

Technologies Explained – Digital SLR

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Canon CMOS sensor

The EOS 7D includes a new 18 megapixel CMOS sensor with a wide ISO range that delivers excellent results in both the low and high-speed ranges as well as improved image quality. The sensor is a standard APS-C size (22.4x14.9mm) and produces an effective field of view of 1.6x the lens focal length.

The EOS 7D sensor features condensed circuitry with improved sensitivity and increased capacity of the photodiodes, which enables shooting at high ISO and prevents overloading when shooting in bright conditions. The ISO range (100 - 6400) is expandable to 12800 enabling photographers to capture subjects in their natural light without the use of a flash.

The EOS 7D sensor includes gapless microlenses that have been moved closer to the photodiodes. These technological advances, which were developed and manufactured by Canon, improve the signal to noise ratio creating very clean high ISO images.

19-point cross-type AF system including Spot AF

The AF system has been completely redesigned using the same architecture as the EOS-1 series and includes a separate processor to handle AF calculations. This, along with AI SERVO II AF, enables the EOS 7D to offer accurate, reliable and continuous shooting at 8fps. Uniquely at this level, all 19 points in the EOS 7D AF sensor are cross-type points with f/5.6 or faster lenses, which allows sophisticated tracking, accuracy and performance throughout the frame.

The EOS 7D also includes Spot AF, a new mode that uses a smaller area of the sensor to determine focus. This is useful for small subjects where there is background detail that can distract the AF sensor. It also includes Zone AF which limits automatic selection to one of five zones. This allows photographers to ensure their subject is automatically selected.

iFCL metering system with 63-zone Dual-layer Sensor

The iFCL system uses Focus, Colour and Luminance information to determine consistently exposed shots. All focus points provide distance information to the metering system to determine proximity to the subject and allow the algorithm to weight the exposure accordingly. The EOS 7D has a completely new metering sensor

with 63 zones compatible with 19 AF points. Typically, metering sensors are more sensitive to red subjects which can lead to overexposure. The EOS 7D combats this with the dual layer sensor, which has one layer sensitive to red and green light and one that is sensitive to blue and green light. The metering algorithm then compares the level of the two layers and adjusts the meter reading accordingly.

100% Viewfinder with 1.0x magnification and built in LCD overlay

The EOS 7D features a high quality viewfinder with 100% coverage and 1.0x magnification - a first for EOS - making it simple and ease to use. The viewfinder uses a prism, coating technologies and eyepiece lenses inspired by the EOS-1 series.

The EOS 7D viewfinder does not have interchangeable focussing screens. In their place is a Transmissive LCD Screen - another first for EOS. Through technological advances Canon has been able to implement the screen whilst maintaining viewfinder image quality. This new feature, which can be illuminated in lowlight, enables grid, spot metering and AF points to be superimposed upon demand.

EOS Movie

The EOS 7D features an improved movie function allowing users to record Full HD movies with full manual control and selectable frame rates. The operation of the movie function has been improved to make it easier to use via direct access to settings with dedicated buttons. AF can now be started by either half pressing the shutter button or using the AF-ON button as before.

The exposure of the movie can be controlled in Manual mode allowing full control of shutter speeds and apertures. It is possible to select frame rates from: 30 (29.97), 25, and 24 (23.976), with 60 (59.94) and 50 available at 720p. ISO can be set automatically or manually in the range (100-6400) and is expandable to 12800. EOS 7D also allows users to trim and cut their movies.

Dual "DIGIC 4"

The EOS 7D is fitted with Dual "DIGIC 4" processors; the power of the processors enables more advanced processing algorithms allowing the camera to achieve a high performance 8fps at 18 megapixels.

DIGIC 4 removes the highly noticeable colour noise as well as reducing luminance noise without loss in detail, allowing for very clean high ISO images. Even at ISO 6400 noise

levels are similar to those of ISO 1600 from DIGIC III. Auto Lighting Optimiser is now also available during manual exposure, without any drop in performance.

DIGIC 4 also allows UDMA cards (mode 6) to be used at their full speed, which allows the EOS 7D to take advantage of the fastest cards available.

Clear View II

The EOS 7D's 3 inch LCD monitor has 920,000 dots (VGA resolution) with a viewing angle of 160°. Clear View II has been designed to combat glare by removing the air-gap between the LCD's protective cover and the liquid crystal. The air-gap is filled with an elastic optical material. This has the affect of suppressing the reflections from the surface of the liquid crystal, caused by the sharp change in refractive index, as light travels through the air-gap. In order to protect the liquid crystal from scratches the Clear View II LCD features a hardened glass cover material. As with the EOS 5D Mark II, an ambient light sensor on the side of the screen can set brightness automatically depending on the environment.