REPORT BY PAUL BURROWS

FUJIFILM GFX 100S

▲ The GFX 100S is very similar in size to full-frame mirrorless cameras such as Panasonic's Lumix S1 series... so it's easily the smallest and lightest 100MP camera there is.

BEST PRACTICE

Fujifilm packs 102 megapixels res into a camera that's more compact than the GFX 50S, but matches the GFX 100 for capabilities with a bit of the brilliant X-T4 thrown in for good measure. And it's priced at under $10,000 too. Happy days.

Digital medium format looked to be struggling before Fujifilm came along with the GFX 50S and breathed new life into the category... with, it should be acknowledged, some help from Hasselblad's X1D. But Fujifilm has kept going; next with the GFX 50R that added real compactness to the mix, and then the GFX 100 which wasn't at all compact, but had 102MP on tap and did stuff that no other digital medium format camera has ever done before. And now there's the GFX 100S with the same mega megapixel sensor, but in a DSLR-style body that's smaller and lighter than the 50MP GFX 50S and with a few of the same capabilities as the current X-mount flagship, the X-T4. This is quite a brew and has the potential to make the 100S the best-selling GFX series camera so far, and probably by a considerable margin too.

For starters, it's the most affordable 100MP camera on the market, and Phase One's IQ4 100MP Trichromatic back attached to an XF body will set you back... well, let's just say, a whole lot more, with the price difference easily buying you two or maybe even three juicy GF lenses. In fact, the GFX 100S is also cheaper than the 50MP Hasselblad X1D II 50C which, if you shop around,

might snag for $10,499 body only – a grand more than the Fujifilm camera. OK, so a big tick for affordability. Size wise, it's smaller than the Canon EOS-1D X Mark III or Nikon D6 pro-level DSLRs. It's even marginally smaller than the Lumix S1 series of full-frame mirrorless cameras, and about the same size as the Leica SL2 and SL2-S. So, put simply, it's not an overly bulky camera, unlike the GFX 100, which is a bit of a beast. Not surprisingly, there's a big difference between these two – the 100S is 30% smaller and a whole 500g lighter – but the reductions compared to the 50S are more modest at around 20g in weight and around 5mm in height. However, there's quite a big difference in the depth of the bodies – due to the relocation of the battery compartment – and this makes the GFX 100S look a whole lot more compact. It's definitely closer to the full-frame mirrorless cameras than anything else with 100 megapixels under the bonnet. And Fujifilm continues to cheekily refer to its medium format sensor as "large format" and, to rub it in a bit more, as "more than full frame".

Significantly, compared to the GFX 50S, the 100S gains in-body image stabilisation that uses a more compact module than that in the GFX 100. When the GFX 100 was launched back in May 2019, Fujifilm was quite proud of this model's IBIS unit, given the considerable challenges of shifting such a big sensor at ultra-high speeds, but now it's done even better, not just reducing the size and weight (by 20% and 10% respectively), but also extending the maximum correction range to six stops (from 5.5 or 5.0 depending on the lens). Most of the GF lenses can now have either 5.5 or 6.0 stops of correction for camera shake and, additionally, the IBIS now works in conjunction with the optical stabilisation on lenses, which is currently in four models (including the GF 45-100mm f/4.0 R LM OIS WR zoom which came with our test camera). As with the X-T4, Fujifilm's Sync IS uses both the OIS and IBIS to correct for pitch and yaw. At the ultra-high res of 102MP, image stabilisation is one of the key elements in ensuring optimum sharpness can be maintained,

IT'S A LEVEL OF IMAGE QUALITY TO WHICH YOU CAN VERY QUICKLY BECOME ADDICTED, AND THEN ANYTHING LESS STARTS TO LOOK INFERIOR. BE WARNED.

especially when shooting handheld in low-light situations with slower shutter speeds.

The GFX 100S's mechanical shutter assembly has also been downsized and is 15% lighter. It's rated to 150,000 cycles and includes a dedicated shock absorber arrangement to minimise vibrations (another important consideration with such a high resolution). While there's no change to the speed range or the maximum flash sync speed compared to the GFX 100, Fujifilm says lag has been reduced.

Another reason for the GFX 100S being more compact than the 50S is the adoption of a fixed EVF rather than the latter's interchangeable module. Of course, the GFX 100 also has an interchangeable EVF and, while we praised the feature on both cameras, we suspect the reality is that not many photographers actually ever take them off, so all that extra engineering probably isn't getting used very often. Using a conventional fixed EVF will certainly reduce the manufacturing costs associated with machining the fitting and providing all the necessary connections.

The GFX 100S also adopts the same, more compact battery pack as is used in the X-T4, but the NP-W235 still has a capacity of 2,200mAh, so it's still good for around 450 shots in the medium format camera. In-camera recharging is available via USB-C, but curiously the 100S can't be fitted with the 50S's vertical/battery grip, so anybody planning a long shoot on location will just have to

▼ Fujifilm is sticking with dual SD memory card slots, both with UHS-II speed support.

1. Monitor screen has three-way tilt adjustments, so it can be angled upwards when the camera is in the portrait orientation.

2 . Joystick controller has been redesigned to greatly improve the ergonomics and usability.

3. Rear control layout keeps things very simple and tidy.

carry spare batteries. However, the camera can be powered via USB-C as well.

The body covers and chassis are magnesium alloy and there are seals at 60 points to provide protection against dust and moisture. Plus there's insulation to enable operation in sub-zero temperatures down to -10°C. The body is reinforced around the lens mount to deal with the weight and stresses created by the bigger and heavier G-mount lenses.

CENTURY MAKER

The sensor is a backside-illuminated (BSI) CMOS chip with an imaging area is 43.8x32.9mm (a.k.a. the '44x33mm' format) and the effective pixel count yields a maximum image size of 11,648x8376 pixels at the standard 4:3 aspect ratio. For the record, this is 1.7x larger than a full-frame sensor. The back-illuminated configuration frees up space on the receiving surface to allow bigger pixels – to benefit the signal-to-noise ratio – and, to optimise the resolution, an optical low-pass filter is omitted. Native sensitivity is equivalent to ISO 100 to 12,800 with extensions down to ISO 50 and up to ISO 102,400.

JPEGs can be captured in one of three image sizes and three compression levels, while the RAW options comprise either 14-bit or 16-bit RGB colour depth and the choice of lossy or lossless compression or no compression at all. There's a total of seven aspect ratios, a '35mm format' mode (at 9552x6369 pixels), a bunch of RAW+JPEG combo settings and the in-camera creation of 8- or 16-bit TIFFs converted in-camera from RAW files.

The sensor is mated with the current generation X Processor 4 quad-core engine which enables continuous shooting at 5fps as well as uncropped 4K video at 25/30p with 10-bit colour (see the Making Movies panel for the rest of the GFX 100's video story). Fujifilm has opted to stick with SD format memory cards for the camera's dual slots, both of which have UHS-II and Video Speed Class V90 support. While the much faster CFexpress cards are starting to be more widely used, SD is still undoubtedly the universal format that has no doubt influenced Fujifilm's thinking here. If it was offering 8K video or 4K at 120fps, it would have to go with faster data transfer capabilities, but UHS-II can keep up with what the GFX 100S offers now.

The sensor-shifting facility of the in-body stabilisation is fine-tuned to enable a Pixel Shift Multi Shot function (which has been added to the GFX 100 via a firmware upgrade). This captures 16 RAW frames with half-pixel shifts to record full RGGB colour and boost the resolution to 400MP, but you'll need Fujifilm's Pixel Shift Combiner software to finish the job post-camera. Interestingly, Fujifilm provides an adjustment for the interval between each capture – from Short to 15 seconds – but no processing for any slight subject movement – the latter certainly is of more practical use than the former. Consequently, everything will have to be totally still in your multi-shot scene – and the camera mounted on a tripod – to avoid any blurring or ghosting.

With every new mirrorless camera – either X-mount or G-mount – Fujifilm adds to the list of processing options for JPEGs. With the GFX 100S it's the 19th Film Simulation profile called Nostalgic Neg and it's another retro-look option, joining Classic Neg and Classic Chrome. According to Fujifilm, Nostalgic Neg replicates the look of colour prints in old photo albums, giving richer colours in the shadows and a softer tonality in the mid-tones and highlights. Presumably we're talking about a well-preserved photo album here.

1. Control layout is new and centres around a main mode dial and a large top-deck info display.

2. Main mode dial includes six positions for customised camera setups.

3. Movie/still selector switches the camera between two distinct operating modes, adjusting the menus and displays accordingly.

▼ Sensor is the same BSI CMOS '33x44' device as is used in the GFX 100, so it's packing 102MP.

THE GFX 100S IS DEFINITELY CLOSER TO FULL-FRAME MIRRORLESS CAMERAS IN SIZE AND HANDLING THAN ANYTHING ELSE WITH 100 MEGAPIXELS UNDER THE BONNET.

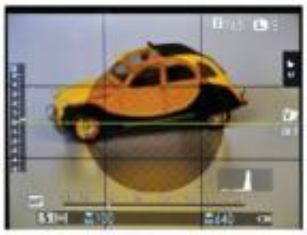


▲ Replay/review panels include an overlaid set of histograms, or thumbnails with various sets of capture data. The thumbnail includes a focus indicator and highlight warning.

▲ Info display includes real-time histogram and selected AF point/zone, plus 15 function indicators.

▲ Main menus switch between photo and video according to the camera's shooting model. AF-C Custom menu allows for fine-tuning of the subject tracking characteristics.

▲ Live view screen elements include a real-time histogram, level display, guide grid and focusing distance scale.


▲ Manual focusing assists include Fujifilm's Digital Split Image and Digital Microprism displays, and a handy Dual Display option that shows the focusing aid in a sub-panel.

▲ Monitor-based Quick Menu can be customised for the number and type of functions displayed. Touchscreen control enhances the convenience.

A digital medium format camera may not be an obvious choice for video-makers, but they like big sensors for all the same reasons that photographers do – an inherently shallower depth-of-field, enhanced low-light performance and plenty of scope for cropping (i.e. or, in this case, moving or zooming about the frame). The GFX 100S is also a better proposition for video as much as it is for photographym being smaller, lighter and more affordable than the GFX 100.

Switching the GFX 100S to movie mode turns it into a dedicated video camera with the menus and displays all changing accordingly. The GFX 100S records 4K video internally using the full sensor width with 10-bit 4:2:0 colour in either the DCI or UHD resolutions at 30, 25 or 24fps, and 10-bit 4:2:2 colour externally via HDMI. This uses the more efficient HEVC H.265 encoding, but the H.264 codec is available too, along with switching between the All-Intra (intraframe) and Long GOP (interframe) compression routines. The highest bit rate available for 4K is an impressive 400 Mbps. A 12-bit ProRes RAW output (4K DCI at 24, 24 or 30fps) is also available via HDMI and the camera supports the cinema aspect ratio of 17:9 for both 4K and 2K recording. There's essentially no limit on the clip length, given Fujifilm states that it's 120 minutes.

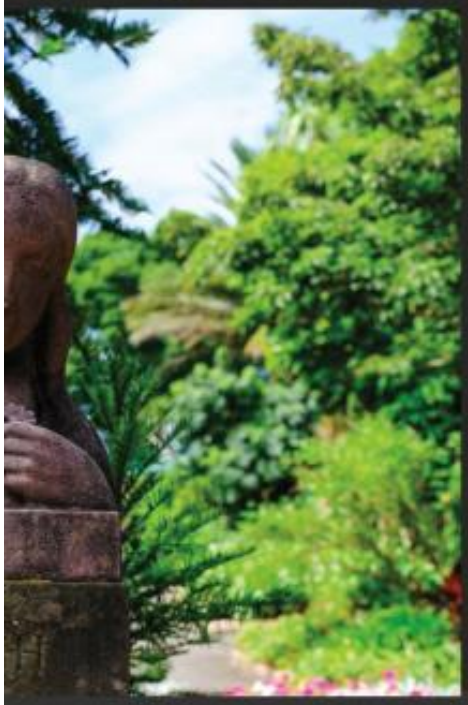
Both F-Log and HLG gamma profiles (with 10-bit colour) are available to enable easier contrast control and colour grading in post-production. Of course, the Eterna/Cinema Film Simulation profile is also available for a flatter colour rendering which optimises the dynamic range. Plus there's the newer Eterna Bleach Bypass profile (introduced with the X-T4) which simulates the bleach bypass film processing technique to give a lower colour saturation, but with higher contrast. All the other Film Simulation profiles are available too, along with their adjustable picture parameters (including the warm-to-cool 'B&W Adjustment'), noise reduction (including interframe NR for 4K recording), dynamic range expansion processing and correction for lens vignetting. Other video features include zebra patterns (with adjustable thresholds), time-coding, focus peaking displays for MF assist and movie silent control via the touchscreen. New is Digital I.S. stabilisation that adds digital shifting (i.e. moving the image on the sensor) to the mix, resulting in a small 1.1x crop.

On the audio side, the GFX 100S has built-in stereo microphones with auto and manual levels control, a wind-cut filter, a low-cut filter and an attenuator. Both a stereo audio input and output are provided, and both are the standard 3.5mm minijack terminals.

While there's really nothing that makes headlines here, the GFX 100S has everything needed to make it a very capable video camera and, as in photography, its combination of sensor size and body size – and affordability – make it a viable alternative to a full-frame camera. It delivers the same level of usability, but with superior image quality particularly in terms of dynamic range, noise levels and high ISO performance.

Info

Test images captured as JPEG/large/superfine files with the Fujinon GF 32-64mm f/4.0 R LM OIS WR zoom (equivalent to 25-51mm). Provia/Standard and Monochrome Film Simulation profiles at ISO 100 and 200. As you'd expect with 102MP at work, the level of details is exceptional, and a wide dynamic range ensures it's maintained in both the highlights and shadows. Even just the Provia profile delivers nicely balanced saturation and good contrast. (Image credit: Sharmishta Sarkar)



As usual, there are globally adjustable parameters for Colour (i.e. saturation), Sharpness, Highlight/Shadow Tone Curve and Clarity. This last parameter first arrived on the X-Pro3 and is designed to adjust definition by tweaking the mid-tones to give either more or less 'punch'. The two B&W profiles – Monochrome and Acros (after Fujifilm's popular B&W film) – have a 'Monochromatic Colour' adjustment that tints in the warm-to-cool and magenta-to-green ranges (plus there are the usual contrast control filters in yellow, red and green). Also introduced on the X-Pro3, the tone curve adjustment consolidates the previous highlight and shadow tone adjustments into one Photoshop-style curves tool. It's worth noting here that the Film Simulation profiles can be applied to RAW files when they're processed post-camera in either Lightroom or Capture One.

Essentially, the GFX 100S has most of the other in-camera processing functions available on the X-T4 with the exception of the Advanced Filter special effects which probably don't get much use on the X-mount flagship either. Also omitted is multi-shot HDR capture, no doubt for the same reason. However, you do get Grain Effect, Colour Chrome Effect, Colour Chrome Effect Blue, Smooth Skin Effect, the Lens Modulation Optimiser (which corrects for diffraction blur when using small aperture settings), flicker detection and reduction, a multiple exposure facility, and an intervalometer. The Colour Chrome Effect Blue differs from the standard Colour Chrome Effect by only adding contrast and saturation to the blue tones rather than all colours. The multiple exposure facility allows for a total of nine frames to be combined with the choice of Additive, Average, Comparative Light or Comparative Dark exposure management options. The intervalometer has a setting for unlimited frames or, alternatively, a specific count of up to 999. The GFX 100S also has a Dynamic Range Priority processing designed to adjust the contrast to give more detailing in both the highlights and the shadows. There are three settings – Auto, Weak and Strong – with the latter two based on the dynamic range expansion setting, which means the minimum ISO is also raised (to ISO 320 and 640 respectively) to give more 'headroom' for adjustments. The Auto setting selects either one or the other, according to the contrast range presented by the prevailing lighting conditions. Alternatively, the standard Fujifilm dynamic range expansion processing options are available with either auto correction or one of three manual settings (as always on a Fujifilm camera, labelled 100%, 200% and 400%).

◀ Noise levels are minimal right across the native ISO range, so there's minimal reduction processing-related artefacts up to ISO 3200 and, even beyond, both the colour saturation and sharpness hold up well. These images are JPEG/large files taken in the aperture-priority auto mode with the aperture set to f/11, so the exposure time varies to compensate for ISO adjustments.

The auto bracketing modes are for exposure, the Film Simulation profiles (you can set three profiles for simultaneous capture), dynamic range and focus, but ISO and white balance have been dropped. The focus bracketing can be set for up to 999 frames with intervals of up to 10 seconds and the focus shift adjusted from one to 10 steps.

CAMERA SYSTEMS

The GFX 100S has the same hybrid contrast/phase-detection autofocusing system as the GFX 100, but with a few performance tweaks here and there, most notably an extension of the sensitivity down to EV -5.5 at ISO 100 and f/1.7, and improved face and eye detection. A total of 3.67 million PDAF pixels give very close to full-frame coverage via 425 measuring points.

The 425 points are arranged in a 25x17 pattern, but this can be reduced to 117 (in a 13x9 pattern) for more efficient selection, but obviously with a bigger measuring area as a result. The AF area modes comprise Single-Point (adjustable to one of five sizes), Zone (in 7x7, 5x5 or 3x3 point clusters selected from 117 points) and Wide. There's also an 'All' setting that lets you to cycle through these three modes via the rear input wheel.

▲ Top deck info display can be switched between a real-time histogram, virtual dials for ISO and shutter speeds, and basic photo (or video) capture settings.

With continuous AF operation, the area modes are Single-Point, Zone and Tracking – the last also works with face- or eye-detection. Additionally, eye detection can be set to left or right priority. As on the higher-end X-mount cameras, there's an AF-C Custom menu that provides five scenarios for fine-tuning focus tracking via three parameters –Tracking Sensitivity, Speed Tracking Sensitivity and Zone Area Switching. The five options are called Multi Purpose, Ignore Obstacles & Continue To Track Subject, For Accelerating/Decelerating Subject, For Suddenly Appearing Subject and For Erratically Moving & Accel/Decel Subject. Additionally, there's a custom setting for manually adjustmenting these control parameters to create a focus tracking regime better suited to a specific type of subject movement.

In addition to a focus peaking display and a magnified image, Fujifilm has developed a couple of other assists for manual focusing, namely the Digital Split Image and the Digital Microprism. Both are digital versions of the focusing devices on an optical focusing screen – respectively the split-image rangefinder and the microprism collar. The Digital Split image panel can be displayed in colour or B&W – whichever is easier to see – while the Digital Microprism creates an interleaved grid pattern. Both work pretty well, but it's still hard to beat the focus peaking display for sheer effectiveness.

Exposure control is based on 256-segment TTL metering using the imaging sensor with a choice of multi-zone, centre-weighted average, fully averaged or spot measurements. Additionally, spot metering can be linked to the active focusing point or zone. The mechanical shutter has a speed range of 60-1/4000 second with flash sync up to 1/125 second. It's supplemented by a sensor-based electronic shutter that can operate at up to 1/16,000 second, both silently and without any vibrations. The latter, in particular, takes on more importance with very high resolution sensors. There's also the option of the hybrid 'first curtain electronic shutter' which uses the sensor, but ends an exposure with the mechanical shutter, thereby enabling the use of electronic flash. The auto exposure modes are supplemented by an AE lock, up to +/-5.0 EV of compensation and auto bracketing that can be set over sequences of two, three, five, seven or nine frames with up to +/-3.0 EV adjustment per frame.

The white balance control options have been expanded to include the additional White Priority and Ambience Priority auto modes that debuted on the X-T4. These supplement the standard auto correction and are designed for shooting under incandescent (a.k.a. tungsten) lighting, to either correct for, or preserve, the warmer tones. Alternatively, there's a choice of seven presets (including one for underwater), and up to three custom measurements can be made. Fine-tuning is available along with manual colour temperature setting over a range of 2,500 to 10,000 Kelvin, but as noted earlier, there's no auto bracketing for white balance.

FUJIFILM CONTINUES TO CHEEKILY REFER TO ITS MEDIUM FORMAT SENSOR AS 'LARGE FORMAT' AND, JUST TO RUB IT IN A BIT MORE, AS 'MORE THAN FULL FRAME'.

IN THE HAND

Although it's still a fairly big camera, the GFX 100S handles comfortably and feels very well balanced, which is no doubt helped by having the battery compartment in the handgrip (rather than at the back of the camera, which is the case with the GFX 50S). In fact, with the possible exception of the rangefinder-style GFX 50R – which is even more compact and lighter – it's easily the nicest handling GFX model so far. The grip is a good size and shape, and Fujifilm has redesigned the control layout that seems both more intuitive and more efficient.

On the top deck there's now just a main mode dial and the large info display panel moves inboard, leaving space for a couple of multi-function buttons astern of the shutter release, which also incorporates the on/off switch. A dedicated button for applying exposure compensation is also here. The rear panel has also been tidied up, deleting the 50S's four-way navigational keypad and amalgamating all these duties with the focus point selector's joystick-type controller, which is consequently a lot bigger with a flatter head. This makes it much easier to thumb in whichever direction you want. As with the GFX 100, you can still have control dials if you want them, but they're virtual dials shown in the top panel info display and with settings for shutter speeds and ISO, adjusted via the front and rear input wheels. It actually works pretty well and the display looks cool too. The alternative displays are for basic capture info (dedicated for either stills or video) or a real-time brightness histogram, and you can also switch between white-on-black or black-on-white. The panel itself is 4.5cm in size with a resolution of 303x230 dots and built-in illumination.

A total of eight controls are customisable, including the rear input dial and from here there's no fewer than eight pages of assignable functions. Items from this long list can also be assigned to four Touch Function actions on the monitor's touchscreen, which are then executed by up, down, left or right swipes. The defaults for these are a full set of histograms (up), a dual-axis level indicator (down), white balance settings (right) and the Film Simulation profiles (left). The front input wheel – which Fujifilm calls the Command Dial – can be configured to adjust aperture, shutter speeds, ISO settings and exposure compensation.

Also extensively customisable is the monitor's Quick Menu screen which can, firstly, be configured with four, eight, 12 or 16 function tiles, and then you can determine what these will be from four menu pages, each listing eight items. The Quick Menu's convenience is further enhanced by being included in the touchscreen's implementation, which also extends to AF point/area selection (with or without auto shutter release), 'touchpad'

AF operation when using the EVF, and the replay/review operations. As is the case with most of Fujifilm's mirrorless cameras, the main menus have to be navigated conventionally, although the joystick controller makes this pretty efficient. The layout and organisation is the same as on any of the X-mount cameras with progressive right-clicks taking you from chapter to page to sub-menu to setting… and obviously left-clicks doing the reverse.

The monitor itself is the same 3.2-inch TFT LCD panel as on the GFX 100 with 2.36 million dots resolution and three-way tilt adjustments (the third being an upward tilt when the camera is being held vertically). The EVF is a fixed version of the GFX 50S's detachable module, so it's a 1.3cm OLED-type EVF with 3.69 million dots resolution and 100% vertical/horizontal scene coverage. The magnification is slightly lower at 0.77x (35mm equivalent) and presumably the decision not to use the GFX 100's higher-res EVF is related to managing manufacturing costs. The refresh rate is 85fps. Both the EVF and the monitor can be adjusted for brightness, colour saturation and colour balance. Both can be cycled through a number of display configurations, but exclusive to the monitor is an Info Display that includes 15 function tiles, the exposure settings, a real-time histogram and the selected AF area mode. When focusing manually, there's an additional Dual Display option which comprises the live view screen, accompanied by a small additional panel to show the manual focus assists separately (or you can switch them about).

The live view screen can be extensively customised in terms of status icons and read-outs, plus there's the options of a level display (single- or dual-axis), a guide grid (either 3x3 or 6x4), a real-time histogram, highlight warning, focusing distance scale, exposure compensation scale and audio channel level meters. You can select up to 32 items in all and even designate which ones will be displayed in a larger size (and also independently in either the EVF or the monitor).

The image replay/review screen can be cycled through four displays comprising an RGB/brightness histograms overlay and a highlight warning, a thumbnail accompanied by capture data and a brightness histogram, and a page of more addition capture info, including the lens settings. The main thumbnail page also provides a highlight warning and a focus point indication. Pressing the rear command dial instantly zooms in on this point for checking the focus and you can then scroll around the image using the joystick controller.

DETAILING AND DYNAMIC RANGE IS WHAT YOU GET IN SPADES WITH A 33X44 MM SENSOR THAT'S PACKING 102 MEGAPIXELS… BECAUSE THERE'S BOTH LOADS OF RESOLUTION AND A HIGH SIGNAL-TO-NOISE RATIO.

Functionally then, the GFX 100S is very similar to the X-T4 and the X-Pro3, but operationally it's quite different with a control layout that's closer to that of the X-S10, being centred on a main mode dial. Plus there's the added convenience of the top-panel info screen and its choice of displays, including the virtual dials for shutter speed and ISO that work just as well as the real things. It's hard to fault the overall efficiency of both the external controls and the touchscreen in conjunction with the Quick Menu. A full touchscreen implementation would be even better, but the GFX 100S's mix works well enough, and the joystick's ergonomic execution is one of the best we've seen.

SPEED AND PERFORMANCE

Using a Panasonic 64GB SDXC UHS-II V90 speed memory card, the GFX 100S captured a sequence of 26 JPEG/large/superfine files in 5.041 seconds, which represents a shooting speed of 5.15fps. The test files were sized around 63MB.

The GFX 100 set new standards for autofocusing performance with a digital medium format camera, and the GFX 100S is just as responsive and fast-to-focus. It performs even better in low light/contrast situations and the eye/face detection locks on instantaneously and stays locked on as the subject moves around the frame. While there's none of the latest AI-based algorithms to facilitate object recognition, focus tracking is still very accurate, even with fairly fast-moving subjects. Obviously, the GFX 100S isn't intended to be a sports camera, but the continuous AF is certainly able to keep up with the sort of action you might want to shoot.

Obviously reliable autofocusing is just one aspect of image sharpness with such a high resolution sensor, and effective image stabilisation is another. Additionally, the GFX 100S is a whole lot easier to use handheld than the bigger and much heavier GFX 100, enabling the lower ISO settings to be used in more available light situations (unless, of course, you need faster shutter speeds to deal with subject movement). In fact, in terms of handheld shooting, the GFX 100S really doesn't need any extra considerations as it really has the same flexibility and handling as a smaller format mirrorless camera. As we found with the GFX 100, the noise management is exemplary across the native ISO range and certainly very good definition and saturation are maintained all the way up to ISO 12,800. The dynamic range is still wide here too. With RAW capture, this translates into a huge amount of exposure latitude for rescuing both the shadows and highlights post-camera. It's also worth noting here the considerable scope for cropping that's available with 102MP – even the 35mm crop still delivers 60MP megapixels resolution – as was the case with medium format film, there's also plenty of flexibility when it comes to framing and composition.

Detailing and dynamic range is what you get in spades with a 33x44mm sensor that's packing 102 megapixels… because there are both loads of resolution *and* a high signal-to-noise ratio. With even the best-quality superfine JPEGs regularly topping 65MB in file size with a highly-detailed subject, it's a whole new experience in terms of the super-crisp definition, smoother-

than-smooth tonal gradations and the negligible noise even when shooting at ISO 1600 or 3200. As we noted with the GFX 100, it's a level of image quality to which you can very quickly become addicted, and then anything less starts to look inferior. Be warned.

THE VERDICT

With so many of the full -frame mirrorless cameras with 30MP or more resolution delivering exceptional image quality, it's getting harder to mount a good case for the 50MP digital medium format models... although Fujifilm's GFX 50R definitely gets a tick for its size and the Hasselblad X1D II 50C for its style. However, 102MP is a very different matter altogether as there's significantly more pixels at work and, thanks to the bigger sensor, they also maintain sufficient size for a higher signal-to-noise ratio, and increased sensitivity... both of which contribute to better high ISO performance. Additionally, with Fujifilm packaging it up in a smaller, lighter and more affordable camera, the GFX 100S brings high-end digital medium format photography within reach of a much wider audience.

Of course, there's the higher cost of the lenses to consider and also the possible system upgrades you might need to handle the bigger image files, but everything about the GFX 100S puts it in contention for the enthusiast-level shooter rather than just professionals who have the potential to make money from it. All the usual reasons for dismissing digital medium format are pretty effectively countered by this camera, and not just because it's unmatched in terms of performance-versus-price-versus-portability, but also because it handles superbly and operates so smoothly. It still demands a bit of physical effort, but everything else is effortless... and the rewards are great.

Fujifilm has stated on quite a few occasions that it won't build a full-frame mirrorless camera, but now it doesn't have to... the GFX 100S is right in the mix in terms of size and functionality and, while it's at the top end of the price range, this is more than justified by the bigger sensor with its 102 megapixels resolution and all the improvements to image quality that it delivers.

VITAL STATISTICS

FUJIFILM GFX 100S $9,499 body only

Type: Professional digital medium format mirrorless camera with Fujifilm G bayonet lens mount.

Focusing: TTL automatic hybrid system using phase-difference detection and contrast-detection measurements. 425 measuring points (in 25x17 or 13x9 patterns). Single-point (six sizes), zone (7x7, 5x5 or 3x3 point clusters selected from 91 points) and wide/tracking modes. Five AF-C Custom settings for optimising tracking plus a user-definable setting for Tracking Sensitivity, Speed Tracking Sensitivity and Zone Area Switching. Face/eye detection with left/right priority. Focus frame adjustable to five sizes. Face/eye detection with left/right priority. Manual switching between one-shot and continuous AF modes. AF+MF mode. Low-light assist via built-in illuminator. Manual focus assist via magnified image, Digital Split Image display (colour or B&W), Digital Microprism display, or focus peaking display (white, red, blue or yellow; low or high levels). Sensitivity range is EV -5.5–18 (ISO 100 and f/1.7).

Metering: 256-point multi-zone, centre-weighted average, full average, spot (2.0% of frame area) and TTL flash. Spot metering can be locked to AF point/zone. Metering range is EV -4.0 to 20 (ISO 100and f/2.0).

Exposure Modes: Continuously-variable program with shift, shutter-priority auto, aperture-priority auto and metered manual.

Shutter: Electronic, vertical travel, metal blades, 60 minutes to 1/4000 second plus 'B' (up to 60 minutes). Flash sync up to 1/125 second. Sensor shutter has a speed range of 60 minutes to 1/16,000 second. Exposure compensation up to +/-5.0 EV in 1/3-stop increments.

Viewfinder: 1.3cm OLED-type EVF with 3.69 million dots resolution, 100% vertical/horizontal scene coverage and 0.77x magnification (35mm equivalent). Automatic/manual switching between the EVF and the LCD monitor screen. Eyepiece strength adjustment built-in. 8.1cm LCD monitor with 2.36 million dots resolution, three-way tilt adjustments and touchscreen controls. Both EVF and monitor are adjustable for brightness, colour saturation and colour balance.

Flash: No built-in flash. External flash units connect via hotshoe or PC terminal.

Additional Features: Magnesium alloy bodyshell sealed against dust and moisture and insulated for subzero temperatures, top panel info display, AE/AF lock, auto exposure bracketing (up to +/-3.0 EV over two, three, five, seven or nine frames), multiple exposure facility (up to nine shots with exposure adjustments – Additive, Average, Comparative Light, Comparative Dark), multi-mode self-timer (2 and 10 second delays), audible signals, auto power-off, wired remote trigger.

DIGITAL SECTION

Sensor: 102 million (effective) pixels BSI CMOS with 32.9x43.8 mm imaging area and 4:3 aspect ratio. No optical low-pass filter. Sensitivity equivalent to ISO 100-12,800, extendable to ISO 50, 25,600, 51,200 and 102,400.

Focal Length Magnification: 0.79x (35mm format), 1.3x (6x4.5cm format).

Formats/Resolution: Three JPEG compression settings, RAW output (lossy compressed, lossless compressed or uncompressed), TIFF RGB (via in-camera conversion of RAW files) and RAW+JPEG capture. Three resolution settings at 4:3 aspect ratio; 11,648x8736, 8256x6192 and 4000x3000 pixels. Three resolution settings at 3:2 aspect ratio; 11,648x7768, 8256x5504 and 4000x2664 pixels. Three resolution settings at 16:9 aspect ratio; 11,648x6552, 8256x4640 and 4000x2248 pixels. Three resolution settings at 1:1 aspect ratio; 8736x8736, 6192x6192 and 2992x2992 pixels. Three resolution settings at 65:24 aspect ratio; 11,648x4304, 8256x3048 and 4000x1480 pixels. Three resolution settings at 5:4 aspect ratio; 10,928x8736, 7744x6192 and 3744x3000 pixels. Three resolution settings at 7:6 aspect ratio; 10,192x8736, 7232x6192 and 3504x3000 pixels. RAW files captured at 11,808x8754 pixels and TIFF files at 11,648x8736 pixels. 24-bit RGB colour for JPEGs, 48/42-bit RGB colour for RAW files, 48/24-bit RGB colour for TIFFs. 35mm Format Mode capture at 24x35mm (9552x6368 pixels) in either JPEG or RAW.

Video Recording: 12-bit ProRes RAW (externally via HDMI): 4K DCI at 4096x2160 pixels and 30, 25 or 24fps. MOV format (MPEG 4 AVC/H.264 with 8-bit 4:2:0 colour internally or HEVC H.265 codec with 10-bit 4:2:0 colour internally): 4K DCI at 4096x2160 pixels and 30, 25 or 24fps (up to 400 Mbps, All-Intra compression) and 17:9 aspect ratio. 4K UHD at 3840x2160 pixels and 30, 25 or 24fps and 16:9 aspect ratio (up to 400 Mbps, All-Intra compression). 2K DCI at 2048x1080 pixels and 60, 50, 30, 25 or 24fps and 17:9 aspect ratio (up to 200 Mbps, All-Intra compression). Full HD at 1920x1080 pixels and 60, 50, 30, 25 or 24fps and 16:9 aspect ratio (up to 200 Mbps, All-Intra compression). Stereo microphones with auto/manual levels adjustment, attenuator, wind-cut filter and low-cut filter. Stereo audio input and stereo audio output provided. Clip lengths are up to 120 minutes.

Video Features: 4K/2K output via HDMI (H.265: 10-bit 4:2:0 to SD card, 10-bit 4:2:2 to HDMI. H.264: 8-bit 4:2:0 to SD card, 10-bit 4:2:2 to HDMI), F-Log gamma profile, HLG profile, digital image stabilisation, focus peaking display, zebra patterns with adjustable brightness threshold, time code support, interframe noise reduction, movie silent control.

Recording Media: Dual slots for SD, SDHC and SDXC with UHS-I and UHS-II support. Sequential, Back-Up and RAW/JPEG slot file management modes.

Continuous Shooting: Up to 42 JPEG/large/superfine frames at 5fps or 18 RAW (compressed). Up to 64 JPEG/large/superfine frames at 2.9fps or 23 RAW (compressed) using the sensor shutter. Low speed continuous mode captures at 2fps.

White Balance: TTL measurement. Three auto modes, seven presets and three custom settings. White balance compensation (amber-to-blue and/or green-to-magenta) in all presets, and white balance bracketing. Manual colour temperature setting from 2,500K to 10,000K. Auto White Priority maintains whites under incandescent lighting. Auto Ambience Priority maintains warmer hues under incandescent lighting.

Interfaces: USB 3.2 Type C, micro HDMI (Type D), 3.5mm stereo audio input, 3.5mm stereo audio output, 2.5mm remote trigger connector.

Additional Digital Features: In-body five-axis image stabilisation with up to six stops of correction, Pixel Shift Multi Shot ultra high res capture (for 400MP files, adjustable shot intervals), sensor cleaning, 19 Film Simulation presets (Provia/Standard, Velvia/Vivid, Astia/Soft, Classic Chrome, Nostalgic Neg, Pro Neg High, Pro Neg Standard, Classic Neg, Eterna/Cinema, Eterna Bleach Bypass, ACROS, ACROS+Yellow, ACROS+Red, ACROS+Green, B&W, B&W+Yellow, B&W+Red, B&W+Green, Sepia), adjustable picture parameters (Colour, Sharpness, Tone Curve, High ISO Noise Reduction, Long Exposure Noise Reduction, Clarity and Monochromatic Colour – warm-to-cool or green-to-magenta), Grain Effect (Roughness –Strong, Weak, Off; Size – Large or Small), Colour Chrome Effect (Strong, Weak, Off), Colour Chrome Effect Blue (Strong, weak, Off), Smooth Skin Effect (Strong, Weak, Off), B&W Adjustment (Warm/Cool), Quick Menu control screen (customisable), Lens Modulation Optimiser processing, intervalometer (up to 999 frames), pixel mapping, dynamic range expansion (Auto, 100%, 200%, 400%), D-Range Priority (Auto, Strong Weak, off), real-time RGB/brightness histogram display, highlight alert, single/dual-axis electronic level displays, grid displays (choice of two), depth-of-field preview, auto bracketing functions (AE, Film Simulation, Dynamic Range and Focus), flicker detection and correction, high ISO noise reduction (plus/minus four levels), six custom setup memories (C1 to C6 on the main mode dial), sRGB and Adobe RGB colour space settings, RGB and brightness histograms in playback, highlight alert in playback, in-camera editing functions (RAW Conversion to TIFF or JPEG (17 adjustable parameters), Erase, Simultaneous Delete, Crop, Resize, Protect, Image Rotate, Red-Eye Removal, Copy, PhotoBook Assist), auto playback, multi-image playback, 9/100 thumbnail displays, zoom playback, silent mode, Instax print, customisable My Menu (16 items), copyright info, voice memo recording, WiFi and Bluetooth LE connectivity, DPOF support.

Power: Rechargeable 7.2 volts, 2200mAh lithium-ion battery (NP-W235 type). In-camera recharging via USB-C.

Dimensions (WxHxD): body only = 150.0x104.2x87.2 mm.

Weight: 821 grams body only (with battery or memory cards).

Price: $9,499 body only.

Distributor: Fujifilm Australia, telephone (02) 9466 2600 or visit www.fujifilm.com/au