

TRIED & tested

We review well-established equipment that's stood the test of time



See an interactive 360° model of this camera at www.skyatnightmagazine.com/MallSigHD

VITAL STATS

- **Price** \$849.99
- **Sensor** 1/3-inch Kodak Exmor scientific grade IMX035LQR
- **Dimensions** 100x50x50mm
- **Ports** Analog & HD-SDI digital outputs, RS-485 I/F connection, power input socket
- **Weight** 300g
- **Software** Third-party control software available
- **Supplier** www.mallincamusa.com
- **Tel** +1 985 863 2165
- **www** www.mallincam.net

Mallincam Signature HD colour video camera

Bringing the cosmos to your living room live in high definition

WORDS: MARK PAYNE-GILL

Recent advances in camera technology have created exciting times in the field of video astronomy. It is now a very popular observing medium for many amateur astronomers. At the forefront of this observing revolution, Mallincam produced the first standalone, high-definition astronomical video camera, designed specifically for live solar, lunar and planetary observing and without the need for a computer. The Signature HD on review here was ahead of its time in that it used the same digital technology standards as used by the broadcast industry. But has it stood the test of time in this growing market?

Our tests took place over a few nights of excellent seeing around a first quarter Moon. We attached the camera to a 14-inch telescope and used the supplied BNC video cable to connect it to our monitor's HD input. The on-screen menu is accessed by holding down the central button on the rear of the camera body; navigating it is straightforward, using the other four menu buttons to move around and change settings. The most important settings are shutter, gain and gamma, which control exposure and contrast.

Aiming at the Moon, the monitor initially showed a washed out, overexposed image. This was soon corrected by shortening the exposure time from 1/25th of a second to 1/180th, and checking that the gain setting, which adjusts the sensor's sensitivity, was set at zero. As we fine-tuned the settings, the Moon's image snapped into perfect focus on our monitor.

Digital eye

Features along the terminator were defined with breathtaking clarity. Jagged shadows on the floor of crater Plato revealed the shape of its eastern wall, while the crater walls of Copernicus showed a wealth of detail, along with a fine daisy chain of small craters that could be seen weaving along the Moon's surface to the west of this iconic feature. Contrast was a little high as we viewed farther away from the terminator, with highlights too bright. This was brought under control by changing the gamma setting from LCD to CRT. We noticed a slightly pinkish tint, but adjusting the colour setting allowed us to correct this giving a more pleasing neutral grey. Apart from some noise visible in the shadow areas the live uncompressed HD ▶

SKY SAYS...

The Mallincam Signature is a fantastic outreach tool for groups of people to experience the night sky

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OWNER'S OBSERVATIONS

Name Mark Payne-Gill
Location Chew Magna, Bristol
Equipment Mallincam Signature HD colour video camera
Owner since April 2011

As a professional cameraman I became intrigued to see if it was possible to film the Moon and planets with affordable professional broadcast equipment. I discovered the Mallincam Signature was able to do exactly this. I bought my first one four years ago and now own three, which I regularly use in my role as the main specialist cameraman for *Stargazing LIVE*. This camera still stands out with its professional

grade sensor and outputs. The standard definition output produces great images in its own right, but the HD signal produces an image quality that is in a different league and well worth the extra outlay for viewing on a professional HD monitor. I've found it essential to add a flip mirror system for quick object finding and centering and often use it in conjunction with a 0.5x focal reducer to give wider views not possible with the small sensor.

The fine detail visible during good seeing can be mind blowing and I love using the camera as an outreach tool, sharing live footage of the Moon, Sun and planets to inspire large audiences.

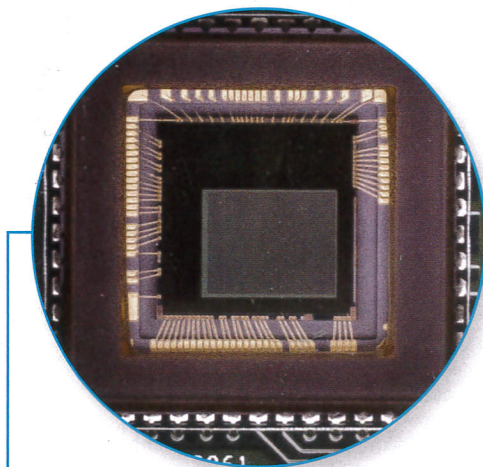
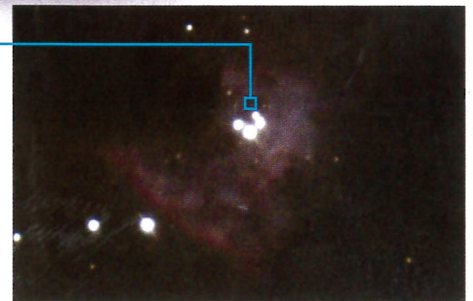
BODY OF CAMERA



The Signature is compact, lightweight and has excellent build quality. As is typical with a security style camera it has a C mount lens port and is supplied with a threaded 1.25-inch nosepiece that accepts filters.

FRAME RATE

With shutter speeds from 1/10,000th of a second to eight seconds, the Signature has dynamic exposure range and is even capable of recording the brightest deep sky objects. The heart of M42 revealed detailed nebulosity around the Trapezium cluster, although in slow shutter mode the commands take as long as the exposure time to execute.



SENSOR

The Kodak Exmor IMX035LQR is a scientific grade 1/3 inch CMOS sensor at 1.49 megapixels. Its small size is the equivalent of a 7mm eyepiece, giving an ideal image scale for close-up views. It has a multitude of formats from 1080p25 to 720p50, selectable between PAL and NTSC, and outputs a professional 3G/HD-SDI signal.

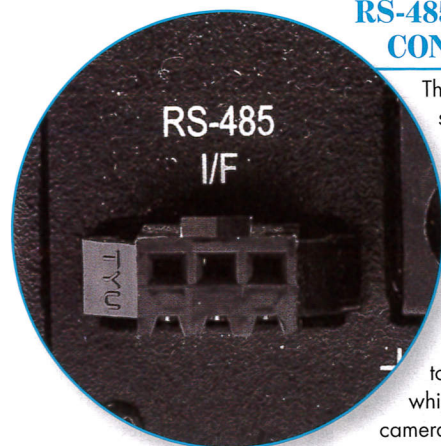


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RS-485 I/F CONNECTION

The Signature is designed as a standalone live video camera and as such no software is supplied. However, third party software is available for computer control via the rear RS-485 I/F connection. This has the benefit of granting access to the menu without having to reach for the rear buttons, which can cause distracting camera shake.



PORTS/CABLES

A convenient dual-shielded cable provides both separate power to a 12V input and data connection to the HD-SDI port. As well as an HD output, there is a second port that produces a standard definition signal. This is useful for connecting to a monitor for framing and focusing while simultaneously recording the HD output.

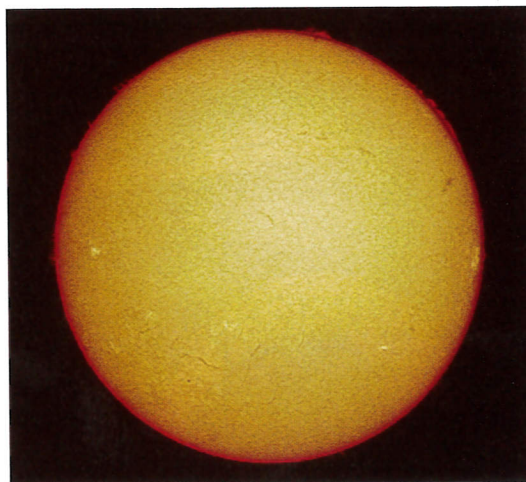
► image was almost equal to the eyepiece view seen with our own eyes!

We switched to a more modest 4-inch telescope to see how the Signature performed with Jupiter. We needed to increase the exposure to 1/25th of a second and added some contrast by changing the gamma back to LCD. This darkened the image slightly, so we added some 4db of gain to correct it, although this added some noise. The seeing had deteriorated but we could still make out some fine detail in the cloud belts and both Europa and its shadow were clearly visible crossing in front of the planet itself. We were impressed – it gave a very similar view to that through the eyepiece.



Staring at the Sun

We couldn't resist trying out our hydrogen-alpha telescope to see how the Signature could handle the Sun's subtle surface features. Adjusting the gamma setting to one, the contrast setting to its highest and fine tuning our solar scope's etalon, we saw fantastic detail with prominences around the edge of the Sun's disc, as well as filaments, fine granular surface detail and bright active regions around sunspots. It was an incredible wealth of texture and detail, live and in high definition. It looked better than our eyepiece views.



▲ The MallinCam Signature reveals great detail in the crater walls of Copernicus in this single frame; only minimal contrast tweaks have been made

◀ A single frame of the Sun in hydrogen-alpha with slight colour and contrast enhancement

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Beginners without technical video knowledge might struggle to grasp the principles not covered in the instruction manual, but even so the Signature is a great tool that could replace the eyepiece given its rewarding live views. Useful for those who find observing through an eyepiece uncomfortable, it also makes for a fantastic outreach tool for schools and star parties as groups of people can experience the night sky whatever is on show at the same time. Considering it's been around for nearly six years, the Signature is a great camera that can easily hold its own against the competition. **S**

VERDICT

BUILD AND DESIGN	★★★★★
CONNECTIVITY	★★★★★
EASE OF USE	★★★★★
FEATURES	★★★★★
IMAGING QUALITY	★★★★★
OVERALL	★★★★★

SKY SAYS...

Now add these:

1. 0.5x focal reducer
2. HD-SDI 6-inch monitor
3. Flip mirror