



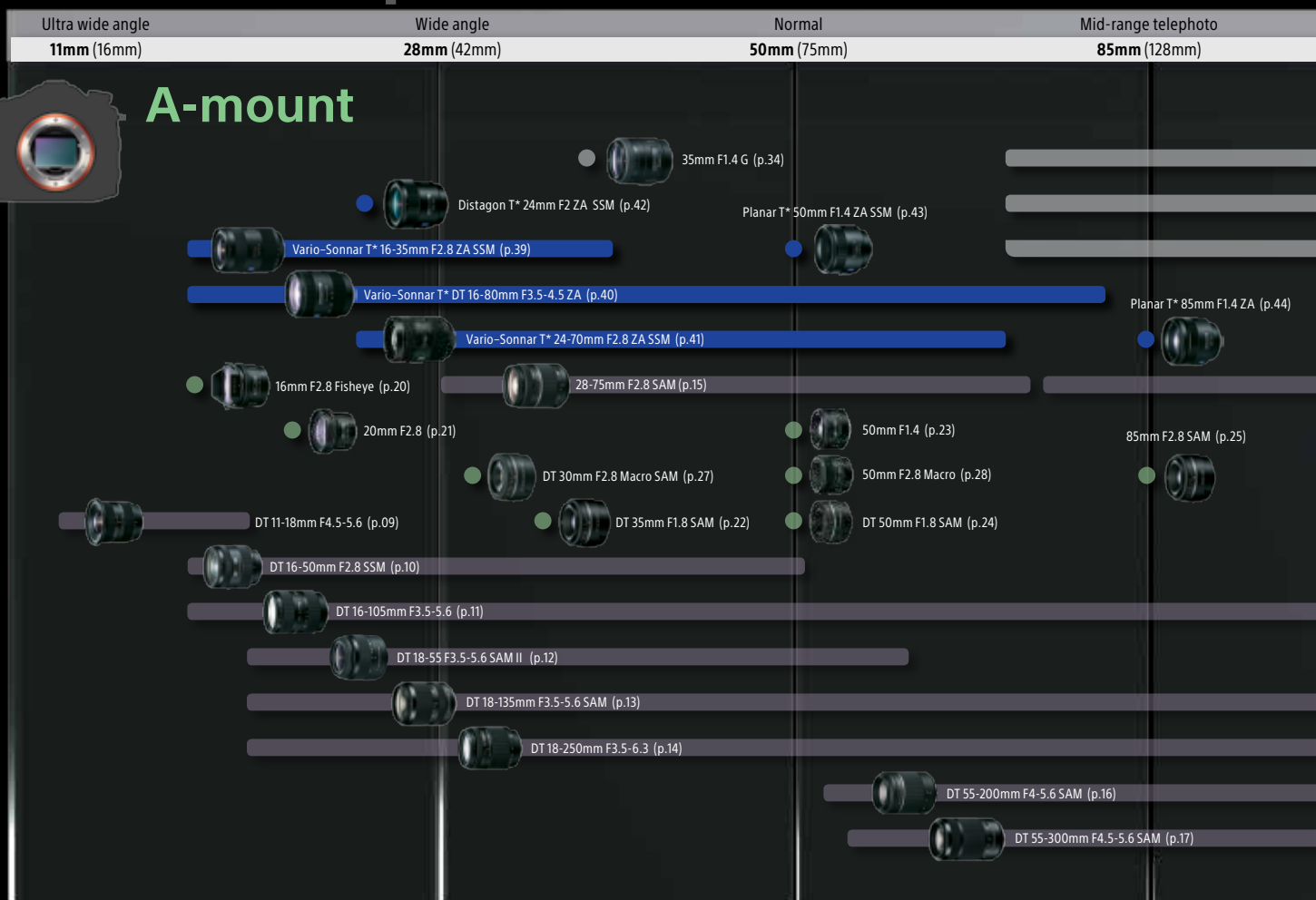
α



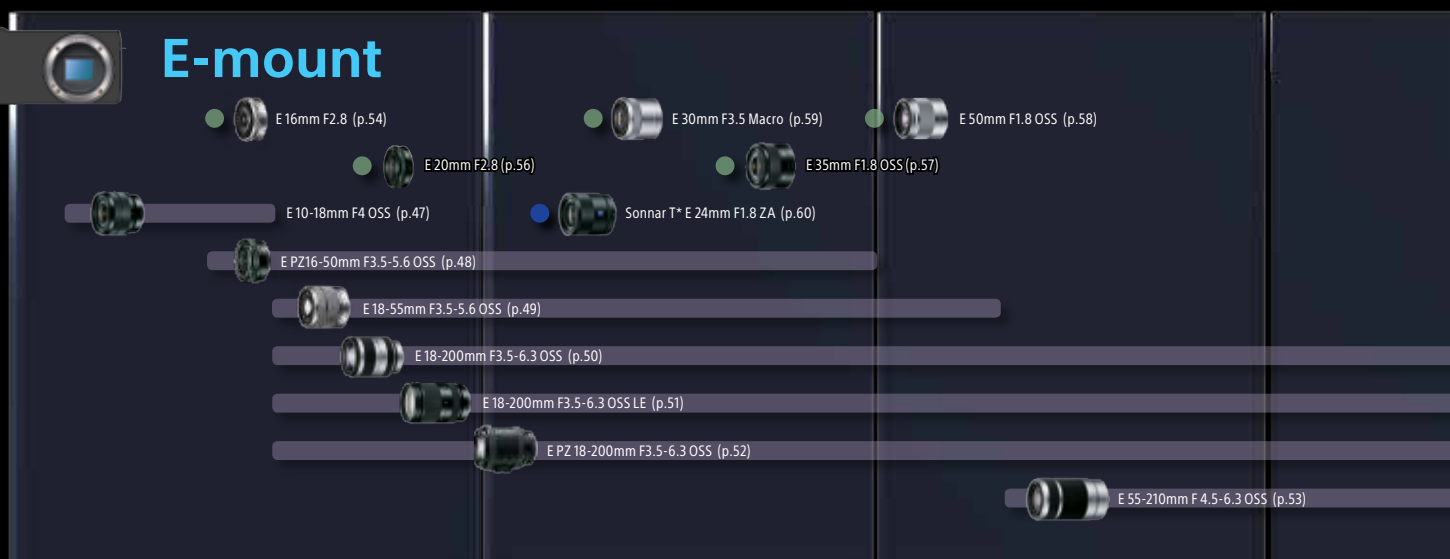
Lens Lineup



A-mount



E-mount



Zoom Lenses
Fixed Focal Length Lenses
G Lenses
Carl Zeiss Lenses



• Numbers shown in parentheses represent the effective focal length equivalent in 35mm full-frame format when shooting with APS-C format interchangeable-lens digital cameras.

* An optional adaptor is required to mount A-mount lenses on the following cameras (image size is automatically set to APS-C): NEX-7, NEX-6, NEX-5R, NEX-5N, NEX-5, NEX-3N, NEX-F3, NEX-C3, NEX-3, NEX-VG900, NEX-VG30, NEX-VG20, or NEX-VG10. A firmware update may also be required for lens adaptor and/or body in order to fully support autofocus with A-mount lenses.

A-mount Lenses

Zoom Lenses

Fixed Focal Length Lenses

G Lenses

Carl Zeiss Lenses

E-mount Lenses

Exclusive to E-mount cameras

Lens Basics

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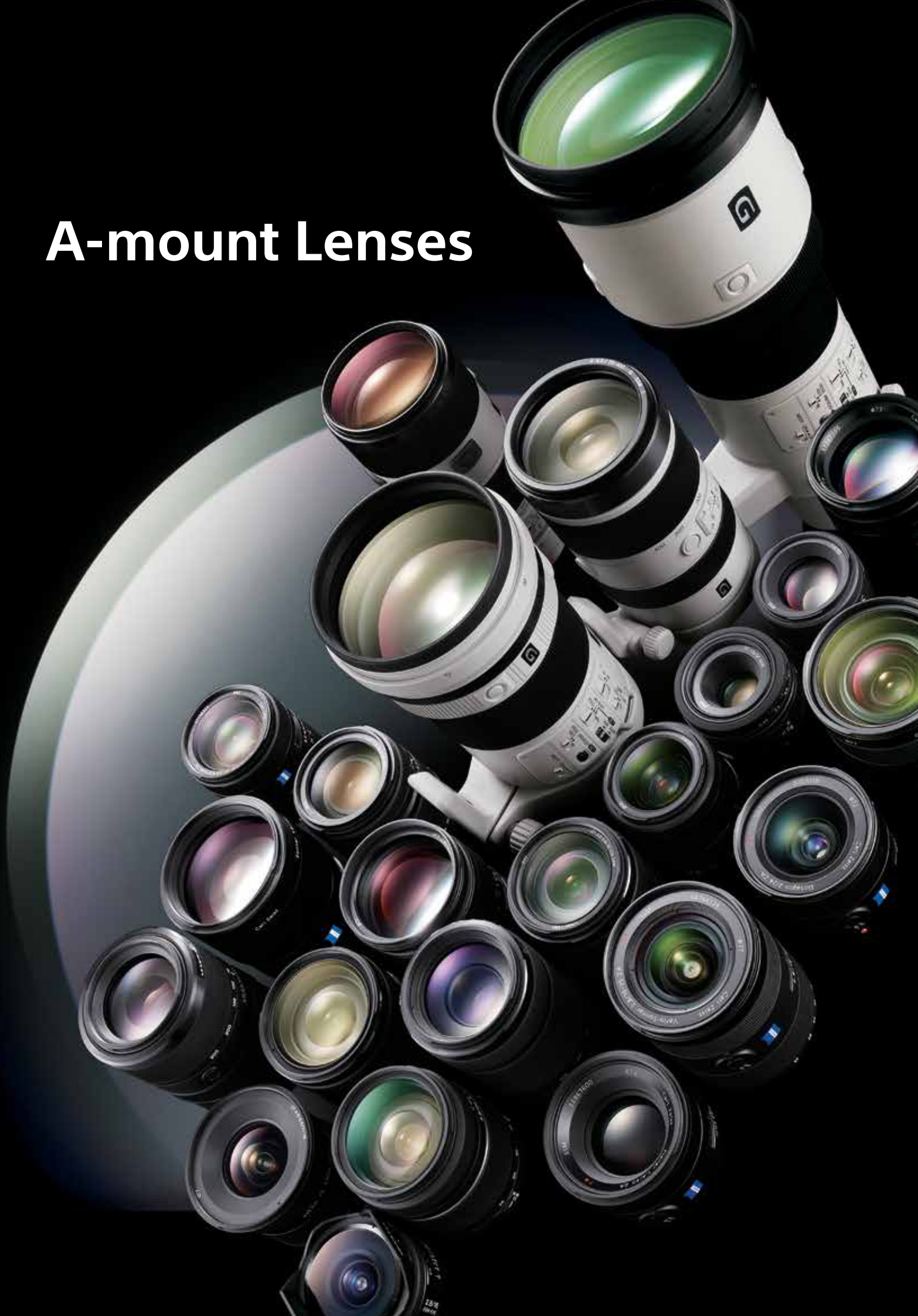
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A-mount Lenses





Zoom Lenses

The advent of the digital age – both in terms of photography itself and the tools used for optical design – has made high-performance zoom lenses more accessible and easier to use than ever before. Not only are zoom lenses a great way to be ready for any photo opportunity, but the freedom to rapidly change framing and composition without having to change the camera position offers creative flexibility that is just too appealing to ignore. In many situations, that speed and freedom can be the key to grabbing shots that would otherwise be missed. Advanced Sony design and manufacturing technology delivers outstanding image quality with unparalleled zoom versatility and convenience.

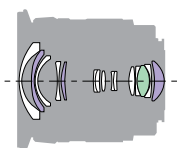


A mode, 1/15 sec., F11, +0.3 EV, ISO 100, Auto white balance
Photo: Kentaro Fukuda

Ultra wide-angle zoom

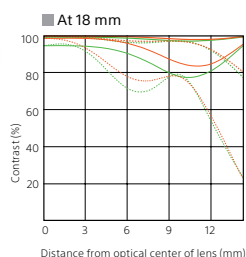
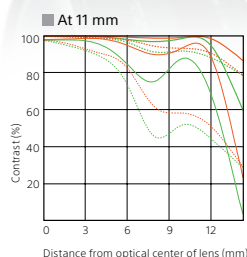
DT 11–18mm F4.5–5.6 SAL1118

APS-C format    



● Aspherical lens ● ED glass

- One ED glass element and three aspherical elements for superior image quality
- High contrast throughout zoom range
- Flare and aberrations effectively subdued
- Circular aperture for attractive defocusing
- 35 mm equivalent focal length: 16.5 – 27 mm



This lens fits squarely in the “wide zoom” category, offering a range of focal lengths that are indispensable for serious indoor and architectural photography as well as any other situation that demands wide-angle coverage. City scenes, crowded markets, historical ruins ... all of these are subjects that can benefit from the wide perspectives this lens provides. It’s also a great lens for shooting dynamic images with deep perspective. Although wide angles present more opportunities for image-degrading lens flare, the DT 11–18mm F4.5–5.6 features special elements and design that reduce flare and aberrations to a minimum for crisp, high-contrast images even under difficult conditions.

Spatial frequency	Max. aperture		F8 aperture	
	R	T	R	T
10 line pairs / mm				
30 line pairs / mm				

R: Radial values T: Tangential values

- Weight (approx): 360 g • Dimensions (Dia. x L): 83 x 80.5 mm
- Max. magnification ratio: 0.125x

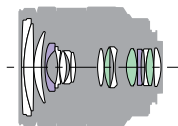


M mode, 1/100 sec., F4.0, ISO 400, Custom white balance
Photo: Shigeru Iwamoto

Standard zoom

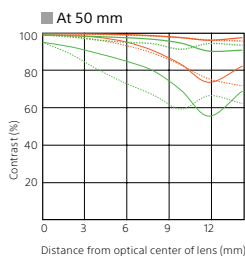
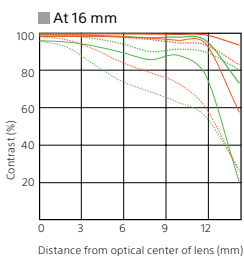
DT 16-50mm F2.8 SSM SAL1650

APS-C format ED IF ADI SSM



Aspherical lens ED glass

- Three ED glass elements and two aspherical elements for superior image quality
- Bright constant F2.8 maximum aperture
- SSM (Super Sonic wave Motor) for fast, quiet autofocus operation
- Circular aperture for attractive defocusing
- Dust and moisture resistant design
- 35 mm equivalent focal length: 24 – 75 mm



Spatial frequency	Max. aperture		F8 aperture	
	R	T	R	T
10 line pairs / mm
30 line pairs / mm

R: Radial values T: Tangential values

The DT 16-50mm F2.8 SSM packs first-class optical performance and a versatile zoom range into a lens that is compact and lightweight. At the wide end you have a 16 mm focal length that is ideal for interiors, sweeping landscapes, or creating visual impact with powerful perspective. Zoom out to the 50 mm end for mid-range telephoto reach that can bring details and distant subjects closer. What's more, you have a constant F2.8 maximum aperture throughout the entire zoom range. That makes shooting in low light easy when the lens is used with A-mount bodies, all of which feature SteadyShot INSIDE body-integrated image stabilization. A large maximum aperture also provides plenty of margin to stop down for increased depth of field or to freeze fast motion. The DT 16-50mm F2.8 SSM additionally features a circular aperture that, combined with the F2.8 maximum aperture, contributes to beautiful defocusing effects. Focusing is fast and smooth thanks to built-in SSM drive, and a dust and moisture resistant design means this lens will continue to deliver outstanding images even in harsh shooting conditions.

• Weight (approx): 577 g • Dimensions (Dia. X L): 81 x 88 mm • Max. magnification ratio: 0.2x



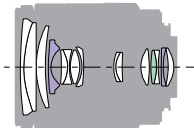
M mode, 1/100 sec., F8.0, ISO 200, Daylight white balance
Photo: Norifumi Inagaki



Standard zoom

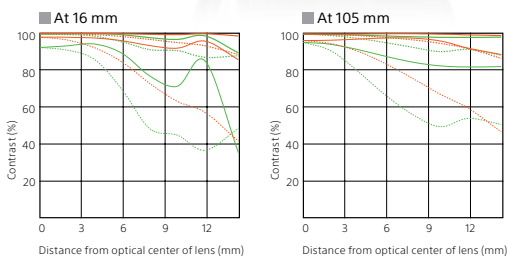
DT 16-105mm F3.5-5.6 SAL16105

APS-C format  ED  IF Auto Clutch  ADI



- One ED glass element and two aspherical elements for superior image quality
- High resolution and contrast throughout zoom range
- Circular aperture for attractive defocusing
- Focus ring with auto clutch does not rotate during autofocus
- 35 mm equivalent focal length: 24 – 157.5 mm

● Aspherical lens ● ED glass



Spatial frequency	Max. aperture		F8 aperture	
	R	T	R	T
10 line pairs / mm	—	—	—	—
30 line pairs / mm	—	—	—	—

R: Radial values T: Tangential values

Zoom range can be a very subjective and personal choice, hinging on individual shooting style and preferred subjects. The 16 - 105 mm range of this lens is a “sweet spot” for many photographers, wide enough at the 16 mm end to capture indoor scenes and long enough at 105 mm to fill the frame with relatively distant subjects. Comfortable handling is another plus, facilitated by a compact, lightweight design and an auto-clutch mechanism that prevents focus ring rotation during autofocus operation, so you can comfortably cradle the lens in your hand while shooting. Of course comfort isn’t everything. A precision optical design delivers superb image quality throughout the entire zoom range.

• Weight (approx): 470 g • Dimensions (Dia. x L): 72 x 83 mm • Max. magnification ratio: 0.23x



M mode, 1/200 sec., F7.1, ISO 200, Auto white balance
Photo: Shinya Morimoto



Standard zoom

DT 18–55mm F3.5–5.6 SAM II SAL18552

APS-C format

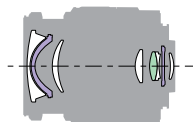


ED



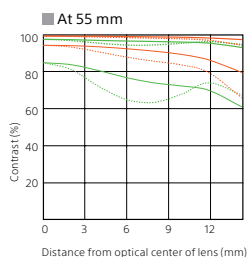
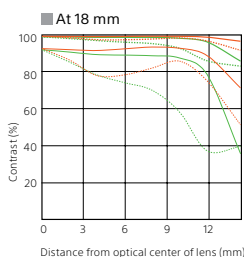
ADI

SAM



Aspherical lens ED glass

- One ED glass element and two aspherical elements for superior image quality
- 0.25 m min. focus plus 0.34x max. magnification for close-ups
- Responsive internal SAM (Smooth Autofocus Motor) autofocus drive
- Circular aperture for attractive defocusing
- 35 mm equivalent focal length: 27 – 82.5 mm



Spatial frequency	Max. aperture		F8 aperture	
	R	T	R	T
10 line pairs / mm	—	—	—	—
30 line pairs / mm	—	—	—	—

R: Radial values T: Tangential values

Redesigned to match modern camera styling, this update to a popular lens is compact, lightweight, and offers a very useful 18 mm through 55 mm zoom range on cameras with APS-C size sensors (27 - 82.5 mm equivalent in 35 mm full-frame format). A high-performance optical design that features two aspherical elements and one ED glass element minimizes aberration, while an improved rear baffle suppresses internal reflections for outstanding clarity and contrast. Complementing the lens's outstanding overall sharpness is a circular aperture design that contributes to beautiful background defocusing when you want to make the foreground subject stand out. SAM (Smooth Autofocus Motor) AF drive achieves smooth, responsive autofocus operation, while a redesigned zoom mechanism enhances zoom feel and precision as well.

• Weight (approx): 222 g • Dimensions (Dia. x L): 71.6 x 69 mm • Max. magnification ratio: 0.34x

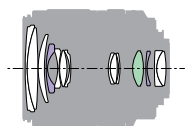


M mode, 1/800 sec., F8.0, ISO 200, Auto white balance
Photo: Shinya Morimoto

High magnification zoom

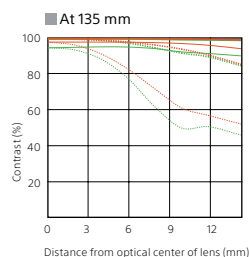
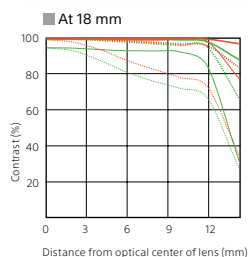
DT 18-135mm F3.5-5.6 SAM SAL18135









APS-C format     



Aspherical lens ED glass

- One ED glass element and two aspherical elements for superior image quality
- High contrast throughout zoom range
- Direct manual focus capability enhances hands-on creative control
- Circular aperture for attractive defocusing
- 35 mm equivalent focal length: 27 – 202.5 mm



Spatial frequency	Max. aperture		F8 aperture	
	R	T	R	T
10 line pairs / mm				
30 line pairs / mm				

R: Radial values T: Tangential values

This lightweight lens offers the dual advantages of an 18 mm wide through 135 mm telephoto zoom range plus convenient portability. That's 27 mm through 202.5 mm in 35 mm full-frame format, in a versatile lens that weighs only 398 g. The DT 18-135mm F3.5-5.6 SAM is in fact the lightest midrange magnification zoom currently available. It also features an outstanding optical design that includes aspherical lenses and ED glass for superior resolution and MTF characteristics throughout the zoom range. An in-lens SAM (Smooth Autofocus Motor) drive system maximizes autofocus performance for high-speed continuous still shooting as well as movies, while direct manual focus affords smooth, easy manual focusing when required.

- Weight (approx): 398 g • Dimensions (Dia. x L): 76 x 86 mm
- Max. magnification ratio: 0.25x

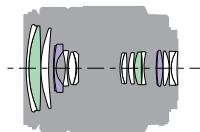


A mode, 1/250 sec., F11, +0.3 EV, ISO 100, Auto white balance
Photo: Norifumi Inagaki

High magnification zoom

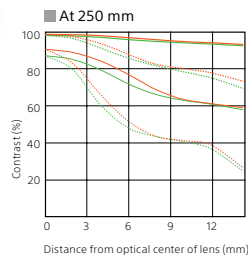
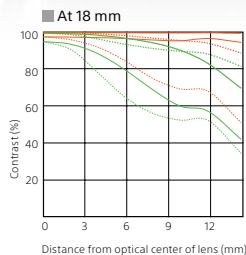
DT 18-250mm F3.5-6.3 SAL18250

APS-C format ED



Aspherical lens ED glass

- Two ED glass elements and two aspherical elements for superior image quality
- Extra-broad zoom range in a compact, lightweight lens
- Circular aperture for attractive defocusing
- Internal focusing for fast autofocus and short min. focus distance
- 35 mm equivalent focal length: 27 – 375 mm



Although similar to the DT 18-200mm F3.5-6.3 in zoom range and performance, the DT 18-250mm F3.5-6.3 offers a bit more “reach” at the long end that can make a significant difference if you’re shooting sports or wildlife, for example. The tradeoff is a small increase in weight and size, but if you need the extra range the difference is worth it. You get the same outstanding clarity and contrast from the wide 18 mm end to full 250 mm telephoto, making this lens one of the most useful and versatile for APS-C format cameras and an extremely wide spectrum of subjects.

Spatial frequency	Max. aperture		F8 aperture	
	R	T	R	T
10 line pairs / mm	—	—	—	—
30 line pairs / mm	—	—	—	—

R: Radial values T: Tangential values

- Weight (approx): 440 g • Dimensions (Dia. x L): 75 x 86 mm
- Max. magnification ratio: 0.29x



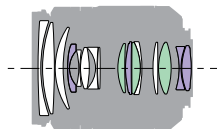
M mode, 1/160 sec., F2.8, ISO 400, Daylight white balance
Photo: Kazushi Momoi



Standard zoom

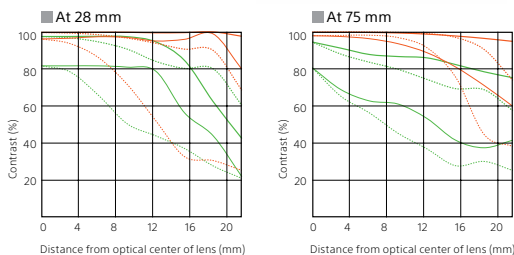
28–75mm F2.8 SAM SAL2875

35mm full frame  ED  IF  ADI  SAM



- Three ED glass elements and four aspherical elements for superior image quality
- Bright constant F2.8 maximum aperture
- Responsive internal SAM (Smooth Autofocus Motor) autofocus drive
- Circular aperture for attractive defocusing

● Aspherical lens ● ED glass



Spatial frequency	Max. aperture		F8 aperture	
	R	T	R	T
10 line pairs / mm	—	—	—	—
30 line pairs / mm	—	—	—	—

R: Radial values T: Tangential values

If you use a 35 mm full-frame format camera body, this award-winning lens offers an ideal balance of brightness, zoom range, and image quality for a wide range of situations you're likely to encounter in everyday shooting. The fact that it features a constant, bright F2.8 maximum aperture at all focal lengths offers significant advantages for hand held and low light shooting, as well as for creating gorgeous defocused backgrounds. But you never know when you might need to go a bit longer, so if there's room in your bag consider taking the 75–300mm F4.5–5.6 along as well: the 28–75mm F2.8 SAM plus 75–300mm F4.5–5.6 combination gives you a full-frame focal length range from 28 mm to 300 mm.

• Weight (approx): 565 g • Dimensions (Dia. x L): 77.5 x 94 mm • Max. magnification ratio: 0.22x

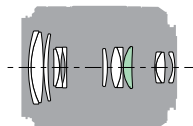


M mode, 1/400 sec., F5.6, ISO 200, Auto white balance
Photo: Shinya Morimoto

Telephoto zoom

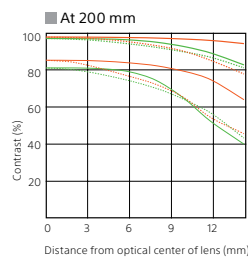
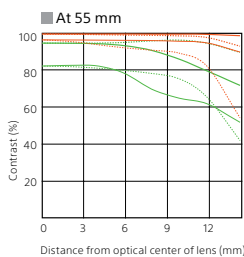
DT 55-200mm F4-5.6 SAM SAL55200-2

APS-C format



● ED glass

- One ED glass element for superior image quality
- Medium to telephoto range in a lightweight lens
- 9-blade circular aperture for attractive defocusing
- Responsive internal SAM (Smooth Autofocus Motor) autofocus drive
- 35 mm equivalent focal length: 82.5 – 300 mm



Covering the medium to telephoto stretch of the “standard” zoom range with ample F5.6 brightness at the 200 mm end, this lens is a lightweight, easy handling choice for shooting sports and other subjects that require some telephoto reach. On an APS-C format camera the 35 mm equivalent focal length at the telephoto end is 300 mm, which is long enough to capture tight shots of the action. In terms of compact, lightweight design and optical performance, the DT 55-200mm F4-5.6 SAM is an ideal companion for the DT 18-55mm F3.5-5.6 SAM II. The pair is light enough to be carried comfortably, providing outstanding image quality from 18 mm to 200 mm.

Spatial frequency	Max. aperture		F8 aperture	
	R	T	R	T
10 line pairs / mm	—	—	—	—
30 line pairs / mm	—	—	—	—

R: Radial values T: Tangential values

- Weight (approx): 305 g • Dimensions (Dia. x L): 71.5 x 85 mm
- Max. magnification ratio: 0.29x

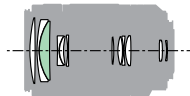


A mode, 1/2000 sec., F5.6, +0.7 EV, ISO 400, Auto white balance
Photo: Takeshi Hirayama

Telephoto zoom

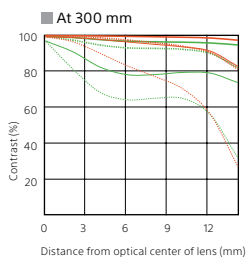
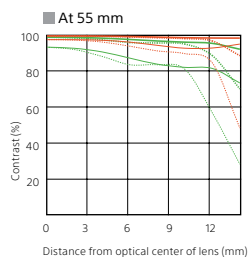
DT 55–300mm F4.5–5.6 SAM SAL55300

APS-C format



● ED glass

- One ED glass element for superior image quality
- Seamlessly extends the 18–55mm standard zoom
- Medium to telephoto range in a lightweight lens
- 9-blade circular aperture for attractive defocusing
- Responsive internal SAM (Smooth Autofocus Motor) autofocus drive
- 35 mm equivalent focal length: 82.5 – 450 mm



Spatial frequency	Max. aperture		F8 aperture	
	R	T	R	T
10 line pairs / mm				
30 line pairs / mm				

R: Radial values T: Tangential values

An ideal companion for the DT 18–55 mm F3.5–5.6 standard zoom, the DT 55–300mm F4.5–5.6 SAM provides extended coverage from 55 mm medium telephoto all the way out to 300 mm super telephoto. In 35 mm full-frame format terms, the combined range of these two models extends from 27 mm wide angle to 450 mm super telephoto, easily covering the shooting requirements of many photo enthusiasts with just two lenses. Image quality is impressive throughout the zoom range, and responsive SAM autofocus easily keeps up with fast-paced still or movie shooting. And when you want defocused backgrounds, a 9-blade circular aperture makes it easy to achieve beautiful bokeh with natural looking highlights. Despite its impressive performance, this lens is remarkably lightweight and portable.

- Weight (approx): 460 g • Dimensions (Dia. x L): 77 x 116.5 mm
- Max. magnification ratio: 0.27x

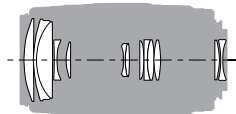


M mode, 1/250 sec., F5.6, ISO 200, Auto white balance
Photo: Kentaro Fukuda

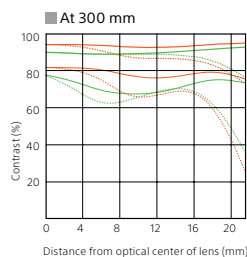
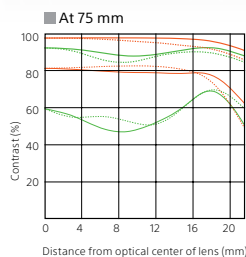
Telephoto zoom

75–300mm F4.5–5.6 SAL75300

35mm full frame  



- Extra-broad zoom range for full-frame cameras
- High optical performance at all focal lengths
- Circular aperture for attractive defocusing
- Double telephoto configuration achieves compact dimensions

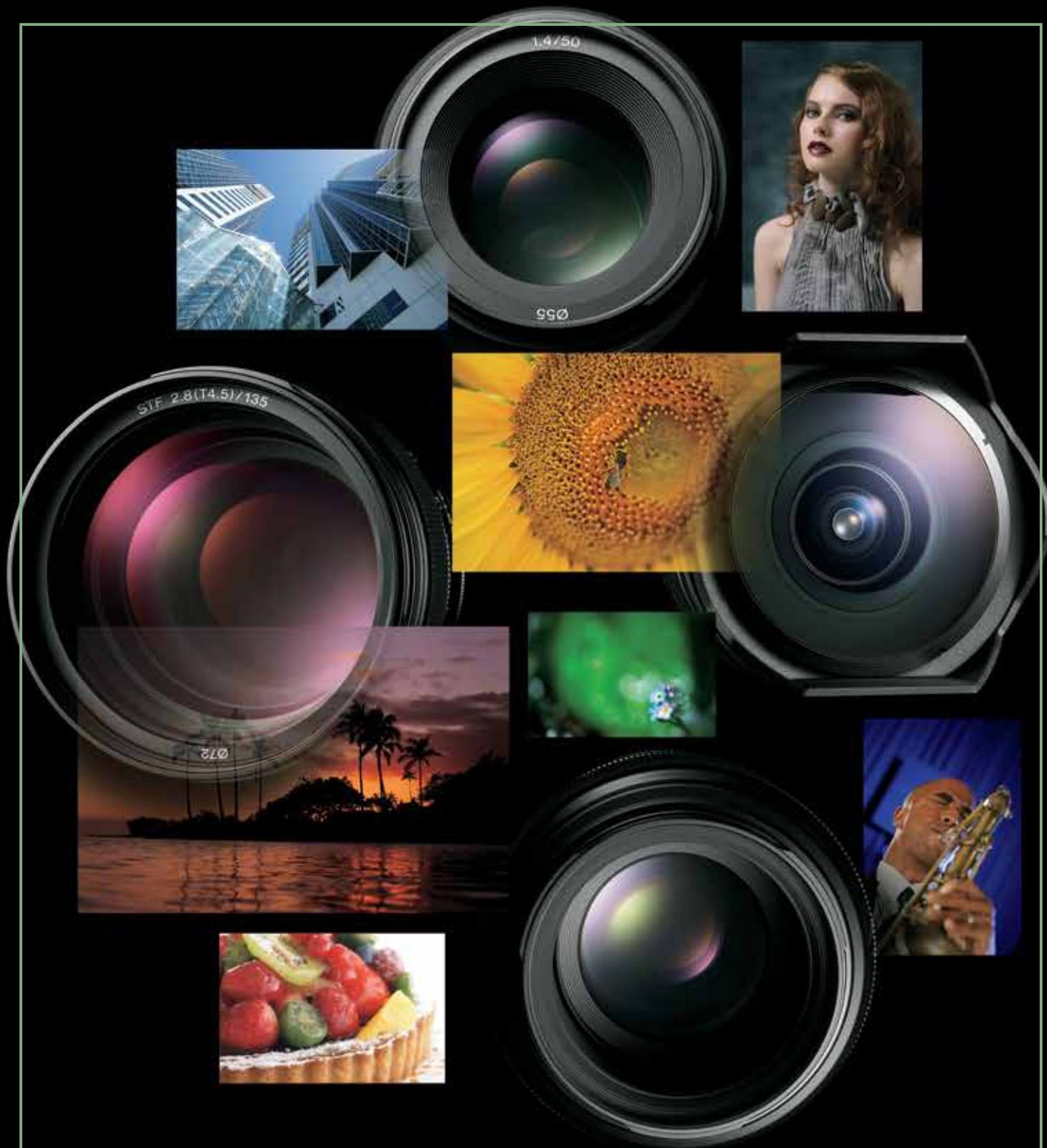


If you shoot sports, wildlife, or other distant subjects with a 35 mm full-frame format camera, this is a lens you'll really appreciate. Its 75 – 300 mm zoom range will let you go from medium perspectives that provide a comprehensive view of the action to tight close-ups of individual image elements in an instant. If you want to be ready for just about every conceivable shooting situation, take the 28–75mm F2.8 SAM along as well, and you'll have every focal length from 28 mm to 300 mm covered in a portable two-lens kit that will deliver admirable image quality on high-performance full-frame bodies.

Spatial frequency	Max. aperture		F8 aperture	
	R	T	R	T
10 line pairs / mm	—	—	—	—
30 line pairs / mm	—	—	—	—

R: Radial values T: Tangential values

- Weight (approx): 460 g • Dimensions (Dia. x L): 71 x 122 mm
- Max. magnification ratio: 0.25x



Fixed Focal Length Lenses

Fixed Focal Length Lenses

Fixed focal length lenses, commonly known as "prime lenses" or simply as "primes," can complement your photographic vision in a number of ways. Although most of the focal lengths offered are also available with zoom lenses, some special-purpose lenses are only available as primes: fisheye lenses and most true macro lenses are examples. And since the optical path only needs to work at one focal length, it can be optimized to deliver a level of optical performance that is a cut above the average zoom. But many photographers like working with a fixed focal length simply because it always gives them the same angle of view and perspective, making it easier to pre-visualize what the camera will see and thus providing the most consistent, intuitive shooting experience.



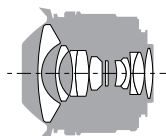
M mode, 1/400 sec., F5.6, ISO 400, Auto white balance
Photo: Goh Fujimaki



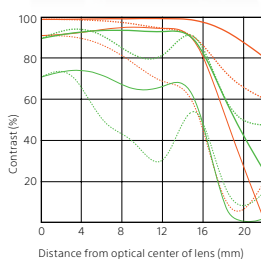
Fisheye

16mm F2.8 Fisheye SAL16F28

35mm full frame



- 180° angle of view on full-frame cameras
- Curvilinear perspective for unique, expansive images
- Crisp image quality throughout the focus range
- Four selectable internal filter settings



Spatial frequency	Max. aperture		F8 aperture	
	R	T	R	T
10 line pairs / mm	—	—	—	—
30 line pairs / mm	—	—	—	—

R: Radial values T: Tangential values

Once a scientific tool but now a favorite of creative photographers, fisheye lenses forgo the restraints of rectilinear perspective – the complex “correction” that is required to keep straight lines looking straight – to deliver expansive images that cover an extremely wide angle of view with curvilinear perspective. The 16mm F2.8 Fisheye provides an extremely wide 180° angle of view on 35 mm full-frame format cameras (110° on APS-C format cameras). In addition to eye-catching interpretations of reality, it offers extended depth of field so that you can capture huge vistas in which everything from 20 cm to infinity is sharp, even at maximum aperture. Since the bulging front element and wide angle of view prevent the use of external screw-in filters, four selectable internal filter settings are provided: normal, O56 monochrome, B12 red reduction, and A12 blue reduction.

• Weight (approx): 400 g • Dimensions (Dia. x L): 75 x 66.5 mm • Max. magnification ratio: 0.15x

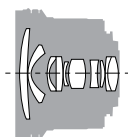


A mode, 1/40 sec., F13.0, -0.3 EV, ISO 100, Daylight white balance
Photo: Takeshi Hirayama

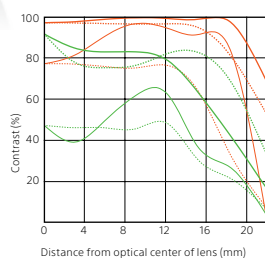
Ultra wide angle









20mm F2.8 SAL20F28

35mm full frame  



- Wide 94° angle of view on full-frame cameras
- Precisely corrected for natural perspective
- Aberration effectively suppressed throughout the focus range
- Rear-focusing mechanism for fast autofocus response
- Circular aperture for attractive defocusing



Spatial frequency	Max. aperture		F8 aperture	
	R	T	R	T
10 line pairs / mm				
30 line pairs / mm				

R: Radial values T: Tangential values

This rigorously corrected lens gives you a wide angle of view for images that benefit from dramatic perspective with minimum distortion. It's an ideal choice for covering spread-out scenes that you can't get far enough way from to cover with a "normal" lens. But there's more: since it has extended depth of field that can keep everything from 25 cm to infinity in crisp focus, you can create exaggerated perspective by including very close and very distant objects in the frame. Close objects will loom large, while distant objects appear to recede markedly into the distance. Meticulous attention has been paid to minimizing flare and internal reflections in this advanced design, with the result that excellent sharpness and contrast are maintained through the image.

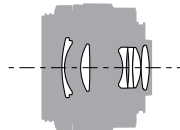
- Weight (approx): 285 g • Dimensions (Dia. x L): 78 x 53.5 mm
- Max. magnification ratio: 0.13x



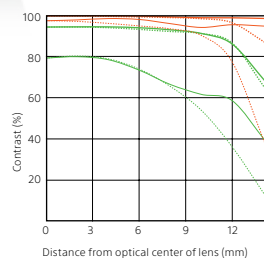
M mode, 1/4000sec., F1.8, ISO100, Auto white balance
Photo: Shinya Morimoto

Normal
DT 35mm F1.8 SAM SAL35F18

APS-C format



- Excellent sharpness and contrast throughout the image
- Circular aperture for attractive defocusing
- Responsive internal SAM (Smooth Autofocus Motor) autofocus drive
- Bright enough for handheld shooting in low light
- 35 mm equivalent focal length: 52.5 mm

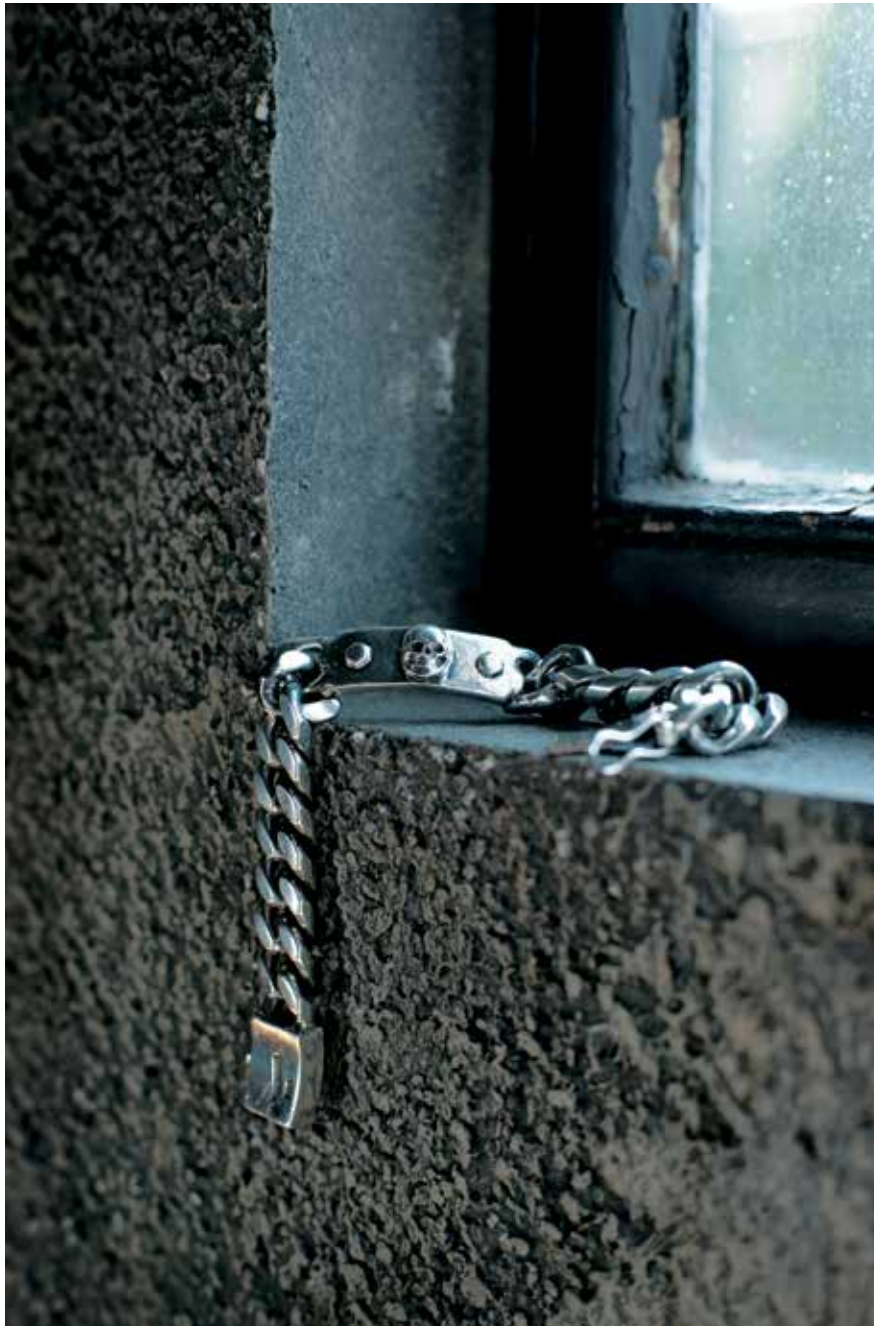


Spatial frequency	Max. aperture		F8 aperture	
	R	T	R	T
10 line pairs / mm	95	95	95	95
30 line pairs / mm	85	85	85	85

R: Radial values T: Tangential values

There's a very good reason why 35 mm is one of the most popular focal lengths for use on APS-C format cameras. The full-frame equivalent focal length is 52.5 mm, providing "normal" perspective – similar to that experienced with the naked eye – and an angle of view that is suitable for an extremely wide range of subjects. You can shoot anything from landscapes to portraits with this lens, without ever feeling that the perspective is too forced or too flat, or that objects appear distorted. The large F1.8 maximum aperture is another advantage: bright enough to allow hand-held shooting in low light, and capable of producing smooth defocusing effects that can add depth and artistic elegance to your images. As a bonus, the DT 35mm F1.8 SAM weighs a mere 170 g, making it unobtrusive on the camera, in a bag, or even in a pocket!

- Weight (approx): 170 g • Dimensions (Dia. x L): 70 x 52 mm
- Max. magnification ratio: 0.25x



M-mode, 1/200 sec., F4.0, -0.3 EV, ISO 200, Custom white balance
Photo: Chukyo Ozawa



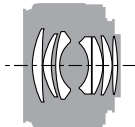
Normal

50mm F1.4 SAL50F14

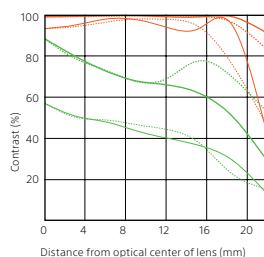
35mm full frame



ADI



- Flare effectively controlled for high contrast
- Outstanding corner-to-corner resolution
- Bright F1.4 max. aperture facilitates hand-held shooting in low light
- Circular aperture for attractive defocusing



Spatial frequency	Max. aperture		F8 aperture	
	R	T	R	T
10 line pairs / mm	—	—	—	—
30 line pairs / mm	—	—	—	—

R: Radial values T: Tangential values

50 mm focal length with a maximum aperture of F1.4: this quintessential fast “normal” lens formula has produced some of the greatest photographic masterpieces in history, and continues to serve as a photographic standard to this day. Of course not all 50mm F1.4 lenses are created equal, and the stunning clarity and contrast delivered by the 50mm F1.4 proves that it is one of the finest in its class. While the in-focus plane is sharp from corner to corner, the combination of F1.4 maximum aperture and circular aperture design makes it possible to elicit silky-smooth defocusing effects to enhance dimensionality and isolate important visual elements. This is a lens that should be part of every serious photo enthusiast’s palette.

• Weight (approx): 220 g • Dimensions (Dia. x L): 65.5 x 43 mm • Max. magnification ratio: 0.15x



M mode, 1/640 sec., F1.8, ISO 100, Auto white balance
Photo: Shinya Morimoto



Mid-range telephoto

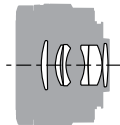
DT 50mm F1.8 SAM SAL50F18

APS-C format

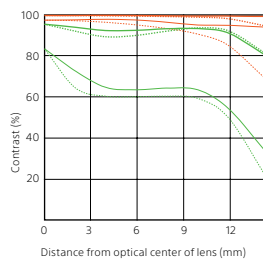


ADI

SAM



- Compact, lightweight, and eminently portable
- Circular aperture for attractive defocusing
- Responsive internal SAM (Smooth Autofocus Motor) autofocus drive
- Bright enough for hand-held shooting in low light
- 35 mm equivalent focal length: 75 mm



On APS-C format cameras, for which it is specifically designed, the DT 50mm F1.8 SAM functions as a moderate telephoto lens (equivalent to 75 mm on a full-frame camera) that can be ideal for shooting portraits as well as for framing and isolating areas of interest in broader, busier scenes. Not only can you isolate the desired subject matter by framing, but you can also take advantage of the lens's large F1.8 maximum aperture and circular aperture design to isolate your subject from the background by using defocusing. The large maximum aperture also facilitates shooting in low light, a capability that is further enhanced by SteadyShot™ INSIDE image stabilization featured in **α** series bodies.

Spatial frequency	Max. aperture		F8 aperture	
	R	T	R	T
10 line pairs / mm	—	—	—	—
30 line pairs / mm	—	—	—	—

R: Radial values T: Tangential values

- Weight (approx): 170 g • Dimensions (Dia. x L): 70 x 45 mm
- Max. magnification ratio: 0.2x



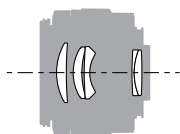
M mode, 1/200 sec., F8.0, ISO 100, Auto white balance
Photo: Shinya Morimoto



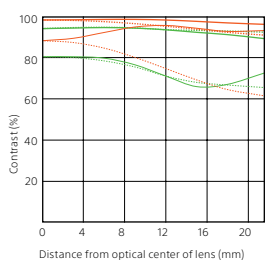
Mid-range telephoto

85mm F2.8 SAM SAL85F28

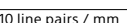

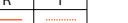

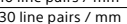


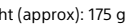
35mm full frame   



- Compact, lightweight, and eminently portable
- Excellent corner-to-corner sharpness
- Large maximum aperture plus circular aperture design for smooth defocusing
- Responsive internal SAM (Smooth Autofocus Motor) autofocus drive



Photographers often choose a large-aperture 85 mm lens for portraits for two compelling reasons. First, the 85 mm focal length makes it easy to fill the frame with the subject from a comfortable distance, without getting so close that unflattering distortion occurs. And second, a large maximum aperture works with the medium-long focal length to create beautifully defocused backgrounds, so that the subject seems to “pop” out of the image. The 85mm F2.8 SAM is just such a lens. But it’s not just limited to portraits. It’s a great choice for any situation where you want a bit more magnification than a “standard” focal length provides. And the fact that it is light and compact means that it’s easy to take along as a second lens.

Spatial frequency	Max. aperture		F8 aperture	
	R	T	R	T
10 line pairs / mm				
30 line pairs / mm				

R: Radial values T: Tangential values

- Weight (approx): 175 g • Dimensions (Dia. x L): 70 x 52 mm
- Max. magnification ratio: 0.2x



A mode, 1/500 sec., F1.8, +0.3 EV, ISO 200, Daylight white balance
Photo: Chukyo Ozawa



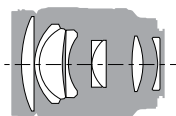
Telephoto

135mm F2.8 [T4.5] STF SAL135F28

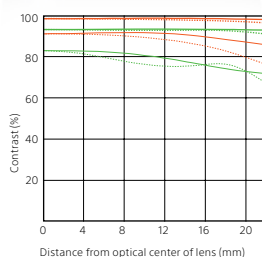
35mm full frame

Manual focus only

Teleconverter compatible



- Unique Smooth Trans Focus design featuring apodization optics
- Sharp in-focus areas with extra-smooth background and foreground defocusing
- Smooth, natural highlight diffusion
- Manual focus and manual aperture ring



Spatial frequency	Max. aperture		F8 aperture	
	R	T	R	T
10 line pairs / mm	95	90	85	80
30 line pairs / mm	85	80	75	70

R: Radial values T: Tangential values

This unique lens has been specifically designed to deliver smooth transitions between crisp in-focus areas and creamily defocused background and foreground areas. It uses special apodization* optics to produce images that seem to have an extra dimension, with high resolution at the plane of focus, gradually melting away to beautifully diffused out of focus rendition. With some lenses highlights in defocused areas can be distracting, but with this unique Smooth Trans Focus design they retain their natural shape in a way that doesn't detract from the defocused background or foreground, and there's no ugly double-line defocusing. The 135mm F2.8 [T4.5] STF promises a one-of-a-kind photographic experience. A manual aperture ring is provided for direct, hands-on defocusing control.

• Weight (approx): 730 g • Dimensions (Dia. x L): 80 x 99 mm • Max. magnification ratio: 0.25x

* "Apodization" is the technical term for changing the shape of a mathematical function; in this case the optical transmission characteristics of the lens.

• For details of STF technology, see P.75.



P mode, 1/640 sec., F6.3, ISO 200, Auto white balance



Macro

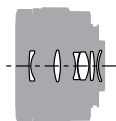
DT 30mm F2.8 Macro SAM SAL30M28

APS-C format

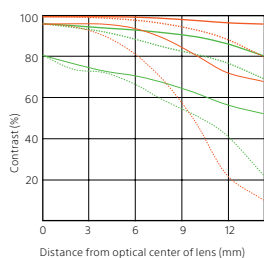


ADI

SAM



- 2cm working distance lets you get really close
- Precision optics deliver excellent sharpness and contrast
- Compact, lightweight, portable design
- Responsive internal SAM (Smooth Autofocus Motor) autofocus drive
- 35 mm equivalent focal length: 45 mm



If you shoot with an APS-C format camera and want a lightweight, compact lens that will handle snapshots and portraits plus macro photography as well, this is it. The 35 mm equivalent focal length of this lens is a distinctly "normal" 45 mm, making it a good choice for general photography. But when an exquisite little detail catches your eye, you can move in as close as 2 cm from your subject to capture macro images with up to 1:1 magnification. The details you focus on will be astonishingly sharp, while the out-of-focus background dissolves into a creamy blur that can really make the details stand out. The DT 30mm F2.8 Macro SAM is only 45 mm long and weighs a discreet 150 g, so it can stay on your camera or in your bag at all times without getting in the way.

Spatial frequency	Max. aperture		F8 aperture	
	R	T	R	T
10 line pairs / mm	—	—	—	—
30 line pairs / mm	—	—	—	—

R: Radial values T: Tangential values

- Weight (approx): 150 g • Dimensions (Dia. x L): 70 x 45 mm
- Max. magnification ratio: 1.0x

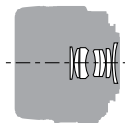


M mode, 1/50 sec., F2.8, ISO 400, Auto white balance
Photo: Shinya Morimoto

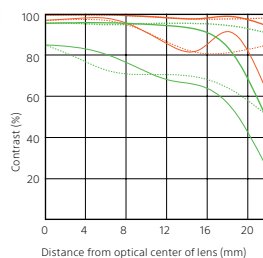
Macro

50mm F2.8 Macro SAL50M28









35mm full frame    Auto Clutch 



- High-performance macro and everyday shooting with one lens
- Accurate autofocus from 1:1 magnification to infinity
- Double floating design contributes to outstanding image quality
- Circular aperture for attractive defocusing
- Focus ring with auto clutch does not rotate during autofocus



Photographers who are attracted to details need a lens that lets them get in close when necessary, filling the frame with their diminutive but fascinating subjects. A lens like the 50mm F2.8 Macro, with a minimum focusing distance of just 20 cm and up to 1:1 magnification, can open up a world of creative possibilities. But there's no need to change lenses when you want to go back to shooting at normal distances. The 50mm F2.8 Macro offers outstanding optical performance for general photography as well, and its 50 mm focal length is a very versatile choice for 35 mm full-frame format cameras. On APS-C format cameras you get a little more reach, which can be advantageous for some normal subjects as well as macro shooting.

Spatial frequency	Max. aperture		F8 aperture	
	R	T	R	T
10 line pairs / mm				
30 line pairs / mm				

R: Radial values T: Tangential values

- Weight (approx): 295 g • Dimensions (Dia. x L): 71.5 x 60 mm
- Max. magnification ratio: 1.0x



P mode, 1/160 sec., F2.8, ISO 400, Auto white balance
Photo: Kentaro Fukuda

Macro

100mm F2.8 Macro SAL100M28

35mm full frame

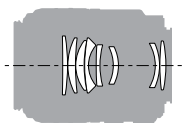


FHB

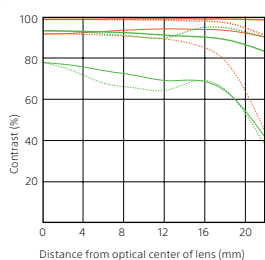
FRL

Auto Clutch

ADI



- Stunning macro shots from a comfortable distance
- Autofocus from 1:1 magnification to infinity
- Double floating design contributes to outstanding close-up image quality
- 9-blade circular aperture for attractive defocusing
- Focus hold button, focus range limiter
- Focus ring with auto clutch does not rotate during autofocus



Doing macro photography outdoors “in the wild” often means that you can’t get too close to your subject and lighting can’t be easily controlled. That’s when you need a telephoto macro lens like the 100mm F2.8 Macro. Greater working distance means you can capture tight macro shots of small-scale wildlife without scaring it away, and you’re not so close that you need special lighting to illuminate your subject. Of course the 100mm F2.8 Macro is a first class telephoto lens for normal shooting too, and can be a good choice for portraits or other subjects that require a bit more reach than a normal lens.

Spatial frequency	Max. aperture		F8 aperture	
	R	T	R	T
10 line pairs / mm	—	—	—	—
30 line pairs / mm	—	—	—	—

R: Radial values T: Tangential values

- Weight (approx): 505 g • Dimensions (Dia. x L): 75 x 98.5 mm
- Max. magnification ratio: 1.0x



G Lenses™

Sony G Lenses are an exceptional breed. They inherit a distinguished pedigree from the original Minolta lens line, with industry-leading Sony design and quality assurance technology added to push their performance to the forefront of twenty-first century photography.

G Lenses impart a visual elegance to every aspect of the images they produce: extraordinary presence at in-focus areas, smoothly dissolving to luscious out-of-focus rendering that can provide a beautiful foundation for captivating photographic art. Their handling is extraordinary too, with intimate operation and response that seamlessly connect the process of taking photographs to the photographer's imagination.





M mode, 1/200 sec., F2.8, ISO 200, Daylight white balance
Photo: Masumi Takahashi

Telephoto zoom 70-200mm F2.8 G SAL70200G



35mm full frame

Teleconverter compatible



ED

IF

3 buttons

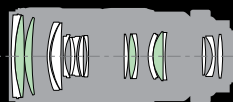
Electronic

FHB

FRL

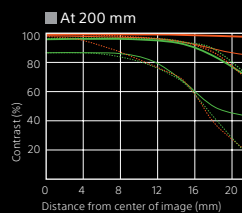
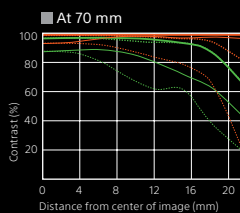
ADI

SSM



● ED glass

- Four ED glass elements effectively suppress aberration
- Constant F2.8 maximum aperture
- Outstanding sharpness and contrast throughout the zoom range
- SSM (Super Sonic wave Motor) for fast, quiet autofocus operation
- Circular aperture for attractive defocusing
- Focus hold and focus range switches offer precision focusing control



Spatial frequency	Max. aperture		F8 aperture	
	R	T	R	T
10 line pairs / mm	95	90	85	80
30 line pairs / mm	85	80	75	70

R: Radial values T: Tangential values

The range from 70 to 200 mm is where much of the telephoto action occurs. The ability to cover that range with a constant F2.8 aperture affords some significant photographic advantages, and the outstanding clarity and contrast offered by the 70-200mm F2.8 G multiplies those advantages many times over. Although the large F2.8 maximum aperture does make it easier to create beautifully defocused backgrounds, there are important advantages for shooting moving subjects as well. Larger apertures – often referred to as “fast” as well as “bright” – allow you to use faster shutter speeds to achieve equivalent exposure, making it possible to capture motion that might end up as a blur with a slower lens. The 70-200mm F2.8 G does it all with characteristic G Lens refinement and class.

- Weight (approx): 1340 g • Dimensions (Dia. x L): 87 x 196.5 mm
- Max. magnification ratio: 0.21x • Tripod mount supplied



A mode, 1/160 sec., F5.6, +0.7 EV, ISO 200, Auto white balance
Photo: Shinya Morimoto

Telephoto zoom

70-300mm F4.5-5.6 G SSM SAL70300G

35mm full frame



ED

RF

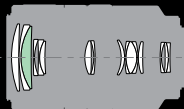
FHB

Electronic

FRL

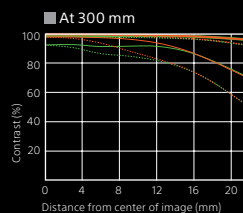
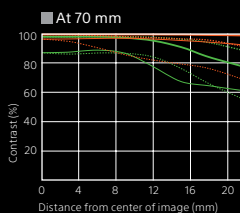
SSM

G



● ED glass

- One ED glass element contributes to minimal aberration
- Outstanding sharpness and contrast throughout the zoom range
- SSM (Super Sonic wave Motor) for fast, quiet autofocus operation
- Circular aperture for attractive defocusing
- Focus hold and focus range switches offer precision focusing control



Spatial frequency	Max. aperture		F8 aperture	
	R	T	R	T
10 line pairs / mm	95	90	85	80
30 line pairs / mm	85	80	75	70

R: Radial values T: Tangential values

The 70-300mm F4.5-5.6 G SSM is the smallest and lightest zoom in the current G Lens series, offering an appealing combination of extended zoom range and handling, plus image quality that will satisfy the most demanding photo enthusiast or pro. An ED lens element collaborates with an advanced optical path design to achieve exceptionally low aberration right out to the maximum 300 mm focal length, so that your telephoto images benefit from impressive clarity and depth. 300 mm is generally considered to be point at which the “medium” telephoto range ends and the “super” telephoto range begins. Long focal lengths like this require careful handling to prevent camera shake, but SteadyShot™ INSIDE image stabilization featured in α series bodies will help you capture clear, blur-free images in a wider range of handheld shooting situations than would normally be possible.

- Weight (approx): 760 g • Dimensions (Dia. x L): 82.5 x 135.5 mm
- Max. magnification ratio: 0.25x



M mode, 1/500 sec., F5.6, ISO 1000, Auto white balance
Photo: Goh Fujimaki

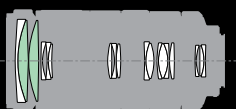
G



Super telephoto zoom 70-400mm F4-5.6 G SSM II SAL70400G2

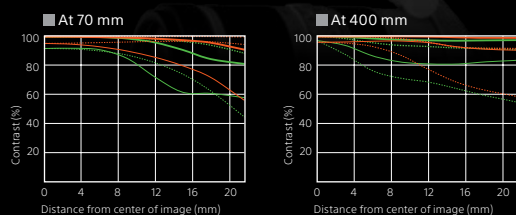
35mm full frame | Teleconverter compatible | Nano AR Coating | ED | IF | FHB | FRL | ADI | SSM

Manual focus only



● ED glass

- Two ED glass elements effectively suppress aberration
- Outstanding sharpness and contrast throughout the zoom range
- SSM (Super Sonic wave Motor) for fast, quiet autofocus operation
- Circular aperture for attractive defocusing
- Focus hold and focus range switches offer precision focusing control



Spatial frequency	Max. aperture		F8 aperture	
	R	T	R	T
10 line pairs / mm	95	90	85	80
30 line pairs / mm	85	80	75	70

R: Radial values T: Tangential values

This new edition of the popular 70-400mm F4-5.6 G retains its predecessor's superb optical design, but adds a Nano AR Coating that further reduces unwanted reflections for clear images with minimal flare and ghosting. Version II also gains a significant speed advantage with roughly four times faster AF subject tracking. Outstanding optical performance rivals prime-lens quality throughout the zoom range, SSM (Super Sonic wave Motor) internal focus supports fast, quiet autofocus, and overall operability is superb.

- Weight (approx): 1500 g • Dimensions (Dia. x L): 94.5 x 196 mm
- Max. magnification ratio: 0.27x • Tripod mount supplied

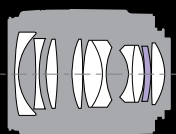


A mode, 1/250 sec., F1.4, ISO 200
Photo: Yuji Nukui

Wide-angle prime 35mm F1.4 G SAL35F14G

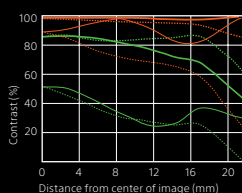
35mm full frame     Auto Clutch

G



● Aspherical lens

- One aspherical element contributes to outstanding image quality even at maximum aperture
- High resolution and contrast throughout the image area
- Circular aperture for attractive defocusing
- Focus ring with auto clutch does not rotate during autofocus
- Focus hold and focus range switches offer precision focusing control



Spatial frequency	Max. aperture		F8 aperture	
	R	T	R	T
10 line pairs / mm	95	90	85	80
30 line pairs / mm	85	80	75	70

R: Radial values T: Tangential values

35 mm prime lenses are a staple for many photographers. The angle of view provided by this focal length is one of the most comfortable and versatile on both 35mm full-frame format and APS-C format cameras, and with that, this lens can be used for anything from close-ups to landscapes. The 35mm F1.4 G, with its superb optics and large F1.4 maximum aperture, is one of the finest fast 35mm lenses in its class. In addition to no-compromise G Lens construction and quality throughout, it features an optical design that includes an aspherical lens element that contributes to consistently superior, low-distortion image quality right up to the F1.4 maximum aperture. You can shoot wide open in low light knowing that the entire scene will be captured with equally superb clarity and contrast. The large maximum aperture and circular aperture design are also an advantage when you want to isolate your subject from a busy background, for example, allowing you to defocus unwanted detail so your subject stands out.

- Weight (approx): 510 g • Dimensions (Dia. x L): 69 x 76 mm
- Max. magnification ratio: 0.2x



M mode, 1/4000 sec., F5.6, ISO 400, Daylight white balance
Photo: Kazushi Momoi

Telephoto prime 300mm F2.8 G SSM II SAL300F28G2

G

35mm full frame

Teleconverter compatible

Nano AR Coating



ED

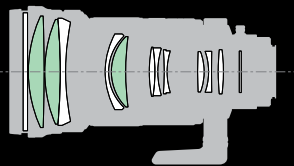
IF

FHB

FRL

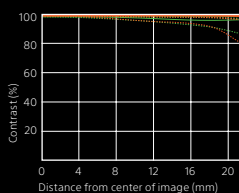
ADI

SSM



● ED glass

- Four ED glass elements effectively suppress aberration
- Constant F2.8 maximum aperture
- Outstanding sharpness and contrast throughout the zoom range
- SSM (Super Sonic wave Motor) for fast, quiet autofocus operation
- Circular aperture for attractive defocusing
- Dust and moisture resistant design
- Focus hold and focus range switches offer precision focusing control



Spatial frequency	Max. aperture		F8 aperture	
	R	T	R	T
10 line pairs / mm	95	90	85	80
30 line pairs / mm	75	70	65	60

R: Radial values T: Tangential values

Fine tuned for digital photography, the latest edition of an already stellar large-aperture telephoto lens offers improved optical quality that will easily match the best high pixel count sensors, plus outstanding balance between contrast and background blur. An advanced Nano AR coating with nano precision structure sharply reduces unwanted reflections for crisp imagery with minimal flare and ghosting, and a new LSI drive circuit achieves four times faster AF subject tracking during continuous shooting compared to the first-generation 300mm F2.8 G SSM II. Other enhancements include greater dust and moisture resistance, and a number of refinements in overall operability. If you shoot sports, wildlife, or even portraits, you'll really appreciate the large aperture, 300 mm focal length, and superb image quality that this lens delivers.

- Weight (approx): 2340 g • Dimensions (Dia. x L): 122 x 242.5 mm
- Max. magnification ratio: 0.18x • Tripod mount supplied



A mode, 1/1600 sec., F8.0, ISO 200, Custom white balance
Photo: Yasushi Ohnishi

Super telephoto prime 500mm F4 G SSM SAL500F40G



35mm full frame

Teleconverter compatible

Nano AR Coating



ED

IF

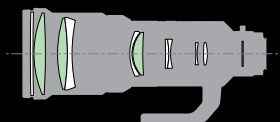
4 buttons Electronic

FHB

FRL

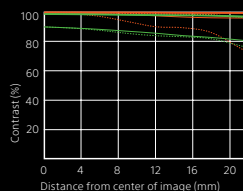
ADI

SSM



● ED glass

- Four ED glass elements effectively suppress aberration
- Constant F4 maximum aperture
- Outstanding sharpness and contrast throughout the zoom range
- SSM (Super Sonic wave Motor) for fast, quiet autofocus operation
- Circular aperture for attractive defocusing
- Dust and moisture resistant design
- Focus hold and focus range switches offer precision focusing control



Spatial frequency	Max. aperture		F8 aperture	
	R	T	R	T
10 line pairs / mm	95	95	90	90
30 line pairs / mm	85	85	80	80

R: Radial values T: Tangential values

This 500 mm super-telephoto lens with a constant F4 maximum aperture offers significant advantages for sports and wildlife photographers in particular. An advanced optical design features three ED glass elements that minimize color aberration while maximizing sharpness, and an improved SSM autofocus drive system offers unprecedented autofocus speed. The 500mm F4G SSM also features a new Nano AR Coating that dramatically reduces unwanted reflections for superior image clarity and contrast. The constant F4 maximum aperture is not only bright, but at this focal length is also ideal for creating beautifully defocused backgrounds as well. A circular aperture design further contributes to smooth defocusing with natural looking highlights. The 500mm F4 G SSM is weather resistant too, and will stand up to heavy duty use in harsh outdoor conditions. A carbon fiber velvet lined lens hood is included.

- Weight (approx): 3460 g • Dimensions (Dia. x L): 140 x 367.5 mm
- Max. magnification ratio: 0.135x • Tripod mount supplied



SAL500F4G with SAL20TC, A mode, 1/2500 sec., F10.0, -0.3 EV, ISO 400, Auto white balance
Photo: Hiroaki Nakajima

Teleconverters

1.4x Teleconverter SAL14TC



- Optics designed to deliver uncompromised image quality
- Increase focal length without degrading resolution or contrast

Compatible lenses

SAL70200G (70-200mm F2.8G)* ¹
SAL300F28G2 (300mm F2.8G II)* ¹
SAL70400G2 (70-400mm F4 - 5.6 G SSM II)* ²
SAL135F28 (135mm F2.8 [T4.5] STF)* ²
SAL500F40G (500mm F4 G SSM)* ³

*¹ Compatible with MF and AF focusing modes

*² Compatible with MF focusing mode only

*³ The SAL14TC is compatible with MF and AF focusing modes.

The SAL20TC is compatible with MF focusing mode only

* Teleconverters should not be used with the NEX-7, NEX-6, NEX-5R, NEX-5N, NEX-5, NEX-3N, NEX-F3, NEX-C3, or NEX-3

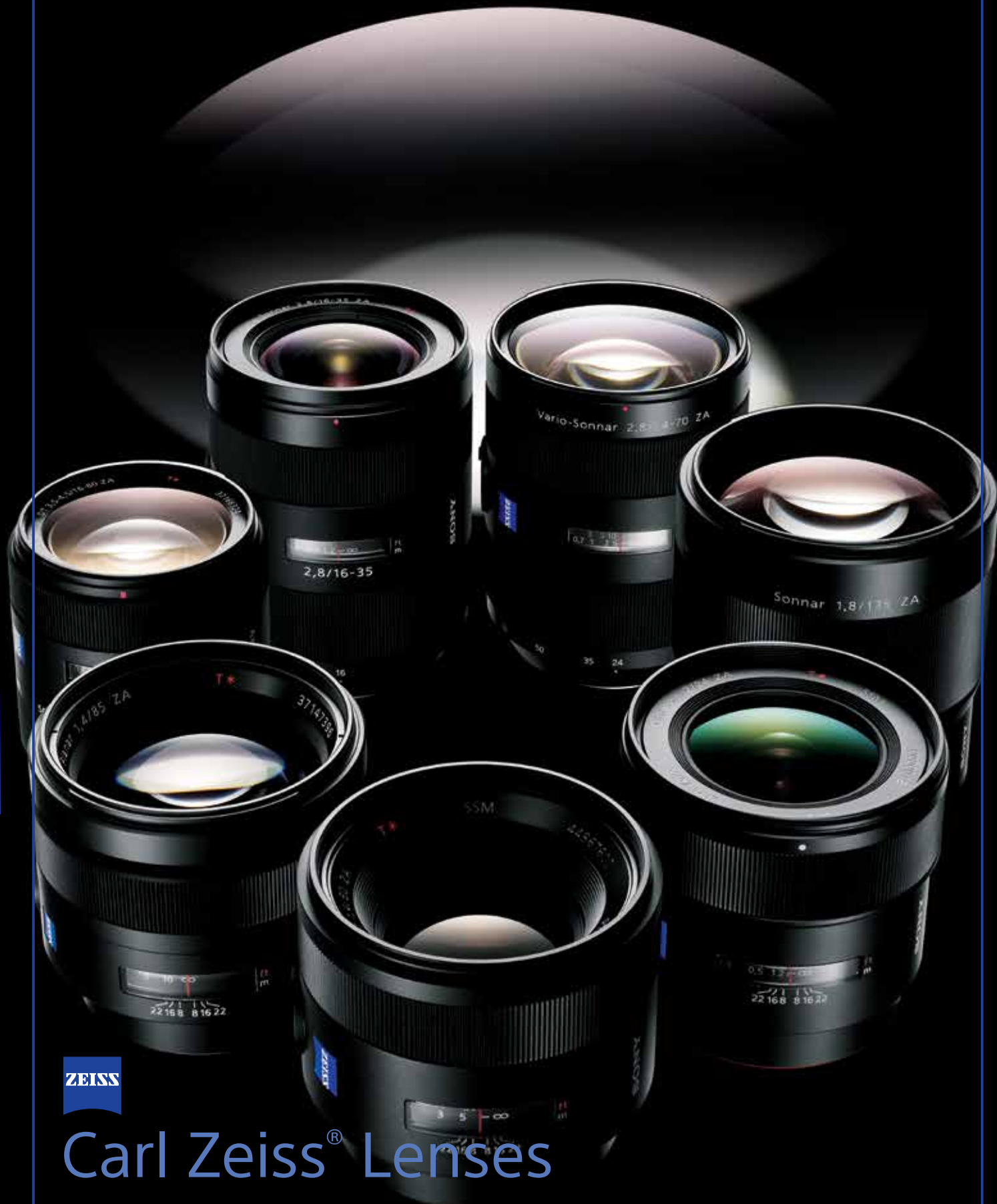
2x Teleconverter SAL20TC



The 1.4x Teleconverter and 2x Teleconverter are a great way to extend your telephoto range without having to carry more large lenses. The 1.4x Teleconverter provides a 1.4x increase in focal length with a 1-stop light loss, so when used with the 300mm F2.8 G SSM II, for example, you have the equivalent of a 420 mm lens with a maximum aperture of F4. The 2x Teleconverter doubles focal length with a 2-stop light loss, so the same 300mm F2.8 G SSM II lens becomes a 600 mm super-telephoto with a maximum aperture of F5.6. For sports, wildlife, and landscapes, the 1.4x Teleconverter and 2x Teleconverter can give you maximum reach with minimum gear to carry.



• Images manipulated to simulate teleconverter magnification.



ZEISS

Carl Zeiss® Lenses

Carl Zeiss AG, founded in 1846, is a legend in the field of camera optics. The company was responsible for many of the innovations that have raised the quality of photographic imaging to the high standard we enjoy today, and is revered for its unswerving dedication to delivering nothing less than the best. Sony is proud and honored to be working with Carl Zeiss AG on the development and production of top-class lenses for Sony **α** series cameras. In fact, these are the only autofocus Carl Zeiss lenses currently available for use on digital single-lens reflex cameras, meaning that Sony camera users have exclusive access to legendary image quality that many consider to be the ultimate in photographic expression.



M mode, 2.0 sec., F11.0, ISO 100, Auto white balance
Photo: Kazushi Momoi



Wide-angle zoom

Vario-Sonnar T* 16-35mm F2.8 ZA SSM SAL1635Z

35mm full frame



Super

ED

ED

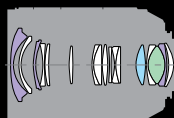
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IF

FHB

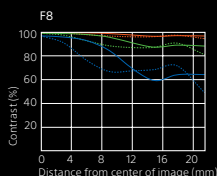
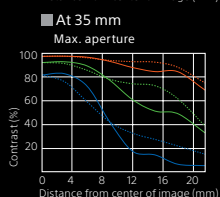
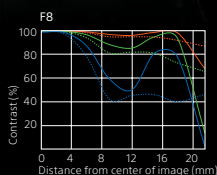
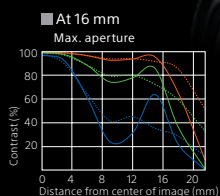
ADI

SSM



- Aspherical lens
- ED glass
- Super ED glass

- One Super ED glass element, one ED glass element, and three aspherical elements for superior image quality
- Carl Zeiss T* coating effectively controls flare and glare
- Constant F2.8 maximum aperture
- Outstanding sharpness and contrast at all aperture settings
- Quiet, responsive internal SSM (Super Sonic wave Motor) autofocus drive
- Focus mode switch and focus hold button offer precision focus control



Spatial frequency	R	T
10 line pairs / mm	—	—
20 line pairs / mm	—	—
40 line pairs / mm	—	—

R: Radial values T: Tangential values

Although it is a wide-angle zoom, and an ideal supplement to a high-performance mid-range zoom, the 16 – 35 mm range of this lens will satisfy the core focal length requirements of many photographers who shoot primarily indoors or in the city. At the other end of the spectrum it can be a great choice for spacious landscapes as well. Regardless of where or how the Vario-Sonnar T* 16-35mm F2.8 ZA SSM is used, its advanced coated optical path delivers exceedingly crisp images with striking contrast, without the aberration and peripheral light falloff that commonly plague wide-angle zooms. That same superlative quality is maintained throughout the zoom range, even at the maximum F2.8 aperture.

• Weight (approx): 860 g • Dimensions (Dia. x L): 83 x 114 mm • Max. magnification ratio: 0.24x

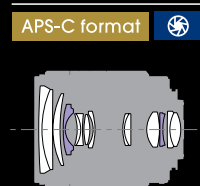


M mode, 1/60 sec., F8.0, ISO 100, Daylight white balance
Photo: Kentaro Fukuda

Standard zoom

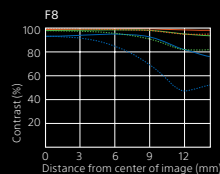
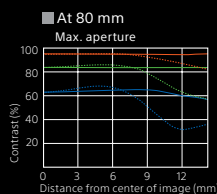
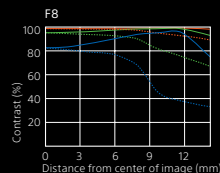
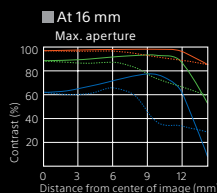
Vario-Sonnar T* DT 16-80mm F3.5-4.5 ZA SAL1680Z

ZEISS



● Aspherical lens

- Two aspherical elements for outstanding image quality at all apertures
- Carl Zeiss T* coating effectively controls flare and glare
- Outstanding sharpness and contrast at all focal lengths
- Circular aperture for attractive defocusing
- Compact, lightweight high-performance zoom
- 35 mm equivalent focal length: 24 – 120 mm



Spatial frequency	R	T
10 line pairs / mm		
20 line pairs / mm		
40 line pairs / mm		

R: Radial values T: Tangential values

Because it has been designed specifically for APS-C format cameras, the Vario-Sonnar T* DT 16-80mm F3.5-4.5 ZA is the lightest and most compact zoom in the Carl Zeiss lineup. It also offers the greatest zoom range in the lineup, making it a superb single-lens solution for many APS-C format photographers. Its 35 mm equivalent focal length range of 24 – 120 mm may be all you'll ever need for day-to-day shooting. And of course it delivers acclaimed Carl Zeiss optical performance and handling, with image quality that rivals the best prime lenses at any focal length. Although the maximum aperture isn't as large as the 35 mm full-frame format lenses in this series, circular aperture design makes it possible to get creative with beautifully smooth defocusing effects. The Vario-Sonnar T* DT 16-80mm F3.5-4.5 ZA is quite simply the most versatile, economical way to experience Carl Zeiss quality on an α series APS-C format body.

- Weight (approx): 445 g • Dimensions (Dia. x L): 72 x 83 mm
- Max. magnification ratio: 0.24x



M mode, 1/5 sec., F11.0, ISO 200, Daylight white balance
Photo: Masumi Takahashi

Standard zoom

Vario-Sonnar T* 24-70mm F2.8 ZA SSM SAL2470Z

ZEISS



35mm full frame



ED

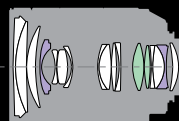


IF

FHB

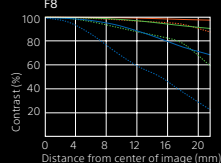
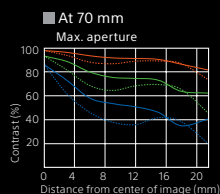
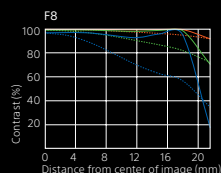
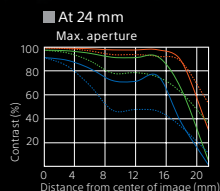
ADI

SSM



● Aspherical lens ● ED glass

- Two ED glass elements and two aspherical elements for superior image quality
- Carl Zeiss T* coating effectively controls flare and glare
- Constant F2.8 maximum aperture
- Outstanding sharpness and contrast at all aperture settings
- Quiet, responsive internal SSM (Super Sonic wave Motor) autofocus drive
- Focus mode switch and focus hold button offer precision focus control



Spatial frequency	R	T
10 line pairs / mm		
20 line pairs / mm		
40 line pairs / mm		

R: Radial values T: Tangential values

If you insist on prime-lens image quality but envy the convenience of variable focal length, here's a lens that brings the best of both worlds together. For many discriminating photographers it is a lens that will stay on the camera most of the time. Its versatile 24 mm to 70 mm zoom range covers a wide gamut of shooting situations, and its extraordinary sharpness and contrast are fully retained at all focal lengths and apertures. Whether you're shooting a tight indoor scene at 24 mm, a portrait at 70 mm, or anything in between, you'll feel and see legendary Carl Zeiss quality in every shot.

- Weight (approx): 955 g • Dimensions (Dia. x L): 83 x 111 mm
- Max. magnification ratio: 0.25x



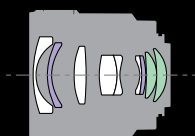
A mode, 1/500 sec., F11.0, ISO 6400, Manual white balance
Photo: Chukyo Ozawa



Wide-angle prime

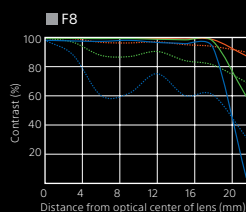
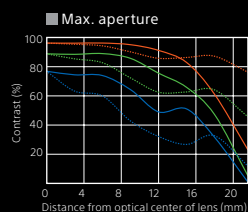
Distagon T* 24mm F2 ZA SSM SAL24F20Z

35mm full frame ED (RF FHB ADI SSM



● Aspherical lens ● ED glass

- Two ED glass elements and two aspherical elements for superior image quality
- Carl Zeiss T* coating effectively controls flare and glare
- Quiet, responsive internal SSM (Super Sonic wave Motor) autofocus drive
- Focus ring with auto clutch does not rotate during autofocus
- 9-blade circular aperture for attractive defocusing



Spatial frequency	R	T
10 line pairs / mm	—	—
20 line pairs / mm	—	—
40 line pairs / mm	—	—

R: Radial values T: Tangential values

Representing the wide end of the A-mount Carl Zeiss prime lens range, the 24 mm focal length of this model provides a wide perspective on 35 mm full-frame format cameras, and a closer-to-normal equivalent focal length of 36 mm on APS-C format cameras. Photographers who value a single-prime approach to general shooting will love this lens, as will those who appreciate the subtle but tangible quality advantage that a first-class prime provides. Use it indoors, on the street, or in the wild for images that can bring your artistic vision to life. In addition to unimpeachable optical performance and refined overall handling, this lens offers particularly responsive, quiet autofocus operation, and a minimum focusing distance of just 19 cm that lets you explore your subjects at close range.

• Weight (approx): 555 g • Dimensions (Dia. x L): 78 x 76 mm • Max. magnification ratio: 0.29x



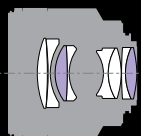
M mode, 1/125 sec., F5.6, ISO 100, Manual white balance
Photo: Goh Fujimaki



Normal prime

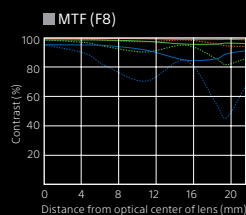
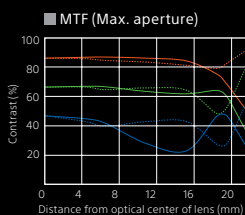
Planar T* 50mm F1.4 ZA SSM SAL50F14Z

35mm full frame



● Aspherical lens

- Outstanding sharpness and contrast at all aperture settings
- Carl Zeiss T* coating effectively controls flare and glare
- Quiet, responsive internal SSM (Super Sonic wave Motor) autofocus drive
- Outstanding corner-to-corner resolution
- Bright F1.4 max. aperture facilitates hand-held shooting in low light
- 9-blade circular aperture for attractive defocusing



Spatial frequency	R	T
10 line pairs / mm	—	—
20 line pairs / mm	—	—
40 line pairs / mm	—	—

R: Radial values T: Tangential values

With a "normal" 50 mm focal length on 35 mm full-frame cameras, this is an unbeatable choice for photographers who like to work with a single prime lens, and a perfect starting point for a superb Zeiss lens collection. A refined Zeiss Planar optical configuration with two aspherical elements delivers superb sharpness and contrast throughout the image at all apertures. A 9-bladed circular aperture can produce beautiful bokeh as well. SSM (Super Sonic wave Motor) drive affords quiet, responsive AF, while direct manual focus capability and a focus hold button enhance overall focusing control.

- Weight (approx): 518 g • Dimensions (Dia. x L): 81 x 71.5 mm
- Max. magnification ratio: 0.14x



A mode, 1/800 sec., F4.0, ISO 800, Manual white balance
Photo: Chukyo Ozawa



Mid-range telephoto prime

Planar T* 85mm F1.4 ZA SAL85F14Z

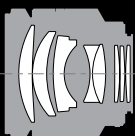
35mm full frame



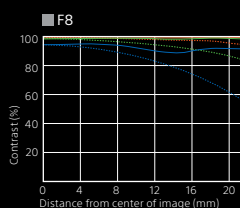
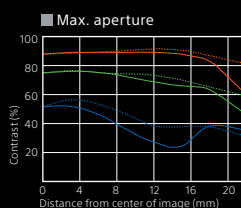
FHB

Auto Clutch

ADI



- Outstanding sharpness and contrast at all aperture settings
- Carl Zeiss T* coating effectively controls flare and glare
- 9-blade circular aperture for attractive defocusing
- Focus ring with auto clutch does not rotate during autofocus
- Focus mode switch and focus hold button offer precision focus control



Spatial frequency	R	T
10 line pairs / mm	95	95
20 line pairs / mm	85	85
40 line pairs / mm	75	75

R: Radial values T: Tangential values

85 mm focal length, F1.4 maximum aperture, and precision Carl Zeiss T* coated Planar optics: it all adds up to superlative performance and handling for portraiture or medium-telephoto landscapes. The delicate, nuanced "drawing" of the Planar design makes it possible to capture subtleties of light and texture that can give images extraordinary depth and presence. Graceful reproduction of skin tones and textures is a characteristic that is prized by photographers and subjects alike. Shooting comfort is another feature of this refined lens. A wide focus ring with auto clutch mechanism does not rotate during autofocus operation, and a focus hold button on the lens itself lies right under your fingertips for easy access.

• Weight (approx): 640 g • Dimensions (Dia. x L): 81 x 75 mm • Max. magnification ratio: 0.13x

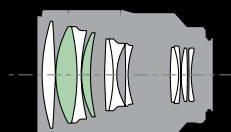


M mode, 1/25 sec., F2.8, ISO 200, Auto white balance
Photo: Chukyo Ozawa

Telephoto prime Sonnar T* 135mm F1.8 ZA SAL135F18Z

35mm full frame      

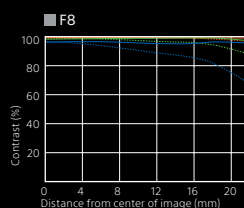
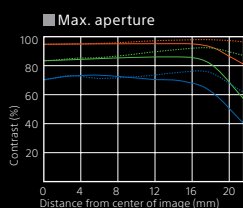
ZEISS



● ED glass

- Two ED glass elements for superior image quality
- Carl Zeiss T* coating effectively controls flare and glare
- Excellent corner-to-corner sharpness and high contrast
- Focus ring with auto clutch does not rotate during autofocus
- Focus hold button provides conveniently placed focus hold control

F1.8 is a relatively large maximum aperture for a 135 mm telephoto lens, and the consistently outstanding performance of this lens throughout its aperture range lets you take full advantage of the extra speed and brightness it provides. Whether you need the large aperture to shoot in low light, to achieve suitable shutter speeds for shooting action, or for creative control of background defocusing, the Sonnar T* 135mm F1.8 ZA will reward you with stunning resolution and contrast where it counts. In addition to portraits and landscapes with natural proportions and perspective, the 135 mm focal length of this lens is often a good choice for indoor sports. 135 mm is well within telephoto territory, and usually requires careful handling to avoid image blurring due to camera shake, but on **α** series bodies with SteadyShot INSIDE image stabilization you'll find it easier than ever to capture crisp images when shooting hand held.



Spatial frequency	R	T
10 line pairs / mm	—	—
20 line pairs / mm	—	—
40 line pairs / mm	—	—

R: Radial values T: Tangential values

- Weight (approx): 995 g • Dimensions (Dia. x L): 88 x 114.5 mm
- Max. magnification ratio: 0.25x



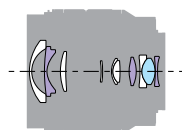
E-mount Lenses



A mode, 1/100 sec., F11.0, -0.7 EV, ISO 200, Daylight white balance
Photo: Katsuhiko Mizuno

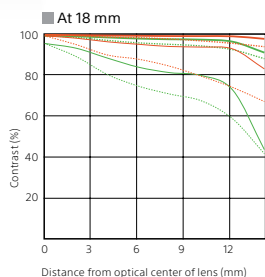
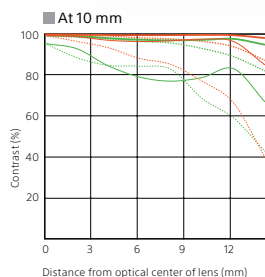
Ultra wide-angle zoom E 10-18mm F4 OSS SEL1018

APS-C format   



- One Super ED glass element, and three aspherical elements for superior image quality
- High contrast throughout zoom range
- Flare and aberrations effectively subdued
- Internal OSS (Optical SteadyShot™) image stabilization
- Circular aperture for attractive defocusing
- 35 mm equivalent focal length: 15 – 27 mm

● Aspherical lens ● Super ED glass



Spatial frequency	Max. aperture		F8 aperture	
	R	T	R	T
10 line pairs / mm				
30 line pairs / mm				

R: Radial values T: Tangential values

Super wide angle zoom from 10 mm through 18 mm (15 mm to 27 mm in 35 mm full-frame format) with a constant F4 maximum aperture is ideal for expansive landscapes as well as emphasized perspective with any subject. Aspherical and ED glass elements in a precision optical design contribute to spectacular resolution and contrast right out to the image edges even with the aperture wide open, and a circular aperture design makes it possible to achieve beautifully smooth defocusing effects with natural-looking highlights. Consistently superior image quality is maintained right throughout the zoom range. Optical SteadyShot image stabilization adds significantly to this lens's versatility, maximizing its impressive performance when shooting handheld, even in challenging low light situations.

- Weight (approx): 225 g • Dimensions (Dia. x L): 70 x 63.5 mm
- Max. magnification ratio: 0.1x

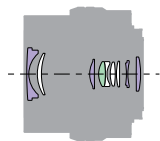


M mode, 1/160 sec., F11.0, ISO 200, Daylight white balance
Photo: Masumi Takahashi

Mid-range zoom

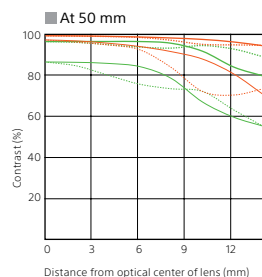
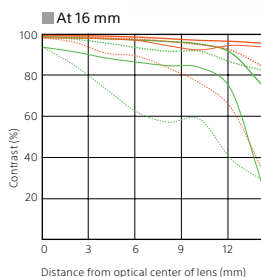
E PZ 16-50mm F3.5-5.6 OSS SELP1650

APS-C format    



● Aspherical lens ● ED glass

- One ED glass element and three aspherical elements for superior image quality
- Exceptionally smooth powered zoom
- Less than 30 mm long when retracted
- Circular aperture for attractive defocusing
- 35 mm equivalent focal length: 24 – 75 mm



Spatial frequency	Max. aperture		F8 aperture	
	R	T	R	T
10 line pairs / mm	—	—	—	—
30 line pairs / mm	—	—	—	—

R: Radial values T: Tangential values

Here's a lens that adds to the small-size advantage of E-mount cameras with a retractable design that's less than 30 mm long when retracted. The E PZ 16-50mm F3.5-5.6 OSS extends automatically and is ready to shoot whenever you are, and it features an exceptionally smooth powered zoom that can significantly enhance the visual quality of your movies. Powered zoom is operated via a dual-function lens ring that also controls manual focus for added focusing versatility and precision when needed. Outstanding optics with aspheric and ED glass elements, plus Optical SteadyShot image stabilization, achieve stunning image quality throughout the zoom range in the widest possible range of shooting situations. Background bokeh is beautiful too, thanks to a circular aperture design.

- Weight (approx): 116 g • Dimensions (Dia. x L): 64.7 x 29.9 mm
- Max. magnification ratio: 0.215x

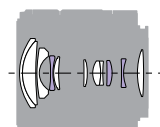


M mode, 1/320 sec., F11.0, ISO 400, Auto white balance
Photo: Shinya Morimoto

Standard zoom

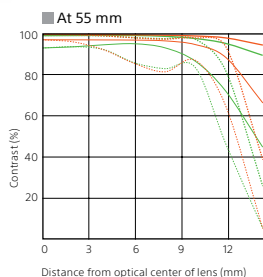
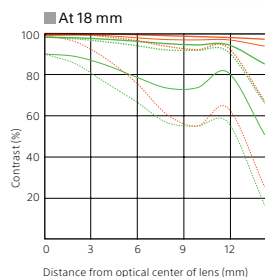
E 18-55mm F3.5-5.6 OSS SEL1855









APS-C format   IF OSS



Aspherical lens

- Compact, lightweight 3x zoom with high-quality metal exterior
- Three aspherical elements for top-class optical performance
- Ideal for shooting stills or movies
- Internal OSS (Optical SteadyShot™) image stabilization
- Circular aperture for attractive defocusing
- Built-in motor delivers smooth, quiet autofocus operation
- 35 mm equivalent focal length: 27 – 82.5 mm



Spatial frequency	Max. aperture		F8 aperture	
	R	T	R	T
10 line pairs / mm				
30 line pairs / mm				

R: Radial values T: Tangential values

This lens offers a superb balance of form and function: ample zoom range in a compact design that weighs only 194 g yet is remarkably comfortable to hold and operate. The 18 – 55 mm zoom range, corresponding to 27 – 82.5 mm on a 35 mm full-frame format camera, is ideally designed for comfortable framing and capture of most subjects encountered in daily life or on vacation, and a built-in Optical SteadyShot image stabilization system makes it possible to produce sharp images even when shooting hand-held in low light. The OSS system is so effective that you'll be able to capture blur-free images at shutter speeds up to four steps slower than would be possible without image stabilization. And thanks to extremely smooth, quiet autofocus and aperture operation, you don't have to worry about unwanted camera and lens noise infiltrating your movie soundtracks.

- Weight (approx): 194 g • Dimensions (Dia. x L): 62 x 60 mm
- Max. magnification ratio: 0.3x

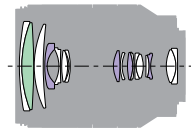


M mode, 1/320 sec., F5.6, ISO 400, Auto white balance
Photo: Shinya Morimoto

High magnification zoom

E 18-200mm F3.5-6.3 OSS SEL18200

APS-C format     

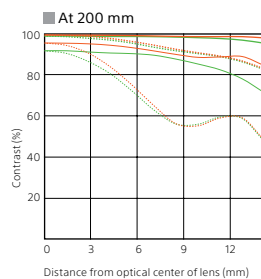
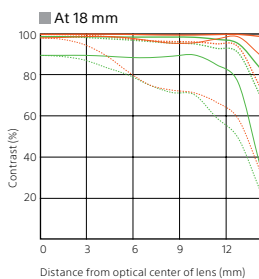










Aspherical lens ED glass

- Versatile extended-range 11x zoom with high-quality metal exterior
- Four aspherical elements for top-class optical performance right out to the image edges
- Ideal for shooting stills or movies
- Internal OSS (Optical SteadyShot™) image stabilization with Active Mode
- Circular aperture for attractive defocusing
- Built-in motor delivers smooth, quiet autofocus and aperture operation
- 35 mm equivalent focal length: 27 – 300 mm

If you're a photographer/videographer who needs maximum speed, versatility, and mobility to rapidly respond to a wide range of shooting situations, from portraits and snapshots to sports, this is a lens you should consider. It features an extensive 11x zoom range, from wide 18 mm to 200 mm telephoto with impressive image quality all the way. The advanced Optical SteadyShot image stabilization system included in this lens will not only make it easier to shoot blur-free stills at long focal lengths, but it also has an automatic Active Mode that will help keep your movie images steady as you move around with the camera while shooting at the wide end of the zoom range. Another feature that contributes to high-quality movie production is extremely quiet autofocus and aperture operation that will keep your soundtracks free of unwanted camera noise.

- Weight (approx): 524 g • Dimensions (Dia. x L): 75.5 x 99 mm
- Max. magnification ratio: 0.35x



Spatial frequency	Max. aperture		F8 aperture	
	R	T	R	T
10 line pairs / mm				
30 line pairs / mm				

R: Radial values T: Tangential values

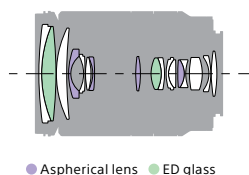


M mode, 1/400 sec., F11.0, ISO200, Daylight white balance
Photo: Norifumi Inagaki

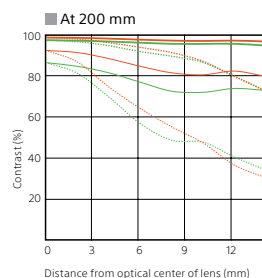
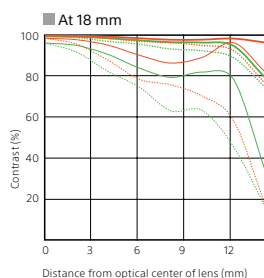
High magnification zoom

E 18-200mm F3.5-6.3 OSS LE SEL18200LE

APS-C format    



- Versatile extended-range 11x zoom with high-quality metal exterior
- Four aspherical elements for top-class optical performance
- Ideal for shooting stills or movies
- Internal OSS (Optical SteadyShot™) image stabilization with Active Mode
- Circular aperture for attractive defocusing
- Compact design weighing only 460 g
- 35 mm equivalent focal length: 27 – 300 mm



Spatial frequency	Max. aperture		F8 aperture	
	R	T	R	T
10 line pairs / mm				
30 line pairs / mm				

R: Radial values T: Tangential values

The extensive 18 mm to 200 mm zoom range of this lens means that you can shoot sweeping landscapes, portraits, sports, wildlife, and more, all without having to stop to change lenses. In 35 mm full-frame format terms the 11x zoom range of this lens reaches from 27 mm wide to 300 mm telephoto, with superb image quality all the way thanks to an advanced optical design and Optical SteadyShot image stabilization. That's heavyweight performance in the lightest and most compact 18 - 200 mm zoom in the E-mount lineup. The unobtrusive size and weight of this lens make it an ideal choice for travel as well as everyday still and movie shooting, and its wide zoom range means it will cover just about any shooting situation you're likely to encounter anywhere you go.

- Weight (approx): 460 g • Dimensions (Dia. X L): 68 x 97.1 mm
- Max. magnification ratio: 0.27x



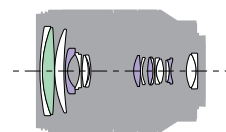
A mode, 1/1000 sec., F8.0, ISO 100, Auto white balance
Photo: Kazushi Momoi

High magnification zoom

E PZ 18-200mm F3.5-6.3 OSS SELP18200

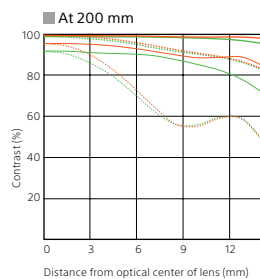
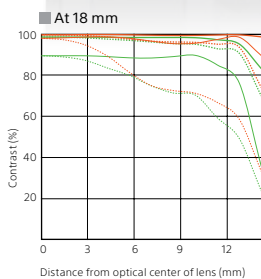


APS-C format      Active Mode



● Aspherical lens ● ED glass

- Four aspherical elements for top-class optical performance
- Ideal for shooting stills or movies
- Exceptionally smooth powered zoom
- Internal OSS (Optical SteadyShot™) image stabilization with Active Mode
- Circular aperture for attractive defocusing
- Built-in motor delivers smooth, quiet autofocus and aperture operation
- 35 mm equivalent focal length: 27 – 300 mm



Spatial frequency	Max. aperture		F8 aperture	
	R	T	R	T
10 line pairs / mm	—	—	—	—
30 line pairs / mm	—	—	—	—

R: Radial values T: Tangential values

“PZ” in the model name stands for “Powered Zoom.” The E PZ 18-200mm F3.5-6.3 OSS is capable of producing smooth constant-speed zooms that can be difficult to achieve manually, adding a professional look to your movie productions while enhancing overall operability. 6-speed stepped zoom capability (2 zoom lever positions x 3 switchable speeds) is also included. Other features that make this lens an excellent choice for moviemaking as well as stills include an extensive 11x zoom range that goes from 18 mm wide-angle to 200 mm telephoto, and Optical SteadyShot image stabilization that can keep your subjects sharp at all focal lengths, even when shooting handheld in low light, and generally smooth, quiet operation that keeps extraneous noise out of your movie soundtracks.

- Weight (approx): 649 g • Dimensions (Dia. x L): 93.2 x 99 mm
- Max. magnification ratio: 0.35x

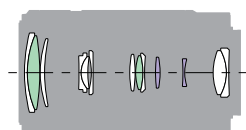


A mode, 1/4 sec., F11.0, -0.7 EV, ISO 400, Auto white balance

Telephoto zoom

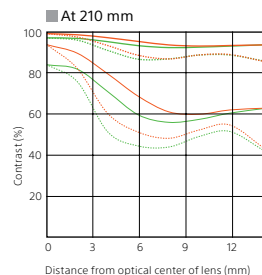
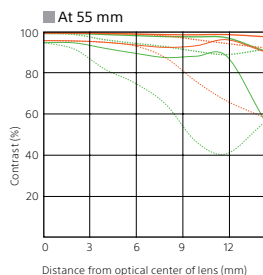
E 55-210mm F4.5-6.3 OSS SEL55210

APS-C format ED OSS



● Aspherical lens ● ED glass

- Compact, lightweight 3.8x telephoto zoom with high-quality metal exterior
- Two ED glass elements and two aspherical elements for superior image quality
- Ideal for shooting stills or movies
- Internal OSS (Optical SteadyShot™) image stabilization
- Built-in motor delivers smooth, quiet autofocus and aperture operation
- Circular aperture for attractive defocusing
- 35 mm equivalent focal length: 82.5 – 315 mm



Spatial frequency	Max. aperture		F8 aperture	
	R	T	R	T
10 line pairs / mm	95	90	85	80
30 line pairs / mm	85	80	75	70

R: Radial values T: Tangential values

An ideal complement to the 18 - 55 mm zoom range of the E 18-55mm F3.5-5.6 OSS, this 3.8x zoom lens takes you from 55 mm out to 210 mm with consistently outstanding optical performance all the way. In 35 mm full-frame equivalent terms that's a wide zoom range of 82.5 mm to 315 mm, providing plenty of reach for outdoor sports or nature photography. Built-in Optical SteadyShot (OSS) image stabilization is a huge advantage when shooting at longer focal lengths or in low light, making it easy to capture crisp, stable images at up to four shutter speeds lower than would normally be possible. And if you shoot movies as well as stills, the built in motor contributes to quiet yet responsive autofocus and aperture operation that will help you record clean sound tracks with minimum mechanical noise.

- Weight (approx): 345 g • Dimensions (Dia. X L): 63.8 x 108 mm
- Max. magnification ratio: 0.225x



A mode, 1/1600 sec., F5.0, -0.3 EV, ISO 200, Auto white balance
Photo: Chukyo Ozawa

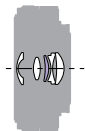


Wide-angle prime E 16mm F2.8 SEL16F28

APS-C format

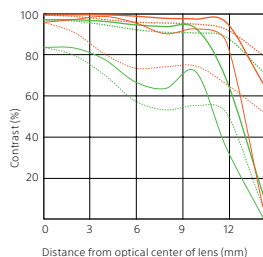


IF



Aspherical lens

- Ultra-slim (22.5 mm) and lightweight with high-quality metal exterior
- 5-element design with one aspherical element for top-class optical performance
- Ideal for shooting stills or movies
- Circular aperture for attractive defocusing
- Built-in motor delivers smooth, quiet autofocus operation
- 35 mm equivalent focal length: 24 mm



Spatial frequency	Max. aperture		F8 aperture	
	R	T	R	T
10 line pairs / mm	—	—	—	—
30 line pairs / mm	—	—	—	—

R: Radial values T: Tangential values

Combine this compact wide-angle prime lens with any E-mount camera for a totally new photographic experience. Mounted on any of the slim bodies for which it is designed it becomes part of an extraordinarily compact, portable photographic system that can slip comfortably into a coat pocket, ready to shoot at any time. In action it gives you wide 16mm coverage (equivalent to a 24 mm lens on a full-frame 35 mm camera) for comfortable shooting in situations ranging from cramped indoor settings to sweeping landscapes, and the large F2.8 maximum aperture is ideal for hand-held shooting in low light. The E 16mm F2.8 is an excellent choice for both stills and movies, particularly since its quiet autofocus/aperture operation will contribute to high-quality movie sound.

• Weight (approx): 67 g • Dimensions (Dia. x L): 62 x 22.5 mm • Max. magnification ratio: 0.078x



With Fisheye Converter, A mode, 1/400 sec., F8.0, -1.7 EV, ISO Auto, Auto white balance
Photo: Takeshi Hirayama

Fisheye Converter VCL-ECF1

*Only compatible with SEL16F28



Ultra Wide Converter VCL-ECU1

*Only compatible with SEL16F28



Without converter



With Fisheye Converter

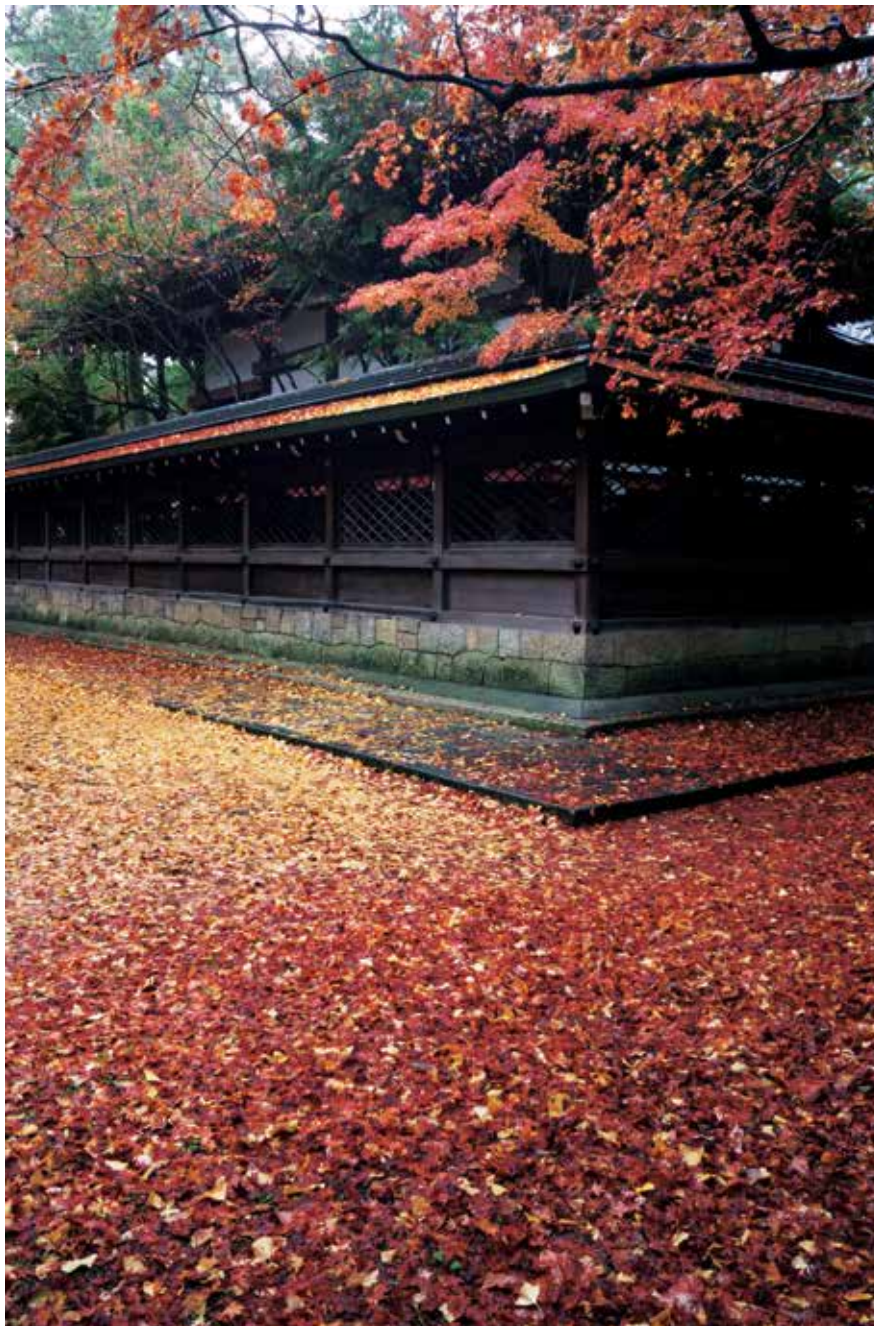


With Ultra Wide Converter

Fisheye and Ultra Wide converters

Although the E 16mm F2.8 is a wide-angle lens, these converters can give you an even wider view. The VCL-ECF1 Fisheye Converter goes a step further with a 180° angle of view that is equivalent to a 15 mm lens on a 35 mm full-frame format camera, with fascinating curvilinear "fisheye perspective." The VCL-ECU1 Ultra Wide Converter provides an angle of view equivalent to that of an 18 mm lens on a 35 mm full-frame format camera, making it possible to shoot dramatic wide-angle scenes with extended depth of field. Both converters attach securely with bayonet mounts, ensuring optimum optical alignment and image quality. Furthermore, these converters cause no light loss so f-stop values remain unchanged.

VCL-ECF1 • Weight (approx): 150 g • Dimensions (Dia. x L): 66 x 44 mm
VCL-ECU1 • Weight (approx): 125 g • Dimensions (Dia. x L): 66 x 44 mm



M mode, 1/3 sec., F11, ISO 400, Auto white balance
Photo: Hidehiko Mizuno

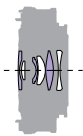


Wide-angle prime E 20mm F2.8 SEL20F28

APS-C format

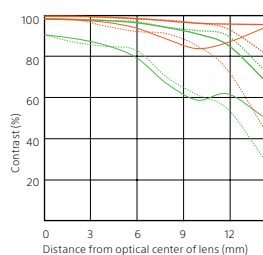


RF



Aspherical lens

- Ultra-slim (20.4 mm) and lightweight with high-quality metal exterior
- 6-element design with three aspherical elements for top-class optical performance
- Ideal for shooting stills or movies
- Circular aperture for attractive defocusing
- Built-in motor delivers smooth, quiet autofocus operation
- 35 mm equivalent focal length: 30 mm



Spatial frequency	Max. aperture		F8 aperture	
	R	T	R	T
10 line pairs / mm	—	—	—	—
30 line pairs / mm	—	—	—	—

R: Radial values T: Tangential values

Not only will the 20 mm (30 mm in 35 mm full-frame format) focal length and F2.8 maximum aperture appeal to experienced photographers, but the outstanding resolution of this lens will satisfy their most stringent image quality requirements as well. Three aspheric elements help to achieve superb contrast and resolution right out to the image edges, while simultaneously enabling a compact 20.4 mm-thick pancake design that makes for an eminently portable combination with compact E-mount cameras. When you want background bokeh the circular aperture design ensures that you get smooth defocusing with natural looking highlights. The built-in autofocus motor responds quickly and operates quietly, so you can use this lens for shooting movies as well as stills without worrying about picking up mechanical noise.

• Weight (approx): 69 g • Dimensions (Dia. X L): 62.6 x 20.4 mm • Max. magnification ratio: 0.12x



A mode, 1/800 sec., F4.0, ISO 200, Auto white balance



Normal prime

E 35mm F1.8 OSS SEL35F18

APS-C format

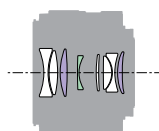


ED



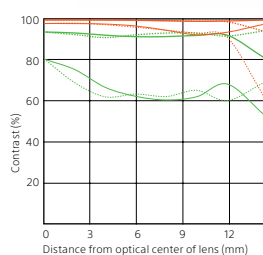
IF

OSS



Aspherical lens ED glass

- One ED glass element and two aspherical elements for superior image quality
- Ideal for shooting stills or movies
- Circular aperture for attractive defocusing
- Internal OSS (Optical SteadyShot™) image stabilization
- Bright F1.8 max. aperture facilitates hand-held shooting in low light
- Built-in motor delivers smooth, quiet autofocus operation
- 35 mm equivalent focal length: 52.5 mm



Spatial frequency	Max. aperture		F8 aperture	
	R	T	R	T
10 line pairs / mm	95	95	95	95
30 line pairs / mm	85	85	85	85

R: Radial values T: Tangential values

The broad expressive capabilities of this prime lens make it an ideal learning tool for the serious photography student or enthusiast. Its 35 mm focal length translates to 52.5 mm in 35 mm full-frame format, for a “normal” angle of view that is close to that of the naked eye. A precision optical design that employs one ED glass element and two aspherical elements delivers outstanding sharpness and contrast throughout the image. The F1.8 maximum aperture yields plenty of margin for low-light shooting, plus gorgeous background blur when needed. And although the internal Optical SteadyShot image stabilization system works to minimize camera shake for crisp images at any aperture, it can achieve remarkable results when combined with large apertures for challenging subjects and lighting situations.

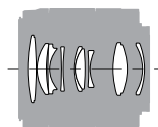
• Weight (approx): 154 g • Dimensions (Dia. X L): 63 x 45 mm • Max. magnification ratio: 0.15x



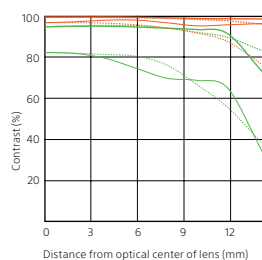
A mode, 1/400 sec., F4.0, +0.7 EV, ISO 100, Daylight white balance
Photo: Shinya Morimoto

Mid-range telephoto **E 50mm F1.8 OSS SEL50F18**

APS-C format  IF 



- Compact, lightweight mid-range telephoto prime with high-quality metal exterior
- Ideal for shooting stills or movies
- Bright F1.8 maximum aperture
- Internal OSS (Optical SteadyShot™) image stabilization
- Built-in motor delivers smooth, quiet autofocus and aperture operation
- Circular aperture for attractive defocusing
- 35 mm equivalent focal length: 75 mm



Spatial frequency	Max. aperture		F8 aperture	
	R	T	R	T
10 line pairs / mm	—	—	—	—
30 line pairs / mm	—	—	—	—

R: Radial values T: Tangential values

A focal length that is perfect for portraiture and a range of other subjects, a bright F1.8 maximum aperture, Optical SteadyShot (OSS) image stabilization, and impressive image quality. Put it all together in a lens that is surprisingly compact and lightweight and you have a winning combination: the E 50mm F1.8 OSS. The large maximum aperture and Optical SteadyShot are worthy features in their own right, but working together they make it possible to shoot crisp, clear images under low-light conditions that would be beyond the capabilities of a conventional lens. In fact, the E 50mm F1.8 OSS is the first F1.8 lens to include OSS image stabilization. The large aperture and a circular aperture design also join forces to create gorgeous defocusing effects. Add responsive, quiet autofocus and aperture operation, and you have a lens that is ideally suited to shooting movies as well as stills.

• Weight (approx): 202 g • Dimensions (Dia. X L): 62 x 62 mm • Max. magnification ratio: 0.16x



A mode, 1/2500 sec., F3.5, +0.3 EV, ISO 200, Daylight white balance
Photo: Kaz Kobayashi

Macro

E 30mm F3.5 Macro SEL30M35

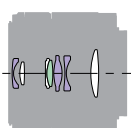
APS-C format



ED

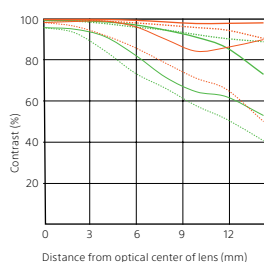


IF



Aspherical lens ED glass

- Compact, lightweight 1:1 macro lens with high-quality metal exterior
- One ED glass element and three aspherical elements for superior image quality
- Ideal for shooting stills or movies
- Internal focus: the minimum working distance does not change
- Built-in motor delivers smooth, quiet autofocus and aperture operation
- Circular aperture for attractive defocusing
- 35 mm equivalent focal length: 45 mm



Spatial frequency	Max. aperture		F8 aperture	
	R	T	R	T
10 line pairs / mm	95	95	95	95
30 line pairs / mm	85	85	85	85

R: Radial values T: Tangential values

Macro photography can be a creative, educational, and thoroughly enjoyable pursuit. The E 30mm F3.5 Macro has been designed to offer versatile, high-performance macro capabilities in a lens that is compact, lightweight, and easy to use. At the time of release the E 30mm F3.5 Macro is, in fact, the lightest interchangeable 1:1 macro lens available anywhere! It is a true 1:1 macro lens with a 2.4 cm minimum working distance that allows tiny subjects and details to be rendered with excellent resolution and contrast. But it also functions as an excellent "normal" lens for day-to-day shooting, and a smooth, quiet internal lens drive system makes it suitable for shooting movies as well. The E 30mm F3.5 Macro is a great choice for a second lens that will let you explore the world in creative new ways. A dedicated cap type lens hood that won't get in the way when shooting close is included.

• Weight (approx): 138 g • Dimensions (Dia. X L): 62 x 55.5 mm • Max. magnification ratio: 1.0x

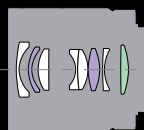


M mode, 1/13 sec., F5.0, -0.3 EV, ISO 200, Cloudy white balance

Wide-angle prime **Sonnar T* E 24mm F1.8 ZA SEL24F18Z**

APS-C format  ED  IF

ZEISS

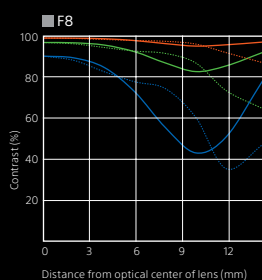
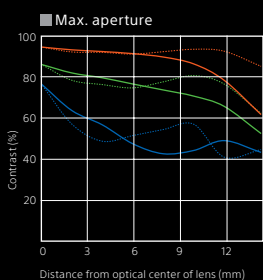


● Aspherical lens ● ED glass

- High-performance Carl Zeiss wide-angle prime with elegant black metal exterior
- One ED glass element and two aspherical elements
- Innovative optical design achieves outstanding corner-to-corner sharpness
- Ideal for shooting stills or movies
- Built-in motor delivers smooth, quiet autofocus and aperture operation
- Circular aperture for attractive defocusing
- 35 mm equivalent focal length: 36 mm

Carl Zeiss quality really shows off the capabilities of the E-mount system, with outstanding resolution and contrast that can add legendary Zeiss depth and dimensionality to your images. This wide-angle prime lens delivers superior corner-to-corner sharpness even at the maximum F1.8 maximum aperture, with minimum distortion and coma. It also focuses as close as 16 cm, providing an unusual combination of close focus and wide-angle perspective for 1:4 macro photography. The 24 mm focal length, equivalent to 36 mm on a 35 mm format camera, is an excellent choice for general shooting. Many photographers will be happy to leave this lens on their camera most of the time, especially since its F1.8 maximum aperture facilitates hand-held shooting even in challenging low-light situations. Movie makers will love this lens too, because smooth, low-noise autofocus and aperture operation mean they can take advantage of its outstanding optical characteristics without worrying about mechanical noise infiltrating the soundtrack.

• Weight (approx): 225 g • Dimensions (Dia. X L): 63 x 65.5 mm • Max. magnification ratio: 0.25x



Spatial frequency	R	T
10 line pairs / mm	95	90
20 line pairs / mm	85	80
40 line pairs / mm	75	70

R: Radial values T: Tangential values

Mount Adaptors

Adaptors bring the extensive A-mount lens lineup to E-mount cameras



With Mount Adaptor LA-EA2, Planar T* 85mm F1.4 ZA, S mode, 1/640 sec., F9.0, -0.7 EV, ISO 400, Auto white balance
Photo: Shinya Morimoto



LA-EA2

E-mount

Compatible cameras: NEX-7 NEX-6 NEX-5R NEX-5N NEX-5** NEX-3N
NEX-F3 NEX-C3** NEX-3** NEX-VG900** NEX-VG30 NEX-VG20 NEX-VG10**

- Mounts A-mount lenses on E-mount bodies *1*2*5
- Built-in AF motor and 15-point AF sensor ensure speedy, continuous autofocus with A-mount lenses
- Responsive autofocus for movies as well as stills*3
- Built-in aperture mechanism supports AE with A-mount lenses*4
- Carrying case supplied

- Weight (approx.): 200 g
- Dimensions (approx. mm, W x H x D): 78.5 x 86.5 x 44



- *1 A firmware upgrade is required for use with the NEX-5 / NEX-C3 / NEX-3 / NEX-VG10
- *2 STF lenses are manual focus only. Use with teleconverters is not recommended.
- *3 The sound of camera and lens operation, as well as other operational sounds, may be recorded when shooting movies
- *4 When shooting movies using autofocus the aperture will be set to F3.5, or the maximum aperture of the lens when it is larger than F3.5. Exposure settings including aperture can be set as required when shooting movies using manual focus.
- *5 Image size is automatically set to APS-C



Translucent Mirror Technology

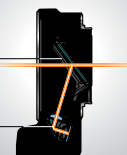
Translucent Mirror Technology delivers responsive autofocus with A-mount lenses

Translucent mirror

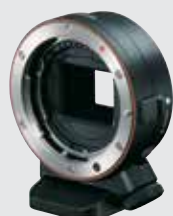
An innovative translucent mirror simultaneously and continuously transmits light from the lens to both the CMOS image sensor and AF sensor.

AF sensor

Light from the mirror is continuously transmitted to the precision TTL phase detection AF sensor for instant focus lock-on, even with fast-moving subjects.



70-200mm F2.8 G mounted



LA-EA1

E-mount

Compatible cameras: NEX-7 NEX-6 NEX-5R NEX-5N NEX-5
NEX-3N NEX-F3 NEX-C3 NEX-3 NEX-VG30 NEX-VG20 NEX-VG10

- Mounts A-mount lenses on E-mount bodies
- Removable tripod attachment supplied
- Weight (Excluding a tripod attachment) 110 g
- Weight (With a tripod attachment) 150 g
- Dimensions (Dia x L) 65.0 x 26.6 mm

- * Functionality maybe limited with some lenses
- * Image size is automatically set to APS-C
- * Autofocus with A-mount lenses will be slower than with E-mount lenses (approx. 2-7 sec. under Sony test conditions, however actual time may vary depending on subject, lighting, and other conditions)
- * A body and/or mount adaptor firmware upgrade may be necessary for autofocus support with A-mount lenses. For details, please check your local site.

α lens accessories

- (Filter diameter size)
- Some items may not be available in all areas.

High-grade Carl Zeiss filters with exclusive T* coating optimize the superb performance of your lenses, effectively reducing flare and ghosting. A thin profile also prevents vignetting.



Circular PL Filter



VF-49CPAM (φ 49 mm) **VF-67CPAM** (φ 67 mm)
VF-55CPAM (φ 55 mm) **VF-72CPAM** (φ 72 mm)
VF-62CPAM (φ 62 mm) **VF-77CPAM** (φ 77 mm)

Circular polarizing filters improve contrast in overly bright light, and remove glare and reflections.



Without filter



With Circular PL Filter



Without filter



With Circular PL Filter

ND Filter (ND8 type)



VF-49NDAM (φ 49 mm) **VF-67NDAM** (φ 67 mm)
VF-55NDAM (φ 55 mm) **VF-72NDAM** (φ 72 mm)
VF-62NDAM (φ 62 mm) **VF-77NDAM** (φ 77 mm)

Neutral density filters attenuate light to allow the use of longer exposures or larger apertures without affecting colors.



Without filter



With ND Filter

MC Protector



VF-405MP (φ 40.5 mm) **VF-67MPAM** (φ 67 mm)
VF-49MPAM (φ 49 mm) **VF-72MPAM** (φ 72 mm)
VF-55MPAM (φ 55 mm) **VF-77MPAM** (φ 77 mm)
VF-62MPAM (φ 62 mm)

Multi-coated protectors are coated on both sides, protecting lenses from damage without causing unwanted flare or reflections.

Lens Cap / Body Cap



Front Lens Cap
ALC-F405S (φ 40.5 mm)
ALC-F49S (φ 49 mm)
ALC-F55S (φ 55 mm)
ALC-F62S (φ 62 mm)
ALC-F67S (φ 67 mm)
ALC-F72S (φ 72 mm)
ALC-F77S (φ 77 mm)



Rear Lens Cap
ALC-R55
A-mount



Body Cap
ALC-B55
A-mount



Rear Lens Cap
ALC-R1EM
E-mount



Body Cap
ALC-B1EM
E-mount

* Caps are equivalent to the types supplied with the corresponding lens or E-mount body

Lenses: how they capture & control light

The linguistic roots of the word “photography” are Greek words meaning “light” and “drawing.” Photography is “drawing with light,” and lenses are the brushes. They are the photographer’s primary creative tools. The way a lens captures and presents an image to the camera’s sensor determines the visual outcome more than any other factor, so the ability to choose the right lens and use it well is one of the most important skills an aspiring photographer should acquire. In this brief guide we’ll look at some of the basics that will help you to choose lenses that are suited to your needs, and make the most out of them to create truly satisfying photographs.

Projecting an image

Our eyes do it, cameras do it, even a simple light-tight box with a tiny hole in one end will do it: the feat of turning light into an image can only be accomplished by first capturing the light from a scene and projecting it onto a surface. That surface, the "image plane," can be a wall, a piece of film, a sensor, or the retina in our eye, and in all cases the image is projected upside-down and horizontally reversed. Let's take a look at the precursor of modern cameras, the simplest camera of all: the pinhole camera. In a pinhole camera a tiny hole is all that's needed to project an image.

To make this easier to understand remember that light normally travels in straight lines, and try to imagine the subject being photographed as being made up of a multitude of points of light of appropriate brightness (and color).

In the example in Figure 1, light from a point at the top of the tree travels in a straight line through the pinhole and reaches a point at the bottom of the image plane, whereas light from a point at the bottom of the tree ends up at the top of the image plane after passing through the pinhole. The real-world scene becomes an image projected on the image plane, upside-down and reversed left-to-right.

A pinhole works like a lens

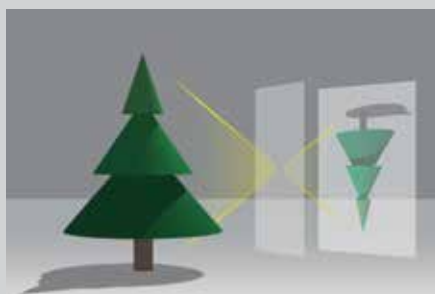
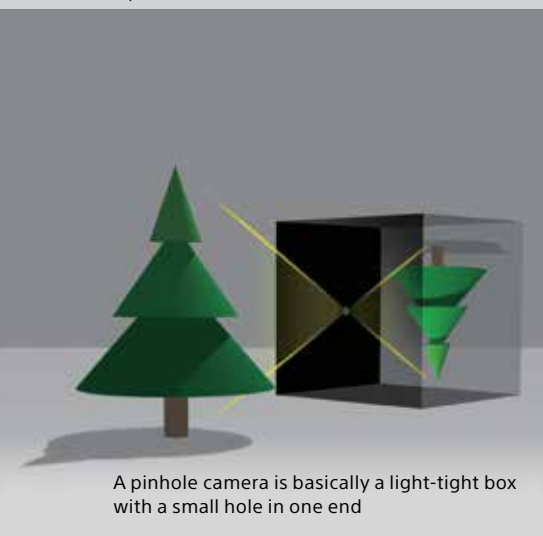


Figure 1. A simple pinhole of appropriate size is capable of projecting a sharp but dim image

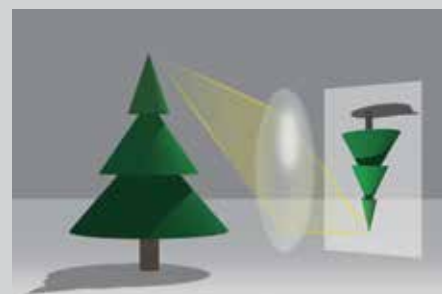
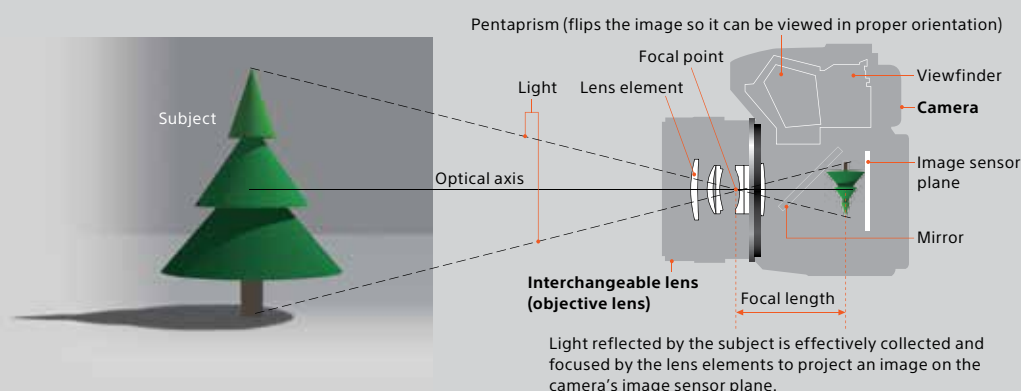


Figure 2. A lens uses the principle of "refraction" to gather more light from the subject and project a sharp, bright image

If a little hole can do all of this, why do we need lenses?

Pinholes can project images, but they are limited and inflexible. In order for the projected image to be sufficiently sharp the hole must be very small, but this means that the projected image is very dim. In principle lenses work similarly to the pinhole, but they are capable of capturing more light from each point on the subject, and therefore project a much brighter image. A lens can bring more light into sharp focus. That's helpful because it means we can use short sub-second exposures rather than having to make sure that both the camera and subject stay perfectly still for many minutes or even hours, which is usually the case with a pinhole camera. Other advantages are that lenses can be made in a variety of focal lengths – wide-angle to capture expansive scenes, or telephoto to photograph distant subjects, for example. Modern lenses are precision optical devices that give photographers boundless freedom to realize their creative vision by "drawing with light."

A simplified cross section of a modern lens and a typical SLR (Single Lens Reflex) type digital camera



TECH TALK

Refraction: bending light

The physical principle that allows lenses to gather and focus light is "refraction." Refraction causes light waves to change speed and direction when they pass from one medium (air, for example) to another (glass, for example), and allows lenses to be designed to "bend" light in a controlled way.

The "refractive index" of an optically transparent medium is a measure of the speed of light in that medium, and therefore the degree to which light will be "bent" by that medium. Optical materials that have different refractive indices – conventional optical glass and ED glass, for example – are sometimes combined in lenses to achieve the desired characteristics.

A look inside

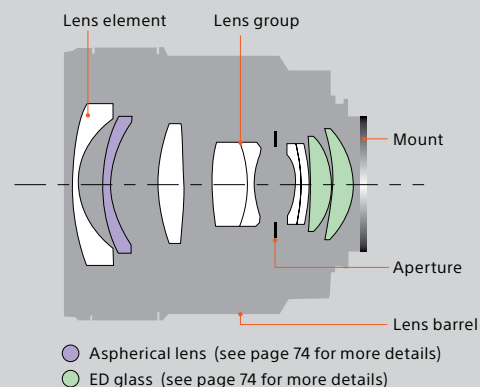
Elements and groups

All modern photographic lenses are “compound” lenses that use a number of lens “elements” precisely mounted along the same optical axis. The use of multiple elements allows lens designers to effectively reduce optical aberrations so you get nice sharp, clean images.

“Elements” are the individual pieces of specially shaped glass that make up the lens. A “group” consists of two or three elements that have been glued together to function as a unit. Sometimes groups consist of different types of glass that have been combined in order to control some form of aberration. Lenses are sometimes described in terms of the number of elements and groups they contain. You’ll hear terms such as “7-group 9-element lens.” Fixed focal length lenses, also known as “prime” lenses, generally have the simplest construction with the fewest groups and elements. Zoom lenses require a larger number of groups/elements to support the zoom functionality.

While most lens elements are “spherical,” meaning that one or more surfaces form part of a sphere, some lenses include “aspherical” elements. Aspherical elements have more complex shapes than simple spherical elements, and are much more difficult and more expensive to produce. Aspherical elements are sometimes used in wide-angle and fast standard lenses, where they can be effective in reducing certain types of aberration.

Lens configuration example: 7 groups / 9 elements

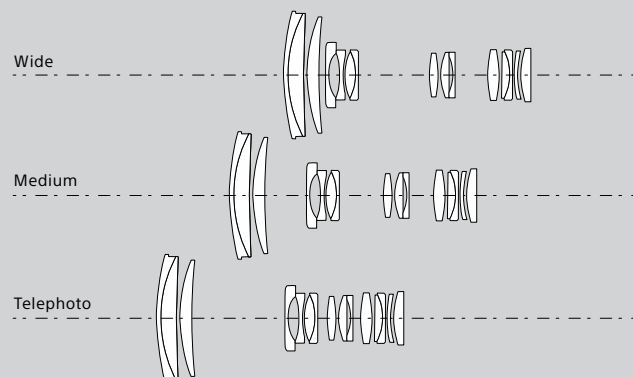


Zoom and focus mechanisms

The job of varying focal length in a zoom lens requires a fairly complex mechanism that translates zoom ring rotation into precise group movement along the optical axis of the lens. Zoom mechanisms must be precisely manufactured to exacting tolerances so that all elements and groups stay in perfect alignment throughout the zoom range.

Focusing is sometimes accomplished by moving the entire lens closer to or further away from the image sensor plane, although some lenses employ a “floating construction” in which groups of elements move independently in order to maintain optimum optical performance at all shooting distances.

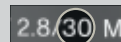
An example of how lens elements and groups move in a zoom lens



Read your lenses

There’s lots of pertinent information printed or engraved on the outside of lenses that can help you understand their characteristics and how to best use them. Here are a few examples.

Focal length



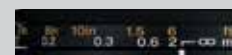
This is the most basic, most important characteristic of any lens. Focal length plays a primary role in determining what types of subjects and compositions the lens is suitable for (see page 68 for more details).

AF/MF switch



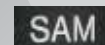
This switch lets you switch between autofocus and manual focus modes.

Distance scale



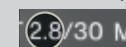
The distance scale indicates the approximate distance from the camera’s image plane to the object that the camera is focused on.

Autofocus drive type



Lenses marked “SAM” or “SSM” feature built-in motors that drive the lens’s focusing mechanism. Lenses that don’t have internal motors are driven by a motor in the camera body (see page 74 for more details).

Maximum aperture



This number represents the lens’s maximum aperture, or “f-number,” and that tells you how “bright” the lens is (see page 67 for more details).

Lens format



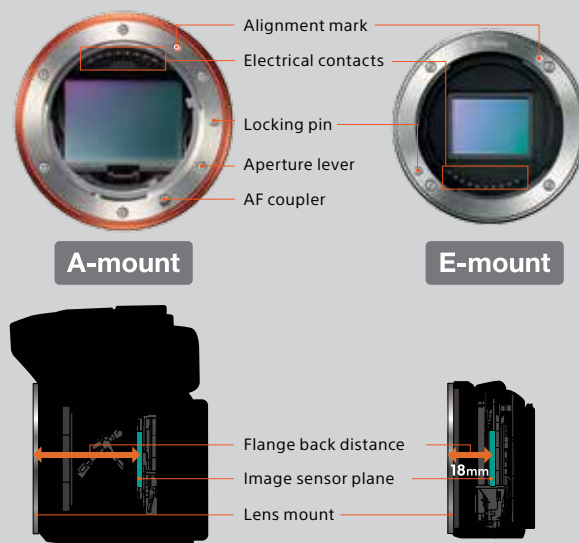
Sony lenses marked “DT” (Digital Technology) have been specifically designed for use on APS-C format A-mount cameras (see page 66 for more details).

Lens mount and sensor formats

Sony A-mount and E-mount systems

Sony α series interchangeable-lens digital cameras are currently produced in two categories, each of which uses a different lens mount and different types of lenses: A-mount SLR (single lens reflex) type cameras with traditional moving mirrors or advanced translucent mirrors, and ultra-compact E-mount cameras that don't use reflex mirrors at all. Despite their remarkable compactness and portability, E-mount cameras feature APS-C format sensors and are capable of delivering image quality on a par with A-mount cameras.

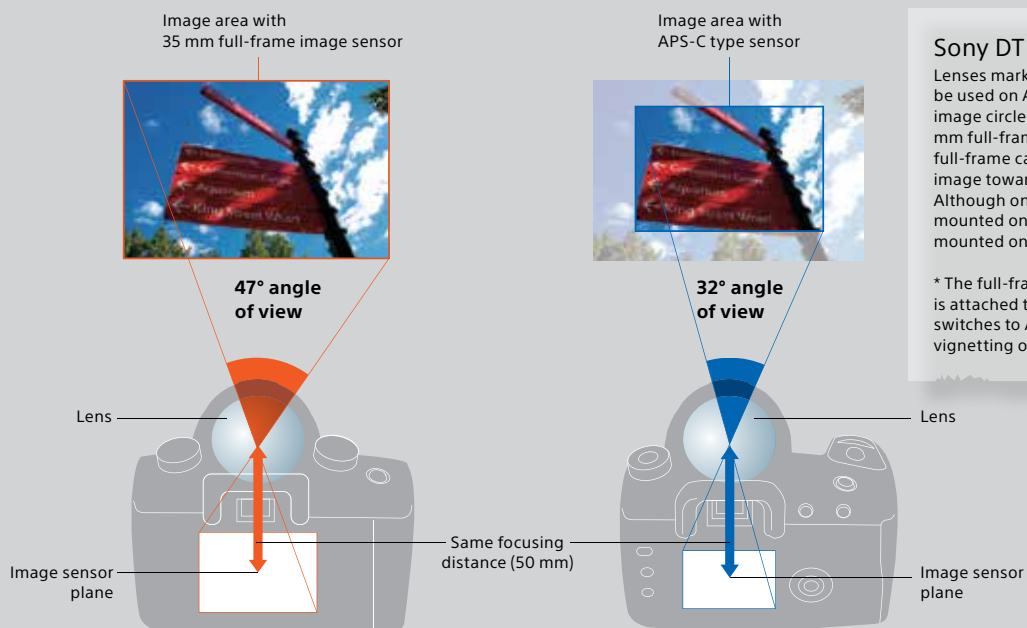
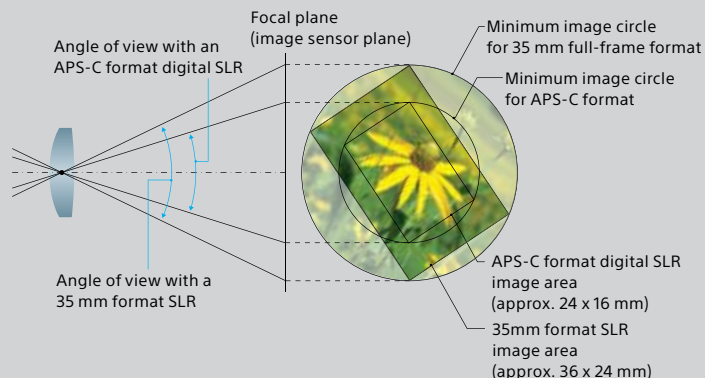
In addition to overall size, the main difference between A-mount and E-mount lenses is their "flange back distance." The flange back distance is the distance from the rear of the lens to the image (sensor) plane. Since many A-mount cameras are traditional SLR designs that have a reflex mirror between the rear of the lens and the sensor, they need to have a flange back distance that allows space for the mirror. E-mount cameras, on the other hand, do not have reflex mirrors and therefore can be designed with a much shorter flange back distance, and consequently smaller lenses overall.



Sensor formats: 35 mm full frame and APS-C

You may have heard the term "full-frame camera," but did you know it refers to the frame size of 35 mm film? The image area of a frame of 35 mm film is approximately 36 mm x 24 mm ("35 mm" is the width of the strip of film), and that's the size of the image sensor in a 35 mm full-frame format camera. Many interchangeable-lens digital cameras use slightly smaller "APS-C" format sensors that measure approximately 24 mm x 16 mm or less. There are a number of other sensor formats, including smaller sensors in digital point-and-shoot type cameras, but APS-C and 35 mm full-frame formats are the two most commonly used in interchangeable-lens cameras.

It is important to understand that there are two "formats" for A-mount interchangeable lenses as well: lenses with an image circle large enough to cover a 35 mm full-frame sensor, and lenses with a smaller image circle that is sufficient for APS-C format sensors. Sony lenses that have "DT" in the model name are compatible with APS-C format SLR cameras only (see the "Sony DT lenses" box, below), while all other lenses will work with both APS-C and 35 mm full-frame format cameras.



Sony DT lenses

Lenses marked "DT" (Digital Technology) should only be used on APS-C format cameras because their image circle isn't large enough to fully cover a 35 mm full-frame sensor. If you do use a DT lens on a full-frame camera, expect to see a darkening of the image towards the edges of the frame (vignetting)*. Although only E-mount lenses can be directly mounted on E-mount cameras, DT lenses can be mounted on these cameras via an adaptor.

* The full-frame A99 is an exception. When a DT lens is attached to the A99, the camera automatically switches to APS-C image size mode so that no vignetting occurs.

• The angle of view values in this example correspond to those of a 50 mm lens.

Aperture, f-numbers, and depth of field

Aperture and exposure

The aperture in a lens – also known as the “diaphragm” or “iris” – is an ingenious piece of mechanical engineering that provides a variable-size opening in the optical path that can be used to control the amount of light that passes through the lens. Aperture and shutter speed are the two primary means of controlling exposure: for a given shutter speed, dimmer lighting will require a larger aperture to allow more light to reach the image sensor plane, while brighter light will require a smaller aperture to achieve optimum exposure. Alternatively, you could keep the same aperture setting and change the shutter speed to achieve similar results. But the size of the opening provided by the aperture also determines how “collimated” the light passing through the lens is, and this directly affects depth of field, so you’ll need to be in control of both aperture and shutter speed to create images that look the way you want them to.



Circular aperture
(see page 74 for details)

TECH TALK

F-number math

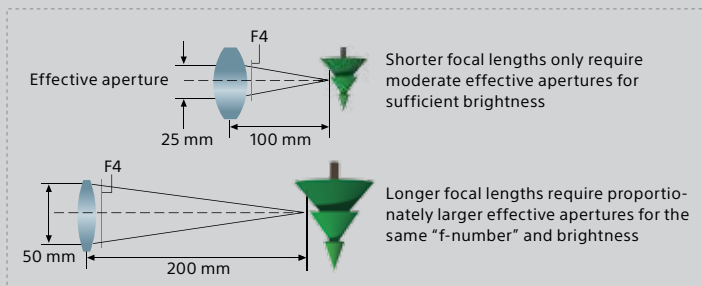
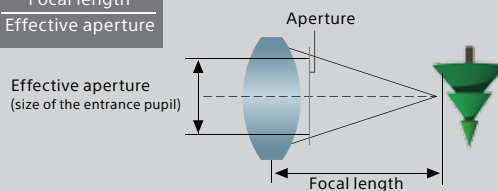
The f-number is the focal length of the lens divided by the effective diameter of the aperture. So in the case of the 35mm F1.4 G lens, when the aperture is set to its maximum of F1.4, the effective diameter of the aperture will be $35 \div 1.4 = 25$ mm. Note that as the focal length of the lens changes, the diameter of the aperture at a given f-number will change too. For example, an aperture of F1.4 in a 300 mm telephoto lens would require an effective aperture diameter of $300 \div 1.4 \approx 214$ mm! That would end up being a huge, bulky, and very expensive lens, which is why you don’t see too many long telephoto lenses with very large maximum apertures. There’s really no need for the photographer to know what the actual aperture diameter is, but it’s helpful to understand the principle.

“F-numbers” or “f-stops”

All lenses have a maximum and minimum aperture, expressed as “f-numbers,” but it is the maximum aperture that is most commonly quoted in lens specifications. Take the Sony 35mm F1.4 G, for example. This is a 35 mm F1.4 lens: 35 mm is the focal length (we’ll get to that later), and F1.4 is the maximum aperture. But what exactly does “F1.4” mean? See the “F-number math” box for some technical details, but for a practical understanding it’s enough to know that smaller f-numbers correspond to larger apertures, and that F1.4 is about the largest maximum aperture you’re likely to encounter on general-purpose lenses. Lenses with a maximum aperture of F1.4, F2, or F2.8 are generally considered to be “fast” or “bright.”

The standard f-numbers you’ll use with camera lenses are, from larger to smaller apertures: 1.4, 2, 2.8, 4, 5.6, 8, 11, 16, 22, and sometimes 32 (for you mathematicians those are all powers of the square root of 2). Those are the full stops, but you’ll also see fractional stops that correspond to a half or a third of the full stops. Increasing the size of the aperture by one full stop doubles the amount of light that is allowed to pass through the lens. Decreasing the size of the aperture by one stop halves the amount of light reaching the sensor.

$$\text{F-number} = \frac{\text{Focal length}}{\text{Effective aperture}}$$

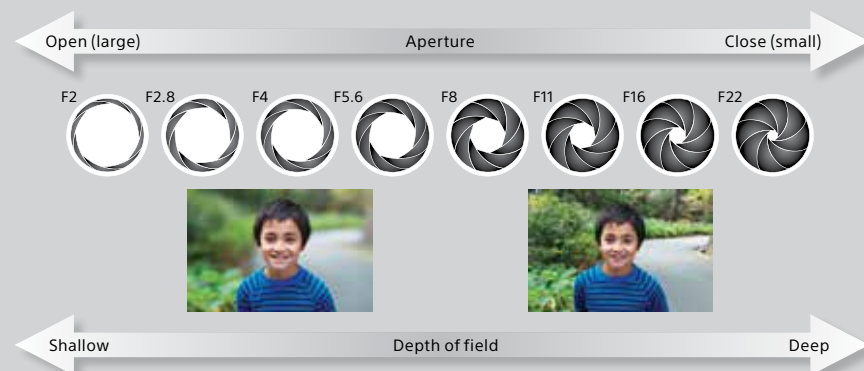


• Aperture and focal length values in the illustration are approximate.

Aperture and depth of field

“Depth of field” refers to the range of distances from the camera within which photographed objects will appear acceptably sharp. In extreme examples of narrow depth of field, the in-focus depth might be just a few millimeters. At the opposite extreme, some landscape photographs show very deep depth of field with everything in sharp focus from just in front of the camera to many kilometers away. Controlling depth of field is one of the most useful techniques you have for creative photography.

Basically, larger apertures produce narrower depth of field, so if you want to shoot a portrait with a nicely defocused background you’ll want to open up the aperture wide. But other factors come into play. Lenses of longer focal lengths are generally capable of producing narrower depth of field (partly because, as we learned above, an F1.4 aperture in an 85 mm lens, for example, is a lot larger than an F1.4 aperture in a wide-angle 24 mm lens), and the distance between objects in the scene being photographed will have an effect on the perceived depth of field as well.

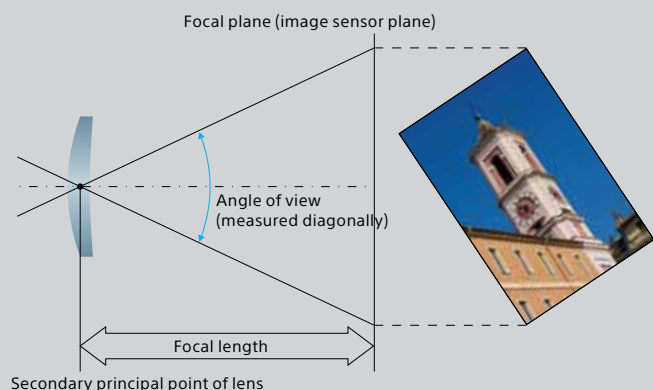


SHOOTING TIP

Three keys to effective defocusing

There’s actually more to shooting images with beautifully defocused backgrounds than simply choosing a bright lens and opening the aperture up all the way. That’s the first “key,” but sometimes a large aperture alone won’t produce the desired results. The second key is the distance between your subject and the background. If the background is very close to your subject it might fall within the depth of field, or be so close that the amount of defocusing isn’t sufficient. Whenever possible, keep plenty of distance between your subject and the background you want to defocus. The third key is the focal length of the lens you use. As mentioned above, it’s easier to get a narrow depth of field with longer focal lengths, so take advantage of that characteristic as well. Many photographers find that focal lengths between about 75 mm and 100 mm are ideal for shooting portraits with nicely blurred backgrounds.

Focal length, angle of view, and perspective



Focal length vs. angle of view

With 35 mm full-frame image sensor		With APS-C type image sensor	
16 mm Fisheye		16 mm Fisheye	
16 mm		16 mm (24 mm)	
18 mm		18 mm (27 mm)	
24 mm		24 mm (36 mm)	
35 mm		35 mm	
70 mm		70 mm (105 mm)	
100 mm		100 mm (150 mm)	
135 mm		135 mm (205.5 mm)	
250 mm		250 mm (375 mm)	
400 mm		400 mm (600 mm)	

* Focal length in (): equivalent focal length when mounted on interchangeable-lens digital cameras with 35 mm full-frame sensors

Focal length

Focal length, or focal length range in the case of zooms, will usually be the foremost consideration when choosing a lens for a specific photograph or type of photography. The focal length of a lens determines two characteristics that are very important to photographers: magnification, and angle of view.

Longer focal lengths correspond to higher magnification, and vice-versa. Wide-angle lenses with short focal lengths have low magnification, which means you have to get physically close to an average-size subject to fill the frame. But that also means you can fit large subjects in the frame without having to shoot from a distance. Telephoto lenses with long focal lengths have high magnification, so you can fill the frame with subjects that are further away from the camera.

TECH TALK

A technical definition of focal length

The focal length of a lens is defined as the distance from its secondary principal point to its rear focal point when focus is set to infinity. The secondary principal point is one of six "cardinal points" that are used as points of reference in an optical lens (front and rear focal points, primary and secondary nodal points, and primary and secondary principal points). There's no predefined location for the secondary principal point in a compound lens – it could be somewhere inside the lens barrel or at some point outside the barrel, depending on the design of the lens – so there's no easy way to accurately measure the focal length of a lens yourself.

Focal length and angle of view

"Angle of view" describes how much of the scene in front of the camera will be captured by the camera's sensor. In slightly more technical terms, it is the angular extent of the scene captured on the sensor, measured diagonally. It is important to remember that angle of view is entirely determined by both the focal length of the lens and the format of the camera's sensor, so the angle of view you get from any given lens will be different on 35mm full-frame and APS-C format cameras (see page 65 on formats). Different lenses of equal focal length will always have the same angle of view when used with the same-size sensor.

The "Focal length vs. angle of view" comparison to the left illustrates this relationship for both 35 mm full frame and APS-C format cameras.

Perspective

With long focal lengths, foreground and background objects will often appear to be closer together in the final image. This effect is sometimes called "telephoto compression," although it is not actually caused by the lens itself. What really happens is that when using a telephoto lens, you will need to be further away from your subjects. So, relative to the distance from the camera to the foreground and background subjects, they actually are closer together! Another way of saying this is that since both the foreground and background objects are at a considerable distance from the camera, their relative sizes in the final image will be closer to reality. When shooting with a wide-angle lens you normally need to get close to the foreground subject so that it is sufficiently large in the frame, which is why more distant objects look comparatively smaller. The difference in apparent perspective is actually a result of how far you are from your subject.



24 mm focal length,*
84 degree angle of view



300 mm focal length,*
8 degree angle of view

* 35 mm format equivalent

Macro photography

Maximum magnification ratio

As mentioned on the previous page, the magnification of any lens is determined by its focal length. For macro photography we are also concerned with how close we can get to our subject. These two factors, focal length and minimum focusing distance, determine the lens's maximum magnification ratio, sometimes referred to as "reproduction ratio." The closer you can get to your subject with a lens of a given focal length, the higher the magnification ratio you'll achieve.

The classic definition of a macro lens is one that has a maximum magnification ratio of at least 1:1, or "1x" in lens specifications. This means that a subject can be reproduced at full size on the camera's image sensor: a 10 mm object can be projected onto the sensor as a 10 mm image when the lens is sufficiently close to the subject. A maximum magnification ratio of 1:2 or "0.5x" would mean that the maximum size that an image of the same 10mm object could be projected onto the sensor would be 5mm, or just half its true size.



0.35x

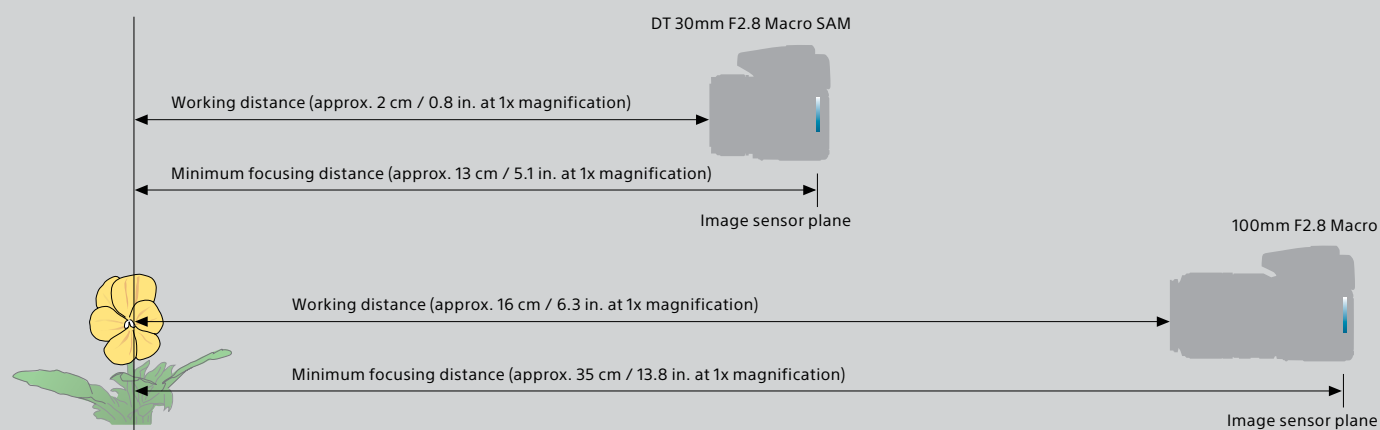


1.0x

Other macro lens characteristics you should know about

Macro lenses are specifically designed to deliver optimum optical performance at very short focusing distances, and will usually be sharpest at close range, but that doesn't mean that you can only use them for macro photography. Many macro lenses are also capable of excellent performance when shooting normal subjects at normal distances as well.

Another important characteristic of macro lenses used at short range is that they have very narrow depth of field. That means they have to be focused very carefully to get the desired details in perfect focus. A tripod can make focusing easier in some situations. You might have to stop the aperture down quite a bit to achieve sufficient depth of field with some subjects. But shallow depth of field can be an advantage, emphasizing the essential in-focus detail while defocusing and de-emphasizing distracting background.



Minimum focus and working distance

The "minimum focusing distance" lens specification can be confusing. Minimum focusing distance is measured from the subject to the rear focal point of the lens, which is at the image sensor plane in the camera body. The term "working distance" is used to describe the distance between the subject and the front element of the lens.

If a lens is specified as having an 0.2 m (20 cm) minimum focusing distance, for example, depending on the thickness of the camera body and the length of the lens, you might only have a

few centimeters of working distance when focused at the minimum focusing distance in order to take a 1:1 macro shot. Being that close to your subject can make lighting difficult (special macro flashes and ring lights are available to overcome this type of lighting problem), focusing can be difficult if the subject or camera moves even slightly, and you're likely to scare away living subjects at such close distances. If any of those problems occur, you need to choose a macro lens that has a longer focal length for more working distance.

Hoods and filters



Without lens hood (flare, poor contrast)



With lens hood (no flare, high contrast)



Visible ghosts

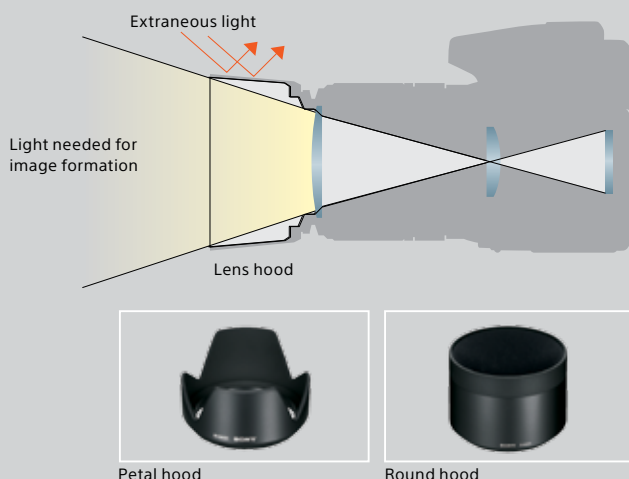


Enlarged view



No ghosts

How lens hoods work



Use your lens hood!

The lens hoods provided with most interchangeable lenses are not just accessories to be used occasionally. They are an important part of the lens's optical system and should always be used in order to ensure optimum performance. There are exceptions, such as when an on-camera flash is used and the lens hood casts a shadow, but for most shooting situations the lens hood should be on the lens, not in your bag. If your lens has a built-in extending hood, it should be extended when you're shooting.

Even though α lenses are uncompromisingly designed with multi-coated elements and other internal features that minimize flare and ghosting, these problems can still occur if extraneous light is allowed to enter the lens. And although the effects of flare might not be obvious in all images, it can subtly degrade contrast and prevent you from capturing the strongest possible image. Strong backlighting, particularly near the edge of the image, can cause ghosts even when a lens hood is used. In such situation the only solution is to reframe the shot so that the problematic light source is excluded.

Lens hoods block extraneous light

Any light entering the lens that does not come directly from the scene being photographed is extraneous light that needs to be eliminated. Light that grazes the front element at a steep angle or bounces around inside the lens barrel will degrade image quality. A lens hood that is properly designed for the lens on which it is used will effectively block extraneous light that does not contribute directly to the image, ensuring that the lens will deliver the highest resolution and contrast of which it is capable. Although most lens hoods for normal to telephoto focal lengths are basic round designs, lens hoods for wide angle lenses often have a "petal" shape that is designed to block unwanted light without intruding into the corners of image area.



Without circular PL filter
(reduced contrast)



With circular PL filter
(increased contrast and deep saturation)

Circular polarizing filters

Circular polarizing (PL) filters can be used to eliminate reflections and glare from reflective surfaces such as glass and water, but landscape photographers find them most useful for increasing contrast and saturation in skies, foliage, and other icons of the landscape genre. In all cases the filter works by eliminating reflections, but in the latter, it is eliminating reflections from airborne dust and water vapor, thus removing a veil of glare and allowing the true colors of the scene to come through.



Without ND filter



With ND filter
(reduced light for slower shutter speed)

Neutral density filters

Sometimes the light is so bright that you're forced to use smaller apertures or faster shutter speeds than you want to. Neutral density (ND) filters reduce the amount of light entering the lens without affecting the color or tonal balance in any way, and can be very useful in this type of situation. Suppose you want to shoot a waterfall using a shutter speed that's slow enough to blur the moving water and create a sense of motion, but the lighting at the scene is too bright. An ND filter will reduce the light intensity so that you can use the relatively slow shutter speed required to achieve the desired effect.

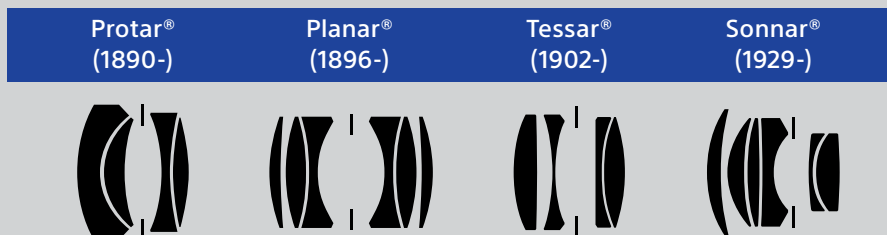
Carl Zeiss® optics

For many photo enthusiasts, Carl Zeiss lenses have long been the ultimate choice. Many models are available, but the only autofocus Zeiss lenses currently available for use on interchangeable-lens digital cameras are those that have been created through close cooperation between Carl Zeiss AG and Sony for the **α** series cameras.



The scientific approach

It was Ernst Abbe of Carl Zeiss AG who first applied scientific principles to lens design, rather than relying on trial-and-error experience. A significant portion of the history of photographic lens development centers on the Protar, Planar, and Sonnar designs that featured advanced optical paths based on those principles. In many ways the history of Carl Zeiss AG is the history of photographic lenses.



The Carl Zeiss lenses that started it all

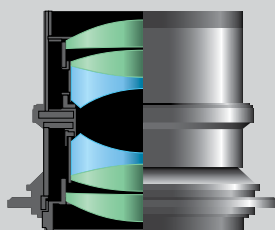
Protar

Developed by Dr. Paul Rudolph in 1890, this lens was one of the original Anastigmat series. The design was named "Protar" (from the Latin "proto," or "first"/ "origin") in 1900. The front group was a standard achromatic combination of low-refractive-index crown glass and high-refractive-index flint glass, but the rear group was an innovative achromatic doublet using Jena glass, with high-refractive-index crown glass and low-refractive-index flint glass. The front and rear elements were located on either side of the diaphragm, effectively suppressing chromatic aberration. This design evolved to become the Unar lens and later the Tessar.



Planar

Another Paul Rudolph design, developed in 1897. Initially this design was called the "Anastigmat Series IA." It features a symmetrical 6-element 4-group Gaussian design that facilitates the use of large apertures. The "Planar" name is derived from the flatness of the image. Planar lenses are appreciated for their superb image depth and rich color reproduction.



The Carl Zeiss traditions of innovative technology and uncompromising quality are alive in today's **α** series lenses as well.



The unmatched T* (T-star) coating

The fact that lens coating technology – vapor deposition of a thin, even coating on the lens surface to reduce reflections and maximize transmission – was originally a Carl Zeiss patent is well known. The Carl Zeiss company also developed and proved the efficacy of multi-layer coatings for photographic lenses, and this is the technology that became the T* coating.

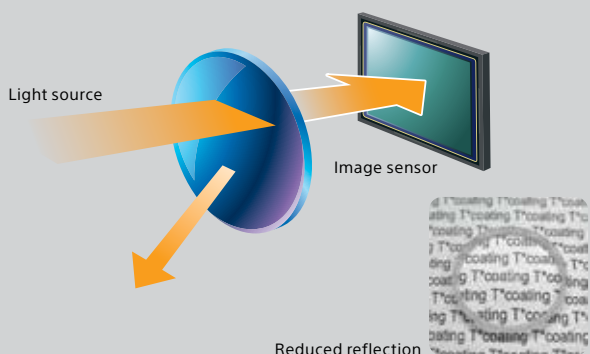
Until the introduction of coated lenses, the lens surface would reflect a large percentage of the incoming light, thus reducing transmission and

making it difficult to use multiple of elements in lens designs. Effective coatings made it possible to design more complex optics that delivered significantly improved performance. Reduced internal reflection contributed to minimum flare and high contrast.

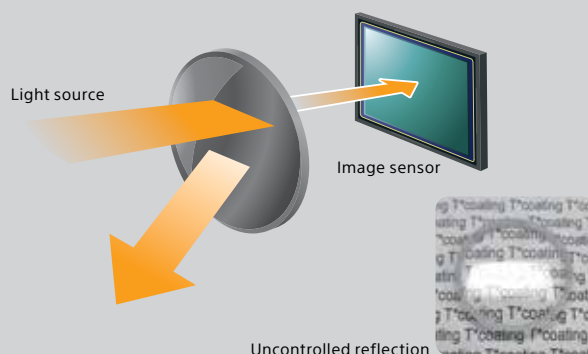
The Carl Zeiss T* coating is not simply applied to any lens. The T* symbol only appears on multi-element lenses in which the required performance has been achieved throughout the entire optical path, and it is therefore a guarantee of the highest quality.



Carl Zeiss coated lens



Uncoated lens



Making sense of MTF

Those MTF (Modulation Transfer Function) graphs that often accompany lens specifications are really not as impenetrable as they look, and they can give you a good idea of how a lens will perform, so it might be worth taking a few minutes to learn what they mean.

MTF describes a lens’s ability to resolve finely spaced black and white lines printed on a test target. As the lines get closer together they start to blur and blend together as the limits of the lens’s resolving ability are reached. MTF is plotted for multiple levels of subject detail (Y axis) at a number of points from the optical center of the lens to its periphery (X axis). The more lines per millimeter the lens can resolve, the better the resolution and contrast of the lens.* This resolving power is expressed as line pairs per millimeter (lp/mm), and sometimes as the more scientific sounding “spatial frequency.”

* For more info about these closely related terms, refer to the “Resolution, contrast, and sharpness” column below.

Take a look at the sample chart below to see how it all works to describe lens performance. The solid green line shows radial contrast values for 10 lp/mm detail with the lens wide open. The line is almost flat, indicating that resolution is constant at approximately 93% from the center to the periphery of the lens. Very good. The solid red line shows contrast with the same parameters except that the aperture has been stopped down to F8. The red line is higher than the green line, indicating that stopping down has improved resolution somewhat.

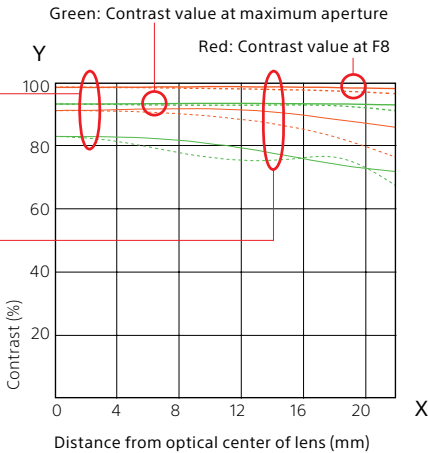
Basically, the higher and flatter the line, the better the performance for the corresponding set of parameters. The smaller the distance between the green and red lines, the more consistent the performance of the lens is over a range of aperture settings. The smaller the gap between the solid and dotted lines, the more attractive the defocusing is likely to be.

That’s really all you need to know to glean useful information from an MTF chart. Just remember that comparing MTF graphs of different lenses is really only meaningful if both lenses have similar focal lengths.

- The X (horizontal) and Y (vertical) axes of the chart correspond to the following values:
- X: Distance from the optical center of the lens to a point near its periphery, measured in millimeters.
 - Y: The degree of contrast measured at each point, expressed as a percentage.

Indicates excellent performance with high contrast and resolution at the center of the lens.

Indicates the level to which resolution and contrast are maintained at the periphery of the lens.



A number of parameters are represented by different line types on the MTF chart, as defined by a legend that accompanies each chart. Those parameters are:

- Two lp/mm values: often 10 lines per millimeter and 30 lines per millimeter.
- Two different aperture settings: lens wide open, and F8.
- Two orientations of line pairs in relation to the lens: “R” (radial = lines parallel to the radius of the lens), and “T” (tangential = lines perpendicular to the radius of the lens).

Spatial frequency	Max. aperture		F8 aperture	
	R	T	R	T
10 line pairs / mm	—	—	—	—
30 line pairs / mm	—	—	—	—

All of the MTF charts that accompany the lens descriptions in the preceding part of this brochure follow these conventions.

Resolution, contrast, and sharpness

Although it is possible to have high resolution and low contrast, or vice versa, in the context of MTF measurements these terms mean almost the same thing. Both good resolution and contrast are necessary for a lens to be perceived as “sharp.” We’re talking about “micro-contrast” here, which is the ability of a lens to differentiate between tiny details that have similar tonal values. Micro-contrast is different from global contrast, the overall range of tones in an image that people usually associate with the term “contrast.” MTF measurements are useful because they show us the relationship between a lens’s resolution and contrast in graphic form that makes it easy to judge how the lens will perform in real-world applications.



Choosing the right lens

Portraits

For most portraits, the person being photographed is the most important element of the photograph, so it can be effective to de-emphasize other non-essential elements. The usual way of doing this is to defocus the background so the viewer gets a sense of location without being distracted from the main subject by too much surrounding detail. Choose a lens that has a large maximum aperture and a focal length between about 75 mm and 150 mm for flattering perspective, and so that you don't have to get uncomfortably close to your subject. The Planar T* 50mm F1.4 ZA SSM (SAL50F14Z), Planar T* 85mm F1.4 ZA (SAL85F14Z), DT 50mm F1.8 SAM (SAL50F18), 85mm F2.8 SAM (SAL85F28), and 135mm F2.8 [T4.5] STF (SAL135F28) are excellent choices for this type of photography.



Landscapes

Although you can use anything from wide angle to telephoto lenses for landscape photography, you'll probably get the most use out of wide lenses that can capture the grandeur and scale of nature at its best. A wide-angle zoom such as the Vario-Sonnar T* 16-35mm F2.8 ZA SSM (SAL1635Z) would be an excellent choice because it covers a range of focal lengths that are extremely useful for landscape photography with outstanding resolution and contrast. Stopped down to F8 or F11 lenses in this focal length range will give you sufficient depth of field to keep the entire scene in sharp focus. Hint: include prominent foreground objects to give your landscape images a greater sense of scale.



Snapshots

The term "snapshot" refers to any photo opportunity that arises spontaneously. You're shooting snapshots when you take your camera for a walk in the park, or on vacation, or even when you're in "serious" street-shooting mode. The key is to capture the moment, and that requires mobility and speed. Some photographers prefer to use a prime lens with a focal length they're comfortable with for this type of shooting: a "simple is faster and better" approach. Others choose a compact mid-range zoom like the DT16-50mm F2.8 SSM (SAL1650) for maximum versatility. If you're going to be shooting snaps indoors or in evening or early morning light you'll want to choose a lens with a large maximum aperture.



Macro and close-ups

"True" macro lenses that can be used to shoot extremely clear, detailed images of very tiny subjects have a maximum magnification ratio of 1:1 (1x), and that limits your choices. Use the DT 30mm F2.8 Macro SAM (SAL30M28) or 50mm F2.8 Macro (SAL50M28) for stationary subjects that you can get very close to, or the 100mm F2.8 Macro (SAL100M28) where a bit more working distance is required. You can also shoot close-ups of subjects such as flowers with any lens that has a maximum magnification ratio of about 0.25x or more and a sufficiently short minimum focusing distance. The 75-300mm F4.5-5.6 zoom (SAL75300) is good for this type of close-up shooting, or you could use the 70-300mm F4.5-5.6 G SSM (SAL70300G) for truly stunning image quality.



Sports

Since sports almost invariably involve fast action, usually at a distance, you'll want to use a telephoto lens that's "fast" enough to allow the use of action-freezing shutter speeds. The 300mm F2.8 G SSM II telephoto prime (SAL300F28G2) or 500mm F4 G SSM telephoto prime (SAL500F40G) is an outstanding choice for this genre, but if you want the framing versatility of a zoom the 70-200mm F2.8 G (SAL70200G) is a great alternative. You could even use the SAL14TC 1.4x Teleconverter or SAL20TC* 2x Teleconverter with any of these lenses to provide more reach for distant subjects or to grab close-ups of the action. Of course there are always exceptions: if you can get close to the action you might be able to use a fast wide-angle prime or zoom to capture a more dynamic perspective.

* The SAL14TC is compatible with AF and MF operation, while the SAL20TC is compatible with MF operation only.



Wildlife

Since you can rarely get close, super-telephoto is the first focal length choice for shooting wildlife. Of course you won't need that much magnification if you're shooting pets at home, but in the wild you'll want to be as far away as possible, to avoid scaring off your subject and for safety. The 300mm F2.8 G SSM II telephoto prime (SAL300F28G2) or 500mm F4 G SSM telephoto prime (SAL500F40G) with the 1.4x or 2x Teleconverter (SAL14TC or SAL20TC*) is probably the most suitable choice. Not only does that combination give you the reach you'll need, but the quiet, responsive operation of the SSM autofocus drive will be an advantage as well. Hint: the above lens/teleconverter combination will give you even more reach when used on an APS-C format body.

* The SAL14TC is compatible with AF and MF operation, while the SAL20TC is compatible with MF operation only.



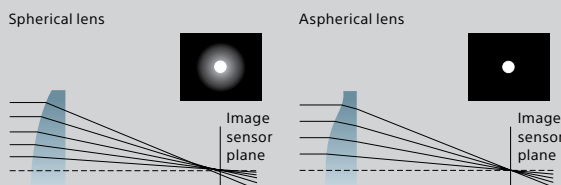
In the preceding product pages, this star icon identifies "EasyChoice" lenses: prime lenses that offer outstanding value in compact, lightweight designs that are ideal for photographers at all levels. Each lens in the series is suited for a particular type of photography, such as portraiture or macro, for example.

α lens technology

The technology required to produce first-class interchangeable camera lenses is very sophisticated indeed, and that applies to every phase of the production process from design through precision parts manufacturing and assembly to stringent quality assurance testing and more. Sony brings a distinguished history of excellence in all of these areas to bear in producing the α lenses. You'll feel the difference in the way α lenses handle, and you'll see the difference in the superior image quality they deliver.

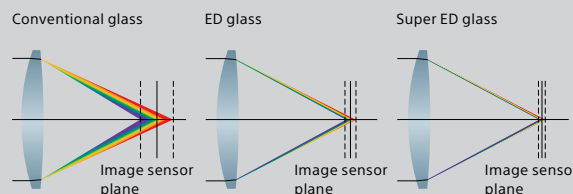
Aspherical lens elements

Spherical aberration, slight misalignment at the image plane between light that has passed through the center and periphery of a simple spherical lens, can become a noticeable problem in large-aperture lenses. The most effective solution is to use one or more specially shaped aspherical elements near the aperture stop to restore perfect alignment at the image plane, thus maintaining high contrast even with the aperture wide open. Aspherical lenses arranged far from the aperture stop can minimize image distortion and flatness of the image plane. Well-designed aspherical lens can reduce the number of elements in the lens for less overall size and weight.



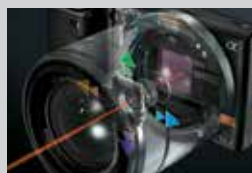
ED and Super ED glass

Chromatic aberration in conventional optical glass elements can reduce contrast, resolution, and color fidelity, particularly at longer focal lengths. ED (Extra-low Dispersion) and Super ED glass were developed with refractive index and dispersion characteristics specially tailored to counter this problem. Lenses that include ED or Super ED glass elements provide superior contrast and resolution throughout the image even at large aperture settings.



Lens-based optical image stabilization OSS

Gyro sensors built into the lens detect even the slightest movement, and the stabilization lens is precisely shifted to counteract any image blur that might occur. The use of precision, quiet linear motors and technology inherited from high-end Sony professional camcorders results in exceptionally quiet, effective image stabilization that contributes to high-quality movies as well as stills.



Active Mode

Moving around while shooting movies means more camera shake that can cause blur. Although conventional image stabilization systems were not effective at compensating for this type of movement, "Active Mode" employs a wider range of motion for the compensation lens, achieving improved stabilization over a greater range of camera movement. Stabilization at the wide end of the zoom range is significantly improved, facilitating handheld movie shooting with minimum image blur.

Auto clutch

The auto clutch mechanism decouples the focus ring so that it does not rotate during autofocus operation. This allows the lens to be cradled in one hand without interfering with autofocus operation, for improved shooting comfort and versatility.

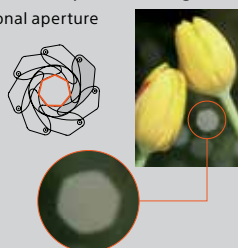
Auto Clutch

Circular aperture

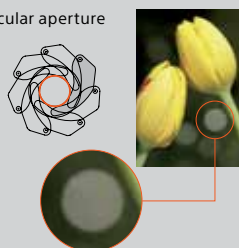
Standard lens apertures appear as a flat-sided polygon when the lens is stepped down, the number of sides corresponding to the number of blades in the aperture. This results in the familiar polygonal out-of-focus highlights seen in many photographs. Almost all α lenses feature a unique circular aperture that contributes to smooth, natural defocusing.

Comparison of aperture design

Conventional aperture



Circular aperture



Floating lens mechanism

This focusing feature is particularly important in certain lenses that are designed for close focusing. It maintains optimum lens performance and therefore maximum sharpness right down to the minimum focusing distance by moving "floating" elements independently when focusing, rather than moving the entire optical assembly as a whole.

Focus hold button

Press this button to lock focus at the current setting. The focus hold button is on the lens barrel right under your fingertip for convenient, fast operation.



Focus range limiter

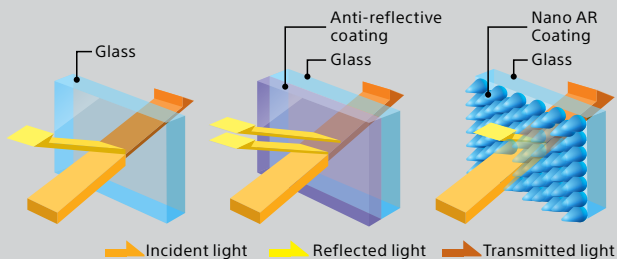
This feature can be used to limit focus range when you need the quickest possible autofocus response. On some lenses a single "limit" range will match the characteristics of the lens (near focus limit on macro lenses, for example), while some lenses have a "near/far" limit range switch.



Nano AR Coating

Nano AR Coating

Original Sony Nano AR Coating technology produces a lens coating that features a precisely defined regular nano-structure that allows accurate light transmission while effectively suppressing reflections that can cause flare and ghosting. The reflection suppression characteristics of the Nano AR Coating are superior to conventional anti-reflective coatings, including coatings that use an irregular nano-structure, providing a notable improvement in clarity, contrast, and overall image quality.



Internal focusing mechanism

IF

In this type of lens, focusing is achieved by moving only the internal elements. The overall length of the lens remains constant, and the filter mounting thread at the front of the lens remains stationary during focusing. The latter characteristic is an advantage when using a polarizing filter. Other advantages include fast autofocus response and reduced minimum focusing distances.

Rear focusing mechanism

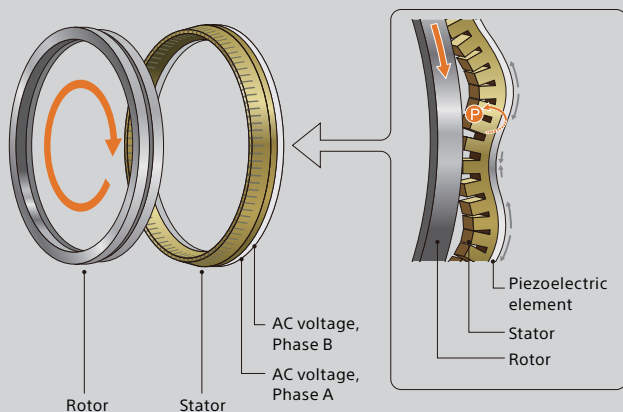
RF

This focusing configuration has similar advantages to internal focusing, described above, but focusing is achieved by moving the rear lens elements rather than the internal elements.

SSM (Super Sonic wave Motor)

SSM

SSM is an advanced direct-drive piezoelectric motor that is capable of delivering high torque even at low speeds, with almost instantaneous start/stop response. Its fast response and low-noise operation translate directly into quick, quiet autofocus operation. SSM lenses also include position detection for enhanced focusing precision. Other advantages of this advanced drive system are that the focus ring does not rotate during autofocus operation, and you can directly switch to manual focusing by simply rotating the focus ring.



SSM consists of a rotor (left), and a stator (right) on which piezoelectric elements are mounted.

SAM (Smooth Autofocus Motor)

SAM

SAM is another type of internal lens motor for autofocus drive. While the SSM motor described above is piezoelectric, the SAM motor is electromagnetic in operation, but provides similar benefits: responsive autofocus operation that does not require mechanical coupling from the camera body.

ADI flash metering

ADI

Advanced Distance Integration flash metering is available when the built-in flash, or HVL-F60M / HVL-F43AM / HVL-F20AM external flash is used together with a lens that has a built-in distance encoder.* It provides automatic metering that is virtually unaffected by the reflectance of subjects or backgrounds. Precise distance information is obtained through the encoder, and this data is used to compensate the flash output accordingly. This yields good exposures more reliably than conventional TTL (through-the-lens) flash metering, which can be thrown off by overly reflective or overly dark subjects and background.

* For details, please see the specifications chart on p.76-77



P-TTL flash metering

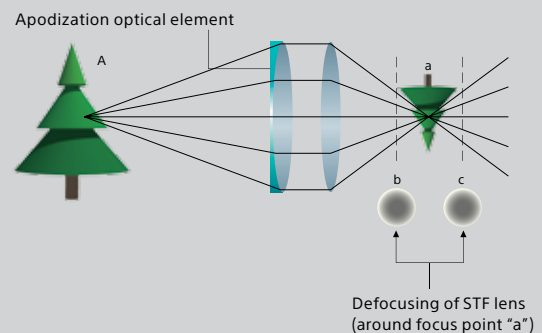


ADI flash metering

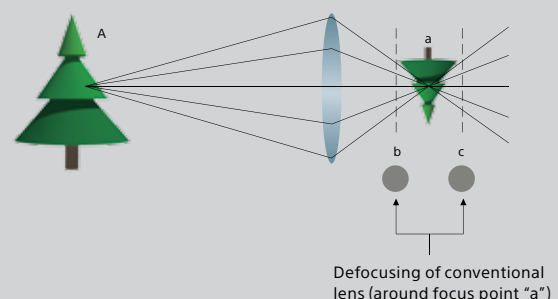
STF lens

A unique α lens feature currently available only in the 135mm F2.8 [T4.5] STF, STF (Smooth Trans Focus) is an optical technology that is aimed specifically at creating the smoothest, most visually pleasing defocusing effect possible while retaining full resolution and contrast at in-focus areas. STF technology employs a special "apodization" element that causes the intensity of defocused point light sources to fade out radially so that no sharply defined edges or geometry remain. The result is extraordinarily creamy defocusing that goes beyond the capabilities of conventional lens technology.

STF lens



Conventional lens



Main specifications of α lenses

Mount	Category	Page	Description	Model name	Lens configuration (group / element)	35 mm-equivalent focal length (APS-C) ¹ (mm)	Angle of view (APS-C) ¹	Angle of view (35mm full frame)	No. of aperture blade
A-mount	Zoom Lens	P.09	DT 11-18mm F4.5-5.6 ^{*2}	SAL1118	12 / 15	16.5 – 27	104° – 76°	—	7 (circular aperture)
		P.10	DT 16-50mm F2.8 SSM	SAL1650	13 / 16	24 – 75	83° – 32°	—	7 (circular aperture)
		P.11	DT 16-105mm F3.5-5.6 ^{*2}	SAL16105	11 / 15	24 – 157.5	83° – 15°	—	7 (circular aperture)
		P.12	DT 18-55mm F3.5-5.6 SAM II	SAL18552	7 / 8	27 – 82.5	76° – 29°	—	7 (circular aperture)
		P.13	DT 18-135mm F3.5-5.6 SAM	SAL18135	11 / 14	27 – 202.5	76° – 12°	—	7 (circular aperture)
		P.14	DT 18-250mm F3.5-6.3 ^{*2}	SAL18250	13 / 16	27 – 375	76° – 6° 30'	—	7 (circular aperture)
		P.15	28-75mm F2.8 SAM	SAL2875	14 / 16	42 – 112.5	54° – 21°	75° – 32°	7 (circular aperture)
		P.16	DT 55-200mm F4-5.6 SAM ^{*2}	SAL55200-2	9 / 13	82.5 – 300	29° – 8°	—	9 (circular aperture)
		p.17	DT 55-300mm F4.5-5.6 SAM	SAL55300	9 / 12	82.5 – 450	29° – 5° 20'	—	7 (circular aperture)
		P.18	75-300mm F4.5-5.6	SAL75300	10 / 13	112.5 – 450	21° – 5° 20'	32° – 8° 10'	7 (circular aperture)
	Fixed Focal Length Lens	P.20	16mm F2.8 Fisheye	SAL16F28	8 / 11 (incl. 1x filter)	24	110°	180°	7
		P.21	20mm F2.8	SAL20F28	9 / 10	30	70°	94°	7 (circular aperture)
		P.22	DT 35mm F1.8 SAM ^{*2}	SAL35F18	5 / 6	52.5	44°	—	7 (circular aperture)
		P.23	50mm F1.4	SAL50F14	6 / 7	75	32°	47°	7 (circular aperture)
		P.24	DT 50mm F1.8 SAM ^{*2}	SAL50F18	5 / 6	75	32°	—	7 (circular aperture)
		P.25	85mm F2.8 SAM	SAL85F28	4 / 5	127.5	19°	29°	7 (circular aperture)
		P.26	135mm F2.8 [T4.5] STF (MF operation only)	SAL135F28	6 / 8 (incl. APD element 1 / 2)	202.5	12°	18°	9 (auto), 10 (manual)
		P.27	DT 30mm F2.8 Macro SAM ^{*2}	SAL30M28	5 / 6	45	50°	—	7 (circular aperture)
		p.28	50mm F2.8 Macro	SAL50M28	6 / 7	75	32°	47°	7 (circular aperture)
		P.29	100mm F2.8 Macro	SAL100M28	8 / 8	150	16°	24°	9 (circular aperture)
	G Lens	P.31	70-200mm F2.8 G	SAL70200G	16 / 19	105 – 300	23° – 8°	34° – 12° 30'	9 (circular aperture)
		P.32	70-300mm F4.5-5.6 G SSM	SAL70300G	11 / 16	105 – 450	23° – 5° 20'	34° – 8° 10'	9 (circular aperture)
		P.33	70-400mm F4-5.6 G SSM II	SAL70400G2	12 / 18	105 – 600	23° – 4° 10'	34° – 6° 10'	9 (circular aperture)
		P.34	35mm F1.4 G	SAL35F14G	8 / 10	52.5	44°	63°	9 (circular aperture)
		P.35	300mm F2.8G SSM II (Built to order)	SAL300F28G2	12 / 13 (incl. 1x filter)	450	5° 20'	8° 10'	9 (circular aperture)
		P.36	500mm F4 G SSM (Built to order)	SAL500F40G	10 / 11	750	3° 10'	5°	9 (circular aperture)
		P.37	1.4x Teleconverter ^{*3}	SAL14TC	4 / 5	—	—	—	—
		P.37	2x Teleconverter ^{*3}	SAL20TC	5 / 6	—	—	—	—
	Carl Zeiss Lens	P.39	Vario-Sonnar T* 16-35mm F2.8 ZA SSM	SAL1635Z	13 / 17	24 – 52.5	83° – 44°	107° – 63°	9 (circular aperture)
		P.40	Vario-Sonnar T* DT 16-80mm F3.5-4.5 ZA ^{*2}	SAL1680Z	10 / 14	24 – 120	83° – 20°	—	7 (circular aperture)
		P.41	Vario-Sonnar T* 24-70mm F2.8 ZA SSM	SAL2470Z	13 / 17	36 – 105	61° – 23°	84° – 34°	9 (circular aperture)
		P.42	Distagon T* 24mm F2 ZA SSM	SAL24F20Z	7 / 9	36	61°	84°	9 (circular aperture)
		P.43	Planar T* 50mm F1.4 ZA SSM	SAL50F14Z	5 / 8	75	32°	47°	9 (circular aperture)
		P.44	Planar T* 85mm F1.4 ZA	SAL85F14Z	7 / 8	127.5	19°	29°	9 (circular aperture)
		P.45	Sonnar T* 135mm F1.8 ZA	SAL135F18Z	8 / 11	202.5	12°	18°	9 (circular aperture)
E-mount	E-mount Lens	P.47	E 10-18mm F4 OSS	SEL1018	8 / 10	15 – 27	109° – 76°	—	7 (circular aperture)
		P.48	E PZ 16-50mm F3.5-5.6 OSS	SELP1650	8 / 9	24 – 75	83° – 32°	—	7 (circular aperture)
		P.49	E 18-55mm F3.5-5.6 OSS	SEL1855	9 / 11	27 – 82.5	76° – 29°	—	7 (circular aperture)
		P.50	E 18-200mm F3.5-6.3 OSS	SEL18200	12 / 17	27 – 300	76° – 8°	—	7 (circular aperture)
		P.51	E 18-200mm F3.5-6.3 OSS LE	SEL18200LE	13 / 17	27 – 300	76° – 8°	—	7 (circular aperture)
		P.52	E PZ 18-200mm F3.5-6.3 OSS	SELP18200	12 / 17	27 – 300	76° – 8°	—	7 (circular aperture)
		P.53	E 55-210mm F4.5-6.3 OSS	SEL55210	9 / 13	82.5 – 315	29° – 7° 40'	—	7 (circular aperture)
		P.54	E 16mm F2.8	SEL16F28	5 / 5	24	83°	—	7 (circular aperture)
		P.55	Fisheye Converter ^{*5}	VCL-ECF1	4 / 4	15	—	—	—
		P.55	Ultra Wide Converter ^{*5}	VCL-ECU1	3 / 3	18	—	—	—
		P.56	E 20mm F2.8	SEL20F28	6 / 6	30	70°	—	7 (circular aperture)
		P.57	E 35mm F1.8 OSS	SEL35F18	6 / 8	52.5	44°	—	7 (circular aperture)
		P.58	E 50mm F1.8 OSS	SEL50F18	8 / 9	75	32°	—	7 (circular aperture)
		P.59	E 30mm F3.5 Macro	SEL30M35	6 / 7	45	50°	—	7 (circular aperture)
	Carl Zeiss Lens	P.60	Sonnar T* E 24mm F1.8 ZA	SEL24F18Z	7 / 8	36	61°	—	7 (circular aperture)

*1 With interchangeable-lens digital cameras incorporating APS-C type image sensors. *2 Exclusively designed for use with APS-C format interchangeable-lens digital cameras. SAL300F28G2, SAL500F40G (with SAL14TC) MF only with SAL135F28 / SAL70400G2 / SAL500F40G (SAL20TC). *4 Without tripod mount. *5 Exclusive to SEL16F28.
 • When mounted on α series cameras with APS-C type sensors, the actual angle of view will be equal to the angle obtained at a focal length approx. 1.5 times longer than stated.

	Min. aperture (f)	Max. magnification ratio (x)	Min. focus (m)	Distance Encoder for ADI flash metering	Filter dia. (mm)	Hood shape / mount	Dimensions: Dia. x L (mm)	Dimensions: Dia. x L (in.)	Weight: (approx.) (g)	Weight: (approx.) (oz.)	Provided accessories
	22 – 29	0.125	0.25	○	77	petal / bayonet	83 x 80.5	3-3/8 x 3-1/4	360	12.7	hood (ALC-SH0009)
	22	0.2	0.3	○	72	petal / bayonet	81 x 88	3-1/4 x 3-1/2	577	20.4	hood (ALC-SH117)
	22 – 36	0.23	0.4	○	62	petal / bayonet	72 x 83	2-7/8 x 3-3/8	470	16.6	hood (ALC-SH105)
	22 – 36	0.34	0.25	○	55	round / bayonet	71.6 x 69	2-7/8 x 2-3/4	222	7.9	hood (ALC-SH108)(optional)
	22 – 36	0.25	0.45	○	62	petal / bayonet	76 x 86	3 x 3-1/2	398	14	hood (ALC-SH119)
	22 – 40	0.29	0.45	○	62	petal / bayonet	75 x 86	3 x 3-3/8	440	15.6	hood (ALC-SH104)
	32	0.22	0.38	○	67	petal / bayonet	77.5 x 94	3-1/8 x 3-3/4	565	20	hood (ALC-SH109)
	32 – 45	0.29	0.95	○	55	round / bayonet	71.5 x 85	2-7/8 x 3-3/8	305	10.8	hood (ALC-SH102)
	22 – 29	0.27	1.4	○	62	round / bayonet	77 x 116.5	3-1/8 x 4-5/8	460	16.3	hood (ALC-SH122)
	32 – 38	0.25	1.5	○	55	round / bayonet	71 x 122	2-7/8 x 4-7/8	460	16.3	hood (ALC-SH0007)
	22	0.15	0.2	—	4x kind (integrated)	petal / fixed	75 x 66.5	2-15/16 x 2-5/8	400	14.2	—
	22	0.13	0.25	—	72	petal / bayonet	78 x 53.5	3-1/16 x 2-1/8	285	10.1	hood (ALC-SH0013)
	22	0.25	0.23	○	55	round / bayonet	70 x 52	2-7/8 x 2-1/8	170	6	hood (ALC-SH111)
	22	0.15	0.45	○	55	round / bayonet	65.5 x 43	2-9/16 x 1-11/16	220	7.8	hood (ALC-SH0011)
	22	0.2	0.34	○	49	—	70 x 45	2-7/8 x 1-13/16	170	6	—
	22	0.2	0.6	○	55	round / bayonet	70 x 52	2-7/8 x 2-1/8	175	6.2	hood (ALC-SH111)
	31[T32]	0.25	0.87	—	72	round / bayonet	80 x 99	3-1/8 x 3-7/8	730	25.8	hood (ALC-SH0014), case
	22	1.0	0.129	○	49	—	70 x 45	2-7/8 x 1-13/16	150	5.3	—
	32	1.0	0.2	○	55	—	71.5 x 60	2-13/16 x 2-3/8	295	10.5	—
	32	1.0	0.35	○	55	round / bayonet	75 x 98.5	3 x 4	505	17.9	hood (ALC-SH0007)
	32	0.21	1.2	○	77	petal / bayonet	87 x 196.5	3-1/2 x 7-3/4	1,340 ^{*4}	47.3	hood (ALC-SH0010), case
	22 – 29	0.25	1.2	○	62	petal / bayonet	82.5 x 135.5	3-3/8 x 5-3/8	760	26.9	hood (ALC-SH103), case
	22 – 32	0.27	1.5	○	77	petal / bayonet	94.5 x 196	3-3/4 x 7-3/4	1,500 ^{*4}	53	hood (ALC-SH121), case
	22	0.2	0.3	○	55	petal / bayonet	69 x 76	2-3/4 x 3	510	18	hood (ALC-SH0001), case
	32	0.18	2.0	○	42 (exclusive)	round / clip-on	122 x 242.5	5-1/16 x 9-3/8	2,340 ^{*4}	82.5	hood, slot-in circular polarizing filter, lens strap, hard case
	32	0.135	4.0	○	42 (exclusive)	round / clip-on	140 x 367.5	5-5/8 x 14-1/2	3,460 ^{*4}	122	hood, slot-in circular polarizing filter, lens strap, hard case
	—	—	—	○	—	—	64 x 20	2-1/2 x 13/16	170	6	case
	—	—	—	○	—	—	64 x 43.5	2-1/2 x 1-11/16	200	7.1	case
	22	0.24	0.28	○	77	petal / bayonet	83 x 114	3-3/8 x 4-1/2	860	30.4	hood (ALC-SH106), case
	22 – 29	0.24	0.35	○	62	petal / bayonet	72 x 83	2-7/8 x 3-3/8	445	15.7	hood (ALC-SH0005), case
	22	0.25	0.34	○	77	petal / bayonet	83 x 111	3-3/8 x 4-3/8	955	33.7	hood (ALC-SH101), case
	22	0.29	0.19	○	72	petal / bayonet	78 x 76	3-1/8 x 3	555	19.6	hood (ALC-SH110), case
	22	0.14	0.45	○	72	round / bayonet	81 x 71.5	3-1/4 x 2-7/8	518	18.3	hood (ALC-SH126)
	22	0.13	0.85	○	72	round / bayonet	81 x 75	3-1/4 x 2-7/8	640	22.6	hood (ALC-SH0002), case
	22	0.25	0.72	○	77	round / bayonet	88 x 114.5	3-1/2 x 4-5/8	995	35.1	hood (ALC-SH0003), case
	22	0.1	0.25	—	62	petal / bayonet	70 x 63.5	2-7/8 x 2-1/2	225	8	hood (ALC-SH123)
	22 – 36	0.215	0.25 (Wide)-0.3 (Tele)	—	40.5	—	64.7 x 29.9	2-5/8 x 1-3/16	116	4.1	—
	22 – 32	0.3	0.25	—	49	petal / bayonet	62 x 60	2-1/2 x 2-3/8	194	6.9	hood (ALC-SH112)
	22 – 40	0.35	0.3 (Wide)-0.5 (Tele)	—	67	petal / bayonet	75.5 x 99	3 x 4	524	18.5	hood (ALC-SH109)
	22 – 40	0.27	0.5	—	62	petal / bayonet	68 x 97.1	2-3/4 x 3-7/8	460	16.3	hood (ALC-SH124)
	22 – 40	0.35	0.3 (Wide)-0.5 (Tele)	—	67	square / bayonet	93.2 x 99	3-3/4 x 4	649	22.9	hood ALC (SH125)
	22 – 32	0.225	1.0	—	49	round / bayonet	63.8 x 108	2-5/8 x 4-3/8	345	12.2	hood (ALC-SH115)
	22	0.078	0.24	—	49	—	62 x 22.5	2-1/2 x 29/32	67	2.4	—
	—	0.62	0.13	—	—	—	66 x 44	2-5/8 x 1-3/4	150	5.3	case
	—	0.75	0.18	—	—	—	66 x 44	2-5/8 x 1-3/4	125	4.5	case
	16	0.12	0.2	—	49	cap	62.6 x 20.4	2-1/2 x 13/16	69	2.4	hood (ALC-SH113)
	22	0.15	0.3	—	49	petal / bayonet	63 x 45	2-1/2 x 1-13/16	154	5.5	hood (ALC-SH112)
	22	0.16	0.39	—	49	round / bayonet	62 x 62	2-1/2 x 2-1/2	202	7.2	hood (ALC-SH116)
	22	1.0	0.095	—	49	cap	62 x 55.5	2-1/2 x 2-1/4	138	4.9	hood (ALC-SH113)
	22	0.25	0.16	—	49	petal / bayonet	63 x 65.5	2-1/2 x 2-5/8	225	8	hood (ALC-SH114), case

• Specifications are based on the latest information available at the time of printing, and are subject to change without notice

Use with 35 mm full-frame interchangeable-lens digital cameras other than the **α99** not guaranteed. *3 Lens compatibility: operation in AF and MF modes with SAL70200G /

• Less light is transmitted by any lens at the image periphery. If the light falloff becomes excessive, reduce the aperture by 1 or 2 stops.

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