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PENTAX K-1

PENTAX's first 35mm full-frame digital SLR camera, and the new flagship model of the popular PENTAX K series, providing outstanding operability and superb reliability

RICOH IMAGING COMPANY, LTD. is pleased to announce the launch of the PENTAX K-1 digital SLR camera. Developed as the flagship model of the acclaimed PENTAX K series of digital SLR cameras, this new model features a large CMOS image sensor, equal in size to the full image area of 35mm film, to deliver super-high-resolution images required for the artistic work of photo enthusiasts and professionals.

Equipped with a large, high-performance CMOS image sensor (35.9mm by 24.0mm) and supported by approximately 36.4 effective megapixels and PENTAX-original imaging technologies, the PENTAX K-1 assures super-high-resolution images rich in gradation and superb in high-sensitivity rendition. Thanks to its large image sensor, the camera provides the same depth of field as a 35mm film-format camera, and allows the user to create a fine *bokeh* (defocus) effect more effectively than before. By further advancing its unique technologies, accumulated over decades of camera development, PENTAX has also equipped the K-1 with a host of the latest technologies. A new-generation shake reduction mechanism effectively reduces camera shake along five axes with a compensation range of five shutter steps. This mechanism also shifts the image sensor unit by a single pixel to assure super-high-resolution digital imaging. An extra-accurate exposure-control mechanism is supported by state-of-the-art artificial intelligence technology. Within its compact body, the K-1 also provides an array of PENTAX-original features and functions, such as a flexible tilt-type LCD monitor that can be tilted to the desired angle horizontally and vertically without deviating from the lens's optical axis; an Operation Assist Light function to facilitate camera operation in the dark; and an optical viewfinder with a nearly 100-percent field of view. In addition to an assortment of interchangeable lenses · from old film-era lenses to the latest D FA-series models · the K-1 also accepts more compact DA-series lenses with a smaller image circle, with the help of its Crop function.

Main Features

1. High-resolution, fine-gradation images supported by approximately 36.4 effective megapixels
The K-1 incorporates a newly developed 35mm-format full-frame CMOS image sensor · the first time in a PENTAX K-mount digital SLR camera. It also features an AA (anti-aliasing) filter. free design that puts priority on image resolution. Coupled with a high-speed image processing system and the newly designed PRIME IV imaging engine, capable of 14-bit RAW-format

image recording, it optimizes the resolving power of approximately 36.4 effective megapixels to deliver super-high-resolution, fine-gradation images. It also allows for super-high-sensitivity shooting up to ISO 204800, and produces beautiful, high-resolution images over the entire sensitivity range · from the lowest sensitivity to the highest · while effectively minimizing annoying noise at all sensitivity levels.

2. New-generation SR II five-axis system

(1) In-body SR mechanism to assure optimal shake reduction performance with all compatible lenses:

The K-1 comes equipped with the PENTAX-developed SR II (Shake Reduction II) five-axis mechanism that enables accurate control of the large full-frame image sensor with all compatible PENTAX interchangeable lenses.* In addition to camera shake caused by pitch and yaw, this new system is also designed to effectively compensate for camera shake caused by horizontal and vertical shift (often generated in macro photography) and camera shake caused by roll, which is difficult to deal with by lens-installed shake reduction mechanisms. It has a compensation range of as much as five shutter steps · the widest of all PENTAX digital SLR models · to expand the limits of handheld shooting. Even when taking a panning shot, this system automatically detects the direction of the camera's movement, and efficiently controls the SR unit to always produce the best image possible without requiring any mode switching operation.

(2) Pixel Shift Resolution System with a new motion correction function

The K-1 features Pixel Shift Resolution System,** the latest super-resolution technology, which captures four images of the same scene by shifting the image sensor by a single pixel for each image, then synthesizes them into a single composite image. Compared to the conventional Bayer system, in which each pixel has only a single color data unit, this innovative system obtains all color data in each pixel to deliver super-high-resolution images with far more truthful colors and much finer details than those produced by conventional full-frame image sensors. This system even provides a new motion correction function,*** which automatically detects a moving object during continuous shooting and minimizes negative effects during the synthesizing process, in order to accommodate a wider range of scenes and subjects.

(3) Innovative AA filter simulator to minimize moiré

By applying microscopic vibrations to the image sensor unit at the sub-pixel level during image exposure, the K-1's AA (anti-aliasing) filter simulator**** provides the same level of moiré reduction as an optical AA filter. Unlike an optical filter, which always creates the identical result, this innovative simulator lets the user not only switch the AA filter effect on and off, but also to adjust the level of the effect. This means that the ideal effect can be set for a particular scene or subject based on given photographic conditions.

(4) Supportive shooting functions

Since the K-1's SR unit has a flexible design that tilts the image sensor unit in all directions, it provides a host of handy shooting functions, including auto level compensation, image-composition fine-adjustment, and ASTRO TRACER, which simplifies advanced astronomical photography using a built-in GPS module.

** Lenses compatible with this mechanism: K-, K_{A-}, K_{AF-}, K_{AF2-} and K_{AF3-}mount lenses; screw-mount lenses (with an adapter); and 645- and 67-system lenses (with an adapter). Some functions may not be available with certain lenses.*

*** When using this system, the user is advised to stabilize the camera firmly on a tripod. When a moving subject is captured in the camera's image field, its image may not be reproduced clearly, either in part or as a whole.*

**** The movement may not be sufficiently corrected when the object is moving in a certain direction and/or pattern. This function does not guarantee that the movement is properly corrected with all subjects.*

***** This function works most effectively with a shutter speed of 1/1000 second or slower. This function may not be combined with some shooting modes, including the Pixel Shift Resolution system.*

3. Flexible tilt-type LCD monitor to accommodate various shooting angles
On its back panel, the K-1 features a newly designed, flexible tilt-type LCD monitor, which can be tilted to the desired angle horizontally, vertically or diagonally with a single action, without deviating from the lens's optical axis. The user can not only tilt it approximately 35 degrees horizontally and approximately 44 degrees vertically, but also pull it out from its base to view the on-screen image from above for waist-level photography. This large, 3.2-inch LCD monitor has approximately 1,037,000 dots and a 3:2 aspect ratio, and provides a protective tempered-glass front panel for added durability. In addition to its wide-view design, it also features a unique air-gapless construction, in which the air space between LCD layers is eliminated to effectively reduce the reflection and dispersion of light for improved visibility during outdoor shooting. A new Outdoor View Setting mode allows the user to instantly choose the desired monitor brightness level with a single push of a button.
4. Newly developed SAFOX 12 with 33 sensor points and full-frame-proportioned AF frame
The K-1 features a newly developed SAFOX 12 AF sensor module with an expanded AF frame covering the full-frame image field with 33 AF sensors (25 cross-type sensors positioned in the middle). The center sensor and the two sensors located just above and below it are designed to detect the light flux of an F2.8 lens, making it easy to obtain pinpoint focus on a subject when using a large-aperture lens. Working together with the advanced PENTAX Real-Time Scene Analysis System, this AF system assures much improved AF tracking performance when photographing fast-moving subjects.
5. Upgraded PENTAX Real-Time Scene Analysis System, with application of artificial intelligence technology
By combining an approximately 86,000-pixel RGB metering sensor with the new PRIME IV imaging engine, the K-1's advanced PENTAX Real-Time Scene Analysis System performs real-time analysis of the brightness distribution over the image field and the subject's colors and movement. Based on this data, it then measures the subject's lighting conditions with great accuracy and optimizes the exposure. In addition, by adopting a breakthrough artificial intelligence technology called deep learning to its algorithm,* it assesses each individual scene more accurately, and optimizes the exposure settings for a given scene or composition.

** Effective when the AUTO exposure mode is set to Scene Analyze Auto and the Custom Image mode is set to Auto Select.*
6. Easy-to-focus optical viewfinder with nearly 100-percent field of view
Newly developed for its 35mm full-frame design, the K-1's optical viewfinder provides a nearly 100-percent field of view and an approximately 0.7-times magnification. It comes with a Natural Bright Matt III focusing screen, which is acclaimed for ease of focusing during manual-focus operation and a true-to-life rendition of defocused areas in the viewfinder image. In addition, its transparent viewfinder display makes it possible to superimpose a wide range of photographic data over the viewfinder image.
7. High-speed continuous shooting with a top speed of approximately 4.4 images per second
The K-1 has a larger shutter unit, which is newly designed to accommodate the camera's full-frame image sensor. It also incorporates a range of new mechanisms to provide high-speed, high-accuracy control of the mirror unit, including a damper mechanism that effectively minimizes mirror shock. A high-speed data transmission system incorporated in the PRIME IV imaging engine allows the user to continuously record as many as 17 images in the RAW

format (or a maximum of 70 images in the JPEG Best format) in a single sequence, at a top speed of approximately 4.4 images per second.

8. Supportive shooting functions to improve picture-taking efficiency and operational comfort

- Operation assist light function, which provides LED lights at four different spots around the camera body (above the lens mount, behind the LCD monitor, at the memory card slot, and at the cable switch terminal) to facilitate lens and memory card changes, attachment and removal of a cable switch, and control button operation at night and in poorly lit settings.
- Key lock function, which prevents erroneous operation of the four-way controller and other exposure-related control buttons.
- Smart Function, which allows the user to swiftly choose and set desired functions using just the function dial and the set dial on the camera's upper panel, without referring to the menu screen on the LCD monitor.
- Control panel customize function, which allows the user to change a listing and/or position of the on-screen menu.

9. Compact, solid body with dustproof, weather-resistant construction

The K-1's bottom panel and front and back frames are all made of sturdy yet lightweight magnesium alloy. Although the camera features a dependable, durable shutter unit that can withstand 300,000 shutter releases (measured under actual shooting conditions) for professional use, its body has been downsized to the minimum, thanks to the incorporation of a newly designed floating mirror structure. With the inclusion of 87 sealing parts in the body, the K-1 also boasts a dustproof, weather-resistant and cold-resistant construction, assuring solid operation at temperatures as low as -10°C. All these features make the K-1 a dependable, all-purpose performer, even under demanding shooting conditions.

10. Wireless LAN connection to support smartphone operation

The K-1 provides a host of wireless LAN (Wi-Fi) functions to support the operation with smartphones and tablet computers. By installing the dedicated Image Sync application in a mobile device, the user can remotely check the live-view image, capture still images, and adjust such camera settings as aperture, shutter speed and ISO sensitivity to the desired level through the mobile device. It is even possible to download captured images onto the mobile device, then upload them on social networking service websites.

11. Full HD movie recording with an array of creative tools

The K-1 captures Full HD movie clips (1920 x 1080 pixels; 60i/30p frame rate) in the H.264 recording format, and comes equipped with a stereo mic terminal for external microphone connection and a headphone terminal. The user can also adjust the audio recording level manually, monitor sound pressure levels during microphone recording, and cut down wind noise using a new wind noise reduction mode. In addition to a host of distinctive visual effects available for movie recording,* the K-1 also provides the interval movie mode, which captures a series of 4K-resolution (3840 x 2160 pixels) movie clips at a fixed interval.

** When special image processing is required, the frame rate may vary depending on the selected special-effect mode.*

12. Built-in GPS module

Thanks to its built-in GPS module, the K-1 provides a variety of advanced GPS functions, including the recording of location, latitude, longitude, altitude and UTC (Universal Time Coordinated) and direction at the time of shooting. The user can easily access images

containing GPS data using a computer, to browse them, check on shooting locations and position data on the screen, or save them.

The K-1 also provides a set of other unique tools, including: Electronic Compass, which displays the camera's direction on its LCD monitor; GPS log, which keeps track of the photographer's movement; and ASTRO TRACER, which simplifies the tracing and photographing of celestial bodies by coupling GPS data with the camera's SR mechanism.

13. Other features

- High-grade DR II (Dust Removal II) mechanism for effective elimination of dust on the image sensor using ultrasonic vibration
- Crop mode with a choice of image area from AUTO, FF (Full Frame) and APS-C, to accommodate different types of lenses
- Clarity control and Skin Tone correction functions, a pair of the latest image processing technologies developed by RICOH Central Laboratory
- HDR (High Dynamic Range) shooting mode with RAW-format data filing, usable in handheld shooting
- The PENTAX-invented hyper operating system for quick, accurate response to the photographer's creative intentions
- Dual SD card slots for memory card flexibility (compatible with SDXC UHS-1 speed class in SDR104 buss speed mode)
- Compensation of various parameters: lens distortion, lateral chromatic aberration, diffraction, and brightness level at image-field edges. Fringe effect compensation is also available in RAW-format processing.
- Compatibility with PENTAX Image Transmitter 2 tethering software (Software update required from RICOH IMAGING official website)
- Digital Camera Utility 5 software (latest version) included

Optional Accessories

D-BG6 Battery Grip

A battery grip for exclusive use with the PENTAX K-1 camera body. Designed to facilitate vertical-position shooting, it provides a shutter release button, a set of control buttons (AE lock, AF, ISO, exposure compensation, green), a preview lever, and dual electronic dials - just like those provided on the camera body. It also features the dustproof, weather-resistant construction identical to the PENTAX K-1 camera body. In addition to the dedicated lithium-ion rechargeable batteries, it also accepts six AA-size batteries.

- ◆ *All other brands or product names mentioned herein are trademarks or registered trademarks of their respective companies.*
- ◆ *Designs and specifications are subjects to change without notice.*

PENTAX K-1 Specifications

Model Description

Type	TTL autofocus, auto-exposure SLR digital-still camera
Lens Mount	PENTAX K _{AF2} bayonet mount (AF coupler, lens information contacts, K-mount with power contacts)
Compatible Lens	K _{AF3} , K _{AF2} (power zoom compatible), K _{AF} , K _A mount lens

Image capture unit

Image Sensor	Primary color filter, CMOS. Size: 35.9 x 24.0 (mm)
Effective Pixels	Approx. 36.40 megapixels
Total Pixels	Approx. 36.77 megapixels
Dust Removal	Image sensor cleaning using ultrasonic vibrations "DR II"
Sensitivity (Standard output)	ISO AUTO/100 to 204800 (EV steps can be set to 1EV, 1/2EV or 1/3EV)
Image Stabilizer	Sensor-shift shake reduction (SR II: Shake Reduction)(5-axis)
AA Filter Simulator	Moiré reduction using SR unit. OFF/Type1/Type2/Bracket (3 images)

File formats

File format	RAW (PEF/DNG), JPEG (Exif 2.3), DCF2.0 compliant
Recorded Pixels	[35mm Full Frame] JPEG: L(36M:7360x4912), M(22M:5760x3840), S(12M:4224x2816), XS(2M:1920x1280) RAW: (36M:7360x4912) [APS-C size] JPEG: L(15M:4800x3200), M(12M:4224x2816), S(8M:3456x2304), XS(2M:1920x1280) RAW: (15M:4800x3200)
Quality Level	RAW (14bit): PEF, DNG JPEG: ★★★ (Best), ★★ (Better), ★ (Good), RAW + JPEG simultaneous capturing available
Color Space	sRGB, AdobeRGB
Storage Medium	SD, SDHC and SDXC Memory Card (Conforms to UHS-I standards)
Dual SD slot	Sequential Use, Save to Both, Separate RAW/JPEG, Image copy between slots possible
Storage Folder	Folder Name: Date (100_1018,101_1019...) or User assigned folder name (Default "PENTX")
Recording File	File Name: "IMGP*****" or User assigned file name File name numbering: Sequential, Reset

Viewfinder

Type	Pentaprism Finder
Coverage (FOV)	Approx. 100%
Magnification	Approx. 0.70x (50mmF1.4 at infinity)
Eye-Relief Length	Approx. 20.6mm (from the view window), Approx. 21.7mm (from the center of lens)
Diopter adjustment	Approx. -3.5m to + 1.2m ⁻¹
Focusing Screen	Fixed Natural-Bright-Matte III focusing screen
Viewfinder Overlay	AF Points, Grid Display, Electronic Level, AF Frame, Spot Metering Frame, Crop

Live view

Type	TTL method using image sensor
Focusing Mechanism	Contrast detection (Face detection, Tracking, Multiple AF points, Select, Spot) Focus Peaking: ON/OFF
Display	Field of View approx. 100%, Magnified view (up to 16x), Grid Display (4x4 Grid, Golden Section, Scale display, Square 1, Square 2, Grid Color: Black/White), Histogram, Bright area warning, Composition Adjustment

LCD monitor

Type	Wide viewing angle TFT color LCD, Air-gapless glass. Flexible-tilt.
Size	3.2 inch (aspect ratio 3:2)
Dots	Approx. 1037K dots
Adjustment	Brightness, Saturation and Colors adjustable
Outdoor View Setting	Adjustable ± 2 step

White Balance

Type	Method using a combination of the image sensor and the light source detection sensor
White Balance	AUTO WB, Multi Auto WB, Daylight, Shade, Cloudy, Fluorescent Light (D:Daylight Color, N:Daylight White, W:Cool White, L:Warm White), Tungsten Light, CTE, Manual WB (up to 3 settings), Color Temperature Configuration (up to 3 settings), Copying the white balance setting of a captured image
Fine Adjustment	Adjustable ± 7 steps on A-B axis or G-M axis

Autofocus System

Type	TTL: Phase-matching autofocus
Focus Sensor	SAFOX 12, 33 point (25 cross type focus points in the center)
Brightness Range	EV-3 to 18 (ISO 100 / at normal temperature)
AF mode	Single AF (AF.S), Continuous AF (AF.C)
AF Point Selection	Spot, Select, Expanded Area (S, M, L), Zone select, Auto (33 AF points)
AF Assist Light	Dedicated LED AF assist light

Metering

Type	TTL open aperture metering using 86K pixel RGB sensor, Multi-segment, Center-weighted and Spot metering
Metering Range	EV-3 to 20 (ISO100 at 50mm F1.4)
Exposure Mode	Scene Analyze Auto, Program, Sensitivity Priority, Shutter Priority, Aperture Priority, Shutter & Aperture Priority, Manual, Bulb, Flash X-sync Speed, USER1, USER2, USER3, USER4, USER5
EV Compensation	± 5 EV (1/2EV steps or 1/3EV steps can be selected)
AE Lock	Button type (timer type: two times the meter operating time set in Custom Setting); Continuous as long as the shutter button is halfway pressed

Shutter

Type	Electronically controlled vertical-run focal plane shutter * Electronic shutter when using Pixel Shift Resolution
Shutter Speed	Auto:1/8000 to 30 sec., Manual:1/8000 to 30 sec. (1/3EV steps or 1/2EV steps), Bulb

Drive modes

Mode Selection	<p>Still Image: Single Frame, Continuous (H, M, L), Self-timer (12s, 2s, Continuous), Remote Control (0s., 3s., Continuous), Bracketing (2, 3 or 5 frames), Mirror-up (Possible to use with Remote Control), Multi-Exposure (Possible to use with Continuous, Self-timer or Remote Control), Interval Shooting, Interval Composite, Interval Movie Record, Star Stream</p> <p>Movie: Remote Control * Bracketing, Interval Shooting, Interval Composite, Interval Movie Record and Star Stream are possible to use with Self-timer/Remote Control.</p>
Continuous Shooting	<p>[35mm full-frame] Max. approx. 4.4 fps, JPEG (L: ★★★ at Continuous H): up to approx. 70 frames, RAW: up to approx. 17 frames Max. approx. 3.0 fps, JPEG L: ★★★ at Continuous M): up to approx. 100 frames, RAW: up to approx. 20 frames Max. approx. 0.7 fps, JPEG (L: ★★★ at Continuous L): up to approx. 100 frames, RAW: up to approx. 100 frames [APS-C size] Max. approx. 6.5 fps, JPEG (L: ★★★ at Continuous H): up to approx. 100 frames, RAW: up to approx. 50 frames Max. approx. 3.0 fps, JPEG L: ★★★ at Continuous M): up to approx. 100 frames, RAW: up to approx. 70 frames Max. approx. 1.0 fps, JPEG (L: ★★★ at Continuous L): up to approx. 100 frames, RAW: up to approx. 100 frames</p> <p>*ISO100</p>
Multi-Exposure	<p>Composite Mode(Additive/Average/Bright) Number of Shots(2 to 2000 images)</p>
Interval Shooting	<p>[Interval Shooting] Interval: 2s. to 24h./ Standby Interval: Min.·1s. to 24h., Number of shots: 2 to 2000 images, Start Interval: Now/Self-timer/Remote Control/Set Time</p> <p>[Interval Composite] Interval: 2s. to 24h./ Standby Interval: Min.·1s. to 24h., Number of shots: 2 to 2000 images, Start Interval: Now/Self-timer/Remote Control/Set Time, Composite Mode: Additive/Average/Bright, Save Process: On/Off</p> <p>[Interval Movie] Recorded Pixels: 4K/FullHD/HD, File Format: Motion JPEG (AVI), Interval:2s. to 24h./ Standby Interval: Min·1s. to 24h., Number of shots: 8 to 2000 images (8 to 500 images at 4K), Start Interval:Now/Self-timer/Remote Control/Set Time</p> <p>[Star Stream] Recorded Pixels: 4K/FullHD/HD, File Format: Motion JPEG (AVI), Interval: Min·1s. to 24h., Number of shots: 8 to 2000 images (8 to 500 images at 4K), Start Interval: Now/Self-timer/Remote Control/Set Time, Fade-out: Off/Low/Medium/High</p>

External Flash

Flash Modes	Auto Flash Discharge, Auto Flash + Red-eye Reduction, Flash On, Flash On + Red-eye Reduction, Slow-speed Sync, Slow-speed Sync + Red-eye, P-TTL, Contrast-control-sync, High-speed sync, Wireless sync * Contrast-control-sync and High-speed sync requires 2 or more dedicated external flash
Sync Speed	1/200sec.
Flash Exposure Compensation	-2.0~+1.0EV

Capture Settings

Custom Image	Auto Select, Bright, Natural, Portrait, Landscape, Vibrant, Radiant, Muted, Flat, Bleach Bypass, Reversal Film, Monochrome, Cross Processing
Cross Process	Random, Preset 1-3, Favorite 1-3
Digital Filter	Extract Color, Replace Color, Toy Camera, Retro, High Contrast, Shading, Invert Color, Unicolor Bold, Bold Monochrome
Clarity	Adjustable ± 4
Skin Tone	Type1/Type2
HDR	Auto, HDR1, HDR2, HDR3, Advanced HDR, Exposure bracket value adjustable, Automatic composition correction function
Pixel Shift Resolution	Available, Motion Correction ON/OFF
Lens Correction	Distortion Correction, Peripheral Illumin. Correction, Lateral Chromatic Aberration Correction, Diffraction Correction
D-RANGE Compensation	Highlight Correction, Shadow Correction
Noise Reduction	Slow Shutter Speed NR, High-ISO NR
GPS	GPS Logging (Logging Interval, Logging Duration, Memory Card Options), GPS Time Sync
Electronic Compass	Available
Astrotracer	Possible
Horizon Correction	SR On: correction up to 1 degrees, SR Off: correction up to 2 degrees
Composition Adjustment	Adjustment range of ± 1.5 mm up, down, left or right (1mm when rotated); Rotating range of 1 degree
Electronic Level	Displayed in viewfinder (Horizontal and vertical); Displayed on LCD monitor (Horizontal and vertical)

Movie

File Format	MPEG-4 AVC/H.264 (MOV)
Recorded Pixels	Full HD(1920x1080, 60i/50i/30p/25p/24p) HD (1280x720, 60p/50p)
Sound	Built-in stereo microphone, external microphone (Stereo recording compatible) Recording Sound Level adjustable, Wind Noise Reduction
Recording Time	Up to 25 minutes or 4GB ; automatically stops recording if the internal temperature of the camera becomes high.
Custom Images	Auto Select, Bright, Natural, Portrait, Landscape, Vibrant, Radiant, Muted, Flat, Bleach Bypass, Reversal Film, Monochrome, Cross Processing
Cross Processing	Random, Preset 1-3, Favorite 1-3.
Digital Filter	Extract Color, Replace Color, Toy Camera, Retro, High Contrast, Shading, Invert Color, Unicolor Bold, Bold Monochrome

Playback

Playback View	Single frame, Multi-image display (6,12, 20, 35, 80 segmentation), Display magnification (up to 16, 100% display and quick magnification available), Grid display (4x4 Grid, Golden Section, Scale display, Square 1, Square 2, Grid Color: Black/White), Rotating, Histogram (Y histogram, RGB histogram), Bright area warning, Auto Image Rotation, Detailed information, Copyright Information (Photographer, Copyright holder), GPS information (latitude, longitude, altitude, Coordinated Universal Time) , Orientation, Folder Display, Calendar Filmstrip Display, Slide Show,
Delete	Delete single image, delete all, select & delete, delete folder, delete instant review image
Digital Filter	Base Parameter Adj, Extract Color, Replace Color, Toy Camera, Retro, High Contrast, Shading, Invert Color, Unicolor Bold, Bold Monochrome, Tone Expansion, Sketch, Water Color, Pastel, Posterization, Miniature, Soft, Starburst, Fish-eye, Slim, Monochrome
RAW Development	RAW file select: Select Single Image, Select Multiple Images, Select a folder RAW Development Parameter: White Balance, Custom Image, Sensitivity, Clarity, Skin Tone, Digital filter, HDR, Pixel Shift Resolution, Shadow Correction, High-ISO NR, Distortion Correction, Peripheral Illumin. Corr., Lateral Chromatic Aberration Correction, Diffraction Correction, Color Fringe Correction, File Format (JPEG/TIFF), Aspect Ratio, JPEG Recorded Pixels, JPEG Quality, Color Space
Edit	Image Rotation, Color Moiré Correction, Resize, Cropping (Aspect ratio and Slant adjustment available), Movie Edit (Divide or delete selected frames), Capturing a JPEG still picture from a movie, Saving RAW data in buffer memory, Image Copy

Customization

USER Mode	Up to 5 settings can be saved
Custom Functions	26 items
Mode Memory	16 items
Button Customization	Fx1 Button, Fx2 Button (One Push File Format, Outdoor View Setting, Flash Mode, Pixel Shift Resolution, Shake Reduction, Horizon Correction, Electronic Level) AF Button (AF1/ AF2/ Cancel AF) Preview Dial (Optical Preview/Digital Preview) Various settings for the action of the e-dials in each exposure mode can also be saved.
AF Customization	AF.S: Focus-priority/ Release-priority 1st Frame Action in AF.C: Release-priority/Auto/Focus-priority Action in AF.C Continuous: Focus-priority, Auto, FPS-priority Hold AF Status: OFF, Low, Medium, High AF in Interval Shooting: Locks focus at 1st exposure, Adjusts focus for each shot AF with Remote Control: Off/On
Operation Control Lock	Type1: E-Dial, EV Compensation, ISO, Green Button, AE Lock Type2: 4-way controller, AF point change button, Change AF Point, OK Button, Menu Button
Text Size	Standard, Large
World Time	World Time settings for 75 cities (28 time zones)
Language	English, French, Germany, Spanish, Portuguese, Italian, Dutch, Danish, Swedish, Finnish, Polish, Czech, Hungarian, Turkish, Greek, Russian, Korean, Traditional Chinese, Simplified Chinese, Japanese
AF Fine Adjustment	±10 step, Uniform adjustment, Individual adjustment (up to 20 can be saved)

Illumination Settings	LCD Panel (High/Low/Off), Backside Controls (High/Low/Off), Lens Mount (On/Off), Card Slot/Connector (On/Off)
Indicator Lamps	Wi-Fi (High/Low/Off), GPS (High/Low/Off), Self-timer (On/Off), Remote Control (On/Off)
Copyright Information	Names of "Photographer" and "Copyright Holder" are embedded to the image file. Revision history can be checked using the provided software.

GPS/Electronic Compass

Satellites	GPS, QZSS, SBAS(WAAS/EGNOS/GAGAN/MSAS)
Reception Frequency	L1 1575.42MHz
Recorded Information	Latitude, Longitude, Altitude, Time (UTC), Direction
Geodesics	World Geodetic System (WGS84)
GPS Logging	KML format, Logging Interval: 5/10/15/30sec. /1min., Logging Duration: 1-24hr. (Up to 9hours at Logging Interval 5sec. Up to 18hrs. at Logging Interval 10sec.)
Electronic Compass	Azimuth calculation using triaxial geomagnetic sensor and triaxial acceleration sensor, True north standard

Power supply

Battery Type	Rechargeable Lithium-ion Battery D-LI90
AC Adapter	AC Adapter Kit K-AC132 (Optional)
Battery Life	Number of recordable images: Approx.: 760 images Playback time: Approx. 390 minutes * With a fully-recharged Rechargeable Lithium-ion Battery. Tested in compliance with CIPA standard. Actual results may vary depending on the shooting condition.

Interfaces

Connection Port	USB2.0 (micro B), External power supply terminal, External cable switch terminal, X-sync socket, HDMI output terminal (Type D) , Stereo microphone input terminal, Headphone terminal
USB Connection	MSC/PTP

Wireless LAN

Standards	IEEE 802.11b/g/n
Frequency (Center Frequency)	2412MHz~2462MHz (1ch~11ch)
Security	Authentication: WPA2, Encryption: AES

Dimensions and Weight

Dimensions	Approx. 136.5mm (W) x110mm (H) x 85.5mm (D) (excluding protrusions)
Weight	Approx. 1010g (Including dedicated battery and SD Memory Card), Approx. 925g (body only)

Operating Environment

Temperature	-10°C~40°C (14°F~104°F)
Humidity	85% or less (no condensation)

Accessories

Included	Strap O-ST162, ME Viewfinder Cap, Rechargeable Lithium-ion Battery D-LI90, Battery Charger D-BC90, AC plug cord, Software (CD-ROM) S-SW162 <Mounted to the camera> Eyecup FT, Hot shoe cover FK, Sync socket 2p cap, Body mount cap KII, Battery Grip terminal cover
Software	Digital Camera Utility 5

Storage capacity

<Still>

Crop : 35mm full-frame	RAW	JPEG											
Recorded Pixels	7360x4912	L: 36M				M: 22M			S: 12M			XS: 2M	
		7360x4912				5760x3840			4224x2816			1920x1280	
Quality Level	PEF	★★★	★★	★	★★★	★★	★	★★★	★★	★	★★★	★★	★
8GB	101	351	676	1164	572	1096	1874	1054	2013	3364	4723	8469	12927

shots

Crop : APS-C size	RAW	JPEG											
Recorded Pixels	4800x3200	L: 15M				M: 12M			S: 8M			XS: 2M	
		4800x3200				4224x2816			3456x2304			1920x1280	
Quality Level	PEF	★★★	★★	★	★★★	★★	★	★★★	★★	★	★★★	★★	★
8GB	215	821	1564	2669	1054	2013	3364	1564	2959	4912	4723	8469	12927

shots

<Movie>

Recorded Pixels	Full HD 1920x1080					HD 1280x720	
	60i	50i	30p	25p	24p	60p	50p
8GB	00:32'15"	00:38'21"	00:32'15"	00:38'21"	00:39'51"	00:32'15"	00:38'21"

hh:mm:ss

The maximum file size is 4GB for movie.

The maximum length is 25 minutes for movie.

System Requirements

<Windows>

OS	Windows 10/Windows 8.1 (32bit/64bit)/ Windows 8 (32bit/64bit)/ Windows 7 (32bit/64bit) / Windows Vista (32bit/64bit)
CPU	Intel Core 2 Duo or higher
RAM	4GB or more
Free Disk Space	Program installation and start-up: 100 MB or more of available space Image file saving: Approximately 15 MB per file (JPEG) / approximately 50MB (RAW)
Monitor	1280 x 1024 dots, 24 bit full-color or more

<Macintosh>

OS	OS X 10.10 / 10.9 / 10.8 / 10.7
CPU	Intel Core 2 Duo or higher
RAM	4GB or more
Free Disk Space	Program installation and start-up: 100 MB or more of available space Image file saving: Approximately 15 MB per file (JPEG) / approximately 50MB (RAW)
Monitor	1280 x 1024 pixels, 24 bit full-color or more