Star turn

Fujifilm's new FinePix S2 Pro joins the Nikon D100 and Canon D60 to complete a trio of digital SLRs offering six-megapixel resolution for around £2,000. Steve Hynes tried it out and found it to be an astonishingly good performer

Nikon users are now spoiled for choice when it comes to digital SLRs. As well as the now well-established D1X and D1H, there's the excellent new six-megapixel D100, reviewed in last month's issue. And now there's the Nikon-based Fujifilm FinePix S2 Pro, a successor to the two-year-old S1 Pro.

Like its predecessor, the S2 Pro uses Fujifilm's 'Super CCD' technology, now in its third generation, the new chip having 6.1 million pixels compared to the S1's 3.4 million.

The Super CCD configuration is unique to Fuji. It differs from conventional CCDs in having the sensor elements arranged along diagonal rows, rather than on the conventional grid pattern. This configuration places more sensing elements along the diagonals, thereby capturing more diagonal information. Fuji claims this results in an image that is perceptually sharper for a given number of captured pixels. Does it really make a difference? Well, we'll come to that later.

Before the image data from the Super CCD can be edited by programs such as Photoshop, it has to be rearranged into the conventional bitmap grid pattern of horizontal and vertical rows. To achieve this without losing any of that extra diagonal data requires more pixels to be created through in-camera interpolation.

The use of in-camera interpolation brought some criticism to Fuji when the S1 was launched, with many seeing it as nothing more than a marketing gimmick – and Fuji didn't help its own cause with its advertising at the time. In fact, the interpolation was a necessary part of extracting maximum quality from the captured data, and it's the same with the S2. The chip has 3,024 x 2,016 elements, their output being interpolated by a linear factor of 1.4x to 4,256 x 2,848 pixels, yielding a 12.1 million pixel image.

This results in some serious file sizes – 34.7MB per image if the full-resolution TIFF mode is used, and 12MB for RAW files. Full-resolution JPEGs with the minimum compression range from about 4.1 to 4.7MB, depending on the subject detail. The YC TIFF, a format that reduced TIFF sizes by one third on the S1 Pro, has been dropped from the S2.

The large file sizes make the use of TIFF mode impractical for many situations. You get a very respectable eight frames in a burst (at about two frames a second) before the buffer is full, then the camera takes around 25 seconds to process each one. Once stored, you can scroll through them quickly, but if you want to actually *do* anything with a particular image – such as zoom in or delete it – you have to wait about 55 seconds before the camera is ready to respond to your request. And that's for each image. It's pretty tedious. The storage demands are equally daunting – a 1GB card will be filled with just 28 images.

You could live with this leisurely pace for architecture or still life, but it won't be much use for anything involving action or people. So, many users looking for optimum quality will find the RAW mode very useful. This mode was absent from the S1, and its introduction is a welcome feature, particularly in the light of the large file sizes. Using RAW reduces each frame to 12MB, bringing the write-to-card time down to about eight seconds per image, and there is almost no delay in zooming in or deleting. The number of images in a burst comes down to seven. →

JPEG mode reduces write time to about three seconds per frame, and again, images can be edited almost instantly. Zooming in, however, is slightly slower than in RAW mode. Again, you get eight frames in a burst.

COLOUR SPACES

Used in JPEG mode, the files are saved in sRGB colour space, which has a relatively small gamut. RAW mode has the advantage of offering either sRGB or the wider-gamut Adobe 98, as well as saving the file in 16-bit. TIFF images are saved with no profile assigned, and the Adobe 98 profile can be assigned on opening in Photoshop.

There is a noticeable difference, with TIFF and RAW images that have the Adobe 98 profile applied having a bit more punch. This is one area where the Nikon D100 does it better by offering sRGB or Adobe 98 in all modes.

For all this, it's the JPEG mode that will see the most use, particularly by the social photographers who are likely to make up a large proportion of owners. The quality of the best JPEG is excellent, and apart from the slight colour variation, you have to look very hard to see the difference between this and either of the uncompressed modes. A 512MB card will hold about 220 of these images, compared to 38 RAW and 14 TIFFs.

The new chip has the same 23x15.5mm dimensions as the S1 chip, resulting in the same crop factor of 1.5. The camera was supplied with a 14mm Sigma lens which gave reasonable wide-angle coverage, equivalent to a 21mm lens on 35mm. However, this remains one of the areas that manufacturers need to tackle with a full-frame chip. →

This image was captured in JPEG mode at full resolution and interpolated slightly (a 24 per cent linear increase) to produce this A3 spread at 300dpi.

(Here's a tip, totally unofficial: by the time you read this, Canon will be about to announce a full-frame camera, probably based on the EOS1V body. But it won't be cheap, probably well over the £5,500 ticket on the EOS 1D, possibly as much as £7,500. And if Canon does this, Nikon is pretty sure to follow. If this happens, remember that you read it here. If not – well, I just made it up to keep you entertained.)

THE BODY

The S2 Pro is an upgrade in terms of the camera body as well as the electronics. The S1 was based on the Nikon F60, a fairly basic entry-level SLR. Its specification earned the camera some criticism, mainly because this body is not fully compatible with AF-S and VR lenses, but also because it has no PC flash connector.

The S2 uses the higher-spec F80 body which supports the AF-S and VR lenses and also has a flash connector. Oddly enough, this important feature is missing from the Nikon D100, even though it is also derived from the F80 body.

While the camera supports these additional lenses, those of us with a brace of the seemingly prehistoric aperture-indexed lenses are left out in the cold. These lenses can be fitted and used, but they are not supported in any way – you can't even use manual metering. Nikon's higher-spec bodies manage to maintain at least this facility.

Shutter speeds range from 1/4000 to 30 seconds, with maximum flash sync speed of 1/125 second. Those wanting to use fill flash in bright sunlight may find the sync speed limiting, as it will require the aperture to be stopped down quite a bit.

Two storage slots are provided, one for SmartMedia, the other for IBM Microdrive or CompactFlash Type II. There's a warning in the manual that some CF cards "may not work properly". No additional explanation is offered. I tried RiDATA and Lexar cards and both worked perfectly.

The image, right, of a Tuscan village was captured in TIFF mode. Above is a section representing one-eighth of the height and depth, enlarged to the equivalent of a 44x30in print of the full image. While the image is breaking up, how would it compare to 35mm film enlarged to this size?

Given the similar specification and price of the S2 and D100, it's inevitable that comparisons will be drawn between them. Don't infer too much from the fact that both are based on the F80. They share this common platform but they are far from identical. The Fuji is a little taller and thicker, and slightly heavier. It also has much better facilities for reviewing images and selecting shooting parameters. In fact, I rate the S2's image-handling and review facilities as the best I have encountered on any digital SLR, regardless of price. There is simply not much more you could ask for.

The 118,000 pixel LCD is clear and, despite not having an anti-glare coating, remains usable in all but direct sunlight. Even if it does become hard to see, the separate monochrome LCD for the function settings remains clear, so operation of the camera is not impeded. This arrangement is a vast improvement on the usual practice of using the image screen for function settings. Other makers should take note.

Pressing the upward arrow of the rocker switch on the camera back zooms in on the image to magnifications up to 24x, which is enough for really meaningful assessment of sharpness. Pressing the play button toggles the rocker function between zoom and pan, allowing any part of the image to be scrutinised.

The image histogram can be set to come up automatically, or brought up as needed using a function button. Successive operations of the button scroll from the overall histogram through the red, green and blue components, then back to overall.

The menu allows the LCD screen to be set for either Postview or Preview. Postview flashes up the captured image briefly and the image is automatically saved; Preview brings the image up for 15 seconds, during which time you can accept it by pressing a function button. If you do nothing it is deleted. The histogram can be made to automatically display with the image. There's also an Off setting that simply saves the images for review at any time. The Preview mode is automatically overridden when using continuous shooting.

On the negative side, Fuji's battery arrangement could be better. Like the S1, the new camera has a pair of non-rechargeable CR123A lithium cells for the metering, AF, flash and other camera functions, →

plus four rechargeable AA NiMH cells to power the digital bits. If the lithium batteries go flat the AA cells can take over all functions except powering the built-in flash, providing the lithiums are removed. These lithiums have a lot of work to do if you use a lot of flash and AF. A pair of them cost £12 at my local camera shop, so it could get expensive. It would certainly be wise to minimise use of the built-in flash in favour of one with its own batteries.

Nikon powers the D100 entirely with a dedicated rechargeable lithium ion battery that lasts ages, and also offers an optional holder that takes two more of these batteries. It's a much better arrangement.

IMAGE CONTROLS

The camera output can be fine-tuned to suit different subjects and shooting conditions. Colour (saturation) can be set to three levels, as well as a black and white setting. There are also three settings each for Tone (contrast) and Sharpness.

In good light, excellent images were produced with Colour and Tone set to the middle (standard) setting. The middle sharpness setting produced reasonable images, but better results are achieved by turning off in-camera sharpening, doing it later in Photoshop where it can be applied with more finesse. In-camera sharpening should only be applied if the images have to be used straight from the camera.

White balance can be set to auto, or to presets that approximate sun, shade, incandescent and three types of fluorescent, plus two custom settings. Oddly, there isn't a flash setting, but this didn't turn out to be a problem. When I wanted to shoot using studio flash I selected the sunlight setting, on the basis that flash output is daylight-balanced at about 5,600°K. It worked fine.

So did the custom setting, taken from the flash, as well as the auto setting. The three shots of the Macbeth colour test chart shown here are virtually identical in colour rendering, and very near neutral. There is just the slightest excess of blue throughout the neutral swatches, amounting to four or five Photoshop points (on a scale of 256).

ISO SETTINGS

The S2 Pro has a nominal ISO setting of 100, with additional settings at 160, 200, 400, 800 and 1,600. In this respect it is a little less ambitious than the Nikon D100, which starts at 200 and goes up to a staggering 6,400.

The test shots reproduced here show noise to be virtually undetectable at 100 and 200, with a low level becoming apparent at 400 in areas of smooth tone. In most everyday shots it would go unnoticed. There's a significant increase in noise at 800, but again it would not be too noticeable in a detailed subject, though you probably wouldn't want to use it for people photography. The 1,600 setting is very noisy, though quite useable for newspaper work.

IN USE

The S2 Pro is dead easy to use, so intuitive to navigate that the manual is rarely needed. The body is well endowed with features, but isn't cluttered by umpteen exposure modes that you will never use. There are just the four that are expected on any professional SLR: manual, aperture priority, shutter priority and the fully automatic programme mode.

The ten-zone exposure metering and the five-point AF system are similar, though not identical, to those on the top-of-the-range F5. Both are very good. An AF assist light helps things along in low light. Control placement is all standard Nikon, so users will have no trouble adapting.

The software is equally friendly. There are separate discs for the viewer and the RAW file converter: both loaded up without a hitch on both Mac and PC and never caused a moment's worry. Both discs did seem to load an enormous amount of stuff, though. The various software options are too detailed to go into here – suffice to say that it all works very well, with a good range of batch-processing options to speed up image-handling.

Three test shots were taken under studio flash using (top to bottom) daylight, custom and auto white balance settings. The results are virtually identical, with just a slight excess of blue across the neutral swatches.

The separate screen for selecting functions and shooting parameters puts the S2 Pro a step ahead of its rivals.

IMAGE QUALITY

Okay. The big question. Is this Super CCD image any better than one from your garden variety chip? Surely six million pixels are six million pixels, however you arrange them. If the diagonals are improved, won't the verticals and horizontals suffer?

I shot a resolution test chart using a Nikon D100 and the Fuji S2 Pro, both with the →

Noise is virtually undetectable at 100 and 200 ISO, and still very minimal at 400. The 800 and 1,600 settings are much noisier, but still useful for certain purposes.

same Nikkor lens set to the same aperture and using the same lighting. To keep things identical, the Fuji was set to 200 ISO, which is the Nikon's minimum setting.

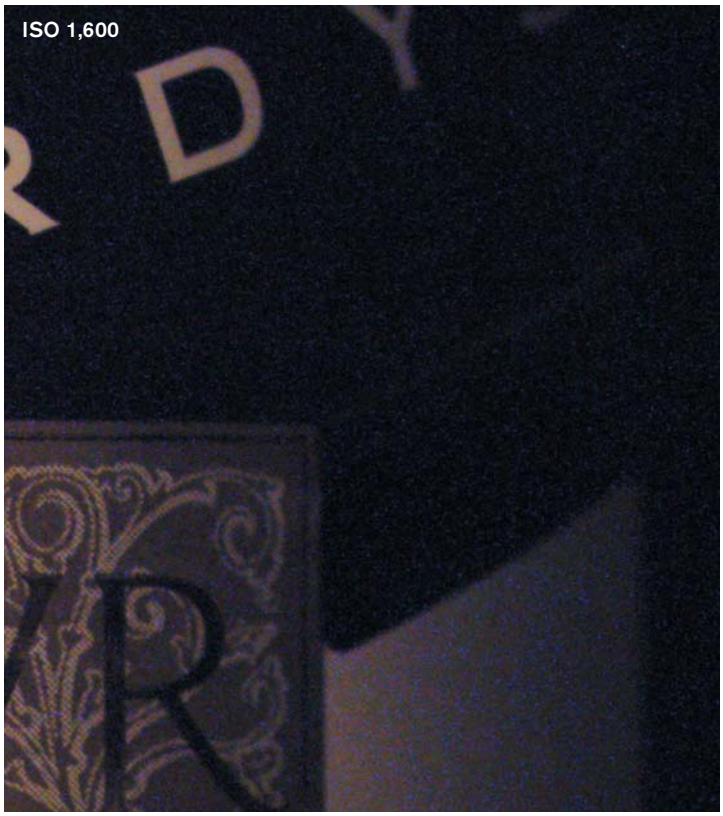
The results confirmed what I had suspected from the many images I had already taken with both cameras, with the Fuji resolving about 30 per cent more lines/mm than the Nikon. (The charts have not been reproduced here because the difference would not be apparent in magazine print without reproducing them at unreasonably large sizes.)

This increased detail could be due to the Super CCD geometry, or possibly some other factor such as the type of anti-aliasing filter used. It is beyond the scope of our test facilities to delve into such matters – all we can say is that the Fuji S2 does resolve more detail than the Nikon D100. Whatever the reason, it's the end result that counts, and the S2 is the superior image.

To see just how far the captured detail can be pushed, take a look at the picture of the Tuscan village on page 75. A section representing one eighth of the width and height, or 1/64 of the image, has been cropped out and interpolated up for magazine reproduction at 300dpi at 5.5x3.7in, equivalent to a 44x30in image from the whole image. Or, if it was printed to inkjet at 200dpi, the whole image would measure 66x44in. Okay, it is starting to come apart, but what would a 35mm Provia transparency look like at this sort of blow-up?

CONCLUSION

The list price of the S2 Pro is £1,995 including VAT for the body only, or £2,230 with a battery charger and a 1GB Microdrive. That's £100 more than its obvious rival, the Nikon D100.



While the D100 is an excellent camera, the Fuji is better and well worth the little extra. The superior image-review facilities, the separate screen for setting shooting parameters, and the provision of a flash cable connector are alone worth the money. The higher image quality is an added bonus. The battery architecture could be improved, as could the choice of colour space in JPEG mode, but I would live with these in return for the above features.

If I were buying a digital SLR this month, my money would be going to Fuji. Next month, who knows? Things are moving that fast. ■