

Canon

Photography for Beginners

the essential guide to understanding photographic basics

For DSLR & mirrorless
Canon EOS cameras



By Nina Bailey

Introduction

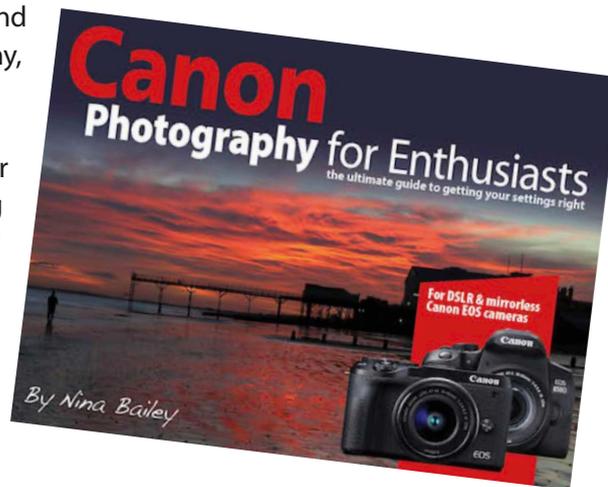
This book has been written for those that are new to the Canon EOS range. The range used to be easy to define being made up of just DSLR cameras or Digital Single Lens Reflex models to give them their full title. Today the EOS range also has Mirrorless models which still have interchangeable lenses and more or less the same features. But they use electronic viewing methods, rather than reflecting the light up into the viewfinder via a reflex or moving mirror. Whichever you have, the book is applicable to your camera, as they are remarkably similar in operation.

In this book I have assumed you have no photographic knowledge and so I have set out to explain the terms, jargon and techniques that you will inevitably encounter when starting to use these models.

Photography can appear very daunting as there are a lot of terms and techniques that you may not have encountered before. You will also find if you've previously used a mobile phone camera or indeed some of the more basic point and shoot models, that the way the camera works is a little bit different and even the way the image looks under the same conditions can change and so in the early part of the book I will explain why some of these changes happen.

The book sets out to get you comfortably using what are known as the Basics Zone or Full Auto modes on your camera and looks at how you can make the most of these to get the images that you want. I finish the book introducing what we know as the Creative modes and why starting to use them can improve your photography, especially when shooting some more specialist subjects.

My follow on book from this, Canon photography for Enthusiasts, moves forward from this basic understanding to give you a much more in depth understanding of how to use those creative modes once you have mastered the techniques in this book.



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About the

2

**PREVIEW
EDITION**



Nina started her own business in 1999, concentrating on training for amateur photographers. In 2014 Nina started producing her own range of ebooks to bring photography training to an ever wider audience. Nina writes, shoots, produces all graphics and designs all the layouts of the books herself and this gives her a very good in-depth understanding of all the processes involved in producing digital images and how they are used. In Summer 2015 Nina was appointed as Technical Editor of EOS Magazine, a role that she is doing in addition to her active role as the principal lecturer for the EOS training Academy and writing her ebooks.

Nina started taking images when she was very young and is still a very keen photographer both professionally and personally. Nina loves travel, landscape and wildlife photography. Most of the images she now shoots are for her own picture library for use in the books and articles that she writes.

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Foreword from the author

I have written this book to be applicable to any model within the Canon EOS range, whether it be a DSLR or mirrorless model. However, that makes it impossible to give you in depth instructions as to how to set specific features, as increasingly the controls are moved around on the different ranges.

However, the menu options I'm showing will be fairly standard between cameras, providing your model was produced since 2012, the only difference being which tab the control is found on. Canon do seem to have a habit of moving commands around menus from one model to another. Models pre 2012 varied a lot more and may lack some of the settings that we are showing within the book.

If you would like more specific guidance for your camera then I have a range of ebooks which are written dedicated to specific models. They are available for almost all models since 2012 and some models which were available a little bit before this. Some are in two volumes Getting started with and Mastering titles, as until fairly recently there was a maximum size that we could go up to for download limits. The books produced since 2018 are now found in a single volume called Understanding your which is possible as the permitted download size is now significantly larger.

The specific model books show you how to set the feature, but more importantly explain what the feature is designed to do and give examples where appropriate of how it is used. So the books go into a lot more depth than the camera manuals which are often best described as "vague" in places.

This book has come about because there are a lot of things which I talk about quite regularly on the training events which I run, which do not really get mentioned in the other books or indeed within the manuals. In many ways it's the general knowledge of photography which you build up over the years, but which if you're new to photography are things that you may not know about.

This book does overlap to a small degree with some of the contents in the Getting started level books, however it expands on some of the topics significantly more and explains a lot more about the overrides within the Basic zone modes, much more than I do in the specific camera books, which do assume a basic general knowledge about photography and the commonly used terms.

The topics in this book are found on the vast majority of the Canon EOS range. However, please be aware that the EOS 1, 5 and 7 series, along with the EOS R, R5, R6 mirrorless models are aimed at experienced enthusiasts and professional users and so do not have many of the Basic zone settings, so a lot of the items discussed in this book will not be found on those models.



EOS MAGAZINE BLOG EOS SYSTEM ARTICLES COMMUNITY

EOS magazine

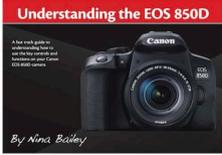
EXCLUSIVELY CANON, ESSENTIAL FOR EOS USERS

EBOOKS FOR YOUR EOS PHOTOGRAPHY

BY CANON TUTOR NINA BAILEY

Camera Guides

Get camera-confident with this range of eBooks by Canon tutor Nina Bailey. Learn more about your Canon EOS camera and its many features and functions. Written in a no-nonsense and friendly style, you will learn how your camera works and how to make best use of it to improve your photography.

Contents

Navigating the book.

All of the menu items below are hyper-linked to the appropriate page - so just tap on the item you want to go to that page. On each page there is a link like this.

[← Return to contents](#)

Tap/click on this button to return to this page. These navigation controls make it much faster to “jump” around the ebook.

About the EOS Range	7
The EOS range	8
Understanding sensor size	11
Why the difference in area	15
Differences compared to other sensors	16
The emergence of mirrorless	19
DSLR Viewfinders	21
DSLR- Live View	22
EOS Anatomy - DSLR models	23
EOS Anatomy - R series mirrorless models	27
EOS Anatomy - M series mirrorless models	29
Lens compatibility	30
Pixel counts	31
What camera specification do you need	32
Range summary	33
Photographic terms	34
Exposure modes	35
Key settings	42
Key setting - Shutter speed	43
Settings cheat sheet	49
Key settings - Apertures	50
Key settings - Stops	54
Key settings - ISO	57

Picture noise	65
Camera terms	68
Lens types	71
Quality settings	72
File formats and extensions	74
File sizes	76
Post production terms	80
Summary	84

Camera displays	85
Key buttons	86
Viewfinder DSLR models	87
Viewfinder/Rear screen - Mirrorless/Live View	88
Rear screen displays - DSLR and Mirrorless	92
Playback displays	94
Playback displays - Magnifying images	96
Playback displays - Displaying multiple images	97
About Histograms	98
Histograms - Brightness	99
Histograms - RGB	104
Display summary	105

Setting up your camera and accessories	106
Navigation	107
Menu Navigation	111
Setting up the date	113
How to view EXIF data	115
Language settings	116
Dioptic adjustment	117
Batteries	118
Getting the best out of batteries	119
Battery info	120
Battery grips	121
Memory cards	123

Memory card FAQ	
Protective filters	
Lens hoods	
Sensors and dust	
Cleaning the camera and lenses	
Rain covers	
Straps	131
Camera bags	141
Tripods	145
Tripod heads	148
Tripod features	150
Tips when using tripods	151
Remote releases	152
Summary	155

Basic zone Exposure modes	156
Understanding the exposure modes	157
Auto+/Full Auto mode	160
About the built-in flashgun	165
Choosing external flashguns	168
Improving light with bounce flash	169
Auto+/Full Auto overrides	170
Understanding the overrides	171
Creative Assist	173
Creative assist - Saving effects	182
Creative assist at playback	183
Flash off mode	184
Creative auto mode	186
PIC and SCN modes	189
Setting SCN modes	190
SCN/PIC overrides	191
Shoot by Lighting scene type overrides	192
Portrait mode	193
SCN modes - Key overrides - DSLR	197

Contents

PREVIEW EDITION

SCN modes - Key overrides - Mirrorless	198	Side lighting	256	Using AI Servo on earlier/mirrorless	
Mirrorless AF methods	199	Back lighting	257	45 point AF areas DSLR	
DSLR - AF areas	200	Planning tools	258	61/65/191 point AF areas DSLR	
Group mode	201	Observation	260	Live View differences	
Self portrait mode	204	Framing	261	Mirrorless AF systems	
Smooth skin mode	205	Different viewpoints	266	Face detection+Tracking AF	
Silent mode	206	Don't assume widest is best	267	Eye detection	337
Kids mode	208	Look for the different	268	Subject to detect	339
Sports mode	210	Summary	269	Other Mirrorless AF methods	341
Panning mode	213			Exposure compensation	344
Landscape mode	216	Creative zone modes	270	White balance	346
HDR Backlight control mode	219	About the Creative zone modes	271	ALO - Auto Lighting Optimizer	350
Close-up mode	222	Sensible default for beginners	274	Picture Styles	354
Food mode	225	Sensible default for beginners - Mirrorless differences	280	Picture Styles - Contrast	357
Handheld Night Scene mode	228	Changing settings in Creative zone modes	282	Picture Styles - Saturation	358
Night portrait mode	231	P - Program mode	285	Picture Styles - Colour tone	359
Candlelight mode	234	P - Program mode - Program shift	287	Picture Styles - Sharpening	361
Creative filters	236	When to use Program mode	289	Picture Style Options	363
Creative filters - Grainy B/W	239	TV - Time value mode	290	Summary of key settings	367
Creative filters - Soft focus	240	What shutter speed to use	293		
Creative filters - Fish-eye effect	241	AV - Aperture value mode	301	Choosing and using lenses	368
Creative filters - Water painting	243	What aperture to use	304	Canon's lens range	369
Creative filters - Art bold effect	244	Which mode is best	310	Lens terms	370
Creative filters - Toy camera effect	245			Choosing lenses	375
Creative filters - Miniature effect	246	Key overrides	313	Choosing lenses - General use	377
Creative filters - HDR Art Standard	247	Setting key controls	314	Choosing lenses - Telephoto options	378
Creative filters - HDR options	248	Focus lock	315	All in one lenses	380
Creative filters - Merging effects	249	Automatic exposure lock	317	Other lenses	381
The pros and cons of basic zone modes	250	AE Lock	320	Getting close	383
		Focusing mode for static subjects	323	Using lenses for effect	385
Getting better images by thinking	252	Focusing modes for moving subjects	324	Using lenses for effect - Wide angle	386
Getting better results by thinking	253	Focusing areas - models with 9/11 points DSLR	325	Using lenses for effect - Standard lenses	387
Lighting directions	254	Focusing areas - models with 19 AF points DSLR	326	Using lenses for effect - Short telephoto	388
Front lighting	255	Focusing areas DSLR	327	Using lenses for effect - Mid telephoto	389

Contents

Using lenses for effect - Long telephoto	390
Summary	391
Composing images	394
Composing images	395
Rule of thirds	396
Viewfinder grids and guides	398
Viewfinder levels	400
Leading lines	401
Backgrounds	403
Using frames	404
Using space	405
Number of subjects	407
Simplicity	409
Composition summary	410
Introduction to workflow	411
About workflow	412
Free Canon software you need	414
Downloading images	419
Filing images	424
Quickly get rid of images you don't want	427
EXIF data	430
Getting additional EXIF data in DPP	431
Clearing your cards	432
Improving images	433
Further reading	435
Learning more	436
Other products and services	438



Understanding sensor size

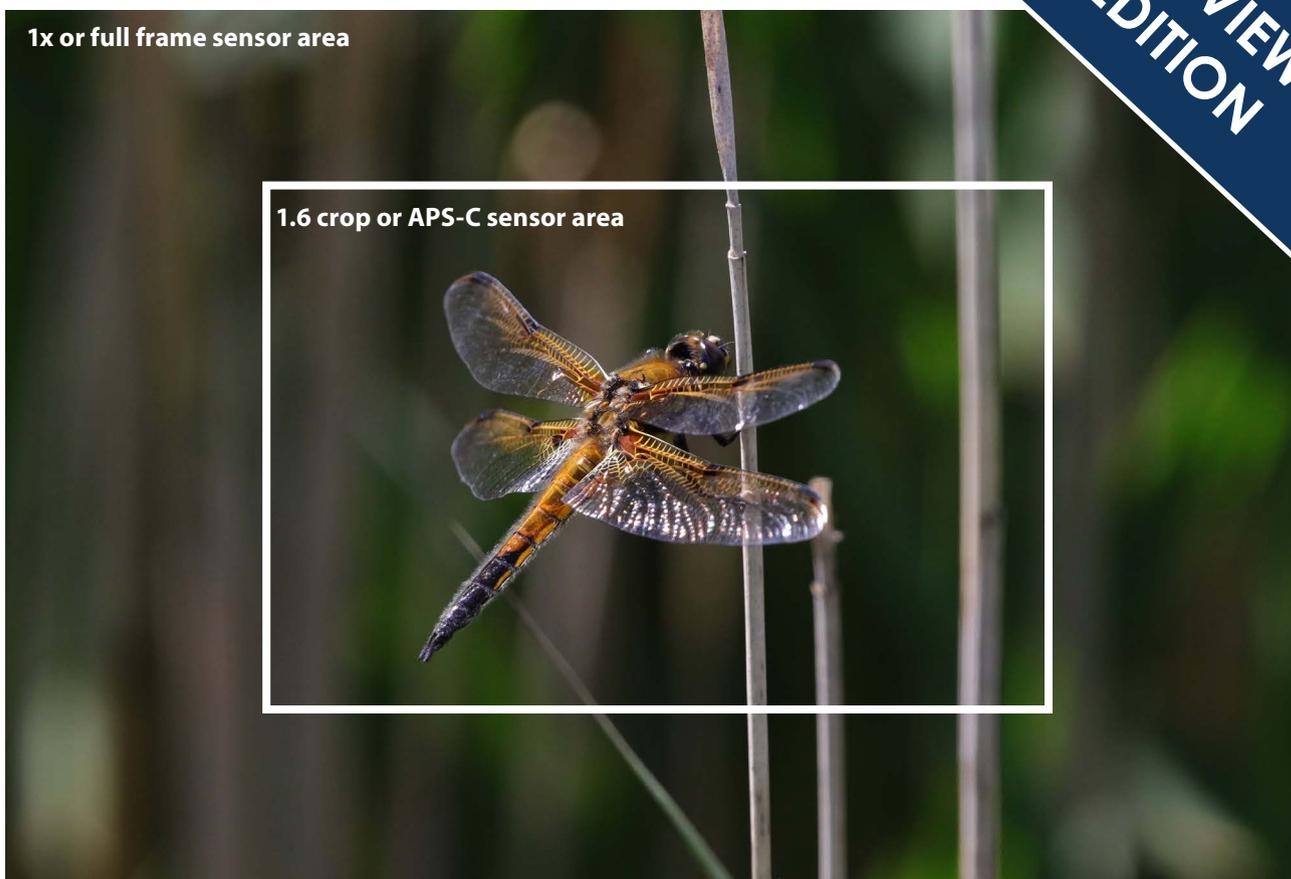
appropriate to the smaller sensor size. These are the lenses which are most commonly sold to go with the models that feature the smaller size sensor.

It is important to understand that there are both advantages and drawbacks to having a camera with a smaller sensor. There are in fact two very big advantages. The first being the smaller sensor models are significantly smaller and lighter and are still more affordable than the full frame. They also give you the effect that you can fill the frame easier without having to resort to very long telephoto lenses. So, wildlife and some sports photography can be made both more affordable and the outfit smaller and lighter, thanks to the crop effect given by the sensor. I will look more at lenses and what they do a little bit later in the book.

The downside to the smaller sensors is that to get a good wide angled view of a landscape you need a lens that captures a wider field of view, something shown very adequately on the previous page. However, this is not so much of a problem today as there is a very good range of EF-S lenses that give you the focal lengths needed to do that. The one thing that can be a drawback on the models with the smaller sensor is that they tend not to perform quite as well in ultra-low light, but for most photographers their performance is more than adequate.

I will explain a little bit more about their low light performance when I talk about the ISO settings and what they do later in the book.

If there are benefits to using the smaller sensor,



you may wonder why people would go to full frame cameras. There is the reality that they do work better in low light levels and can give better picture quality, although for wildlife and sports photography you do need longer lenses. If you have the means to afford both the full frame camera and lenses for them, they can give you better control over the background blur in the image.

So generally, the full frame cameras are more versatile but that comes at a cost. The price point

of full frame models will always be higher and generally they are going to be larger and heavier. However, the latest EOS R series mirrorless models with the size and weight issues to a significant degree.

You're probably starting to understand now that knowing which sensor your camera has is important, because it has a knock-on effect on a number of the things within photography that we're going to be talking about within the book.

Understanding sensor size

I will look at lenses in a bit more depth later on in the book, but it is important to understand that to get the same amount in the frame the lens has to change between the different sensor sizes.

The crop factor allows us to calculate the equivalent lens that would be used on a full frame camera, compared to the model with the smaller sensor.

So, for example we want to know what lens is equivalent to 24mm on a full frame camera, we divide 24 by 1.6 which gives us 15. So we would need a 15mm lens to give us the same angle view as a 24mm lens on a full frame body.

If we want to do the maths the other way round, then if we start off with an 18mm lens on a APS-C camera the maths becomes 18 multiplied by 1.6 which gives us 28.8 so we would basically need to use a 28mm lens.

What is important to understand with this maths is it's telling us the equivalent lens that gives us the same picture area on the other format, however it doesn't actually change the focal length of that lens. So although a 50mm lens will give a different area being captured, depending on which sensor size is being used on, it is still a 50mm lens and gives the perspective and depth of field of the 50mm lens.

The chart above shows the lenses that are equivalent to one another depending on which sensor size you use, to save you doing the maths.

I have also highlighted the cells and shown which

1.0x or Full frame	1.6 or APS -C sensor
16mm	10mm
24mm	15mm
28mm	18mm
50mm	31mm
70mm	44mm
105mm	66mm
135mm	85mm
200mm	125mm
300mm	188mm
400mm	250mm
500mm	312mm
600mm	375mm
800mm	500mm
	Wide angle
	Standard
	Telephoto

of the lenses would be considered wide angle, standard or telephoto. One thing that's noticeable is that the standard and lower telephoto focal lengths, which are the ones that we use to shoot portrait and close ups subjects, start to fall into different length categories. Also, the wide angle lenses have a significantly lower focal length. Both of these factors mean that there is significantly more captured sharp within the image when using the smaller sensor models.

Of course with the APS-C sensor you can use the same lenses as would use on a full frame model and simply shoot from further away. For instance we would get a similar effect, but if we are shooting at a greater distance to capture the same amount, there is still slight changes in what we capture and how much will be sharp.

If you are struggling to make sense of this don't worry too much, the reality is that depending on which sensor size you have, just buy the lenses that work with that sensor. If you buy the series of lenses designed for the smaller sensors, EF-S or EF-M depending on whether you use a DSLR or mirrorless model, rest assured those lenses are designed with focal lengths which are appropriate for those models.

Where we can see more problems is with the standard EF lens range, as the focal length ranges (in other words the mm range) is designed to be appropriate to the full frame sensors although the lenses can be used on the APS-C models.

This is why later in the book I am going to take a look at the type of outfit that's appropriate in terms of lenses for different types of photography and where the variations would be between the two sensor sizes. I'm going to do this because one thing I would observe is I see so many photographers who are carrying around two or even three lenses, which actually duplicate most of their range and therefore are a little pointless to own.

Exposure Modes

PREVIEW EDITION



The exposure mode dial/button allows you to tell the camera the way that you want it to work. Your camera will have a range of exposure modes on it which on most models range from a fully automatic setting, which makes the camera point and shoot, through to a mode which will give you complete manual control. In between you have modes ranging from ones that give a large degree of automation through to semi-automatic modes which gives you more control but where the camera still does some of the work

this is depressed and held down, you then turn the Main dial on the top of the camera to scroll through the available exposure mode settings. This option makes it easier to change modes whilst looking through the camera's viewfinder and on the R series models does allow some interesting customizations. This allows which button is used to change the mode to be changed to other buttons. The models that have the mode button generally feature less or sometimes no fully automatic modes.

Most EOS models have an exposure mode dial located on the top of the camera body. As you can see from the top row of images, the exact position of the dial varies. If the exposure mode dial has a button in the centre of it, then this will need to be pressed before the dial can be rotated to set the mode. There will be a mark on the camera which is where you line the mode up against.

The most basic of the M series mirrorless models have a very basic mode selector on the top of them. This is highlighted bottom right and allows a simple selection between a Basic zone option, or access to creative modes, or a movie mode. Once in the appropriate option you can then choose variations on those modes from the rear screen on the camera. This is done to make these cameras act more like a point and shoot camera and these models are mostly used in Full Auto, although they do have the more versatile options available if needed.

Some of the more advanced models, 1D series and the EOS R and R5 have a mode button. When



Exposure Modes



On the dials above I have lightened the areas on the mode dials/mode screen showing where the Basic zone Modes are located. A Basic zone mode is any mode which gives only a limited range of controls and overrides for the photographer to use. The Creative Modes have been left unshaded on all the illustrations above.

As you can see from the exposure mode dials along the top line, the exact choice of modes varies quite significantly. There is now a gradual transition to making the exposure mode a little bit simpler and so the one shown on the left hand side is from an EOS 850D, which now has all of its simplified mode options within just 3 settings. The second dial from the left is from a 800D which was produced just a few years earlier and this shows far more modes being available but actually the 850D has almost the same options.

Over the next few pages I will take a look at the symbols used for each mode and explain very briefly about the mode itself. I will look at the modes in more depth in a specific chapter later, but it's useful to know the names and where they are set.

BASIC ZONE MODES

A+ AUTO+ is a fully automatic mode that will choose the settings for you. It senses the focal length of the lens and sets a shutter speed that will prevent camera shake from affecting your images. The ISO will adjust to accommodate this. On models produced before 2011 the Auto+ mode was found as a simple green square and was sometimes referred to as green square mode or more correctly Full Auto mode. In actual operation the two modes look the same, however, there is more intelligence going on within the Auto+ mode. Earlier models have no overrides, whilst later models generally allow you to change the drive mode and possibly control whether the flash fires or not. Some advanced models offer additional controls.

On models from 2018 onwards which do not have the Creative auto mode, you will find a feature called Creative assist. This allows a range of adjustments to be done at the time of shooting and if shooting in RAW, the images can be processed in camera with the same adjustments on some models.



FLASH OFF is similar to Auto+ mode but it only appears on models that feature a built-in flash which pops up automatically. This mode prevents the flash from firing, making it suitable for use when flash is either not allowed or when shooting without flash will produce a better image. The only available override is normally the drive mode setting. This mode is not found on models after 2018, as the flash units no longer pop up automatically.

CA - CREATIVE AUTO is a fully automatic mode that does offer you some creative control

Key settings

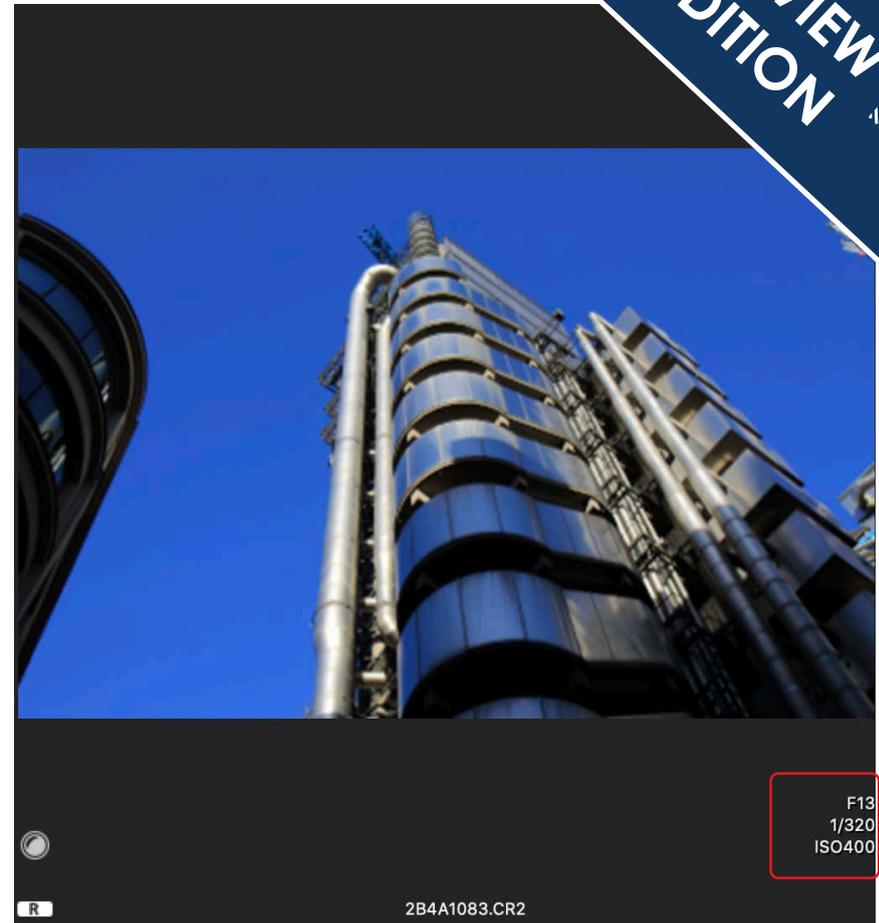
There are three settings that are used to take every picture that you capture. These are the shutter speed, the aperture and the ISO setting. These three settings combined control what we call the exposure of the image. In other words getting the correct amount of light to fall on the sensor to give an image which is being captured at the right brightness.

The Basic zone modes, that's the fully automatic ones, which we are mainly going to be looking at in this book, mostly set these things for you automatically. The mode you choose may allow some control over the combination of the settings. I will also look at the most commonly used creative modes, and once you start to use these options it is important you understand what the shutter speed, aperture and ISO does as you start to take an increasing amount of control over these options.

These options quite literally control how your image looks. The shutter speed set correctly ensures that you do not get blur in the picture, caused by movement of the camera at the time of taking. In other words, it gives you the ability to handhold the picture. The shutter speed is also used to allow you to either freeze or deliberately blur the subject that you are taking. So from a creative point of view it's actually a very important control.

The aperture is controlling how much light comes in through the lens and it works in an identical way to the pupil of our eye. In low light levels it can open up wide and let more light in and in bright light it narrows down letting less light in. It also has an influence on something called depth of field. That's the correct term for how much is coming out sharp within the image, looking at it from front to back. The reason I say it only has an influence over it, is the focal length of the lens you choose to use, in other words it's mm setting, also has a big controlling factor in the amount you get sharp in the image.

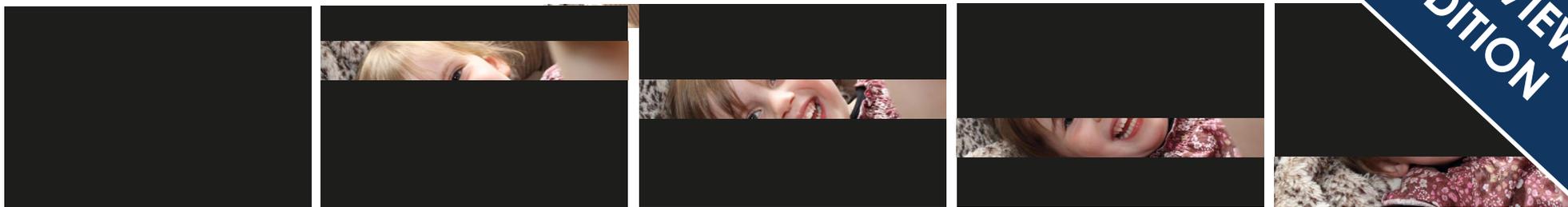
The control that many photographers forget about is the ISO, which controls the sensitivity of the imaging sensor. In traditional film photography it controlled the sensitivity of film to light, but was fixed for that film and so it wasn't really considered to be a significant part of the exposure process. However, on today's digital cameras it can literally change frame by frame and has a very wide range of options to choose from. So today the ISO is a very important part of getting exposures correct and more importantly getting the shutter



speeds and aperture as you want for the image you want to create.

The settings used on the camera when the image is taken is saved within the images EXIF or Exchangeable Information Format Data and even when you have downloaded the images, the settings can be viewed for each image. I have highlighted on the image above which is a screenshot from Canon's Digital Photo Professional how the EXIF data displays. The aperture is at the top, then the shutter speed and ISO is at the bottom.

Key settings - Shutter speed



The shutter speed controls how long the light can fall on the sensor for. The models in the EOS range offer a fairly standard range from 1/8000th on the higher level models or 1/4000th on the entry, compact and introductory models, down to 30 whole seconds. The shutter which is used on an EOS model is called a focal plane shutter. It consists of two shutter curtains. These are made up from a number of shutter blades which can actually be seen in the image to the right, they overlap slightly and operate from the top to bottom of the frame.

On a DSLR model it is almost impossible to see the shutter, as the reflex mirror which reflects light up into the viewfinder so you can see through the lens is down and blocks the view of the shutter mechanism. The image to the right shows a mirrorless body which does not have a reflex mirror and so the shutter mechanism is much more visible, also due to the way the camera body is constructed it is much nearer to the lens mount than it would be found on a DSLR body.

The way that a shutter normally operates is that the first shutter curtain will drop down which starts to expose the image and then the second shutter curtain follows it, as shown in the series of images at the top of the page. Up to a certain shutter speed (1/180, 1/200 or 1/250 depending on the camera that you have) the first shutter curtain fully opens and then the second curtain follows. Above this shutter speed the second curtain starts to close before the first curtain has fully opened and the image is exposed by a travelling slit. This is how the camera achieves very high shutter speeds.

The highest shutter speed that the camera fully opens its shutter, is only relevant if shooting with flash and that shutter speed can be referred to as the X sync speed on the camera or the maximum synchronisation speed. Although it's useful to know the terms if you're using the camera's built-in flash or a flashgun designed especially for Canon EOS models, the camera will automatically manage the shutter speeds being used for you to ensure that you don't exceed the correct sync speed.



Above: The shutter on a mirrorless camera is only closed when the camera is turned off. In normal operation the shutter would be open and if you took the lens off you will be able to see the sensor. This is why on a mirrorless model it's very important you turn the camera off before changing lenses, as when switched on there is no protection in front of the sensor unit.

Key settings - Apertures

out which one they are referring to. It is one of the reasons why I have changed how I refer to the aperture slightly and now use the terms wide and narrow rather than large and small as it avoids at least some of the confusion. Although today the aperture is almost universally referred to as the aperture, it is not that long ago (40+ years) that it could also be called the iris or the diaphragm, Though I haven't seen these terms in general use for many years now.

Just like the shutter speed the aperture's can be divided into three groups. Wide apertures, mid apertures and narrow apertures.

WIDE APERTURES only appear on lenses with a high specification or prime lenses which only have a single focal length. There are a few zoom lenses which are either f2 or f2.8 but these are very expensive. Wide apertures are normally used when you want to get things blurred in the foreground or the background Although there are other ways of achieving that, which I will look at later in the book.

MID APERTURES are the ones that we use most of the time but on a lot of the affordable zoom lenses they may be the widest aperture that you have available. It is important to realise that not all lenses can produce good background blur as they don't have a wide enough aperture.

NARROW APERTURES are used when we need to get a lot sharp within the image when shooting general images and they are also used when shooting Close-up and macro subjects as it can be

Wide/large apertures - f1.4, f1.8, f2, f2.8



Mid apertures - f4, f5.6, f8, f11



Narrow/Small apertures - f16, f22, f32



Key settings - Apertures

very difficult to get good sharpness over the entire subject.

In addition to controlling the amount of light coming through the lens, you may have noticed that the aperture also influences how much we get sharp within the image. What we are referring to is depth of field, which is how the amount of sharpness from foreground to background is described. A shallow depth of field means you may only have one part of the image that is sharp. A deep depth of field means everything will be in focus from the very closest thing to the far distance.

Depth of field is the single hardest concept in photography to get to grips with and as this book is aimed at beginners, I am only going to mention a few bits about it. As there are far more important things to grasp before worrying too much about all the ways that depth of field can be controlled.

The reason it is so difficult to grasp is that although the aperture has a modifying effect on the depth of field, with a wide aperture giving the least depth of field and narrow apertures giving the most, there are several other things which affect the amount of sharpness you get within an image.

The type of lens being used is one, with wide angled lenses generally giving a deep depth of field and telephoto lenses enabling you to get a shallow depth of field.

The distance you are from your subject also plays a part and the closer that you are to the subject the harder it becomes to get everything sharp,

conversely the greater the distance from the subject the easier it becomes to get everything sharp from front to back. The distance between the subject and the background also has an effect. So, in total there are four things that vary the effect you get, which makes understanding the interaction between them all quite complex. Therefore I look at depth of field in depth in the follow on book to this, Canon photography for enthusiasts.

The images to the right are all taken within a few minutes of each other, the shutter speed and aperture used is identical for all three images. The only thing that has been changed is the setting on the lens as the images were taken at different focal lengths, indicated by the number with mm after it. I was standing in exactly the same position to take all three pictures, so in these examples the control over how the background looks is not being achieved by varying the aperture, the lens in question had a widest aperture of f5.6.

However, the fact that the focal length is getting longer means the lens is changing the depth of field that we are getting. Changing the focal length of the lens can have a far more significant effect over the sharpness you are getting in an image and the resulting depth of field then changing the aperture.

This is especially true if you use the smaller and lighter lenses as they tend to be the ones with the more restrictive aperture ranges. I will talk more about depth of field when I look at lenses in more depth later in the book as when starting off you can manage depth of field for most images by careful



Key settings - Stops



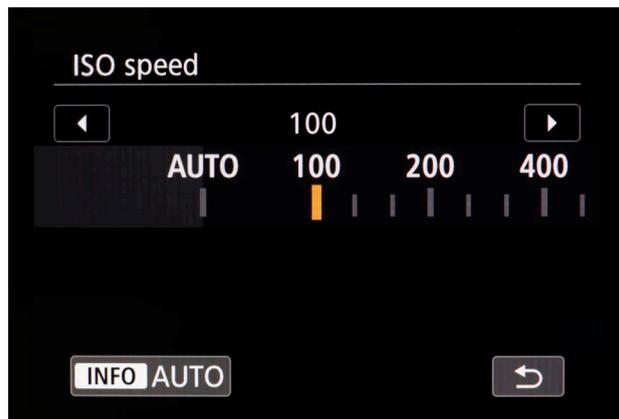
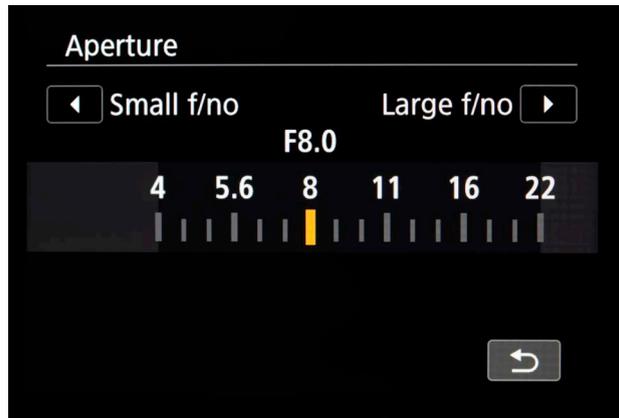
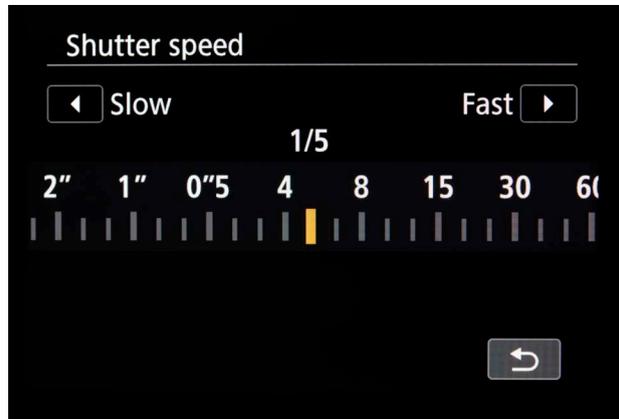
You have the Main dial (shown top left) on the top of the camera and on many models, there is a Quick control dial (shown bottom left) on the rear of the camera.



Both give small clicks as you turn them and each click is equivalent to 1/3 stop on most models, therefore three clicks equal 1 stop. The exception to this on the most basic models as the ISO only sets in full stops. The fact that they do give the small click is very useful as you gain experience as it allows

you to dial settings in whilst looking through the camera knowing how many clicks you need to get to the setting you want.

The displays to the right show the shutter speed, aperture and ISO being set using the controls available on the rear of the camera when the Q button is pressed. However, be aware that these options are only available in the creative modes which are P, TV, AV and M.

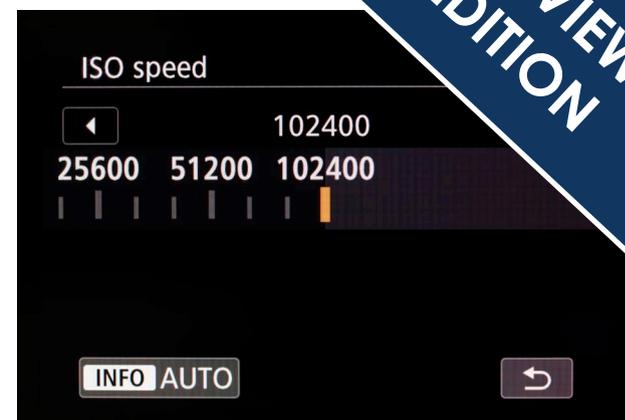
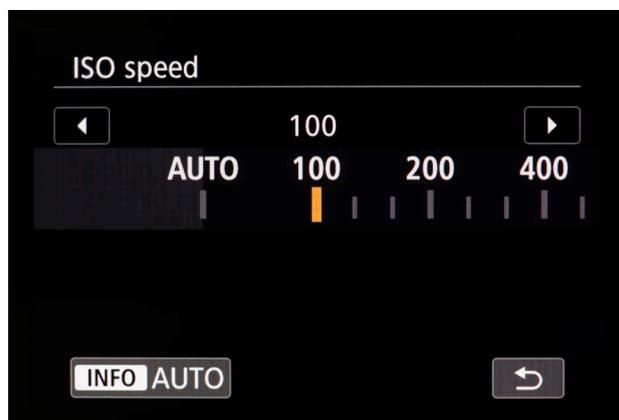


The Basic zone modes on the later models launched since about 2016 are now starting to offer some overrides within them. The screen image above shows the mode screen from the Portrait Scene mode which offers a brightness control, which works almost identically to the Exposure compensation options.

It may seem strange that it's called something different, but brightness is a more generally understood control and when setting the option, it will indicate that minus makes the picture darker whilst plus makes the picture lighter simplifying the settings a little bit. In addition, you have overrides for the drive mode and the built-in flash operation.

Models from 2012 to 2016 do offer some overrides, but they are set in a much more obscure way which I will look at in depth within the modes chapter.

Key settings - ISO



The chart to the right shows the ISO increments in 1/3rd stops with the whole stop increments highlighted in bold. The options which I have highlighted in red are only available within expanded ISO settings. Obviously it will go without saying that the range of ISO settings you have available is controlled by the camera that you own, so if you have a little bit older model you may be missing quite a lot of the settings which are shown on the chart.

The ISO is a little bit different from the aperture and shutter speed, as it has an automatic option available even when shooting within the Creative modes. This allows you to let the camera choose the most appropriate ISO allowing you to concentrate on the other camera settings. Auto ISO works very well when you are handholding the camera, especially in P or AV mode where it will ensure that the shutter speed being used is always appropriate to handhold the camera without getting any blur from camera movement. If shooting on a tripod in the Creative modes, then the ISO is best manually

Third stop increments

50, 100, 125, 160, 200, 250, 320, 400, 500, 640, 800, 1000, 1250, 1600, 2000, 2500, 3200, 4000, 5000, 6400, 8000, 10000, 12800, 16000, 20000, 25600, 32000, 40000, 51200, 64000, 80000, 102400, 204800, 409600, 819200

controlled. In the Basic zone modes the ISO is always controlled by the camera and you have no ability to influence its settings, although most of the modes are designed to keep the ISO as low as possible.

LOW ISO SETTINGS 50, 100, 200, 400

The low ISO settings are used when shooting static subjects in bright light levels, 400 ISO is also used for action when shooting in bright light if you have lenses with relatively wide apertures. 50 ISO is only available on the full frame models that offer ISO expansion and is sometimes indicated by the letter L rather than showing 50 ISO.

These settings give the very best possible quality. However, that has to be offset against the fact

that in low light levels these ISO settings may not allow the shutter speed to be high enough, to safely handhold the camera. Trying to stick to these settings all the time can result in a lot of images which are blurred through camera movement.

It is sometimes better to sacrifice a little bit of quality, which may not even be noticeable in the end result, to ensure that the shutter speed is high enough so that the subject is captured sharp.

These settings are also used if you want to get an image that has some blur within it to convey movement. By using the lowest ISO your camera can go down to it permits you to get the longest shutter speed available in those light levels. Techniques where you need these longer shutter

Lens types

Lens type	Full frame	APS-C
Ultra-wide	<20mm	<14mm
Wide angle	24 – 35mm	15 – 35mm
Standard	36 - 60mm	
Telephoto	70 - 300mm	
Super telephoto	>400mm	

A lot of photographers refer to this as a magnification factor which is incorrect. It is simply that you're cropping down the image area the same way as you would crop an image in the computer. This makes it look like the subject is filling the frame more. The reality of lenses is that a 300mm lens, is a 300mm lens regardless of which camera you put it on.

book, however for the time being I will not understand when I talk about a lens and what focal lengths that's referring to.

A little bit later I will also look at building an outfit because it's very easy to end up with lenses which overlap a significant amount, if you don't really think about the lenses that you need.

I will take a more in depth look at lenses later in the



10mm



15mm



24mm



35mm



50mm



85mm



100mm



135mm



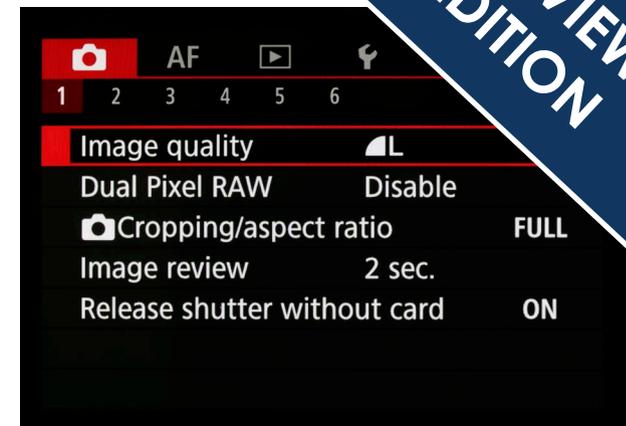
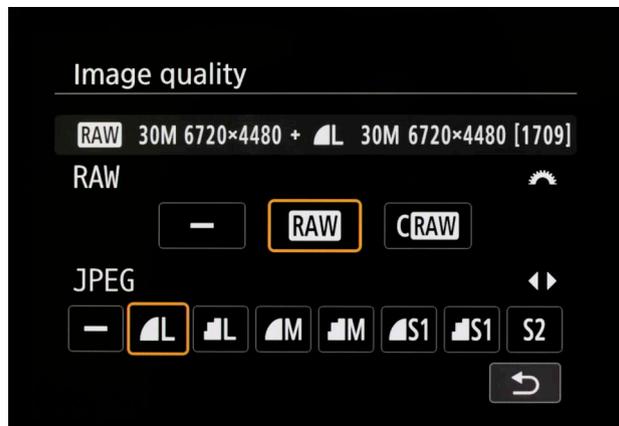
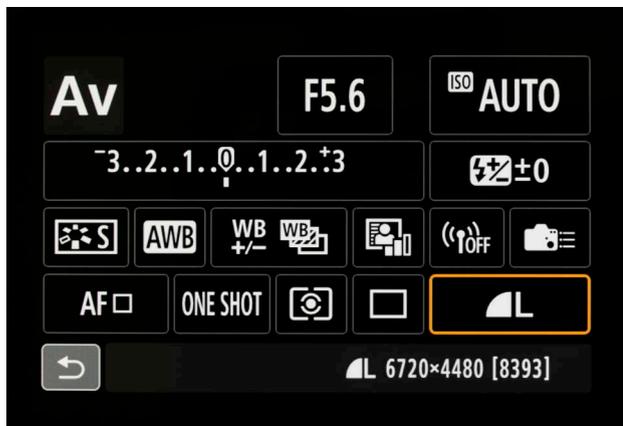
200mm

Lenses are split into groups to allow you to understand the effect that they will produce. Each of the lens types above will give a specific look to the image that you take. The images to the right are taken from the same place on different lenses, showing the changing effect that they give. The table above shows the focal lengths that the lenses fall into for the different sensor types, for each of the main lens categories.

You may notice that particularly at the wide angled end of the range is what we define as ultra wide and wide varies a bit between full frame and the APS-C sensor type cameras. If you remember back towards the start of the book, I talked about sensor sizes and the fact they do have an effect on the lenses that you are using.

Strictly speaking this affects the lenses all the way through, but what we call a standard, telephoto and super telephoto lens normally remains fairly standard. Although the reality is when fitted to a camera with the smaller sensor, a 300mm lens for example will make this subject appear 1.6x closer than if it was taken on a full frame camera.

Quality settings



The image quality settings refer to the type of file format that your Canon EOS is producing when you shoot an image. The default option on all EOS cameras is to produce a large fine JPEG.

The large part (shown to the left) of that indicates that the camera is going to be using all the pixels that it has. On the image above and in the centre you can see that it gives you the actual pixel dimensions. When you go into the more detailed settings it would tell you that 6720x4480 is actually equivalent to 30 Mp or 30 million pixels. The settings you see will depend on the model that you have

The camera also offers medium (M) and small (S) options in case you want to be shooting a file that is smaller for internet or email use in camera. Very roughly medium is normally about half the full number of pixels and small is about one quarter. You may also come across S2 or S3 options which give an even smaller pixel count.

The fine part is less obvious and it shows how the file

compression is set. The symbol is a smooth edged quarter circle (as shown to left). This indicates that the image will be very good quality with minimal compression being applied.

There is also a normal option (symbol shown to the left) for most if the file sizes of the file types. This is indicated by a quarter circle with stepped edge. Photographers often get very confused by these descriptions. Japanese companies in general refuse to have negative terms on their products. So you never see a low quality option. However, in reality the fine option is the one that is normally used which is why it is set as the default. The one described as normal, is actually the low quality option and therefore rarely used these days.

The quality options can be set in two places. The black Q screen has the option normally down at the bottom right-hand corner. Quality settings can be done from the menu system where it will be within the red part the menu. On most models that will be the top item on the first menu however this does

change on the professional 1D system models, as does the way the compression options are set.

Within the image quality options you will also find the RAW file settings. These are there for more experienced users who want more flexibility within the post-production stages. A RAW file needs to be processed using a program that can convert the RAW file, before it can be used within other applications. Canon has Digital Photo Professional available to download for free which can do this. On older models there was just simply a RAW option. We then started to see medium and small RAW in addition to standard size RAW file. These were added for photographers who struggled with the size of normal RAW file. Though the small and medium options did not prove popular.

In 2018 a new option called C RAW first appeared which has now become standard on all models since then, offering a RAW file that is compressed to give file size that is 30 to 40% smaller than a normal RAW image.

Viewfinder DSLR models

The viewfinder on DSLR models tends to be standard. The very latest ones have the displays in white rather than green, but the information displayed remains constant. The camera has two different states, the first is when the camera is first switched on, it will show the basic information, but then when the shutter button is half depressed other information will appear. The display we are showing to the right assumes the shutter button is held pressed at the halfway position which will display all the information.

1| FOCUSING POINT BEING USED FOR FOCUS

The exact way that the focusing displays varies from one model to another and indeed according to how the autofocus on the camera is set up. So rather than seeing a single square there may be multiple squares and the display may be shown in black rather than in red. Some of the entry, compact and introductory level models show a red dot in the centre of the square rather than the whole square lighting up.

2| SHUTTER SPEED BEING USED TO TAKE THE PICTURE

The shutter speed will display here, and it will use the methods of displaying that I looked earlier in the book. The display is currently showing that the shutter speed is 1/125. If the shutter speed is flashing it is indicating that there is a problem with the exposure and steps should be taken to adjust the settings until it is not flashing.

3| APERTURE BEING USED TO TAKE THE PICTURE

The aperture will display here, and it will display using the options I looked at earlier. The display is showing that an aperture of f5.6 is going to be used. If the aperture is flashing it is displaying that there is a problem with the exposure and the settings should be adjusted until it stops flashing.

4| ISO SETTING BEING USED FOR THE IMAGE

The ISO will show here once the shutter button has been pressed part way, if the shutter button has not been pressed part way then it may display just as Auto if the Auto ISO is set.

5| FOCUS CONFIRMATION LIGHT

This green circle will light up once focusing has been achieved if the camera is being used in One Shot AF mode. If the camera is being used in its AI Servo AF there is no circle shown as the focusing is constantly being adjusted.



6| SHOT BURST POSSIBLE

This is the number of images that can be taken in quick succession. The number varies a lot according to the way the camera is set up and the model that you have. On the entry level, compact and introductory models it only ever shows 9 even though it may be possible to take a lot more images.

7| BATTERY STATUS INDICATOR

This does not appear in the viewfinder on all models, but where it does, it shows the current status of the battery.

8| EXPOSURE COMPENSATION SCALE/ MANUAL EXPOSURE SCALE

When working in the semi-automatic modes this allows you to see if there is any Exposure compensation set. If you are working in manual mode, this is the exposure scale you use to adjust the exposure in the viewfinder and it will indicate if you are correct, which is a centre position or over or under if it is towards the plus or minus settings.

Rear screen displays - DSLR and Mirrorless

PREVIEW EDITION

The Q screen only appears in the format to the right if you are shooting within the Creative modes. If you are shooting within the Basic zone modes then you get a similar, but more basic screen (shown bottom right) with the settings that are available in that mode. I will look at those screens later in more depth. The exact layout of the screen is fairly similar on all models, however, there are slight variations in the positioning of some of the controls, especially on the slightly older models. The controls as indicated to the right are:

1| **EXPOSURE MODE** - only available for display it cannot be set here.

2| **ISO SETTING** - like the other places this is displayed, it will say the actual ISO in manual mode or show Auto if it is set to Auto ISO.

3| **EXPOSURE COMPENSATION SCALE/MANUAL EXPOSURE SCALE**

4| **FLASH EXPOSURE COMPENSATION** - this allows the flash brightness to be made lighter or darker. Always applies to any built-in flash but can also set external flashguns on cameras and flash units launched 2007 and later.

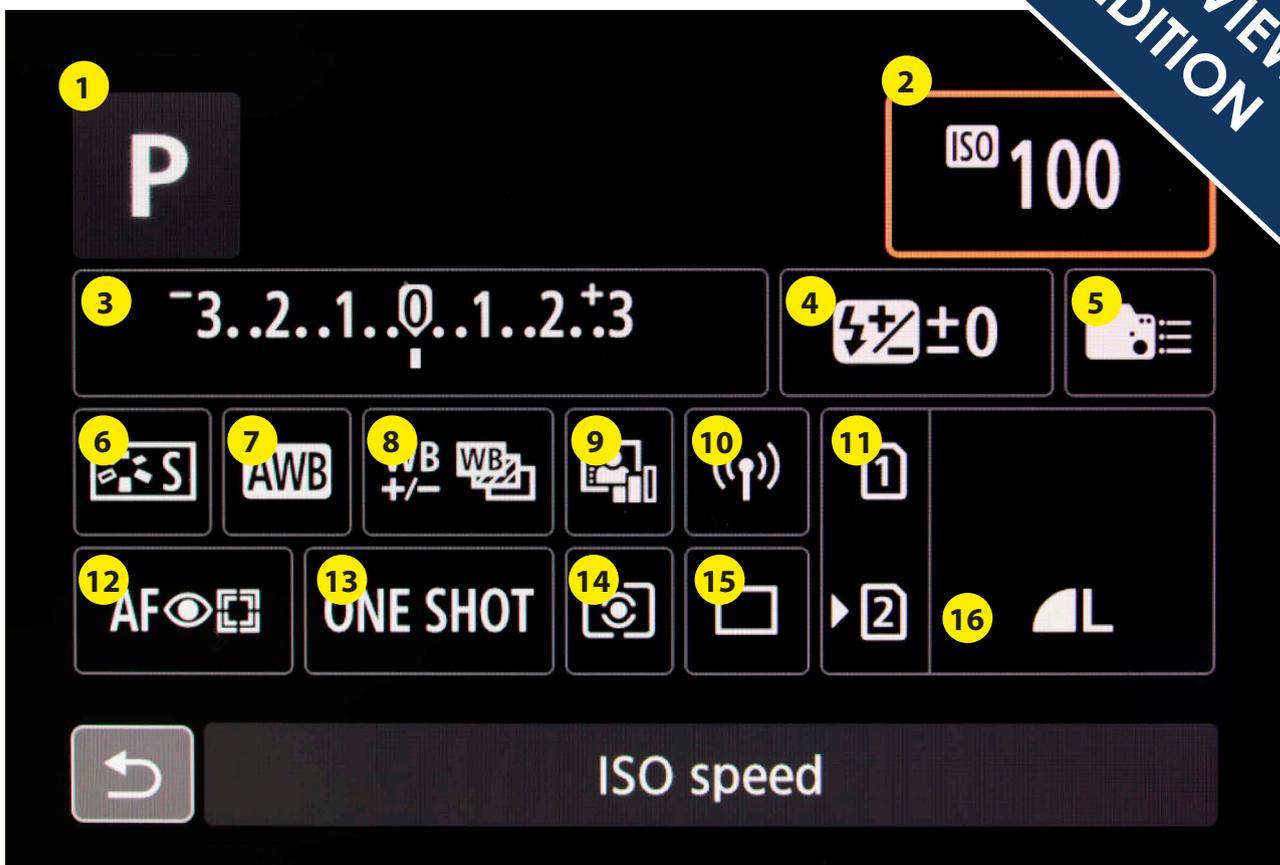
5| **CUSTOM CONTROLS** - allows you to customise a number of the buttons on the camera. This option is only found on enthusiast models and higher with the exception of introductory models launched in 2020.

6| **PICTURE STYLE**

7| **WHITE BALANCE SETTINGS**

8| **WHITE BALANCE SHIFT AND BRACKETING** - Specialist settings allowing very minor corrections to the colour of the image being captured.

9| **AUTO LIGHTING OPTIMIZER**



10| **WI-FI OPERATION** - Only on models that have Wi-Fi built-in

11| **MEMORY CARD CONTROLS** - Only found on models that have two card slots

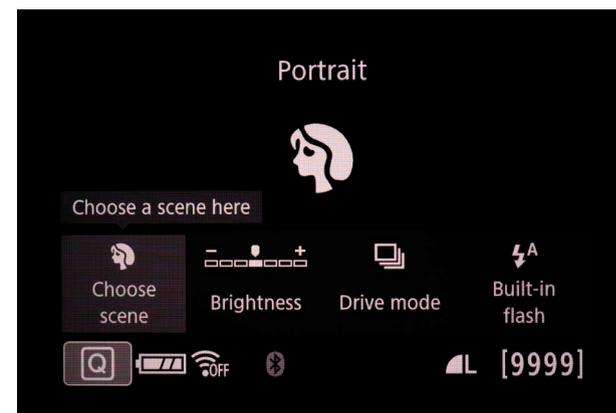
12| **AUTOFOCUS AREA OR METHOD** - Only found on models that feature more than 11 autofocus points

13| **AUTOFOCUS MODE SELECTION**

14| **METERING MODE**

15| **DRIVE MODE**

16| **IMAGE QUALITY SETTINGS**



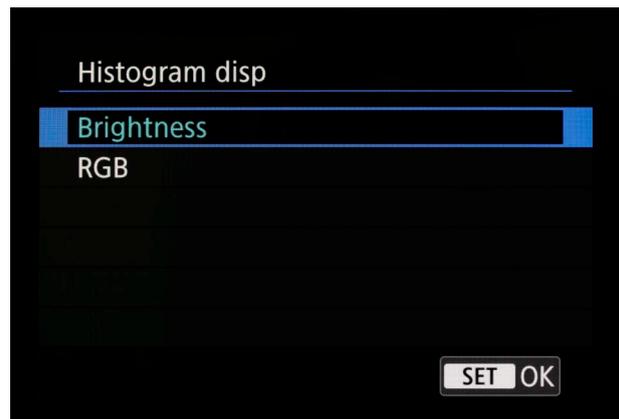
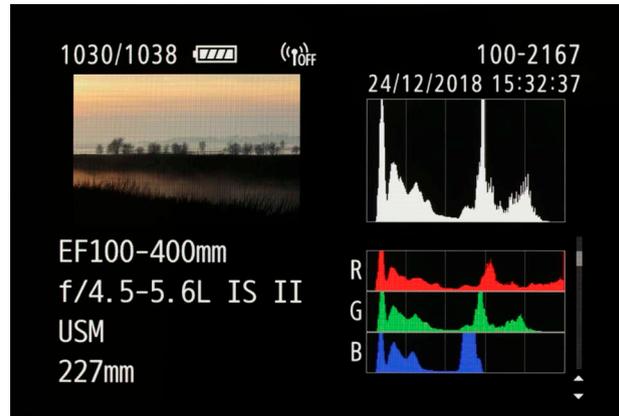
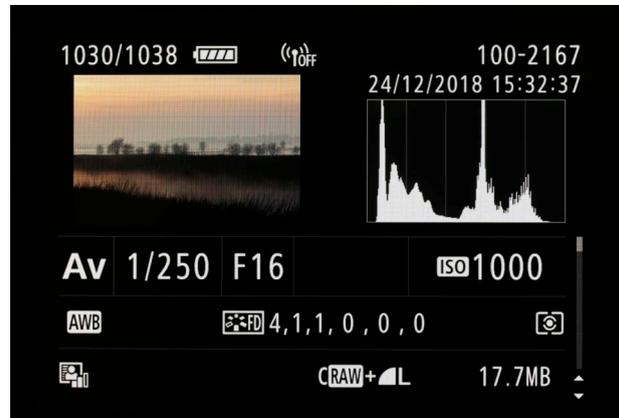
[Return to contents](#)

Histograms are graphs that show the range of tones that are within the image. They crop up in many different places within digital imaging. They are found on all EOS models where you can see the histogram when you playback the image. The screens that I'm showing in the centre column are accessed by pressing the INFO/DISP button when you are playing back an image. To the far right is a mirrorless/Live View display of the camera displaying a live histogram when shooting. Be aware that this sometimes cannot display in some focusing modes on some models.

There are two types of histogram that can be displayed. The brightness one is the one that's normally used, and it's normally depicted as a white graph on a black background. This shows you the tonal range of the image in other words the black and white content of the picture it does not relate to the colours within the image.

Essentially the histogram is a graph showing the tonal range of the image displayed as 256 columns. The column on the far left is the blacks and the column on the far right is the whites.

There is then the RGB histogram and this is shown in the middle image in the centre column. This shows your histogram for each of the three primary colours that the image is made up from, red, green and blue. Some EOS models allow you to select which is used, shown to the right. The RGB histograms look impressive, however, they are significantly more difficult to read and generally tell you less about the image than the straightforward



brightness histogram.

The histogram sometimes gets used at the time of shooting to assess the range of tones within the image. However, I would caution against using solely the histogram to assess whether the image is correctly exposed or not. It needs to be used in conjunction with the image itself. As it depends on the image, as you will see over the next few pages, as to how accurate the information is that it is showing you.

The histogram is also used a significant amount within the post-production process, sometimes to assess the tonal range of the image, however, in many programs we can also use it as one of the adjustment tools.

Because of this it is important to understand the histogram and what it is showing. Also to understand that it will change a significant amount depending on the type of image that we are processing.

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