). The MX5 series of cameras are quite small and easy to use, they are supplied with 16 bit Windows software for use on Windows 3.x or 95/98. Unlike the earlier SX cameras, the MX doesn't require an interface, just supply 12 volts d.c. from either a 12 volt battery or the supplied mains to 12 volt power unit. The well written manual gives warnings about running a laptop from the same battery as the camera, in my case this isn't a problem as I have both mains available in the observatory and an isolated 12 volt to 15 volt converter for my Toshiba Libretto laptop.

The image on the right shows my eyepiece projection arrangement, the off-axis guider is only used as a means of connecting the eyepiece projection adapter to the telescope (the projection adapter is bare aluminium). The eyepiece projection adapter is fitted with a Canon 'FD' lens series T2 mount, the MX5-C is fitted with a home made Canon FD series camera body plate to M42 thread adapter. This arrangement allows me to swap between a Canon A1 or FTb camera and the MX5-C, it also allows me to use the MX5-C on a variety of Canon lenses. Shown below is the MX5-C alongside a homemade Canon eyepiece adapter.

Both these items are made from 'two times converters' that can often be found in second hand camera shops at little cost. The exact spacing required to convert a bayonet mount lens to the M42 threads of the MX5 body is best found by experiment, mine is approximately 20mm. One big annoyance is that Starlight didn't make the MX5 series parfocal with the earlier SX series, mine needs an extra 6mm of spacing in order to adapt the MX5 for use with the SX apapter. The Starlight distributor in North America (Adirondack Video Astronomy) offers MX5 to camera lens adapters, I consider them far too expensive at $80 for the pair to mate a Canon lens to the MX5.

The manual takes you through a step by step approach to using the camera for the first time. I agree with their suggestion that you should try taking images in daylight with an ordinary camera lens, in order to get used to using the camera and converting the image from 'monochrome' to colour. In common with the earlier SX colour camera, the initial image shows the luminance part of the image. The colour part of the image is 'extracted' in software. Colour images look more natural that those from the earlier camera, although the software still saves the images in a squashed 'letter box' format due to the pixels being

rectangular. It's a simple matter to re-size the images in PaintShop Pro to 510 x 373 pixels. Click on here to view a 26KB JPG image of a vase of flowers, this image is shown at 510 x 373 pixels to give an idea of the colour and resolution of the camera (or lack of it).



The image of Jupiter hasn't had any colour 'tweaking' and is a 200mS exposure using the eyepiece projection adapter with a 20mm Erfle eyepiece. Both images taken with a Meade 10" f6.3 SCT . The image of Saturn (shown below) is to the same scale, but is a longer exposure of 1 second due to Saturn being a dimmer object. Compare these images with those from a ToUcam web cam (at a fraction of the cost) on the gallery page.

One good feature of the supplied software is the quick focus mode, as the normal download time is 20 seconds (an optional port accelerator is available to speed this up). 20 seconds is too long to wait for focussing. Using a par focal eyepiece gets the focus nearly right, but for best results a final tweak is needed. Another good point with the software is the auto save in FITS format (flexible image transfer), this means you can continuously take images and store them to disk as 'imgXXX.fts' where XXX is a number incrementing from 1 to 65,000. These images include time, date and exposure information. It's easy to take a hundred or more images to take advantage of good moments of seeing when taking planetary images. Other features of the software are the ability to auto align a sequence of images, this may overcome tracking problems due to poor polar alignment or periodic errors. I've only used this once on the M31 shot, as this was taken with a 50mm camera lens mounted on my Losmandy G-11 mount, it came as no surprise to find everything aligned perfectly and the 5 images look identical to a single 5 minute exposure.

Only having owned the camera for a couple of weeks, I've not had a chance to take any deep sky shots with it. Just for a test, I took a 5 x 1 minute shot of M31 and M110 using a 50mm Canon camera lens at f1.8, the camera and lens were mounted 'piggy back' on the main telescope. This image is quite good considering it's only taken with a fairly coarse resolution CCD and a normal camera lens (m31.jpg - 44KB). This image shows stars fainter than magnitude 16! Stars can look bloated due to the infra red sensitivity of most CCD cameras, the Starlight manual suggests using an infra red blocking filter. I already have one, but it's intended to thread onto a 1.25" eyepiece, so isn't easy to fit between a camera lens and the Starlight camera. It would have been a good idea for Starlight to include a filter as an accessory for the camera.

Overall, the MX5-C was about as good as any similar CCD camera for a planetary work... until the low cost Philips ToUcam came along and blew it out of the water!. With the continued drop in price of conventional digital SLR cameras and their incredible performance, even for deep sky, the cost of an MX5C is quite high at around 620 GB pounds. The larger chip SBIG ST7 and ST8 cameras are obviously a better bet for deep sky CCD image taking, it's a pity about their very high cost. Further details on the Starlight cameras can be found at their web site