

March 10, 2010

## **PENTAX 645D**

### **PENTAX's First Medium-Format Digital SLR Camera: Designed to be the Top of Medium-Format Digital SLR Cameras, Thanks to Super-High-Resolution Images**

HOYA CORPORATION PENTAX Imaging Systems Division is pleased to announce the launch of the PENTAX 645D lens-interchangeable, medium-format digital SLR camera. Thanks to the incorporation of a large image sensor, equal in performance to professional-standard digital camera backs, this high-performance model delivers super-high-resolution images with approximately 40 effective megapixels. It also offers outstanding dependability and superb operability and maneuverability to make outdoor shooting effortless and comfortable for demanding photographers.

The PENTAX 645D has been developed to provide super-high-resolution images produced by large image sensors — something previously available only on professional models — to serious landscape and outdoor photographers. It combines exceptional image quality with excellent maneuverability and outstanding reliability to simplify professional-level outdoor shooting. Thanks to the incorporation of a large, high-performance image sensor (measuring 44mm by 33mm) and PENTAX-original image-processing technology, it produces extra-sharp, super-high-resolution images with approximately 40 effective megapixels. It features remarkable durability and dependability, thanks to its lightweight but solidly built body featuring a magnesium-steel-alloy frame, reinforced glass LCD panel protectors and a reliable dustproof, weather-resistant construction. In addition, it is designed to be compatible with the majority of the existing PENTAX 645 system, so that current PENTAX 645-series camera users can take advantage of their valuable assets, including high-performance smc PENTAX 645 interchangeable lenses.

### **Major Features**

#### **1. Unprecedented image quality**

##### **(1) Super-high-resolution images made possible by approximately 40 effective megapixels**

The PENTAX 645D incorporates a high-performance CCD image sensor produced by Kodak. It measures 44mm by 33mm, and is approximately 1.7 times larger than its 35mm-format counterparts. Thanks to approximately 40 effective megapixels, it assures a wide dynamic range to faithfully reproduce the prevailing ambience and

the sense of depth in super-high-resolution images that are rich in gradation and truthful in texture description. In order to bring out the full potential of the lens and the image sensor and assure the highest level of image-resolving power, the CCD unit is designed with no low-pass filters.

### **(2) High-performance, high-speed PRIME II imaging engine**

The PENTAX 645D features the acclaimed, PENTAX-original PRIME (PENTAX Real Image Engine) II as its imaging engine. Thanks to its high-speed data-processing capacity and new algorithm exclusively programmed for medium-format digital SLR cameras, this high-performance imaging engine produces super-high-quality images rich in gradation and faithful in color reproduction, while allowing speedy data transmission of large-volume image data — even RAW-format images as large as some 50MB per file.

### **(3) 14-bit A/D converter for faithful conversion of image data to digital signals**

The PENTAX 645D features a high-performance A/D converter, which faithfully converts the large volume of analog image data output by the large CCD image sensor to digital signals carrying an extensive amount of image data, including resolution and gradation.

## **2. Solid, maneuverable body**

The PENTAX 645D's main frame is made of lightweight but strong magnesium-steel alloy, while the chassis is made of diecast aluminum to minimize the expansion and extension caused by heat and also to optimize kinematic accuracy and thermal stability. The LCD panels — one on the camera's top panel, another on the back panel — are covered with tempered glass plates for extra protection. The PENTAX 645D's body is also designed to be a compact and highly maneuverable medium-format camera, despite the incorporation of such dependable features as a dust-proof, weather-resistant construction with 70 special seals, outstanding cold-resistant performance to assure solid operation at a temperature as low as  $-10^{\circ}\text{C}$ , and a newly designed shutter unit with a top shutter speed of 1/4000 second that can withstand as many as 50,000 shutter releases.

## **3. Dual SD/SDHC memory card slots**

The PENTAX 645D has a pair of memory card slots for the recording of images on both SD and SDHC memory cards. This dual-slot design gives the photographer extra data-storage options: for instance, recorded images can be assigned to different cards according to recording format (such as RAW or JPEG), or one of the cards can be used as the backup of the other. The settings for each memory card slot can be easily made by dedicated button.

## **4. Dependable DR II mechanism to minimize dust spots**

The PENTAX 645D comes equipped with the highly dependable DR (Dust Removal) II mechanism, which effectively minimizes annoying dust spots on recorded images, even when the lenses are changed in dust-prone outdoor settings. By shifting UV/IR-cut filters placed in front of the CCD image sensor at supersonic speed using a piezoelectric element, this mechanism effectively and efficiently

shakes dust off the image sensor. Thanks to the user-friendly dust-alert system, the photographer can check at a quick glance for dust adhering to the image sensor prior to the actual shooting.

### **5. Newly designed, high-precision 11-point wide-frame AF sensor**

The PENTAX 645D's new SAFOX IX + wide-frame autofocus system features 11 sensor points (with nine cross-type sensors positioned in the middle) to assure the extra-high-precision focusing demanded of medium-format digital SLR cameras. To develop this sophisticated AF system, the entire optical system was redesigned, at the same time with the addition of the new functionality to analyze and make use of the light sources data in the field of view.

### **6. Advanced 77-segment multi-pattern metering**

The PENTAX 645D employs a state-of-the-art, 77-segment multi-pattern metering system to assure super-high-accuracy light metering. The exposure accuracy is further enhanced by collecting such additional data as image orientation (horizontal or vertical) and the distance to and magnification of the subject using the sensors installed inside the camera body, with the obtained data incorporated into exposure calculations.

### **7. Large, easy-to-see optical viewfinder**

Incorporated in the PENTAX 645D's finder unit, a trapezoid-shaped glass prism not only assures an approximately 98% field of view, but also greatly contributes to the downsizing of the camera body. Coupled with a bright, easy-to-focus Natural-Bright-Matte focusing screen, the PENTAX 645D's viewfinder offers a large, clear view of the subject.

### **8. Custom Image function to create desired visual effects with ease**

The PENTAX 645D's Custom Image function lets the user easily control an image's finishing touches to more precisely reflect the user's creative intentions, or to more faithfully reproduce the ambience of the scene. The user can select one of eight modes, including the new Reversal Film mode designed to create images with the colors that are typical of reversal film. In addition, all parameters — such as saturation, hue, contrast, sharpness, key, and highlight/shadow contrast — can be easily adjusted to desired levels, so that the photographer can shoot images with great ease.

### **9. Versatile, multi-mode exposure system for faithful reproduction of creative intentions**

#### **(1) Hyper Program function**

The PENTAX 645D's Hyper Program function allows the user to instantly switch from Programmed AE mode to Shutter- or Aperture-Priority AE mode with a simple turn of the electric dials positioned around the grip. A single push of the green button shifts the exposure mode back to the original Programmed AE mode.

## **(2) Hyper Manual function**

When shooting in the Metered Manual mode, the PENTAX 645's Hyper Manual mode lets the user to instantly set the proper exposure for the subject with a single push of the green button.

## **(3) Sensitivity-Priority mode**

The unique Sensitivity-Priority (Sv) mode automatically selects the optimum combination of aperture and shutter speed for the user-selected sensitivity. The sensitivity can be shifted swiftly by electronic dial on the back panel. The variable amount of the ISO could be configured to either 1/2 or 1/3 steps per click.

## **(4) Shutter/Aperture-Priority mode**

Taking full advantage of the unique capability of digital cameras for the automatic shifting of sensitivity at any time, the Shutter/Aperture-Priority (TAv) mode automatically selects the most appropriate sensitivity for the user-selected aperture/shutter-speed combination. It allows the user to effortlessly experiment with a greater range of photographic expressions.

## **10. Large, easy-to-view 3.0-inch LCD monitor with approximately 921,000 dots**

Positioned on the camera's back panel, a large 3.0-inch color LCD monitor with approximately 921,000 dots provides a clear, bright view of onscreen images and menus. Since its wide-view design allows quick, effortless confirmation of the monitor image from approximately 170 degrees both horizontally and vertically, the photographer has little difficulty shooting images from low and high angles. The LCD monitor is also treated with exclusive AR (Anti-Reflection) coating to minimize reflections on the screen, even in the outdoor locations under bright sunshine.

## **11. Long battery life**

The PENTAX 645D is powered by a large-capacity, rechargeable lithium-ion battery, which can capture approximately 800 images\* when fully charged.

*\* Under testing conditions prescribed by PENTAX, when using a rechargeable D-LI90 lithium-ion battery with no flash.*

## **12. Other features**

- 1) HDR (high dynamic range) function to create one composite image with an extra-wide gradation range from three images with different exposures
- 2) Dynamic-Range Expansion function to compensate for both whitewashed (excessively overexposed) and blacked-out (excessively underexposed) areas
- 3) Digital Level function for easy checking of the image's levels
- 4) Automatic compensation of distortion and lateral chromatic aberration (available in combination with the D FA 645- and FA 645- series lenses)
- 5) Versatile white-balance control system, including the CTE mode designed to emphasize the dominant color components of the captured images, which works especially well with such scene like sunset.

- 6) Mirror shock/operation-noise reduction function to assure smooth, quiet operation of the mirror during shooting
- 7) Attachment of copyright credits on recorded images
- 8) Compatible with the SDM (Supersonic Direct-drive Motor) autofocus mechanism, designed to assure smooth, quiet operation using the supersonic motor installed inside SDM lenses
- 9) HDMI terminal (for type C mini connectors) for high-resolution image data output
- 10) User-friendly, color-classified control buttons/switches, based on the color universal design concept
- 11) PENTAX Digital Camera Utility 4 software package, including a RAW-data processing application (based on the popular SILKYPIX RAW-data processing engine developed by Ichikawa Soft Laboratory) and browser application

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# 645D Specifications

Type	TTL autofocus, auto-exposure medium format digital SLR camera	
Effective Pixels	approx. 40 megapixels	
Image Sensor	Total pixels	approx. 40.01 megapixels
	Type	CCD with a primary color filter
	Size	44mm x 33mm
	Pixel size	6.0 μm x 6.0 μm
Dynamic Range	11.5f - stops	
Recorded Pixels	Still	JPEG: L[40M]7264x5440 pixels, M[32M]6528x4896 pixels [21M]5376x4032 pixels, S[13M]4224x3168 pixels [7M]3072x2304 pixels RAW: [40M]7264x5440 pixels
Formats	Still	RAW(14 bit): (PEF/DNG), JPEG: ★★★(Best), ★★(Better), ★(Good), RAW+JPEG: available
Recording file Format	Still	RAW (PEF/DNG), JPEG (Conforms to Exif 2.21), Conforms to DCF (Design rule of Camera File system) 2.0
Sensitivity ( Standard output sensitivity )	Auto:200-1000, Extension:100, 1600 (1EV steps or 1/2EV steps or 1/3EV steps)	
Storage Media	SD, SDHC memory card (Dual slot)	
White Balance	Auto, Daylight, Shade, Cloudy, Fluorescent Light ( D, N, W, L), Tungsten Light, Flash, CTE, Manual setting 1, Manual setting 2, Manual setting 3, Color temperature setting (3 types) with WB fine adjustment	
Custom Image	Bright, Natural, Portrait, Landscape, Vibrant, Muted, Reversal Film, Monochrome	
Viewfinder	Type	Trapezoid prism finder
	Focusing screen	Natural-Bright-Matte focusing screen
	Field of view	approx. 98%
	Diopter adjustment	approx. -3.5 - +2.0m <sup>-1</sup>
	Magnification	approx. 0.62 x (with D FA645 55mmF2.8 at infinity), approx. 0.85 x (with FA645 75mmF2.8 at infinity)
Monitor	Type	TFT color LCD monitor, Wide angle view, Brightness adjustable, Color adjustable, AR Coating, Reinforced glass
	Size	3.0 inch
	Dots	approx. 921,000 dots
Preview Method	Optical preview, Digital preview	
Playback	1 Image, 2 Image, 4 Image, 9 Image, 16 Image, 36 Image, 81 Image, Enlargement (up to 32X, scroll available), Image Rotation, Folder view, Slideshow, Histogram, Resize, Cropping, Bright/Dark area, Calendar view, Index view	
Digital Filter	Playback Mode	Monochrome, Extract Color, Color, Base Tweaking, Soft
Focusing System	Type	TTL phase difference detection, 11-point autofocus system (SAFOX IX+)
	Focus Mode	AF-single, AF-continuous
	Focus Point	Auto, Select, Center
	Superimpose	available
Exposure Control	Metering System	TTL open-aperture 77-segment metering
	Metering Mode	(1) Multi-segment metering, (2) Center-weighted metering, (3) Spot metering
	Exposure Range	EV 2-21 (at Standard Output Sensitivity 200 with 55mmF2.8)
	Modes	(1) Program AE, (2) Sensitivity-Priority AE, (3) Shutter-Priority AE, (4) Aperture-Priority AE, (5) Shutter and Aperture Priority AE, (6) Metered Manual, (7) Bulb, (8) X speed
	Exposure Compensation	±5EV
AE Lock	available	
Shutter	Shutter Type	Electronically controlled vertical-run focal plane shutter
	Shutter Speed	Auto:1/4000 - 30 sec, Manual:1/4000 - 30 sec (1/3 EV steps or 1/2 EV steps), bulb
Drive Modes	Single-frame, Continuous (Hi, Lo), Self-timer (12s, 2s), Remote control (0s, 3s ), Remote Continuous Shooting, Interval, Multiple Exposure, Exposure Bracketing, Extended Bracketing	
	Continuous shooting	<Both 1 slot and 2 slot> approx. 1.1 fps, RAW(PEF)+JPEG(40M at ★★★): until approx. 13 fps, RAW(PEF): until approx. 13 fps, RAW(DNG): until approx. 13 fps, JPEG(40M at ★★★): until approx. 15 fps
	Mirror Lock-up shooting	available by dedicated dial
Flash Synchronization	Hot shoe, X-sync socket, sync-speed: 1/125 sec., P-TTL, high-speed-sync, wireless-sync with PENTAX dedicated external flash	
Dust Removal	Image sensor cleaning function by supersonic vibration (DR II) with dust alert function	
Time	World Time	75 cities (28 time zones)
Data Folder	Folder Name	Date (100_MMDD...), PENTX (100PENTX, 101PENTX...),
	File Name	Standard, User customize
Power Sources	Rechargeable D-LI90 lithium-ion battery Optional AC adapter also available.	
Battery Life	Number of recordable images	approx. 800 (23°C) *, approx. 700 (0°C), approx. 650 (-10°C)
Interfaces	Playback time	approx. 440 minutes (23°C) *, approx. 400 minutes (0°C), approx. 380 minutes (-10°C)
	USB2.0 (Hi-Speed:mini B type), Video output (mini phone type), HDMI output (type C mini), DC input , Cable switch, X-sync socket	
Video Output	Compatible with NTSC and PAL formats	
Lens Mount	PENTAX 645AF2 bayonet mount	
Usable Lens	PENTAX 645AF2, 645AF, and 645A mount lenses	
Dimensions	approx. 156(W) x 117(H) x 119(D)mm (6.1 x 4.6 x 4.7 inches)	
Weight	approx. 1480 g (52.2 oz.) loaded and ready with battery and two SD memory cards	
	approx. 1400 g (49.4 oz.) without battery and SD memory card.	
Bundle software	PENTAX Digital Camera Utility 4 (Ver.4.20)	

\* Recording capacity shows approximate number of shots recorded during CIPA-compliant testing. Actual performance may vary depending on operating conditions.

# 645D Specifications

## Storage capacity

	RAW		JPEG														
	PEF	DNG	L			M						S					
Recorded Pixels	7264×5440	7264×5440	40M(7264×5440)			32M(6528×4896)			21M(5376×4032)			13M(4224×3168)			7M(3072×2304)		
Quality Level	---	---	★★★	★★	★	★★★	★★	★	★★★	★★	★	★★★	★★	★	★★★	★★	★
<b>128MB</b>	1	1	5	9	19	6	12	24	10	17	35	16	28	57	30	53	104
<b>256MB</b>	2	2	10	19	38	13	23	47	19	35	69	32	56	111	59	105	203
<b>512MB</b>	5	5	21	38	76	26	47	94	39	69	137	63	111	220	118	208	402
<b>1GB</b>	11	11	43	76	152	53	94	188	78	139	275	126	223	441	237	416	805
<b>2GB</b>	22	22	87	155	310	108	192	381	159	283	558	258	455	890	483	841	1617
<b>4GB</b>	44	44	172	306	609	213	378	749	313	556	1097	507	893	1749	950	1653	3176
<b>6GB</b>	67	67	262	465	926	324	575	1139	476	845	1667	770	1359	2659	1444	2513	4828
<b>8GB</b>	89	89	351	623	1240	433	769	1525	637	1131	2232	1031	1819	3559	1933	3364	6462
<b>12GB</b>	135	135	530	940	1871	654	1161	2301	962	1707	3368	1556	2744	5369	2917	5075	9749
<b>16GB</b>	180	180	706	1254	2495	873	1549	3069	1283	2277	4492	2076	3660	7162	3891	6769	9999
<b>32GB</b>	362	362	1418	2516	5006	1751	3107	6157	2574	4568	9012	4165	7343	9999	7805	9999	9999

The FW version which has been checked storage capacity is version is β17.

9999: available to shoot over 9999