

Tutorial: Focus

Focusing your EOS

Your EOS camera features an advanced autofocus (AF) system that lets you concentrate on composition whilst it ensures that your photo is sharp. But have you investigated how flexible the system is?

This tutorial will explain how AF works, how the options available will help you take control and create better photos:

- How Auto Focus works
- Using AF points for better focus
- Why to change AF Modes
- AF-assist beam
- Focusing in Live View
- Occasions when Manual Focus may help
- Quick tip: Adjust the Viewfinder to your eyesight

How Auto Focus works

Inside your EOS camera, just behind the lens mount, is a mirror angled at 45 degrees. This reflects light from the lens up to the viewfinder. However not all of the light is reflected upwards. The centre of the mirror is semi-silvered, which means that some of the light passes through.



Angled behind the main mirror (1) is a smaller secondary mirror (2). This reflects light down to an AF sensor (3) in the base of the camera. This sensor looks for repeating patterns and is able to measure the amount of defocus in an image. Data is sent to the focusing motor in the lens to bring the image into focus.

Using AF points for better focus

Every EOS digital camera has multiple AF Points, from 9 in the EOS 1100D to the 61 in the EOS-1D X and 5D Mark III cameras.

With automatic AF Point selection, subject distance readings are taken by each of the points when you press the shutter button. If more than one point lights up it means that these points are supplying similar focusing distances to the camera.

Each focus point is capable of passing accurate focusing data to the lens, so why are there so many? It is so that you can select the point or points you want to be active. This is done by pressing the button in the top right of the camera back. Then turn the Main Dial select one, some or all the points.



An active AF Point lights up in red in the camera viewfinder and takes a distance reading from the nearest part of the subject to the camera. Inactive points do not take readings.

Usually it makes sense to choose the centre point as this is the most sensitive. Position this point over the area of the subject you want to be in focus and then partially depress the shutter button. This will lock the focus. Now you can recompose the image in the viewfinder and fully depress the shutter button to take a picture. Alternatively, you can choose an off-centre focus point to be active. Choose a point that covers the area of the subject you want to be in focus.

Why to change AF Modes

All EOS cameras feature three different focusing modes. Choose the one which suits your subject.

One-Shot AF: *best for still subjects, such as landscapes and portraits.*

When you partially depress the shutter button, the lens focuses and the focus is then locked. The AF points that achieve the focus will display in red and a green focus confirmation light will appear in the viewfinder. If the camera is unable to find the focus, e.g. your subject is too close, the focus confirmation light will blink and you will not be able to fire the shutter.

AI Servo AF: *best for moving subjects when the focusing distance is changing.*

When you partially depress the shutter button, the lens focuses on your subject. If you keep the button partially depressed, the lens will continually refocus if the subject moves and the focus

distance changes. Focus tracking will continue for as long as your subject is covered by an active AF Point.

AI Focus AF: *best for subjects moving unpredictably, such as animals.*

The camera automatically switches from One-Shot AF to AI Servo AF if it detects your subject moving.

AF-assist beam

In low light, an AF-assist beam can help with accurate focusing. On cameras with built-in flash this is done by a series of flashes and is effective up to approximately 4 metres. Alternatively, a Speedlite or Speedlite Transmitter ST-E2 can be used which emit the AF-assist beam as a grid of red light. Subjects should be 10 metres or less away depending on the Speedlite.

Focusing in Live View

All current EOS cameras offer a choice of focusing modes in Live View.

Check your Instruction Manual ([downloadable here](#)) for the focusing options your EOS has. One of the advantages of using Live View is that it lets you see the depth-of-field more easily than with the optical viewfinder.



The depth-of-field button (photo above) lets you see how the image will look at the selected aperture. Wide apertures such as f/4 give a narrow depth-of-field; only a small area in front of and behind the plane of focus will appear sharp. Small apertures, such as f/16, give a wider area of apparent sharpness.

Less light reaches the sensor when you reduce the size of the lens aperture for depth-of-field preview. This darkens the image seen through the optical viewfinder. However, the view on the LCD screen on the back of the camera does not darken because the camera amplifies the light that is reaching the screen to give you the Live View feed, making it much easier to see the depth of field.

Manual focusing

Whilst AF is very effective, there are occasions when you may want to experiment with your focus point.

For example, when photographing landscapes, focusing about one-third of the way into the subject can maximise depth-of-field (the area behind and in front of the point of focus that appears sharp).

You can do this by selecting the centre AF Point and positioning it over an appropriate area of the subject. Partially depress the shutter button to lock the focus before recomposing the image, but you will need to refocus for each shot.

If you plan to take several images of the landscape, perhaps with different exposure settings, manual focusing is the answer. There is a small switch on the side of the lens which can be moved from 'AF' setting to 'MF'.



Did you know that you can adjust the viewfinder to your eyesight?

With EOS single-lens reflex cameras it is essential that your eyes can focus on the image displayed in the optical viewfinder. You can wear glasses to help with this, but it is often better to make use of the built-in dioptic correction lens. This is adjusted using the small wheel at the top right of the viewfinder eyepiece. Look into the viewfinder and turn the wheel in one direction and then the other until the black rectangles that indicate the position of the focus points are at their sharpest.



Learn more

This tutorial gives a good start into understanding the autofocus capabilities of your EOS. If you would like to know more, Canon Professional Network (CPN) offers an in-depth explanation here.

<http://cpn.canon-europe.com/content/education/infobank/autofocus.do>