

Technologies Explained – EOS 60D

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Canon CMOS sensor

Exclusively designed and manufactured by Canon to work in combination with its own DIGIC processors, Canon's CMOS technology integrates advanced noise reduction circuitry at each pixel site, delivering virtually noise-free images. In comparison with CCD technology, the lower power consumption characteristics of Canon's CMOS sensors also contribute to longer battery life.

Signal conversion in Canon's CMOS sensors is handled by individual amplifiers at each pixel site. Unnecessary charge transfer operations are avoided, vastly speeding up the process of getting the signal to the image processor. Noise is reduced, power consumption is limited and faster frame rate potential is increased.

The EOS 60D utilises the same advanced sensor developed for the EOS 550D, coupled with the advanced low-pass optical filter introduced with the EOS 7D, performing extremely well at both high and low sensitivities for excellent quality images, even in low light. The sensor features a four channel read-out, allowing the fast transfer of image data to the DIGIC 4 processor to support a high speed burst of 5.3fps at 18MP resolution.

DIGIC

Image data captured by the CMOS sensor is processed by Canon's purpose-built DIGIC image processors before being written to memory card. DIGIC technology uses advanced image processing algorithms to ensure precise, natural colours, tonal gradation, accurate white balance, and advanced noise reduction. Ultra-fast processing speeds result in highly responsive camera operation and near-instant start-up times.

DIGIC chips work with a high speed image buffer, reading, processing, compressing and writing image data fast enough to keep the buffer clear during long continuous shooting bursts. In addition, because DIGIC integrates all key processing functions, power consumption is kept to a minimum.

Basic +

Basic + is a new creative imaging function that makes it easier to create the desired image effects when shooting a scene. With Basic +, photographers have the option to shoot by ambience selection or by lighting or scene type:

1. Shoot by ambience selection: exposure compensation and white balance are adjusted according to preset styles to create ambience or tone in the image
2. Shoot by lighting or scene type: a simplified form of white balance which allows new digital photographers to change the white balance settings according to more understandable terms such as “Daylight”, “Shade”, “Cloudy”, “Sunset”, “Tungsten light” and “Fluorescent light”

EOS Movie

The EOS Movie function allows EOS 60D photographers to record 1080p HD movies with manual control and selectable frame rates.

Thanks to the large (22.3 x 14.9mm) integrated CMOS sensor, depth of field can be managed more effectively. The exposure of the movie can be controlled in Manual mode, allowing full control of shutter speeds and aperture. It is possible to select frame rates from: 30 (29.97), 25, and 24 (23.976), with 60 (59.94) and 50 available at resolutions of 720p. Auto mode also allows photographers to easily shoot HD video without worrying about exposure settings – ideal when needing to capture split-second action as it unfolds.

In situations where the subject is further away, the EOS 60D's Movie Crop function records with the central 640x480 pixel area of the sensor, creating an effective magnification of up to seven times the focal length of the lens.

Vari-angle wide LCD monitor

The EOS 60D features a 7.7cm (3.0”) 3:2 Vari-angle wide LCD monitor offering approx 720x480 pixel resolution with 1,040k dots. Screen brightness can be adjusted to one of seven levels, making it easier to view high-quality images and make ultra-accurate focus checks in playback. The LCD monitor flips out 175° and can be rotated by 270° to a low or high angle to allow perfect composition at unusual shooting angles.

iFCL metering system with 63-zone Dual-layer Metering 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 60D features a metering sensor with 63 zones compatible with all nine AF points. Typically, metering sensors are more sensitive to red subjects which can lead to underexposure. The EOS 60D combats this with a 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 in real time.

In-camera post-processing

The powerful DIGIC 4 processor within the EOS 60D allows photographers to capture full resolution images in RAW format, and, with in-camera RAW processing, tweak the images before saving a JPEG copy ready to print or share with friends.

Photographers can also apply a range of creative filter effects to their RAW and JPEG images in-camera. Grainy B/W, Soft Focus, Toy Camera Effect and Miniature Effect filters can be applied individually or overlaid for more creative and individual results.

Large JPEG images can be resized in-camera (using the same aspect ratio) with the smaller version saved separately. The largest JPEG image (M) can be resized to one of three smaller sizes (S1, S2 and S3).

To help photographers organise their workflow more effectively, images captured on the EOS 60D can instantly be assigned a ranking of one to five stars, allowing them to be sorted with Canon software and third party post-processing.

EOS Integrated Cleaning System

The EOS Integrated Cleaning System combats sensor dust in three important ways - Reduce, Repel and Remove:

1. **Reduce** - Internal camera mechanisms are designed to minimise dust generation. The redesigned body cap prevents dust generation through wear on the cap itself
2. **Repel** - Anti-static technologies, including a special fluorine coating, are applied to the low-pass filter covering the front of the sensor so as not to attract dust
3. **Remove** - A Self-Cleaning Sensor Unit uses hi-frequency vibrations to shake dust from the infrared filter for a period of approximately one second after each start up. For instant shooting after power up, this feature is disabled immediately as the shutter release is depressed

Canon has also developed an internal Dust Delete Data system, which can map the position of visible dust on the sensor. This can then be deleted automatically after the shoot with the latest Digital Photo Professional software.

Picture Styles

Picture Style pre-sets simplify in-camera control over image quality. Picture Style presets can be likened to different film types – each one offering a different colour response. Within each selectable preset, photographers have control over sharpness, contrast, colour tone and saturation. The camera's factory default configuration is set to deliver immediately-usable JPEG images without need for additional menu settings. Picture Style presets applied to a RAW image can be revised with Canon's Digital Photo Professional software.

The six presets are:

1. **Standard** – For crisp, vivid images that don't require post-processing
2. **Portrait** – Optimises colour tone and saturation and weakens sharpening to achieve attractive skin tones
3. **Landscape** – For punchier greens and blues with stronger sharpening to give a crisp edge to mountain, tree and building outlines
4. **Neutral** – Ideal for post-processing
5. **Faithful** – Adjusts colour to match the subject colour when shot under a colour temperature of 5200K
6. **Monochrome** – For black and white shooting with a range of filter effects (yellow, orange, red and green) and toning effects (sepia, blue, purple and green)

The User Defined Picture Styles can be used to store up to three customised pre-sets, or any of the pre-sets available for download from Canon's web site at:

www.canon.co.jp/Imaging/picturestyle/file/index.htm.

Software

Digital Photo Professional Software

Digital Photo Professional software provides high speed, high quality processing of lossless RAW images. Processing with Digital Photo Professional allows real-time display and immediate application of image adjustments, giving control over RAW image variables such as white balance, dynamic range, exposure compensation, noise reduction and colour tone – plus the ability to view Auto Focus points on an image and apply unsharp mask sharpening. The Lens Aberration correction tool allows precise correction of different types of distortion caused by certain cameras. Images can be recorded in camera with sRGB or Adobe RGB colour space. Images can also be rotated and trimmed allowing photographers to correct framing and horizons as part of the RAW processing. Digital Photo Professional also provides full support for the rating system within the EOS 60D allowing star ratings to be added or edited for easier sorting.

Digital Photo Professional supports sRGB, Adobe RGB, ColorMatch RGB, Apple RGB and Wide Gamut RGB colour spaces. ICC (International Colour Consortium) profiles can be attached to TIFF or JPEG images when converted from RAW. This allows faithful reproduction of colours in software applications that support ICC profiles, such as Adobe Photoshop. For improved efficiency, a set of image adjustments can be saved as a recipe and applied.

EOS Utility

The latest version of EOS Utility provides essential support for Live View remote shooting (with the ability to overlay an image to assist with alignment of subsequent shots during product photography), camera configuration and image transfers. Tightly integrated with Digital Photo Professional, EOS Utility can be configured to monitor 'hot' folders, automatically renaming and moving incoming images to a structured file system. Images can also be tagged with EXIF data, including copyright information.

Picture Style Editor

Picture Style Editor allows photographers to create individual Picture Styles that meet their personal requirements. Each Picture Style contains detailed information on how specific colours should be represented within an image. Once new Picture Styles have been created, they can be uploaded directly into the camera and applied to JPEG or



RAW images. When working with RAW files in DPP, both personal Picture Styles and predetermined Picture Styles can all be adjusted.