

A few years ago the best planetary imagers used low-cost webcams to achieve amazing results but it soon became apparent that these devices imposed a significant limit on the potential image quality. The colour filter matrix in front of the webcam's CCD reduced its sensitivity leading to lower frame rates, more noise and more of a battle with seeing. The other problem was that the image from the camera's chip was compressed in order to transfer it to the PC and this led to an unrecoverable loss in quality. The most successful planetary imagers are now using specialised cameras costing \$1000 (£500) or more such as the 640×480 Lumenera Skynyx 2.0 which overcomes these problems.

Recently, a company called *The Imaging Source* have introduced a range of cameras intended for high resolution astronomical imaging that come close to the performance of high-end cameras such as the Skynyx but for a fraction of the cost. They offer a range of monochrome and colour cameras capable of transferring full frame, uncompressed images at up to 60fps over a 400 Mbit/s IEEE 1394 (Firewire) interface. Their 640×480 mono camera, the DMK 21AF04, ships for €330 (£230) including software.

The camera I reviewed was the DFK 31AF03.AS. This is a 1024×768 colour camera based on a Sony ICX204AK CCD with 4.65µm square pixels. The camera is well made with a solid metal case and it is supplied with a 1¼" noisepiece ready to attach to the telescope. A monochrome camera, which is based on the equivalent Sony chip without the Bayer colour matrix is also available and would be more appropriate for most planetary imagers. Other cameras in the series range from 640×480 up to 1280×960 pixels.

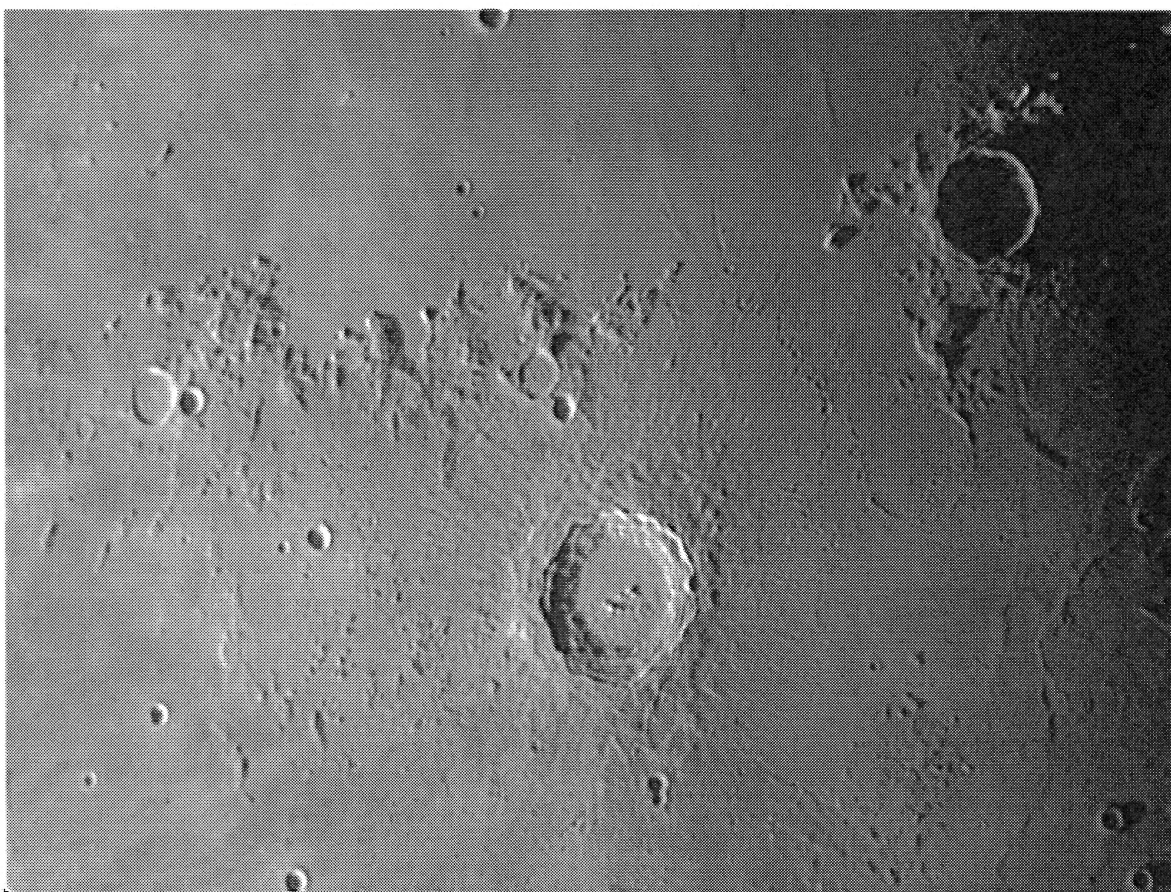
The software supplied is pretty good and it installed without any problems on the fairly low-end (2002 vintage) Pentium 4 PC in my observatory. This runs Windows XP, SP2 and the camera was immediately recognised and configured. If your PC doesn't have a Firewire interface suitable cards can be purchased for under £20. I operated the camera via a 4m cable connected to the observatory PC and then controlled the setup from indoors via a remote desktop.

Video is available from the camera in an uncompressed 8-bit format (768KB per frame in the case of the 1024×768 camera) and for this camera the Firewire interface has no problems transferring it at 30 fps (corresponding to around half the maximum capacity of the Firewire interface). Faster rates are possible by selecting a smaller region of interest in the image and only transferring that. Unfortunately, unlike the Skynyx which can operate in 12-bit mode the DMK cameras only offer 8-bit. This is one of those areas where the DMK doesn't quite come up to the standard of the Lumenera camera.

The camera can also be used in long exposure mode and the dark noise is impressively low and consistent from frame to frame. I would expect however that it's main application will be as a high frame-rate planetary imaging camera. I am by

no means a regular planetary imager but I have used a humble Toucam to get some good results and this camera beats that by a long way. The very best planetary imagers will always find the money to buy the best camera available but if, like me, you are only an occasional user of this kind of camera the DMK series is certainly worth a close look.

Copernicus
2007 Nov 3,
07h00mUT
DFK31AF03.AS
camera C11 prime
focus
Nick James



Copernicus and surroundings. 2007 November 3. 0700UTC. DFK31AF03.AS camera. C11 prime focus. Nick James.