

P+ Digital Back Overview

	P 65+		P 40+		Achromatic+	P 45+	P 30+
Description	World's first full frame medium format digital back, featuring Sensor+ with a choice of 60.5 megapixels for finest resolution or scaled full frame captures for fast workflow and low light versatility.		Fastest digital back with up to 1.8 fps in Sensor+ mode. A choice of 40 or 10 megapixels and an ISO range from 50 to 3200 makes this digital back the most versatile tool in the range.		The Achromatic+ digital camera back is designed to be a high performance black and white only product with no color filters on the sensor.	High resolution shooter with unlimited burst sequences and optimized for large format photography with live preview functionality for easy composition and focus checking.	The top quality fast fashion shooter with ISO 1600, with superior moiré control and well suited for harsh environments.
Sensors							
Lens Factor	1.0		1.3		1.1	1.1	1.3
CCD size effective	53.9 x 40.4 mm		43.9 x 32.9		49.1 x 36.8	49.1 x 36.8	44.2 x 33.1
Active pixels	8984 x 6732		7320 x 5484		7216 x 5412	7216 x 5412	6496 x 4872
Pixel size (micron)	Full res. 6 x 6	Sensor+ 12 x 12	Full res. 6 x 6	Sensor+ 12 x 12	6.8 x 6.8	6.8 x 6.8	6.8 x 6.8
Resolution (megapixels)	60.5	15.0	40	10	39	39	31.6
Light sensitivity (ISO)	50-800	200-3200	50-800	200-3200	50-800	50-800	100-1600
Exposure time	1/10.000 sec. – 1 minute				1/10.000 sec. up to one hour with XPose+ technology		
Image quality	16bit-OptiColor+, 12 f-stops Dynamic+ and Lens+ technology				12 f-stops Dynamic+ Lens+ technology		16bit-OptiColor+, 12 f-stops Dynamic+ and Lens+ technology
Capture time (frames per sec.**)	1.0	1.4	1.2	1.8	0.67	0.67	0.8
Battery Lifetime (up to captures/up to stand-by time*)	2000 / 3		2500 / 4		2500 / 4	2500 / 4	3000 / 4
Image buffer	1.3 GB High Speed RAM				640 MB high speed RAM		
Display	2.2" QVGA TFT with 230,000 pixels, high brightness and contrast both indoor and outdoor, very fine details						

Results are based on testing in Phase One's testing department. Variation may be expected due to specific camera set up. Battery used for test is new 2500mAh Li+.
 *) standby Time will vary a lot depending on temperature, usage of battery and state of the back e.g. Zero Latency will increase power consumption significantly
 **) Maximum expected performance. The actual performance will be dependent on the camera model and on the camera and digital back capture modes content is subject to change without notice

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Achromatic+ Camera System



Inset image by Niels V. Knudsen - © Phase One

Pure black & white

The Achromatic+ Camera System is the first commercially available medium format solution that is a true replacement for almost all scientific black and white film based solutions. The Achromatic+ Camera System offers much higher quality and with far more consistency.

The Achromatic+ back is designed to be a black and white only product with no color filters on the sensor. The Achromatic+ is supplied in two different configurations both featuring 39 megapixels resolution.

The first configuration includes a permanently mounted IR cut-off filter that is required to allow the sensor record the human visible spectrum.

The second version is supplied with no IR cut-off filter and is therefore capable of recording into the visible as well as the infrared and ultraviolet parts of the spectrum using interchangeable filters.

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Achromatic+ Specifications



Inset image by Niels V. Krudsen - © Phase One

- 39 mega pixel captures for maximum resolution and fine details
- Pure black and white sensor
- Perfect for fine art and black & white reproduction
- Ideal for scientific applications with interchangeable IR filters*
- Up to 1 hour noise free exposures
- Near full frame captures

Available models:

CV: Classic Visible photography - IR/UV protectionglass in front of CCD

* **ER:** Extended Range IR & UV light - No IR/UV protectionglass in front of CCD. For interchangeable filters

Imaging technology	
CCD	BW CCD
Lens Factor	1.1
Resolution	39 mega pixels
Active pixels	7216 x 5412 pixels
CCD size effective	49.1 x 36.8 mm
Pixel size	6.8 x 6.8 micron
Image ratio	4:3
Antiblooming	10 f-stops
Dynamic range	12 f-stops

Output files	
Color depth	16 bit monochrome
Image file formats	TIFF-RGB, TIFF-CMYK, JPEG
Color management	RGB, Embedded ICC profile, CMYK

Sensitivity	
ISO	50, 100, 200, 400, 800

Spectral Sensitivity	
CV Classic Visible photography	app 400-700 nm
ER Extended Range	app 350-1100 nm
For more information on filters visit: http://www.phaseone.com/Achromatic-tech-specs	

LCD screen	
Size	2.2"
Resolution	230,400 pixels
Viewing angle	160°

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	Intel-based Macs, 2 GB RAM, 10GB free harddisk space, FireWire® interface, Mac OS X 10.5.6 or later,
PC	Intel® Pentium® 4 or equivalent, 2 GB RAM, 10 GB of free hard disk space, IEEE 1394 interface, Windows XP®, service pack 3 or Windows Vista®, service pack 1, Microsoft® .NET Framework version 3.0

P+ back mounts	
Phase One/Mamiya	Phase One 645 AF/DF, Mamiya 645AFDII/ AFDIII
Phase One H101	Hasselblad H1 and H2
Hasselblad V	Hasselblad 555ELD, 553ELX, 503CW and 501CM Via adaptor: Mamiya RZ67 Pro II Mamiya RB67 Mamiya RZ67 PRO IID
Contax	Contaxt 645

Wide angle & technical cameras	
Possible via the Phase One FlexAdaptor & third party adaptors. Arca Swiss, Cambo, Horseman, Linhof, Toyo, Sinar, Plaubel, Horseman.	

Storage files	
Phase Ones IIQ RAW file format speeds up the image capture and file transfer. It increases the storage capacity by turning the full 16 bit image data into a compact RAW file format. The default IIQ RAW-large format is completely lossless.	
IIQ small:	27 MB
IIQ large:	44 MB

Software	
Capture One 5.1 DB or Capture One 5.1 Pro	

Certifications	
CE	

645DF Camera Body Specifications



- Open platform for maximum choice and compatibility
- Durable, proven platform for secure operation
- Ergonomic handling and ease of use
- Use Phase One digital lenses, Mamiya AFD lenses or Hasselblad V lenses
- Guaranteed up to 300.000 captures or 3 years (VA)
- Exposures from 1/4000s to 60 minutes
- Flash synchronization up to 1/800 sec.

Shutter speed from 1/4000s to 60 minutes, B and X modes can match the extreme long exposure capability of the P+ digital backs or stop action with fast shutter speed or flash.

The mirror and viewfinder of the Phase One 645DF camera are almost three times larger than those of 35mm cameras, providing much greater control of focus and composition.

While hosting a complete list of features and custom functions, the Phase One 645DF camera is extremely easy to use. All settings important to the exposure are easily controlled by manual dials and soft buttons.

Camera type	Modular 645 AF DSLR body
Lenses	Phase One Digital focal plane lenses, Schneider Kreuznach leaf shutter lenses and Mamiya 645 AFD lenses Compatible with Hasselblad V lenses
Backs	Open platform back mount
Auto focus	TTL phase-difference AF with 3 focus points Focus confirmation in manual mode Infrared AF assists for unfailing focus Auto focus lock for swift AF/ M shift
Shutter	1/4000s to 60 minutes Up to 2 FPS Shutter speed bracketing
Flash	Focal plane shutter: Up to 1/125s Leaf shutter lenses: Up to 1/8000s' 1 st and 2 nd curtain flash synchronization X sync terminal and support for TTL flash
Light Metering	TTL metering (average, spot and auto) Programmable AEL button Exposure compensation: +/- 5EV
Mirror-Up	Electronically-activated by switch on grip

Viewfinder	Fixed prism viewfinder Exchangeable diopter from -5 to +3 LCD panel full exposure information
Focusing Screen	Interchangeable focus screens Laser engraved mask for digital back Matte, Grid, Checker, Microprism
Selftimer	Self-timer from 2 to 60 sec
Remote	Screw in cable release on shutter button Terminal for electronic triggering devices
Stop down Preview	Stop down preview button on front of camera
Tripod Socket	1/4 inch and 3/8 inch included
Power Requirements	6 AA batteries (standard or rechargeable) External battery pack – 6 AA batteries External AC adapter
User configuration	3 Custom dial modes for capture settings 36 custom settings Customizable dials and buttons
Size	W, H, D // 6, 5, 7.2" // 153, 128, 184mm
Weight	35 oz. / 1030g, w/o batteries