

MEDIUM FORMAT ROUND-UP SET-UPS FROM \$15,000

Going Big on a Budget



When your world of landscape photography outgrows the 35mm format, your next step is delve into the world of Medium Format. **Ewen Bell** explores a few options that won't mean taking out a second mortgage.

FTHE EMPHASIS IN DSLR technology is on speed and flexibility, with as much image quality as physics will allow. By contrast, the world of Medium Format is blanketed by slow shutters and patient preparation – an ideal match for landscape photographers. The number of focus points on an autofocus system is not a major factor when shopping for a landscape kit.

We went shopping for a sweet set of pixels dedicated to landscape photography that would go beyond the current crop of Digital SLR products. Our starting point was a Mamiya DM22 system, which retails for under \$15,000 in Australia when bundled with the standard 80mm lens plus an additional 35mm wide angle to suit the landscape genre.

The combination of more affordable digital backs and the depth of quality optics from traditional lens systems make this an interesting time to migrate into the world of Medium Format.

The middle way

Size changes everything when designing a camera, and the world of Medium Format technology enters new realms for photographers who have grown up in the world of SLR. The core difference in quality that you get from a Medium Format system comes from projecting a larger image size onto the film or sensor. More data to play with is good for quality in every possible way, yielding better dynamic range and a lower pixel density.

Bigger sensors also mean bigger lenses and a bigger camera body. Medium Format

TOP OF THE LINE

Phase One have released an 80MP digital back in their latest IQ range, sporting a multi-touch screen that feels a lot like your iPhone. If you sell enough of those limited-edition landscape prints, you can add the IQ180 to your Mamiya, Hasselblad or Phase One system for a little over \$50,000.

gear is generally heavier and bulkier than the SLR equivalent. Landscape photographers already accept the need to carry around a tripod and work a little logistics into their planning, so they're not expecting to whip out the camera and snap off a few frames.

The bigger format also means less depth of field. Sometimes this effect is deeply desirable, especially in studio settings or wedding photography. Some landscape artists tinker with the shallow focus world but in general the objective is to maximise their depth of field. Detail and sharpness are usually regarded as premium, so higher f-stops and longer exposures are required to achieve the depth of field we take for granted on an SLR.

Physics balances the depth of field penalty for bigger sensors by providing access to higher f-stops. On a conventional SLR camera, an aperture of f/22 is likely to cause loss of image quality due to the diffraction limits

“Landscape photographers can gain direct access to leading-edge image quality without having to buy a modern Medium Format system”

of the lens. The aperture is so narrow at f/22 that light passing through the aperture generates a distortion pattern around the image. It's like having an overlay of slightly out of focus images scattered across your frame.

On a larger camera format, the physical size of the aperture for any given f-stop is greater, so the extent of diffraction is much less when compared to DSLR.

The net result is that you get sharper images at f/22 on a Medium Format system. You can push through to those higher f-stops with less distortion, plus the physically larger lenses and larger sensor give you better resolving »

LENS BEFORE PIXELS

Digital backs sporting a mere 20MP of image capture might seem a little light compared to the specs on many partial-frame SLR cameras today, but don't let the numbers fool you. The quality of the lens is still the most important factor when shooting landscapes, and you need an exceptional lens to come close to the resolving ability of most digital sensors. Pixels alone are no good without good glass in front. Medium Format systems are engineered for professional markets that demand lens performance, and even in this realm the older film lenses have been superseded by modern versions with superior optics.



TOUCH SCREEN DISPLAY
The IQ180 features a 3.2" high resolution iPhone-style touch screen display, great for zooming, scrolling and a range of other context-sensitive invisible controls.

PHASE ONE IQ SERIES
The Phase One IQ180, IQ160 and IQ140 digital camera backs feature maximum resolutions of 80, 60.5 and 40 megapixels, and are absolutely top of the line.

ability. Shooting landscapes at higher f-stops demands slower shutter speeds of course, and hence you find quality tripods are common accessories to Medium Format photography.

Pieces of the puzzle
Modular design also makes Medium Format systems that little bit unique. Traditional film cameras like the Hasselblad 500 series and Mamiya RZ series were popular with professionals because they separate the camera from the film in a very physical sense. Cartridges loaded with film would slip onto the back of the camera, your lens of choice slips onto the front, and away you go. You don't change rolls of film; you change the entire cartridge.

Detachable cartridges enabled photographers to swap between film speeds, negatives, transparency or B+W. A fair number of lovely old Medium Format cameras are also supported by brand new digital backs. Landscape photographers can therefore gain direct access to leading-edge image quality without having to buy a modern Medium Format system, while still being able to opt for the analogue option when desired.

The potential for shopping on the second-hand

FIELD OF VIEW
Comparing the angle of your lens between Medium Format and DSLR is not always straightforward. On a full-frame DSLR, a 50mm lens is a "standard" field of view, or what we see through our eyes. Medium Format cameras use 80mm for a standard lens instead, a function of the larger geometry for a larger sensor. More affordable digital backs have a cropping factor however, around 1.3 or 1.2 of the full frame, so your 35mm wide-angle lens on a Medium Format system may be equivalent to 24mm on a DSLR.

market for good equipment and swapping between film and digital is worth a closer look. Buying a camera system that predates autofocus can save you a lot of money, and who needs a rapid autofocus system when composing a waterfall anyway? Limitations do exist for older lenses, but for the purpose of getting into the market and shooting on a big format, there are ways to save a few pennies.

Working with manual focus takes on a whole new feel when you're looking through the large and vibrant viewfinder of a Medium Format system. Not only is your sensor bigger, but the image presented through the viewfinder is bigger too. Manual focus is a far more satisfying experience when you can see the subject clearly. »

"Buying a camera system that predates autofocus can save you a lot of money"

TRY BEFORE YOU BUY
Before you invest \$15,000 in a camera system, you can rent a Medium Format kit for a weekend and take it for a test drive. Most professional dealers will charge a modest price for the service and might deduct the rental costs if you later decide to buy.



INVENTING A GENRE
Tokyo-based Mamiya pioneered the establishment of the 645 format for pro shooters, and its latest incarnation – the 645DF – continues to produce images of the highest quality.

Mamiya 645DF

Affordable and expandable

If you want Medium Format without maximum pricetag, the Mamiya 645D puts forth a compelling argument.

» DETAILS

PROS LOVE THE MAMIYA LABEL because for decades their studio cameras delivered image quality that many regarded as superior to Hasselblad. Not as compact to operate as the Swedish brand, the Mamiya RZ series were heavy rigs to pack up and take on a trek in search of landscape scenes.

The modern version builds on the established quality of the brand but couples the digital technology of Phase One, the guys who first developed digital backs for the Hasselblad and hence developed Capture One software for processing RAW files. You can still buy the RZ series and get support for digital backs, but the more contemporary style of the 645DF range is both easier to pack and lighter on the budget.

The Mamiya system offers autofocus abilities comparable to DSLR and a very fast internal shutter in case you need to do some studio work too. The Phase One 645DF is an identical camera body and uses the same lenses, but these are sold with the Phase One digital backs that offer slightly different features to the Mamiya digital backs, which are re-branded from the Leaf Aptus-II range. The Mamiya bodies work seamlessly with Phase One digital backs for future upgradability.

Mamiya 645DF with 22MP Digital Back

RRP: \$10,999

Lens 1: Sekor 35mm f/3.5, RRP: \$2299

Lens 2: Sekor 80mm f/3.5, RRP: \$2299

Total package: under \$15,000

Sensor: 22MP across 48mm by 36mm (cropping factor of 1.2)

Long exposures: maximum exposure of 32 seconds

Sensitivity range: 25-400 ISO

Display: 3.5"

Website: mamiya.com

» VERDICT

XXXXXXXXXX XXXXXXXXXXXX XXXXXXXXXXXX XXXXXXXXXXXX
XX
XX

» RATING 9.5/10

A GRAIN OF SALT

A Medium Format master, Murray Fredericks has spent years studying and photographing the salt landscapes of Lake Eyre, and has learned a thing or two about camera technology in the process.

Some names just keep popping up in the world of photography. Talent will out. Murray Fredericks is the photographer behind a unique project to capture the void of salt lakes in the Australian outback. His images are contemporary by nature and gain strength through Fredericks' bold use of the flat terrain of dry lakes. When he began his work, the lake was dry. But all that changed in recent years.

"Salt" has been extensively exhibited in Melbourne and Sydney during the last half of 2011, and his most recent works have made appearances in Europe and China, too. I was charmed to see some of Fredericks' work at the 2011 Paris Photo art fair (see page 104 for more), with his spectacular 193cm-wide prints of storm clouds over the Tiwi Islands being represented by one of London's best fine art galleries.

On several occasions in the last year I had stood before a massive print of Fredericks' hard work and found great inspiration. That's the mark of a successful photographer: the ability to inspire other photographers.

In the world of "contemporary fine art landscapes" there is little doubt that size matters, and it's hard to imagine a DSLR camera that could capture the depth of detail, dynamic range and sheer scope of pixels to match the work of Fredericks. That's why in this issue we've drawn attention to the narrowing gap in budgets between high-end DSLR and entry-level Medium Format.

Landscape photography is essentially more a question of art than technique, which for Fredericks meant spending weeks at a time camped out on the salt. Year after year he returned to capture more images as his photography

evolved and took shape. Your choice of camera system affects the artistic nature of your images in ways that cannot be ignored.

Medium Format photography won't suit everyone, and is not a magic panacea for better photos. It's another medium to work within, one that demands patience but rewards with quality. Murray Fredericks can no doubt take lovely photos with a DSLR, but I'm pretty sure his images standing 193cm wide on gallery walls are shot with his finest Medium Format equipment.

We can't all walk around with a 60MP Phase One digital back to capture our landscape impressions, but I'm appreciative of Fredericks' fine photography for inspiring me to look more closely at Medium Format as a serious option in the world of digital photography. murrayfredericks.com.au



■ Salt 300 (Tent & Bike)
2005; Pigment print on cotton rag; 120 x 250cm; Edition of 7; courtesy of Murray Fredericks and Arc One Gallery, Melbourne

Nikon D3x

Comparison DSLR

We couldn't very well discuss the merits of moving to Medium Format without a nod to the type of systems you'll be leaving behind...

QUALITY ON THE GO
There's no question that high-end DSLRs such as the D3x were designed with sports photography and photo-journalism in mind.

WE SHOPPED FOR THE best full-frame DSLR available from Nikon, equipped with their

very best quality wide angle lens plus a second prime lens for shooting detail or people. Quality is paramount for landscape work and we wanted to compare lenses that would yield the best image quality for our DSLR comparison. You'll need a budget of just under \$14,000, or less if you already have some good lenses.

Implicit with this comparison is the assertion that Medium Format sensors will give a better image quality than the Nikon D3x. My geeks in white



» DETAILS

- Nikon D3x**
- Sensor Size:** 24.5MP across 36x24mm
- ISO Range:** 100-1600
- Long exposures:** Bulb setting and noise reduction mode gives access to very long exposures
- Display:** 3.0"
- Website:** nikon.com.au
- RRP:** \$9999.95
- Lens 1:** Nikkor AF-S 24mm f/1.4G ED, \$2199
- Lens 2:** Nikkor AF-S 85mm f/1.4G, \$1699
- Total package:** street price under \$14,000

» VERDICT

XXXXXXXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXXXXXX

» RATING **x/10**

BEST-IN-CLASS
Regarded by many as the best DSLR currently on the market, the D3x still falls some way short of Medium Format systems.

coats argue convincingly that the dynamic range and colour reproduction is noticeably better on the Hasselblad or Phase One digital backs when stacked against the best from Nikon, Canon or Sony. The Nikon D3x is superb, but the physics of Medium Format is better.



■ Nikkor AF-S 24mm and 85mm f/1.4 lenses

Double takes

One challenge for engineers of Medium Format cameras has been applying a high-speed shutter across a large exposure area. Moving a shutter at 1/500th of a second across the film or sensor is very tricky, even more so without generating a large slap inside the camera. Shaking the internals is bad for image quality.

One solution was to put a shutter inside the lens instead of the camera. Leaf shutters take advantage of the narrow distance across the aperture to apply the exposure time, achieving very high shutter speeds that we typically associate with SLR cameras. Most modern lenses on Medium Format systems use this solution. Now you have a situation where the camera has a shutter as well as the lens, and some synchronisation is required to keep everything in step.

The internal shutter flies open, signals the lens that all is good to go, then the leaf shutter allows a metered length of light to come through. Landscape photographers need to know this because high-speed shutters are rarely a requirement for their

“The Nikon D3x is superb, but the physics of Medium Format is better”

work. Older lenses that don't have a leaf shutter are still fine for landscape use, as the internal shutter will suffice for tripod work. It means you have the option of saving a few dollars and shopping for a second-hand lens that doesn't have a leaf-shutter.

Second-hand news

We asked a few second-hand dealers for recommendations on Medium Format cameras that could be attached to digital sensors. The popular suggestions were the Contax 645, Mamiya RZ, Mamiya 645 and Hasselblad H or V mounts. Other models also work with the latest digital backs, but many well-loved brands are no longer in manufacture, which means you could be buying into a camera system that's hard to replace if the body fails or malfunctions.

It was even suggested to me that »

Hasselblad H4D-31

Beyond landscapes

A longtime leader in the Medium Format stakes, Hasselblad's H4D-31 places formerly untouchable quality within arm's reach.

THE PRICE RANGE OF THE 'BLADS goes beyond our entry level budget but you only get what you pay for. The modern H4D series provides a lot more functionality than the average landscape photographer will use, but will find additional use in any studio as such.

Hasselblad have invested a lot in their autofocus lens range that compliments the hardware, and added features such as "True Focus" which actively holds your focal point while you re-frame a shot. Of more interest to landscape photographers is support for adding a GPS receiver to the body. The geeks in Sweden are doing some interesting things with digital sensors to enhance the image

quality and expand dynamic range even further. As you climb higher through the range of sensors you start to see features like multi-shot imaging, which shifts pixels between a series of frames to build superior detail. The latest version of their 50MP sensor can shoot six frames to generate a 200MP image as well. You won't see multi-shot in the entry level H4D-31, but you can always add a better digital back later.

Landscape work may also benefit from Hasselblad's unique solution to tilt-shift technology. The HTS 1.5 tilt shift adaptor sits between your lens and body to deliver exceptional control of depth of field for a range of compatible H series lenses.



» DETAILS

- Hasselblad HD4-31**
- Sensor size:** 31MP across 33mm by 44mm (cropping factor of 1.3)
- Long exposures:** Maximum exposure of 64 seconds
- Sensitivity range:** 100-1600 ISO
- Display:** 3.0" with 230,400 pixels
- RRP:** \$6495 (inc HC 80mm f/2.8 lens)
- Website:** hasselblad.com.au
- Lens 1:** HCD 28mm f/4, RRP: \$4495
- Lens 2:** HC 80mm f/2.8, RRP: \$2695 (inc in kit)
- Total package:** RRP \$20,990

» VERDICT

XXXXXXXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXXXXXX

» RATING **8.5/10**

FOCUS FACTS
Hasselblad sets themselves apart with added features like "True Focus", which actively holds your focal point while you re-frame a shot.

“Of more interest to landscape photographers is support for a GPS receiver”

TILT SHIFT
Use of an HTS 1.5 tilt shift adaptor on the Hasselblad provides great control over depth of field.

FUNCTIONAL AND FLEXIBLE
The H4D series comes packed with more features than a landscape photographer will need, and so doubles as an excellent studio system to boot.



Hasselblad 500C

Second-hand like new

Going back to where it all began for Hasselblad, the 500C represents a landmark for the company, and the entire photographic landscape.

ANYONE WHO HAS HELD A Hasselblad 500 series will know that it feels unlike the other Medium Format cameras. Peering down into that large viewfinder is the ultimate "shoot from the hip" experience. The solid feel of the winder mechanism only adds to the allure. For landscape photographers the absence of autofocus technology is not a problem, and in fact represents a bonus to carry around a minimal kit that needs less battery power. Hasselblad stopped selling the 500CW very recently but the second-hand market is loaded with good bodies in top condition. Even the older Hasselblad 500 series models, dating back

to 1957, can be used with a digital back. We found a lovely old 500C at a second-hand dealer with a 40mm CF Distagon, 80mm CF Planar and a film cartridge for good measure. The asking price was \$1400. The Leaf Aptus-II 22MP sensor delivers comparable pixel count to the very best of DSLR technology but with the exceptional image quality you expect from Medium Format. If you can't afford a brand new Medium Format camera system, this might be a stepping-stone to better landscapes. Hasselblad also offer their own digital back dedicated to these models, the CFV-50. The resolution of this sensor at 50MP may well exceed the resolving power of the original V-series CF lenses, but if you're a Hasselblad fan and have a few of the more modern CFI lenses stashed away, then this sensor will match their abilities nicely. There's even support in the CFV-50 to correct for known lens aberrations and enhance the final image quality.

HUNT AROUND
Hasselblad may have stopped stocking the shelves with the excellent 500CWs, but the second-hand market has plenty. A little digging will yield results.



» DETAILS

Hasselblad 500C with Leaf Aptus-II 5 Digital Back

Sensor size: 22MP across 48mm by 36mm (cropping factor of 1.2)

Long exposures: max 32secs

Sensitivity range: 25-400 ISO

Display: 3.5"

RRP: \$11,000

Website: leaf-photography.com

Second-hand Hasselblad 500C with 80mm and 40mm CF lenses

Street Price: \$1400

Total package: street price under \$9000

Hasselblad 500C with CFV-50 Digital Back

Sensor Size: 50MP across 38mm by 49mm (cropping factor of 1.2)

Long exposures: max 64secs

Sensitivity range: 50-800 ISO

Display: 2.5"

RRP: \$19,495

Website: hasselblad.com.au

Second-hand Hasselblad 500C with 80mm and 40mm CF lenses

Street Price: \$1400

Total package: street price under \$22,000

» VERDICT

XXXXXXXXXX XXXXXXXXXXXX XXXXXXXXXXXX XXXXXXXXXXXX
XX
XX

» RATING **x/10**



SERIOUS POWER
The Hasselblad CFV-50 delivers a 50 megapixel sensor twice the size of modern full-frame 35mm DSLRs.

"We found a lovely old 500c with an asking price of \$1400"



SOLID STATE
The sturdy Leica S2 boasts a huge 30x45mm sensor, encased in a gorgeously chunky body that's actually smaller than some DSLRs.

buying two camera bodies is not a bad idea, in case one fails and you're stuck with a digital back and lenses that don't adapt to newer models. Despite the reputation for quality optics from these familiar brands, buyers need to appreciate that lens technology has improved dramatically since the first Hasselblad 500C hit the market in 1957. Lens coatings and improvements in glass manufacturing have pushed forward the development of lenses to keep pace with the most advanced digital sensors. Autofocus is not the only advance in this area, so if you hope to drop 80MP behind your camera system one day, then a more modern lens design might be in order. Shopping for second-hand equipment is always difficult if you're not buying from a respected dealer, and particularly when looking at lenses. Poorly stored gear can be ruined by mould growing on the glass in humid climates, or may have suffered damage from sand inside the barrel for example. Unless you know what you're looking for, it can be hard to shop with confidence – and you're spending a lot of money to have a bad lens on a good digital back.

Big enough
How many pixels are essential for your landscape work is a matter of choice. Canon's 5D Mark II has been popular with budget-minded landscape photographers because at 21MP you're getting close to or above the number of pixels that an SLR lens can effectively resolve. Stuffing more pixels into the same sized sensor won't necessarily give you a better image. Medium Format systems project a larger image, and so give greater scope to add pixels before you hit the resolution limits of the lens. Medium Format sensors are available »

"You get better quality pixels from a physically larger sensor."

Leica S2

Big sensor in an SLR form factor

"The Leica S2 achieves image quality far beyond the M9"

It looks like a large SLR but in fact conceals a very large sensor – and is something all Leica fans should aspire to.

THIS UNIQUE CAMERA SYSTEM has been designed with a dedicated range of lenses but can also support Hasselblad V, Mamiya 645 or Pentax 67 lenses via optional adaptors. While the price tag puts the Leica S2 well outside our entry-level budget, this camera is still something for Leica aficionados to strive for. The sensor is a 3:2 format which should appeal to landscape shooters, plus the Leica engineers have chosen to skip the low-pass filter in favour of digital processing to address moire effects. This means less interference between your lens and the sensor. Capturing images is flexible with support for CF and SD cards when outputting DNG files.

Aesthetically the S2 looks like a DSLR, a very solid one, but still retains features you expect from a Medium Format system. You can't swap out the digital back, but you can swap in a leaf-shutter lens for dual-shutter support. Most importantly, the S2 provides a very large sensor that achieves image quality far beyond the smaller sensor of the Leica M9.

» DETAILS

Leica S2
RRP: \$27,390

Lens 1: LEICA ELMARIT-S 30mm f/2.8 ASPH, RRP: \$8250

Lens 2: LEICA SUMMARIT-S 70 f/2.5 ASPH, RRP: \$5610

Sensor: 37.5MP across 30mm by 45mm (cropping factor of 1.4)

Long exposures: Cable release for exposures above 30 seconds

Sensitivity range: 80-1250 ISO

Display: 3.5"

Website: leica.com

Total package: \$41,250

» VERDICT

XXXXXXXXXX XXXXXXXXXXXX XXXXXXXXXXXX XXXXXXXXXXXX
XX
XX

» RATING **x/10**



Pentax 645D

A big step beyond SLR

High-end resolving power in a camera that can confidently emerge from the studio to mix it in the field.

THE NEW RANGE OF FA AUTOFOCUS lenses for this new camera system are few in number, but for landscape work the essentials are available. The new 25mm lens gives you wide angle shooting while the 55mm lens is handy for getting a little tighter when needed. The price of the 25mm lens puts this package outside of our target price range, but if the budget can stretch the reward is 40MP of Medium Format detail. Pixels for dollars it represents great value, and the system will work nicely with older Pentax 645 lenses too.

Unlike the other Medium Format systems listed here the Pentax 645D has the sensor integrated into the camera body instead of being modular. In many ways the camera feels like an SLR and it certainly feels like a Pentax. Comparable size and weight to the Nikon D3x it's easy to use for anyone familiar with a DSLR, but boasts 40MP of detail that comes close to the resolving limits of the new lenses.

Weather sealing of the lens mount and new series digital lenses offer better protection from the elements than your average Medium Format, plus the sensor itself being fully contained adds a little extra weather insurance. As an added bonus this camera turns the rear screen into a level indicator to ensure flat horizons.

» DETAILS

- Pentax 645D**
- Sensor size:** 40MP across 33mm by 44mm (cropping factor of 1.3)
- ISO Range:** 100-1600
- Long exposures:** Bulb setting and DFS mode gives access to exposures beyond 30 seconds
- Display:** 3.0" with 921,000 pixels
- RRP:** \$12,995
- Website:** pentax.com.au
- Lens 1:** Pentax-D FA 645 55mm F/2.8 AL (IF) SDM AW Lens, RRP: \$1695
- Lens 2:** Pentax-D FA 645 25mm f/4 AL (IF) SDM AW Lens, RRP: \$5495
- Total package:** RRP just over \$20,000

» VERDICT

XXXXXXXXXX XXXXXXXXXXXX XXXXXXXXXXXX XXXXXXXXXXXX XXXXXXXXXXXX XXXXXXXXXXXX XXXXXXXXXXXX XXXXXXXXXXXX

» RATING **x/10**

“The additional sharpness and detail from a Medium Format system will give you a lot more latitude”

up to 80MP if you have the money to buy one, and the results are stunning when you print a fine art image onto a 60x40 inch canvas. With our budget comparison in mind, the more affordable digital backs at the 22MP end of the market offer equal pixel power to the best of DSLRs but with superior detail and quality. You get better quality pixels from a physically larger sensor.

If you're already shooting with professional quality DSLR systems, you'll appreciate that a 22MP file will blow up to 30x20 inches without any drama, giving you some impressive results as you explore the potential of digital landscape photography. The additional sharpness and detail from a Medium Format system will give you a lot more latitude than the same number of pixels from a full-frame DSLR.

When the time comes to upgrade your pixels, you'll need only swap the digital back, not the entire camera body.

CONCLUSION

Given a budget of \$15,000, the Mamiya 645DF looks like a compelling package. You won't get the superb flexibility of a Nikon D3x but you will get stunning image quality and tonal range, a modern camera system and a platform that can be expanded upon later. A great selection of lenses adds to the appeal of this camera system and your landscape rig can double for high-end studio work.

The generous display on the Mamiya backs and touch-screen controls help when trying to assess the sharpness of your frames. These digital backs are limited to exposure lengths of 32 seconds, but perform superbly in every other regard.

Weather sealing is not a big feature of these Medium Format systems, so you'll have to take care out in the field if you're used to a bit of rough and tumble with your current DSLR kit.

Phase One P45+

Large sensor for long exposures

Perfect for landscapes and fine art compositions, the P45+ is for shooters who know that a long time is a good time.

ONE OF THE BEST PERFORMING digital backs in recent years is still available for a wide range of Medium Format bodies, including the Hasselblad V and H mounts, the Mamiya and older mounts. This range of digital backs is being superseded by the Phase One IQ models, but still represents superb image quality and value.

The main feature of this sensor that places it into a unique category for landscape work is the ability to shoot exposures up to one hour in length.

Overheating is the main challenge with large sensors, which is why so many of the professional digital backs are limited to 30 seconds or thereabouts. I've spent a bit

» DETAILS

- Phase One P45+**
- Sensor size:** 339MP across 37mm by 49mm (cropping factor of 1.1)
- Maximum exposure:** 1 hour
- Sensitivity range:** 50-800 ISO
- Capture Cycle on a single charge:** 2500 frames
- Image Quality:** 16bit files with 12 stops of Dynamic Range
- Display:** 2.2" with 230,000 pixels
- Compatible cameras:** Contax 645, Mamiya 645 AFD, Hasselblad V and H
- Website:** phaseone.com
- RRP:** \$21,000

» VERDICT

XXXXXXXXXX XXXXXXXXXXXX XXXXXXXXXXXX XXXXXXXXXXXX XXXXXXXXXXXX XXXXXXXXXXXX XXXXXXXXXXXX XXXXXXXXXXXX

» RATING **8/10**



EXCELLENT VALUE
Although being overtaken now by the Phase One IQ models, the Phase One P45+ still holds its own in image quality and value.

FLEXIBILITY
The Phase One P 45+ works seamlessly with the Mamiya 645 AFD (inc the Phase One 645DF), Contax 645 and Hasselblad V and H systems.

“One of the best performing digital backs in recent years”

of time with professional landscape photographers capturing extremely soft light after sunset, and they don't mind dragging in exposures for 15 minutes or even longer. For them a Phase One P45+ would be essential rather than a luxury.

PRE-OWNED AND PRE-LOVED
All of Phase One's pre-owned digital backs are serviced, come with a 12-month warranty, and represent great value for money.



AS GOOD AS NEW
If you can't afford to head straight for the top shelf, the Phase One website has a very handy resource that lets you consider buying a top quality pre-owned Phase One digital back.

new pic: needs deep etching. Gb