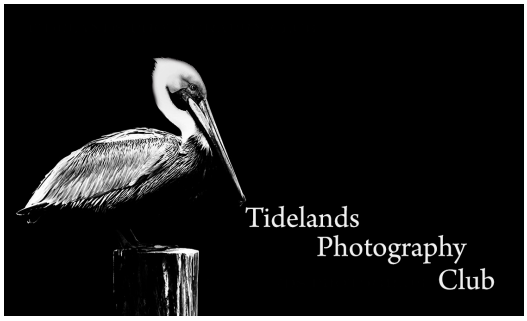


Hyperfocal Distance - how and why

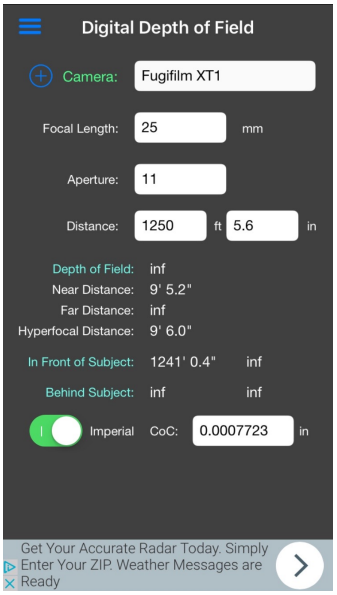
Hyperfocal Distance is basically finding the the focusing distance that yields the greatest depth of field. The hyperfocal distance is dependent on your camera sensor size, the focal length of your lens and the aperture or *f* stop.

Here's a complicated formula for determining the Hyperfocal Distance:

$$\text{Hyperfocal Distance} = \frac{(focal\ length)^2}{(f\text{-}number)(acceptable\ circle\ of\ confusion)} + (focal\ length)$$

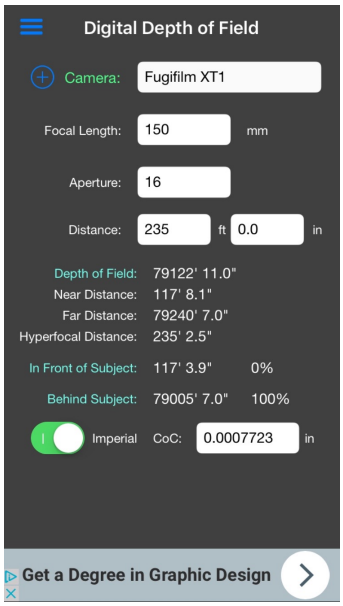
But, fortunately there are several apps for your Smart Phone, such as DOF Master or Digital DOF. Both are easy to use and Free or inexpensive. Simply select your camera model, then the *f* stop and the focal length of your lens. the app will calculate the Hyperfocal Distance plus the near and far focus distances. The app uses a suggested CoC, Circle of Confusion, this can be changed if needed, but in digital photography it's usually the pixel size of your camera's sensor.

Just a couple of basic points to remember, Wide Angle lenses produce deeper depth of Field & smaller apertures (*f* 16) create deeper depth of field. Conversely telephoto lenses produce shallower depth of field & larger apertures (*f* 4) create shallower depth of field.

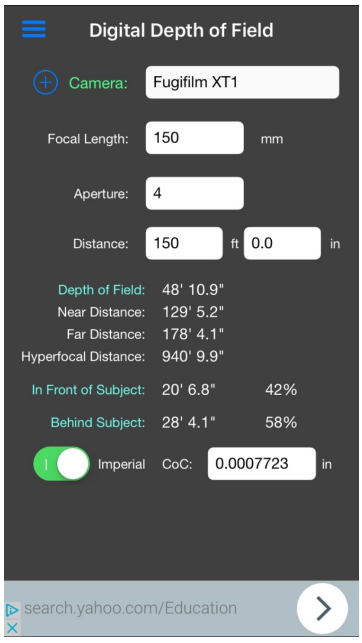


Let's demonstrate how to use this, let's use a wide angle lens and set up for a landscape photo, with mountain peaks in the far distance, say 5 miles away. Also in the scene is a log cabin in the valley, it's about 1250 feet away, I'm using my Fuji X-T1 with a 25 mm lens and *f* 11. As I set this up in my app. my Hyperfocal distance is 9'-6" and this will yield a near focus at 9'-5.2" and a far distance of infinity. So this will result in the far mountain peaks as well as the cabin in focus.

Now, let's use a telephoto lens shooting Birds in Flight with our subject bird about 150 feet away, so we're using a 150 mm lens and f 16 the resulting hyperfocal distance is 235'-2.5". So if I set my focus at the hyperfocal distance my near focal distance is 117' and my far distance is infinity, so using these settings I can photo the subject bird at any distance beyond 117' and the bird will be in focus.



Now, let's use the Depth of Field app another way. Let's use the Bird in Flight example above, but I need to use f 4 to get the exposure right, this gives me a hyperfocal distance of 940', which is of no value, but if I set the subject distance to 150 feet, the app calculates that the near distance is 129 feet and the far distance is 178 feet, so if the bird stays in that range, he will remain in focus.



More on Hyperfocal Distance:

https://photographylife.com/hyperfocal-distance-explained/