

Canon

EOS-1D

Mark IV

WHITE PAPER



**THE CANON EOS-1D MARK IV:
THE NEXT CHAPTER OF EOS,
A NEW STANDARD OF EXCELLENCE**

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Canon's new professional DSLR, the EOS-1D Mark IV, enters a much more competitive and difficult market than the one that greeted the EOS-1D Mark III in February of 2007. More manufacturers are serious about competing in the professional segment and long-time favorite brands of pros have upgraded their offerings. The world's economy has been in turmoil for more than two years, causing distress for dealers, distributors and manufacturers as well as for their customers. How does a distributor or dealer order an inventory of cameras when its traditional lines of commercial credit have dried up? And certainly, any individual's purchase that can be described as discretionary must take its place in line behind life's necessities.

Canon understands that the EOS-1D Mark IV has to be prepared to answer all questions, vanquish all competitors and appeal strongly to any and all who would use it to make their living. This is an epic challenge. Canon's vast R&D staff has worked furiously to produce just such a camera. As you read in detail about the many aspects of the EOS-1D Mark IV's excellence, it becomes apparent that Canon's engineers, designers and scientists have indeed succeeded.

For whom is the EOS-1D Mark IV designed? To begin with, it is for the EOS-1 Series' traditional constituency: professional photographers in virtually every category from photo-journalism and sports through nature, wedding, portrait and fashion to commercial, industrial and law enforcement. There is a great deal here to appeal to all of them in its new AF system, refined image quality, advanced workflow, customizable controls and incredible responsiveness. But there is a second camera inside the body of the EOS-1D Mark IV, an HD video camera with amazing low-light performance, outstanding portability, a huge sensor similar in size to the Super 35mm motion picture film format and a level of durability unheard of in most HD video cameras. Professional videographers will recognize it immediately, the way they identified the video potential of the EOS 5D Mark II. Still photographers at a wedding, at a runway show, at a fire, will realize that they have with them an extraordinary tool with which to capture the events before them and to distribute those results on the rapidly growing universe of web video sites (YouTube.com™, Vimeo.com™ and so many others)

plus all the other media providers, such as newspapers and magazines that routinely offer video as part of their online mix.

Then there's the value argument. The EOS-1D Mark IV will have an estimated retail price of \$4,999 at introduction, a highly competitive opening price for a state-of-the-art, go anywhere, do anything professional DSLR with great speed, outstanding image quality and remarkable convenience. Now, throw in that Full HD video capability. It's hard to say exactly how much this is worth because there is no direct equivalent in the world of pro video — but it's fair to say that the EOS-1D Mark IV's video functionality alone is worth several thousand dollars at least. If you are a still photographer, you've paid nothing whatsoever for this incredible video capability. If you are a videographer accustomed to spending five figures or even higher for a professional camera, it will be well worth it to buy at least several EOS-1D Mark IV cameras for serious production work; the images are that good and the price is so appealing.

This paper details the ways in which the EOS-1D Mark IV has been designed to produce terrific still images and videos, afford its users a tremendous range of configurability, be a precise and rugged companion, and be a pleasure to use. Follow the discussion and see if you don't agree.



- EOS-1D Mark IV**
- Completely Redesigned Autofocus System
 - Outstanding ISO Sensitivity
 - Full HD Video Recording at Selectable Frame Rates
 - Large 27.9mm x 18.6mm APS-H (super 35) image sensor
 - Fine Detail and High Image Quality
 - High Speed and Quick Response for Fast 10 fps Shooting
 - High-Performance and High-End Features
 - Advanced Features to Expand Shooting Possibilities
 - High Reliability and Solid Body for Adverse Conditions
 - Customization to Suit the Scene and Shooting Style
 - Expandable System to Extend Shooting Possibilities
 - Superior Features of the EOS-1D Mark III Retained and Refined

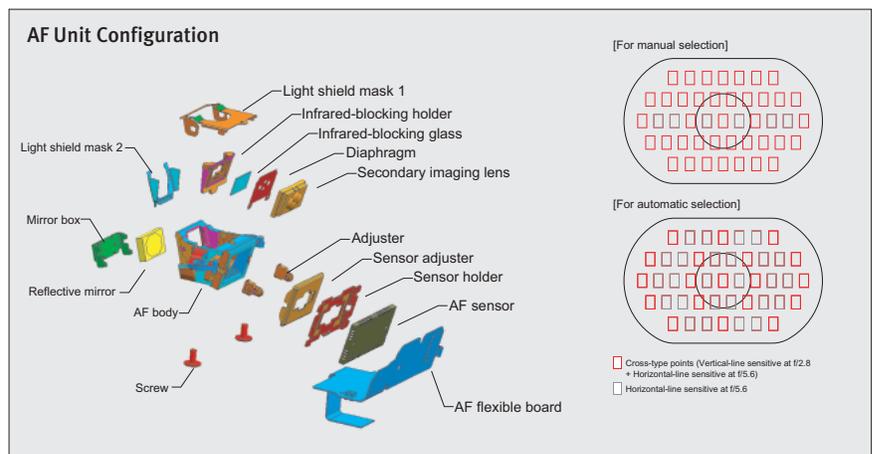
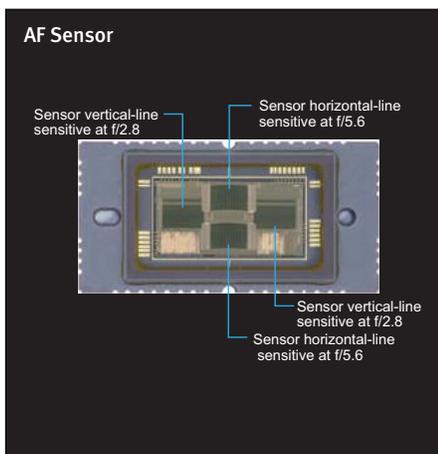


Feature		EOS-1D Mark IV	EOS-1D Mark III
Effective pixels [Approx. megapixels]		16.10	10.10
Imaging processor		Dual "DIGIC 4"	Dual "DIGIC III"
UDMA compatible		Yes	—
M-RAW (M-RAW+JPEG)		Yes	—
Auto Lighting Optimizer		Yes	—
Lens peripheral illumination correction		Yes	—
High ISO speed noise reduction [settings]		4	2
AF sensor	Cross-type AF points (f/2.8 for horizontal + f/5.6 for vertical)	39 (Manual selection)	19
	AF points (f/5.6 for vertical)	6	26 Assist
ISO speed	Setting range [Normal]	Auto, 100 - 12,800	100 - 3200
	ISO expansion	L:50, H1:25,600, H2:51,200, H3:102,400	L:50, H:6400
Maximum burst [Approx. shots, ()=UDMA]	JPEG Large	85 (121)	110
	RAW	26 (28)	30
	RAW+JPEG Large	20 (20)	22
Live View shooting	Focusing	Live /  Live / Quick / Manual	Manual
	Grid [types]	2	1
Movie shooting	Recording size [pixels] / Frame rate [fps]	1920x1080 / 30,25,24 1280x720 / 60,50 640x480 / 60,50	—
	Exposure control	Movie P, Movie M	
	Stills during movie shooting	Yes	
LCD monitor	Dots [Approx.]	920,000	230,000
	Angle of view [Approx. °]	160	140
	Anti-glare/Reinforced glass	Yes / Yes	— / —
	Interface languages	25 (In Japan: J-E only)	18
Playback	Jump display [types]	7	6
	Slide show	Yes	—
	Movie playback/Simple editing	Yes / Yes	— / —
	Voice memo playback	Yes	—
	Transfer order/Direct image transfer	— / —	Yes / Yes
Custom Functions [Qty]		62	57
- AF point switching [points]		45 / 19 / 11 / inner 9 / outer 9	19 / inner 9 / outer 9
- AF point expansion [items]		4	3
- AI Servo AF operation method and release timing change [items]		4	3
- Spot AF		Yes	—
- Vertical/Horizontal AF point setting		Yes	—
- AE/FE Microadjustment		Yes / Yes	—
Operation ease (Improved shape, stroke, height of button)		Yes	—
HDMI mini OUT terminal		Yes	—
External microphone IN terminal		Yes	—
Number of possible shots [23°C/73°F] (CIPA)		1500	2200
Weight [g, body only]		1180	1155
WFT-E2 II/II A / WFT-E2/E2A compatibility		Yes / Yes (Firm Ver.2.0.0)	Yes* / Yes

*If WFT-E2 II is attached to EOS-1D Mark III, the camera's firmware must be updated.



The EOS-1D Mark IV's AF system has been comprehensively reconsidered from its design components (sensor, firmware and mechanism) to its manufacturing execution. The design objectives were improved stability, reliability, precision and function. These objectives have been achieved with a totally new AF system, featuring totally new AF hardware and in-camera software. The result is a highly intelligent, fast, customizable and solid professional autofocus system that is both stable and responsive.



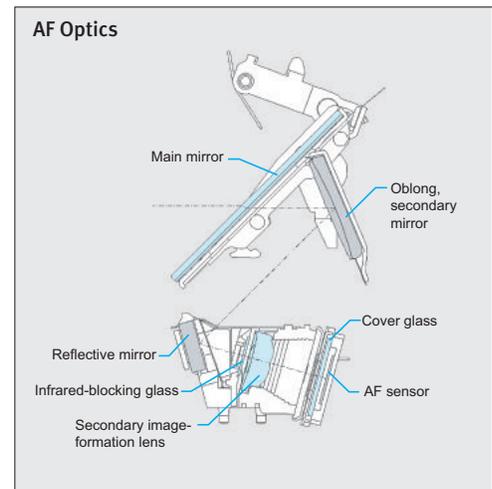
The EOS-1D Mark IV's newly designed low-noise AF sensor has 45 user-selectable AF points, 39 of which are cross-type (functional with all f/2.8 and faster EF lenses as well as some f/4 EF lenses) and distributed throughout the focusing area; the result is higher precision and extremely reliable subject tracking. (Note that the EOS-1D Mark III has 19 cross-type sensors, and the EOS-1D Mark II/n had only 7.) AF detection precision has also been substantially improved because some of the AF points' f/5.6-sensitive sensors now have two lines and the f/2.8-sensitive line sensors have been improved. In addition, compared to the AF sensor in the EOS-1D Mark III, the new unit also has Spot AF and other functional enhancements.

Comparison of AF Sensor's Basic Specifications

Specification		EOS-1D Mark IV	EOS-1D Mark III
Total AF points		45	
Cross-type points (f/2.8 horizontal + f/5.6 vertical)		39	19
f/4 lens: 39 cross-type AF		Yes	-
Center AF point	f/4 lens: Cross-type AF	Yes	
	f/8 lens: AF	Yes	
	Gross defocus compatibility	Yes	
AF brightness range		EV-1 - 18	

As with the EOS-1D Mark III, AF processing, which includes focusing calculations as well as lens driving, is divided between a dedicated AF CPU and the camera CPU. It thus uses a distributed processor configuration. To attain the maximum speed of approximately 10 fps in AI Servo AF, the AF CPU and camera CPU are both high-speed microcomputers (48MHz 32-bit RISC for AF and 40MHz 32-bit RISC for camera).

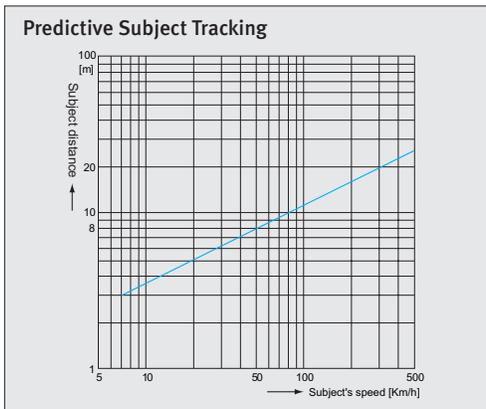
The AF sensor's basic configuration and focusing optics are similar to those of the EOS-1D Mark III. However, there are now 39 cross-type AF points available for **manual** AF point selection. (Note that these 39 points work as cross-type points only during manual AF point selection. During automatic AF point selection, the same 19 AF points as on the EOS-1D Mark III will work as cross-type points.) Increasing the number of cross-type AF points to 39 was made possible by the high-speed, vertical line-sensitive $f/2.8$ sensor components whose reading position is switchable. The new reading method improves both AF precision and the subject tracking success rate. The precision of the focusing optics has also been enhanced with stricter AF adjustment standards and improvements in the manufacturing process to improve the stability of AF performance.



New AI Servo AF algorithm

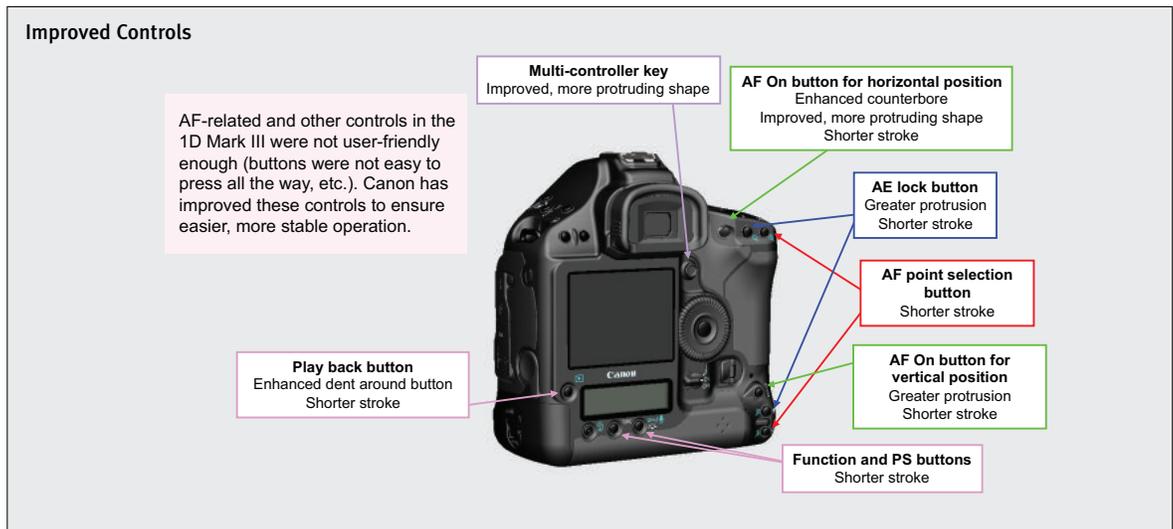
To go along with the hardware and manufacturing process improvements, Canon also completely revamped the firmware used to calculate predictive focus. As a result, a significantly improved AI Servo AF algorithm now called AI Servo II AF eliminates focusing errors, maintains tracking and improves response. In the past, Canon AF system development concentrated on achieving fast response. Highly responsive AF systems offer accurate predictive AF (they focus quickly on subjects in the AF frame), but they have difficulty stabilizing focus if the subject leaves the AF frame during AI Servo AF continuous shooting. The 1D Mark III, highly responsive by design, consequently has a lower probability of accurately focusing on fast-moving subjects that are hard to keep within the AF frame. With the new 1D Mark IV AI Servo II AF algorithm, stability, reliability and AF precision have all been improved without a sacrifice in responsiveness. Predictive AF is more intelligent and avoids over-response, and difficult lighting — both low contrast and very bright conditions — is handled better. Canon has conducted numerous field tests with professional photographers both in the US and abroad and the resulting feedback has helped to make the algorithm precisely suited to the shooting needs of pro users.

During predictive focus with the revised AI Servo II AF algorithm, if a continuous focusing result is not obtained, the focusing result for the missing moments is ignored. Stable lens driving is executed based on the next obtainable continuous focusing result. Also with AI Servo II AF, even if an obstacle is detected or if the AF point loses the subject, the subject tracking continues with predictive control based on the focusing result immediately before the obstacle was detected or before the subject was lost. If there is a sudden abnormal measurement, it is disregarded. Instead, focusing is based on the most recent successful measurement. To enable instantaneous response to the subject's movement, the camera can now start predictive control with the measurements taken immediately after the subject starts to move. In sum, the success rates for focusing moving subjects and for subjects whose distance keeps changing, as is often the case in hand-held close-up shooting, are substantially improved.



AI Servo AF operation characteristics and AF point expansion have also been improved to work effectively with the new Spot AF and orientation-linked AF point selection features.

As an example, with an EF 300mm f/2.8L IS USM lens, the EOS-1D Mark IV can track a subject approaching at 50 kph/31 mph up to about 8 meters/26.2 feet away. This is the same specification as the EOS-1D Mark III. However, with the 39 cross-type AF points and totally updated in-camera AF processing, the Mark IV's subject detection and tracking performance have improved substantially over the EOS-1D Mark III's. This combination of hardware and software (AI Servo II AF algorithm) improvements enables a much more stable AI Servo AF control.



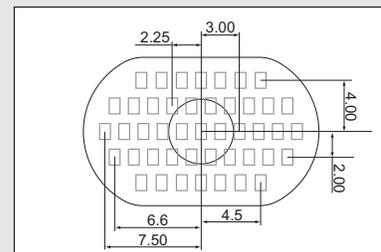
Improved AF-related controls

The AF-related controls on the EOS-1D Mark IV have been revised to provide more convenient and more accurate operation. For example, the shape, stroke, and protrusion of the AF Start button have been improved, as has the stroke of the AF point selection button (horizontal/vertical orientation). Other examples can be found on the diagram provided here.

High-precision, cross-type sensors

As was the case with the EOS-1D Mark III, the center AF point of the EOS-1D Mark IV has a cross-type sensor which is vertical line-sensitive up to a maximum aperture of $f/4$ and horizontal line-sensitive to a maximum aperture of $f/8$. Therefore, with a lens (or lens-plus-extender combo) whose maximum effective aperture is $f/4$ or faster, high-precision, cross-type focusing is possible. With lenses or lens/extender combinations whose maximum aperture is between $f/4$ and $f/8$, AF is possible at the center point with horizontal-line detection. The center row of cross-type AF points, including the center AF point, have a thin line sensor for vertical line detection with $f/2.8$ or faster EF lenses. This allows focus with lower contrast subjects and improves detection precision. Also, the center AF point uses a new double line design that enables it to detect the subject even when it is grossly out of focus. This reduces the lens' searching to detect the subject, making AF control faster and easier.

AF Point Field of View

**Low noise AF sensors**

Low noise is just as important for AF sensors as it is for imaging sensors. AF sensor noise contaminates the signal-to-noise ratio and makes accurate focusing in difficult light problematic. Phase difference detection, the judging of the focusing error, becomes difficult. The new low-noise CMOS AF unit in the EOS-1D Mark IV, designed and manufactured by Canon, improves detection accuracy and provides greater stability in dark, super-bright and low-contrast conditions.

As with the EOS-1D Mark III, the sensitivity range of AF extends from EV -1 to EV 18 (at 23°C/73°F, ISO 100). The configuration of AF points as seen in the viewfinder is also the same as the EOS-1D Mark III's. But even though what the photographer sees in the viewfinder looks the same as with the previous EOS-1D Mark III, it's important to know that the actual AF sensor is a totally new design in the EOS-1D Mark IV.

Automatic point-of-focus compensation for spectral source variation

The EOS-1D Mark IV can automatically correct the slight error in the point of focus caused by differing spectral characteristics of light sources, resulting in a more consistent AF. This correction feature is especially effective under artificial light sources. It is achieved with a dedicated light source detection sensor on the back of the pentaprism.

AF Point Selection

During manual AF point selection, 38 (or 18 during automatic AF point selection) cross-type AF points (excluding the center AF point) provide high-precision, cross-type performance with lenses whose maximum apertures are $f/2.8$ or faster. Their horizontal line sensors (sensitive to vertical detail) provide up to 3 times the precision of the vertical sensors, providing added focusing accuracy with wide-aperture lenses where it's needed most. When lenses with slower maximum apertures are used (with some notable exceptions — see below), the vertical line sensor becomes the only component used, allowing AF with lenses or lens/extender combinations that are $f/5.6$ or faster. The center AF point, as mentioned above, can perform AF with lenses as slow as $f/8$ (such as an $f/4$ lens with a Canon EF Extender 2X or 2X II attached). Whenever lenses slower than $f/4$ are used, the center point reverts to a single vertical AF line sensor, which is sensitive to horizontal detail.

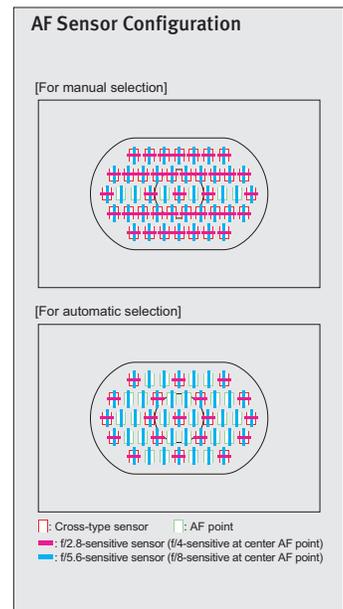
Note that although the maximum aperture of the following lenses or combinations is $f/4$, cross-type focusing with 39 AF points is now possible with these current lenses:

- EF 17-40mm $f/4L$ USM
- EF 24-105mm $f/4L$ IS USM
- EF 70-200mm $f/2.8L$ IS USM + Extender EF1.4x II
- EF 200mm $f/2L$ IS USM + Extender EF2x II
- EF 300mm $f/2.8L$ IS USM + Extender EF1.4x II
- EF 400mm $f/2.8L$ IS USM + Extender EF1.4x II

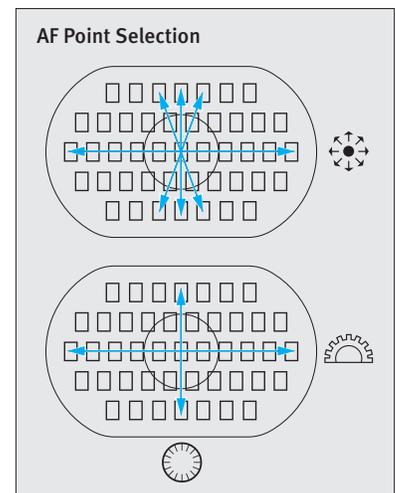
The following current EF lenses are compatible with $f/2.8$ -sensitive cross-type sensors¹:

Lens	35mm format focal length equivalent
EF 16-35mm $f/2.8L$ II USM	21-46
EF 24-70mm $f/2.8L$ USM	31-91
EF 70-200mm $f/2.8L$ USM	91-260
EF 70-200mm $f/2.8L$ IS USM	91-260
EF 15mm $f/2.8$ Fish Eye	20
EF 14mm $f/2.8L$ II USM	18
EF 20mm $f/2.8$ USM	26
EF 24mm $f/1.4L$ II USM	31
EF 24mm $f/2.8$	31
EF 28mm $f/1.8$ USM	36
EF 28mm $f/2.8$	36
EF 35mm $f/1.4L$ USM	46
EF 35mm $f/2$	46
EF 50mm $f/1.2L$ USM	65
EF 50mm $f/1.4$ USM	65
EF 50mm $f/1.8$ II	65
EF 85mm $f/1.2L$ II USM	110
EF 85mm $f/1.8$ USM	110
EF 100mm $f/2$ USM	130
EF 135mm $f/2L$ USM	175
EF 135mm $f/2.8$ Soft-Focus	175
EF 200mm $f/2.8L$ II USM	260
EF 200mm $f/2L$ IS USM	260
EF 300mm $f/2.8L$ IS USM	390
EF 400mm $f/2.8L$ IS USM	520

¹ Discontinued EF lenses with maximum apertures of $f/2.8$ and larger are also compatible with the 39 cross-type focusing points.



During manual AF point selection, the six single-axis AF points (or 26 AF points during automatic AF point selection) other than the 39 cross-type AF points will work as horizontal line-sensitive sensors at maximum apertures up to $f/5.6$. They have the same detection performance as the EOS-1D Mark III's assist points working at maximum apertures up to $f/5.6$. The two AF points at the immediate top and bottom of the center AF point have improved detection performance and precision due to the doubling of the number of lines for the $f/5.6$ sensor. The 45 AF points can be selected automatically, or any one of them can be selected manually. (With the EOS-1D Mark III, only 19 AF points could be selected manually.) To select an AF point, press the AF point selection button; then use the Multi-controller, Main Dial or Quick Control Dial. Pressing the Multi-controller straight in selects the center AF point. With the center AF point selected, pressing the Multi-controller again will set automatic AF point selection. Pushing the Multi-controller up, down or to the side selects the AF point in the respective direction. Turning the Main Dial selects a horizontal AF point, while the Quick Control Dial selects a vertical AF point. While the 45 AF points are selectable, if you use the Multi-controller or Main/Quick Control Dial to move vertically among the AF points, the AF point selection will switch as follows: Single AF point -> Two AF points -> Single AF point. (This is the same as with the EOS-1D Mark II N.) If AF is executed while two AF points are selected, automatic AF point selection with the two AF points will take effect.



Enhanced AF Customization

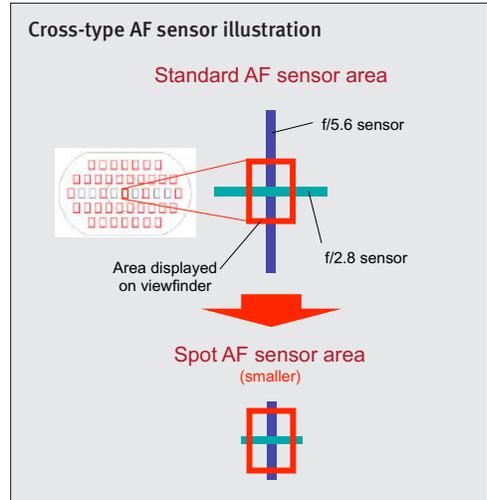
Enhanced AF Customization

C.Fn III	Item	Description	Live View							
1	USM lens electronic MF	0 Enable after One-Shot AF	○	8	AF expansion w/ selected pt	0 Disable	Yes (with Quick mode)			
		1 Disable after One-Shot AF				1 Left/right AF point				
		2 Disable in AF mode				2 Surrounding AF points				
2	AI Servo tracking sensitivity	Slow: -2, -1, 0, +1, +2: Fast		9	Multi-controller while meter.	0 Off				
						1 AF point selection				
3	AI Servo 1st/2nd img priority	0 AF priority/Tracking priority		10	Selectable AF point	0 45 points	Yes (with Quick mode)			
		1 AF priority/Drive speed prior				1 19 points				
		2 Release/Drive speed priority				2 11 points				
		3 Release/Tracking priority				3 Inner 9 points				
4	AI Servo AF tracking method	0 Main focus point priority		11	Switch to registered AF point	0 Disable	Yes (with Quick mode)			
		1 Continuous AF track priority				1 Switch with is pressed				
5	Lens drive when AF impossible	0 Focus search on	Yes (with Quick mode)	12	AF point auto selection	0 :disable :enable	Yes (with Quick mode)			
		1 Focus search off				1 :disable :enable				
6	Lens AF stop button function	0 AF stop	Yes (except 4: with Quick mode)	13	AF point display during focus	0 On	Yes (with Quick mode)			
		1 AF start				1 Off				
		2 AE lock				2 On (when focus achieved)				
		3 AF point: M -> Auto / Auto -> Ctr				0 Normal		Yes (with Quick mode)		
		4 ONE SHOT <-> AI SERVO				1 Brighter				
		5 IS start				15		AF-assist beam firing	0 Enable	Yes (with Quick mode)
		6 Switch to registered AF pt.							1 Disable	
7 Spot AF	2 IR AF assist beam only	16	Orientation linked AF point	0 Same for both vertic./horiz.	Yes (with Quick mode)					
				1 Select different AF points						

※ new feature

AI Servo 1st/2nd Image Priority

	First frame during continuous shooting	All subsequent frames in burst
0: AF priority/Tracking priority	Shutter is released once subject is in focus. There may be a delay when image is blurred.	Focus is prioritized. Continuous shooting speed may slow down depending on amount of blur, contrast and brightness.
1: AF priority/Drive speed priority	Shutter is released once subject is in focus. There may be a delay when image is blurred.	Continuous shooting speed is prioritized. Continuous shooting may slow down (depending on amount of blur, contrast and brightness) but is faster than for tracking priority.
2: Release/Drive speed priority	Shutter is released even if subject is out of focus.	Continuous shooting speed is prioritized. Subject tracking may not be active depending on amount of blur, contrast and brightness.
3: Release/Tracking priority	Shutter is released even if subject is out of focus.	Focus is prioritized. Release timing may be delayed depending on amount of blur, contrast and brightness.



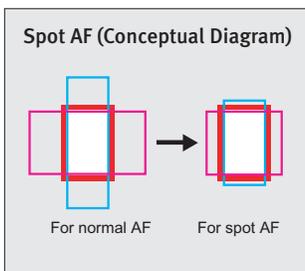
Release/Tracking priority

C.Fn III-3: (AI Servo 1st/2nd image priority) has had the optional [3: Release/Tracking priority] setting added. Shutter-release priority (rather than focus priority) is given to the first shot. During continuous shooting (from the second shot onward), stable focus-tracking of the subject is given priority. This new setting, which was the only option for AI Servo AF release/tracking priority with the original EOS-1D, EOS-1D Mark II and EOS-1D Mark II N, was conspicuously absent on the EOS-1D Mark III. Now, EOS-1D Mark IV users will have the best of both worlds together with the new improvements to AF hardware and software.

Spot AF

The new AF system allows for considerable customization, particularly because new controls have been added to the complement of Custom Functions. For example, when C.Fn III-6-7 is set and you press the AF Stop button on a super telephoto lens that has AF Stop buttons, the focusing line sensor's usable area becomes narrower; the focusing field of view is reduced by about half. The AF system can then focus on a smaller area, reducing errors caused, for example, when a sensor sees a bit of extraneous background.

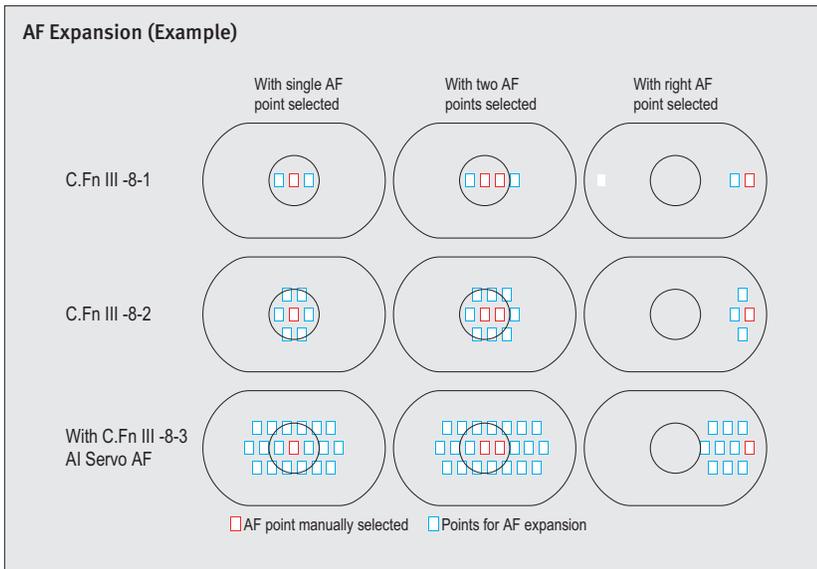
Some examples of situations in which Spot AF will be effective include staying focused on the eye of a helmeted driver in an open-cockpit racing car, capturing an athlete on a distant victory stand without using a telephoto lens and being confident the cropped photo will be clear enough, capturing baseball players through the backstop and photographing wild animals through trees in a forest.



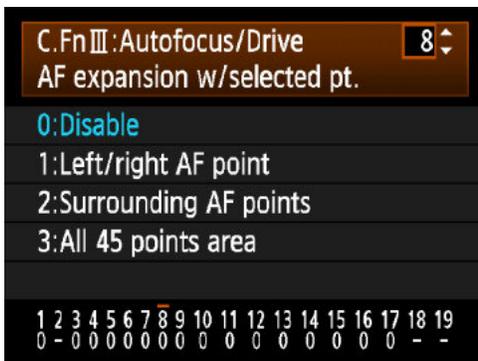
Spot AF works regardless of the AF mode and AF point selection method. It is especially effective for manual AF point selection. However, since the decrease in size may make it difficult to keep the AF point centered on an erratically moving subject, focusing might be difficult. When starting with a scene entirely out of focus, Spot AF focusing may be slow. As a reminder that Spot AF has been set, the AF point display in the viewfinder will flash brighter than normal.

AF Point Expansion

With C.Fn III-8 and a manually-selected AF point, the effective size of the AF point can be expanded by using the AF points adjacent to the selected AF point. If the manually-selected AF point cannot achieve focus, focus can be achieved with one of the adjacent (expanded) AF points. The range of expandable AF points is shown in the diagram given here. These settings can be effective for shooting a moving subject that is difficult to track with just one AF point, or with subjects that don't have lots of detail or contrast. The [1: Left/right AF point] and



[2:Surrounding AF points] options are the same as the EOS-1D Mark III. These give the photographer a moveable “cluster” of either three (via option 1) or up to eight (via option 2) AF points, which can be moved freely around the AF coverage area. The [3: All 45 points area] setting is a very powerful option that's new to the 1D series. It effectively allows the photographer to *manually select the starting* point for focus detection while gaining the ability to track the subject anywhere it moves within the 45-point Area AF ellipse indicated on the focusing screen. (By comparison, when automatic focusing point selection is combined with AI Servo AF, the subject must



C.Fn III-8: AF Point Expansion

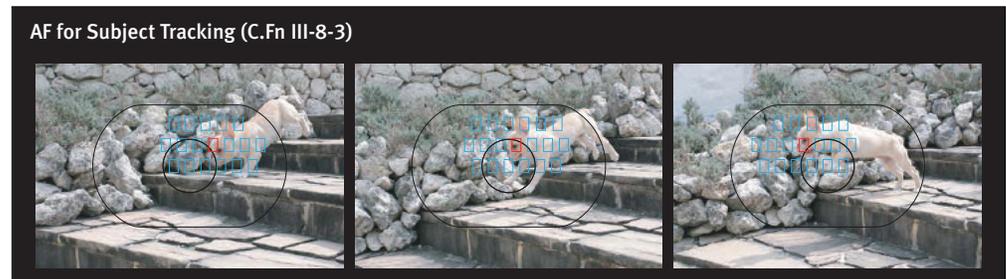
be initially detected with the center AF point.) In addition, C.Fn III-8-3 allows the camera to display the active focusing point in the viewfinder as it follows the subject during a burst shooting sequence. Here's how it works: When C.Fn III-8-3 is combined with AI Servo AF, up to 18 AF points adjacent to the manually-selected AF point will become active. Each time the subject moves to another AF point, the expanded AF points will also shift to surround the AF point covering the subject. In response to the subject's movement, the AF point lit in red also shifts continuously. Since the clump of active focusing points can shift automatically according to subject movement, all 45 focusing points are effectively available for burst mode shooting.

As long as the subject is within the Area AF frame, autofocusing of the subject will continue. This is the same logic as with automatic AF point selection. However, since the focusing is concentrated over a smaller area than during automatic AF point selection, focusing on a particular subject is easier. Also, if the main AF point loses the subject by a considerable amount during automatic AF point selection, all 45 AF points are used to search for the subject. With C.Fn III-8-3, the 18 expanded AF points are instead used to search for the subject. For example, even if there is an object closer than the main subject, the camera can still quickly and securely track the main subject. If One-Shot AF is set and focus cannot be achieved with the manually-selected

AF point, focus is executed with an expanded area of up to 44 AF points. Subject detection is done in three instant steps, with 6, 18, then 44 AF points. Because the manually-selected AF point is where the subject is supposed to be, focusing is easier and more accurate using the AF points closer to the main AF point. Better yet, DPP 3.7.3 and higher can display the active focusing point for each image when C.Fn III-8-3 is used together with manual focusing point selection, even when the active focusing point differs from the manually selected focusing point.

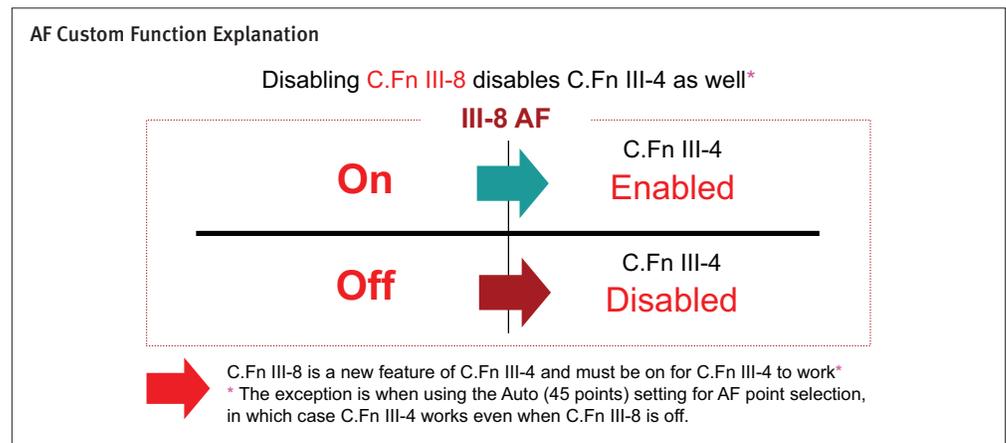
Differences Between C.Fn III-8-3 and Automatic AF Point Selection with AI Servo AF

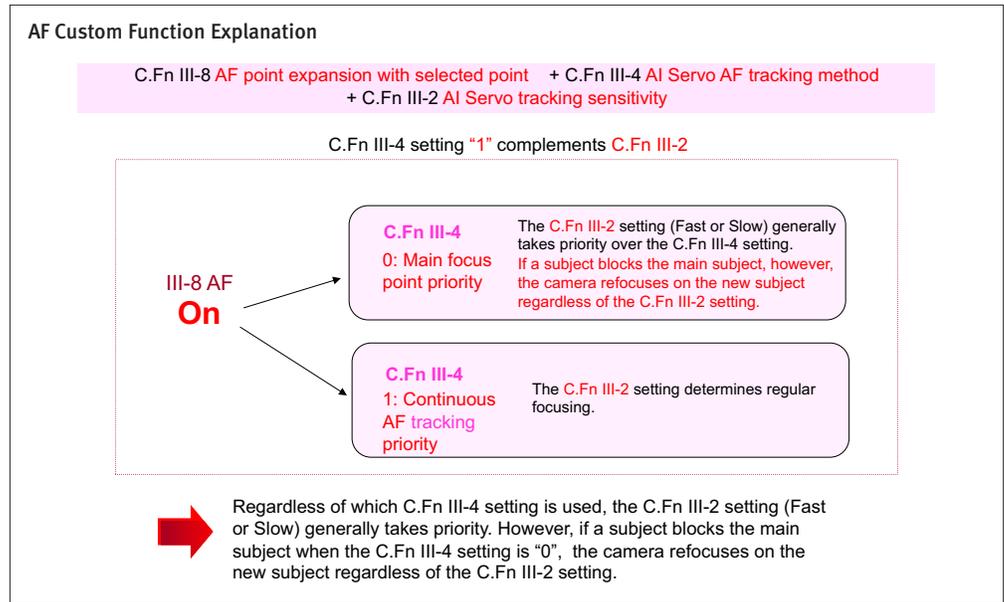
	C.Fn III -8-3	Automatic Selection
AF Starting Position	Manually - selected AF point	Center
Expansion Area	Main AF point + 18 points	Main AF point + 44 points
Action when Main AF Point Greatly Misses Subject	Search by 18 points	Search by 45 points
Focusing Positon Check During Shooting	Possible	Not provided
Point of Focus Check with DPP	Possible	Not provided



C.Fn III-8-1, III-8-2 or III-8-3 must be on for C.Fn III-4 (AI Servo AF tracking method) to become fully effective. The exception occurs when using Automatic Focusing Point Selection, in which case both settings for C.Fn III-4 are effective even when C.Fn III-8 is off.

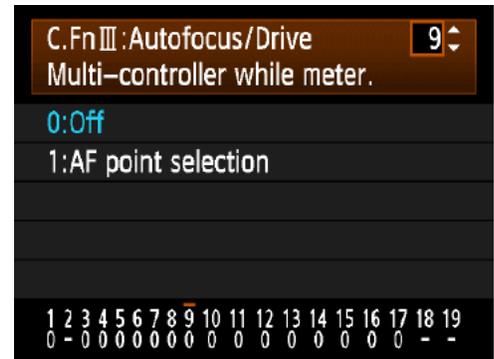
Regardless of which C.Fn III-4 setting is used, the C.Fn III-2 setting [AI Servo tracking sensitivity] generally takes priority. However, if a subject blocks the main subject when the C.Fn III-4 setting is 0, the camera refocuses on the new subject regardless of the C.Fn III-2 setting.





Use of Multi-controller

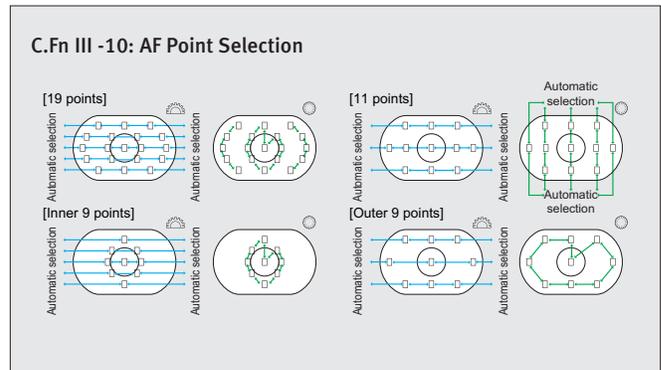
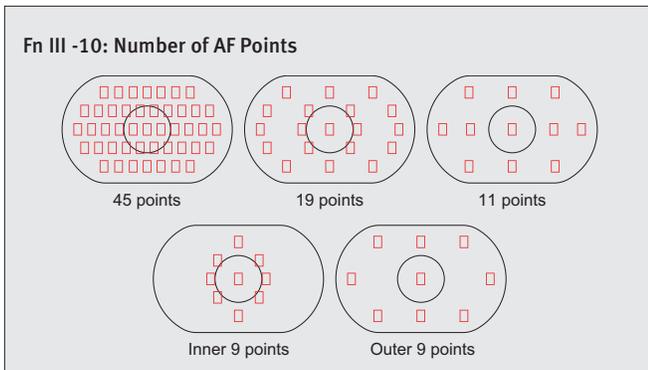
While exposure metering is active, the new C.Fn III-9 enables/disables the Multi-controller's ability to select an AF point. This setting was included in the EOS-1D Mark III (C.Fn III-9: Selectable AF point). It is now a separate Custom Function.



C.Fn III-9 enables AF point selection via the multicontroller while metering.

Selectable AF points

With C.Fn III-10, you can control the number of manually-selectable AF points. At the default setting (III-10-0), all 45 points are manually selectable. Other options include 19 points, 9 inner points or 9 outer points (the same options as the EOS-1D Mark III), or 11 AF points (an option that was available with the EOS-1D Mark II/n). During automatic AF point selection, AF will be executed with 45 AF points regardless of the C.Fn III-10 setting.



Switch to registered AF point

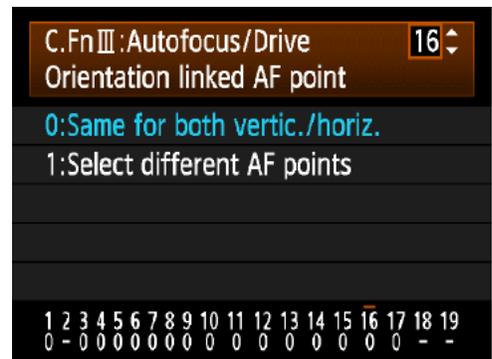
For [C.Fn III-11: Switch to registered AF point], the [2: Only while <AE lock button> is pressed] setting has been added. The setting name for 1 has been changed to [1: Switch with <Multicontroller>].

AF-assist beam firing

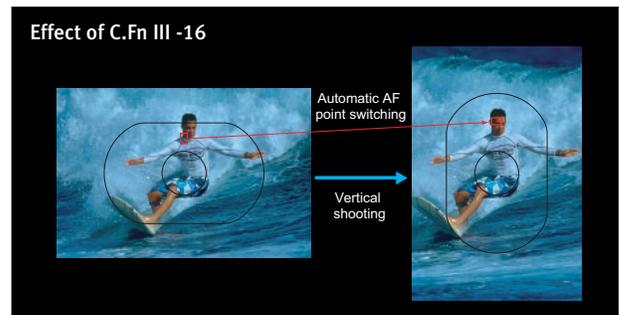
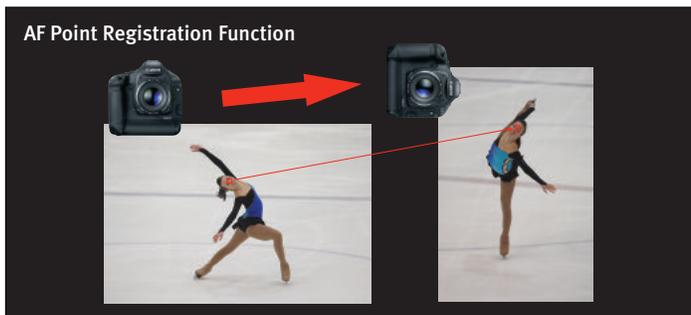
[C.Fn III-15: AF-assist beam firing] has had the [2: IR AF assist beam only] setting added. Set this to disable the series of small flashes fired as the AF-assist beam, as with Speedlite 270EX.

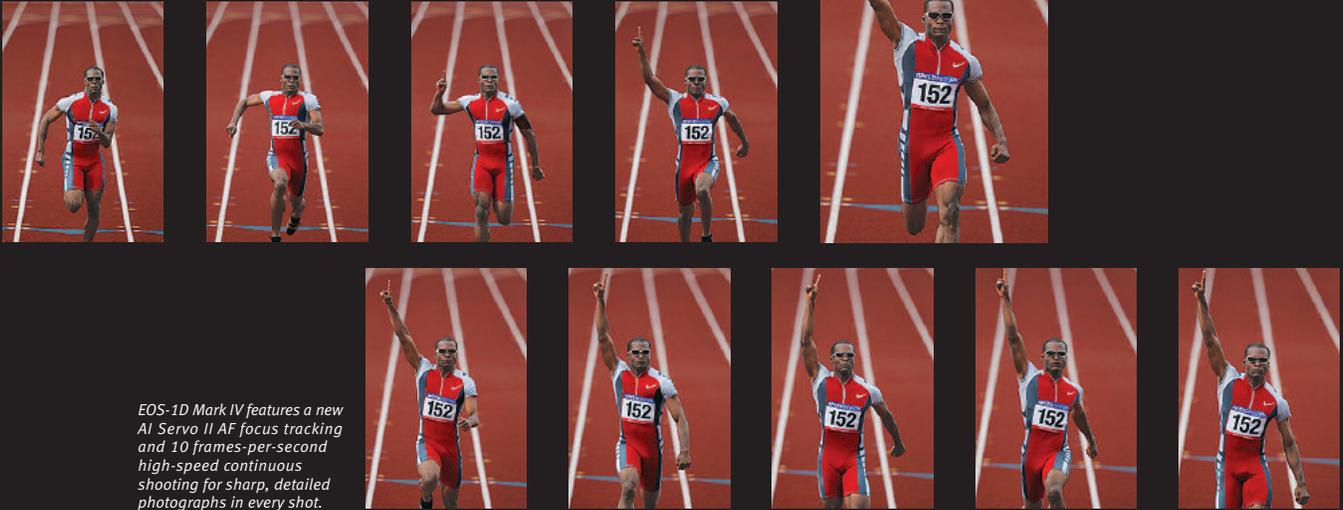
Orientation linked AF point

With C.Fn III-16-1, you can set the AF point for vertical shooting separately from the AF point for horizontal shooting. During shooting, the camera detects the change in the orientation and instantly switches to the corresponding AF point that was set. With C.Fn III-16-1, you can also select the AF point to be used in three different camera orientations: horizontal, vertical (grip on top) and vertical (grip on bottom). Automatic AF point selection is also selectable in any orientation as the corresponding AF point. When you change the camera orientation, the AF point will also change automatically. If you clear the camera settings to their defaults, the selected AF points for the respective orientations will all be reset to the center AF point.



C.Fn III -16





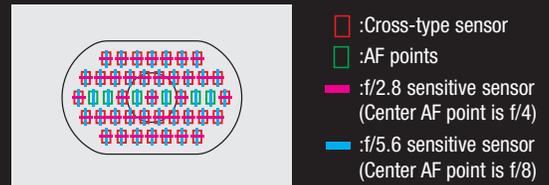
EOS-1D Mark IV features a new AI Servo II AF focus tracking and 10 frames-per-second high-speed continuous shooting for sharp, detailed photographs in every shot.

More Accurate Focus in More Situations

Both One-Shot AF and new AI Servo II AF modes are provided to cover a wide variety of shooting situations. The AI Servo II AF mode has been re-engineered to help ensure improved speed and stability with more reliable focus-tracking performance. The new algorithms make it possible to more accurately track subjects that move irregularly. In addition, AI Servo II AF greatly enhances macro photography with algorithms that automatically sense the use of a macro-focusing lens at close distances, appropriately adjusting AF operating parameters to better accommodate unpredictable camera/subject movement.

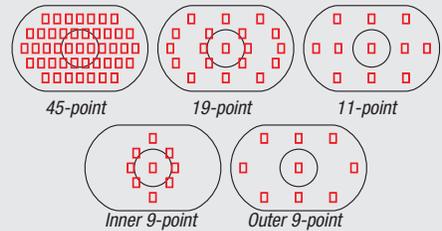
Powerful, Customizable AF Operation

The photographer can select any one of the 45 AF points manually or allow the camera to make the selection automatically. To select an AF point manually, the user can press the AF point selection button, then use either the Multi-controller or a combination of the Main and Quick Control Dials to highlight the desired point in the viewfinder. As with previous EOS 1-series cameras, the photographer can use a Custom Function to automatically expand a manually selected AF point. The expansion of points can be limited by the user to 19, 11, inner 9 or outer 9. A Custom Function (C.Fn III-16) can be used to pre-register an AF point for automatic AF point switching to the registered point when the camera orientation is changed from the horizontal to vertical position, or vice versa. Another Custom Function enables the user to enable or disable the burst of short flashes when a flash unit without an IR AF-assist beam is used.

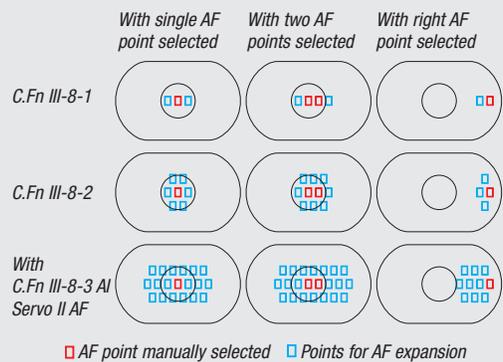


With Auto AF selection, 19 points are cross-type AF sensors.

AF Point Expansion Selections



AF Point Expansion



AF Point Registration C.Fn III-16



Automatic AF point switching to registered AF point when camera orientation is changed.

At high ISO speeds, the EOS-1D Mark IV achieves exceptionally high image quality, including high resolution, minimal noise and a sense of atmosphere and depth, all without compromising shooting performance (burst rate, continuous shooting speed and so forth). These advantages enable new possibilities for image making.

For example, it is now possible to capture high-resolution images at a 1/1,000 second shutter speed in almost any night game setting. The EOS-1D Mark IV is ideal for stopping the motion of athletes in dimly lit places such as stadiums, gyms and indoor swimming pools. The low light shooting capability of the EOS-1D Mark IV extends even further when shutter speeds slower than 1/1000 are used. This feature allows the new camera to create usable images in light so low that other cameras with less sensitive image sensors may miss the shot completely.

ISO 12,800 is now within the normal ISO speed range, two stops higher than before. The normal ISO speed range is the widest among EOS Digital cameras with ISO 100-12,800 (in 1/3-stop increments). ISO speed expansion offers L: 50, H1: 25,600, H2: 51,200 and H3: 102,400. Also, this is the first EOS-1D Series camera with ISO Auto. The default setting sets the ISO speed automatically within ISO 100-12,800. When ISO Auto is set, even if the upper ISO speed limit has been set to H1, H2, H3 and the lower ISO speed limit to L with C.Fn I-3, ISO range expansion does not take effect. However, if the upper/lower ISO speed limit have been set narrower than the normal ISO speed range, ISO Auto will set the ISO speed within the range set. With most previous EOS cameras having ISO Auto, the ISO speed was fixed at ISO 400 when the Manual shooting mode was combined with ISO Auto.

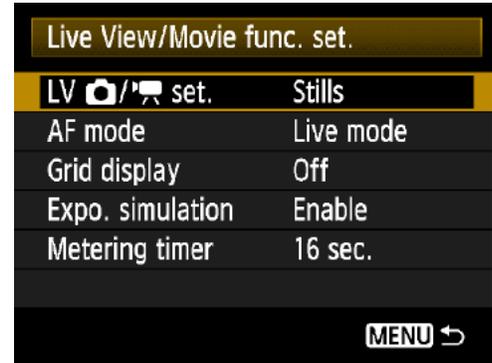
However, with the EOS-1D Mark IV, the ISO speed is now adjusted automatically to obtain correct exposure for the shutter speed and aperture that have been set. This feature effectively functions as ISO priority.

ISO Auto Speed Setting Range

Shooting Mode	C.Fn I-3	ISO Speed Setting
P, Tv, Av, M	Default	ISO 100 - 12,800
	Expanded	ISO 100 - 12,800
	Limited	Upper limit to lower limit
Bulb, Flash		Fixed at ISO 400

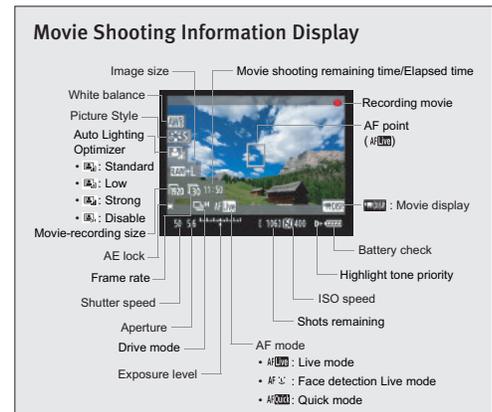
Of the approximately two stops higher sensitivity that the EOS-1D Mark IV has over the EOS-1D Mark III, one stop is due to the improved CMOS sensor (see the section on the sensor) and the other is attributable to the performance boost of the Dual DIGIC 4 Image Processors rather than DIGIC III Image Processors (see the section “Dual DIGIC 4”).

New video capture features, such as manual exposure control for video shooting, as well as new video recording sizes and new frame rates have been added to the EOS-1D Mark IV based on user feedback from the EOS 5D Mark II. Some users found setting the 5D Mark II's [LV func. setting] difficult to figure out, so the procedure has been simplified. Now, video shooting settings are selected with the [Live View/Movie func. set.] screen. When you choose [LV Still Photos/Movie set.] -> [Movie], the video screen will be displayed when Live View is activated.



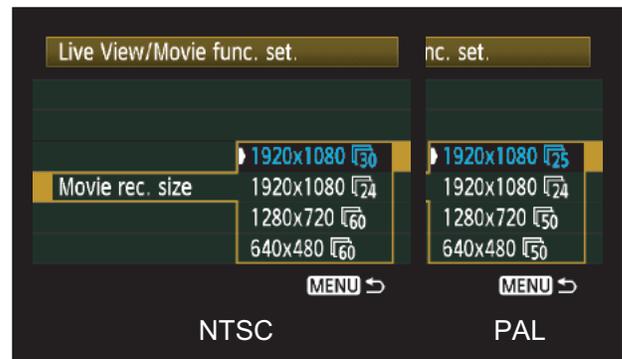
Live View/Movie function setting

With the Live View image displayed, press the FEL button to start recording video. Press it again to stop recording. (NOTE: This is a big difference compared to the EOS 5D Mark II, which used the SET button to start and stop video recording. With the EOS-1D Mark IV, you can press the SET button to start Live View, but if you press it again, Live View will be shut off.) With [LV Still Photos/Movie set.] set to [Movie] and C.Fn IV-11 [Start movie shooting] set to [1: Quick start (<FEL> btn.)], you can just press the FEL button during shooting to activate Live View and start capturing video immediately.



Video recording formats

The video compression is MPEG-4 AVC, variable (averaged) bit rate. (The bit rate is the amount of data per second of video, expressed as bps, bits per second. The higher the bit rate, the higher the image quality. Of course, as bit rates increase, the file size does become larger. Variable bit rate increases for scenes with rapid movement and decreases for static subjects. The optimum bit rate is set for specific types of scenes. The audio recording is linear PCM (pulse code modulation).



Movie Recording Size/Frame Rate

uncompressed. The video is recorded as a .MOV file. The range of available frame rates depends on the NTSC/PAL video format setting.

Video recording sizes and frame rates

Three video recording sizes are provided: 1920x1080 pixels (Full HD), 1280x720 pixels (HD) and 640x480 pixels (SD). The adjustable frame rate can be selected for the respective recording size: Full HD: 30p/25p/24p fps, HD/SD: 60p/50p fps. (The actual frame rates are as follows: 30 fps: 29.97 fps, 25 fps: 25.00 fps, 24 fps: 23.976 fps, 60 fps: 59.94 fps, 50 fps: 50.00 fps. Progressive scanning is used for all frame rates.) During video recording, the picture is displayed on the screen in the recording quality's aspect ratio. (A semi-transparent mask covers the parts not recorded.)



The displayed frame rate options will change automatically depending on the video output format (NTSC/PAL). Based on user requests, the frame rate has been changed to conform to the NTSC/PAL format and motion picture standard. The frame rate for HD and SD quality has been doubled compared to the EOS Rebel T1i, making videos look less jerky for fast-moving subjects and action. (The frame rate for SD quality is also twice as fast as the EOS 5D Mark II.)

Movie Recording Size and Frame Rate

Movie Recording Size	Frame Rate [fps]		Scanning Method	Video OUT Format
	Indication	Actual fps		
1920x1080 (Full HD)	30	29.97	Progressive	NTSC
	25	25		PAL
	24	23.976		NTSC/PAL
1280x720 (HD)	60	59.94		NTSC
	50	50		PAL
640x480 (SD)	60	59.94		NTSC
	50	50		PAL

An actual frame rate of 29.97 fps in NTSC mode was chosen as the default setting for Full HD video recording in order to match the North American NTSC TV standard. Video clips shot at this frame rate with the EOS-1D Mark IV can therefore be combined with separately recorded audio and video sources shot at the same frame rate for use with professional NLE (non-linear editing) software systems.

Image development during movie shooting

Image quality	Frame rate	Use	Notes
Full HD	30P (29.97fps)	NTSC	The format (video output settings) varies depending on the region.
	25P	PAL	
	24P (23.976fps)	Shooting movies	This format is requested by people in the film industry who believe 24p provides more appealing results.
HD/VGA	60P (59.94fps)	NTSC	This format captures more realistic movement thanks to higher frame rates than the Full HD format. It can be utilized for double-speed recording.
	50P	PAL	

Rapid subject movement — and camera movement — look less smooth at 24 fps than they do at 30 or 60 fps, but the resulting video looks similar to traditional movies shot at 24 fps. Especially at slower shutter speeds, 1/50th of a second or slower, there is a definite “look” to these settings that many users prefer. The actual framing rate of the EOS-1D Mark IV (and the EOS 7D) when set to 24 fps is 23.976 fps, to match industry standards for professional editing and production workflows.

At the reduced recording sizes of 1280x720 (HD) and 640x480 (SD), the 60 fps (59.94 actual fps) and 50 fps frame rates of the EOS-1D Mark IV are great for rapid subject movement, such as action sports or wildlife. With frame rates from 24 to 60 fps, the EOS-1D Mark IV can handle a wide variety of professional video assignments.

Image processing and high ISOs

Video clips are shot according to the Picture Style that’s been selected by the user. User-selected settings for Auto Lighting Optimizer and Peripheral Illumination Correction will also be reflected in video clips. The image processing settings for video capture are given in the following table:



Picture Style

Image development during movie shooting

Parameter	Setting
Picture Style	
White balance	
Auto Lighting Optimizer	Enabled
Peripheral illumination correction	Enabled
Highlight tone priority	Enabled
High ISO speed noise reduction	Not functional
Long exposure noise reduction	Not applicable since there is no exposure longer than 1 sec.

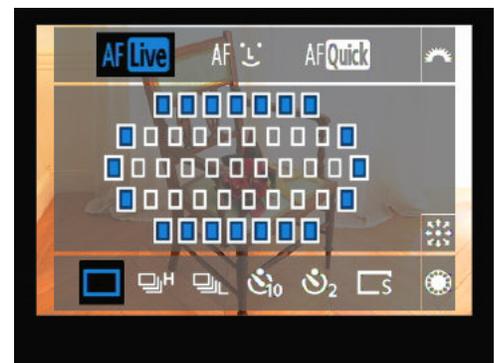
The EOS-1D Mark IV has an amazing top ISO of 102,400. This sensitivity is available for both video capture and still photos, making the camera a great tool for shooting videos, as well as stills, at night. Intrepid journalists and documentarians in search of those aspects of human nature seen infrequently, as well as the usual police and fire drama, will find the EOS-1D Mark IV a superb professional companion.

Audio recording Audio recording is possible with the built-in microphone (positioned just below the EOS-1 logo on the front of the camera) or with a range of commercially available external microphones connected to the camera via a 3.5mm stereo plug. Audio recording can be turned ON or OFF with a menu item, [Sound recording: On/Off]. Sound is recorded in linear (uncompressed) PCM that has no audio degradation and facilitates extraction in bit parts and editing. The sampling frequency is 48 KHz, and the bit count is 16 bits for both Left and Right channels. With the built-in microphone or an external microphone, the sound volume is adjusted automatically.

The built-in microphone records monaural sound. The audio IC has a wind shield feature that reduces wind noise automatically during outdoor shooting. There is also a feature to automatically reduce aperture drive noise in video clips recorded with the built-in microphone, a feature that's available for the first time in an EOS Digital SLR. However, the built-in microphone may still pick up noise from operating the camera dials, lens, Image Stabilizer, AF motor and so forth.

A commercially available, electret condenser microphone with a 3.5mm diameter stereo mini plug can be connected as an external microphone. Because the camera provides plug-in power, it is compatible with most electret condenser microphones. The camera cannot use dynamic or phantom-powered condenser microphones. The wind shield and aperture noise reduction features will not work with an external microphone.

Focusing Before video shooting starts, focus can be achieved in Live Mode AF, (face detection) Live Mode AF, or Quick Mode AF by pressing the shutter button halfway or by pressing the AF-ON button. If you attempt to autofocus during a video recording with the 1D Mark IV set to Quick Mode AF, the camera will switch automatically to Live Mode AF. During video shooting, you can press the AF-ON button to focus again. (Pressing the shutter button halfway will not operate AF while recording videos.) However, doing so may throw off the focus temporarily and/or change the exposure. Note that the built-in



AF/Drive

microphone will pick up AF motor noise. Automatic focusing during video capture is thus not recommended. There will be no focus confirmation beeper sound during video capture, if focus is lost and re-achieved with AF. There is no continuous autofocus as found in video cameras. If the lens in use has an Image Stabilizer, the IS function will work during video capture. Image Stabilizer modes 1 and 2 can be used. Mode 2 is recommended for panning.

Auto exposure control

If you select a shooting mode of P, Tv, Av or Bulb in movie mode, the default setting of “Auto exposure shooting” takes effect. The M mode is used for “Manual exposure shooting.”

Movie Exposure Control

Setting		Shooting Mode	
		P, Tv, Av, Bulb	M
ISO speed	Manual	Not possible	ISO100 - 12800, H1, H2, H3) *1
	ISO Auto	(ISO100-12800, H1, H2, H3) *2	Auto (ISO100 - 12800) *3
Shutter speed	30/25/24 fps	Auto (1/30 - 1/4000 sec.)	1/30 - 1/4000 sec. *4
	60/50 fps	Auto (1/60 - 1/4000 sec.)	1/60 - 1/4000 sec. *5
Aperture		Auto	Manual *4
Exposure compensation / AE lock		Yes / Yes	- / -

- *1: If the upper ISO speed limit is set to H1, H2, H3 with C.Fn I-3, the ISO speed will be manually settable within that range. However, even if L (equivalent to ISO 50) is set as lower ISO speed limit, it cannot be set. If the upper and lower ISO speed limits are set to a narrower range, the ISO speed will be manually settable within that range.
- *2: If the upper ISO speed limit is set to H1, H2, H3 with C.Fn I-3, the ISO speed will be automatically set within that range. However, if the upper and lower ISO speed limits are set to a narrower range, the automatically set ISO speed range will not be narrowed.
- *3: Automatically set within the normal ISO speed range, regardless of C.Fn I-3 setting.
- *4: If C.Fn I-12 limits the range narrower than 1/30 sec. to 1/4000 sec., the narrowed range will take effect.
- *5: If C.Fn I-13 limits the settable aperture range, the limited range will take effect.

To obtain stable video exposures, center-weighted average metering (metering with the imaging element) is used. The metering mode is not user selectable. If the AF mode is (face detection) Live mode, evaluative metering linked to the detected face (AF point) is used for exposure control. With Program AE for videos, auto exposure control is executed with a varying signal accumulation time (“signal accumulation time” is digital video terminology for shutter speed), varying aperture, and automatic adjustment of the ISO speed. When lighting conditions allow, a signal accumulation time within 1/30 sec. to 1/125 sec. and ISO 100 are set. Under bright conditions, the signal accumulation time can become as fast as 1/4000 sec. Under low light, the ISO speed is normally set as high as ISO 12,800. If C.Fn I-3 [Set ISO speed range] is used to

set the upper limit for ISO to include [H1], [H2] or [H3], the ISO speed will be expanded up to the upper limit.

However, even if [L] is set, the ISO speed will not be expanded to the low-speed end. Also, even if the upper and lower limits are set to narrow the range from the default range, the narrowed range will not take effect.

If C.Fn II-2 [High ISO speed noise reduction] is set, the auto ISO speed range will be ISO 200-12,800 regardless of the C.Fn I-3 setting.

ISO Speed Settings for Automatic Exposure During Movie Shooting

		Movie Shooting	
		Automatic Exposure	
High ISO speed noise reduction: Disable	ISO speed range expansion	Off	100 - 12800
		L - H3	100 - H3
		Limited range*	100 - 12800
High ISO speed noise reduction: Enable	ISO speed range expansion	Off	200 - 12800
		L - H3	200 - 12800
		Limited range*	200 - 12800

* Sample applicable with ISO 6400 as the upper limit and ISO 100 as the lower limit.

During auto exposure video shooting, exposure compensation and AE lock are available. Exposure compensation can be set for up to ± 3 stops in 1/3- or 1/2-stop increments. Press the AE lock button before or during video recording to lock the exposure. (An asterisk will appear below the scene on the LCD monitor as a reminder that exposure is locked.) As the camera moves through light and dark areas, the exposure will remain constant. To cancel AE lock, press the adjacent AF point selection button. Pressing the AE lock button a second time will simply take a new reading and lock that in place. Metering can be set to operate for 4, 16 or 30 seconds or 1, 10 or 30 minutes.

Manual exposure control Many serious video shooters prefer manual exposure control, especially when the light is interesting (dark and moody, heavily back- or side-lit and so forth). When the EOS-1D Mark IV is set to Manual exposure mode, users can manually control the camera's shutter speed, aperture and ISO settings in movie mode. Under most conditions, center-weighted average metering (with the image sensor) is employed during video capture. However, if the AF mode is (face detection) Live mode, evaluative metering linked to the detected face (AF point) is executed. The metering mode is not user selectable in video mode.

ISO Auto can be set or the ISO speed can be set manually. When ISO Auto is active, the video can be shot in a mode similar to aperture-priority AE (fixed aperture and correct exposure), but the user sets the shutter speed/aperture combination and the camera varies the ISO.

The ISO Auto speed range will be ISO 100–12,800, regardless of the C.Fn I-3 [Set ISO speed range] setting. If C.Fn II-2 [High ISO speed noise reduction] is set, the range will be ISO 200–12,800.

When the ISO speed is manually set, ISO 100–12,800 can be set in 1/3-stop or whole-stop increments. If the [H1], [H2] and [H3] upper limit is set with C.Fn I-3 [Set ISO speed range], the ISO speed will be expanded up to the upper limit that was set. However, even if the [L] lower limit is set, the ISO speed will not expand to the lower limit. Also, if the upper and lower limits are set to narrow the ISO speed range, it will be narrowed compared to the default range. If C.Fn II-2 [High ISO speed noise reduction] is set, the default ISO speed range will be ISO 200–12,800. Even if C.Fn I-3's [H1], [H2] and [H3] upper limit and [L] lower limit are set, ISO expansion will not take effect (ISO 200–12,800). If the upper and lower limits are set to narrow the default range, the ISO speed range will be narrowed.

The fastest shutter speed (signal accumulation time) available is 1/4000 second. The slowest will vary depending on the frame rate. At 24, 25 or 30 fps, the shutter speed will be limited to 1/30 second. At 50 or 60 fps, it will be limited to 1/60 second. The aperture can be set without limit anywhere within the lens' maximum and minimum apertures.

If the shutter speed is set between around 1/30 second to 1/125 second, subject movement will look smooth in finished video files. The faster the shutter speed, the less smooth the subject movement will look. However, you could intentionally use a fast shutter speed and then use ZoomBrowser EX/ImageBrowser to extract still images (several tens of frames per second) from the video clip.

Apertures, sensor size and depth-of-field

The large apertures ($f/2$, $f/1.4$ and $f/1.2$) and long focal lengths available with many Canon EOS system lenses make shallow depth-of-field/selective focus easy to achieve with the EOS-1D Mark IV. The large APS-H size sensor (approximately super 35 format), midway between the full size sensor of the EOS 5D Mark II and the APS-C sensor of the EOS 7D, also contributes to effortless shallow DOF. (The larger the sensor, the longer the focal length required to produce an equivalent field of view. All else being equal, a longer lens has a narrower field of view and shallower DOF.)

The majority of professional video cameras in the \$20,000 to \$80,000+ range have sensors that are described as $2/3''$, according to published product data. These sensors measure approximately 8.08mm by 6.6mm with a consequent diagonal of 11.0mm. The EOS-1D Mark IV's APS-H sensor is 27.9mm by 18.6mm (33.5mm diagonal). By area, then, the sensor of the EOS-1D Mark IV is approximately 9.8 times larger than the most common sensor size of professional ENG camcorders. In addition to the implications for depth-of-field, the EOS-1D Mark IV's larger sensor size makes high resolution with relatively large photodiodes possible, resulting in significantly greater low light sensitivity and less noise than smaller sensors at equivalent ISO settings.

Comparing crop factors is interesting, too. In the world of digital SLRs, crop factor is defined as the ratio of the diagonal of a full 35mm frame, 43.2mm, to the diagonal of the frame in question. It often comes up in considerations of how lenses will work on various camera bodies. Smaller sensors have larger crop factors. The EOS 5D Mark II has a crop factor of 1. The EOS-1D Mark IV's is nominally 1.3 and the EOS 7D's is 1.6. A 50mm lens has an effective focal length of 50mm on a 5D Mark II, 65mm on an EOS-1D Mark IV and 80mm on an EOS 7D, in terms of angle of view. On a pro camcorder with a $2/3''$ sensor, the crop factor of 3.93 yields an effective focal length of 196.5mm for a 50mm lens. These numbers help to quantify the new realms of focus differentiation that are achievable with Canon's new HD video-capable DSLRs.

Some video shooting tips

With the camera ready to shoot a video, the time lag between pressing the FE lock button and when the video starts shooting is approximately 0.2 second.

To save videos to a CF card, the card's actual writing and reading speed must be 8MB/second or faster. If recording to an SDHC memory card, the card must be Speed Class 6 or higher.

If the card's writing speed is slow, the internal memory will fill up and the LCD monitor will indicate the remaining capacity of the internal memory. If the internal memory becomes full, video shooting will stop automatically. If you take still photos during video shooting, use a UDMA CF card.

Note that a video cannot be recorded simultaneously to multiple recording media. File size is limited to 4 GB per video clip or less due to file system restrictions. Note, too, that even if the video file is smaller than 4 GB, a single video cannot be longer than 29 minutes and 59 seconds. If the video exceeds either the file size limit or video length limit, video shooting will stop automatically. However, if video shooting exceeds the limit, stops and goes on standby, you can shoot another video immediately afterward.

Total Movie Recording Time and File Size Per Minute (Approx.)

Movie Recording Size	Frame Rate	Total Movie Recording Time		File Size
		4GB Card	16GB Card	
1920x1080	30fps	12 min.	49 min.	330 MB/min.
	25fps			
	24fps			
1280x720	60fps	12 min.	49 min.	330 MB/min.
	50fps			
640x480	60fps	24 min.	1 hr. 39 min.	165 MB/min.
	50fps			

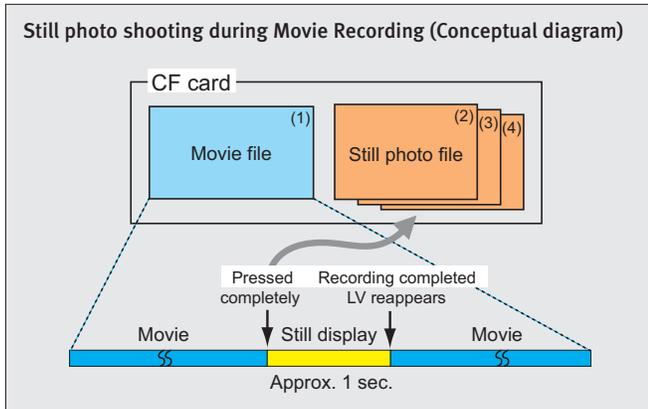
Focus first before shooting a video clip (an obvious-but-useful tip). As noted earlier in this document, it's possible to autofocus while recording video, but it's not recommended for several reasons.

To minimize recording camera operation noise, please follow these guidelines:

- Do not operate any dials while shooting a video.
- If the Image Stabilizer is unnecessary, turn it off to silence the IS operation noise. (In movie mode, the Image Stabilizer is always operating, even when the camera is not recording video. Turning IS off to save power is recommended.)
- Use an external microphone for maximum audio quality.
- If audio recording is unnecessary, set [Sound recording: Off].

Photographing stills during video shooting

When the reduced resolution of a frame grab won't do, full quality (RAW, JPEG, or even RAW+JPEG) still photos can be obtained while shooting video. (There will be a pause of approximately 1 second in the recorded video.) Regardless of the shooting mode in use, you



can press the shutter button to take a still photo either before or during video shooting. The still photo will be captured in the recording quality (image size and JPEG compression rate) which was previously set. Still photos can be captured in all image sizes including RAW+JPEG. Still photos are recorded separately from the video file. The video file and still photo file will be recorded to the same media. They cannot be recorded to different media, but if [Recording func.] is set to [Rec. separately] or [Rec. to multiple], the still photo will be recorded to each card in the image size that was set.

During auto exposure video shooting, exposure control for still shooting is done with a Program AE dedicated to still shooting. The ISO, shutter speed and aperture displayed on the bottom of the screen when you press the shutter button halfway are the exposure settings that will be used for still shooting. The exposure setting for video shooting is not displayed.

Function Settings for Shooting Stills During Movie Shooting

Parameter	Setting	
	Movies: Automatic exposure shooting	Movies: Manual exposure shooting
Image Size	RAW, M, RAW, S, RAW, L, M1, M2, S (all images sizes including RAW +JPEG)	
JPEG compression	L, M1, M2, S: 1 - 10	
Picture Style	[Pict Style icons]	
White balance	AWB, [WB icons], 1 - 5, [WB icon], PC-1 - 5	
Color space	Enabled	
Auto Lighting Optimizer	Enabled	
Peripheral illumination correction	Enabled	
Highlight tone priority	Enabled	
High ISO speed noise reduction	Not functional	
Long exposure noise reduction	Not applicable since there is no exposure longer than 1 sec.	
Exposure control	Automatic	Exposure setting for movie shooting
External flash	Flash off	
Depth-of-field preview	Not possible	
Drive mode	[Drive mode icons], S (S ¹⁰), S ₂ Not possible)	

For manual exposure video shooting, the exposure settings (ISO speed, shutter speed, and aperture) set for the video shooting will be used for still shooting. When you press the shutter button during video shooting, a frozen video image (minimum-size still photo) will be recorded during a 1-second delay. An imitation shutter sound will also be heard. When the still photo has been recorded to the memory card and the Live View image appears, video shooting resumes automatically. The card will have recordings of one video file along with separate files of the still photos taken.

Although continuous shooting of stills during video recording is also possible, the LCD monitor will be shut off until the still shooting sequence ends. A UDMA-compatible CF card is recommended for continuous still shooting, but even with a UDMA-compatible CF card, the video shooting might stop automatically while shooting depending on the number of still shots, still image size, subject, CF card brand and so forth.

During single-image display, a video icon is displayed on the upper left part of the screen for video files. On 4-image and 9-image index displays, the left edge of the video clip's thumbnail image will have a perforation. If you wish to display only videos, use the [Image jump w/Quick Control Dial] menu to select [Movies]. During single-image display with this setting active, turning the Main Dial will browse through videos only.

Video playback on the camera's LCD monitor

Pressing SET while a video is displayed will display the playback panel on the bottom of the LCD monitor display. You can select Play, Slow motion, First frame, Previous frame, Next frame, Last frame or Edit. The built-in speaker is on the lower right on the camera back.

On the playback screen, the sound volume can be adjusted to one of six levels including mute. Videos shot with the EOS 5D Mark II, EOS 7D or the EOS Rebel T1i can be played back on the EOS-1D Mark IV.

However, although videos shot with the EOS-1D Mark IV can be played back on the 1D Mark IV or the 7D, they cannot be played back on the 5D Mark II or the T1i.



Single-Image Display

Video playback on a connected TV set and saving to a hard disk recorder

Playing back a video with the camera and viewing it on a TV set is the easiest way to see the EOS-1D Mark IV's beautiful image quality. When the camera is connected with an HDMI (or AV) cable, the camera will automatically set the optimum resolution to match the TV set. The HDMI video output options are: 1080/60i, 1080/50i, 480/60p and 576/50p. Because the camera sets the optimum resolution automatically, there is nothing special you need to do.

When saving the video to a standard definition DVD recorder or hard disk recorder, connect the camera with an AV cable and play back the video to save it. Recording devices such as hard disk recorders usually do not have an HDMI input terminal because of copyright concerns. Therefore, captured videos cannot be saved directly digitally. Also, since the EOS-1D Mark IV's digital terminal is for connecting to a personal computer, it cannot be connected to video camera accessories such as a DVD or hard disk recorder. If an OSK-E3 Data Security Verification Kit is used to try to play back an encrypted still image via an HDMI connection, "Cannot playback" will appear and the image will not be displayed.

Playback, editing and stills extraction on a personal computer

You can use ZoomBrowser EX/ImageBrowser (provided with the EOS-1D Mark IV) and a personal computer (Windows or Macintosh) to do such things as view and edit the video, extract still images and convert file formats. However, for smooth playback in Full HD or for HD quality, a personal computer with Core2 Duo 2.6GHz or faster CPU and 2GB or higher RAM is recommended.

With ZoomBrowser EX/ImageBrowser, you can also copy a lightly edited video back to the card. The camera can play back the edited video only if the editing was limited to editing out the first and last scenes; it cannot play back videos edited in more sophisticated ways.

Videos cannot be played back with Canon camcorders compatible with the AVCHD format nor with the M80 Canon media storage device.

If you play back a video with the camera while the "Shooting information display" is enabled, the shooting mode, shutter speed, and aperture will not be displayed. However, the settings at the start of video shooting will be recorded to the Exif image information. If the video is set to manual exposure and the ISO speed is set manually, the ISO speed will be displayed on the shooting information screen. The ISO speed will not be displayed if ISO Auto is set along with automatic or manual exposure of the video.

In-Camera Video Editing

You can edit out the first and last scenes of a video clip shot with the EOS-1D Mark IV in about 1 second increments. When you select [Edit] on the video playback screen, the editing panel will appear at the screen bottom. You can select from [Cut beginning/Cut end/Play/Save]. While watching the edit bar, use the Multi-controller and Quick Control Dial to mark the editing point. With Save, the edited clip can be saved as a new video clip or it can overwrite the original clip.



Simple Movie Editing

While playing the video clip in Edit mode, tilt the Multi-controller left or right for frame-by-frame viewing. Press it in to fast-forward. Turning the Quick Control Dial once will go to the previous or next frame. However, as video clips are cut in 1-second increments (position where the scissors' mark is displayed on the left of the edit bar), the position you indicated and the position where the clip is actually cut may be slightly different.

A high-performance personal computer is required to convert MOV files to DVD-Video (SD quality) or AVCHD formats with commercially available software. First-time filmmakers should be advised that conversion can take several times longer than the length of the video itself.

Capturing video while connected to a TV set

The video output from the camera's A/V OUT or HDMI terminal during Live View or video recording will appear in the 4:3 aspect ratio (dotted red line in the figure given here), as displayed on the camera's LCD monitor. Therefore, when the output is displayed on a 16:9 TV set, the picture size will not fill the frame. The video itself will be recorded in the size (Full HD, HD or SD) that was set. If you connect the camera to a TV set and shoot a video, the TV will not output any sound during the video shooting, avoiding unfortunate audio artifacts. Nonetheless, sound will be recorded normally.



Monitor picture as it will appear on a TV with 16:9 aspect ratio



FULL HD
1080

The EOS-1D Mark IV captures Full HD Video (1920 x 1080) at 30 (29.97), 25 or 24 (23.976) fps.

EOS HD Video: An Exciting New Tool for Motion Picture Capture

With the introduction of Canon EOS digital SLRs capable of HD video capture, professional photographers, videographers and cinematographers have at hand an important new imaging tool. They have discovered not only the convenience, but also the very special qualities of Canon EOS HD Video. By shooting video with a large sensor camera (HD recording area of the EOS-1D Mark IV CMOS sensor of 27.9mm x 15.7mm approx. is similar when compared to 24.89 x 18.65mm of Super 35 motion picture film), it's simple to take advantage of the image quality and characteristics intrinsic to SLR photography. The EOS-1D Mark IV increases flexibility for the photographer in that it also allows for full use of Canon's extensive EF lens line-up, including wide angle, macro, super-telephoto, tilt-shift and fish-eye, providing a wealth of depth-of-field and other creative shooting options once reserved only for still photography. The resulting HD video is a standout in its stunning depth-of-field characteristics, remarkable capture capability under poor lighting conditions and deep clean blacks with nearly undetectable noise.

Comprehensive Choice of Frame Rates and Formats

The EOS-1D Mark IV is the first EOS 1-Series digital SLR to provide HD video capture capability, setting new standards for image quality and professional versatility. It supports a wide range of frame rates and video formats, enabling photographers to tailor their footage to specific needs and markets. For Full HD (1920 x 1080), the available frame rates are 30 (29.97) fps, 25 fps and 24 (23.976) fps for cinematography.

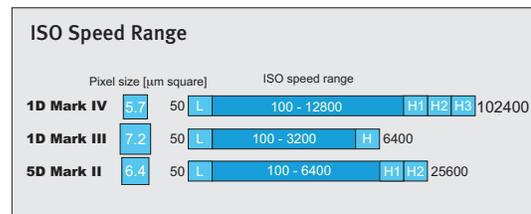
For Standard HD (1280 x 720), the available frame rates are 60 (59.94) fps and 50 fps. For SD (VGA — 640 x 480), the available frame rates are 60 (59.94) fps and 50 fps. Video is captured with progressive scanning and recorded in the MOV format (MPEG-4 AVC/H.264 video, uncompressed linear PCM audio) using a variable bit rate. This helps ensure high-quality image and sound while keeping file size to a minimum.

Advanced Exposure Control

When shooting HD video, including Full HD, the EOS-1D Mark IV employs Center-Weighted average metering (using the imaging sensor) to help ensure stable motion-picture exposure. If the AF mode is set to Face Detection Live View, the camera will use Evaluative metering linked to the AF point corresponding to the face to calculate exposure. Program AE mode is used when set in P, Tv, Av and Bulb shooting modes. ISO speed is automatically set between 100–12,800, and shutter speed is automatically set between 1/30 – 1/4,000 second at 30/25/24 fps and between 1/60 – 1/4,000 second at 60/50 fps. With these shooting modes, aperture is also automatically selected. (If ISO speed expansion has been selected, the range can be extended to 102,400.) As with still shooting, AE lock is available for video. Exposure compensation is available in the range of ± 3 stops. Full manual exposure control can also be used when shooting video. ISO speed can be set automatically or manually between 100 and 12,800. Shutter speed can be manually set from 1/30 to 1/4000 of a second. Available aperture settings are specific to the lens used.

The EOS-1D Mark IV camera has a new APS-H-size (imaging area 27.9 x 18.6mm, approximately 1.3x lens crop) CMOS sensor developed and manufactured by Canon, using semiconductor manufacturing equipment also designed and manufactured by Canon. This sensor enables professional-level performance in every respect. Its resolution is approximately 16.1 Megapixels (4896 x 3264 pixels). Its normal ISO range is 100 to 12,800. The range can be extended via ISO Expansion down to L: 50 and up, via H1, H2 and H3 to 25,600, 51,200 and, incredibly, to 102,400 Its low noise, high-speed signal

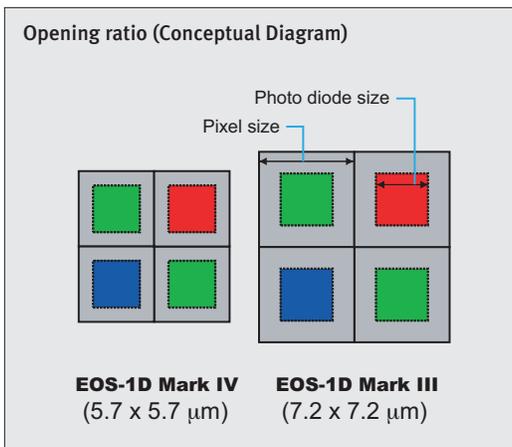
reading produces 10 fps in continuous shooting, even with noise reduction on. In addition, the sensor handles Live View full HD video shooting. In all, it is a remarkable example of cutting-edge sensor technology.



CMOS Sensor Specifications

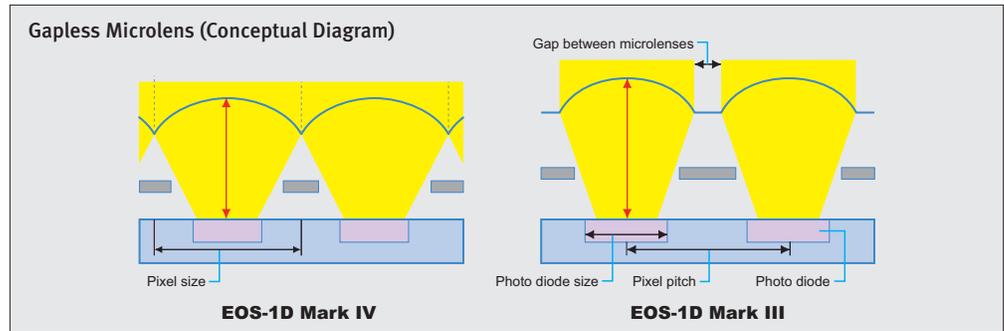
Specification	EOS-1D Mark IV	EOS-1D Mark III
Effective pixels	Approx. 16.10 million (4912 x 3270)	Approx. 10.10 million (3904 x 2598)
Total pixels	Approx. 17.00 million (5136 x 3306)	Approx. 10.70 million (4080 x 2622)
Effective sensor size [Approx. mm]	27.9 x 18.6	28.1 x 18.7
Pixel size [μm]	5.7 x 5.7	7.2 x 7.2
Color filter	RGB primary color filter	
A spect ratio	3:2	

Despite a smaller pixel size than that of the EOS-1D Mark III (5.7 versus 7.2 microns), design objectives—now achieved—for the new sensor included: a superb S/N ratio, high-speed and low-noise image development, high ISO speeds and wide dynamic range.



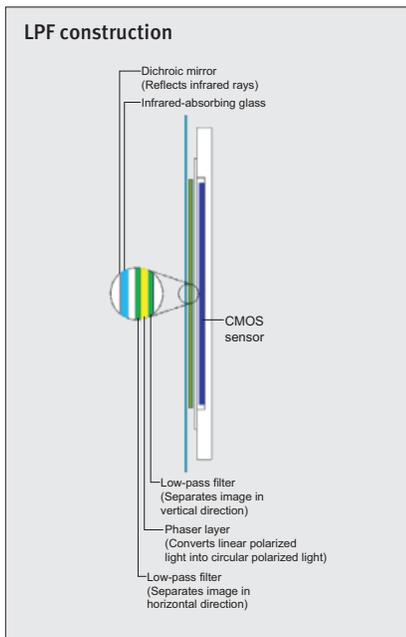
Canon's improved semiconductor fabrication technology has enabled a new method of photodiode construction. Photodiode area is optimized and photoelectric conversion efficiency is improved. This allows more light energy to be accumulated and transferred even though pixel size has been reduced.

To improve light-gathering efficiency further, another new and critical process has been incorporated in the fabrication of the microlens over the sensor so that there is no gap at all between the microlenses. Additionally, the distance from the microlenses to the photodiodes has been reduced compared to earlier designs, improving efficiency even further.

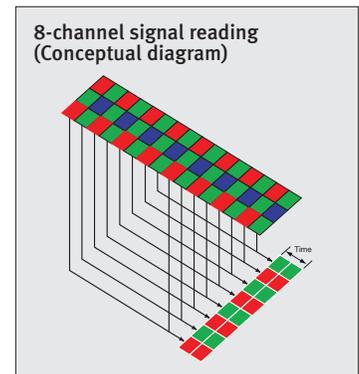


Several additional significant technical developments contribute to increased S/N performance. A new material used for the sensor unit’s RGB primary color filters improves transmittance. In addition, the circuit for applying high gain now suppresses noise from outside the sensor, improving resistance to noise and resulting in low noise even at high ISO speeds. Finally, a preamp whose internal gain has been doubled is incorporated, further increasing S/N.

The gapless microlenses, the higher photodiode area ratio (photodiode area divided by pixel size), the new color filter material, the reduced microlens-to-photodiode space, the improved external noise suppression and the high-output preamp all enable the admirably improved S/N ratio that is, in turn, directly responsible for the higher ISO speeds, low noise and wide dynamic range that distinguish the EOS-1D Mark IV’s performance. Compared to the EOS-1D Mark III, the result is an improvement of approximately 1 stop in sensitivity despite the reduction in pixel size, and this is without considering the additional 1 stop of improvement for in-camera JPEGs that’s made possible by the advanced image processing technology of the Dual DIGIC 4 Image Processors. Therefore, all EOS-1D Mark IV users can benefit from the camera’s image quality improvements, even those users who prefer RAW captures only.

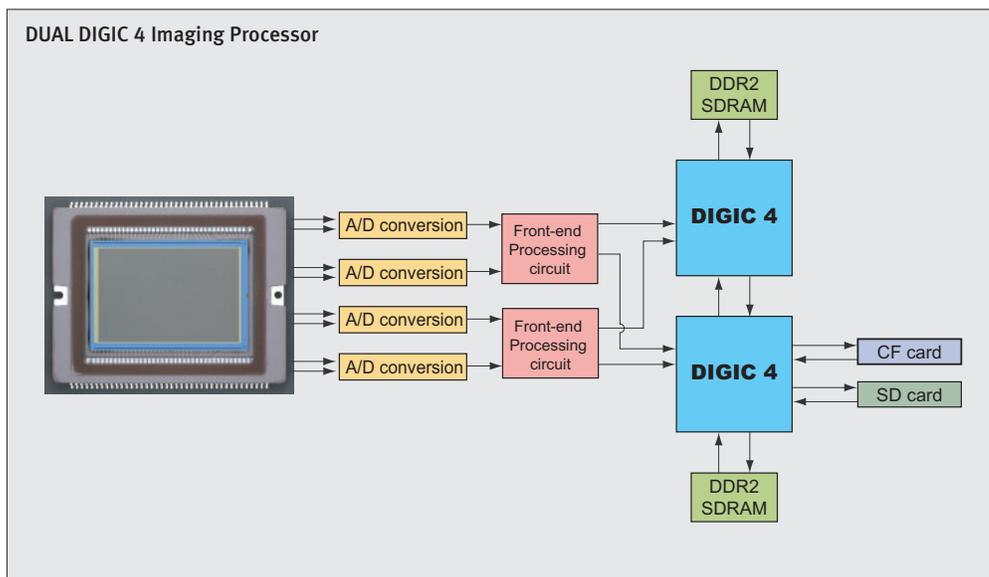


As in the case of the EOS-1D Mark III, one-line, 8-channel readout is incorporated. The high-speed amp, faster reading sequence, and higher reading frequency enable approximately 10 fps continuous shooting.



The basic construction and performance of the infrared-blocking, low-pass filter on the front of the sensor unit are the same as that of the EOS-1D Mark III. However, the top surface of the infrared-absorption glass now has a fluorine coating to prevent dust adhesion.

The DIGIC 4 Image Processor has approximately six times more processing power than the DIGIC III Image Processor. It can match the III's very fine image detail and natural color reproduction while attaining even faster signal processing. Because of the huge computing capability required by the 16.1 Megapixel sensor, its 10 fps maximum continuous shooting speed and the EOS-1D Mark IV's HD video functions, two DIGIC 4 Image Processors are provided. Processing speeds are more than three times faster than those of the EOS-1D Mark III despite the increase in the number of pixels. Thus, for example, the Dual DIGIC 4 Image Processor array can prevent the burst rate reduction previously caused by Standard and Low High ISO noise reduction settings.



The S-RAW file originally introduced with the EOS-1D Mark III camera provided photographers who did not require large files but who wanted to retain full control over image processing with an option that they found appealing. In the EOS-1D Mark IV, there are now three RAW image sizes and four JPEG image sizes with the new M-RAW (Medium RAW) size added to RAW and S-RAW. M-RAW+JPEG or S-RAW+JPEG can also be recorded. The image size setting screen has the same design as with the latest EOS cameras, but it can also be set on the rear LCD data panel below the LCD monitor, as with the EOS-1D Mark III. Each JPEG image size can be compressed to one of ten compression rates, as in the case of the EOS-1D Mark III.

Image Size and Recorded Pixels

Image Size	Recorded Pixels
Large	Approx. 16.00 Megapixels (4896 x 3264)
Medium 1	Approx. 12.40 Megapixels (4320 x 2880)
Medium 2	Approx. 8.40 Megapixels (3552 x 2368)
Small	Approx. 4.00 Megapixels (2448 x 1632)
RAW	Approx. 16.00 Megapixels (4896 x 3264)
M-RAW	Approx. 9.00 Megapixels (3672 x 2448)
S-RAW	Approx. 4.00 Megapixels (2448 x 1632)

While much attention is paid to the quality of the RAW output of modern DSLRs, many users of these cameras are journalists or event photographers in a mad rush to get their work submitted. These people don't have the time to enjoy the exquisite control of RAW image development; they shoot JPEGs. The closer a camera can get to giving them the image characteristics they require straight away, the happier (or, at least, the less tense) they are. Canon has continued to refine a group of image control features that, taken as an ensemble, help the EOS-1D Mark IV to turn out extremely high quality, precisely configured JPEGs.

Function Availability Table

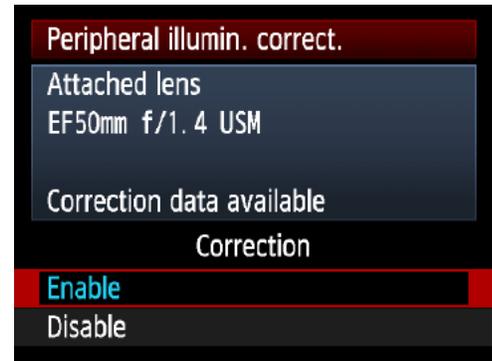
● : Set automatically ○ : User selectable □ : Not selectable/Disabled

Function		Viewfinder Shooting					LV Shooting	Movie Shooting
		P	TV	AV	M	Bulb		
Image size	JPEG	○	○	○	○	○	○	(Still photo)
	RAW	○	○	○	○	○	○	
	RAW+JPEG	○	○	○	○	○	○	
ISO speed	Auto	○	○	○	○	○	○	○
	Manual	○	○	○	○	○	○	Enabled in M movie mode
Picture Style	Standard	○	○	○	○	○	○	○
	Portrait	○	○	○	○	○	○	○
	Landscape	○	○	○	○	○	○	○
	Neutral	○	○	○	○	○	○	○
	Faithful	○	○	○	○	○	○	○
	Monochrome	○	○	○	○	○	○	○
	User Defined	○	○	○	○	○	○	○
White balance	Auto WB	○	○	○	○	○	○	○
	Preset WB	○	○	○	○	○	○	○
	Custom WB	○	○	○	○	○	○	○
	Color temperature setting	○	○	○	○	○	○	○
	WB correction	○	○	○	○	○	○	○
	WB-BKT	○	○	○	○	○	○	○
Color space	sRGB	○	○	○	○	○	○	●
	Adobe RGB	○	○	○	○	○	○	○
Auto Lighting Optimizer		○	○	○	○	○	○	○
Lens peripheral illumination correction		○	○	○	○	○	○	○
Long exposure noise reduction		○	○	○	○	○	○	○
High ISO speed noise reduction		○	○	○	○	○	○	(Still photo)
Highlight tone priority		○	○	○	○	○	○	○

Function		Viewfinder Shooting					LV Shooting	Movie Shooting		
		P	TV	AV	M	Bulb				
AF	One-Shot	○	○	○	○	○	With #22	(Still photo)		
	AI Servo	○	○	○	○	○				
	AF point selection	Auto	○	○	○	○			○	
		Manual	○	○	○	○			○	
	Live mode	○	○	○	○	○			○	○
	⌂ Live mode	○	○	○	○	○			○	○
	Quick mode	○	○	○	○	○			○	Before shooting starts
Metering	Evaluative	○	○	○	○	○	●	With #23		
	Partial	○	○	○	○	○				
	Spot	○	○	○	○	○				
	Center-weighted average	○	○	○	○	○		●		
Exposure	Program shift	○	○	○	○	○	○			
	Exposure compensation	○	○	○	○	○	○	Other than M movie mode		
	AE lock	○	○	○	○	○	○			
	AEB	○	○	○	○	○	○			
	Depth-of-field preview	○	○	○	○	○	○			
Drive	Single shooting	○	○	○	○	○	○	(Still photo)		
	High-speed continuous shooting	○	○	○	○	○	○			
	Low-speed continuous shooting	○	○	○	○	○	○			
	10-sec. self-timer	○	○	○	○	○	○			
	2-sec. self-timer	○	○	○	○	○	○			
	Silent single shooting	○	○	○	○	○	○			
External Speedlite	FE lock	○	○	○	○	○	○			
	Flash exposure compensation	○	○	○	○	○	○			

Peripheral Illumination Correction

Matching the peripheral light falloff characteristics of more than 85 Canon EF lenses introduced over the past 22 years, the light level at the four corners of the image is automatically corrected, using a custom algorithm for each supported lens that reads the aperture in use and, when possible, the distance setting. With JPEG images, the light falloff is corrected during image capture. With RAW images, the correction can be done with Digital Photo Professional's "Shot settings." The degree of in-camera correction is about 70% of what can be done with Digital Photo Professional. Lenses that do not have distance information cannot be corrected based on the shooting distance. With such lenses, the camera can make the correction only up to about 50 percent of DPP's maximum.



Peripheral Illumination Correction

At high ISO speeds, noise along the image periphery is prone to increase. Therefore, the higher the ISO speed, the lower the peripheral illumination correction will be. The minimum correction will be about 20 percent of DPP's maximum. (With lenses not having distance information, it will be about 15 percent.)

Peripheral illumination correction data for up to 40 lenses can be registered in the camera. Upon factory shipment, the camera will have the correction data for approximately 29 lenses. The correction data can be registered or deleted from the camera with EOS Utility software. EOS Utility is updated as new EF lenses are introduced, thus ensuring forward compatibility.

Lenses whose lens peripheral illumination correction data is registered in the camera upon factory shipment

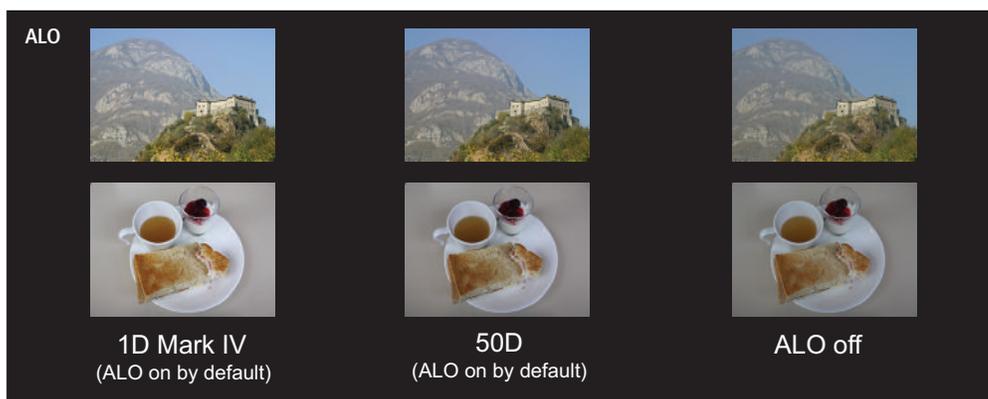
EF 16-35mm f/2.8L II USM	EF 28-105mm f/3.5-4.5 II USM	EF 28mm f/1.8 USM
EF 17-40mm f/4L USM	EF 28-105mm f/4-5.6 USM	EF 28mm f/2.8
EF 20-35mm f/3.5-4.5 USM	EF 28-135mm f/3.5-5.6 IS USM	EF 35mm f/1.4L USM
EF 24-70mm f/2.8L USM	EF 28-200mm f/3.5-5.6 USM	EF 35mm f/2
EF 24-85mm f/3.5-4.5 USM	EF 28-300mm f/3.5-5.6L IS USM	EF 50mm f/1.2L USM
EF 24-105mm f/4L IS USM	EF 14mm f/2.8L II USM	EF 50mm f/1.4 USM
EF 28-90mm f/4-5.6	EF 20mm f/2.8 USM	EF 50mm f/1.8 II
EF 28-90mm f/4-5.6 II	EF 24mm f/1.4L II USM	EF 85mm f/1.2L II USM
EF 28-90mm f/4-5.6 III	EF 24mm f/1.4L USM	EF 85mm f/1.8 USM
EF 28-105mm f/3.5-4.5 USM	EF 24mm f/2.8	

*The EF 28-90mm f/4-5.6/II/III lenses will be displayed as "EF 28-90mm f/4-5.6," and the EF 28-105mm f/3.5-4.5/II lenses will be displayed as "EF 28-105mm f/3.5-4.5."

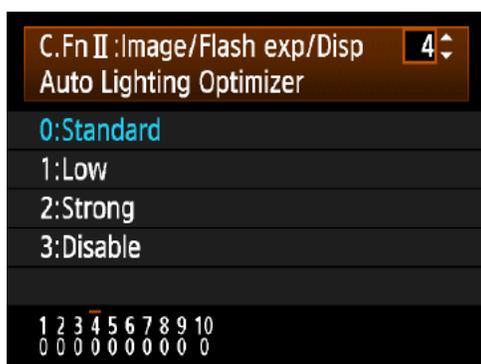
Auto Lighting Optimizer

The Auto Lighting Optimizer function (ALO) automatically adjusts the picture during image processing to obtain optimal brightness and contrast. It corrects AE underexposure, flash underexposure, low contrast, or backlit underexposure (face detection). The algorithm works by optimally adjusting brightness and tone based on scene information, including the

image histogram. This is the first time that the feature has appeared in an EOS-1 series camera. The EOS-1D Mark IV's ALO algorithm is one generation newer than that of the EOS 50D. It is improved in its handling of scenes without faces. For scenes with faces, the previous algorithm is employed. The default setting is Standard, but optional settings include Low, Strong and Disable.



ALO works with both JPEG and RAW images. With RAW images, photographers can choose the same settings that the camera offers when processing the images in the supplied DPP software. You can select from Standard, Low, Strong or Disable. With previous EOS DIGITAL cameras having ALO, the function worked only in the P, Tv, Av and CA modes. However, with the EOS-1D Mark IV, ALO now also works in the Manual mode and bulb as well, in keeping with the idea of enhanced JPEG workflow.



Auto Lighting Optimizer

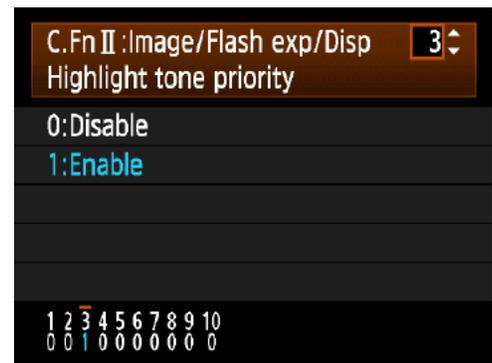
In the case of manual exposures, noise in the areas brightened by the Auto Lighting Optimizer may increase. The exposure must be set accordingly to prevent excessive correction. For incident-light scenes where the subject's background is dark over a large area, the correction by the Auto Lighting Optimizer might turn out to be excessive in rare cases. Therefore, if you expose the subject correctly (exposed according to the set shutter speed and aperture), setting the Auto Lighting Optimizer to [1: Low] or [3: Disable] is recommended.

When using the continuous shooting mode, AE is enabled and ALO locks. Therefore, when using continuous shooting mode in environments where brightness is rapidly changing, set ALO to "1: Low" or "3: Disable." The reason for this is that the camera adjusts ALO when the first frame is taken, then employs the same setting for subsequent frames in the sequence. This is especially important if the first frame happens to be shot when lighting is relatively dark. Subsequent frames taken in brighter conditions will be overexposed since the camera "locked" the ALO setting based on the darker lighting conditions of the first frame. (Setting ALO as described above assures more evenly exposed images whether or not faces are recognized in the composition.)

When using Manual or Bulb modes, ALO compensation is based on the exposure set by the photographer. Backlit subjects have a tendency to be underexposed. If the photographer tries to compensate for this by exposing for the subject, the background becomes overexposed. However, by enabling ALO and exposing for the background, the main subject will be brightened for a more balanced image with regard to brightness and contrast between background and main subject. Adjusting exposure can be tricky when photographing a brightly lit subject set against a large dark background, such as a shaded forest or crowded stadium; ALO may be affected by the background and overcompensate. In situations such as these, expose for the main subject and set ALO to “1: Low” or “3: Disable.”

Highlight tone priority

Highlight tone priority has the same specifications as it did on the EOS-1D Mark III. The “D+” icon has been added to the LCD panel and viewfinder to indicate that highlight tone priority has been set. (Since “D+” is displayed, the ISO speed’s zero numeral is not displayed small, as with the EOS-1D Mark III.) If C.Fn II-3-1 is set, the ISO speed range will be limited to ISO 200–12,800.



Highlight Tone Priority

Picture Style

The basic image characteristics of each Picture Style are the same as before. However, in response to user feedback, the following Picture Styles have been fine-tuned: Standard, Landscape, Portrait and Monochrome. To make images usable as is, without any post-processing, the default sharpness setting is more aggressive than with the EOS-1D Mark III. This makes image resolution look better when viewed on a personal computer or print. Neutral and Faithful are unchanged as their emphasis on plain, unaltered image characteristics is geared for post-processing. In these Picture Styles, the degree of sharpening at default settings is the same as with the EOS-1D Mark III. If you view an image at 100% magnification or higher, image detail will look more natural than with the four Picture Styles listed above.

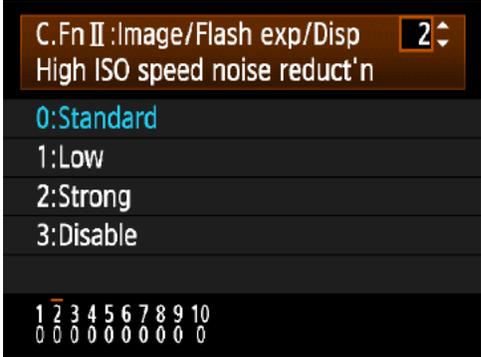
New default image settings

Low-noise technology has allowed the achievement of greater sharpness than in the EOS-1D Mark III without degrading image quality. The “Standard,” “Landscape,” “Portrait” and “Monochrome” Picture Styles produce sharper, higher-contrast images (because of ALO) appropriate for use without adjustment. The “Neutral” and “Faithful” Picture Styles use the previous model’s default settings to provide a natural-looking image that is ideal as a base for post-processing. Images are optimally sharpened to prevent them from appearing fuzzier than 1D Mark III images displayed at the same size (because the EOS-1D Mark IV pixel count is 1.6 times greater).

High ISO Speed Noise Reduction

C.Fn II-2's [0] setting has been changed to [Standard] so that the default setting now executes noise reduction. The noise reduction level can be set to [Standard, Low, Strong or Disable] to suit the noise level. With the EOS-1D Mark III, if [On] was set, the maximum burst during continuous shooting would greatly decrease. However, with the EOS-1D Mark IV, the [Standard/Low/Disable] settings no longer affect the maximum burst. Only if [Strong] is set will the maximum burst decrease.

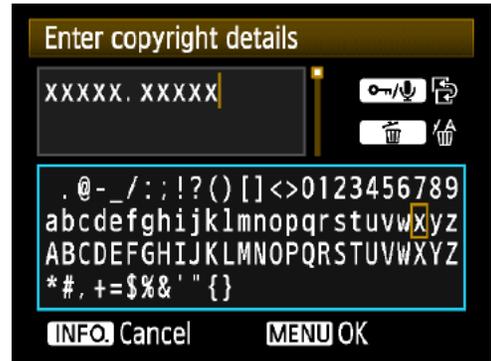
At default settings, the standard high ISO speed noise reduction Custom Function setting will be applied to the recorded images. However, if the image is played back with the camera (on the LCD monitor or a TV set) or printed directly (other than RAW, M-RAW and S-RAW+JPEG Large), the image without the noise reduction will be used for the display or printing. Therefore, noise might be noticeable in the displayed or printed image. The noise reduction effect will be reflected when the image is initially displayed with Digital Photo Professional, and can be adjusted by the photographer prior to rendering an output file.



High ISO Speed Noise Reduction

Copyright information

Previous EOS DIGITAL cameras that had the copyright information feature allowed the photographer's name and copyright holder's name to be registered to the camera only with EOS Utility. With the EOS-1D Mark IV, the information can now be registered directly with the camera. When a picture is taken, the copyright information is also recorded as part of the image's Exif information. Up to 63 characters each can be entered for the photographer's name and copyright holder's name.



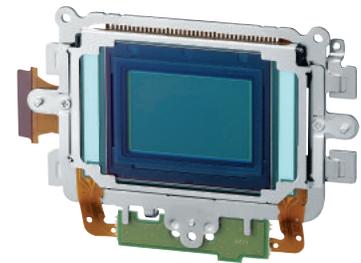
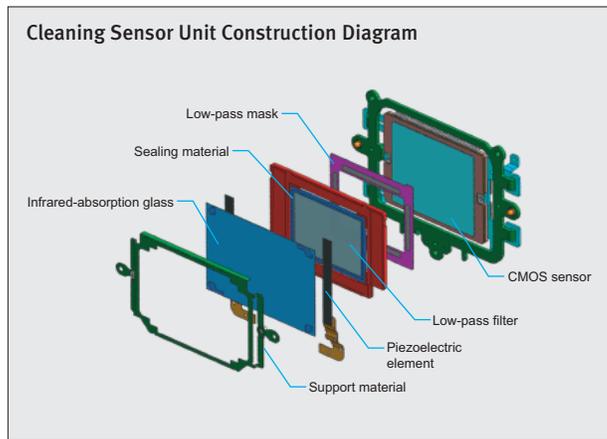
Enter Copyright Details



Copyright Information

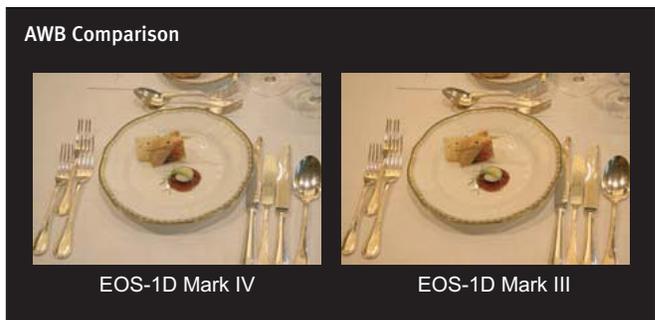
EOS Integrated Cleaning System

Related to the workflow issue in the sense that a clean sensor produces files that don't need to be spotted, the EOS-1D Mark IV uses the EOS Integrated Cleaning System to minimize dust generation and dust adhesion to the sensor and to shake dust off the sensor or to make it less noticeable. Although the preconditions for operation of the Self Cleaning Sensor Unit and the specifications for obtaining and appending the dust delete data are basically the same as with the EOS-1D Mark III, the EOS-1D Mark IV's low-pass filter has a new fluorine coating on the infrared absorption glass. The coating improves resistance to sticky and moist dust. Dust removal has been improved with a revamped drive sequence.



Improved white balance algorithm and auto white balance

An improved white balance algorithm now makes color reproduction when shooting under low color temperature light sources (light sources with a strong red cast such as tungsten and certain mercury varieties) more precise. The preset WB, custom WB, color temperature setting, personal WB, WB correction, WB-BKT specifications are all the same as with the EOS-1D Mark III. Note that with bright shots, such as sunsets, the result is almost the same as with previous cameras. Also, if you want the strong color cast to remain, just set the color temperature setting manually to around 4000K.

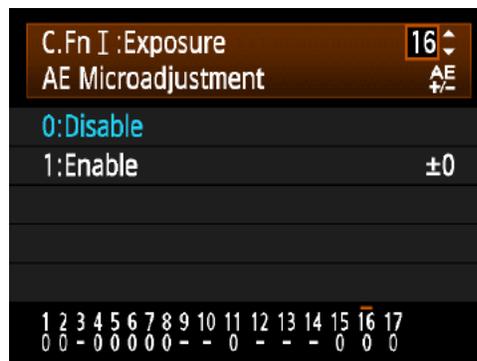


The EOS-1D Mark IV has a total of 62 Custom Functions. Up to six top-tier menu options and Custom Function settings can be registered in My Menu. Up to three sets of Custom Function settings can be registered in the camera. The camera settings can be saved as a file to a memory card. When the file is read, the saved camera settings take effect. (This does not include the date/time, language, video output format, C.Fn I-16, C.Fn I-17, C.Fn III-7 or C.Fn IV-12.)

The following nine basic settings can be registered: shooting mode, white balance, drive mode, metering mode, AF mode, AF point, color space, image size and Picture Style. When the basic settings are applied, the nine settings will be set as they were registered. Note that [Record func.] will be set to [Standard], and the exposure compensation, AEB, flash exposure compensation, WB correction and WB-BKT settings will be canceled.

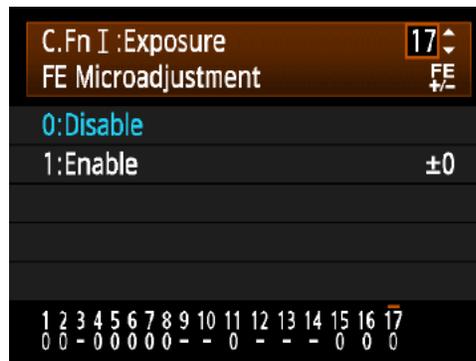
The following is a list of Custom Functions that are new or improved compared to the EOS-1D Mark III. Note that due to the addition of new Custom Functions, the same Custom Functions on the EOS-1D Mark III may have different Custom Function numbers in the EOS-1D Mark IV:

- C.Fn I-3: Set ISO speed range, changed. Upper limit: 100–12,800, H1, H2 or H3. Lower limit: L, 100–12,800
- C.Fn I-12: Set shutter speed range, changed to: Highest speed: 1/8000 sec. – 15 sec., Lowest speed: 30 sec. – 1/4000 sec.
- C.Fn I-15: Flash sync. speed in Av mode, the [1: 1/300 – 1/60 sec. auto] setting has been added. (If C.Fn I-15-1 or I-15-2 is set, high-speed sync will not be possible.)
- C.Fn I-16: AE Microadjustment (New). Users have different perceptions of what a “standard exposure” is. Quite a few users think the resulting image is either slightly underexposed or overexposed. So, based on the user’s subjective tastes, this new feature enables the user to fine-tune the standard exposure level up to ± 1 stop in 1/8-stop increments. If you have multiple cameras, you can make this adjustment to compensate for any differences between each camera in the standard exposure level.



C.Fn I-16

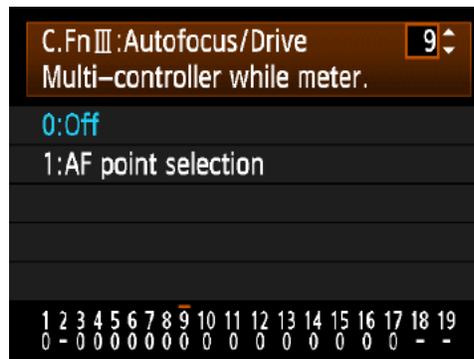
- C.Fn I-17: FE Microadjustment (New). For flash photography, the standard flash exposure level can be fine-tuned up to ± 1 stop in 1/8-stop increments.



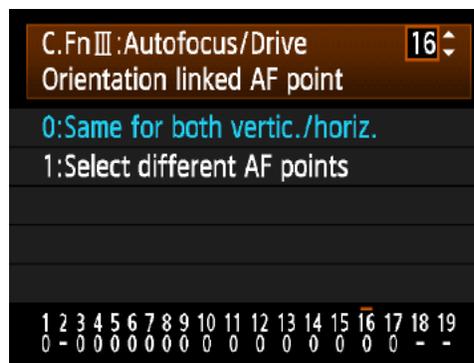
C.Fn I-17

- C.Fn II-2: High ISO speed noise reduction. Four settings are now provided: [0: Standard, 1: Low, 2: Strong, 3: Disable]. The EOS-1D Mark III only had [0: Off] and [1: On].
- C.Fn II-4: Auto Lighting Optimizer (New). Four settings are available: [0: Standard, 1: Low, 2: Strong, 3: Disable].
- C.Fn II-10: INFO. button when shooting. The default setting has been changed to [0: Displays shooting functions].
- C.Fn III-3: AI Servo 1st/2nd image priority. The [3: Release/Tracking priority] setting has been added. Shutter-release priority (rather than focus priority) is given to the first shot. During continuous shooting (from the second shot onward), focus-tracking of the subject is given priority.
- C.Fn III-6: Lens AF stop button function. The [7: Spot AF] setting has been added. During manual/auto AF point selection, if you press the AF Stop button on the super telephoto lens, the AF line sensor's usable range will become narrower. This is to reduce focus detection error prone to occur with a small target subject due to perspective confusion. With spot AF, the AF point will blink brighter than usual.
- C.Fn III-8: AF expansion with selected AF point. The [3: All 45 points area] setting has been added. In the AI Servo AF mode, the subject must be tracked with the manually selected AF point. During manual AF point selection, all 45 points can be used. So even if the manually selected AF point loses the subject, as long as the subject is within the Area AF, focusing can continue. Because the EOS-1D Mark IV does not have Assist AF points, the settings are now called [1: Left/right AF point] and [2: Surrounding AF points].

- C.Fn III-9: Multi-controller while metering (New). While metering is active, this enables/disables the Multi-controller for selecting an AF point. This setting was included in EOS-1D Mark III's [C.Fn III-9: Selectable AF point]. It is now a separate Custom Function.



- C.Fn III-10: Selectable AF point. The [0: 45 points] and [2: 11 points] settings have been added. When 2 is set (11 points), it will work in the same way as with the EOS-1D Mark II/n. The position of the 19 points, 9 inner points and 9 outer points is the same as with the EOS-1D Mark IV.
- C.Fn III-11: Switch to registered AF point. The [2: Only while <AE Lock> is pressed] setting has been added. The setting name for 1 has been changed to [1: Switch with <Multicontroller>].
- C.Fn III-15: AF-assist beam firing. The [2: IR AF assist beam only] setting has been added. Set this to disable the series of small flashes fired as the AF-assist beam, as with Speedlite 270EX.
- C.Fn III-16: Orientation-linked AF point (New). When [1: Select different AF points] is set, the AF point can be selected separately (automatically or manually) for the Horizontal orientation, 2. Vertical orientation (grip bottom), and 3. Vertical orientation (grip top). The AF point selected for each orientation will be stored in the camera's memory. When you switch the camera orientation between horizontal and vertical, the AF point will also switch automatically.



C.Fn III-16

- C.Fn IV-4: Assign SET button. The function name has been changed from [SET button when shooting] to [Assign SET button].
- C.Fn IV-9: Protect Images/Voice memo button function. Now that the EOS-1D Mark IV has a built-in speaker, the [2: Play memo (hold: Record memo)] setting has been added. To avoid confusion with the video sound recording, the setting name has been changed to “Memo (Record).”
- C.Fn IV-11: Start movie shooting (New). When [1: Quick start (<FEL> btn.)] is set, you can start shooting a video immediately just by pressing the FEL button while the camera is ready to shoot. (This applies when the [Live View/Movie func. set.] screen has been set to enable video shooting.)



C.Fn IV-11

Here is a complete list of the EOS-1D Mark IV's Custom Functions:

Custom Functions

Group	No.	Item	Description				
C.Fn I: Exposure	1	Exposure level increments	0 1/3-stop set 1/3-stop comp.	Yes	Yes		
			1 1-stop set 1/3-stop comp.				
			2 1/2-stop set 1/2-stop comp.				
	2	ISO speed setting increments	0 1/3-stop	Yes	Yes (in Movie M mode)		
			1 1-stop				
	3	Set ISO speed range	Disable	Yes	Yes (in Movie M mode)		
			Enable				
			Register			Highest ISO speed	100 - 12,800, H1,H2,H3 (1-stop increments)
			Lowest ISO speed			L, 100 - 12,800	
	4	Bracketing auto cancel	0 On	Yes			
			1 Off				
	5	Bracketing sequence	0 0, -, +	Yes			
			1 -, 0, +				
			2 +, 0, -				
6	Number of bracketed shots	0 3 shots	Yes				
		1 2 shots					
		2 5 shots					
		3 7 shots					
7	Spot meter. link to AF point	0 Disable (use center AF point)					
		1 Enable (use active AF point)					
8	Safety shift	0 Disable	Yes				
		1 Enable (Tv/Av)					
		2 Enable (ISO speed)*2					
9	Select usable shooting modes	Disable	Yes	Yes			
		Enable					
		Register			M	P	
		Tv			BULB		
Av	Apply						
10	Select usable metering modes	Disable					
		Enable					
		Register					
					Apply		
11	Exposure mode in manual expo.	0 Specified metering mode					
		1 Evaluative metering					
		2 Partial metering					
		3 Spot metering					
		4 Center-weighted average					
12	Set shutter speed range	Disable	Yes	Yes (in Movie M mode)			
		Enable					
		Register			Highest speed	8000 - 15" (1-stop increments)	
		Lowest speed			30" - 4000(1-stop increments)		
13	Set aperture value range	Disable	Yes	Yes (in Movie M mode)			
		Enable					
		Register			Min. aperture (Max. f/)	91 - 1.4 (1-stop increments)	
		Max. aperture (Min. f/)			1.0 - 64 (1-stop increments)		
14	Apply shooting/ metering mode	Disable					
		Enable					
		Register			With AE lock button (AF on)	With AE lock button (AF off)	

Custom Functions

Group	No.	Item	Description			
C.Fn I: Exposure	15	Flash sync. speed in Av mode	0	Auto	Yes	
			1	1/300-1/60sec. auto		
			21	1/300sec. (fixed)		
	16	AE Microadjustment	Disable		Yes	(Still photo)
			Enable (±1 stops in 1/8-stop increments)			
	17	FE Microadjustment	Disable		Yes	
Enable (±1 stops in 1/8-stop increments)						
C.Fn II: Image/Flash exp/Disp	1	Long exp. noise reduction	0	Off	Yes	(Still photo)
			1	Auto		
			2	On		
	2	High ISO speed noise reduction	0	Standard	Yes	(Still photo)
			1	Low		
			2	Strong		
	3	Highlight tone priority	0	Disable	Yes	Yes
			1	Enable		
			0	Standard		
	4	Auto Lighting Optimizer	1	Low	Yes	Yes
			2	Strong		
			3	Disable		
	5	E-TTL II flash metering	0	Evaluative flash metering	Yes	
			1	Average flash metering		
	6	Shutter curtain sync.	0	1st-curtain synchronization	Yes	
			1	2nd-curtain synchronization		
	7	Flash firing	0	Enable	Yes	
			1	Disable		
	8	Viewfinder info. during exp.	0	Disable		
			1	Enable		
	9	LCD panel illumi. during Bulb	0	Off	Yes	
			1	On during Bulb		
	10	INFO. button when shooting	0	Displays shooting functions		
			1	Displays camera settings		
C.Fn III: Autofocus/Drive	1	USM lens electronic MF	0	Enable after One-Shot AF	Yes	Yes
			1	Disable after One-Shot AF		
			2	Disable in AF mode		
	2	AI Servo tracking sensitivity	Slow: -2 . -1 . 0 . +1 . +2: Fast			
	3	AI Servo 1st/2nd img priority	0	AF priority/Tracking priority		
			1	AF priority/Drive speed prior		
			2	Release/Drive speed priority		
	4	AI Servo AF tracking method	3	Release/Tracking priority		
			0	Main focus point priority		
			1	Continuous AF track priority		
	5	Lens drive when AF impossible	0	Focus search on	Yes (with Quick mode)	
			1	Focus search off		
	6	Lens AF stop button function	0	AF stop	Except for 4 (Partially possible in Quick mode only)	
			1	AF start		
			2	AE lock		
			3	AF point: M -> Auto / Auto -> Ctr		
			4	ONE SHOT <-> AI SERVO		
			5	IS start		
			6	Switch to registered AF pt.		
	7	Spot AF				

Custom Functions

Group	No.	Item	Description				
C.Fn III: Autofocus /Drive	7	AF Microadjustment	0	Disable	Yes (with Quick mode)		
			1	Adjust all by same amount			Forward:-20.....0.....+20:Backward
			2	Adjust by lens			Forward:-20.....0.....+20:Backward
	8	AF expansion w/ selected pt	0	Disable	Yes (with Quick mode)		
			1	Left/right AF point			
			2	Surrounding AF points			
			3	All 45 points area			
	9	Multi-controller while meter.	0	Off			
			1	AF point selection			
	10	Selectable AF point	0	45 points	Yes (with Quick mode)		
			1	19 points			
			2	11 points			
			3	Inner 9 points			
			4	Outer 9 points			
	11	Switch to registered AF point	0	Disable	2 + with Quick mode		
			1	Switch with < >			
			2	Only while < > is pressed			
	12	AF point auto selection	0	direct: disable/:enable	Yes (with Quick mode)		
			1	direct: disable/:disable			
			2	direct: enable/: enable			
13	AF point display during focus	0	On	Yes (with Quick mode)			
		1	Off				
		2	On (when focus achieved)				
14	AF point brightness	0	Normal	Yes (with Quick mode)			
		1	Brighter				
15	AF-assist beam firing	0	Enable	Yes (with Quick mode)			
		1	Disable				
		2	IR AF assist beam only				
16	Orientation linked AF point	0	Same for both vertic./horiz.	Yes (with Quick mode)			
		1	Select different AF points				
17	Mirror lockup	0	Disable				
		1	Enable				
		2	Enable:Down with SET				
18	Continuous shooting speed	Disable		Yes			
		Enable					
		Register	High speed 10 - 2 fps (per shot)				
		Apply	Low speed 1 - 9 fps (per shot)				
19	Limit continuous shot count	Disable		Yes			
		Enable					
		Register	Limited shots 99 - 2 (per shot)				
		Apply					
C.Fn IV: Operation/ Others	1	Shutter button/ AF-ON button	0	Metering + AF start	Yes	Yes	
			1	Metering + AF start/AF stop			
			2	Metering start/Meter+AF start			
			3	AE lock/Metering + AF start			
			4	Metering + AF start/Disable			
	2	AF-ON/AE lock button switch	0	Disable	Yes	Yes	
			1	Enable			

Custom Functions

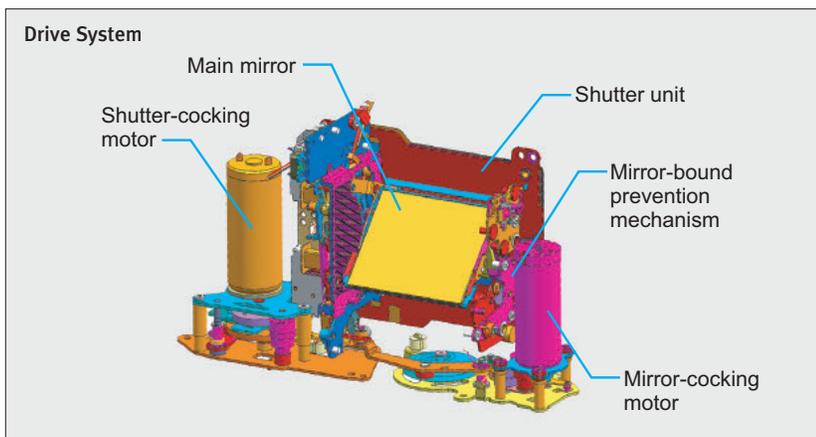
Group	No.	Item	Description		
C.Fn IV: Operation /Others	3	Quick Control Dial in meter.	0 Exposure comp./Aperture	Yes (For 1 and 3, only with Quick mode) (Movie + 2, 4 in Movie M)	
			1 AF point selection		
			2 ISO speed		
			3 AF point selection+ <-> *4		
		4	ISO speed+ <-> ISO*4		
	4	Assign SET button	0 Normal (disabled)		
			1 White balance		
			2 Image size		
			3 ISO speed		
			4 Picture Style		
			5 Record func. + media/folder		
			6 Menu display		
		7	Image playback		
	5	Tv/Av setting for Manual exp.	0 Tv= / Av=	Yes	Yes
			1 Tv= / Av=		
	6	Dial direction during Tv/Av	0 Normal	Yes	Yes
			1 Reverse direction		
	7	Av setting without lens	0 Disable	Yes	Yes
			1 Enable		
	8	WB + media/ image size setting	0 Rear LCD panel		
			1 LCD monitor		
	9	button function	0 Protect (hold:Record memo)		
			1 Record memo(Protect:Disabled)		
			2 Play memo (hold: Record memo)		
	10	Button function when <OFF>	0 Normal(enable)	Yes	Yes
			1 Disable , , Multi-controll.		
	11	Start movie shooting	0 Default (from LV)		Yes
			1 Quick start (<FEL> btn.)		
12	Focusing Screen	0 Ec-CIV			
		1 Ec-A,B,C,CII,CIII,D,H,I,L			
		2 Ec-S			
		3 Ec-N,R			
13	Timer length for timer	Disable		[Timer after release] only	
		Enable			
		Register	6 sec. timer		0 - 59 sec., 1 - 60 min.
			16 sec. timer		0 - 59 sec., 1 - 60 min.
			Timer after release		0 - 59 sec., 1 - 60 min.
Apply					
14	Shortened release time lag	0 Disable			
		1 Enable			
15	Add aspect ratio information	0 Off	Yes	(Still photo)	
		1 Aspect ratio 6:6			
		2 Aspect ratio 3:4			
		3 Aspect ratio 4:5			
		4 Aspect ratio 6:7			
		5 Aspect ratio 10:12			
6 Aspect ratio 5:7					
16	Add original verification data	0 Off	Yes	(Still photo)	
		1 On			

The EOS-1D Mark IV has a maximum continuous shooting speed of approximately 10 fps (in both One-Shot AF and AI SERVO AF) thanks to a two-motor system, mirror-bounce suppression (an active mirror stopper), 8-channel signal reading, Dual DIGIC 4 Image Processors and other improvements, even though the camera has about 1.6 times more pixels than the EOS-1D Mark III. As long as the high speed continuous drive mode icon is not blinking, the maximum 10 fps continuous shooting is possible. The shutter-release time lag is normally 55 ms. When optimized with C.Fn IV-14-1, it is approximately 40 ms when the lens is set to its maximum aperture, which is the same as the EOS-1D Mark III.

The two-motor system employs one motor each for mirror cocking and shutter cocking. The high-torque, dedicated motors are matched to the respective load torque requirements of the mirror and the shutter, for the mirror a 12mm diameter motor and for the shutter a 15mm diameter motor. The motors are given gear ratios appropriate for high efficiency and high-speed cocking. A gear clutch is employed to ensure that the drive operates even under low temperatures when the load increases. The active mirror stopper controls mirror rebound and keeps the mirror down and working for as long as possible, contributing to a stable viewfinder image and successful high-precision AI Servo AF (allowing more time for focusing) during high-speed continuous shooting. The motors' floating support enables silent operation and reduces unwanted vibrations.

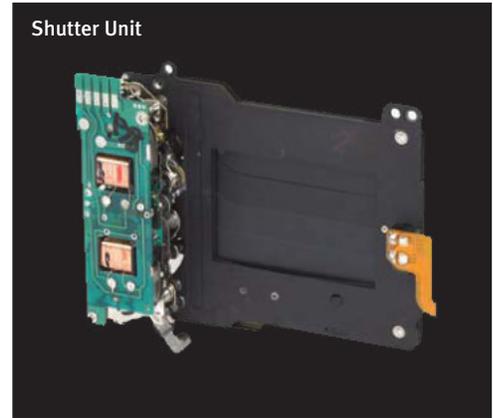
As with the EOS-1D Mark III, the following are provided: single frame shooting, high-speed continuous shooting (10 fps), low-speed continuous shooting (3 fps), 10-second self-timer, 2-second self-timer and silent single shooting. Continuous framing rates can be adjusted in 1 fps increments via Custom Function control, like the EOS-1D Mark III.

DDR2 SDRAM serves as the buffer memory, enabling high-speed data transfers. Also, Dual DIGIC 4 Image Processors perform parallel image processing. During high-speed continuous shooting with a non-UDMA CF card, the following maximum bursts are

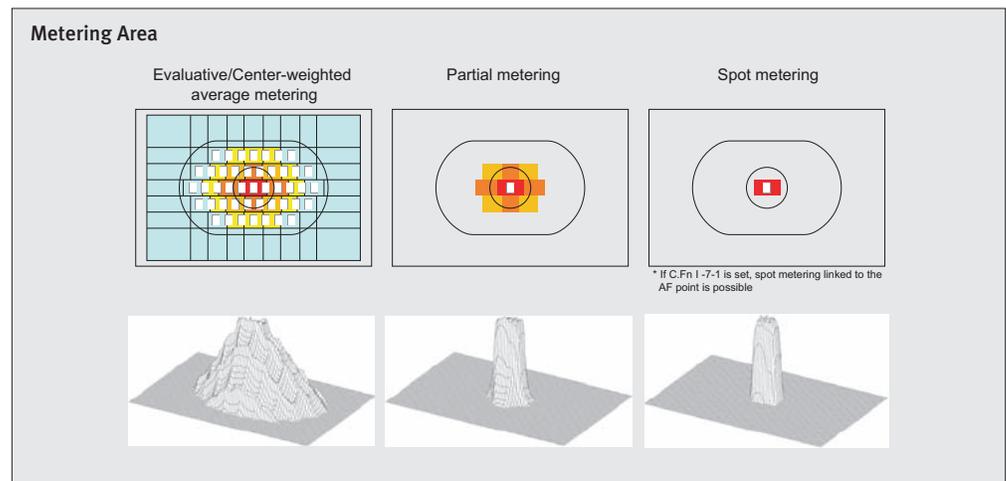
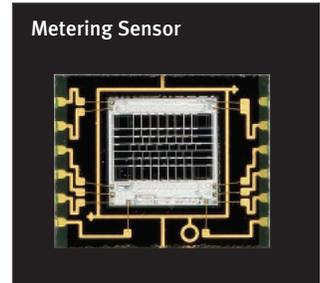


attained: JPEG Large, approx. 85 shots; RAW, approx. 26 shots, and RAW+JPEG, approx. 20 shots. With a UDMA-compliant CF card, the following maximum bursts are attained: JPEG Large, approx. 121 shots; RAW, approx. 28 shots and RAW+JPEG, approx. 20 shots. (Canon testing conditions: 4GB CF card, JPEG quality 8, ISO 100, Standard Picture Style.) The maximum burst can vary depending on the subject, memory card brand, ISO speed, Picture Style, and so forth.

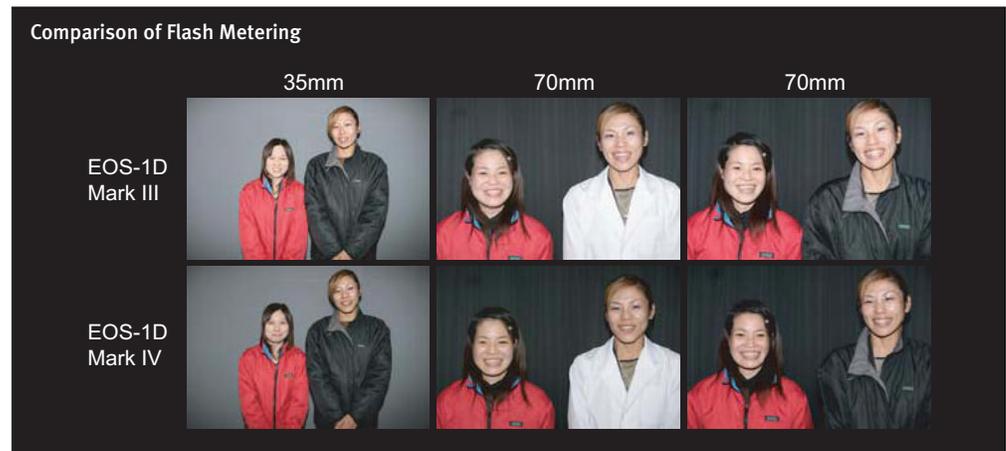
The vertical-travel, mechanical, focal-plane shutter with all speeds electronically controlled is the same as the unit in the EOS-1D Mark III, with a durability of 300,000 cycles, 1/8000 sec. maximum shutter speed.



The metering sensor is the same 63-zone metering unit as the EOS-1D Mark III's. The metering sensor's zone correlation has been optimized for the Area AF frame's 45 AF points. Evaluative, Partial, Spot, and Center-weighted average metering are provided. Partial metering uses about 13.5% of the viewfinder area at the center. Spot metering uses about 3.8% of the viewfinder area at the center. The Evaluative metering algorithm has been improved for less metering dependence on the subject and more consistent metering control.



Based on the EOS-1D Mark III's E-TTL II autoflash algorithm, the EOS-1D Mark IV's improved E-TTL II autoflash algorithm takes further advantage of lens distance information. This data helps to obtain correct flash exposures more consistently without being misled by the subject's clothing, color or size. It is especially effective at wide angles with a small subject or when the subject or background is dark.



As with the EOS-1D Mark III, the shooting modes provided are P, Tv, Av, M and Bulb. ISO 12,800 is now within the normal ISO speed range, two stops higher than before. The ISO speeds that can be set manually and the auto ISO speed range are the same for both viewfinder shooting and Live View shooting. (For a discussion of ISO speed for videos, please see the video shooting section.)

ISO Speed for Viewfinder and Live View Shooting

			Viewfinder Shooting Live View Shooting	
			Auto ISO	Manual ISO
Highlight tone priority: Disable	ISO speed expansion	Off	100 - 12,800	
		L - H3	100 - 12,800	100 - H3
		Limited range*	100 - 6400	
Highlight tone priority: Enable	ISO speed expansion	Off	200 - 12,800	
		L - H3	200 - 12,800	
		Limited range*	200 - 6400	

*Sample applicable with ISO 6400 as the upper limit and ISO 100 as the lower limit.

Standard levels for Metering and flash exposure can be adjusted by the user via the AE and FE Microadjustment Custom Functions. With AE Microadjustment, the standard metering level can be adjusted by 1/8 EV step, max. +/- 1 step. With the FE microadjustment function (flash exposure standard level adjustment function), the flash exposure standard level can also be adjusted by 1/8 EV step, max. +/- 1 step. When using multiple cameras at the same time, it is also possible to match minor individual differences accurately with these microadjustment functions.

There have been some changes to the shutter speed control range limits during flash photography with EX-series Speedlites. Previously, the upper limit was 1/300 second, and the lower limit was 1/60 second. Now, the upper and lower limits can now be set to a range of 1/8000 – 30 seconds.

When using ISO Auto in the EOS-1D Mark IV's Manual exposure mode, the aperture and shutter speed are fixed and the ISO speed for the correct exposure is set automatically, and displayed in the viewfinder, on the top LCD data panel or on the LCD monitor during Live View when the shutter button is pressed halfway. When shooting in places such as a stadium with a mixture of bright light and shadows where there are large differences between the high and low values, this is a handy function. In situations where neither aperture value (depth of field) nor shutter speed (avoidance of subject blurring) can be sacrificed, ISO Auto + Manual exposure mode can be a welcome answer.

With all C.Fns at their default settings, ISO Auto for still photography with the 1D Mark IV is always automatically set within the range of ISO 100–12,800. Even if the upper ISO speed limit is set to H1, H2 or H3 and/or the lower ISO speed limit to L with C.Fn I-3, the ISO Auto speed range for still photos will be ISO 100–12,800. However, if the lower and higher ISO speed limits have been set to a narrower range via C.Fn I-3, ISO speed will be automatically set within that range. Also, if ISO Auto is used in Bulb mode or with flash, the ISO speed will be fixed at 400. However, the ISO Auto speed range during video capture in Manual exposure mode can extend from 100 all the way to 102,400 if H3 is selected as the upper limit in C.Fn I-3.

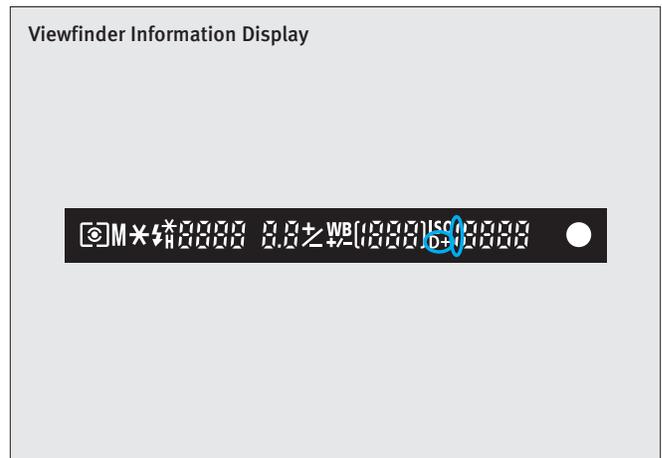
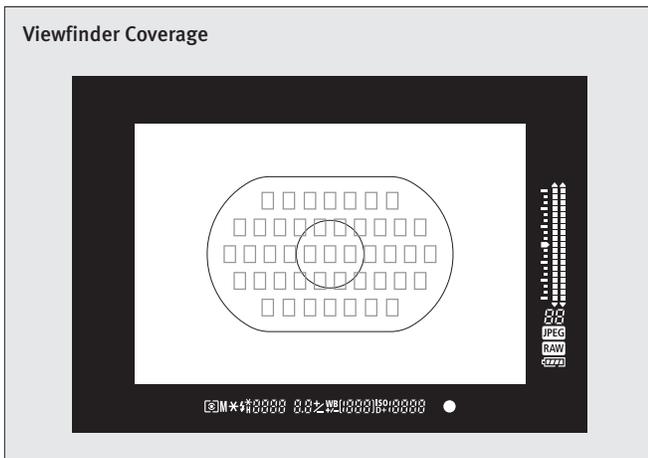
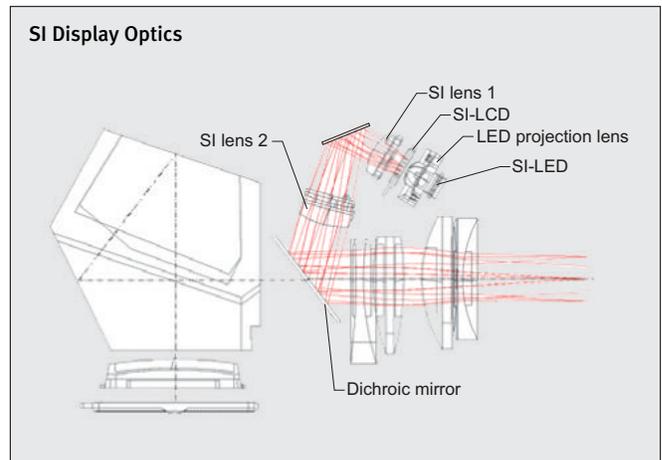
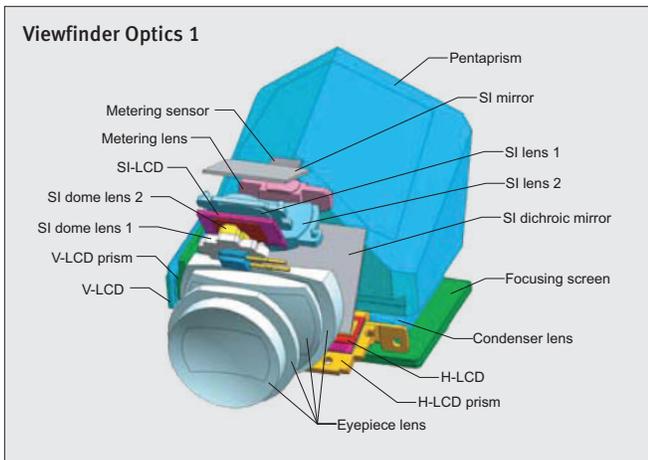
In the P, Tv and Av modes with C.Fn I-8-2 (Tv/Av safety shift) set, C.Fn I-3's ISO range limit will be canceled when the standard exposure cannot be obtained, even if C.Fn I-3 has set the lowest and highest settable ISO speed to a narrower range. It will be automatically controlled within the range of ISO100–12,800.

In ISO Auto with C.Fn I-8-1 (Tv/Av safety shift) set, C.Fn I-12's shutter speed range limit and C.Fn I-13's aperture range limit will be canceled when the standard exposure cannot be obtained. C.Fn I-3's upper and lower limits will be applied to control the ISO speed range.

The viewfinder optics (pentaprism and eyepiece optics), superimposition display optics, focusing screen, eyepiece shutter and viewfinder accessories are the same as the EOS-1D Mark III's. The viewfinder has 100% coverage, approx. 0.76x magnification, 28.3° angle of view, approx. 20mm eyepoint, -3 to 1 dpt. dioptic adjustment and an eyepiece shutter.

The Laser-matte Ec-C IV standard focusing screen is the same as the EOS-1D Mark III's, featuring easy focusing, excellent brightness, less grain, and natural background blur. The camera is compatible with all Ec focusing screens used by EOS-1-series cameras.

The viewfinder's information display now has the "D+" icon to indicate highlight tone priority, and the ISO speed display now has five digits. The EOS-1D Mark IV is compatible with all of the EOS-1D Mark III's viewfinder accessories.



The improved flash metering algorithm resolves the previous problem of flash overexposure of the main subject that occupied a small area in wide-angle shots.

The EOS-1D Mark IV is compatible with all EX-series Speedlites and the AF-assist flashes fired by Speedlite 270EX.

With the 580EX II, 580EX, 550EX, or ST-E2 the AF-assist beam linked to the EOS-1D Mark IV's Area AF frame is emitted automatically. With EOS-dedicated Speedlites other than these, focusing with the AF-assist beam might not work with certain AF points.

With the 580EX II, 430EX II and 270EX Speedlites, the camera can set the Speedlite settings and flash Custom Functions. (The displayed information may differ, depending on EX-series Speedlite model being used and Custom Function settings for flash.) With other Speedlites, the camera can set only certain Speedlite settings: [E-TTL II], [Flash exposure compensation] and [Flash firing].

Flash function settings	
Flash mode	E-TTL II
Shutter sync.	1st curtain
FEB	-3..2..1..0..1..2*3
Flash exp. comp	-3..2..1..0..1..2*3
E-TTL II	Evaluative
Zoom	Auto
INFO Clear flash settings	

Flash Function Settings

On its side panel, the EOS-1D Mark IV has a PC terminal with no polarity. Because large studio flash units have different flash duration times, the flash sync should be tested beforehand. Simultaneous use of hot shoe and PC-fired flash is possible.

The EOS-1D Mark IV's Live View function is designed to appeal to press, studio product, architecture, fashion, portrait, nature and landscape photographers. The new item in this list, compared with earlier versions of Live View, is press photographers, and it is there because of the EOS-1D Mark IV's new Live View AF. The new, high-definition Clear View LCD II is an important part of the Live View system. It offers improved visibility, even in bright locations, and facilitates close examination of images before and after capture.

Compared with the EOS-1D Mark III's Live View shooting feature, the EOS-1D Mark IV's Live View has been improved by having 3 new autofocus functions. It has most of the same Live View shooting features as the EOS 7D.

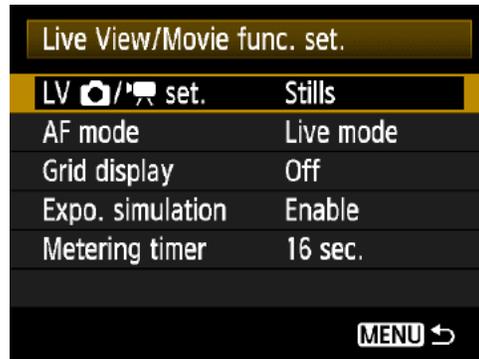
In the Live AF mode and the Face Detection Live AF mode, contrast detection AF with the image sensor is now faster compared to the EOS 50D and the EOS 5D Mark II. This was made possible by changing the AF control microcomputer to the same MPU used for phase-detection AF, and an improved lens control sequence. A silent shooting feature with the electronic 1st-curtain is not provided.

Switching the Shooting Information Display

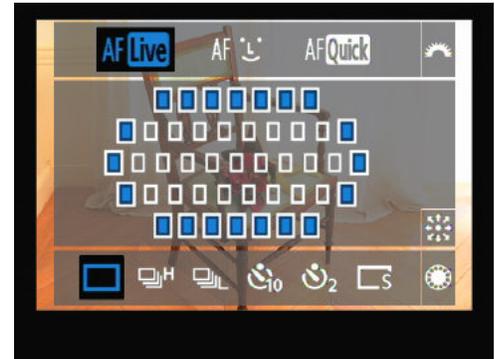
Live View Shooting Information Display

With the [Live View/Movie func. set.] screen, you can set all Live View shooting settings (except C.Fn IV-11 and C.Fn IV-15). Under [LV Stills/Movie set.], select [Stills]. The options displayed on the [Live View/Movie func. set.] screen will change depending on the [LV Stills/Movie set.] setting.

While Live View is displayed, you can now display the menu and playback images. When you are finished with the menu settings or image playback, the Live View display reappears. While Live View is displayed, you can also press the AF/Drive mode button, or the ISO speed button to display the respective screen and set it as desired.



Live View/Movie Function Setting



AF/Drive

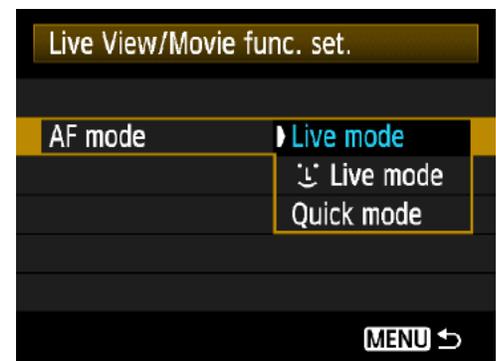
Press SET to display the Live View image. With the EOS-1D Mark IV, you can now press the shutter button halfway to autofocus (in addition to using the AF-ON button), prior to the start of video recording.

Live View focus can be achieved with the three AF modes. Also, you can magnify the image by 5x or 10x and focus manually (except with Face Detection Live AF). Live AF mode is the default AF mode.

In the Live mode, AF is achieved with the image sensor's contrast detection. You can use the Multi-controller to change the position of the single AF point.

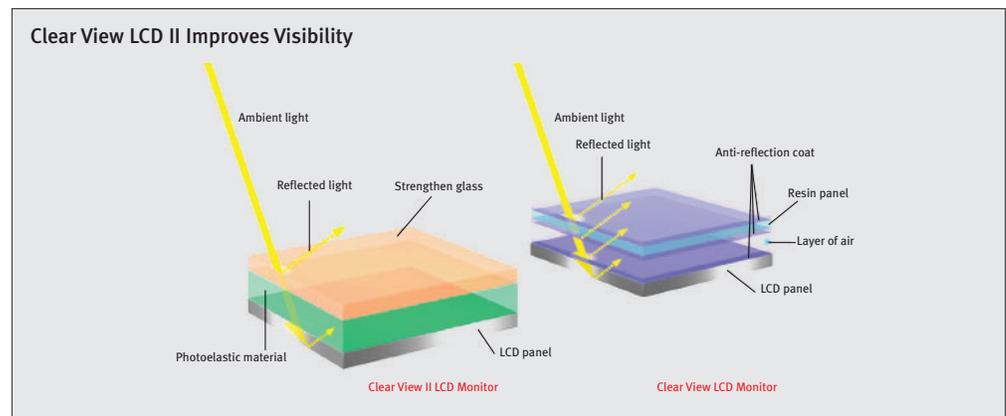
Face Detection Live AF mode detects human faces automatically and focuses with contrast detection AF. If multiple faces are detected, the largest face closest to the center is selected to be focused automatically. If it is not the desired target face, the Multi-controller can be used to select the target face.

In Quick AF mode, phase detection AF with the full, 45-point AF sensor is used in the One-Shot AF mode. The AF point can be selected automatically or one AF point can be selected manually. When you press the shutter button halfway or press the AF-ON button, the mirror goes down and autofocus is executed. (The Live View image is momentarily interrupted.) When focus is achieved the manually selected AF point lights up on the LCD monitor, and the Live View image reappears automatically. During automatic AF point selection, only the AF point or points achieving focus is or are displayed in red.



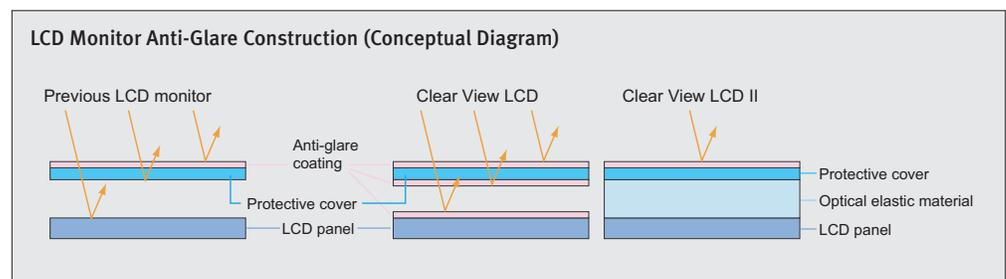
AF Mode

The 3-inch LCD monitor features approximately 920,000 dots (VGA res), a wide (160°) viewing angle, high brightness and low power consumption. Colors and color reproduction have been improved over the EOS-1D Mark III. Natural-looking images close to the sRGB color space are obtained. Also, even with the magnified view, the resolution is appropriate for checking focus precision. In sum, the new LCD delivers the finest performance Canon has ever offered.



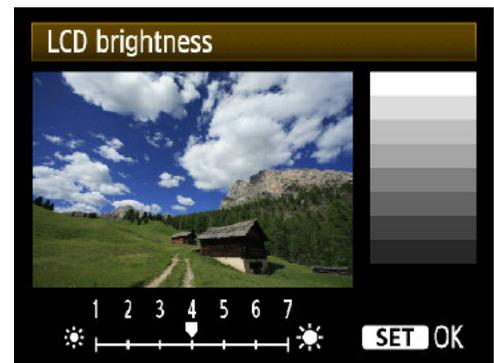
With older LCD designs, light reflections on and in the LCD monitor hindered visibility. These reflections occurred because the protective cover surface and liquid crystal panel surface had air (with a different refractive index than those surfaces) between them. Previously, these surfaces had anti-glare coatings to reduce reflections. With the EOS-1D Mark IV, instead of just reducing reflections, the idea was to eliminate the cause altogether. The space between the protective cover and liquid crystal panel is filled with an optical elastic resin material that has a carefully matched refractive index. The filling creates a borderless structure. Light reflections inside the LCD monitor have thereby been drastically reduced. As a result, the blacks look crisp and the display has high contrast. Also, menus and displayed images can be viewed closer to the protective cover's top surface.

The material used for the protective cover has been changed from acrylic to reinforced glass to prevent any force applied to the protective cover from reaching the LCD panel through the optical elastic material. The protective cover is also now much more resistant



to scratching. Scratches on the protective cover that can hinder screen visibility no longer pose a problem. The EOS-1D Mark IV's LCD monitor's glass surface has an anti-reflective coating and a smudge-resistant coating. Together with the internal reflection-reduction technologies already mentioned, the LCD monitor is now easier to see even under sunny outdoor conditions.

During image playback, pressing the illumination button will now display the [LCD brightness] screen, permitting immediate adjustment of the brightness level.



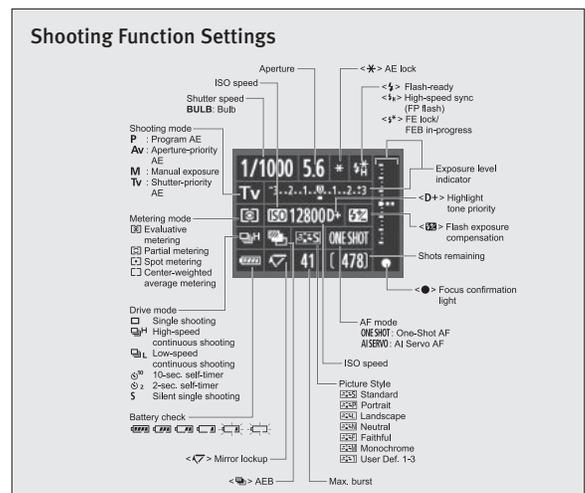
LCD Brightness

EOS-1D Mark IV cameras sold outside Japan provide these 25 menu interface languages: English, German, French, Dutch, Danish, Portuguese, Finnish, Italian, Norwegian, Swedish, Spanish, Greek, Russian, Polish, Czech, Hungarian, Romanian, Ukrainian, Turkish, Arabic, Thai, Simplified Chinese, Traditional Chinese, Korean and Japanese.

The menu screens look neat and crisp with 256 colors, proportional fonts, gradations and animations.



What is displayed when you press the INFO. button while the camera is ready to shoot can be set with C.Fn II-10. If 0 is set (the default setting), the INFO. button will display the shooting function settings. While looking at the LCD monitor, you can set the shooting functions. When you shoot, the captured image will be displayed for 2 seconds and then the shooting function settings will reappear.



Also, if you turn off the power (including auto power off) while the shooting function settings are displayed, the image will be displayed again automatically when you turn on the power. If 1 is set, the camera settings will be displayed. What is displayed is the same as with the EOS-1D Mark III except for the addition of the AE/FE microadjustment setting.

To make it easier to identify the nature of an error, Err99 has been itemized. Errors are displayed as Err10 to Err80, and Err99, the same as with EOS-1D Mark III firmware Ver. 1.2.5 and later. Other error codes are the same as the EOS-1D Mark III's, but the previous Err01, 02, 04, 06 and 99 messages have been made more detailed to Err10, 20, 30, 40, 50, 60, 70, 80 and 99.

Error Codes

No.	Message	Solution
Err 01	Communications between the camera and lens is faulty. Clean the lens contacts.	Clean the electrical contacts on the camera and lens and use a Canon lens.
Err 02	Card cannot be accessed. Reinsert/change card or format card with camera.	Remove and install the card again, replace the card, or format the card.
Err 04	Cannot save images because card is full. Replace card.	Replace the card, erase unnecessary images, or format the card.
Err 06	Sensor cleaning is not possible. Turn the camera off and on again.	Operate the power switch.
Err 10, 20, 30, 40, 50, 60, 70, 80, 99	Shooting is not possible due to an error. Turn the camera off and on again or re-install the battery.	Operate the power switch, remove and install the battery pack again, or use a Canon lens.

All of the menu settings and the options available in each case are given here:

Menu Settings

Item	Description
Shooting 1	
White balance	Auto, Daylight, Shade, Cloudy, Tungsten, Fluorescent, Flash, Custom 1 - 5, Manual (2500 – 10000K) / PC1 – 5 *1
Custom WB regist.	Register image on card / Record and register image / Edit caption / Set as white balance
WB SHIFT/BKT	(WB correction): B/A/M/G bias, 9 levels each (WB-BKT): B/A and M/G bias, ±3 levels in single-level increments
Color space	sRGB / Adobe RGB
Picture Style	Standard / Portrait / Landscape / Neutral / Faithful / Monochrome / User Def. 1 / User Def. 2 / User Def. 3
Peripheral illumin. correct.	Attached lens: Correction data available / Correction data not available Correction: Enable / Disable
Shooting 2	
JPEG quality	L: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 M1: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 M2: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 S: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
Image size	Standard / Auto switch media / Rec. to multiple RAW: -, RAW, M-RAW, S-RAW JPEG: -, L, M1, M2, S Rec. separately Card 1: L, M1, M2, S, RAW, M-RAW, S-RAW Card 2: L, M1, M2, S, RAW, M-RAW, S-RAW External recording media: L, M1, M2, S, RAW, M-RAW, S-RAW
Review time	Off / 2 sec. / 4 sec. / 8 sec. / Hold
Beep	On / Off
Release shutter without card	Enable / Disable
Dust Delete Data	(Data acquisition screen)
External Speedlite control	Flash function settings / Flash C.Fn settings / Clear all Speedlite C.Fn's
Playback 1	
Protect images	Select images / All images in folder / Clear all images in folder / All images on card / Clear all images on card
Rotate	(Image selection screen: SET button: 90° -> 270° -> 0°)
Erase images	Select and erase images / All images in folder / All images on card
Print order	Sel.Image / By folder / All image / Set up / Print *2
Image copy	Sel.Image / By folder / All image
External media backup*3	Quick backup / Backup
Playback 2	
Highlight alert	Disable / Enable
AF point disp.	Disable / Enable
Histogram	Brightness / RGB
Enlarge display	Enlarge from image center (Center) / Enlarge from selected AF point (AF point)
Image jump w/ 	1 image / 10 images / 100 images / Date / Folder / Movies / Stills
Slide show	(Playback image count) (Playback image) All images / Folder / Date / Movies / Stills Set up: Play time: 1 sec. / 2 sec. / 3 sec. / 5 sec. Repeat: On / Off Start

*1: Only when personal WB has been registered. *2: Only when a printer is connected.

*3: Only when WFT-E2 II A, WFT-E2/E2A (Firmware Ver. 2.0.0 or higher) and external recording media are connected.

Menu Settings

Item	Description
Set-up 1	
Auto power off	1 min. / 2 min. / 4 min. / 8 min. / 15 min. / 30 min. / Off
Record func+media/folder sel.	Record func.: Standard / Auto switch media / Rec. separately / Rec. to multiple Record/play (Playback): CF/SD/External USB Storage Device *3 Folder: xxxEOS1D
File numbering	Continuous / Auto reset / Manual reset
File name setting	File name / Change User setting 1 / Change User setting 2
Auto rotate	On with Camera & Computer/On with Computer/Off
Format	CF/SD
Set-up 2	
LCD brightness	1.2.3.4.5.6.7 (7 levels)
Date/Time	yy/mm/dd/hr./min./sec. [yy/mm/dd, dd/mm/yy, mm/dd/yy]
Language	(Cameras sold in Japan): Japanese / English (2 languages only) (Cameras sold outside Japan): English / German / French / Dutch / Danish / Portuguese / Finnish / Italian / Ukraine / Norwegian / Swedish / Spanish / Greek / Russian / Polish / Czech / Hungarian / Romanian / Turkish / Thai / Arabic / Simplified Chinese / Traditional Chinese / Korean / Japanese (25 languages)
Video system	NTSC / PAL
Battery info.	Power source / Remaining cap. / Shutter count / Recharge performance
Live View/Movie func. set.	LV Stills/Movie / set.: Disable / Stills / Movie AF mode: Live mode / Face Detection Live mode / Quick mode Grid display: Off / Grid 1 Coarse / Grid 2 Fine Expo. Simulation *4 : On / Off Movie rec. size *5*7 : 1920x1080 30 / 1920x1080 25 / 1920x1080 24 / 1280x720 60 / 1280x720 50 / 640x480 60 / 640x480 50 Sound recording*5 : On / Off Metering timer: 4 sec. / 16 sec. / 30 sec. / 1 min. / 10 min. / 30 min.
Set-up 3	
Save/load settings on media	Save / Load
Regist/apply basic settings	Register / Apply
Clear all camera settings	(Confirmation screen)
Copyright information	Display copyright info. / Enter author's name / Enter copyright details / Delete copyright information
Sensor cleaning	Auto cleaning: Enable / Disable Clean now Clean manually
Firmware Ver. x.x.x	(Firmware update screen)
WFT settings*6	(WFT-E2 II/II A & WFT-E2/E2A setting screen)
Custom Functions	
C.Fn I: Exposure	(17)
C.Fn II: Image/Flash exp/Disp	(10)
C.Fn III: Autofocus/Drive	(19)
C.Fn IV: Operation/Others	(16)
Clear all Custom Func. (C.Fn)	(Confirmation screen)
C.Fn setting register/apply	Register / Apply / Confirm settings / Return
My Menu	
My Menu settings	Register / Sort / Delete / Delete all items / Display from My Menu

*3: Only when WFT-E2 II A, WFT-E2/E2A (Firmware Ver. 2.0.0 or higher) and external recording media are connected.

*4: Displayed only when [Stills] is selected. *5: Displayed only when [Movie] is selected.

*6: Only when WFT-E2 II A and WFT-E2/E2A (Firmware Ver. 2.0.0 or higher) are connected.

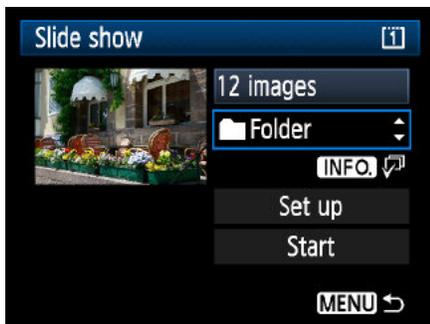
*7: What is displayed differs depending on the NTSC/PAL setting.

If [AF expansion with selected point] is set, the magnified view can now start from the AF point that achieved focus. Normally, the manually selected AF point is regarded as the point where focus is achieved. However, when C.Fn III-8-1, 2 or 3 is set, the AF point is expanded and the manually-selected AF point might be different from the one that achieved focus. Now that the magnified view can start from the AF point that did achieve focus, you can easily check focus regardless of the AF point selection.

Slide show is a new feature. The slide show format (All images, by folder, by date, videos or stills), playback interval and repeat playback can be set. Continuous playback is also possible.

You can now jump through still photos only or videos only.

With C.Fn IV-9-2, you can now press the Microphone button to play back the voice memo when displaying an image to which a voice memo recording has been appended. To prevent confusion with the video's sound recording, the "Memo" name is used in the camera nomenclature, GUI and so forth.



Slide Show

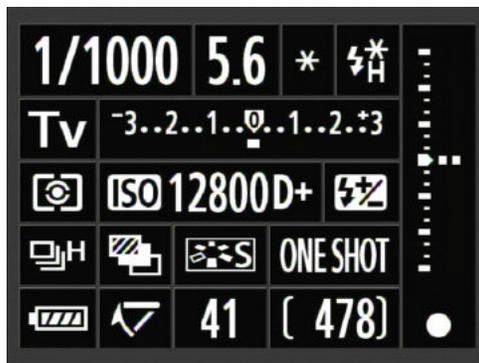


Image Browsing

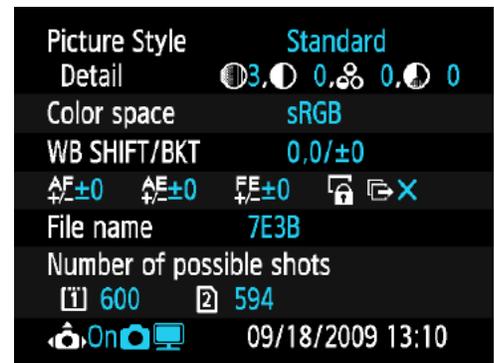


Voice Memo Playback

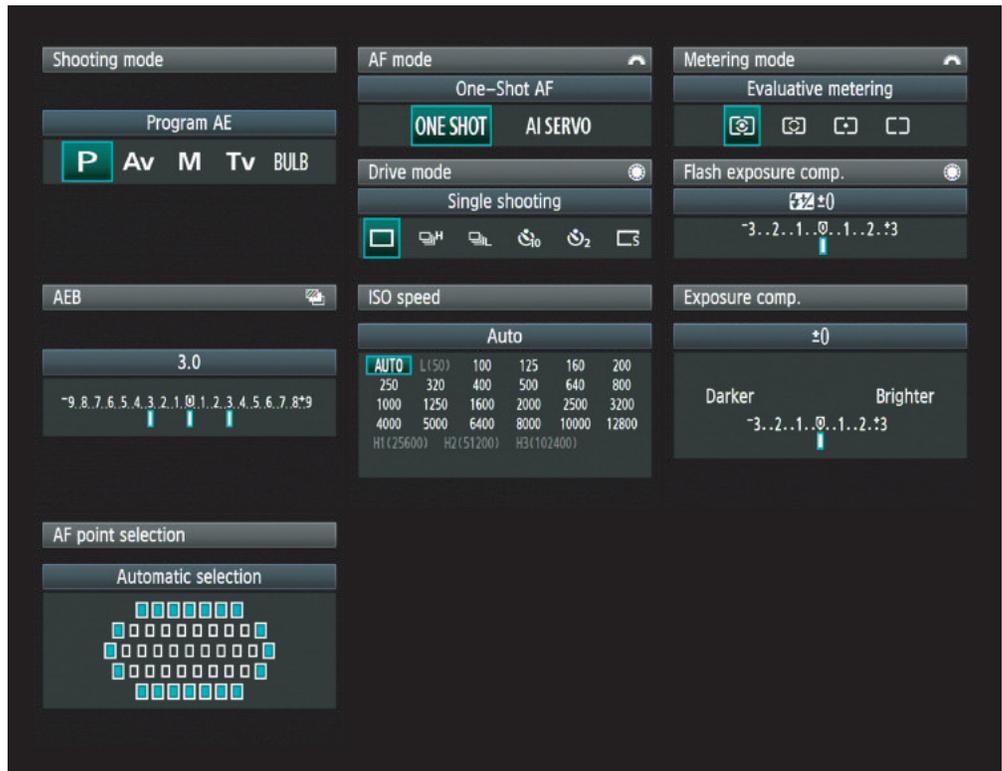
With C.Fn II-10-0 (the default), the shooting function settings are now displayed. With the camera ready to shoot, pressing the INFO button will display the shooting function settings on the LCD monitor. While the settings are displayed, you can press the shooting mode selection button, ISO speed button, or AF point selection button and display the respective setting screen. You can then set the function while looking at the screen. The Quick Control function operated by the Multi-controller is not provided. The settings displayed when C.Fn II-10-1 is set are, with the exception of AE/FE Microadjustment that is new, the same as with EOS-1D Mark III.



Shooting Functions



Camera Settings



Setting Screens

The EOS-1D Mark IV is compatible with UDMA (Ultra Direct Memory Access) up to Mode 6. With a UDMA CF card, the writing speed is faster. UDMA cards are recommended for burst mode shooting and video capture.

Digital terminal

As with the EOS-1D Mark III, the digital terminal is compatible with Hi-speed USB. The cable can be the Interface Cable IFC-200U or the IFC-500U as before. Thanks to the Dual DIGIC 4 Image Processors and a more efficient internal interface, the transfer speed is faster than with the EOS-1D Mark IV. Smooth image transfers with EOS Utility, and still/video shooting with remote Live View, are possible. Note that the cable protector has been changed due to the new position of the terminal. Besides securing the interface cable, it can now support the HTC-100 HDMI (High Definition Multimedia Interface) Cable.

**New external microphone
IN terminal**

A new audio input terminal has been added to the EOS-1D Mark IV for video shooting.

**Compatible With External
Media**

With Wireless File Transmitter WFT-E2 II/II A and WFT-E2/E2A (with firmware Ver. 2.0.0 or higher), you can use external media equipped with a USB port and record videos to those devices. Recording functions, file name setting, image copying, backup to external media and other video-recording functions are basically the same as with the EOS-1D Mark III. (See the separate discussion of the WFT-E2 II/II A.)

The EOS-1D Mark IV is compatible with all EOS-1D Mark III accessories except Video Cable VC-100. Instead of the VC-100, the EOS-1D Mark IV is provided with the new Stereo AV Cable AVC-DC400ST. The AVC-DC400ST connects the EOS-1D Mark IV's audio/video OUT terminal (also the digital terminal) to the TV set's AV terminal (video, audio L/R).



The new HTC-100 HDMI Cable connects the EOS-1D Mark IV's HDMI mini OUT terminal to a TV set's HDMI terminal. Since HDMI can transmit digital signals as is (compared with analog, with minimal signal transmission loss and minimal errors with digital/analog conversion), very fine video and high-quality audio can be enjoyed on a TV set equipped with HDMI input and the appropriate internal circuitry.



PictBridge printing functions The EOS-1D Mark IV incorporates the latest PictBridge features, such as tilt correction. (Using the trimming screen, the image can be tilted up to $\pm 10^\circ$ in 0.5° increments.)

The PictBridge feature set is the same as in the EOS-1Ds Mark III, the EOS 5D Mark II and the EOS 7D. RAW images (including the new M-RAW and recent S-RAW) can also be printed, but only those RAW/M-RAW/S-RAW images captured by the EOS-1D Mark IV. When a RAW image is printed, the JPEG Large image included in the RAW image file is used for printing (except with RAW+JPEG Large images).

Videos cannot be printed. The EOS-1D Mark IV is not compatible with Bubble Jet Direct nor CP Direct. Since a survey found that these features are not really used anymore, Direct image transfer and Transfer order have been discontinued.

Design EOS-1 cameras have won many prestigious design awards around the world. While retaining the basic design of the EOS-1D Mark III, the EOS-1D Mark IV has been further refined as a shooting tool based on user suggestions. The design concepts are: first, “form, as an expression of power and refinement”, and second, “improvements to make operation even easier”.



Nomenclature

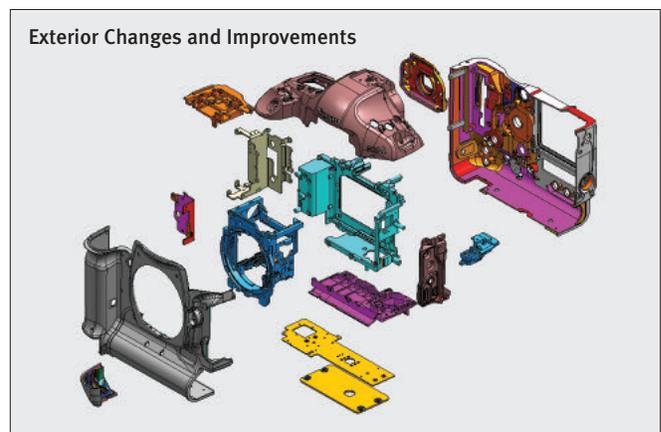


To improve ease of operation, the camera controls indicated in the illustration have been refined with regard to button stroke, height, shape and so forth, based on user suggestions.



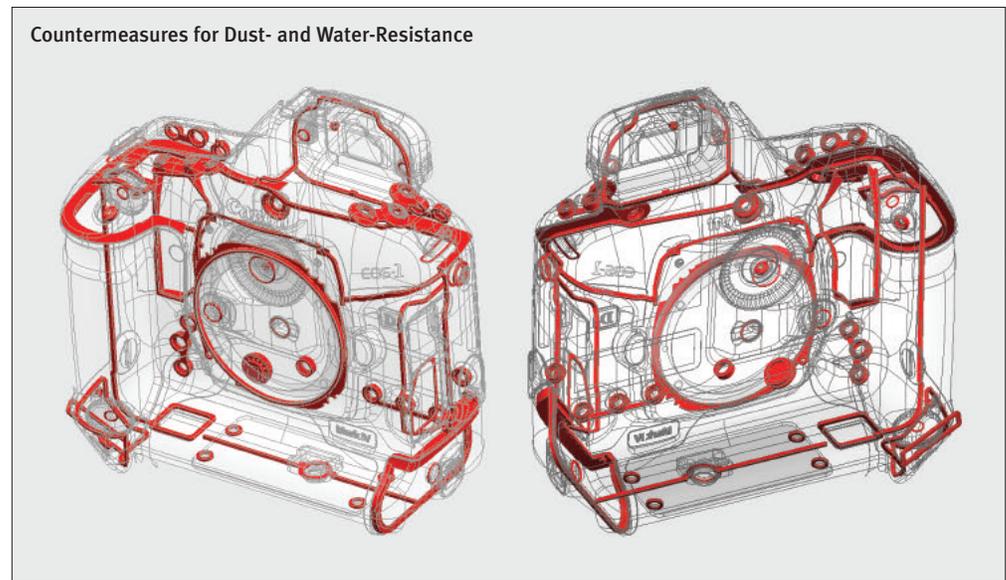
The dimensions are the same as the EOS-1D Mark III's at 156 x 156.6 x 79.9 mm/6.1 x 6.2 x 3.1 in. (W x H x D). The weight has increased by approximately 1 ounce to about 1180 g/41.6 oz. (body only) due mainly to the LCD monitor's reinforced glass.

Construction The EOS-1D Mark IV has the same configuration of external covers (top, front and rear covers made of magnesium alloy and memory card slot cover) and internal construction (magnesium-alloy chassis and mirror box) as the EOS-1D Mark III. The external covers



have a highly durable and grippy baked-on black paint finish. The camera body is thereby strong, rigid, lightweight and of very high quality both in fact and as a subjective matter of perception.

The EOS-1D Mark IV has the same dust and water resistance level as the EOS-1D Mark III. A total of 76 locations at camera controls and external cover seams have been outfitted for dust and water resistance. When the camera is combined with a water-resistant EF lens and EX-series Speedlite, the entire system will be water resistant.



The configuration of the internal construction and major components is basically the same as that of the EOS-1D Mark III. The shutter unit has a durability of 300,000 cycles. The mechanical parts, electronics, optics, operation controls and so forth also have 300,000 cycle durability.

Parts Count

Item	EOS-1D Mark IV	EOS-1D Mark III
Optics	27	27
Mechanical parts	720	675
Electrical parts	1751	1481
Circuit boards	47	42
Lead wires	25	22
Total (Official)	2570	2247
Screws and washers	366	325
Total	2936	2572

- *The shutter unit is counted as 1 part.
- *The DC/DC converter is counted as 1 part.
- *The E-ring is counted as a washer.
- *The official total excludes the screws and washers.

The same shutter-release mechanism as that of the EOS-1D Mark III is employed. The shutter-release stroke and pressing force are also the same. The shutter-release time lag from SW-1 ON is 55 ms (aperture stopped down by no more than 3 stops). The viewfinder

Shutter-Release Stroke and Pressure

State	Stroke	Pressure
Shutter button protrusion	1.5mm	–
Standby position to SW-1 ON	0.6mm	85g
SW-1 ON to SW-2 ON	0.3mm	350g
Leeway after SW-2 ON	0.2mm	–

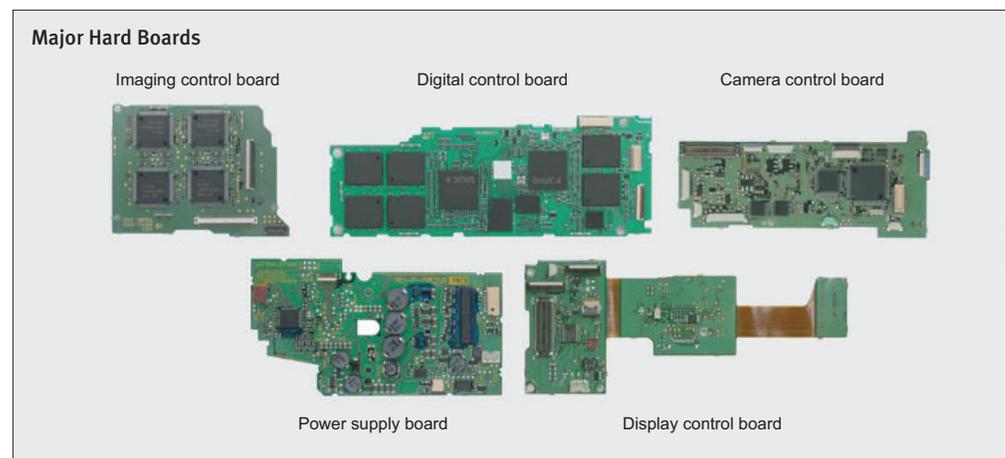
blackout time is 80 ms, the same as on the EOS-1D Mark III. The shutter-release time lag can be shortened to about 40 ms at the maximum aperture of the lens by setting C.Fn IV-13 [Shortened release time lag].

The basic configuration of the electrical components is the same as the EOS-1D Mark III's. They consist of the imaging control board, digital control board, camera control board, display control board, power supply circuit board, flexible boards and certain other boards (16 hard boards and 28 flexible boards).

The imaging control board performs the A/D conversion of the digital signal output by the CMOS sensor. It also has the video signal processing circuit IC for the TG (Timing Generator) to generate the CMOS sensor's drive pulse and the power supply circuit to supply power to the CMOS sensor.

The digital control board has Dual DIGIC 4 Image Processors and the digital image-processing circuit that includes the newly developed, front-end processing circuit. It also has the memory circuit consisting of the DDR2 SDRAM (includes the image buffer memory), HDMI control circuit, USB control circuit and audio control circuit. (The terminals are on a separate interface board.)

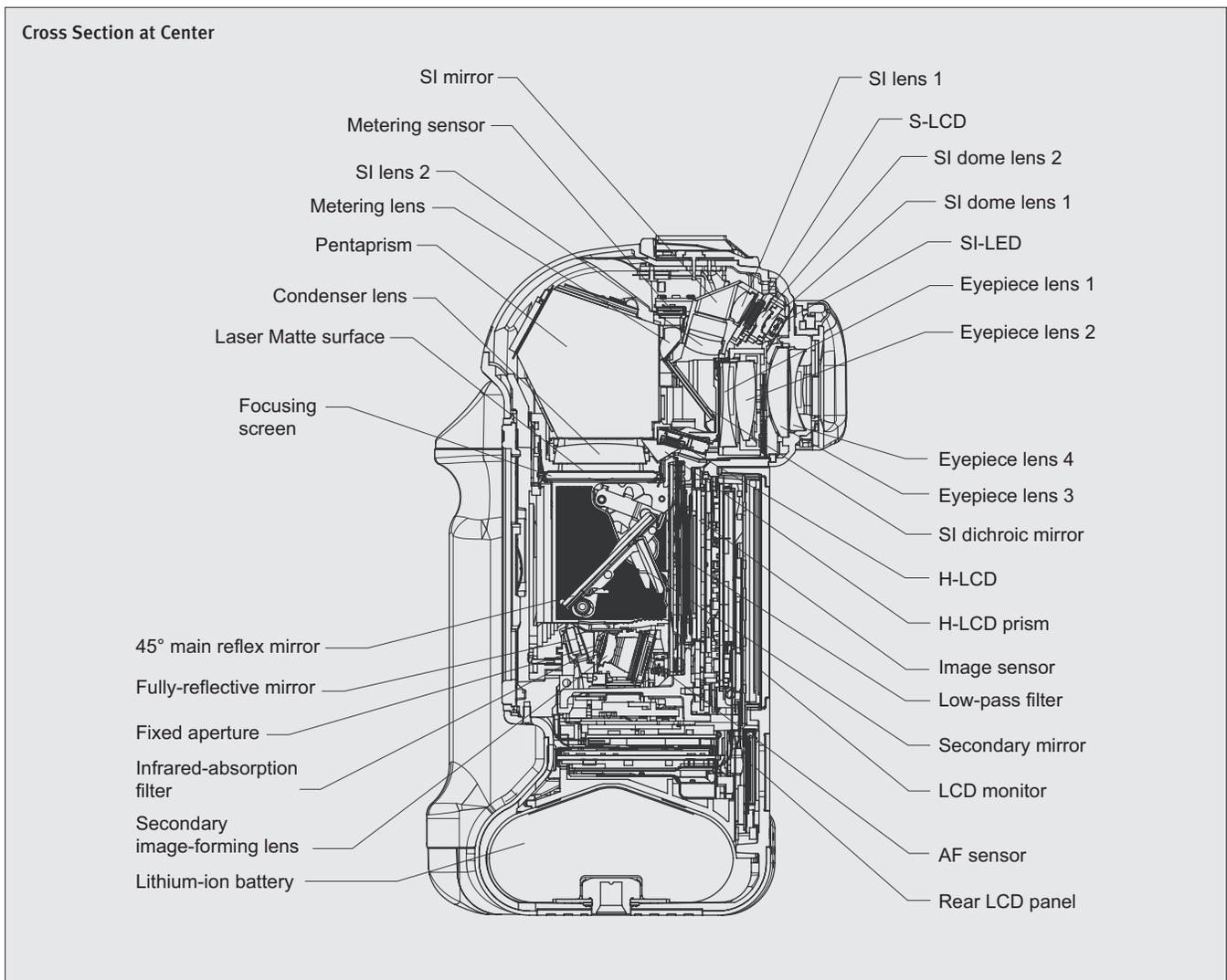
This camera control board has the main microcomputer IC for controlling the sensors, mechanical components and other camera operations. It also has the AF-control IC, EFIC (Electronic Flash Integrated Circuit) for the lens and external Speedlite interfaces, EEPROM (Electrically Erasable Program Read Only Memory) to store various adjustment data and flash-control IC.



The display control board has the display IC for the display panel, viewfinder display and for the drive control of the superimposed display. It also has the motor driver IC for the shutter motor's drive control.

The power supply board has the power supply circuit and supplies power to all the boards in the camera.

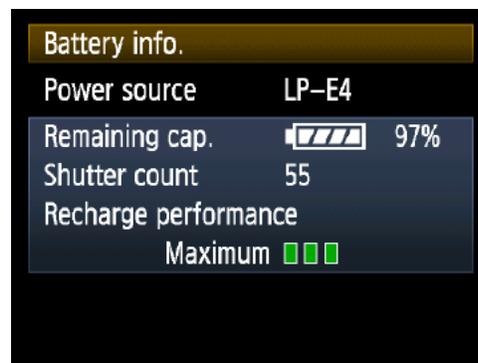
The Self Cleaning Sensor Unit board drives and controls the SCSU. It consists of the power supply section, an oscillator circuit to generate the drive signal, the driver section to output the drive signal, and the sensor circuit that detects the oscillator's status. It is controlled by a signal from the camera control board.



As with the EOS-1D Mark III, the EOS-1D Mark IV's power source system consists of the dedicated, lithium-ion LP-E4 Battery Pack featuring high-capacity, high performance, compactness, light weight and remaining battery capacity detection. The LC-E4 Battery Charger is also included in the standard kit, but AC Adapter Kit ACK-E4 is now an optional accessory.

Communications with the LP-E4 Battery Pack enable the battery's remaining capacity to be displayed. The remaining capacity is indicated in one of six levels by the battery check icon displayed on the top LCD panel, in the viewfinder (during metering), and on the [Battery info.] menu. If there is a communication problem with the battery, an error message will appear. However, when you select [OK], you can still continue shooting. (The battery level icon will indicate 0% capacity.)

On the [Battery info.] menu screen, you can check the battery model, remaining battery capacity, shutter count and recharge performance (in 3 levels).



Battery Information

The number of possible shots has decreased compared to the EOS-1D Mark III. This is due to the much higher power consumption required by the increased image processing performance, for the increased pixel count, and faster memory card access speed.

However, to minimize the decrease in the number of possible shots, low voltage is used for the circuits and power is minimized for each module when not in operation. Thanks to such meticulous power-saving measures, a professionally useful number of possible shots is still the order of the day.

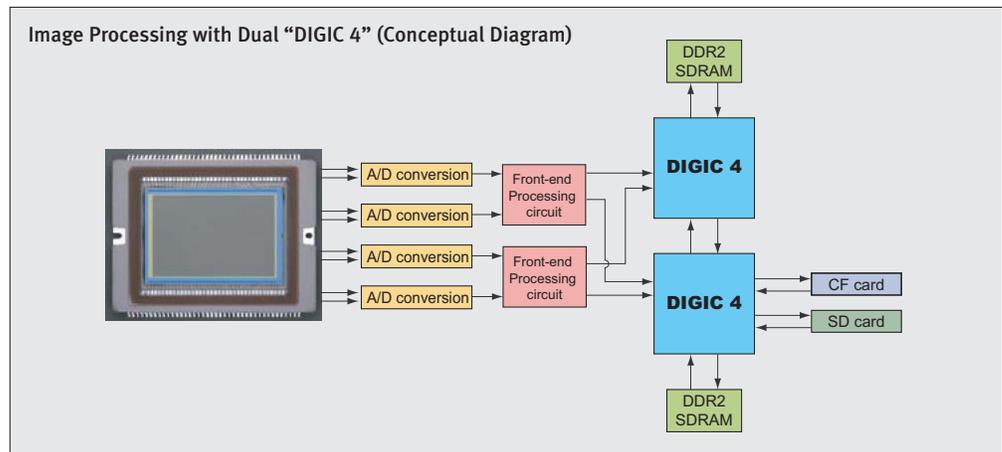
Possible Shots

Shooting Method	Temperature	
	At 23°C/73°F	At 0°C/32°F
Viewfinder shooting	Approx. 1500 shots	Approx. 1200 shots
Live View shooting (Stills)	Approx. 270 shots	Approx. 230 shots

*Based on a fully-charged Battery Pack LP-E4 and CIPA testing standards.

*With a fully-charged Battery Pack LP-E4, movie shooting totaling about 2 hours and 40 min. is possible (at 23°C/73°F). (One movie can be recorded up to 29 min. 59 sec. or 4 GB in file size.)

Two newly developed front-end ICs have been incorporated to handle the 8-channel, high-speed signal reading from the approximately 16.1 Megapixel CMOS sensor. The two ICs work together with the Dual DIGIC 4 Image Processors as a high-speed parallel-processing circuit to attain approximately 10 fps high-speed continuous shooting.



Features made possible with DIGIC 4 Image Processors:

- Low-noise processing (DIGIC 4 Image Processor + CMOS -> Normal ISO speed range increased by 2 stops)
- Faster image processing
- Improved noise reduction at high ISO speeds, with no decrease in maximum burst
- Improved Auto Lighting Optimizer
- Lens Peripheral illumination correction
- Face detection AF during Live View shooting (Face detection Live mode)
- Full HD (Full High-Definition) video shooting
- HDMI OUT
- Compatible with UDMA Mode 6 (CF card)
- LCD monitor VGA
- M-Raw

Overall improvement in image quality

One of the many respects in which EOS DIGITAL cameras have made continuous progress is that their low-noise CMOS sensors have gained megapixels. At the same time, various image-processing features have been incorporated and image quality has been improving apace. The EOS-1D Mark IV has effectively built upon this.

Technology	High Image Quality Effects
1. Approx. 16.10 Megapixel CMOS	High resolution, low noise
2. 14-bit A/D conversion, signal processing	Excellent gradation
3. High ISO speed noise reduction	Low noise at all ISO speeds
4. Auto Lighting Optimizer	Automatic correction to obtain favorable brightness and contrast
5. Lens peripheral illumination correction	Automatic correction of peripheral light fall-off

Overall image quality is clearly improved with both image sensor advances (16 Megapixels, gapless microlenses and so forth) and image processing function upgrades. The default settings apply high ISO speed noise reduction, Auto Lighting Optimizer and lens peripheral illumination correction. In the case of previous cameras, noise reduction at high ISO speeds greatly reduced the maximum burst during continuous shooting. However, with the EOS-1D Mark IV and DIGIC 4, this drawback has been eliminated (except at the “Strong” setting).

Some notes on perceived image quality are appropriate here. First, images shot with the EOS-1D Mark IV tend to reveal blur and defocus more easily than images shot with the EOS-1D Mark III or EOS-1D Mark II, especially when viewed at the same size (for example, when viewing at 100% on a computer monitor). After all, the EOS-1D Mark IV provides 16.1 Megapixels — approximately 1.6 times more than the EOS-1D Mark III (10.1 Megapixels) and approximately 2 times more than the EOS-1D Mark II (8.2 Megapixels).

As long as final print size is the same, the visible effects of blur and defocus are the same regardless of pixel count. However, it is becoming popular to view images on computer monitors; thus, clients and photographers are increasingly concerned about blur and defocus in images shot with high-resolution cameras. EOS-1D Mark II and EOS-1D Mark III users should understand the increased likelihood of blur and/or defocus when using high-resolution cameras. To prevent these image defects, photographers should use faster shutter speeds at high ISO settings and/or shoot with IS (Image Stabilizer) lenses.

Image-recording quality

As shown in the table here, there are nineteen image sizes to choose from. As with the EOS-1D Mark III, the JPEG quality (compression rate) can be set to one of ten levels for each of the L, M1, M2 and S sizes.

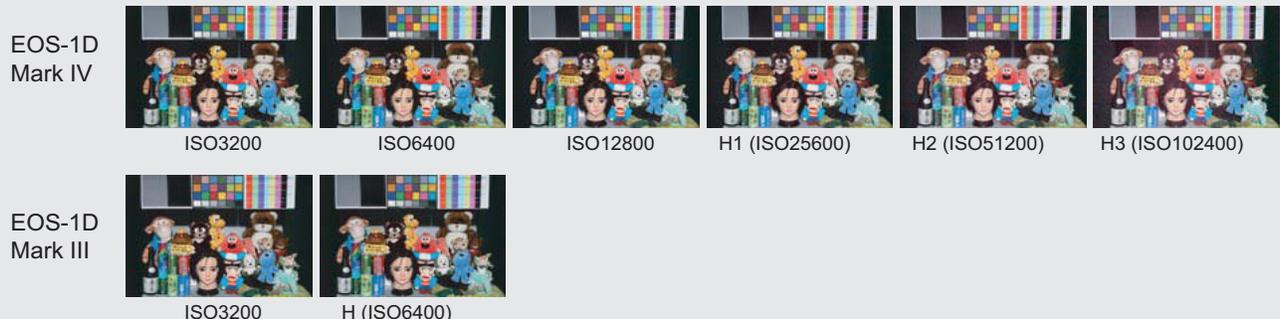
Image-Recording Quality Specifications

Image Size	Pixels [Approx. megapixels]	File Size [Approx. MB]	Possible Shots [Approx.]	Maximum Burst [Approx.]		Printing Size	
				Continuous (H)	Continuous (L)		
L (Large)	16.00 (4896 x 3264)	5.7	692	85/107/121	692/692/2704	A3 or larger	
M1 (Medium 1)	12.40 (4320 x 2880)	4.5	874	111/159/164	874/874/3414	Around A3	
M2 (Medium 2)	8.40 (3552 x 2368)	3.5	1148	182/417/309	1148/1148/4480	A4 or larger	
S (Small)	4.00 (2448 x 1632)	2.0	1957	1957/1957/5447	1957/1957/7632	A5 or larger	
RAW	16.00 (4896 x 3264)	22.2	175	26/27/28	37/54/81	A3 or larger	
M-RAW	9.00 (3672 x 2448)	14.8	263	33/35/35	70/172/376	A4 or larger	
S-RAW	4.00 (2448 x 1632)	9.9	397	43/43/43	285/393/1553	A5 or larger	
RAW+	L	-	22.2+5.7	139	20/20/20	24/30/35	-
	M1		22.2+4.5	145	20/20/20	25/33/37	
	M2		22.2+3.5	152	20/20/20	26/33/39	
	S		22.2+2.0	161	20/20/20	27/34/41	
M-RAW+	L	-	14.8+5.7	190	20/20/20	32/46/62	-
	M1		14.8+4.5	202	20/20/20	35/52/76	
	M2		14.8+3.5	214	20/20/20	37/57/91	
	S		14.8+2.0	232	20/20/20	41/69/89	
S-RAW+	L	-	9.9+5.7	251	20/20/20	45/84/121	-
	M1		9.9+4.5	272	20/20/20	54/118/266	
	M2		9.9+3.5	294	20/20/20	62/194/1153	
	S		9.9+2.0	329	20/20/20	86/329/1290	

- Figures for the possible shots are based on Canon's testing standards (JPEG quality 8, ISO 100, and Standard Picture Style) using a 4GB card.
- The image file size, number of possible shots, and maximum burst will vary depending on the shooting conditions (subject, memory card brand, ISO speed, Picture Style, Custom Functions, etc.).
- Figures 1)/2)/3) for maximum burst during continuous shooting are when using 1) nominally 30MB/s 4GB CF card, 2) nominally 45MB/s UDMA compatible 4GB CF card or 3) nominally 90MB UDMA mode 6 compatible 16GB CF card.
- Figures in boldface indicate the number of possible shots until the CF card becomes full (Card Full).

Noise reduction Noise reduction at high ISO speeds is similar to that of the EOS-1D Mark III and other EOS Digital cameras going forward; however, the EOS-1D Mark III had only the “Disable/Enable” setting. The EOS-1D Mark IV now offers four settings: Standard, Low, Strong and Disable. The default setting(Standard) applies noise reduction. With Dual DIGIC 4 Image Processor’s high image quality and high-speed processing, excellent noise reduction is executed at all ISO speeds while the image detail is well retained. Chromatic

Comparison of Image Quality at High ISO Speeds



noise in the shadow areas and luminance noise are greatly reduced. The “Standard” setting obtains better noise reduction than the EOS-1D Mark III’s “Enable” setting. Thanks to improved noise reduction, a CMOS sensor with a high S/N ratio, and the DIGIC 4 Image Processor's high-speed and low-noise image development, ISO 12,800 can be included in the normal ISO range and the ISO speed can be expanded to 25,600 (H1), 51,200 (H2) and 102,400 (H3).

Image recording The EOS-1D Mark IV is compatible with UDMA (Ultra Direct Memory Access) Mode 6, the fastest category announced to date, enabling a maximum transfer speed of 133 MB/second. UDMA CF cards currently on the market attain maximum writing/reading speeds of 90 MB per second, so if and when faster UDMA CF cards appear, they will be compatible with the camera. With the fastest UDMA CF cards currently on the market, the speed is approximately 4 to 5 times faster than with the EOS-1D Mark III.

The writing methods to recording media are the same as with the EOS-1D Mark III. You can select [Standard], [Auto switch media], [Rec. separately] or [Rec. to multiple]. During video shooting, the video cannot be recorded simultaneously to cards 1 and 2 even if [Record func.] is set to [Rec. separately] or [Rec. to multiple]. The video will be recorded to the card set for [Playback]. Also, if [Record func.] is set to [Standard] or [Auto switch media], any stills taken during video shooting will be recorded to the same card as the video. If [Rec. separately] or [Rec. to multiple] is set, the video will be recorded to the card set for [Playback] and the still photos will be recorded in the image size set for the card.

Voice memo (Audio clips) While a still image is played, sound can be recorded with the built-in microphone on the camera back. (Voice memo recording is not possible with an external microphone or with the built-in microphone on the camera front for videos. Also, voice memos cannot be recorded for videos.) The voice memo is recorded as a WAV file having the same file number as the image. Hold down the Microphone button for 2 seconds to start recording a voice memo. With C.Fn IV-9-1, press the Microphone button to start recording a voice memo immediately. The sampling frequency is now 48KHz. It was 8KHz with EOS-1D cameras before the EOS-1D Mark IV.

The maximum recording time is 30 seconds per voice memo. If multiple voice memos are recorded for one image, they will be saved as a continuous recording in a single file. During image review immediately after image capture, only one voice memo can be recorded.

The voice memo appended to an image can be played while the image is played. With C.Fn IV-9-2 set, pressing the Microphone button can play the voice memo. The voice memo can also be played on a TV set via HDMI/AV-out.

**Folder name, file name
and file extension**

You can create and select folders freely. The folder name format will be 100EOS1D, where the first 3 numbers are based on the highest folder number existing on the memory card that's installed in the camera. The file name can be set to one of three formats:

1. Factory-default, four-character alphanumeric name
2. Any four characters (User setting 1)
3. Any three characters plus the image size (User setting 2)

If 3 is set and an M-RAW image is taken, the fourth character will be "M." These three settings also apply to the file name for videos. If Adobe RGB color space is set, the fourth character will be "_" (underscore). For JPEG images, the file extension will be ".JPG." For RAW, M-RAW, and S-RAW, it is ".CR2," and for videos, ".MOV."

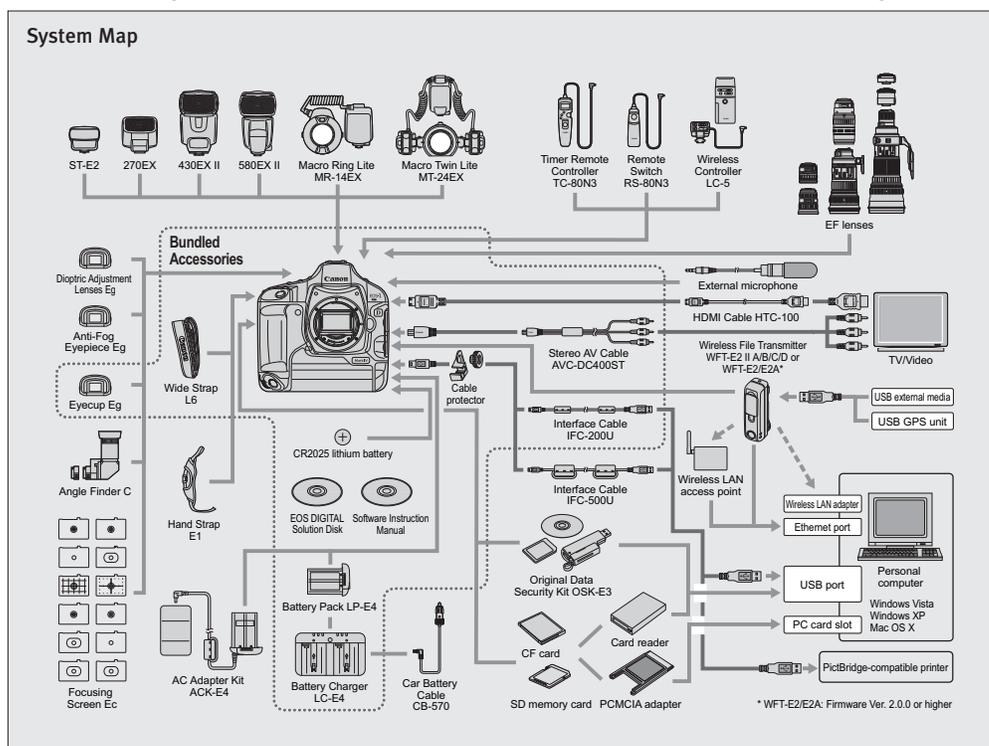
Discussed in the “Interface” section of this paper, new accessories added to the Canon EOS system at this time include the WFT-E2 II/II A wireless file transmitter, the AVC-DC400ST Stereo AV Cable and the HTC-100 HDMI Cable.

Some system accessories have certain restrictions when used with the EOS-1D Mark IV. The table here gives that information.

Accessories with Restrictions

Interchangeable Lenses	
Lens Mount Converter FD-EOS	Although they can be used with manual exposure, exposure error occurs.
Macro Lens Mount Converter FD-EOS	Therefore, these items will be officially listed as incompatible.
Speedlites	
480EG	Compatible with external flash metering and manual flash. (Full output with TTL autoflash)
540EZ	Compatible with manual flash. (Full output with TTL autoflash)
430EZ	
420EZ	
ML-3	Flash is always fired at full output.
300EZ	
200E	
Wired multi-Speedlite accessories	The Speedlite restrictions above will apply.

The current Canon system map gives some sense of the range of configurational possibilities that Canon shooters enjoy. For anyone investing in Canon equipment, it is both a comfort and an encouragement to consider that no matter how one’s needs — or one’s imagination —



* WFT-E2/E2A: Firmware Ver. 2.0.0 or higher

change in the future, the pieces exist within the Canon system to facilitate the fulfillment of almost any requirement, no matter how challenging it may be.

**WFT-E2 II A Wireless File
Transmitter**

The WFT-E2 II A was developed to enhance the mobile performance of the EOS-1D Mark IV as an accessory for image transfer via wireless or wired networks.

It is an EOS-1D Mark IV accessory that surpasses the WFT-E2A in the following features:

- It provides essentially the same features as the WFT-E5A (for the EOS 7D camera), except for media server functionality.
- It can be used over IEEE 802.11a wireless networks. (When the transmitter is attached to an EOS-1D Mark III or EOS-1Ds Mark III (requires a firmware update on either camera), IEEE 802.11a is available.
- Wi-Fi Protected Setup support for easy access to wireless LAN access points.
- Enhanced remote shooting, using WFT Server (previously HTTP)



- Enables linked shooting, with wireless shutter release of multiple sets of the EOS-1D Mark IV and WFT-E2 II A using EOS Utility
- Can be connected to Bluetooth-compatible GPS devices when a Bluetooth unit is in the WFT-E2 II A USB port
- Web browsers can be used to download images and shoot remotely over a network. Improvements include the ability to specify pages of 16, 32, 48 or 64 thumbnails when viewing images, as well as new icons for image downloading.
- Major improvements were made for remote shooting, in settings for shooting, Live View shooting, focusing, and so on. Note that the functions are identical to the WFT-E2A when using browsers that do not support JavaScript.

Remote Capture

Figure 4 Camera control screen

The image shows a screenshot of the camera control screen with 18 numbered callouts pointing to various UI elements. A legend table on the right lists the corresponding functions for each number.

①	Battery check
②	Drive mode
③	Possible shots
④	AF mode
⑤	Release button
⑥	AF/MF switch
⑦	Shutter speed
⑧	Aperture
⑨	ISO speed
⑩	Exposure compensation
⑪	Quality
⑫	Shooting mode
⑬	White balance
⑭	Metering mode
⑮	Menu
⑯	Live View shooting button
⑰	Manual focus button
⑱	Live View image screen

• Shaded items cannot be configured via WFT Server. ② and ④ are configured on the camera itself.

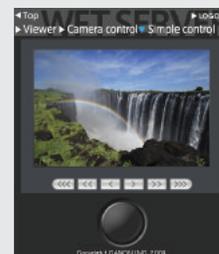


Figure 5 Simple control screen



Figure 6 Remote capture screen without JavaScript support

JavaScript-compatible browsers offer the choice of [Camera control] and [Simple control] interfaces. [Camera control] (Figure 4) is suitable for computers and [Simple control] (Figure 5) for PDAs or other small devices. Note that [Simple control] offers only Live View shooting and focusing. (In the [Camera control] interface, Live View image size switching (implemented for the WFT-E5) is not supported due to the system restrictions.)

Linked shooting: Up to 10 slave cameras linked to a master camera can be wirelessly triggered. The transmission range is approximately 100 m / 328 ft. from the master camera (when signal strength is favorable). Videos cannot be captured this way. Operation of slave cameras is linked to pressing the master camera shutter button halfway or fully. Pressing the master camera shutter button halfway puts slave cameras in the same state as if the shutter buttons were pressed halfway (at which point AF and AE begin).

After AF and AE on slave cameras, when the slave cameras are waiting for the master camera shutter button to be fully pressed, the slave cameras will respond as if their shutter buttons were fully pressed within 0.05 second after the master camera shutter button is fully pressed. Under these conditions, the linked shooting time lag is within 0.05 second. This time lag is unrelated to the distance of slave cameras from the master camera. It is the same whether they are 1 m / 3.3 ft. or 100 m / 328 ft. apart. Note that a time lag ten times as long (approximately 0.5 second) may occur when images captured by slave cameras are being developed and written, or when the LCD monitor is used.

These models are inter-compatible for purposes of linked shooting: the EOS-1D Mark IV and WFT-E2 II A the EOS 5D Mark II (requires firmware update) and WFT-E4 II A, and the EOS 7D and WFT-E5A. The three models can be freely combined in linked shooting.

EOS Utility version 2.7.2 (Windows/Macintosh: EOS Utility (referred hereafter as EU) is software for communicating with EOS DIGITAL cameras that enables you to download images from your camera to a compatible personal computer, specify camera settings and take pictures remotely. Its main features are:

- Image downloading from the camera
- Camera settings (conforms to the connected camera specifications)
- Flash setting (conforms to the connected camera and flash specifications)
- Remote shooting
- Timer shooting, interval timer shooting and bulb exposure
- Remote Live View shooting
- Folder monitoring during wireless file transmitter use
- Linkage with software for optional accessories, DPP, ZB/IB and Picture Style Editor

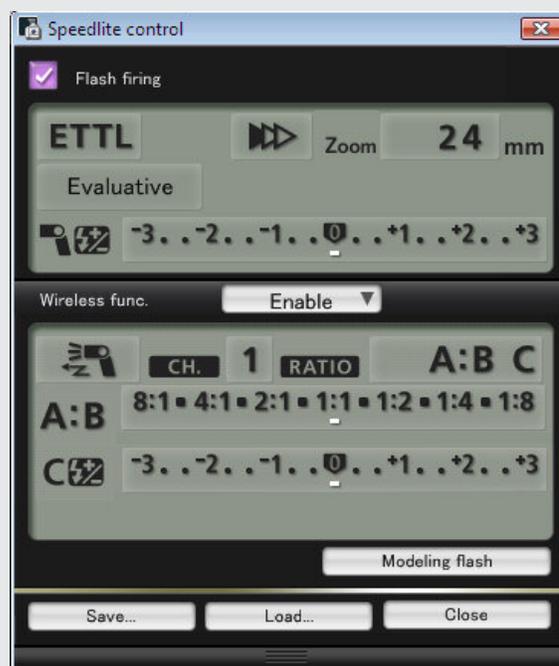
Version 2.7.2 includes the functions described here that were not provided in version 2.7.1.

- Support for the EOS-1D Mark IV
- [Update] button has been added to the flash function settings window. By clicking the [Update] button, the information displayed in the [Flash function settings] window is

Speedlite Control Menu and Speedlite Control Window



Speedlite control menu



Speedlite control window

updated so it is synchronized with the current flash settings. Setting changes made with the flash unit are not reflected in the [Flash function settings] window.

- White balance files (extension “.WBD”) registered in an EOS-1D Mark IV camera can now be saved to computer. Previously with EOS-1D Mark III and EOS-1Ds Mark III, a white balance file was saved to computer after adjusting the white balance in RAW Image Task using a shot RAW image. For the EOS-1D Mark IV, however, as RAW Image Task was discontinued, a white balance can be registered in the camera after adjustment in the [Remote Live View window] or [Test shooting] window in EU, which can then be saved to a computer as a white balance file.

Digital Photo Professional Ver. 3.7.3

(Windows/Macintosh): This is image viewing/processing/editing software for EOS DIGITAL RAW images and is aimed at amateur and professional users who work primarily with RAW images. Because DPP uses non-destructive image editing processes for both RAW and TIFF/JPEG images, the many adjustments that can be made to images in DPP alter only the image processing parameters, leaving the original image data itself untouched. This gives you the freedom to modify images with no risk of impairing the image quality. Support for EOS-1D Mark IV models is provided with Ver. 3.7.3.

As before, the main functions of DPP are:

- High speed RAW image display
- Extensive range of image editing functions
 1. RAW image adjustment
 2. Image adjustments that retain the original image state
 3. Image rotation (90° increments left or right)
 4. Trimming
 5. Dust removal
 6. Image correction (copy stamp)
 7. Single-image transfer to Photoshop
- RAW image conversion and saving
- Window displays tailored to professional workflows
 1. Thumbnail display in the main window
 2. Edit window
 3. Edit Image window
 4. Quick Check window
 5. Collection window
- Viewing and editing of JPEG and TIFF images
- Noise reduction function

- Lens aberration correction
 1. Peripheral illumination correction
 2. Distortion correction
 3. Chromatic aberration correction
 4. Color blur correction
- Linkage with Canon's EOS software
- Direct RAW image printing via linkage with Canon printers
 1. Faithful, high quality printing via linkage with Canon inkjet printers
 2. Linked printing on Canon large-format printers
- Batch processing of large numbers of RAW images
 1. Batch conversion and saving as JPEG/TIFF images
 2. Batch transfer to other image editing software
 3. Batch conversion of image file names
- Saving and loading recipe data, and batch application of recipe data to other images
- Support for RAW images from almost all EOS DIGITAL cameras (excluding EOS DCS1 and EOS DCS3)
- Does support RAW images shot with EOS D6000 and EOS D2000 that have been converted to RAW images using the CR2 Converter

Other software: Of the other software contained on the Digital Solution Disk, Picture Style Editor Ver. 1.6.1 (Windows/Macintosh) and Original Data Security Tools Ver. 1.7.1 (Windows) have been changed only in that they now support images from the EOS-1D Mark IV. The following programs have not been changed: ZoomBrowser EX Ver. 6.4 (Windows) / ImageBrowser Ver. 6.4 (Macintosh), PhotoStitch Ver. 3.1 (Windows) / Ver. 3.2 (Macintosh), Memory Card Utility Ver. 1.2 (Windows/Macintosh), and WFT Utility Ver. 3.4 (Windows/Macintosh).



EOS-1D Mark IV

1. Type

1-1 Type:	Digital AF/AE single-lens reflex camera
1-2 Compatible lenses:	Canon EF lenses (except EF-S lenses)
1-3 Lens mount:	Canon EF mount
1-4 Lens restrictions:	None
1-5 Lens focal length:	Equivalent to 1.3x the normal lens focal length

2. Image Sensor

2-1 Type:	High-sensitivity, high-resolution, single-plate, CMOS sensor
2-2 Image sensor size:	Approx. 27.9 x 18.6 mm (APS-H size)
2-3 Effective pixels:	Approx. 16.10 Megapixels: 4912 (H) x 3270 (V) pixels
2-4 Total pixels:	Approx. 17.00 Megapixels: 5136 (H) x 3306 (V) pixels
2-5 Pixel unit:	5.7 μm square
2-6 Aspect ratio:	2:3 (Vertical:Horizontal)
2-7 Color filter type:	RGB primary color filters
2-8 Low-pass filter:	Fixed position in front of the image sensor
2-9 Dust delete feature:	<p>(1) Self Cleaning Sensor Unit</p> <ul style="list-style-type: none"> • Removes dust adhering to the low-pass filter. • Automatic cleaning when power on and off, and manual cleaning. • Low-pass filter has a fluorine coating. <p>(2) Dust Delete Data acquisition and appending</p> <ul style="list-style-type: none"> • The coordinates of the dust adhering to the low-pass filter are detected by a test shot and appended to subsequent images. • The dust coordinate data appended to the image is used by the provided software to automatically erase the dust spots. <p>(3) Manual cleaning</p>

3. Recording System

3-1 Image type: JPEG, RAW (14-bit Canon original)

Image Size	Pixels	Image Type
Large	Approx. 16.00 Megapixels (4896 x 3264)	JPEG
Medium 1	Approx. 12.40 Megapixels (4320 x 2880)	
Medium 2	Approx. 8.40 Megapixels (3552 x 2368)	
Small	Approx. 4.00 Megapixels (2448 x 1632)	
RAW	Approx. 16.00 Megapixels (4896 x 3264)	Lossless RAW
M-RAW	Approx. 9.00 Megapixels (3672 x 2448)	
S-RAW	Approx. 4.00 Megapixels (2448 x 1632)	

3-2 JPEG quality: Settable from 1 (low quality due to high compression) to 10 (high quality due to low compression)

3-3 RAW+JPEG simultaneous: Three RAW types and six JPEG types can be set in any combination

3-4 Image file size, number of possible shots, and maximum burst during continuous shooting:

Image Size		Image File Size [Approx. MB]	Possible Shots [Approx.]	Maximum Burst [Approx.]	
				Continuous (H)	Continuous (L)
JPEG	Large	5.7	692	85/107/121	692/692/2704
	Medium 1	4.5	874	111/159/164	874/874/3414
	Medium 2	3.5	1148	182/417/309	1148/1148/4480
	Small	2.0	1957	1957/1957/5447	1957/1957/7632
RAW		22.2	175	26/27/28	37/54/81
M-RAW		14.8	263	33/35/35	70/172/376
S-RAW		9.9	397	43/43/43	285/393/1553
RAW+ JPEG	Large	22.2+5.7	139	20/20/20	24/30/35
	Medium 1	22.2+4.5	145	20/20/20	25/33/37
	Medium 2	22.2+3.5	152	20/20/20	26/33/39
	Small	22.2+2.0	161	20/20/20	27/34/41
M-RAW + JPEG	Large	14.8+5.7	190	20/20/20	32/46/62
	Medium 1	14.8+4.5	202	20/20/20	35/52/76
	Medium 2	14.8+3.5	214	20/20/20	37/57/91
	Small	14.8+2.0	232	20/20/20	41/69/89
S-RAW + JPEG	Large	9.9+5.7	251	20/20/20	45/84/121
	Medium 1	9.9+4.5	272	20/20/20	54/118/266
	Medium 2	9.9+3.5	294	20/20/20	62/194/1153
	Small	9.9+2.0	329	20/20/20	86/329/1290

*Figures for the possible shots are based on Canon's testing standards (JPEG quality 8, ISO 100, and Standard Picture Style) using a 4GB card.

*The image file size, number of possible shots, and maximum burst will vary depending on the shooting conditions (subject, memory card brand, ISO speed, Picture Style, Custom Functions, etc.).

*Figures 1)/2)/3) for maximum burst during continuous shooting are when using 1) nominally 30MB/s 4GB CF card, 2) nominally 45MB/s UDMA compatible 4GB CF card or 3) nominally 90MB/s UDMA mode 6 compatible 16GB CF card.

*Figures in bold indicate the number of possible shots until the CF card becomes full (Card Full).

- 3-5 Image recording format: Complies with Design rule for Camera File system 2.0 and Exif 2.21
- 3-6 Folder setting: Creating new folders and selecting folders in the recording media possible
- 3-7 Image file name: First four characters (ex. xxxx0001.JPG) can be set/selected
- (1) Characters assigned by the camera
 - (2) Any four alphanumeric characters
 - (3) Any three alphanumeric characters + one character indicating the image size
 - Image size character: Large/RAW: L, Medium/M-RAW: M, Medium2: N, Small/S-RAW: S.
 - RAW and JPEG can be distinguished with the extension.
 - For (2) and (3), the first character cannot be an underscore.
 - If Adobe RGB is set, the first character will be an underscore (except for movie files).
 - For (3), the fourth character of movie file names will be an underscore.
- 3-8 Extension: JPEG: JPG, RAW: CR2 (Canon Raw 2nd edition), Movie: MOV
- 3-9 File No.: The following three types of file numbers can be set:
- (1) Continuous numbering
 - The continuous numbering of captured images will continue even after you replace the camera's card. The numbering continues even when the folder changes.
 - (2) Auto reset
 - When you replace the camera's card, the numbering will be reset to start from 0001. If the new card already contains images, the numbering will continue from the last recorded image in the card.
 - (3) Manual reset
 - Resets the file number to 0001, and creates a new folder automatically.

4. Image Processing

- 4-1 Picture Style: (1) Standard (2) Portrait (3) Landscape
 (4) Neutral (5) Faithful (6) Monochrome
 (7) User Defined 1-3

4-2 Picture Style settings:

Item	Selections / Settings
Base style	Standard / Portrait / Landscape / Neutral / Faithful / Monochrome / Picture Style file
Sharpness	0 / 1 / 2 / 3 / 4 / 5 / 6 / 7
Contrast	-4 / -3 / -2 / -1 / 0 / +1 / +2 / +3 / +4
Color saturation	-4 / -3 / -2 / -1 / 0 / +1 / +2 / +3 / +4
Color tone	-4 / -3 / -2 / -1 / 0 / +1 / +2 / +3 / +4
Filter effect	N: None, Ye: Yellow, Or: Orange, R: Red, G: Green
Toning effect	N: None, S: Sepia, B: Blue, P: Purple, G: Green

4-3 Color space: Selectable between sRGB and Adobe RGB

4-4 Auto Lighting Optimizer: Provided (C.Fn II-4)

4-5 Highlight tone priority: Provided (C.Fn II-3)

- The ISO speed setting range will be ISO 200–12,800.

4-6 Auto correction of lens peripheral light:

Possible (set with [Peripheral illumin. correct.] menu)

- Peripheral light data for approx. 29 lenses is stored.
- With EOS Utility, correction data for up to 40 lenses can be registered in the camera.

4-7 Noise reduction:

(1) Long exposure noise reduction (C.Fn II-1)

- Functions with exposures 1 sec. or longer.

(2) High ISO speed noise reduction (C.Fn II-2)

- Operates at all ISO speeds.
- If [Strong] is set, the continuous shooting speed will greatly decrease.

4-8 Appending copyright

information:

The author's (photographer's) name and copyright holder's name can be set with the camera or EOS Utility. This information is appended to the Exif information when the photo is taken.

- Up to 63 text characters can be entered.

4-9 Appending original

image verification data:

Possible (C.Fn IV-16)

5. Recording Media Drive

- 5-1 Recording media: (1) CF card (2) SD/SDHC memory card
- Accepts CF card Types I and II.
 - Compatible with 2 GB and larger cards (Not compatible with SDXC memory cards.).
 - High-speed writing with UDMA CF cards.
 - With WFT-E2 II A or WFT-E2/E2A (Firmware Ver. 2.0.0 or higher), recording to external media is possible.
 - If an Eye-Fi Card is used, Auto power off cannot be disabled during image transfers through wireless LAN.
- 5-2 Recording media access indicator: Access lamp lights/blinks
- 5-3 Read error warning: The respective error message is displayed in the viewfinder, on the top LCD panel, and on the LCD monitor. The shutter release also locks.
- 5-4 Card formatting: Enabled
- Low-level formatting with SD/SDHC memory card also enabled.
 - External recording media cannot be formatted via WFT-E2 II A or WFT-E2/E2A (with firmware Ver. 2.0.0 or higher).
- 5-5 “No CF” card warning: Provided
- 5-6 Recording functions: With the CF card, SD/SDHC memory card, and external media, the following recording functions can be used:
- (1) Standard
 - No automatic switching of recording media.
 - (2) Automatic switching of recording media
 - When the current recording media becomes full, it switches to another recording media automatically and continues recording.
 - (3) Separate recording
 - Set the desired image size (L, M1, M2, S, RAW, M-RAW, S-RAW) for each recording media before shooting.
 - The image size set for one captured image will be applied to all the recording media.
 - (4) Recording of identical images
 - The same image is recorded to all recording media. (Also possible with RAW+JPEG.)
 - Movies cannot be recorded simultaneously to multiple recording media.
 - If simultaneous recording has been set, movies will be recorded to the recording media set with [Play] on the [Recording func+media/folder sel.] screen.
 - If a still photo is taken during movie shooting and (3) or (4) has been set, the still photo will be recorded to each recording media in the image size that was set.

- 5-7 Image copying: Images can be copied between the CF card, SD/SDHC memory card, and external recording media as follows:
 (1) Selected images (2) Selected folder (3) All images
- The media used as the source of the image to be copied is set with [Play] on the [Recording func+media/folder sel.] screen.
- 5-8 Backup to external recording media: Enabled
- With external recording media connected via WFT-E2 II A and WFT-E2/E2A (Firmware Ver. 2.0.0 or higher).
 - Two options: 1. Quick backup (Backup folder created automatically and folder name set automatically.), 2. Backup (Backup folder created manually and folder name can be entered manually.)
 - Images in the card are backed up in the external recording media's root directory based on the card's DCIM folder structure.

6. White Balance

6-1 Type: Auto white balance with the image sensor

6-2 Modes:

WB Mode	Color Temperature (Kelvin)
1. Auto	Approx. 3,000-7,000
2. Daylight	Approx. 5,200
3. Shade	Approx. 7,000
4. Cloudy, twilight, sunset	Approx. 6,000
5. Tungsten light	Approx. 3,200
6. White fluorescent light	Approx. 4,000
7. Flash	Approx. 6,000
8. Custom (Custom WB) 1-5	Approx. 2,000-10,000
9. Color Temperature	Approx. 2,500-10,000
10. PC-1 - PC-5	-

- 10.: Up to five white balance data sets can be registered.

- 6-3 White balance correction:
- Blue/amber bias: ± 9 levels
 - Magenta/green bias: ± 9 levels
 - * Corrected in reference to the current WB modes (any mode listed in 6-2 above) color temperature.

- 6-4 White balance bracketing: ± 3 levels, in single-level increments
- With the current WB mode's (any mode listed in 6-2 above) color temperature as the standard, one image each for "Set value/Blue bias/Amber bias" or "Set value/Magenta bias/Green bias" is created.
 - Both "Blue bias/Amber bias" and "Magenta bias/Green bias" cannot be set together.
 - White balance correction and AEB can also be set in combination.

7. Viewfinder

7-1 Type:	Eye-level SLR (with fixed pentaprism)
7-2 Focusing screen:	Ec-C IV provided <ul style="list-style-type: none"> • Interchangeable with Ec-series screens.
7-3 Dioptic adjustment:	Adjustable from -3.0 to +1.0 m-1 (dpt)
7-4 Eye point:	20 mm (at -1 m-1, from eyepiece lens center)
7-5 Coverage:	Approx. 100% vertically and horizontally
7-6 Magnification:	Approx. 0.76x (with 50mm lens at infinity, -1 m-1) <ul style="list-style-type: none"> • Angle of view: Approx. 28.3°
7-7 Viewfinder information:	AF information <ul style="list-style-type: none"> AF points and focus confirmation light Exposure information <ul style="list-style-type: none"> Metering mode, spot metering area, shutter speed, aperture, manual exposure, AE lock, ISO speed*, exposure level, exposure warning <ul style="list-style-type: none"> • ISO speed display now has five digits. Flash information <ul style="list-style-type: none"> Flash ready, high-speed sync, FE lock, flash exposure level Image information <ul style="list-style-type: none"> JPEG recording, RAW recording, shots remaining, maximum burst, highlight tone priority (D+), white balance correction, card information Power level indicator <ul style="list-style-type: none"> Battery check
7-8 Mirror:	Quick-return half mirror (Transmittance:reflectance ratio of 37:63)
7-9 Viewfinder blackout time:	Approx. 80 ms at 1/60 sec. or faster speeds
7-10 Mirror lockup:	Enabled (C.Fn III -17)
7-11 Mirror cut-off:	No mirror cut-off with lenses up to EF1200mm f/5.6L USM
7-12 Depth-of-field preview:	Enabled with depth-of-field preview button
7-13 Eyepiece shutter:	Built-in
7-14 Misc.:	Eyecup Eg provided

8. Autofocus

- 8-1 Type: TTL-AREA-SIR AF-dedicated CMOS sensor
- 8-2 AF points: Area AF with 45 AF points
- 8 mm (H) x 15 mm (W)
 - All 45 AF points are horizontal-line sensitive at $f/5.6$ (vertical). Thirty-nine of the 45 AF points are vertical-line sensitive at $f/2.8$ for cross-type focusing. For automatic AF point selection, cross-type focusing with 19 AF points is used. (The 39 cross-type AF points are used only during manual AF point selection.)
 - When using some $f/4$ lenses (including when using $f/2.8$ lens + Extender 1.4x), cross-type focusing with 39 AF points is possible.
- 8-3 Focusing modes: (1) Autofocus
1. One-Shot AF
 2. Predictive AI Servo AF
- The following can be set: C.Fn III-2: Focus-tracking sensitivity, C.Fn III-3: Servo operation method and shutter-release timing, C.Fn III-4: Servo operation method in case a closer object enters the focus center during subject-tracking.
- (2) Manual focus
- 8-4 Focusing point selection: (1) Manual selection
1. 45 AF points (C.Fn III-10-0), 2. 19 AF points (C.Fn III-10-1),
 3. 11 AF points (C.Fn III-10-2), 4. 9 inner AF points (C.Fn III-10-3),
 5. 9 outer AF points (C.Fn III-10-4)
- AF point expansion is possible with C.Fn III-8-1, 2, 3.
- (2) Automatic selection
- Toggle between the center AF point and automatic AF point selection by pressing the Multi-controller.
 - With C.Fn III-6-7, spot AF is possible with the lens' AF stop button (AF point blinks at high brightness).
 - With C.Fn III-9-1, the Multi-controller can select the AF point during the metering operation.
 - With C.Fn III-11-1/2 or C.Fn III-6-6, you can switch to the registered AF point.
 - With C.Fn III-16-1, the AF point can be registered separately for the vertical and horizontal orientations.
- 8-5 Selected AF point display: Indicated by superimposed display in the viewfinder and on the LCD panel
- If C.Fn II-10-1 is set, press the AF point selection button while the shooting function settings are displayed, then the selected AF point will be displayed.
- 8-6 AF activation: Press the shutter button halfway (SW-1) or press the AF start button
- 8-7 AF operation speed: Same as EOS-1D Mark III
- 8-8 Focus confirmation: Indicated by superimposed display in viewfinder, focus confirmation light, and beeper
- 8-9 AF working range: EV -1 – 18 (at 23°C/73°F and ISO 100, based on Canon's testing standards)

8-10 Light source detection

feature: Provided

8-11 AF Microadjustment:

Enabled (C.Fn III-7)

- This focusing adjustment is done only with the AF sensor (phase-difference detection).
- The Live mode and  (face detection) Live mode AF (contrast detection) during Live View shooting cannot be adjusted.

8-12 AF-assist beam:

None

- When an external, EOS-dedicated Speedlite is attached to the camera, the AF-assist beam from the Speedlite will be emitted when necessary.
- Compatible with the 270EX's AF-assist beam (a series of small flashes).

9. Exposure Control

9-1 Type:

Max. aperture TTL metering with 63-zone SPC with the following selectable modes:

- (1) Evaluative metering (linked to all AF points)
 - With One-Shot AF, AE lock is applied when focus is achieved.
- (2) Partial metering (approx. 13.5% of viewfinder)
- (3) Spot metering (approx. 3.8% of viewfinder)
 1. Spot metering at center
 2. AF point-linked spot metering (C.Fn I -7)
 - If C.Fn III -10-0 and automatic AF point selection is set, spot metering at the center will take effect.
 3. Multi-spot metering
 - Up to eight spot meter readings can be obtained.
- (4) Center-weighted average metering
 - Real-time metering (no AE lock) takes effect for (2), (3), and (4).

9-2 Exposure modes:

- (1) Program AE (Program shift/Safety shift possible: C.Fn I -8-2)
- (2) Shutter-priority AE (Safety shift possible: C.Fn I -8-1,2)
- (3) Aperture-priority AE (Safety shift possible: C.Fn I -8-1,2)
- (4) Manual exposure (Safety shift possible: C.Fn I -8-2)
- (5) Bulb exposure
- (6) E-TTL II program flash AE
 1. Evaluative metering
 2. Average metering (C.Fn II -5-1)

9-3 Metering range:

EV 0–20 (at 23°C/73°F with 50mm f/1.4 lens at ISO 100)

9-4 Exposure beyond

range warning:

- Shutter speed or aperture reading blinks on the top LCD panel and in the viewfinder
- If C.Fn II-10-1 is set, the shutter speed and aperture will also blink while the shooting function settings are displayed.

9-5 Exposure metering: Activated when shutter button is pressed halfway (SW-1 ON)

- AE Microadjustment possible with C.Fn I-16 (standard exposure adjustment), and FE Microadjustment possible with C.Fn I-17 (standard flash exposure adjustment).

9-6 ISO speed

(Recommended exposure index):

Auto, ISO 100–12,800 (1/3-stop or 1-stop increments: C.Fn I-2), Expandable

- ISO Auto set by default. With all C.Fn to their default setting, automatically set within ISO 100–12,800.
- With C.Fn I-3 (ISO speed range), the highest and lowest settable ISO speed can be set. By setting L (ISO 50) for the lowest speed and H1 (ISO 25,600), H2 (ISO 51,200), H3 (ISO 102,400) for the highest, ISO speed expansion is possible.
- In manual ISO setting, if the upper ISO speed limit is set to H1, H2, H3 and the lower ISO speed limit to L with C.Fn I-3, the settable ISO speed range will be ISO 100–12,800.
- In ISO Auto, even if the upper ISO speed limit is set to H1, H2, H3 and the lower ISO speed limit to L with C.Fn I-3, ISO Auto speed range will be ISO 100–12,800. However, if the lower and higher ISO speed limits have been set to a narrower range, ISO speed will be automatically set within that range.
- In P, Tv, Av modes and C.Fn I-8-2 (Tv/Av safety shift) is set, C.Fn I-3's ISO range limit will be canceled when the standard exposure cannot be obtained, even if C.Fn I-3 has set the lowest and highest settable ISO speed to a narrower range. It will be automatically controlled within the range of ISO 100–12,800.
- In ISO Auto and C.Fn I-8-1 (Tv/Av safety shift) is set, C.Fn I-12's shutter speed range limit and C.Fn I-13's aperture range limit will be canceled when the standard exposure cannot be obtained. C.Fn I-3's upper and lower limits will be applied to control the ISO speed range.
- With C.Fn II-3 (Highlight tone priority) set, even if C.Fn I-3 has set the lower ISO speed limit to L and the upper ISO speed limit to H1, H2, H3 the ISO Auto range and manual ISO range will be ISO 200–12,800. However, if the lower and higher ISO speed limits have been set to a narrower range with C.Fn I-3, the settable range will be ISO 200 to the higher speed limit set.
- When checking the ISO speed of still photos or movies shot at H3 (ISO 102,400) in commercially available software, the correct ISO speed value may not be displayed (The EXIF information standard cannot record ISO 102,400 settings).
- When imprinting the shooting information for images shot at H2, H3 ISO speeds during ISO speed range expansion, the ISO speed setting may not be correctly printed.

[ISO Auto Speed Control]

Shooting Mode	ISO Speed	Description
1. Program AE	C.Fn I-3 Default: 100–12,800 Expanded: 100–12,800 Limited: Lowest to highest ISO speed set	If the shutter speed is too slow (causing camera shake), the aperture will be shifted to the maximum aperture. If the maximum aperture is still inadequate, the ISO speed will be shifted.
2. Shutter-priority AE		If the settable shutter speed and aperture has been limited with C.Fn I-12/13, the ISO speed will be shifted based on the limited shutter speed/aperture.
3. Aperture-priority AE		If the aperture hits the minimum or maximum value, the ISO speed will be shifted.
4. Manual exposure		Based on ISO 100, if the shutter speed would cause camera shake, the ISO speed will be shifted.
5. Bulb *1	Fixed at ISO 400	The ISO speed is shifted to obtain a correct exposure
6. With flash*1 *2	Fixed at ISO 400 (Also for 1 to 5.)	

*1: If ISO 400 is not within C.Fn I -3's upper and lower limits, the ISO speed closest to 400 will be set.

*2: In P mode and if bounce flash is used, the ISO speed will be set automatically within ISO 400-1600. If daylight flash will result in overexposure, the minimum ISO 100 will be set.

9-7 Exposure compensation: ±3 stops in 1/3- or 1/2-stop increments, Manual, and AEB

Shooting Mode	Factor	
	Shutter Speed	Aperture
1. Shutter-priority AE	–	Yes
2. Aperture-priority AE	Yes	–
3. Program AE	Yes	Yes
4. Manual	C.Fn IV -5-0	Yes
	C.Fn IV -5-1	–

- Manual exposure compensation and AEB can be combined.
- The AEB shooting sequence will be standard exposure, underexposure, and overexposure.
- With the self-timer, three consecutive shots are taken.

9-8 AE lock: (1) Auto AE lock

- In the One-Shot AF mode with evaluative metering, AE lock takes effect when focus is achieved.

(2) Manual AE lock

- In the P, Tv and Av modes, enabled with the AE lock button (press again to update).
- Enabled in all metering modes.

9-9 Multiple exposures: Not possible

10. Shutter

- 10-1 Type: Vertical-travel, mechanical, focal-plane shutter with all speeds electronically-controlled
- 10-2 Shutter speeds: 1/8000 to 30 sec. (1/3-, 1/2-, or 1-stop increments: C.Fn I -1), X-sync at 1/300 sec.
- 10-3 Shutter release: The shutter speed range can be limited with C.Fn I-12 and the aperture range limited with C.Fn I-13.
- 10-4 Shutter-release time lag: Soft-touch electromagnetic release
- (1) During SW-1 ON, time lag between SW-2 ON and start of exposure:
Approx. 0.055 sec.
- (2) Time lag between simultaneous SW-1/SW-2 ON and start of exposure: Approx. 0.09 sec.
- Time lag with the aperture stopped down by 3 stops or less. Excludes AF operation time.
- 10-5 Camera shake warning: None

11. Drive

- 11-1 Drive mode: (1) Single shooting
(2) High-speed continuous shooting (Approx. 10 fps)
(3) Low-speed continuous shooting (Approx. 3 fps)
(4) 10 sec. self-timer
(5) 2 sec. self-timer
(6) Silent single shooting
- Continuous shooting speed for (2) and (3) can be set with C.Fn III -18.
- 11-2 Continuous shooting speed: Max. approx. 10 fps
- For all image-recording quality settings in both One-Shot AF and AI Servo AF at 1/500 sec. and higher shutter speeds.
- 11-3 Self-timer operation indicator: Self-timer lamp and top LCD panel indicator
- 11-4 Maximum burst: See 3-4

12. Flash

- 12-1 Sync contacts: (1) Hot shoe: X-sync contact
- Flash sync at 1/300 sec. or slower.
 - If a non-Canon flash does not obtain a flash-ready signal, set the sync speed manually to 1/250 sec. or slower.
- (2) Body side at bottom: PC terminal (No polarity)
- Since the flash duration may differ depending on the large, studio flash unit, set the sync speed to 1/125 sec. to 1/30 sec. beforehand.
 - The flash in (1) and (2) can be fired simultaneously.

- 12-2 Flash control: E-TTL II autoflash and FE lock
- 12-3 Flash exposure compensation: ± 3 stops in 1/3- and 1/2-stop increments
- 12-4 Setting operation: With Speedlite 580EX II, 430EX II, and 270EX, the [External Speedlite control] menu can be used to set the following:
- (1) Flash function settings
 - What is displayed differs depending on the EX Speedlite model and the flash Custom Function settings.
 - (2) Flash C.Fn settings / Clear all Speedlite C.Fn's
 - What is displayed differs depending on the EX Speedlite model.
 - With EX-series Speedlites other than the above, the camera can only set [E-TTL II], [Flash exp. comp] and [Flash firing].

13. Live View Shooting

- 13-1 Type: Electronic viewfinder with image sensor
- 13-2 Coverage: Approx. 100% vertically and horizontally
- 13-3 Frame rate: 30 fps
- 13-4 Focusing:
- (1) Autofocus (One-Shot AF)
 - AF enabled by pressing the shutter button halfway or pressing the AF-ON button.
 - 1. Live mode
 - One point, contrast AF. Switching to another AF point possible.
 - 2.  (face detection) Live mode
 - Face detection, Contrast AF. When multiple faces are detected, face selection is possible with the Multi-controller.
 - Magnified view not possible.
 - 3. Quick mode
 - 45-point, phase-difference AF (Same as viewfinder shooting), One-shot AF.
 - Manual AF point selection enabled.
 - (2) Manual focus
 - Magnify the image by 5x or 10x and focus manually.
- 13-5 Metering: Real-time Evaluative metering with image sensor
- Metering range: EV 0 - EV 20 (At 23°C/73°F, 50mm f/1.4 lens, ISO 100)
 - AE lock possible. The active metering time can be changed.
- 13-6 ISO speed
(Recommended exposure index): See 9-6
- 13-7 Drive mode: Selectable drive modes listed in 11-1

- 13-8 Continuous shooting
speed: High-speed continuous shooting: Approx. 10 fps,
Low-speed continuous shooting: Approx. 3 fps
- 13-9 Image display: Still photos: For stills / Exposure simulation
Movies: For movies
- 13-10 Depth-of-field
preview: Possible with Depth-of-field preview button
- 13-11 Magnified view: Magnify by 5x or 10x at the AF point position
- 13-12 Grid display: Grid displayed
(1) 2 vertical lines x 2 horizontal lines,
(2) 5 vertical lines x 3 horizontal lines
- 13-13 Aspect ratio display: Enabled (C.Fn IV -15). Aspect-ratio boundary lines displayed on
screen. Aspect ratio information appended to images automatically
(1) 6:6 (2) 3:4 (3) 4:5 (4) 6:7 (5) 10:12 (6) 5:7
- 13-14 On-screen
information display: Switchable with INFO button
• Stills: Three steps, Exposure simulation: 4 steps
- 13-15 Silent shooting: Not possible (No Live View silent shooting mode)
- 13-16 Shutter-release time lag: (1) With SW-1 ON, time lag from SW-2 ON to the start of the exposure:
Approx. 0.11 sec.
(2) With SW-1 and SW-2 pressed simultaneously, time lag until the start of the exposure:
Approx. 0.12 sec.
• Time lag figures above apply with the aperture stopped down by up to 3 stops
(excluding AF operation time).
• With flash: (1) Approx. 0.28 ms, (2) Approx. 0.31 ms
- 13-17 Possible shots: At 23°C/73°F: Approx. 270 shots, At 0°C/32°F: Approx. 230 shots
• Based on a fully-charged LP-E4 and CIPA (Camera & Imaging Products
Association) testing standards.
- 13-18 Possible shooting time: Approx. 3 continuous hours (at 23°C/73°F, with fully-charged LP-E4)
- 13-19 Remote Live View
shooting: Enabled with EOS Utility

14. Movie Shooting

14-1 Movie compression

method: MPEG-4 AVC/H.264
Variable (average) bit rate

14-2 Audio recording method: Linear PCM

14-3 Recording format: MOV

- Encryption of movies not possible with OSK-E3.

14-4 Movie recording size

and file size (Bit rate): 1920 x 1080 30p/25p/24p : Approx. 330 MB/min. (Approx. 44 Mbps)
1280 x 720 60p/50p: Approx. 330 MB/min. (Approx. 44 Mbps)
640 x 480 60p/50p: Approx. 165 MB/min. (Approx. 22 Mbps)

14-5 Required card

performance: Writing/reading speed: 8MB/sec. or faster
• SDHC memory cards must be Class 6 or higher.

14-6 Maximum file size: 4GB

- Limited by file system restriction.
- If continuous movie shooting reaches a 4GB file size, the movie shooting stops automatically. Another movie can be shot immediately afterward.
- Even with highly-compressed subjects, the shooting will stop when 29 min. 59 sec. is reached.

[Continuous movie shooting time enabled in each recording size until 4 GB is reached]

Movie-recording Size	Frame Rate	Total Recording Time
1920 x 1080	30fps	Approx. 12 min.
	25fps	
	24fps	
1280 x 720	60fps	Approx. 12 min.
	50fps	
640 x 480	60fps	Approx. 24 min.
	50fps	

14-7 Frame rate: [1920 x 1080]

(1) 30p : 29.97fps (2) 25p : 25.0fps (3) 24p : 23.976fps

[1280 x 720]

(4) 60p : 59.94 fps (5) 50p : 50.0fps

[640 x 480]

(6) 60p : 59.94 fps (7) 50p : 50.0fps

- Actual frame rate.
- The selectable movie recording size and frame rate changes automatically depending on the NTSC/PAL setting. NTSC: 1, 3, 4, 6. PAL: 2, 3, 5, 7

14-8 Creative image

processing: Based on current Picture Style

14-9 Video range: Full range (0 – 255)

14-10 Audio recording:

- (1) Built-in microphone: Monaural recording
- (2) External microphone IN terminal: Stereo (with a stereo microphone)
 - Audio recording can be enabled/disabled with a menu.
 - Recording level automatically adjusted.
 - Sampling frequency: 48 KHz, Bits: 16 bit x 2 ch
 - External microphone can be a commercially-available, electret condenser microphone with a 3.5mm dia. stereo mini plug (plug-in power compatible). Dynamic condenser microphones or those which require phantom power cannot be used. Compatible with an impedance of 200 Ω - 2K Ω .
 - When the built-in microphone is used, the wind-blocking feature and automatic reduction of aperture noise take effect.

14-11 Focusing:

- (1) Autofocus (Based on 13-4)

AF with 1, 2, and 3 below is possible before movie shooting and with 1 and 2 during movie shooting

 1. Live mode
 2.  (Face detection) Live mode
 3. Quick mode (One-Shot AF)
- (2) Manual focus
 - The movie image can be magnified by 5x or 10x and focused manually.
 - The movie image cannot be magnified during movie display and shooting.

14-12 Metering method: Center-weighted average metering using the image sensor

- Center-weighted average metering using the image sensor. (If the AF mode is  (Face detection) Live mode, AF point-linked evaluative metering will be set.)
- Metering range: EV 0–20 (At 23°C/73°F with 50mm f/1.4 lens, ISO 100)

14-13 Exposure control:

- (1) Shooting mode: P, Tv, Av, Bulb -> Movie Program AE
 - Aperture, ISO speed, and signal accumulation time (shutter speed) automatically set.
 - The signal accumulation time is automatically controlled within 1/30 sec. to 1/4000 sec.
- (2) Shooting mode: M -> Movie manual exposure
 - Shutter speed (signal accumulation time), aperture, and ISO speed set manually.
 - For 30/25/24 fps: Settable within 1/30 sec. to 1/4000 sec.
 - For 60/50 fps: Settable within 1/60 sec. to 1/4000 sec.
 - C.Fn I-12/13 (shutter speed/aperture settable range) takes effect only for movie manual exposure.

14-14 ISO speed

(Recommended exposure index):

- (1) In Movie Program AE: ISO speed automatically set
 - By default, ISO speed is automatically set within ISO 100–12,800.
 - When the upper ISO speed limit is set to H1,H2, H3 with C.Fn I-3, the ISO speed will be

automatically set within the defined ISO speed range. However, even if the lower ISO speed limit is set to L, the ISO speed range will not be expanded. In addition, even if the upper and lower ISO speed limits are set narrower than the default settings, the ISO speed range will not be restrained and the ISO speed will be automatically set within the default ISO speed range.

(2) With Movie Manual Exposure: Auto, ISO 100–12,800 (1/3 or whole stop increments:

C.Fn I-2), H1, H2, H3

- With ISO Auto, ISO speed is automatically set within ISO 100–12,800. C.Fn I-3 settings do not take effect.
- With ISO speed manual setting, when the upper ISO speed limit is set to H1,H2,H3 with C.Fn I-3, H1,H2,H3 settings become available in addition to ISO 100-12,800. However, even if the lower ISO speed limit is set to L, the ISO speed range will not be expanded. If the upper and lower ISO speed limits are set narrower than the default settings, only the ISO speed settings within that range will be selectable.

14-15 Exposure

compensation: Possible (in 1/3- or 1/2-stop increments up to ± 3 stops)

- Except during movie manual exposure.

14-16 AE lock:

- Provided
- During movie shooting, press AEL button for AE lock or the AF point selection button to cancel AE lock (no automatic cancellation).
 - With AE lock set before movie shooting, movie shooting can start.
 - Not applicable during movie manual.

14-17 Grid display: See 13-12. Not displayable during movie shooting

14-18 Aspect ratio display: See 13-13. Not displayable during movie shooting

14-19 Image Stabilizer: With an IS lens whose IS switch is ON, the Image Stabilizer operates at all times during metering and movie shooting

- IS modes 1 and 2 compatible.

14-20 Information display: Displayed in four screens switchable with the INFO button

14-21 Still photo shooting: Still photo shooting is possible before or during movie shooting when you press the shutter button completely

- In the P, Tv, Av and Bulb modes, the exposure is controlled automatically based on the still photo program line (different from the movie program line) for use during movie shooting.
- In the M mode, still photos are captured with the ISO speed, shutter speed and aperture set for movie shooting.
- Still photos are captured in the recording quality set for stills and saved to the recording media as files different from movies.
- When a still photo is captured, the movie will freeze for about 1 sec. The movie will then continue to be recorded as a single movie file to the recording media.
- For shooting stills during movie shooting, using a UDMA CF card is recommended.

14-22 Flash photography: Not possible for Movies

- 14-23 Remote control shooting: Not possible for Movies
- 14-24 Quick movie shooting: Possible (C.Fn IV -11-1)
- On the [Live View/Movie func. set.] screen, if [LV   set.] is set to [Movie] and C.Fn IV -11-1 is set, pressing the FEL button when the camera is ready to shoot will start the movie shooting immediately.
- 14-25 Shooting time: At 23°C/73°F: Total approx. 2 hr. 40 min.
At 0°C/32°F: Total approx. 2 hr. 20 min.
- With fully-charged LP-E4 and movie shooting at 1920x1080, 30 fps.
- 14-26 Playback method: (1) Playback with EOS-1D Mark IV LCD monitor
(2) Playback on TV set with EOS-1D Mark IV connected via HDMI/AV cable
(3) Playback on PC via ZoomBrowser EX/ImageBrowser
- * Recommended are (1) and (2). Option (3) requires a high-performance PC.
- 14-27 Extracting still photos: Possible with ZoomBrowser EX/ImageBrowser provided with EOS-1D Mark IV
- 1920x1080: Approx. 2.073 megapixels, 1280x720: Approx. 921,000 pixels, 640x480: Approx. 307,000 pixels.

15. LCD Monitor

- 15-1 Type: TFT color, liquid-crystal monitor
- 15-2 Screen size: 3.0 in.
- 15-3 Dots: Approx. 920,000 dots (VGA)
- 15-4 Coverage: Approx. 100%
- 15-5 Viewing angle: Approx. 160° vertically and horizontally
- 15-6 Brightness adjustment: Adjustable to one of seven brightness levels
- During playback, illumination adjustable by pressing the illumination button.
- 15-7 Anti-glare measures: Reflections reduced with resin filling between the LCD and glass
Glass surface has an anti-reflective coating
- 15-8 Angle adjustment: None
- 15-9 Protective cover: None (Reinforced glass incorporated)

16. Playback

- 16-1 Image review: Set to Off, 2/4/8 sec., or hold
- 16-2 Image display format: [Single image display]
Single-image display, Single image + Image size, shooting information display, histogram display

[Index display]

4-image index , 9-index image

[Jump display]

1 image, 10 images, 100 images, Date, Folder, Stills, Movies

- 16-3 Display conditions:** Images saved in Design rule for Camera File system format
- 16-4 Highlight alert:** With single-image display, overexposed highlight areas will blink
- 16-5 Histogram display:** (1) Brightness (2) RGB
- 16-6 Magnify zoom display:** Magnification approx. 1.5x to 10x enabled in 15 steps
- The magnified view starting position can be set to [Enlarge from image center] or [Enlarge from selected AF point].
- 16-7 Rotated display:** (1) Manual (90° -> 270° -> 0°)
- (2) Auto rotate
- 16-8 Slide show:** You can select All images or select by folder, by date, movies or stills.
Playback time (1/2/3/5 sec.) and Repeat (On/Off) can be set
- Continuous playback time: Still: Approx. 10 hr. 30 min., Movie: Approx. 9 hr. 20 min. (With fully-charged LP-E4 at 23°C/73°F for still photo playback.)
- 16-9 Movie playback:** (1) Play (2) Slow motion (variable speed possible)
- (3) First frame (4) Previous frame (5) Next frame
- (6) Last frame (7) Edit (8) Volume (6 levels)
- Sound volume while connected to a TV is adjustable with the TV set.
- 16-10 Movie editing:** The movie's first and last scenes can be edited out, and the edited movie can be played and saved.
- (1) Cut beginning (2) Cut end (3) Play (4) Save
- With (4), the edited movie can be saved as a new movie or it can overwrite the original movie.
 - Multi-controller can play frame-by-frame or fast forward by holding it down.
 - Turning the Quick Control Dial can play it frame-by-frame.
 - As movies are cut by 1-second increments (position where the scissors' mark is displayed on the left of the edit bar), the position indicated and the position where the movie is actually cut may be slightly different.
- 16-11 Audio/video output:** (1) HDMI mini OUT terminal (Type C)
- Video output: (1) 1080/60i (2) 1080/50i (3) 480/60p (4) 576/50p
- Switches automatically to 1, 2, 3 or 4 to suit the movie size and TV set.
 - If OSK-E3 is used to try and playback an encrypted still image via an HDMI connection, "Cannot playback" will appear and the image will not be displayed.
- (2) Audio/video OUT terminal (NTSC/PAL selectable)

17. Protection/Deletion of Recorded Images

- 17-1 Erase protection: Erase protection (or protection cancellation) of images can be done for a single image, all images in a folder, or all images in a card (or external recording media).
- 17-2 Erase: Non-protected images can be erased for a single image, checkmarked images, all images in a folder, or all images in a card (or external recording media).

18. Voice memo (Audio clips)

- 18-1 Recording method: While a still image is played, sound can be recorded with the built-in microphone on the camera back.
The voice memo is recorded as a WAV file having the same file number as the image
- Voice memos cannot be recorded for movies.
 - Hold down the  button for 2 sec. to start recording a voice memo.
 - With C.Fn IV -9-1, press the  button to start recording a voice memo immediately.
 - 48KHz sampling frequency (previously 8KHz with EOS-1D cameras before EOS-1D Mark IV)
 - Voice memo recording not possible with an external microphone or the built-in microphone on the camera front for movies. (Recordable only with the microphone on the camera back.)
- 18-2 Recording time: Maximum 30 sec. per voice memo
- If multiple voice memos are recorded for an image, they will be saved as a continuous recording in a single file.
 - During the image review immediately after image capture, only one voice memo can be recorded.
- 18-3 Sound playback: The voice memo appended to an image can be played while the image is played
- With C.Fn IV -9-2 set, pressing the  button can play the voice memo.
 - The voice memo can be played on a TV set via HDMI/AV-out.
 - Voice memos recorded with an EOS-1D-series camera prior to EOS-1D Mark IV can be played. (Cannot be played via HDMI/video OUT.)

19. Menus

19-1 Description:	Shooting ^{1, 2} / Playback ^{1, 2} / Set-up ^{1, 2, 3} / Custom Function / My Menu
19-2 LCD monitor language:	(1) For Japan: Japanese and English only (2) For other markets: The following 25 languages are selectable: English, German, French, Dutch, Danish, Portuguese, Finnish, Italian, Norwegian, Swedish, Spanish, Greek, Russian, Polish, Czech, Hungarian, Romanian, Ukraine, Turkish, Arabic, Thai, Simplified Chinese, Traditional Chinese, Korean and Japanese
19-3 Firmware updating:	Enabled by the user

20. PictBridge

20-1 Paper sizes:	Credit card size (5.4 cm x 8.6 cm) to A3+/13" x 19", 14" x 17", roll paper
20-2 Paper types:	(width 9 cm/4"/13 cm/21 cm) Plain, Photo, Fast Photo, Fine Art, Semi-gloss
20-3 Printing effects:	Default, On, Off, Vivid, NR, Vivid+NR, Natural, Natural M, B/W, Cool tone, Warm tone <ul style="list-style-type: none"> • Brightness, adjust levels, face brightener, red-eye correction, contrast, color saturation, color tone, and color balance are adjustable. • Printing effects preview enabled (except for face brightener and red-eye correction) • The selectable printing effects may differ depending on the printer.
20-4 Layout:	Borders, borderless, 2/4/8/9/16/20/35-image layout (duplicate images on one sheet), print + shooting information, 20-image index + shooting information, 35-image contact sheet index, standard setting
20-5 Trimming:	Trim horizontally up to 16 steps, vertically up to 10 steps
20-6 Tilt correction:	With the trimming screen, the image can be tilted up to $\pm 10^\circ$ in 0.5° increments
20-7 Date and file No. imprinting:	Date, file No., Both, Off, Default setting
20-8 DPOF-compatible:	DPOF print ordering provided <ul style="list-style-type: none"> • If both Standard and Index are set, only Standard will take effect for printing.
20-9 Printable images:	RAW/M-RAW/S-RAW and JPEG images complying to Design rule for Camera File System <ul style="list-style-type: none"> • Regarding RAW/M-RAW/S-RAW images, only those captured by the EOS-1D Mark IV can be printed. • Movies cannot be printed.
20-10 BubbleJet Direct and CP Direct:	Not supported

21. Print specification (DPOF)

- 21-1 System: Complies to DPOF Version 1.1
- 21-2 Specification with
print screen: (1) Individual images
(2) All images in folder
(3) All images in the card or external recording media
• RAW/M-RAW/S-RAW images and movies cannot be selected for DPOF.
- 21-3 Print type: (1) Standard (2) Index (3) Both
- 21-4 Date/File No. print: Enabled
• For the index, both the date and image number cannot be set to [On].
- 21-5 Camera direct: All the selected images can be printed in a batch

22. Direct image transfer / transfer order

None (Feature abolished)

23. Customization

- 23-1 Custom Functions: A total of 62 Custom Functions from C.Fn I to IV can be set with the camera
- 23-2 Registering and applying
Custom Function settings: Up to three sets of Custom Function settings can be registered in the camera.
When a set of Custom Function settings is applied, the Custom Function settings will take effect
• Does not include C.Fn I-16, C.Fn I-17, C.Fn III -7 and C.Fn IV -12.
- 23-3 Saving and reading
camera settings: The camera settings can be saved as a file to recording media
When the file is read, the saved camera settings take effect
• Save or load the file in the selected card or external media.
• Does not include the date/time, language, video output format, C.Fn I-16, C.Fn I-17, C.Fn III -7, and C.Fn IV -12.
- 23-4 My Menu: Up to six top-tier menu options and Custom Function settings can be registered
- 23-5 Registering and applying
camera's basic settings: The following basic settings can be registered: Shooting mode, white balance, drive mode, metering mode, AF mode, AF point, color space, image size and Picture Style (9 settings)
When the basic settings are applied, the nine settings will be set as they were registered
• [Record func.] will be set to [Standard], and the exposure compensation, AEB, flash exposure compensation, WB correction and WB-BKT settings will be canceled.

24. External Interface

- 24-1 Digital terminal: For personal computer communications, direct printing (Hi-Speed USB), audio/video (NTSC/PAL) output
 - Stereo audio output possible.
- 24-2 HDMI mini OUT terminal: Type C (Resolution switches automatically)
- 24-3 Remote control terminal: N3-type terminal
- 24-4 PC terminal: See 12-1 (2)
- 24-5 External microphone
 - IN terminal: 3.5mm dia. stereo mini jack
- 24-6 Extension system
 - terminal: For WFT-E2 II A and WFT-E2/E2A (Firmware Ver. 2.0.0 or higher)

25. Power Source

- 25-1 Battery: Battery Pack LP-E4 x 1
 - With the AC Adapter Kit ACK-E4, AC power is possible.
- 25-2 Battery life:

Shooting Mode	Temperature	
	At 23°C/73°F	At 0°C/32°F
Viewfinder shooting	Approx. 1500	Approx. 1200
Live View shooting	Approx. 270	Approx. 230

 - Based on a fully-charged LP-E4 and CIPA (Camera & Imaging Products Association) testing standards.
- 25-3 Bulb exposure time: Approx. 5 hours 40 min.
 - With a fully-charged LP-E4
- 25-4 Main switch: OFF/ON/ON (Quick Control Dial ON), 3 settings
- 25-5 Start-up time: Approx. 0.1 sec. (Based on CIPA testing standards)
 - Approx. 0.2 sec. based on previous specification standard.
- 25-6 Battery check: Automatic battery check when the power switch is turned ON
 - Displayed in one of six levels
 - Displayed on LCD panel, in the viewfinder, and battery information screen.
- 25-7 Battery information: The power source type, remaining capacity (in 1% increments + 6-level battery check), shutter count, and recharge performance (3 levels) can be checked
 - Battery registration and history not displayed.
- 25-8 Power-saving feature (Auto power off): Power turns off after the set time (1, 2, 4, 8, 15 or 30 min.) of nonoperation elapses
 - Lithium CR2025 button battery x 1
- 25-9 Date/time back-up battery:
 - Battery life approx. 5 years

26. Body (Chassis) Material

- Magnesium alloy
- Chassis and mirror box.

27. Exterior

- 27-1 Exterior material: Magnesium alloy
- Top, front, rear covers, and card slot cover.
- 27-2 Exterior color: Black
- Paint finish and grippy surface.
- 27-3 Tripod socket: CU 1/4
- 27-4 LCD panel illumination: Approx. 6-sec. illumination with LCD panel illumination button

28. Dimensions

- 6.1 (W) x 6.2 (H) x 3.1 (D) in.
156 (W) x 156.6 (H) x 79.9 (D) mm

29. Weight

- Approx. 41.6 oz. / 1180 g
- Body only (Excluding Eye-cup, battery and card. With backup battery.)

30. Operating Environment

- 30-1 Operating temperature: 32°F to 113°F / 0°C to 45°C
- 30-2 Operating humidity: 85% or less

31. Accessories

- 31-1 Battery pack: Battery Pack LP-E4
- 31-2 Battery charger: Battery Charger LC-E4
- 31-3 AC power source: AC Adapter Kit ACK-E4
- Car Battery Cable CB-570 connectable.
- 31-4 Focusing screen: Focusing screen Ec-C IV / Ec-A, B, C, C II, C III, D, H, I, L / Ec-S / Ec-N, R

- 31-5 Finder Accessories: Eyecup Eg
Dioptric Adjustment Lens Eg
Anti-Fog Eyepiece Eg
Angle Finder C
- 31-6 Interface cable: Interface Cable IFC-200U, IFC-500U
- 31-7 Audio/video cable: Stereo AV Cable AVC-DC400ST
HDMI Cable HTC-100
- 31-8 Transmitter: Wireless File Transmitter WFT-E2 II A
Wireless File Transmitter WFT-E2/E2A
- For use with EOS-1D Mark IV, the WFT-E2/E2A's firmware version must be updated to 2.0.0 or higher.
- 31-9 Original image verification/
Data encryption / decryption: Original Data Security Kit OSK-E3
- 31-10 Strap: Wide Strap L6
Hand Strap E1
- 31-11 EOS System
Accessories: See the System Accessory Compatibility Table



The new EOS-1D Mark IV makes a great case for itself. Its new, 45-point AF system with 39 cross-type sensors for superb tracking of fast moving subjects is certainly a highlight. The intelligent new AF algorithm and the ability to customize many of the AF settings to suit very precise shooting techniques will be appreciated by all serious photographers. Then, there are the many individual improvements (such as gapless microlenses) that combine to make image noise so low that ISO 12,800 is in the normal range and ISO 102,400 is available.

The EOS-1D Mark IV's 1080p HD video function includes 29.97 fps, 25 fps and 23.976 fps in its impressive list of selectable frame rates, a sign to video professionals that this camera is nothing less than a completely serious tool. The exposure control options, including manual, the wealth of playback choices and the fantastic look of large sensor/fast lens images, combined with stunning low-light sensitivity, must suggest intriguing and unprecedented, possibilities.

The improved JPEG workflow is another feature that measures up to the true needs of working professionals. Because Canon has refined a group of functions that, individually, make improvements and corrections in-camera, the output of the EOS-1D Mark IV can be fine-tuned to any taste without time-consuming post-production work. The team includes Peripheral Illumination Correction, the Auto Lighting Optimizer, Picture Style, new and sharper default image settings, High ISO speed noise reduction and a new white balance algorithm. Each function is handy on its own; as a group, they are exceptional.

The new LCD monitor is a revelation. The optical resin-filled, borderless display is clear and crisp for watching video playback with saturated colors and without reflections, focusing precisely with Live View or reading menus with all their choices, even in bright light.

The EOS-1D Mark IV shares with its EOS-1 Series forebears the ultra-rugged, all-weather construction that so many professional photographers have relied on in so many difficult situations. As part of the Canon EOS system, the EOS-1D Mark IV is compatible with an encyclopedic list of accessories, including the new WFT-E2 II A wireless file transmitter, a compact unit that provides an impressive array of connectivity options.

Finally, the EOS-1D Mark IV is a terrific value. Even when judged on its still camera features alone, this DSLR is a best-in-class professional tool. Combine that with an essentially free 1080p HD video camera and you have what is, beyond debate, a unique selling proposition. Canon expects that many people will find that proposition irresistible.