

Canon

EOS-1 **Ds**

Mark II DIGITAL



**THE CANON
EOS-1Ds MARK II:**

**THE ABSOLUTE
PINNACLE OF D-SLR
DESIGN AND
PERFORMANCE**

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I. OVERVIEW



The Canon EOS-1Ds Mark II, brother of the EOS-1D Mark II and successor to the EOS-1Ds, is the new flagship of the Canon line of digital single lens reflex cameras and the absolute pinnacle of D-SLR design and performance.

The Canon-designed and manufactured full-frame CMOS sensor has 16.7 megapixels, the highest resolution unit in any digital SLR on the market. Complete, in-house control has made it technically and economically feasible for Canon to produce a sensor of such prowess.

Amazingly, the 1Ds Mark II is lithe and responsive. Canon has given it the processing power and write speeds necessary to handle the enormous files it records so effortlessly. The EOS-1Ds Mark II can fire bursts of 32 JPEGs or 11 RAW frames at 4 frames-per-second. It starts from OFF in 0.3 second and has a shutter delay as low as 40ms. The 1Ds Mark II shares its exceptional 45-point

autofocus system, E-TTL II flash system, extensive controls, rugged chassis and shutter with the EOS-1D Mark II, the professional standard for sports, news, fashion, wedding and portrait photographers worldwide.

This commonality of parts has enabled Canon to offer a vastly improved camera for the same price as its 11.1 megapixel predecessor. For approximately \$8,000, the 1Ds Mark II equals, and surpasses in many respects, the performance of digital camera backs that cost \$16,000 and up, plus the purchase of a medium format body. Then factor in the limited selection and expense of medium format lenses and accessories and the inconvenient add-ons most backs require. At \$7,999, the 1Ds Mark II may not be inexpensive, but it is a sensational deal.

The EOS-1Ds Mark II will appeal immediately to photographers who do commercial product shots, stock photography, portraits and landscape work. Wedding photographers who sell large prints, or who have wanted to, and magazine photographers shooting covers, full-page layouts and centerfolds will love it, too. Photographers who have used the EOS-1Ds will be delighted with the new resolution of the 1Ds Mark II, but they will find the new speed and ease of operation a pleasure as well. It is likely that the steady rate of conversion of pros from other systems will continue and possibly accelerate.

Like the 1Ds and the 1D Mark II, the 1Ds Mark II is compatible with virtually the entire Canon EOS System. An abundance of lenses, Speedlites, transmitters and power supplies is available. Conversely, the 1Ds Mark II is itself part of that system. The 1Ds was very successful in the rental market and in equipment pools. The 1Ds Mark II will be much more popular. A photographer could buy, say, one or two 1D Mark IIs, secure in the knowledge that a 1Ds Mark II can be rented when greater resolution is required. Further, because the two cameras share operating controls, there is no learning curve involved, no fear that a mistake in setting, or failing to set, an unfamiliar camera will have an unfortunate result. Similarly, everything one might buy with or for a 1D Mark II would work seamlessly should one purchase a 1Ds Mark II in the future. Such is the confidence one can derive from a comprehensive and industry-leading system. In sum, the Canon EOS-1Ds Mark II is the benchmark against which all professional cameras and imaging systems, film and digital, will be measured. Let the comparisons begin.

II. SUMMARY OF FEATURES

Performance

- World's highest pixel count in a 35mm, full-size digital AF SLR camera
- 16.7 megapixel, full-size, single-plate CMOS sensor, designed and manufactured by Canon
- Continuous shooting speed of 4 fps (One-Shot AF/AI SERVO AF) with a maximum burst of 32 shots in JPEG large or 11 shots in RAW (vs. 3 fps and 10-shot maximum burst for all pixel counts with EOS-1Ds)
- DIGIC II Image Processor with 8-channel reading and DDR-SDRAM for fast processing, fine detail and natural color reproduction
- Uses 45-point area AF unit with 7 cross-type sensors, E-TTL II flash system and 21-zone light-metering sensor
- Startup time is an exceptionally fast 0.3 sec., compared with 0.5 sec. for the 1D Mark II and 0.6 sec. for the 1Ds
- Release time lag 55ms (40ms with maximum aperture set via Personal Function) and viewfinder blackout time 87ms, same times as EOS-1D Mark II
- Increased battery performance
- Shorter media write times
- Color reproduction improved to give richer, fuller colors while maintaining traditional EOS-1D series emphasis on fine color gradations
- False colors (aliasing artifacts) minimized by new 3-layer optical low-pass filter
- Same low-noise characteristics as EOS-1D Mark II
- Selectable dark noise subtraction for long exposures
- Full-size sensor takes full advantage of lens performance, including wide-angle lenses; no focal length conversion factor
- Shutter speeds: 1/8000 to 30 sec. and bulb exposure
- Maximum X-sync speed 1/250 sec.
- Shutter endurance increased to 200,000 cycles, same as 1D Mark II
- Has 2 memory card slots, CF and SD, like the EOS-1D Mark II, for simultaneous backup or individual recording
- Same One-Shot AF speed and AI SERVO AF subject tracking performance as the EOS-1D Mark II



Controls and Display

- Supports the same range of ISO settings as the EOS-1D Mark II, ISO 100 to 1600 (extended ISO range: L- 50, H- 3200) despite having smaller pixel size (7.2 μm vs. 8.2 μm)
- Five recording pixel counts (approx.): L- 16.60MP, M1- 8.60MP, M2- 6.30MP, S- 4.20MP and RAW-16.60MP (EOS-1Ds had only Large and Small)
- Five preset color matrixes and two user-settable matrixes
- Color space (sRGB, Adobe RGB), color saturation (5 levels) and color tone (5 levels) all user-settable, same as 1D Mark II
- Three user-settable sets of processing parameters: tone curve (standard plus 3 types), sharpness (5 levels), and contrast (5 levels), same as 1D Mark II
- Camera settings can be saved to a memory card for specific stadiums, multiple cameras, set-up restoration
- White balance compensation correctable for blue/amber and magenta/green bias (+/- 9 levels)
- White balance bracketing for magenta/green and blue/amber bias correction
- RGB histogram provided
- Fully customizable: 20 Custom Functions (65 settings) and 27 Personal Functions
- Viewfinder coverage 100%; viewfinder specs the same as those in the EOS-1D Mark II
- New 230,000 pixel, high-detail LCD monitor, same as in 1D Mark II, has up to 10x magnification in 15 steps and built-in rotated display function for vertical shots

Body and Exterior

- Magnesium alloy chassis and external covers (top, front and rear) for ruggedness, light weight and rigidity
 - Same water and dust resistance as EOS-1D Mark II
 - Canon logo on pentaprism now set in relief for more professional appearance
 - Revised memory card slot cover release knob, same as on 1D Mark II, allows operation while wearing gloves
- “Ds” and “Mark II DIGITAL” nameplates now gold plated



Compatibility and Support

- IEEE1394 (Firewire) interface, as on 1D Mark II, enables high-speed image transfers
- New Video OUT terminal (NTSC/PAL), as on 1D Mark II, but not 1Ds
- New USB connection for camera direct printing
- Compatible with PictBridge, Bubble Jet Direct, CP Direct and DPOF
- Adopts new CR2 RAW format
- Compatible with Adobe RGB-supported DCF 2.0 and Exif 2.21
- 12 menu interface languages
- Compatible with all Canon EF Lenses (but not EF-S series lenses) and almost all EOS accessories



Software and Accessories

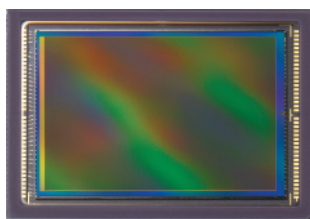
- Professional software bundle provides fast and easy workflow; includes Digital Photo Professional 1.5, EOS Viewer Utility 1.2, EOS Capture 1.2, PhotoStitch, TWAIN and WIA drivers
- Supports data creation for accessory Data Verification System kit, DVK-E2
- New accessory Wireless File Transmitter, WFT-E1A, enables transfer of images to an FTP server via wireless or wired LAN



Wireless File Transmitter WFT-E1A

III. NEW AND IMPROVED DESIGN FEATURES

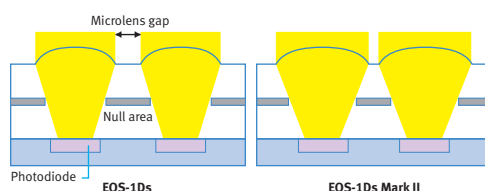
New 16.7 Megapixel CMOS Sensor



CMOS sensor

The heart of the Canon EOS-1Ds Mark II is a state-of-the-art, 16.7 megapixel, full frame, single-plate CMOS sensor developed and manufactured by Canon. The 1Ds Mark II has the world's highest pixel count in a 35mm digital SLR camera. Its maximum-recorded resolution is 4992 by 3328 pixels. Each pixel is 7.2 μm , smaller than the 8.2 μm of the EOS-1D Mark II sensor or the 8.8 μm of the EOS-1Ds it replaces, but supporting the same range of ISO settings and producing the same low noise as the 1D Mark II and surpassing the 1Ds on both counts.

The 1Ds Mark II sensor shares with the 1D Mark II several substantial improvements made possible by the Canon-developed, on-chip RGB primary color filter together with larger microlenses that have much smaller gaps between them than those on the 1Ds. These narrow gaps greatly increase the efficiency of light convergence while greatly reducing birefringence. Canon has also improved the design of the photo diodes in the CMOS sensor by eliminating transistors in each pixel, making a greater portion of the surface area of each pixel sensitive to light.



Normally, it's nearly impossible to provide both high resolution and minimal false color, but the EOS-1Ds Mark II has a 3-layer optical low pass filter that works with the DIGIC II chip to reduce false colors while having minimal impact on resolution.

A second-generation, on-chip noise elimination circuit attends to fixed-pattern and random noise. In addition to longer battery life, the lower power consumption of the CMOS sensor means that the Signal-to-Noise Ratio is less affected when the sensor's temperature rises. For long exposures, including those up to several minutes, the circuit-driving standard current and the power to the output amp are cut off and, as with the 1D Mark II, the camera applies Dark Frame Subtraction automatically. Additionally, the irregular image edge colors that occur during long exposures have been reduced dramatically.

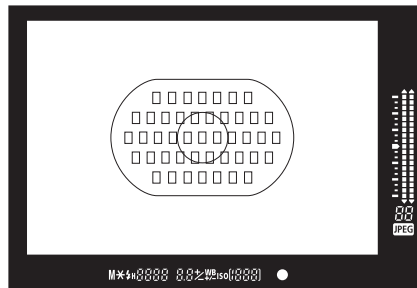
Like the EOS-1D Mark II, the 1Ds Mark II is equipped with a low-noise, high-speed output amp, and can read 8 channels simultaneously per line, enabling a continuous

shooting speed of 4 frames-per-second despite the enormous file size generated by 16.7 megapixels.

The EOS-1Ds Mark II's sensor measures 36 by 24mm, a full 35mm frame, eliminating the need for lens focal length conversion factors. Wide-angle lenses and the many unusual or specialized lenses in the Canon EF family have their full, unfettered visual effect.

Autofocus System

The EOS-1Ds Mark II uses the exceptionally precise and fast autofocus system of the EOS-1D Mark II with a few minor changes.



Viewfinder

Like the EOS-1D Mark II, 1D, 1Ds and 1v, the EOS-1Ds Mark II has a 45-point Area AF unit. Manual selection of 45, 11 or 9 AF points is possible. 38 of the 45 AF points are vertical-line sensitive up to a maximum aperture of f/5.6. 6 of the 7 AF points at the center are cross-type sensors that are vertical-line sensitive up to a maximum aperture of f/2.8 and horizontal-line sensitive

up to a maximum aperture of f/5.6. The central AF point is a cross-type sensor that supports vertical-line sensitivity to a maximum aperture of f/4 and horizontal-line sensitivity to a maximum aperture of f/8.

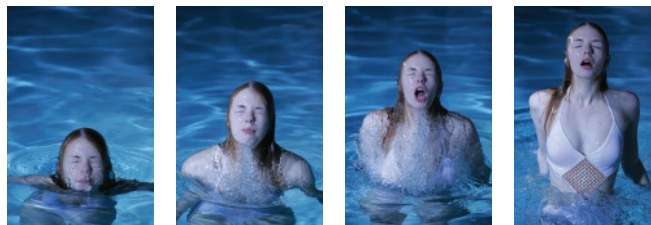
There are three autofocus modes: One-Shot AF, which stops and locks when focus is achieved, Predictive AI Servo AF, which constantly tracks subject movement and focuses until the start of exposure, and Manual focusing, which has focus confirmation with the in-focus indicator light and the superimposed AF point. EOS Speedlites that have built-in AF-assist emit a near-infrared beam when necessary to assist autofocus.

The AF-related circuitry and the AF algorithm in the 1Ds Mark II incorporate the new 1D Mark II design so that the AF performance clearly surpasses that of the 1Ds. The EOS-1D and 1Ds had a single CPU for AF operations from focus detection to lens-driving control. The EOS-1D Mark II and 1Ds Mark II have two CPUs responsible for these functions.

Dividing tasks means decisions are made simultaneously rather than in sequence. In Predictive AI Servo AF, statistical prediction using the focusing data from previous focusing operations is incorporated. The number of focusing operations per unit time is twice as many with the 1D and 1Ds. With shorter time intervals and more repetitive focusing operations, the predictive AF control works effectively from the first shot even with subjects moving erratically. Should the subject's movement change just before shutter release, the shorter focusing operation interval means the predictive AF control has a higher probability of catching it.

As with the EOS-1D Mark II, the AF CPU of the 1Ds Mark II is a 33 MHz, 32-bit RISC (reduced instruction set) microcomputer that handles area AF detection and auto AF point selection. The 1Ds Mark II camera CPU is a 32 MHz, 32-bit RISC microcomputer that controls lens communications, lens driving control and predictive AF statistical calculations. As a result, all the processing is faster than with the EOS 1D and 1Ds. One-Shot AF speed is faster; AI SERVO AF focusing precision is the same for the 1D Mark II and the 1Ds Mark II and appreciably greater than that of their predecessors.

Because the AF unit is capable of operating at 8.5 frames-per-second and the 1Ds Mark II has a maximum speed of 4 fps, the AI Servo AF algorithm has been optimized for 4 fps operation. “C-Fn 21 AI SERVO AF continuous shooting and shutter speed priority” of the EOS-1D Mark II is deleted for the 1Ds Mark II for the same reason. The 1Ds Mark II can track a moving subject easily and shoot at 4 fps, so without setting C-Fn 21, it can operate at the maximum continuous shooting speed.



E-TTL II Flash System

Since the first photographer set a house on fire with blitzlichtpulver (flash powder) more than a hundred years ago, low-light shooters have waited patiently for E-TTL II, the complete solution to flash control.

The EOS-1Ds Mark II shares the new E-TTL II algorithm with the EOS-1D Mark II. The system enables uncanny E-TTL flash accuracy and reliability. In previous cameras, evaluative flash metering was based on the assumption that an autofocus point would cover the subject. When this is not the case, inaccurate flash exposures result. The EOS-1Ds Mark II's evaluative flash metering is not dependent on the active AF point.

In the new algorithm, ambient light is measured when the shutter button is pressed. Next, a pre-flash is fired and the metering sensor takes readings at the central 17 metering zones. The ambient and pre-flash readings are compared. The metering areas having a small difference are selected as the flash exposure metering areas. (Areas with very big differences between ambient and pre-flash readings are excluded or down weighted because they are assumed to contain a highly reflective object or that the subject is not in that part of the frame. The algorithm avoids chronic underexposure problems in such situations.) These readings are weighted, averaged and compared with the ambient light reading, and the main flash output is then set and stored in memory. E-TTL II weights and averages the flash metering for the subject and all other objects at the same distance as the subject. Even if the subject's position, reflectance or size changes, the flash output will not change radically. The flash exposure will be highly accurate and stable.

Most EF Lenses provide distance information, and this data is also considered in determining if there is a highly reflective object, once again lessening the chance of underexposure. The EOS-1Ds Mark II is compatible with the color data transmission feature introduced on the Speedlite 580EX. When the Canon Speedlite 580EX is used with the 1Ds Mark II, the color temperature of the flash is incorporated in white balance calculations, affording a remarkable improvement in color balance accuracy.



Flash sync is provided from the side PC socket and the newly strengthened hot shoe. A locking pin in the hot shoe prevents Speedlite slippage. The two connections can be used simultaneously. Hot-shoe mounted flash units can sync at 1/250 or slower. Studio flash can sync at 1/125 or slower. The PC terminal has no polarity issues and can be used safely with sync voltages up to 250V.

The EOS-1Ds Mark II is compatible with Canon's entire line of EX series Speedlites plus the MR-14EX Macro Ring Lite and the MT-24EX Macro Twin Lite for close-ups. Wireless flash works with the on-camera Speedlite 580EX, 550EX, MR-14EX, MT-24EX or Speedlite Transmitter ST-E2 serving as the master, transmitting wireless signals to an unlimited number of 580EX, 550EX and 420EX Speedlites as slave units. The 420EX can only function as a slave, and the MR-14EX or MT-24EX can function only as master units. The master unit's flash can be enabled or disabled. Even when disabled, the flash head can still transmit wireless optical signals. Except with the 420EX, a modeling flash can be fired.

Up to 3 groups (for main, fill and background) of slave units can be set up. The slave unit's ID is set to Group A, B or C. The flash output ratio between Groups A and B can be adjusted automatically from 8:1 to 1:1, or from 1:1 to 8:1. The flash output of Group C can be adjusted through flash exposure compensation.

Exposure Control

The EOS-1Ds Mark II has a 21-zone silicon photocell that handles maximum aperture TTL metering. There are four selectable metering modes: Evaluative, which is linkable to any AF point, Partial, which meters approximately 8.5% of the screen, Center spot metering, which reads approximately 2.4% of the screen and has added options of AF point-linked or multi-spot metering, and Center-weighted average metering, which calculates over the entire image, but emphasis is placed in the center zone.

The 1Ds Mark II, like the 1D Mark II, has seven shooting modes: Shutter-priority AE, Aperture-priority AE, Program AE, either Evaluative or Averaged E-TTL II program autoflash (21-zone flash metering), Manual exposure, Flash metered manual or Bulb. The metering range is from EV 0 to EV 20 and the ISO range is from 100 to 1600 in 1/3-step increments with 50 and 3200 menu-selectable. In addition to manual exposure compensation, auto exposure-bracketing (AEB) records 3 exposures in an adjustable range of up to +/- 3 stops in 1/3 or 1/2 stop increments. AE Lock is available in any auto exposure mode.

DIGIC Image Processor



DIGIC II Image Processor

The next-generation DIGIC II Image Processor in the Canon EOS-1Ds Mark II, as well as in the EOS-1D Mark II, features ultra-fast response and high performance. The single board design replaces the multiple boards of the 1D and 1Ds and the DIGIC II itself is a single-chip unit whereas the 1D and 1Ds had two separate Image Processors. The DIGIC II has a new signal processing algorithm, 8-channel signal reading and faster image data signal processing. Color reproduction of high-saturation, bright subjects is improved. Auto white balance is more precise and accuracy in low color temperatures, such as tungsten light, is better. False colors and noise in low light have been reduced.

The DIGIC II Image Processor enables the EOS-1Ds Mark II to write to card at speeds up to 5.8 MB/sec, depending on the CF card's write speed capability, whereas the 1Ds writes at just under 2 MB/sec.

The EOS-1Ds Mark II uses double data rate, synchronous dynamic random access memory, DDR-SDRAM, first seen in a digital SLR in the EOS-1D Mark II. This high speed buffer memory is one of the keys to the 1Ds Mark II's ability to capture 16.7 megapixel files at 4 frames-per-second for as many as 32 JPEGs or 11 RAW images. With its 4.1 megapixels, the 1D could do 21 JPEGs or 16 RAW images at 8 frames-per-second. The EOS-1Ds, with 11.1 megapixels, can fire off 10 frames at 3 fps. The speed king, the EOS-1D Mark II, can fire at 8.5 fps for up to 40 JPEGs or 20 RAW consecutive frames.

Speed of Operation

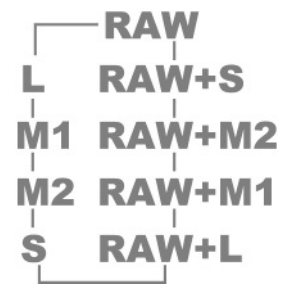
During continuous high-speed shooting, mirror blackout time becomes a serious problem. The faster the mirror comes down and stabilizes, the clearer, sharper and brighter the finder image is, giving a much more accurate and less fatiguing view and giving the predictive autofocus more time to do its job. The EOS-1Ds Mark II shares with the EOS-1D Mark II, EOS-1v, 1D and 1Ds a Canon innovation called Active Mirror Control which replaces conventional suppression of mirror rebound shock with a mechanical system which incorporates a hook on the backside of the main mirror. The hook holds the mirror in place when it flips down, reducing mirror bounce and shake and confining it to a much shorter duration. The result is a mirror blackout time of 87ms.

In its normal configuration, the EOS-1Ds Mark II has the same shutter release time lag as the EOS-1D Mark II, the EOS-1D, the EOS-1Ds and the EOS-1v film cameras, 55ms, when stopping down within 3 stops of maximum aperture, but (as with the 1D Mark II) the delay can be reduced to 40ms at maximum aperture with Personal Function 26, "shorter shutter release time lag." The startup time after the power switch is turned on is about 0.3 sec., half the 0.6 sec. of the EOS-1Ds.

Recording Controls

The EOS-1Ds Mark II has an increased range of recording quality selections and settings compared with the 1Ds. The JPEG pixel count has four options: L (16.6MP), M1 (8.6MP),

M2 (6.3MP), and S (4.2MP). An additional choice is CR2 RAW at 16.6MP. The recording quality, or compression rate, is independent of the pixel count. For each of the four pixel counts, there are ten compression rates selectable from the menu, from 1 (minimum quality, maximum compression) to 10 (maximum quality, minimum compression). All the recording quality levels and combinations, JPEG, RAW and RAW + JPEG, can now be accessed directly with the Quality button and the Quick Control Dial.



Color Matrix

The EOS-1Ds Mark II has five pre-set color matrixes (which have been re-tuned to control red saturation), the same as the EOS-1D, the EOS-1Ds and the EOS-1D Mark II:

Standard: (sRGB compatible) Provides natural-looking color shades and tones. It is the starting point for general shooting.

Portrait: (sRGB compatible) Provides a warmer color palette, ideal color tones for portraits.

High Saturation: (sRGB compatible) Brighter, more vibrant colors make color shades look similar to high-saturation slide film. It is useful for product shots and on-screen applications.

Adobe RGB: Preserves a wider color gamut than sRGB. This setting is recommended for advanced users with experience in color management.

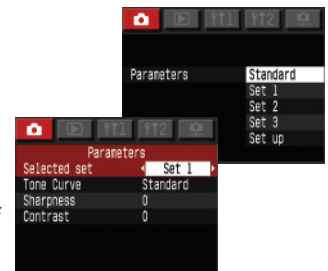
Low Saturation: (sRGB compatible) Makes color shades lighter or more subdued. It is useful for portraits and studio shooting.

Like the 1D Mark II, the 1Ds Mark II has two additional matrixes that can be set by the user for color space (sRGB, Adobe RGB), color saturation (5 levels: low, slightly low, standard, slightly high, high) and color tone (5 levels: -2, -1, 0, +1, +2).



Processing Parameters

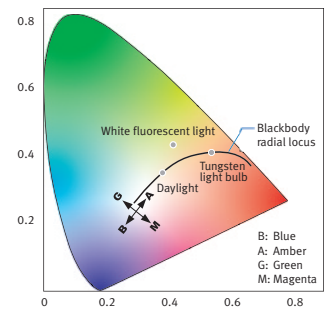
In addition to the standard processing parameters applied automatically by the camera during image recording, three sets of parameters can be determined by the user. The tone curve must first be set with dedicated software. Then, in addition to standard, the options are TCD1, TCD2 and TCD3. There are six sharpness levels, from 0 to 5 and five levels of contrast, from -2 to +2. By altering these parameters, users can “develop” their images however they like.



White Balance

The EOS-1Ds Mark II and the 1D Mark II feature ten white balance modes, from totally automatic control to precise setting of the color temperature in degrees Kelvin to give photographers unsurpassed control, even in difficult tungsten/fluorescent mixed light.

White Balance is indicated on the rear LCD panel. There are ten separate settings: Auto (approx. 3000-7000K), Daylight (approx. 5200K), Shade (approx. 7000K), Cloudy (approx. 6000K), Tungsten light (approx. 3200K), Fluorescent (approx. 4000K), Flash (approx. 6000K), Manual (from 2000-10000K), Color temperature (approx. 2800-10,000K) and PC-1 to PC-3, allowing registration of up to three color temperatures with dedicated software.



The accuracy of the new white balance algorithm, especially at low color temperatures, has made it possible to eliminate the external AWB sensor found on the 1Ds and to discontinue hybrid AWB.

The white balance compensation function allows users to adjust the currently set white balance mode's standard color temperature (between 2000 and 10000K rather than from 2800 on the 1Ds). It provides the same effect as attaching a color conversion light balancing filter (for corrections in the blue-to-amber range) and/or a color compensation filter (for corrections in the magenta-to-green range). The compensation can be set up to 9 levels in single-level increments for each color. The blue/amber bias and magenta/ green bias adjustments can be set in combination with each other. Unlike conventional filters, the built-in white balance compensation never fades and cannot be scratched.

White balance bracketing, shared with the 1D Mark II, permits three white balance-bracketed images to be captured with a single shot, rather than the three shots required on the 1D/1Ds. Magenta/standard color temp/green bracketing is added to the blue/standard color temp/amber bracketing on the 1D/1Ds. Bracketing can be up to +/-3 levels of blue/amber or magenta/green. White balance bracketing can be set in combination with white balance compensation and AEB.

Rather than being set in a menu window, manually adjusted color temperatures can now be entered directly in the Color Temperature selection mode using the WB button and the main dial. This is easier than on the 1Ds and is more likely to prevent errors.

Dual Slot Memory Cards



The EOS-1Ds Mark II and the 1D Mark II have two card slots, one for CompactFlash and another for the physically smaller Secure Digital. Canon engineers were able to make this addition without altering the legendary "1 series" chassis. There are several ways to take advantage of this configuration:

The same file can be recorded on each card, creating a full backup. If one of the cards becomes full, the user can cancel the backup mode and continue shooting on the remaining card.

One can select either the CF card or the SD card for recording. When the card becomes full, one switches to the other card. This is not an automatic process so you will know you're now on your "reserve tank."

The intelligent display of the number of remaining shots displayed on the top LCD panel is based on the memory card that has fewer frames left.

The red LED memory card access lamp blinks while data is being written to or read from the memory cards. Error warnings are displayed on the top LCD panel, in the viewfinder and on the LCD monitor. The shutter release locks. A menu setting permits separate card formatting. Shooting is possible with only the SD card inserted.

Data Loss Protection Of interest to untold thousands of photographers, even if the memory card slot cover is opened by mistake, the EOS-1Ds Mark II and the EOS-1D Mark II prevent data erasing. Writing resumes when the cover is closed.

Reliability and Durability The Canon EOS-1Ds Mark II continues the tradition, begun in 1971 with the Canon F-1 SLR, of reserving the "1" series designation for cameras which represent state-of-the-art ruggedness and durability. The use of magnesium alloy is continued for the top, front and rear covers, the memory card slot cover and the chassis. The mirror box is a machined aluminum die-casting. The dust-proofing and waterproofing seals have been improved. There are nearly 100 environmental seal points on the EOS-1Ds Mark II body. L-series lenses add an additional seal at the lens/body interface. Shutter durability has been increased from 150,000 cycles on the 1D, the 1Ds, and the EOS 1v film camera, to 200,000 cycles, as on the 1D Mark II. Additionally, the flash accessory shoe has been strengthened to reflect the service conditions that the 1Ds Mark II may face.



Ease of Operation In response to users who had trouble operating the 1D memory card slot cover knob with gloves on, the shape of the knob handle has been changed on the 1Ds Mark II and the 1D Mark II. A recess has been created under the handle.

Some commonly used functions have been made more accessible than they were on the 1Ds. JPEG, RAW and RAW + JPEG can be selected in a single operation and manual color temperature settings can be adjusted directly with the WB button and the main dial

without using the menu. Frequently used ISO speed extensions have been moved to the menu screen from the Custom Functions. An Enlarge button has been added to control screen magnifications. The Erase button has been moved to the bottom row with the Recording Quality and White Balance buttons. The Erase button also has a small raised point in its center to distinguish it from the other buttons.

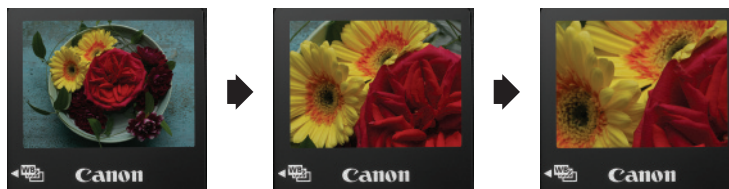
Even when reviewing work or adjusting settings, pressing the shutter button will return the camera to shooting mode instantly so the user will never miss something important while he or she is fiddling with buttons and dials.

Playback Features

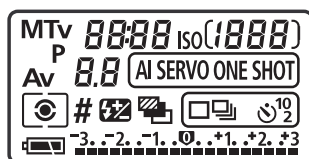
The EOS-1Ds Mark II has five image display formats: Single (Info), Single, 4-image index, 9-image index and Magnified zoom display. The Single (Info) format shows the following 23 items: shutter speed, aperture, exposure compensation amount, image protection, audio recording, image quality, shooting mode, metering mode, flash exposure compensation amount, ISO speed, ISO speed bracketing amount, white balance mode, white balance compensation amount, white balance bracketing amount, color temperature, date, time, file number, AF point, histogram, original image evaluation data, memory card selection status, and folder number.

An RGB Histogram has been added to display options, enabling the user to check white balance bias, color balance, color saturation, color gradation compression, as well as other color-related information that the brightness display does not show.

When the Highlight Alert is enabled, the bright portions of the image that contain no information will blink. The histogram is switchable on the menu from RGB to Brightness. The image on the rear display can be magnified from 1.5 to 10x in 15 steps, accessed by holding down the magnify and the plus or minus buttons. The display can be scrolled left or right, up or down while magnified. One can view the next image while retaining the magnification and location settings. Image rotation may be accomplished manually by a menu selection, or automatically during playback. The Video OUT terminal permits menu-selectable NTSC or PAL display.



High Resolution LCD



The EOS-1Ds Mark II has the same bright, high-resolution LCD display as the EOS-1D Mark II. The 2 inch, polysilicon TFT LCD screen has 230,000 pixels, nearly double the 120,000 of the 1D/1Ds. The display is very sharp and detailed so it is easier to read text and data and to evaluate images, even in sunlight. The backlight for the LCD monitor has also been

upgraded to a white LED unit, which is much brighter and more accurate in color than the fluorescent backlight used with the EOS-1D and 1Ds. At the same time, the new backlight consumes far less power, thus contributing to the 1Ds Mark II's outstanding battery life.

- Camera Settings Retention** Almost all the camera settings displayed on the top and rear LCD panels and in the menus can be saved to a memory card. Benefits that attend to this advance include: Personal settings or settings for a specific stadium can be shared with and used on multiple cameras. The menu and C.Fn/P.Fn settings specified on one camera can be saved and uploaded to another camera, speeding and simplifying complex setup tasks and minimizing the chance that errors might occur. When the camera is sent in for servicing or repairs, settings can be stored and then reloaded when the camera is returned so that the camera is set up exactly as before.
- Image Protection/Erase** Single images, all images in a folder or all images in a memory card can be protected or unprotected. Single images, all images in a folder or all images or all images in a memory card can be erased if they are not protected. Any protected images cannot be erased with the camera, but the entire contents of the card can be erased when it is formatted in the camera.
- Drive System** The EOS-1Ds Mark II has four drive modes: single, approximately 4 fps, 10 second self-timer and 2 second self-timer. During continuous shooting, images are stored in the DDR-SDRAM buffer memory. When the buffer becomes full, further shooting is disabled until at least one frame becomes available. At shutter speeds of 1/250 or faster, the EOS-1Ds Mark II can fire bursts at 4 fps up to 32 JPEGs or 11 RAW frames. After the image is captured, the image review can be set to OFF, ON, or ON (INFO), which includes a histogram display. The review time can be set to 2, 4 or 8 seconds or Hold.
- Connectivity** The EOS-1D and 1Ds use 6-pin FireWire/IEEE1394 connections for data transfer, the 1Ds at 60 Mbps and the 1D at 40 Mbps. The 1Ds Mark II and the 1D Mark II use a 4-pin FireWire port which creates room for a USB 1.1 Type B interface (for Direct Printing) and video out, all in the place previously occupied by IEEE1394 alone. An IFC-450D4 cable is bundled with the 1Ds Mark II. The data transfer speed of the EOS-1Ds Mark II is usefully faster than that of the 1Ds thanks to DIGIC II: 100 Mbps.
- The new camera direct USB port, with the small Type B connector, is used exclusively for direct printing via CP Direct, Bubble Jet Direct or PictBridge. The USB and IEEE1394 ports are positioned close together to make it impossible for the two to be connected at the same time. Under the upper rubber cover, there is a PC flash sync connection and an N3-type remote control terminal. At the request of photographers who need to display or to demonstrate their images while they are shooting, the 1Ds Mark II and the 1D Mark II feature a new video OUT terminal, NTSC or PAL, not provided on the 1Ds.

Audio Recording Sound recorded with the built-in microphone for 30 seconds maximum is attached to the respective image in WAV format. EOS Viewer Utility, Digital Photo Professional, and other compatible software applications support playback of recorded sound files.

Direct Printing The EOS-1Ds Mark II can print directly to a Canon Compact Photo Printer, Canon PIXMA series Printer, Canon Bubble Jet Direct Photo Printer, or to a non-Canon, PictBridge-compatible printer. With DPOF (Digital Print Order Format), one can specify which images in the memory cards are to be printed and in what quantity. This feature is very convenient when one wishes to make prints with a DPOF-compatible printer or photo lab. In direct printing, one can simply print the images specified with DPOF. The camera also supports Exif Print. This worldwide standard for higher quality digital photos records camera settings and shooting conditions right in the JPEG file created with each shot. Then the camera's own software communicates with an Exif-enabled printer to adjust parameters based on the individualized information embedded in each image, optimizing the printed image based on the photographer's original intent. The EOS-1Ds Mark II, like the 1D Mark II, supports the latest version of Exif (2.21), which adds Adobe RGB to Exif's color space information.

Of interest to 1Ds Mark II users for on-site distribution, the Canon Compact Photo Printer CP-220/CP-330 are small dye-sub printers, identical except that the CP-330 can run on a rechargeable battery pack. They can make bordered or borderless prints in sizes ranging from miniature stickers and wallet to 4" x 6" photo postcards and 4" x 8" photo greeting cards.



PIXMA IP8500 and EOS 1Ds Mark II

IPTC Compatibility The photographer's name as well as the shooting date and time can be appended to JPEG images every time the shutter is fired. Detailed IPTC (International Press Telecommunication Council) information can also be entered in the computer via the bundled software. In the EOS-1D and 1Ds, the IPTC data could be appended only to RAW images. With the 1Ds Mark II and 1D Mark II, the IPTC information can be appended to JPEG images instead. The embedded IPTC data is compatible with the image transfer software used by the news services. This should prove to be a substantial benefit to agencies and photojournalists because JPEGs are smaller and faster to transmit and are therefore far more likely to be used in conjunction with IPTC information.

Exif 2.21 Compatibility Exif stands for Exchangeable Image File Format, the worldwide standard for storing digital images as JPEG (Joint Photographic Experts Group) files. It stipulates the shooting information appended to images. The EOS-1Ds Mark II and 1D Mark II support the latest version of Exif, 2.21, which adds Adobe RGB to Exif's color space information.

Photoshop CS can see Exif 2.21 files. When an Exif 2.21 compatible application is used, it is automatically opened using the Adobe RGB color space. Exif 2.21 compatible printers will produce prints with optimum saturation adjustment.

Software Package The EOS-1Ds Mark II is bundled, at no extra cost, with two software CD-ROMs. The EOS Digital Solution Disk (v. 9.0) includes EOS Viewer Utility (v. 1.2), EOS Capture (v. 1.2), PhotoStitch, a TWAIN Driver and a WIA Driver. Macintosh and Windows versions of Viewer Utility, Capture and PhotoStitch are provided. Digital Photo Professional (v. 1.5) is on the second disk.

Digital Photo Professional (DPP) offers high-speed and convenient processing of RAW images. Rivaling and even surpassing features of expensive, stand-alone and plug-in RAW image processing programs, DPP streamlines professional photographers' workflow, providing time and labor saving options such as instantaneous RAW image adjustment display and support for .CR2 and RAW .TIF as well as Exif TIFF and JPEG formats. Among the numerous features DPP provides is the capability to save multiple adjustments to an image as a "recipe" that can be reloaded and used again or applied to other images. In comparison mode, original and edited images can be compared side by side or within a single split image.

DPP is compatible with multiple color space settings including sRGB, Adobe RGB and Wide Gamut RGB as well as Color Management Settings using ICC profiles. Among the array of processing options provided by DPP are color channels, tone curves, exposure compensation, white balance, dynamic range, brightness, contrast, color saturation, ICC Profile embedding and assignment of monitor profiles. DPP allows continuous editing while batches of previously adjusted RAW files are rendered and saved in the background.

Planned changes for DPP version 1.5, compared with v. 1.1, include a cropping tool, a navigation tool, CMYK printer simulation, multiple image downloading and downloading to applications other than Photoshop, and support for high-end compact models, such as the Canon Powershot Pro1. Continuous refinement simply means that the functionality and value of DPP will increase over time.

The EOS Viewer Utility/EOS Capture programs bundled with both Mark II cameras permit downloading of images directly from the camera's CF or SD cards to the computer (utilizing the supplied IEEE1394 cable or a peripheral card reader) for use by DPP or other programs, and the EOS Capture program in particular works together with DPP to support tethered shooting with a full range of image adjustments in studio environments, an application at which the EOS-1Ds Mark II will excel. Once images have been adjusted in DPP, a transfer function allows immediate editing in Photoshop or any other imaging program. The PhotoStitch program automatically composites multiple images into a single image.

In addition to the single-image printing function available on normal printers, DPP supports linked printing with the Easy-PhotoPrint software for Canon Inkjet/Bubble Jet

Printers. Images printed from DPP using Easy-PhotoPrint and a Inkjet/BJ printer can be printed in faithful colors, taking maximum advantage of the Inkjet/BJ printer color space. When Easy-PhotoPrint 2.1 or later is used with a Canon i9900 Desktop Photo Printer or Canon PIXMA iP8500 Photo Printer, their ChromaPLUS system with 8 individual ink cartridges supports images captured in Adobe RGB with the EOS-1Ds Mark II and EOS-1D Mark II cameras.

Wireless File Transfer

The most significant new accessory offered with the EOS-1Ds Mark II, especially for journalists, is the Wireless File Transmitter WFT-E1A. When attached to the bottom of the 1Ds Mark II, the WFT-E1A enables the camera to transfer images to an FTP server via wireless or wired LAN (local area network). Images can be automatically transferred immediately or multiple images can be selected after shooting and then sent.

The wireless LAN is compatible with IEEE 802.11b/g, and the wired LAN is Ethernet. With wireless LAN, one can send images to an FTP server by using a commercial wireless LAN access point or by connecting to a wireless LAN adapter.

Firmware upgrades* will make the EOS-1D Mark II and the EOS 20D compatible with the WFT-E1A. The WFT-E1A unit includes a mini-antenna, IEEE1394 cable, a case and a camera mounting screw. The battery and charger will be optional.



*Available December 2004.

Data Verification Kit

The new, optional DVK-E2 Data Verification Kit, v. 2.1, is a significant advance for the use of digital photography in forensic and law enforcement applications. The kit consists of a dedicated Secure Mobile Card DV-E2 (SMC), a new SMC card reader with small USB adapter, the EOS Data Verification Disk which is Windows 2000/XP compatible (A Mac version is planned to be downloadable from Canon USA's web site) and a manual. Encrypted verification data is added to image headers in the camera when P.Fn-31, "Add original decision data," is switched on. Data verification software can then confirm that EOS-1Ds Mark II, EOS-1D Mark II, EOS-1Ds and EOS 20D image files have not been altered.



DVK-E2 Data Verification Kit

IV. SPECIFICATIONS

Camera Type	Type: Digital AF/AE SLR Recording Medium: Type I or II CF card, SD memory card Image Size: 36.0 x 24.0mm Compatible Lenses: Canon EF lenses (except EF-S lenses) Lens Mount: Canon EF mount
Imaging Element	Type: High-sensitivity, high-resolution, single-plate, color CMOS Effective Pixels: Approx. 16.7 megapixels Total Pixels: Approx. 17.2 megapixels Aspect Ratio: 2:3 (Vertical:Horizontal) Color Filter System: RGB primary color filter Low-pass Filter: Fixed position in front of the image sensor
Recording System	File Format: Design rule for Camera File system 2.0 (JPEG) and RAW. Exif 2.21 compliant. Recording Formats: JPEG and RAW File Size (on CF card): JPEG: (1) L (Large): Approx. 5.5MB (4992 x 3328) (2) M1 (Medium1): Approx. 3.2MB (3600 x 2400) (3) M1 (Medium2): Approx. 2.6MB (3072 x 2048) (4) S (Small): Approx. 1.9MB (2946 x 1664) (5) RAW: Approx. 14.6MB (4992 x 3328) JPEG quality: can be set from 1 (min. quality, max. compression) to 10 (max. quality, min. compression). Folder Setting: Automatic File Numbering: (1) Consecutive numbering (2) Auto reset (3) Manual reset Processing Parameters: Standard parameters plus up to three custom processing parameters can be set Interface: IEEE1394 for personal computers; USB for direct printing; Video output (NTSC/PAL)
White Balance	Settings: Auto, Preset (daylight, shade, overcast, tungsten bulb, fluorescent light, flash), Manual (2800-10000K in 100k increments), Custom (read off photo quality gray card or white subject, color temperature), Personal (up to 3 MB settings can be uploaded to the camera via dedicated software).
Color Temperature Compensation	White balance bracketing: ± 3 stops in full-stop increments White balance correction: ± 9 stops in full-stop increments *Blue/amber bias or magenta/green bias possible

Viewfinder **Type:** Eye-level SLR (with fixed pentaprism)
Coverage: Approx. 100% vertically and horizontally (Coverage against JPEG Large)
Magnification: 0.7x (-1 diopter with 50mm lens at infinity)
Eyepoint: 20mm
Built-in Dioptic Correction: -3.0 – +1.0 diopter
Focusing Screen: Interchangeable (9 types), Standard focusing screen: Ec-CIII
Mirror: Quick-return half mirror (Transmission: reflection ratio of 37:63, no mirror cut-off with EF 1200mm f/5.6 or shorter lens)
Viewfinder Information: AF information (AF points, focus confirmation light), exposure information (shutter speed, aperture, manual exposure, spot metering circle, ISO speed, exposure level, exposure warning), flash information (flash ready, FP flash, FE lock, flash exposure level), white balance correction, JPEG recording, number of remaining shots, memory card information
Depth-of-field: Enabled with depth-of-field preview button (with Speedlite 580EX, 550EX, MR-14EX, or MT-24EX, pressing the depth-of-field preview button fires a modeling flash)
Eyepiece Shutter: Built-in

Autofocus **Type:** TTL-AREA-SIR with AF-dedicated CMOS Sensor
AF Points: 45
AF Working Range: EV 0-18 (at ISO 100)
Focusing Modes: One-Shot AF, Predictive AI Servo AF, AI Focus AF (Automatically selects One-Shot AF or AI Servo AF), Manual focusing (MF)
AF Point Selection: Automatic selection, manual selection, home position (switch to registered AF point)
Selected AF Point Display: Superimposed in viewfinder and indicated on LCD panel.
AF-assist Beam: Emitted by the dedicated Speedlite

Exposure Control **Metering Modes:** 21-zone TTL full aperture metering. (1) Evaluative metering (linkable to any AF point), (2) Partial metering (approx. 8.5% of viewfinder at center), (3) Spot metering [Center spot metering (approx. 2.4% of viewfinder at center), AF point-linked spot metering (approx. 2.4% of screen), Multi-spot metering (Max. 8 spot metering entries)], (4) Center-weighted averaged metering
Metering Range: EV 1-20 (at 20°C with 50mm f/1.4 lens at ISO 100)
Exposure Control Systems: Program AE (shiftable), Shutter-priority AE, Aperture-priority AE, E-TTL II Autoflash Program AE, and Manual.
ISO Speed Range: Equivalent to ISO 100-1600 (in 1/3-stop increments), ISO speed can be expanded to ISO 50 and 3200 via menu selection.
AE Lock: Auto: Operates in One-Shot AF mode evaluative metering when focus is achieved. Manual: By AE lock button in all metering modes.

Shutter	<p>Type: Electronically-controlled focal-plane shutter.</p> <p>Shutter Speeds: 1/8000 to 30 sec. (1/3-stop increments), bulb, X-sync at 1/250 sec.</p> <p>Shutter Release: Soft-touch electromagnetic release</p> <p>Noise Reduction: Settable with C.Fn-02 (Noise reduction for long exposures)</p> <p>Self-Timer: 10 sec. or 2 sec. Delay.</p> <p>Remote Control: Remote control with N3 type terminal.</p>
External Speedlite	<p>EOS External Flash or Dedicated Speedlite: E-TTL II autoflash with EX-series Speedlite.</p> <p>PC Terminal: Provided.</p>
Drive System	<p>Drive Modes: Single, Continuous, Self-Timer</p> <p>Continuous Shooting Speed: Approx. 4 fps (at 1/250 sec. or faster for all recording quality settings)</p> <p>Max. Burst During Continuous Shooting: 32 shots (JPEG Large/Fine)/11 shots (RAW)</p>
LCD Monitor	<p>Type: TFT color LCD monitor</p> <p>Monitor Size: 2.0 inches</p> <p>Pixels: Approx. 230,000 pixels (displayed pixels)</p> <p>Coverage: Approx. 100% (for JPEG images)</p> <p>Brightness Adjustment: 5-levels (settable with menu's "LCD brightness")</p>
Image Playback	<p>Image Display Format: (1) Single image, (2) Single image with information, (3) 4-image index, (4) 9-image index, (5) Magnified zoom, (6) Manual/automatic rotation</p> <p>Highlight Alert: In the single image with information display mode, the highlight portions containing no image information will blink.</p>
Image Protection and Erase	<p>Protection: Erase protection of one image, all images in a folder, or all images in the memory card can be applied or cancelled.</p> <p>Erase: One image, all images in a folder, or all images in the memory card can be erased (except protected images).</p>
Menus	<p>Menu Categories: (1) Shooting Menus, (2) Playback Menus, (3) Setup Menus</p> <p>LCD Monitor Language: English, German, Dutch, Danish, Finnish, Italian, Norwegian, Swedish, Spanish, Simplified Chinese and Japanese.</p> <p>Firmware Updating: Enabled by the user</p>
Power Source	<p>Battery: One Ni-MH Pack NP-E3</p>

Number of Shots

Configuration		
NP-E3	Normal temp (68°F/20°C)	1200 frames
	Low temp (32°F/0°C)	800 frames

Dimensions and Weight**Dimensions (W x H x D):** 6.1 x 6.2 x 3.1 in./156 x 157.6 x 79.9mm**Weight:** 42.9 oz./1215g (Body only. battery: 11.8 oz./335g)**Working Conditions****Working Temperature Range:** 0-45° C/32-113° F**Working Humidity:** 85% or less

- All the specifications above are based on Canon's testing and measuring standards.
- The camera's specifications and physical appearance are subject to change without notice.

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V. CONCLUSION

What makes a camera a landmark? Image quality? Resolution? Speed of operation? Range of controls? Superb construction? Any camera would be disqualified from landmark consideration if it didn't have all of these in abundance. No, a landmark literally alters the terrain. It changes the hierarchy of product offerings and calls into question the value of equipment both more and less costly than itself. It may even render certain categories superfluous.

The Canon EOS-1Ds Mark II is, beyond doubt, a landmark. When the EOS-1Ds was introduced in 2002, there was no direct competitor for its speed, image quality and ruggedness. The 1Ds Mark II boasts dramatic improvements in resolution, image quality, speed, user interface and noise. It, too, is without peer.

Canon continues to offer a complete professional photographic system. The high speed EOS-1D and the high-resolution EOS-1Ds have now been superseded by the EOS-1D Mark II and the EOS-1Ds Mark II. The new cameras are faster, easier to use, have astonishing improvements in detail and image quality, and represent dramatic increases in value over their predecessors. What a splendid pair they are: the EOS-1D Mark II is the professional standard; the EOS-1Ds Mark II is clearly the pinnacle of digital SLR design and performance.

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