

Phase One P40+ Digital Back

By Stan Sholik



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The latest buzzword in technology is “convergence.” Technologies that in the past have developed along separate lines are now converging into a single platform. This can range from separate VCR and DVD players being bundled together to GPS devices and cameras being built into portable phones.

Convergence is happening in professional photography also of course. Several of the latest digital SLRs are capable of HD video recording and now stereo sound recording. While these are obvious examples of convergence, the new Phase One P40+ digital back is a more subtle illustration.

For the first time that I can recall since I have been writing about digital capture backs, a new model is being released with fewer pixels than the previous release. Not only does the P40+, with 40 megapixels, have fewer pixels than the 60.5 megapixel P65+, you can set the P40+ to capture at 10-megapixel resolution with the push of a button. Here is where the convergence comes in: the convergence of medium format digital back and digital SLR technology into a single product.

Shooting the P40+ at 10 megapixels delivers files with a resolution of the top digital SLRs of just a few years ago. Output size is full-page magazine quality and could easily produce a

Left: I photographed this hand-painted porcelain vase by artist Franz Bischoff for a book on his work being produced by a local museum. The subtle colors and tonality needed to be accurately reproduced and the P40+ was up to the task.



The P40+ is capable of producing exceptionally clean neutrals as well as saturated colors in the same capture as was done here in this photo of oysters that was created for my food portfolio.

16x20 photographic or inkjet print. The capture rate increases to better than two per second, high enough for any commercial, portrait and wedding assignment and all but the most extreme fashion shoot. While the capture rate seems slow from the spec, it is actually faster overall than 8 fps because you never need to wait for a full buffer to clear. You can capture images at 1.8 fps with the P40+ until you fill your CF card or hard drive.

The other advantage to the 10-megapixel resolution is a doubling of available ISO speeds to settings of 200, 400, 800, 1600 and 3200. While the ISO 3200 setting needs some post-production noise reduction that the Capture One software is yet to include, all of the other ISO settings deliver perfectly usable images with non-existent to acceptable noise. This means that a wedding photographer can shoot available light in the church, group photos before the reception and flash photos during the reception without changing camera systems. Photojournalists could shoot picture stories without additional lighting.

These capabilities of the P40+ are the result of Phase One's Sensor+ technology developed by Dalsa, the manufacturer of the P40+ sensor, in partnership with Phase One. Through

some clever mathematics and in-camera processing, Sensor+ effectively doubles the pixel size, resulting in a doubling of ISO speed and a reduction by a factor of four in the number of pixels. Phase One first introduced Sensor+ technology in their currently top-of-the-line P65+ back. Incorporating Sensor+ into the P40+ brings the technology to a more useful and cost-effective level.

But, you say, digital SLRs are converging upward with more megapixels, etc., so why invest in a medium format system? If you're asking this question, you've probably never shot with a medium format digital back. The answer to the question is, simply, image quality. The P40+, as with all medium format backs, uses CCD sensors rather than the CMOS sensors found in most digital SLRs. It is generally agreed that CCDs deliver superior image quality, although they are more expensive to produce.

Medium format sensors, including the P40+, also do away with the anti-aliasing filter found on most digital SLRs. This filter is designed to soften the image and eliminate moiré. By eliminating it, sharpness is visibly improved.



Left: This portrait of Laguna Beach artist Wolfgang Bloch in his studio is the type of assignment I would normally shoot with a digital SLR. Instead, I used the Sensor+ technology of the P40+ at ISO 1600 so I could comfortably handhold the camera and 28mm lens as I composed and shot quickly. Exposure: 1/100 at f/8. **Below:** I had a hard time finding an area that would show noise in the image.



And the P40+ has no microlens array on the sensor either, which can further degrade the image. What the P40+ does have is full 16-bit capture making more information available for every color in the image than you will find in any digital SLR.

Another advantage that the P40+ has over digital SLRs is simplicity in operation. You are not assaulted with an array of buttons and custom menus. If it were possible to call a design that is about five years old “classic,” then I would use that word to describe current line of Phase One backs. Even if you have never used one previously, you can take it out of its case, charge a battery and be capturing images immediately.

While Sensor+ technology in the P40+ gives you capture speed, high ISO capability and enough resolution for most uses, when you need more resolution, the P40+ delivers that also. Phase One has finally named a back with the actual capture resolution, 40 megapixels, which breaks down to 7320x5484 active pixels. With more information to process than with the Sensor+ active, capture time drops to 1.2 captures per minute. The physical size of the sensor is the smallest of all Phase One backs, approximately 44x33mm, which means a 1.3x lens fac-

tor, making your 80mm lens a usable portrait focal length.

Image quality at full resolution is excellent. Among the backs I have tested, only the Phase One P65+ with half as much resolution delivers better image quality. Dynamic range drops off slightly as you increase ISO speed, but you will need to examine images closely to see it.

With excellent full resolution capture and the versatility of Sensor+, there are still areas for improvement with the P40+ and the Phase One system.

Battery life has never been a strong point with Phase One backs, and the P40+ is no exception. While Phase One rates battery life at 2500 captures in a 4-hour period, my experience would seem to be more like 100–200. In the studio, if you are shooting tethered to a computer with a 6-pin FireWire port, the P40+ will draw power from the computer and battery life is not an issue. On location, a six-pack of fully charged batteries would be good to have available for a day’s shooting.

Some users will find the current lack of Live View to be a drawback. Phase One says this is a limitation of the Sensor+ design that they are working to solve. It may be available by the

time you read this. Let's hope that it is easier and more intuitive to use than Phase One's Live View on the P45+.

Another limitation of Sensor+ backs is the amount of exposure time they can handle. If you need shutter speeds longer than one minute, the P40+ isn't for you.

Phase One continues to suffer through criticism of the smallish size of the LCD on their backs, compared with the size of LCDs on digital SLRs. To me this is a non-issue. In the studio I'm capturing directly into the computer. On location I have a huge viewfinder in which to compose and a histogram the size of the LCD on which to check exposure. The P40+ LCD is bright enough to be useable in direct sunlight, unlike my Nikon's, and you can zoom far into the image to check focus if you need to. I don't see the problem.

As technologies converge, Phase One is at the forefront

with the P40+ back. The P40+ provides a solution for photographers who are looking for the image quality of a medium format back with the ease of use and speed of capture needed to handle virtually any professional assignment short of sports. Wedding photographers in particular should take a close look at the P40+.

MSRP of the P40+ back including the Phase One/Mamiya 645AFD III camera is \$21,990 with the Classic Warranty. More information about the P40+ and Sensor+ technology is available at www.phaseone.com.



Stan Sholik is a commercial/advertising photographer in Santa Ana, CA, specializing in still life and macro photography. His latest book, Professional Filter Techniques for Digital Photographers, is published by Amherst Media.

TECHNICAL SPECIFICATIONS

Imaging technology	
Sensor:	CCD
Lens Factor:	1.3
Resolution:	40 megapixels
Active pixels:	7320 x 5484
CCD size effective:	44mm x 33mm
Image ratio:	4:3
Microlens on CCD:	No
Dynamic range:	12.5 f-stops
P 40+ full resolution capture mode:	
Resolution:	40 megapixels
Pixel size:	6 x 6 micron
Raw file compression	IIQ Large: 40MB IIQ Small: 26MB
ISO:	50, 100, 200, 400, 800
Sensor+ capture mode:	
Resolution:	10 megapixels
Pixel size:	12 x 12 micron
Raw file compression	IIQ Large: 10MB
IIQ Small:	7MB
ISO:	200, 400, 800, 1600, 3200
Output files	
Color depth:	16 bit per color
Image file formats:	All output formats of Capture One are possible: TIFF-RGB, TIFF-CMYK, JPEG.
Color management:	RGB, Embedded ICC profile, CMYK
Camera system	
Capture time:	1.2 sec./frame - 1.8sec/frame depending on camera platform
Storage security:	Phase One Secure Storage System technology
Battery type:	7.2 V Lithium Ion 2500mAh
Battery Lifetime:	2000 Captures
Exposure time:	1/10000 sec. - 1 minute
Live preview:	Promised
IR filter:	Mounted on CCD
Cooling system:	Passive cooling
Power up time:	Less than 2 sec. from OFF, sleeping architecture for instant ON
Power:	8-33 V DC (from FireWire®)

LCD screen	
Size:	2.2"
Resolution:	230,400 pixels
Viewing angle:	160°
P 40+ mounts	
Phase One/Mamiya:	Phase One 645 AF, Mamiya 645AFD series, RZ67 Pro IID, Mamiya RB67es, Via adaptor: Mamiya RZ67 Pro IID
Hasselblad V:	Hasselblad 555ELD, 533ELX, 503CW and 501CM
Hasselblad H:	Hasselblad H1 and H2 / Fuji GX645
Contax:	Contax 645AF
Technical cameras and wide angle	
4 x 5" via Flexadaptor:	Arca Swiss, Cambo, Linhof, Toyo, Sinar, Plaubel, Horseman
Operating conditions	
Temperature:	0° to 40°C (32° to 122°F)
Humidity:	15 to 80% RH (non-condensing)
Lighting	
Supports all photographic lights:	Flash, tungsten, daylight, fluorescent, HMI
Computer minimum requirements	
Mac:	Fast Core 2 Dual or later CPU, 4 GB RAM. Fast HDD: RAID 0 configured systems for maximum performance. Nvidia 8800 series graphics card or newer, IEEE 1394 interface
PC/Mac:	Pentium III, 2 GB RAM, IEEE 1394 interface, Windows XP Service Pack 3 or Windows Vista Service Pack 1
Software	
Capture One 4.8 or later	
<i>All Technical specifications are based on Phase One test standards, and can be changed without notice.</i>	