ExpoAperture Depth of Field Guide

Frequently Asked Questions

Will the ExpoAperture Depth of Field Guide work with my digital SLR camera?

Yes. The ExpoAperture Depth of Field Guide will work as is with all full-frame 35mm and digital SLR cameras where the image sensor is approximately the same size as a full 35mm frame (24mm x 36mm). You may also use the Guide with digital cameras with a 1.5 or 1.6 equivalent focal length by referring to the Guide's *Focal Length Conversion Table*; or with medium format film (120/220) cameras by referring to the *Medium Format Film Instructions*.

My digital camera does not have a full size sensor; can I still use the guide by multiplying the actual focal length of the lens by the camera's equivalent focal length factor?

No. The equivalent focal length factor (or multiplier) is based on the linear relationship between a full size 35mm frame and the camera's image sensor. The formulas used to determine depth of field are based on an exponential relationship of focal length to aperture size. Therefore multiplying the actual focal length by the camera's equivalent focal length factor will not result in the correct answer for your camera.

Can I use the ExpoAperture guide with my digital camera which has a 1.6 equivalent focal length?

Yes. Many of the digital SLR cameras on the market today have either a 1.5 or 1.6 equivalent focal length. Taking this into consideration we have developed a *Focal Length Conversion Table* that will convert the actual focal length of your lens to one that will result in the correct depth of field when set on the Guide's dial. Do not confuse the converted focal length with the equivalent focal length, they are not the same.

Focal Length Conversion Table

If you have a digital SLR camera with a 1.6 or 1.5 equivalent focal length use the following conversion table to determine the focal length setting on the ExpoAperture Depth of Field Guide. Determine the actual focal length of lens you are using and set the ExpoAperture Guide to the corresponding focal length in the table. Values that are not directly listed in the table can be approximated.

Actual Focal Length of Lens	Set the ExpoAperture guide to...	Actual Focal Length of Lens	Set the ExpoAperture guide to...
14mm	18mm	80mm	100mm
17	21	96	120
20	25	112	140
24	30	136	170
28	35	160	200
34	42	192	240
40	50	224	280
48	60	273	340
56	70	321	400
68	85		

Which digital cameras have a 1.5 or 1.6 equivalent focal length?

While we have not examined every camera on the market we have come up with a list of the more popular cameras and film formats showing their equivalent focal length factors in relation to a full-frame 35mm camera.

Sensor / Image sizes for some popular cameras and film formats

Equivalent Focal Length in relation to 35mm film	Sensor/Image Size H x V in millimeters	Camera Model or Film Format
0.4	56 x 84	Medium format film – 120 rectangular format
0.5	56 x 56	Medium format film – 120 square format
0.6	56 x 42	Medium format film – 120 half frame format
1.0	36 x 24	Kodak DCS SLR/c, DCS SLR/n, DCS 14n Contax N Digital Canon EOS 1Ds Mark II All full frame 35mm cameras
	35.8 x 23.8	Canon EOS 1DS
1.3	28.7 x 19.1	Canon EOS 1D, 1D Mark II
	30.2 x 16.7	APS format film – H format
1.4	30.2 x 9.5	APS format film – P format
	25.1 x 16.7	APS format film – C format
1.5	23.7 x 15.5	Nikon D50, D70, D70s, D100, D1, D1H, D1x, D2x, D2H, D2Hs Pentax *ist D, DL, DS
	23.5 x 15.7	Konica/Minolta Maxxum 7D, 5D
1.6	23.0 x 15.5	Fuji Fine Pix S3 Pro, S2 Pro
	22.7 x 15.1	Canon EOS 300D/Digital Rebel EOS 10D, D60, D30
	22.5 x 15.0	Canon EOS 20D
	22.2 x 14.8	Canon EOS 350D/Digital Rebel
1.7	21.5 x 14.4	Sony DSC-R1
	20.7 x 13.8	Sigma SD10, SD9
1.9	18.0 x 13.5	Olympus E-300, E-1

ExpoImaging, Inc. is not responsible for the accuracy or completeness of this table.
It is only presented here for comparison purposes.

How do I use the ExpoAperture guide with my medium format 120/220 film camera?

Using the ExpoAperture Depth of Field Guide with medium format film (120/220) is very simple; you either multiply or divide the number of zones by two as you switch from one side of the Guide to the other. If starting on the front of the Guide multiply the number of zones by two and use that number of zones on the Zone Dial. If starting with the Zone Dial divide the number of zones by two and then use that number of zones on the front of the guide.

What circle of confusion is used in the ExpoAperture Depth of Field Guide calculations?

The ExpoAperture Depth of Field Guide, when used with 35mm film, is based on a permissible circle of confusion of 35 microns. If you are using the *Focal Length Conversion Table* for 1.5 or 1.6 equivalent focal length cameras, ExpoAperture Guide computes the depth of field using a circle of confusion of 22.5 microns. When using the guide in accordance with the instructions for medium format film (120/220) cameras, the permissible circle of confusion is 70 microns.

The shortest focal length on the Guide is 18mm; will it work with focal lengths less than 18mm?

Yes. We should pint out that lenses with such short focal lengths inherently have very large depth of fields to begin with. Therefore it was decided that inclusion of such short focal lengths would not enhance the Guide's usefulness. However it is still possible to use the Guide to determine depth of field with focal lengths less than 18mm.

Here's how - If starting on the front of the Guide: set the guide's focal length to twice the actual focal length of the lens you are using; read the number of zones under the f-stop you want to use; multiply the number of zones by four; on the Zone Dial center the number of zones you just calculated around your focal point; and, read the depth of field. If starting with the Zone Dial: center the number of zones you want in focus around the focal point; on the front of the Guide set the focal length to twice the actual focal length of the lens you are using; divide the number of zones you used on the Zone Dial by four; and, read the f-stop required above the number you just calculated.

What kind of warranty comes with the ExpoAperture Guide?

All ExpoImaging products come with a limited warranty to be free of defects in workmanship and materials for a period of one (1) year from the date of original retail purchase. If the product proves to be defective within the warranty period it will be replaced.