

**When a Canon EOS DSLR is turned on, does the sensor attract more dust because it is electrostatically charged?**

I cannot speak for other manufacturers' products, but EOS Digital SLRs with Canon CMOS image sensors do not carry electrostatic charges at any time. Also, when DSLR image sensors are discussed, it's important to remember that the surface of the sensor itself is never exposed to dust. Instead, a low-pass filter is permanently mounted in front of the sensor at a distance of a millimeter or so. The gap between the low-pass filter and the image sensor is hermetically sealed during the manufacturing and assembly process. Once that happens, additional dust particles are prevented from reaching the surface of the sensor. Loose dust particles will eventually end up on the front surface of the low-pass filter during normal use of the camera, such as changing lenses. For this reason, the low-pass filters used in EOS DSLRs are treated with an anti-static coating during the manufacturing process. This coating passively repels dust particles, but at no time is the filter electrically charged in the camera.

Of course, there are many different kinds of dust particles. Most are relatively dry, and small enough that they can be easily dislodged from the surface of a low-pass filter with ultrasonic vibration or a soft puff of air. But others are wet or sticky, and once this type of particle adheres to a low-pass filter, it usually cannot be removed by vibration or air movement. This is the reason why Canon developed the EOS Integrated Cleaning System, which applies Dust Delete Data recorded by the camera to remove residual dust spots in images during post-processing with Digital Photo Professional software in the photographer's computer. It's also possible to clean the low-pass filter manually in order to remove sticky dust particles.

**I'm curious if switching lenses while the camera is still on has any potential downsides, other than the obvious loss of everything in the buffer. I'm particularly concerned whether leaving the camera on increases the likelihood that dust might be attracted into the camera, or if there are any detrimental effects on image stabilized lenses. I'd also appreciate any additional insight you can provide on why leaving the camera turned on might be a bad idea, or why it really doesn't matter.**

I'm not sure where you got the idea that switching lenses would clear an EOS digital SLR's buffer memory while the camera is writing to a memory card, because it doesn't. On your second question, it's always possible for dust to enter the camera when changing lenses, but whether the camera is on or off during this operation makes no difference. On your third question, no detrimental effects are caused by changing an image stabilizer lens while the camera is on.

The main concern about leaving a camera turned on is the possibility of unintentional shutter release that may occur if the equipment is stored in a gadget bag or other location where the shutter button might be pressed inadvertently.

**Should one turn off the camera when changing the flash cards?**

With most current DSLRs it's OK to change memory cards while the camera is on, as long as you're sure that the card busy signal is off before you open the memory card compartment cover. However, turning the camera off before changing memory cards is a good habit to acquire if you really want to play it safe.

## **How can I extend the battery life of an EOS DSLR?**

There are basically five levels of power consumption on an EOS DSLR. Here they are, from minimum to maximum:

**Level 1.** The camera consumes the least amount of power when the main switch is turned off. A minuscule drain is used in this condition if a memory card is inserted or a lens is changed, but not enough to affect battery life significantly.

**Level 2.** The next level of power consumption occurs when the main switch is on but the camera is asleep, i.e., after the Auto Power Off function has operated. The only significant difference between this condition and level #1 is that the shutter button remains active so that the camera can be "awakened" ASAP by a half-press.

**Level 3.** The next level of power consumption occurs when the main switch is on and the external LCD data panel is active, but the shutter button is not being pressed. This is not a heavy degree of consumption, but it is considerably more than Level 1 or Level 2.

**Level 4.** This level occurs when the shutter button is pressed halfway. In this condition, the metering system is activated, the LCD data panels and viewfinder data display are illuminated, and the focus motor may or may not be driven. If it is driven, the focusing point may be illuminated in the viewfinder and the beeper may sound to confirm focus completion, depending on the lens in use and user-selected camera settings. Level 4 is significantly higher in power consumption than Level 3 but it only lasts six seconds (or less, if you use Personal Function 23) after finger pressure is removed from the shutter button. At default camera settings, Level 4 is also activated for two seconds after each exposure.

**Level 5.** This level occurs when the shutter button is pressed all the way down, initiating a sequence that includes mirror release, diaphragm stop-down, shutter release, diaphragm reopening, and re-cocking of the shutter and mirror. When the camera is set for continuous shooting and AI Servo, you can add focus drive between shots to this sequence. This is the maximum power consumption level for the camera.

Waking the camera up from sleep by tapping the shutter button after the Auto Power Off function has operated essentially takes the camera from Level 2 to Level 3, which is not a big jump in terms of consumption. However, leaving the camera in Level 3 by extending the time limit of the Auto Power Off function will almost always consume more power than letting it go to sleep. Of course, one of the best ways to cut down on battery life is by keeping the camera at Level 4 without taking pictures.