

Lenses – a buyer's guide

Since the descriptions that go with lenses have become increasingly long and less meaningful I thought it might be helpful to provide a quick translation of current lens terminology. For example, a glance down a listing of Canon lenses reveals an EF 70-200mm f/2.8 L IS USM lens. A similar perusal of Sigma's website draws our attention to an APO 50-150mm f/2.8 EX DC HSM lens and, just to show my non-bias, the Nikon lens brochure announces an AF-S 18-200mm f/3.5-5.6G VR DX IF-ED lens. First prize, however, must go to Tamron and its AF 28-300mm f/3.5-6.3 XR DI VC LD Aspherical (IF) Macro lens.



Now, while the millimeter bit and the f/numbers probably make some sense, the rest of the acronyms are likely to be more confusing. So here is my Dummies Guide to [increasingly ridiculous] lens terminology:

Focal length (mm) – the focal length of a lens is expressed in millimeters and relates to the distance between the focal point and the optical centre of the lens. Combined with the format of the image sensor (e.g. full-frame, Nikon DX, etc.) focal length will determine angle of view, that is how much of the scene the lens see, which, in turn, describes the type of lens, e.g. wide-angle, standard, telephoto.

Maximum aperture range (f/xx – xx) – the maximum aperture value relates simply to the maximum lens aperture of the lens. On zoom lenses, where the values are given as a range (e.g. f/3.5 – 5.6), this indicates that the maximum aperture changes depending on what focal length is set. Where a zoom lens has just one maximum aperture value, this indicates that the maximum aperture is fixed across all of the possible focal lengths of that lens.

Maximum lens aperture is quoted because it identifies the light gathering ability of the lens. The wider the maximum aperture (i.e. the smaller the f/number) the more light the lens is able to gather and, therefore, the darker the conditions in which it can be used effectively. For example, a lens with a maximum aperture of f/2.8 can gather 2-stops (4 times) more light than a lens with a maximum aperture of f/5.6, making it more versatile in low light conditions.

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This is the main reason that professional photographers are willing to pay significantly more money (e.g. £2,800 for a 300mm f/2.8 lens compared to £800 for the 1-stop slower 300mm f/4) for a lens with a wide maximum aperture.

Optical stabilization – many lenses now have some form of optical stabilization function, which aids the hand holding of a camera by compensating for camera shake, thereby reducing the quality-degrading effects of image blur. First used in the military, it is a highly effective technology that uses a system of motors to compensate for vibrations (or movement) in the light signal transmitted via the lens. Different manufacturers call their version of the technology by different names, as shown in the following table:

Manufacturer	Function name	Acronym
Canon	Image Stabilization	IS
Nikon	Vibration Reduction	VR & VR II
Sigma	Optical Stabilization	OS
Tamron	Vibration Compensation	VC

1-, 2- and 3-letter acronyms – I've tried to cover all of the various acronyms used by manufacturers in the following table but may have inadvertently missed a few of the more obscure ones:

Acronym	Manufacturer	Meaning
ED	Nikon	Extra-low dispersion glass minimizes chromatic aberrations (a type of colour and image dispersion that reduces image quality). Improves sharpness and colour correction.
G	Nikon	A lens having no aperture ring (aperture being set instead via the command dial on the camera body).
IF	Nikon	Internal focusing (the physical size of the lens remains unchanged).
D	Nikon	Refers to a lens that provides focus distance information to the camera. Improves the accuracy of the TTL light meter and flash metering.
SWM	Nikon	Stands for Silent Wave Motor, enabling fast and quiet AF operation.
VR (VR II)	Nikon	Vibration Reduction (see above).

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DX	Nikon	Refers to Nikon's range of lenses that are designed specifically for use with D1 and D2-series digital cameras, as well as the latest D300 (i.e. models with small-frame sensors). Can be used on the D3 in DX-mode.
ASP	Nikon	Aspherical lens elements, effective at eliminating the problem of coma and aberrations.
EF	Canon	Lenses compatible with Canon's modern EF-mount, used on the EOS line of cameras (distinct from older FD mount)
L	Canon	Canon's designation for premium performance lenses, often using special glass, as in Nikon's ED or other APO lenses.
IS	Canon	Image Stabilization (see above).
USM	Canon	Ultrasonic Motor (similar to SWM above)
APO	Sigma	Designate apochromatic lenses, designed to focus all colors in the same plane, thus reducing chromatic aberration and improving optical performance, especially on long lenses.
EX	Sigma	Sigma's designation for premium performance lenses
DC	Sigma	Lenses designed to cover cropped sensors (similar to Nikon's DX). Can be used on the Nikon D3 in DX-mode.
HSM	Sigma	Hypersonic Motor (similar to USM and SWM above)
OS	Sigma	Optical Stabilization (see above).
XR	Tamron	Refers to lenses having a compact (small) design.
DI	Tamron	Digitally-integrated (designed to work with both digital and film cameras).
VC	Tamron	Vibration Compensation (see above).

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LD	Tamron	Low dispersion glass minimizes chromatic aberrations.
IF	Tamron	Internal focusing (the physical size of the lens remains unchanged).
SP	Tamron	Stands for Super Performance, identifying a lens with a higher specification (and higher cost) than none-SP lenses.

Lens controls

In addition to the above, there are two main lens controls that I always prefer to have access to, although not all lenses provide them. Some telephoto lenses have a Limiter switch, which increases the closest focusing distance, limiting the distance range the lens travels during autofocus operation. This control option speeds AF performance and is particularly useful when photographing fast- and erratically moving wildlife.

The other control I find particularly useful is a manual override option, which enables focus to be set manually even when AF-mode is selected.

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