SHUTTER SCHOOL

Getting the most out of your Camera

January 8, 2026

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Updating the firmware on your Camera and Lenses

firm·ware

ˈfərmwer/

noun

Computing

noun: **firmware**

permanent software programmed into a read-only memory.

With the digital age , all cameras have a computer inside of them.

A program that controls the functions.

It is the Operating System for the camera or lens.

Just like Windows or the Mac OS.

Unlike your Computer, Tablet or Phone,

Your camera cannot be set to automatically update this software or firmware.

What is firmware and why is it important?

Inside your camera is a microprocessor (small computer), that uses software stored on non-removable flash memory inside your camera.

This is called firmware and is the operating system of your camera which allows you to control the features and functions, with the camera's menus and buttons.

Firmware also controls autofocus, exposure, image processing, noise reduction and other important functions within your camera. Without firmware your camera would not be able to operate.

Why check for firmware updates?

- Updates generally contain fixes or feature enhancements. Firmware updates aren't always necessary – some cameras never have updates.
- When a new camera is assembled the manufacturer loads the firmware that was designed at that time. After the camera has been released to the public, people may find that there are bugs or problems with the way the camera operates.
- Some of these fixes can be minor, but some of them fix more serious issues such as autofocus problems, battery-draining issues, or the camera unexpectedly locking up.

- Other reasons why firmware updates are released is to include new camera features such as added languages, or to have manually adjustable settings that were once solely automatic.

- Some updates are to support new optional accessories for your camera (e.g. wireless functions or GPS modules, etc.). I like to think of them as free upgrades to your camera.

When to check for firmware updates?

- I recommend checking for updates on a semi-regular basis, every few months or so, and after you purchase a new camera is also a good time to check.

- There will likely be fewer firmware updates for older cameras but still worthwhile checking, perhaps on an annual basis.

If you have never checked your camera for a firmware update then now is a good a time to do so.

You can check for the latest firmware by looking at the manufactures support and downloads section of their website for your brand and model of camera.

Look for higher version numbers than the one found on your camera. If the version numbers are the same, there is no need to perform an update.

Important: You need to know the model of your camera and only use the firmware that is specific to your model.

Check what version your camera is currently using.

Why read the instructions carefully before updating your cameras firmware?

Read the instructions very carefully before updating the firmware on your camera –

You don't want to end up having a dead camera!

- If the battery fails during the firmware update or the update is interrupted in some manner, the risk is having a camera without usable software.

- Meaning you have a dead camera that you have to take to the manufacturer to fix!

- **How to find out what has been fixed or updated with the new firmware?**
- Check the release notes that come with the firmware updates. Usually, you will find included a list of the fixes or updates in earlier versions of the firmware too.

General instructions only –

Please read your own firmware update instructions for your camera model

1. Check the firmware version on your camera – it will be shown on one of the menu options
2. Check to see what the latest version of firmware is available for your camera on the manufacturers web site
3. Read the instructions carefully
4. Download the firmware
5. Install a fully charged battery into your camera
6. Format a memory card in your camera (read your manual if you aren't sure how to do this)
7. Place that memory card into a card reader connected to your computer (do not connect via a cord from the camera)
8. Copy the firmware update file into the top-level (root) folder of the cameras memory card
9. Safely eject the card on the computer
10. Place the memory card back into the camera (remember to power off the camera any time you remove a card or open the slot door)
11. Follow the instructions to update the cameras firmware
12. Unless instructed to do so, don't touch any buttons, or switch the camera off during the process
13. Check to see that the camera is running the newly installed firmware version – as per the first step

Some Nikon DSLR cameras may have A, B and L firmware – what are these? Nikon A-firmware is for the I/O (Input/Output) processor. B-firmware is for the Control ("Expeed") integrated micro-controllers and L-firmware is for lens specific updates such as correction for lens distortion.

You need not know why they have this scheme, just know what version is the latest for your camera model and use that to keep your camera up to date.

Other camera manufacturers generally have just one firmware version to install.

Things you might want your camera to do

Getting the most out of Auto ISO. Setting the limits.

Custom Shooting Modes.

Metering Modes.

Back Button Focus.

Customizing the menu screen (Canon).

Using Auto ISO

Setting Minimum Shutter Speed:

Auto ISO sensitivity control will automatically raise ISO sensitivity to prevent shutter speeds slower than this limit in exposure modes P and A.

Choose from values between 1/2000 s and 1 s, or select Auto to allow the camera to choose the minimum shutter speed according to the lens focal length (Select camera and lenses only).

For example, the camera will select a fast minimum shutter speed with telephoto lenses to reduce the camera blur that tends to occur at long focal lengths.

Using Auto ISO

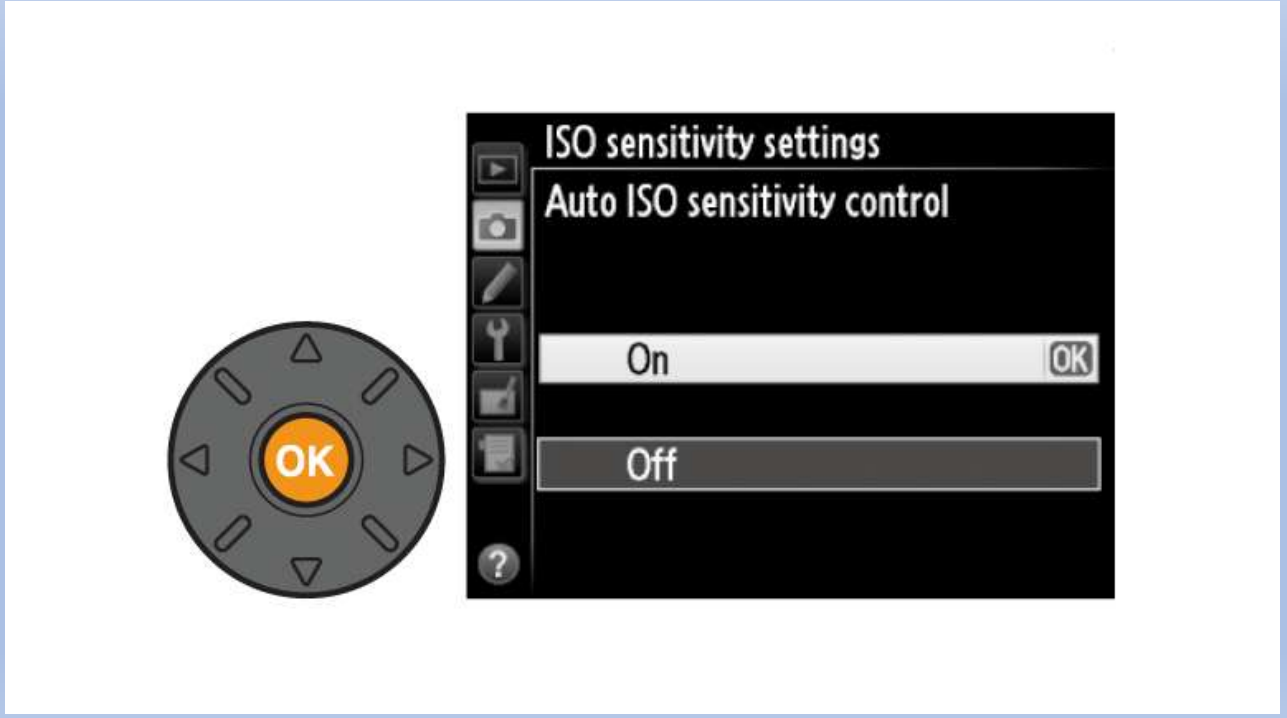
When setting the Auto ISO speed range, you can also select the minimum shutter speed to ensure it never goes too slow.

With this set, you may sometimes find the shutter speed drops below the lower limit you set. This is likely because the correct exposure could not be achieved within the Auto ISO range and with the lowest shutter speed you selected, so the shutter speed will be shifted to adjust.

If you have to ensure the shutter speed does not change below a certain level, then you should set it manually instead.

Using Auto ISO - Nikon

Using Auto ISO - Nikon



Using Auto ISO - Canon

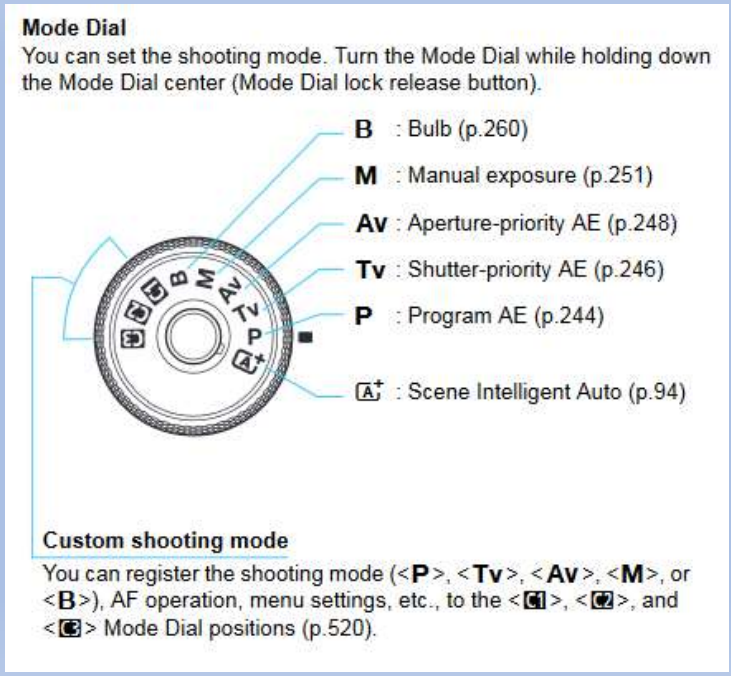
Using Auto ISO - Canon

Select the Minimum Shutter Speed the camera will set to in A mode before increasing ISO.

Customizing your Camera

You can register current camera settings, such as the shooting functions, menu functions, and Custom Function settings, as Custom shooting modes under the Mode Dial's

<C1>, <C2>, and <C3> positions.



Custom Controls will allow the camera to remember all the settings for a particular situation.

Example:

1. Set up the camera for high action or sports where you want to have a fast shutter speed and auto ISO. You can also preset focus points, metering mode and high speed continuous.

2. Another setting for your favorite Portrait settings. Aperture Priority , Spot Metering , Single Point focus and others.

With your Custom Functions set up,

Now you can quickly switch from high speed , continuous to single shot for a portrait with the quick turn of the dial.

Metering Modes

- Metering is how your camera determines what the correct shutter speed and aperture should be, depending on the amount of light that goes into the camera and the sensitivity of the sensor. Back in the old days of photography, cameras were not equipped with a light "meter", which is a sensor that measures the amount and intensity of light.
- Photographers had to use hand-held light meters to determine the optimal exposure. Obviously, because the work was shot on film, they could not preview or see the results immediately, which is why they religiously relied on those light meters.

Metering Modes

Matrix Metering (Nikon), Evaluative Metering (Canon)

Center-weighted Metering

Spot Metering

Metering Modes

Camera meters work great when the scene is lit evenly.

However, it gets problematic and challenging for light meters to determine the exposure, when there are objects with different light levels and intensities.

Metering Modes

- For example, if you are taking a picture of the blue sky with no clouds or sun in the frame, the image will be correctly exposed, because there is just one light level to deal with. The job gets a little harder if you add a few clouds into the image – the meter now needs to evaluate the brightness of the clouds versus the brightness of the sky and try to determine the optimal exposure. As a result, the camera meter might brighten up the sky a little bit in order to properly expose the white clouds – otherwise, the clouds would look too white or “overexposed”.

Metering Modes

- Matrix Metering or Evaluative Metering mode is the default metering mode on most DSLRs.
- It works by dividing the entire frame into multiple “zones”, which are then all analyzed on individual basis for light and dark tones.
- One of the key factors (in addition to color, distance, subjects, highlights, etc) that affects matrix metering, is where the camera focus point is set to.
- After reading information from all individual zones, the metering system looks at where you focused within the frame and marks it more important than all other zones.

Metering Modes

Using the whole frame for determining the correct exposure is not always desirable. What if you are trying to take a headshot of a person with the sun behind?

This is where center-weighted metering comes in handy. Center-weighted Metering evaluates the light in the middle of the frame and its surroundings and ignores the corners.

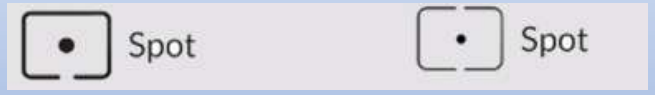
Compared to Matrix Metering, Center-weighted Metering does not look at the focus point you select and only evaluates the middle area of the image.

Metering Modes

Spot Metering only evaluates the light around your focus point and ignores everything else. It evaluates a single zone/cell and calculates exposure based on that single area, nothing else.

Because the light is evaluated where you place the focus point, you could get an accurate exposure on the subject regardless of where it is in the frame. Also, if you were taking a picture of a person with the sun behind but they occupied a small part of the frame, it is best to use the spot metering mode instead.

When your subjects do not take much of the space, using Matrix or Center-weighted metering modes would most likely result in a silhouette, if the subject was back-lit. Spot metering works great for back-lit subjects like that.



Back Button Focus

Put that thumb to work.

This is why primates make the best photographers.

Back Button Focus

How would you like it if I could show you how to :

- Make your focusing more responsive.
- Eliminate lost focus lock during image capture.
- Capture with a greater sharpness.

Back Button Focus

Back Button Focus

The key concept of this is that you have two separate buttons for two separate functions :

Focus and Shutter Release

This gives you the ability to use two different fingers to be able to operate those functions independently of one another.

You have control.

Back Button Focus

Why would anyone want to remove AF from the shutter button?

- Back Button Focus

Back Button Focus

This is a question many users ask when Back-button AF is first explained to them.

There are certainly many times where the standard method of operation — press the shutter button half-way down to focus, and then press fully to shoot — works perfectly well.

Back Button Focus

By separating AF activation from shutter release, it's possible in some cases to be more effective with AF, and not have the focus thrown off if something momentarily enters the picture area while you're shooting.

Back Button Focus

If you are shooting something like a series of portraits of a person, and you want them composed off-center, back-button AF makes it super-easy to take as many pictures as you want.

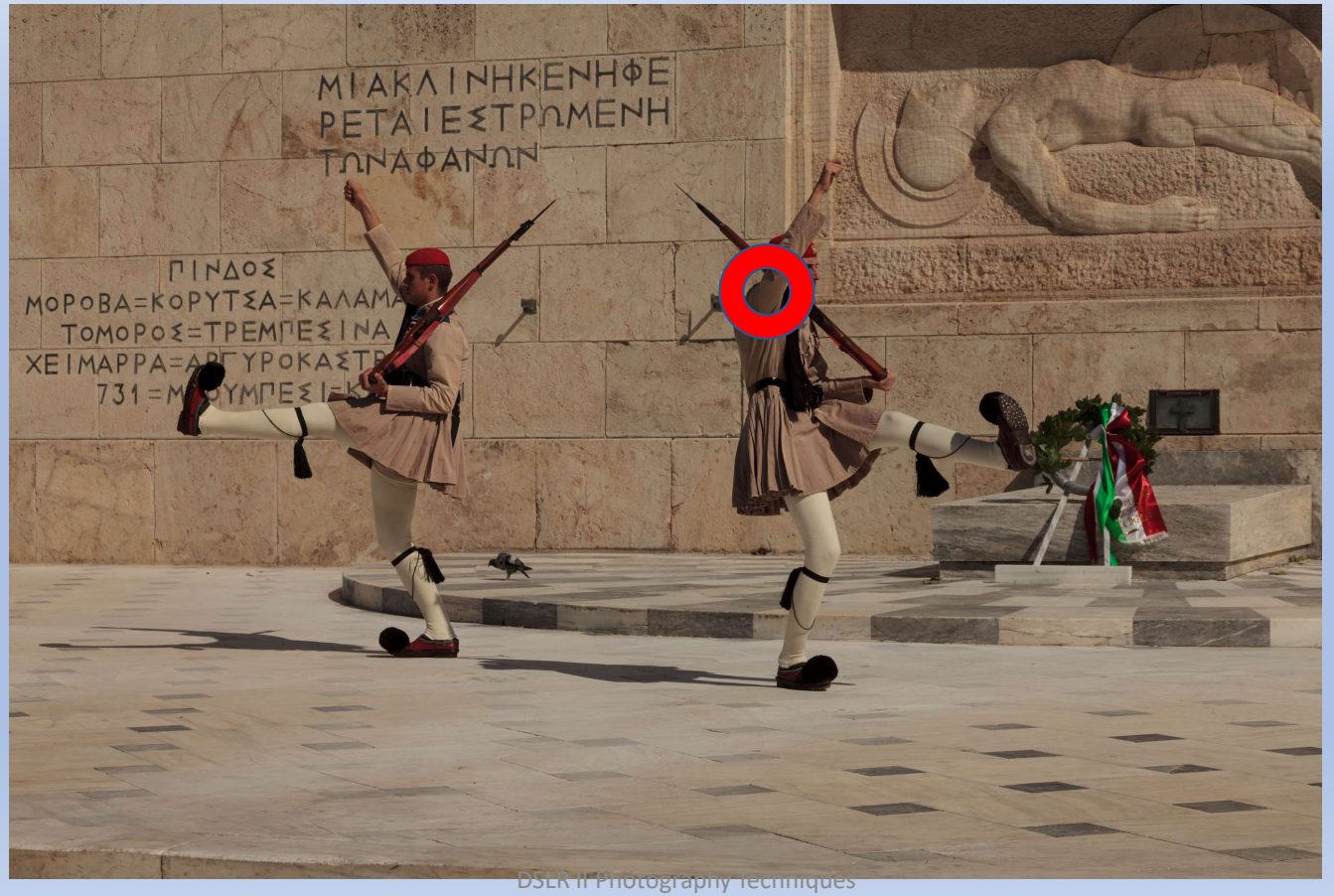
Focus on your subject by pressing the rear button .

Once in-focus, take your thumb off the rear button.

Re-compose the shot to move your subject off-center. Shoot as many pictures as you like.

Back Button Focus

Back Button Focus



Back Button Focus

No matter what, the camera makes no effort to re-focus when you press the shutter button half-way down again.

Back Button Focus

Back Button Focus

No More Switching Your Lens To Manual Focus

With Back Button Focus you no longer need the focus mode selector on your lens because the camera will no longer re-focus when you press the shutter down.

In most cases, your AF-ON button will be used for focus and focus only. So you're free to use your shutter button as just that, a shutter!

Back Button Focus

Stability is another benefit for the using the back button focusing option.

When you do that, your hand is likely to shake and move when you actually press the shutter down.

When you press your shutter half way, you are required to precariously hold that focus until you are ready to take the photo.

Back Button Focus

Back button focusing allows you to hold your hand in a more relaxed way. It also allows you to have an anchor point on the back of the camera to more evenly distribute the weight and use the heel of you hand to further stabilize your camera.

The less overall movement there is, the sharper your photos will be.

Back Button Focus

Easier over-riding of AF with full-time manual focus

Most lenses today have a neat feature called full-time manual focus

There's no need to first move the switch to MF.

Even if the lens's AF/MF switch is in the AF position, these lenses allow the shooter to instantly adjust focus manually by simply turning the focus ring on the lens.

Back Button Focus

And if you want to touch-up focus, or totally over-ride what the AF is doing, just pull your thumb off the rear button and turn the ring.

No matter how many pictures you shoot, pressing the shutter button will not cause the AF to try to kick-in and re-set the focus you just adjusted manually.

Back Button Focus

This is great for specialized shooting situation's

Panorama’s

HDR

Focus Stacking

Basic exposure bracketing

Long Exposure

Back Button Focus

- When you have groups of people , your chances of getting the good shot are generally slim to none.

- Having focus locked at the same point over 2 or 3 shots will make using one of the editing features that allow you to merge and align multiple image files into one good one with a greater success rate.

- That slight focus shift caused by the camera refocusing each time is reduced or eliminated.

Back Button Focus

So, I want to try .

How do I set this up in camera?

Back Button Focus

- **Instructions for the Nikons without an AF-ON button**:
- The AE-L/AF-L button can be programmed to function as an autofocus button.
- Menu > Custom Setting Menu > Controls > Assign AE-L/AF-L Button > AF-ON
- or
- Menu > Set Buttons> Assign AE-L/AF-L > AF-ON

Back Button Focus

- In Nikons, the AF-On button is turned on.
- The instructions for the D700 are as follows:
- Press Menu > Custom Setting Menu >a Autofocus > AF-ON > OK

Back Button Focus

- The particular Custom Function number varies, depending on the EOS model in question.
- All digital EOS SLRs, with the exception of the original, 6-million pixel EOS Digital Rebel model, have a Custom Function for moving AF from the shutter button to a back-button.
- Be sure to check your camera manual for confirmation on the Custom Function number for Back-Button AF in your EOS model.