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α Lenses

α creation

Stellar choices for photographic expression

Photography is creative. A photographer must make a number of critical choices that will determine the outcome. One of the most influential choices is the lens itself. What is being photographed, under what lighting conditions, and where? What lens will provide the necessary control over composition and perspective, or how motion is captured? Which areas of the image are to be in sharp focus and which are to be out of focus? How will the lens function with filters that might be needed to change the characteristics of the captured light? There is no single right answer for every photographer and subject. The only certainties are that a choice must be made and that more high-quality options mean more creative freedom.

Sony's α lens lineup offers everything the creative photographer needs to realize their vision. Economy, luxury, versatility, precision, legendary optical performance… it's all there. The choice is yours.

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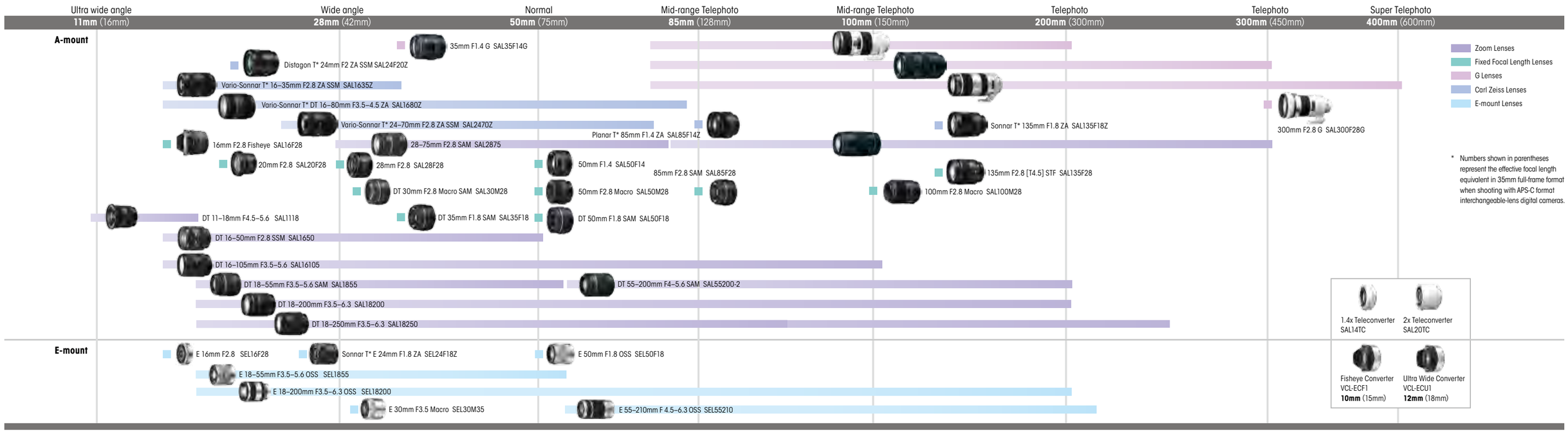


Lenses: How they capture and control light

The linguistic roots of the word "photography" are the Greek words meaning "light" and "drawing." Photography is "drawing with light," and lenses are the brushes. After their imagination, lenses 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. 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.

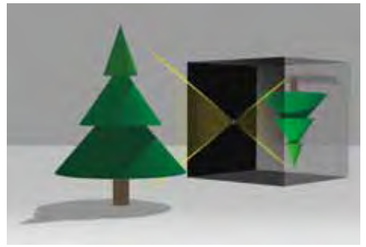
Projecting an image

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. 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, then 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 camera is basically a light-tight box with a small hole in one end

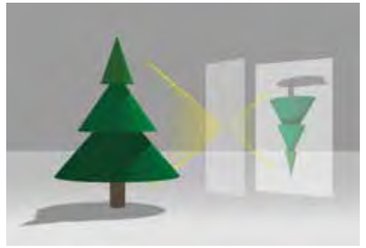


Figure 1. A simple pinhole of appropriate size is capable of projecting a sharp but dim image

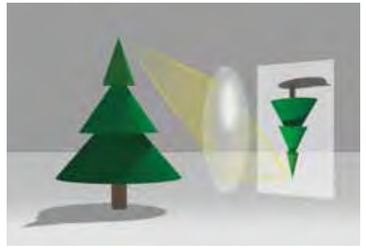
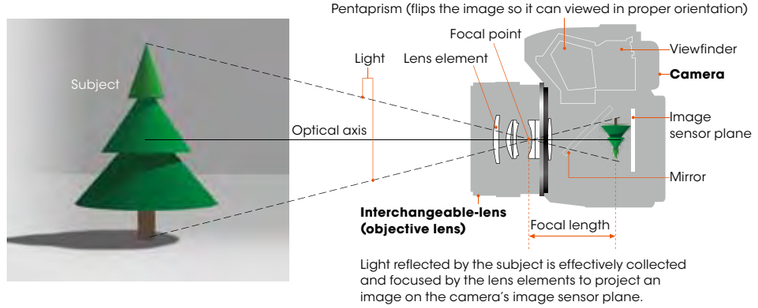


Figure 2. A lens uses the principle of "refraction" to gather more light from the subject and project a sharp, bright image

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 also 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 also 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 from wide-angle to capture expansive scenes or telephoto to photograph distant subjects. 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



Light reflected by the subject is effectively collected and focused by the lens elements to project an image on the camera's image sensor plane.

TECH TALK

Refraction: bending light

The physical principle that allows lenses to gather and focus light is called "refraction." Refraction causes lightwaves 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

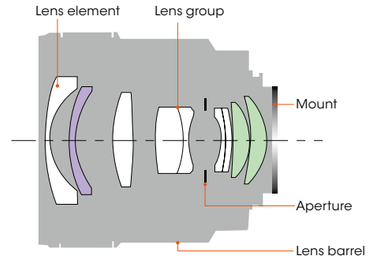
All modern photographic lenses are "compound" lenses that use a number of lens "elements" precisely mounted along the same optical axis. The use of multiple elements allows lens designers to effectively reduce optical aberrations so you get nice sharp, clean images.

"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



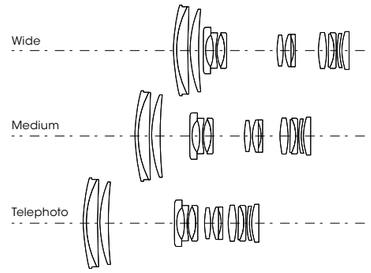
Aspherical lens (see page 16 for more details)
ED glass (see page 16 for more details)

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.

How lens elements and groups move in a zoom lens



Read your lenses

There is a lot 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.

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 17 for more details).

Maximum aperture

This number represents the maximum aperture, or "f-number," of the lens and tells you how "bright" the lens is (see page 9 for more details).

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 10 for more details).

AF/MF switch

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

Lens format

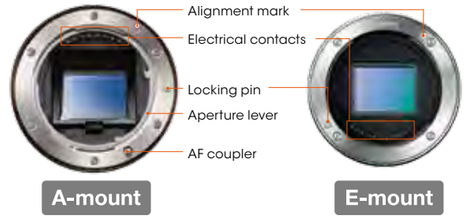
Sony lenses marked "DT" (Digital Technology) have been specifically designed for use on APS-C format A-mount cameras (see page 8 for more details).

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 have a more traditional shape and utilize moving mirrors or advanced translucent mirrors. Ultra-compact E-mount cameras 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 have a reflex mirror between the rear of the lens and the sensor, precipitating the need to have a flange back distance that allows space for the mirror. E-mount cameras, on the other hand, are mirror-less and therefore can be designed with a much shorter flange back distance, allowing the body of the camera to be much smaller and consequently the lenses as well.



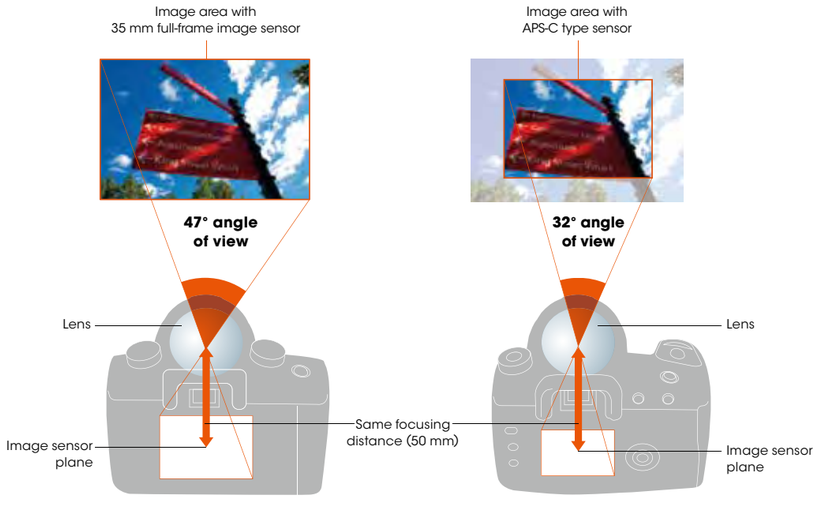
Sensor formats: 35mm full frame and APS-C

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



*The angle of view values in this example correspond to those of a 50mm 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 often 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. The size of the opening provided by the aperture also determines how "collimated" the light passing through the lens is. Since this directly affects depth of field, 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 16 for details)

TECH TALK

F-number math

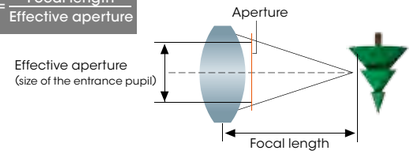
The f-number is the focal length of the lens divided by the effective diameter of the aperture. So in the case of the SAL3514G lens, when the aperture is set to its maximum of F1.4, the effective diameter of the aperture will be 35 ÷ 1.4 = 25mm. Note that as the focal length of the lens changes, the diameter of the aperture at a given f-number will change too. For example, an aperture of F1.4 in a 300mm telephoto lens would require an effective aperture diameter of 300 ÷ 1.4 ≈ 214mm! 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.

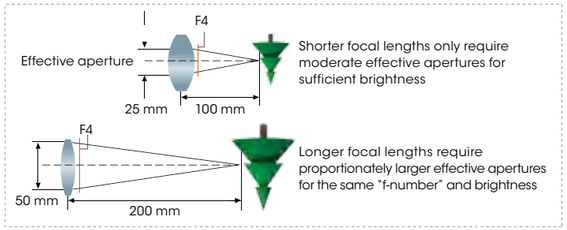
"F-numbers" or "f-stops"

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 SAL35F14G, for example. This is a 35mm F1.4 lens: 35mm is the focal length 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.

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



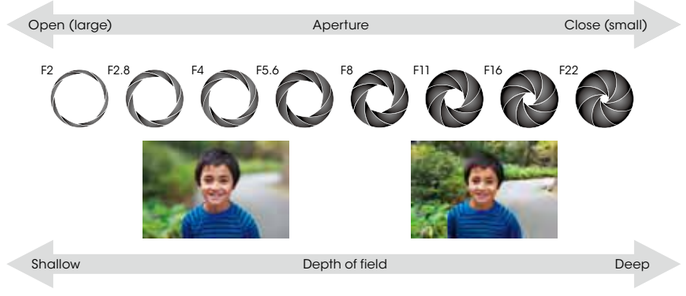


- Aperture and focal length values in the illustration are approximate.

Aperture and depth of field

"Depth of field" refers to the range between the nearest and farthest objects in a scene that 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 a narrower depth of field, so if you want to shoot a portrait with a nicely defocused background you'll want a wider aperture (lower F-number). There are times when other factors come into play. Lenses of longer focal lengths are generally capable of producing narrower depth of field. This is partly because an F1.4 aperture in an 85mm lens, for example, is physically larger than an F1.4 aperture in a wide-angle 24mm lens. Additionally, the distance between objects in the scene being photographed will have an effect on the perceived depth of field as well.

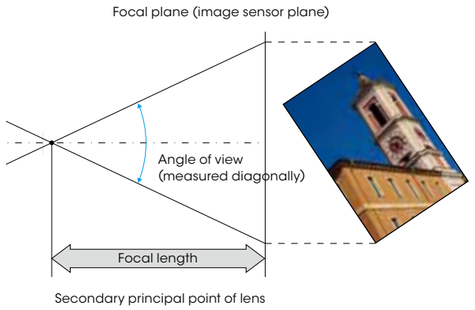


SHOOTING TIP

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 75mm and 100mm are ideal for shooting portraits with nicely blurred backgrounds.

Focal length, angle of view and perspective



Focal length vs. angle of view

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

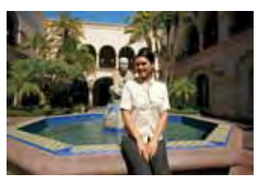
Focal length and angle of view

"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. 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 35mm 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. As such, the distance of the subject from the background relative to the subject's distance from the camera lens becomes smaller and smaller the further away the photographer stands. From that perspective 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.



24mm focal length,*
84° angle of view

300mm focal length,*
8° angle of view

* 35mm 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 10mm object can be projected onto the sensor as a 10mm 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.

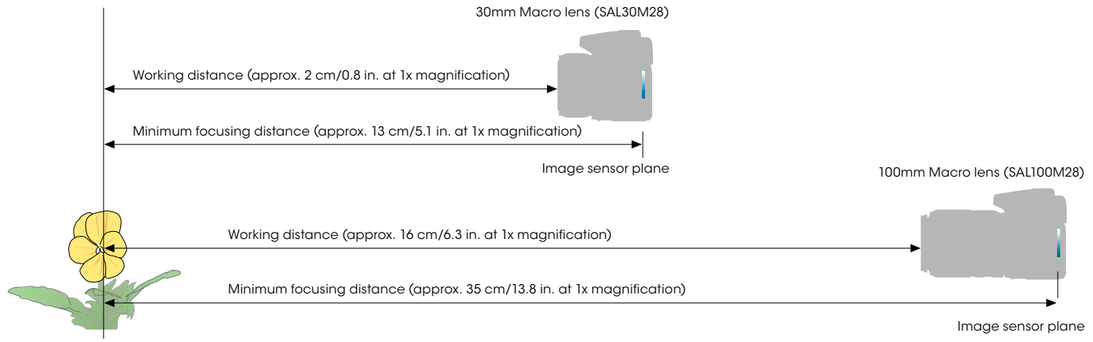
0.35x

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 meter (20 centimeter) 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)

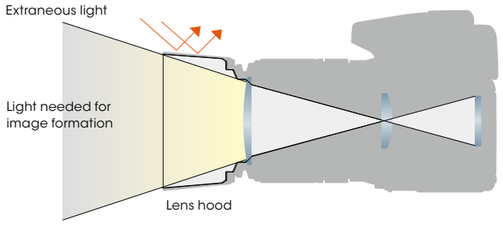
With lens hood (no flare, high contrast)

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 it is capable of. 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.

Petal hood

Round hood

Without circular PL filter
(reduced contrast)

With circular PL filter
(increased contrast and deep saturation)

Circular polarizing filters for improved contrast and color

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.

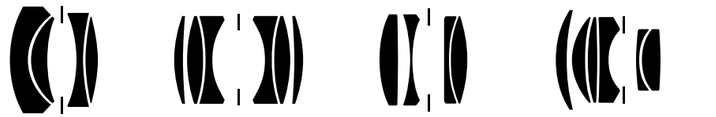
Carl Zeiss® optics

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.

Protar® (1890-)	Planar® (1896-)	Tessar® (1902-)	Sonnar® (1929-)



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.

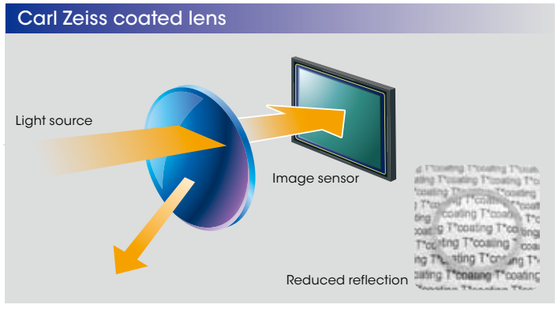
The Carl Zeiss traditions of innovative technology and uncompromising quality are alive in today's α series lenses as well.

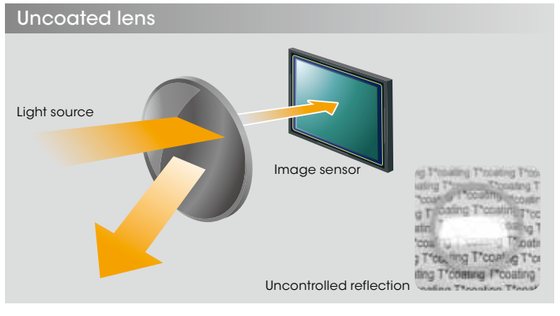
The unmatched T* (T-star) coating

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 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.





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.

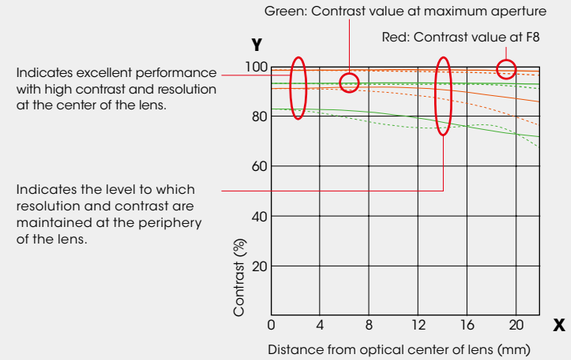
Take a look at the sample chart below to see how it all works to describe lens performance. The solid green line shows radial contrast values for 10 lp/mm detail with the lens wide open. The line is almost flat, indicating that resolution is constant at approximately 93% from the center to the periphery 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.



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 latter part of this brochure follow these conventions.

TECH TALK

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 75mm and 150mm for flattering perspective, and so that you don't have to get uncomfortably close to your subject. The Planar T* 85mm F1.4 ZA (SAL8514Z), DT 50mm F1.8 SAM (SAL50F18), 85mm F2.8 SAM (SAL85F28), 135mm F2.8 [T4.5] STF (SAL135F28) and E-mount 50mm F1.8 (SEL50F18) are excellent choices for this type of photography.

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), 50mm F2.8 Macro (SAL50M28), or E-mount 30mm F3.5 (SEL30M35) 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 impressive close-ups 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.

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.

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 telephoto prime (SAL300F28G) 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 either of these lenses to provide more reach for distance 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.

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 28-75mm F2.8 SAM (SAL2875) 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.

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 telephoto prime (SAL300F28G) 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.

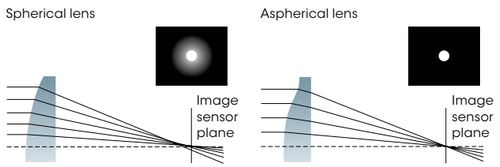
In the product pages that follow, this star icon identifies lenses: prime lenses that offer outstanding value in compact, lightweight designs that are ideal for photographers at all levels. Each lens in the series is suited for a particular type of photography, such as portraiture or macro, for example.

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.

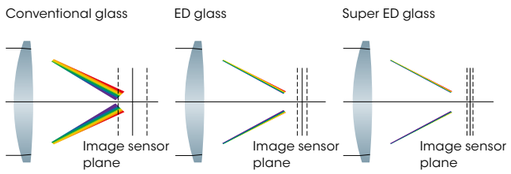
Aspherical lens elements

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.



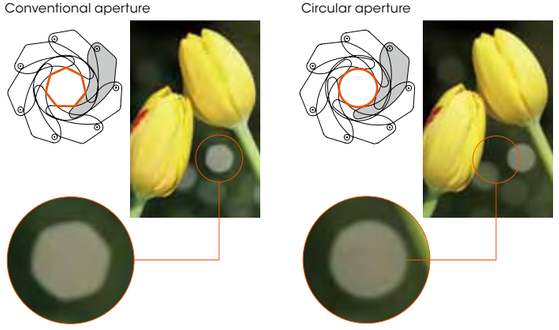
Auto clutch

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.

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



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.

Internal focusing mechanism

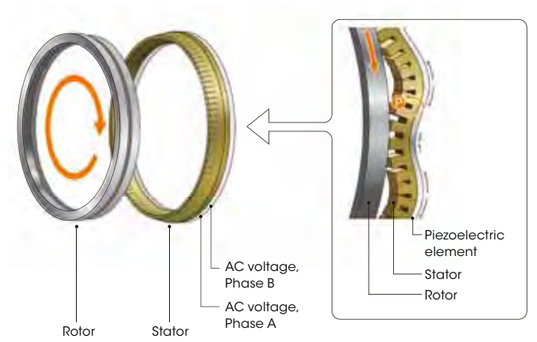
In this type of lens, focusing is achieved by moving only the internal elements. The overall length of the lens remains constant, and the filter mounting thread at the front of the lens remains stationary during focusing. The latter characteristic is an advantage when using a polarizing filter. Other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

Rear focusing mechanism

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 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.



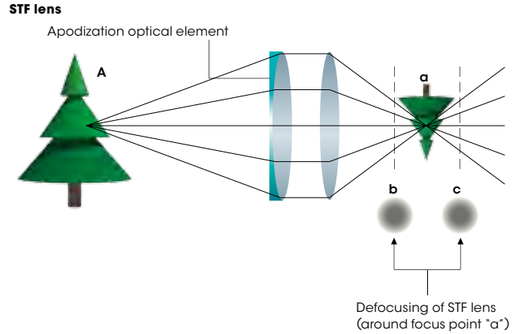
SSM consists of a rotor (left), and a stator (right) on which plexoelectric elements are mounted.

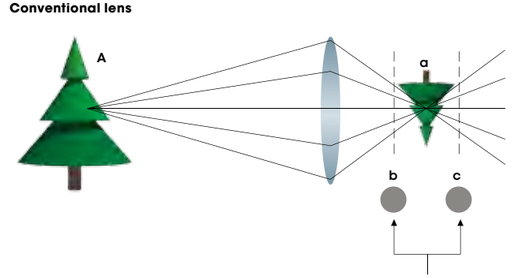
SAM (Smooth Autofocus Motor)

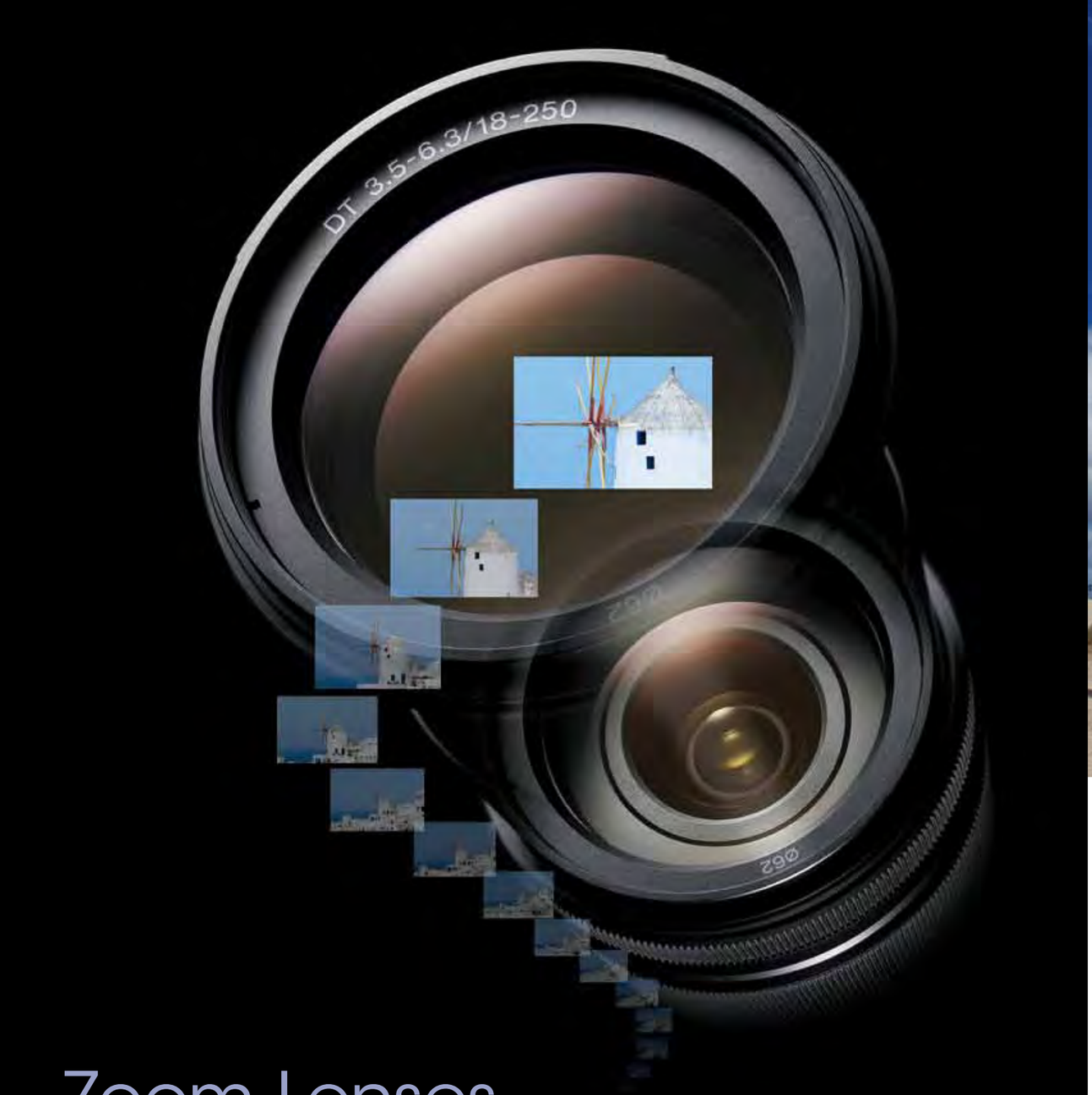
SAM is another type of internal lens motor for autofocus drive. While the SSM motor described above is piezoelectric, the SAM motor is electromagnetic in operation, but provides similar benefits: responsive autofocus operation that does not require mechanical coupling from the camera body.

STF lens

A unique α lens feature currently available only in the SAL135F28, 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.







Zoom Lenses

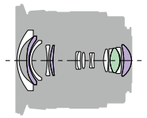
The advent of the digital age—both in terms of photography itself and the tools used for optical design—has made high-performance zoom lenses more accessible and easier to use than ever before. Not only are zoom lenses a great way to be ready for any photo opportunity, but the freedom to rapidly change 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.

M mode, 1/1250 sec., F8, ISO 200, Auto white balance; Photo: Goh Fujimaki

Wide-angle zoom

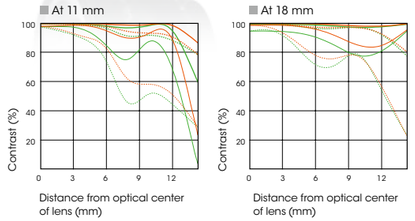
DT 11–18mm F4.5–5.6 SAL1118

APS-C format | ED | IF



- 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
- 35mm equivalent focal length: 16.5–27mm

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

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 SAL1118 features special elements and design that reduce flare and aberrations to a minimum for crisp, high-contrast images even under difficult conditions.

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

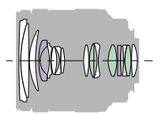
M mode , 1/250 sec., F5.6, ISO 400, Manual white balance

M mode, 1/100 sec., F8, ISO 200, Daylight white balance, Landscape Creative Style; Photo: Norifumi Inagaki

Mid-range zoom

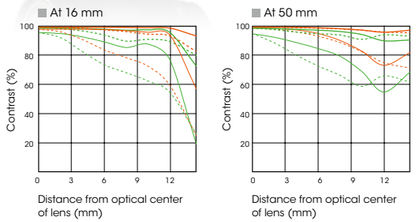
DT 16–50mm F2.8 SSM SAL1650

APS-C format | ED | IF | 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 weather resistant design
- 35mm equivalent focal length: 24–75mm



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

R: Radial values T: Tangential values

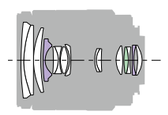
The SAL1650 packs first-class optical performance and a versatile zoom range into a lens that is remarkably compact and lightweight. At the wide end you have a 16mm focal length that is ideal for interiors, sweeping landscapes, or creating visual impact with powerful perspective. Zoom out to the 50mm 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, especially when the lens is used with a body that includes 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 SAL1650 additionally features a circular aperture that, combined with the F2.8 maximum aperture, contributes to beautiful defocusing effects.

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

Mid-range zoom

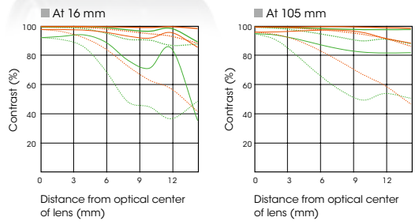
DT 16–105mm F3.5–5.6 SAL16105

APS-C format | Auto Clutch | ED | IF



Aspherical lens ED glass

- 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
- 35mm equivalent focal length: 24–157.5mm



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 16–105mm range of this lens is a "sweet spot" for many photographers, wide enough at the 16mm end to capture indoor scenes and long enough at 105mm 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.

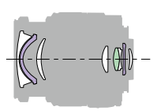
- Weight (approx): 470 g
- Dimensions (Dia. x L): 72 x 83 mm
- Max. magnification ratio: 0.23x

A mode, 1/80 sec., F5.6, ISO 100, Daylight white balance; Photo: Norifumi Inagaki

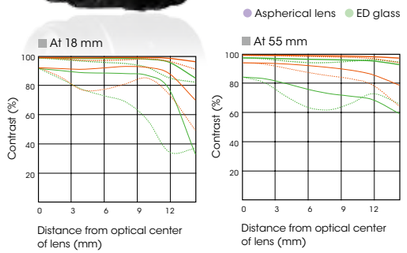
Mid-range zoom

DT 18–55mm F3.5–5.6 SAM SAL1855

APS-C format | ED | SAM



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



If you're the kind of photo enthusiast who likes to carry a camera at all times, whether actively shooting or not, you probably want one small, lightweight lens that won't be a burden while walking around but will deliver top quality and versatility when a photographic opportunity arises. The SAL1855 is the smallest and lightest zoom in this series, weighing in at only 210 grams while offering an 18–55mm focal length range that will cover most day-to-day subjects. It also features a minimum focusing distance of just 25 centimeters that, combined with 0.34x maximum magnification, will let you get close and explore details. If you want to be prepared for a wider range of subjects the SAL1855 is the perfect companion for the SAL55200-2, the pair providing excellent optical performance from 18mm to 200mm.

- Weight (approx): 210 g
- Dimensions (Dia. x L): 69.5 x 69 mm
- Max. magnification ratio: 0.34x

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

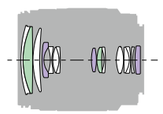
R: Radial values T: Tangential values

S mode, 1/250 sec., F6.3, +1.0 EV, ISO 3200, Auto white balance; Photo: Shinya Morimoto

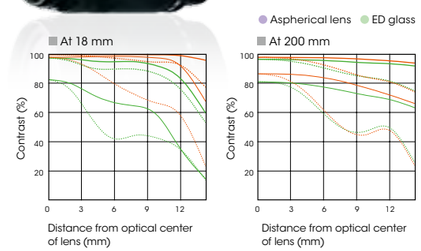
High magnification zoom

DT 18–200mm F3.5–6.3 SAL18200

APS-C format | ED | IF



- Two ED glass elements and three aspherical elements for superior image quality
- Broad zoom range in a compact, lightweight lens
- Circular aperture for attractive defocusing
- Internal focusing for fast autofocus and short min. focus distance
- 35mm equivalent focal length: 27–300mm



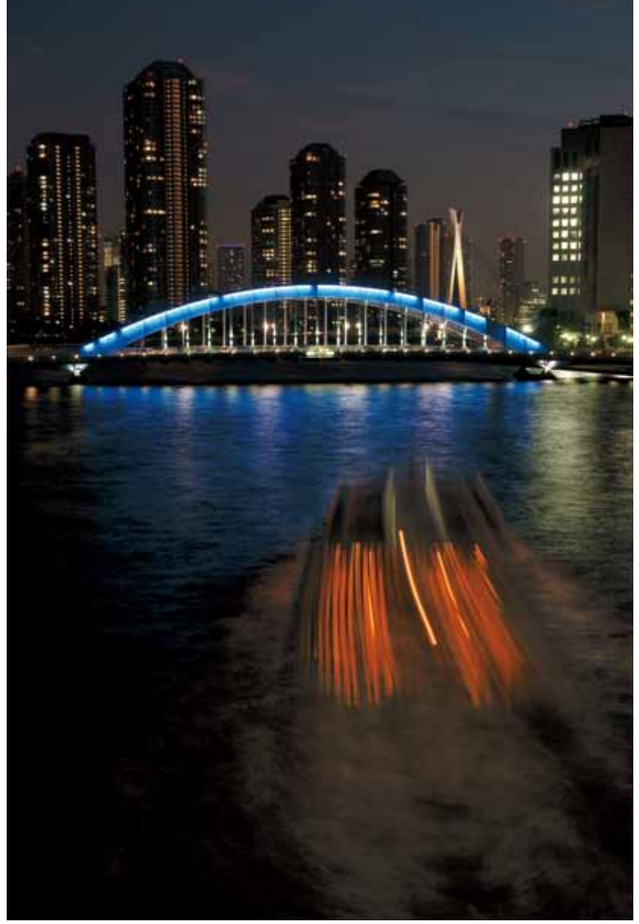
It will take you from a wide scene-spanning 18mm to far-reaching 200mm telephoto that will let you zoom in on distant subjects, yet the SAL18200 weighs only 405 grams and is no larger than many zooms of more limited range. For these reasons it is an excellent choice for photographers who want to cover as many situations as possible without having to change lenses. In addition to being an outstanding one-lens solution, it features a refined optical design that ensures excellent sharpness and contrast throughout the image at all focal lengths, so you can shoot with confidence in any situation that arises.

- Weight (approx): 405 g
- Dimensions (Dia. x L): 73 x 85.5 mm
- Max. magnification ratio: 0.27x

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

R: Radial values T: Tangential values

P mode, 1/125 sec., F5.6, +0.3 EV, ISO 100, Auto white balance, Portrait Creative Style; Photo: Norifumi Inagaki

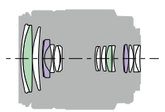


A mode, 4 sec., F9.0, -1.0 EV, ISO 200, Daylight white balance; Photo: Kazu Kobayashi

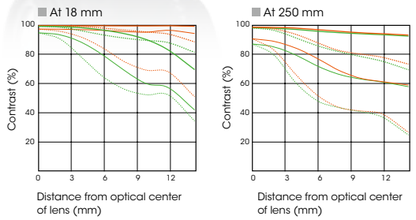
High magnification zoom

DT 18–250mm F3.5–6.3 SAL18250

APS-C format | ED | IF



- 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
- 35mm equivalent focal length: 27–375mm



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

R: Radial values T: Tangential values

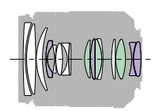
Although similar to the SAL18200 in zoom range and performance, the SAL18250 offers a bit more "reach" at the long end that can make a significant difference if you're shooting sports or wildlife, for example. The tradeoff is a small increase in weight and size, but if you need the extra range the difference is worth it. You get the same outstanding clarity and contrast from the wide 18mm end to full 250mm telephoto, making this lens one of the most useful and versatile for APS-C format cameras and an extremely wide spectrum of subjects.

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

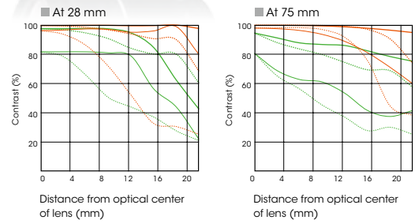
Mid-range zoom

28–75mm F2.8 SAM SAL2875

35mm full frame | ED | IF | SAM



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

2010 AWARDS TIPA BEST EXPERT LENS

* The SAL2875 received the 2010 TIPA Best Expert Lens award.

If you use a 35mm 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 SAL75300 along as well: the SAL2875 plus SAL75300 combination gives you a full-frame focal length range from 28mm to 300mm.

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

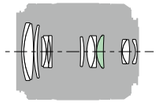
S mode, 1/3200 sec., F9, ISO800, Auto white balance

A mode, 1/1250 sec., F5.6, +0.3 EV, ISO 200, Auto white balance, Vivid Creative Style; Photo: Takeshi Hirayama

Telephoto zoom

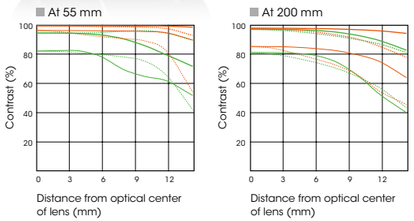
DT 55–200mm F4–5.6 SAM SAL55200-2

APS-C format | ED | SAM



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
- 35mm equivalent focal length: 82.5–300mm



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

R: Radial values T: Tangential values

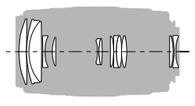
Covering the medium to telephoto stretch of the "standard" zoom range with ample F5.6 brightness at the 200mm end, this lens is a lightweight, easy handling choice for shooting sports and other subjects that require some telephoto reach. On an APS-C format camera the 35mm equivalent focal length at the telephoto end is 300mm, which is long enough to capture tight shots of the action. In terms of compact, lightweight design and optical performance, the SAL55200-2 is an ideal companion for the 18–55mm SAL1855. The pair is light enough to be carried comfortably, providing outstanding image quality from 18mm to 200mm.

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

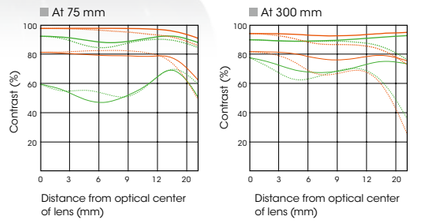
Telephoto zoom

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



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

R: Radial values T: Tangential values

Going out to shoot sports, wildlife, or other distant subjects with a 35mm full frame format camera? Be sure to take this lens along. Its 75–300mm zoom range will let you go from medium perspectives that provide a comprehensive view of the action to tight close-up of individual image elements in an instant. If you want to be ready for just about every conceivable shooting situation, take the 28–75mm SAL2875 along as well, and you'll have every focal length from 28mm to 300mm covered in a portable two-lens kit that will deliver admirable image quality on high-performance full-frame bodies.

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

Fixed Focal Length Lenses

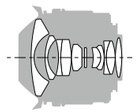
Fixed focal length lenses, commonly known as "prime lens" or simply as "primes," can complement your photographic vision in a number of ways. Although most of the focal lengths offered are also available with zoom lenses, some special-purpose lenses are only available as primes: fisheye lenses and most 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.

A mode, 1/200 sec., F7.1, -0.3 EV, ISO 200, Auto white balance; Photo: Yuji Nukui

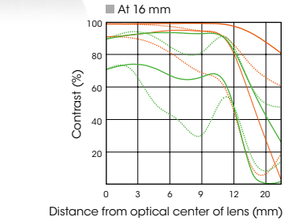
Fisheye

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 SAL16F28 provides an extremely wide 180° angle of view on 35mm 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 centimeters 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

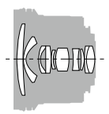
M mode, 1/125 sec., F11, ISO 200, Landscape Creative Style; Photo: Yuji Nukui

M mode, 1/125 sec., F11, ISO 200, Landscape Creative Style; Photo: Yuji Nukui

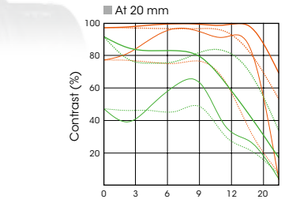
Ultra wide angle

20mm F2.8 SAL20F28

35mm full frame | RF



- 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

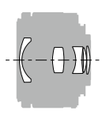
This rigorously corrected lens gives you a wide angle of view for images that benefit from dramatic perspective with minimum distortion. It's an ideal choice for covering spread-out scenes that you can't get far enough way from to cover with a "normal" lens. But there's more: since it has extended depth of field that can keep everything from 25 centimeters 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

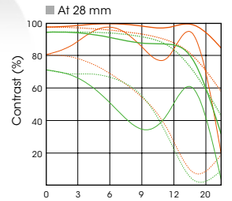
Wide angle

28mm F2.8 SAL28F28

35mm full frame



- Excellent contrast and resolution
- Compact, lightweight design
- Built-in slide-out lens hood
- An outstanding choice for 35mm full-frame and APS-C format cameras



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

R: Radial values T: Tangential values

28 millimeters is an extremely versatile focal length that can be useful in a wide variety of situations on both full frame and APS-C format cameras. On a 35mm full frame format camera, 28mm is wide enough to allow comfortable shooting indoors or on the street without producing forced perspective. On an APS-C format camera 28mm is equivalent to a focal length of 42mm, which is close to "normal" in terms of angle-of-view and perspective. For photo enthusiasts who use either or both types of bodies, this lens is a must-have! It's compact and lightweight, and is a versatile, convenient choice for use either as a main or second lens.

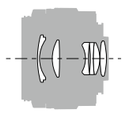
- Weight (approx): 185 g
- Dimensions (Dia. x L): 65.5 x 42.5 mm
- Max. magnification ratio: 0.13x

M mode, 1/320 sec., F5.6, ISO 200, Cloudy white balance (-1); Photo: Kentaro Fukuda

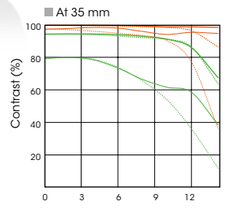
Normal

DT 35mm F1.8 SAM SAL35F18

APS-C format | SAM



- 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
- 35mm equivalent focal length: 52.5mm



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

R: Radial values T: Tangential values

There's a very good reason why 35mm is one of the most popular focal lengths for use on APS-C format cameras. The full-frame equivalent focal length is 52.5mm, 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 SAL35F18 weighs a mere 170 grams, making it unobtrusive on the camera, in a bag, or even in a pocket!

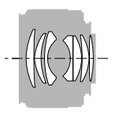
- Weight (approx): 170 g
- Dimensions (Dia. x L): 70 x 52 mm
- Max. magnification ratio: 0.25x

A mode, 1/320 sec., F2, +0.3 EV, ISO 200, Manual white balance

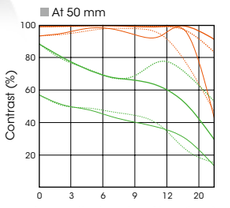
Normal

50mm F1.4 SAL50F14

35mm full frame



- 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

50mm 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 SAL50F14 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.

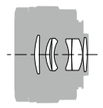
- Weight (approx): 220 g
- Dimensions (Dia. x L): 65.5 x 43 mm
- Max. magnification ratio: 0.15x

M mode, 1/800 sec., F8, ISO 400, Auto white balance

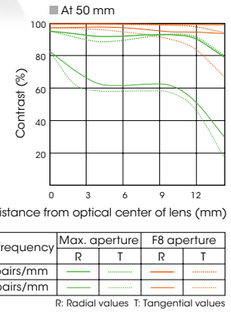
Mid-range telephoto

DT 50mm F1.8 SAM SAL50F18

APS-C format SAM



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



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

R: Radial values T: Tangential values

On APS-C format cameras, for which it is specifically designed, the SAL50F18 functions as a moderate telephoto lens (equivalent to 75mm 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.

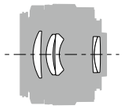
- Weight (approx): 170 g
- Dimensions (Dia. x L): 70 x 45 mm
- Max. magnification ratio: 0.2x

M mode, 1/640 sec., F2.8, -0.3EV, ISO 200, Manual white balance

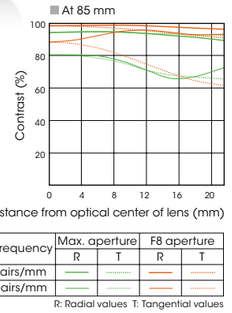
Mid-range telephoto

85mm F2.8 SAM SAL85F28

35mm full frame SAM



- 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



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

R: Radial values T: Tangential values

Photographers often choose a large-aperture 85mm lens for portraits for two compelling reasons. First, the 85mm 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 SAL85F28 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.

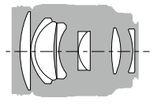
- Weight (approx): 175 g
- Dimensions (Dia. x L): 70 x 50 mm
- Max. magnification ratio: 0.2x

A mode, 1/400 sec., F4.5, ISO 200, 5300K color temperature; Photo: Chukyo Ozawa

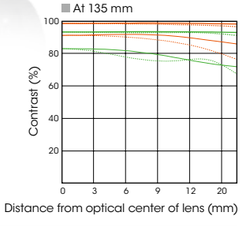
Telephoto

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	———	·····	———	·····
30 line pairs/mm	———	·····	———	·····

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 SAL135F28 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.

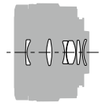
- For details of STF technology. See pg.17.

P mode, 1/200 sec., F4.5, ISO 100, Auto white balance; Photo: Kentaro Fukuda

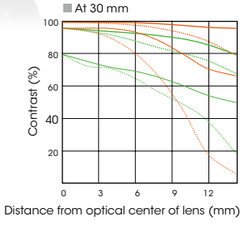
Macro

DT 30mm F2.8 Macro SAM SAL30M28

APS-C format | 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
- 35mm equivalent focal length: 45mm



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 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 35mm equivalent focal length of this lens is a distinctly "normal" 45mm, 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 centimeters 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 SAL30M28 is only 45 millimeters long and weighs a discreet 150 grams, so it can stay on your camera or in your bag at all times without getting in the way.

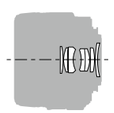
- Weight (approx): 150 g
- Dimensions (Dia. x L): 70 x 45 mm
- Max. magnification ratio: 1.0x

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

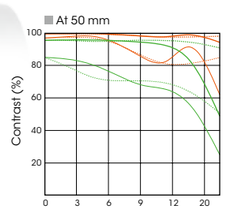
Macro

50mm F2.8 Macro SAL50M28

35mm full frame | Auto Clutch | FHB | FRL



- 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



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

R: Radial values T: Tangential values

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 SAL50M28, with a minimum focusing distance of just 20 centimeters 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 SAL50M28 offers outstanding optical performance for general photography as well, and its 50mm focal length is a very versatile choice for 35mm 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.

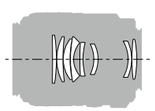
- Weight (approx): 295 g
- Dimensions (Dia. x L): 71.5 x 60 mm
- Max. magnification ratio: 1.0x

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

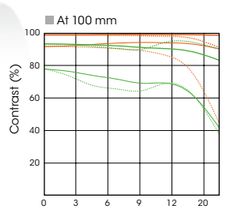
Macro

100mm F2.8 Macro SAL100M28

35mm full frame | Auto Clutch | FHB | FRL



- 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

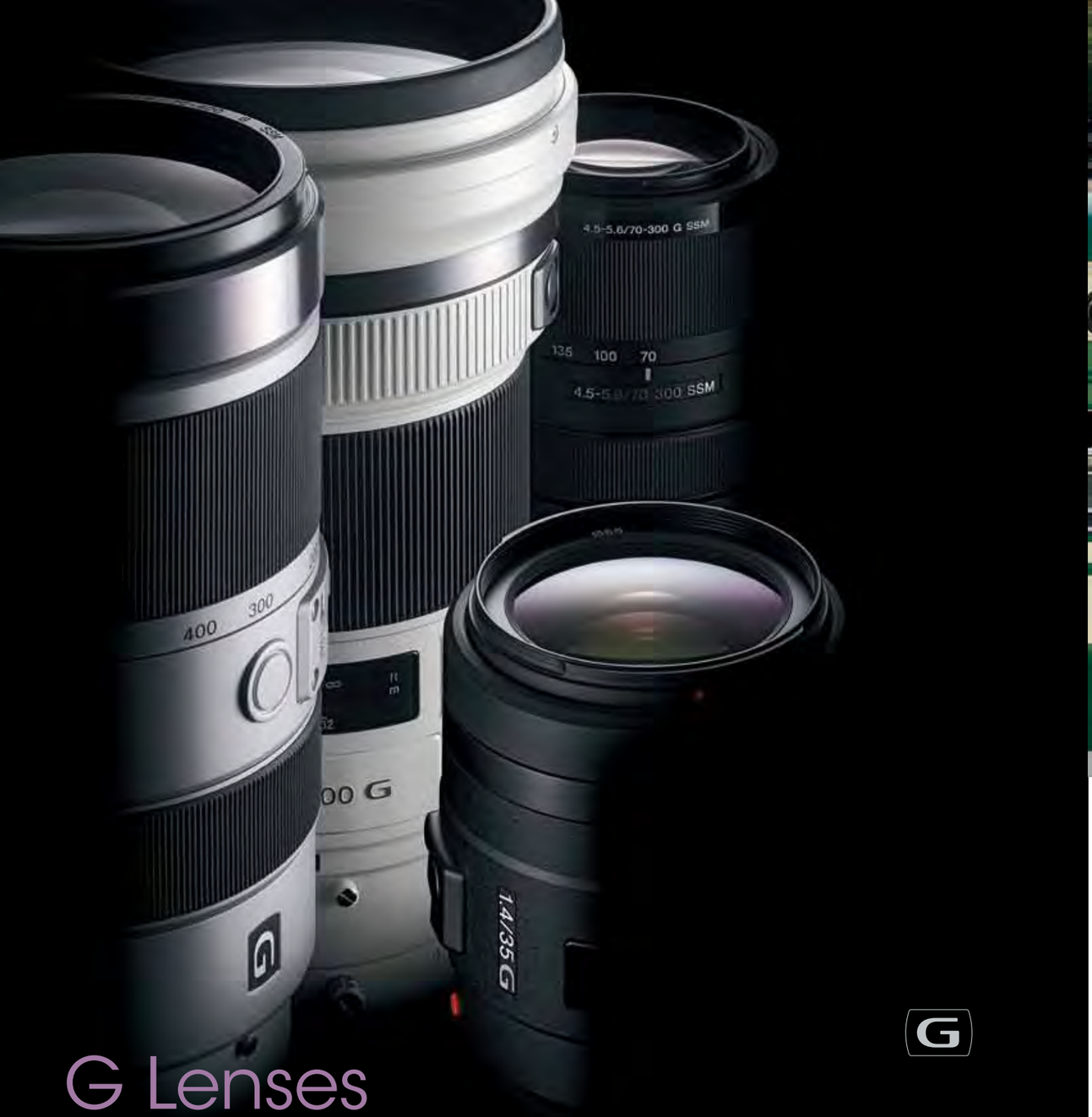


Spatial frequency	Max. aperture		F8 aperture	
	R	T	R	T
10 line pairs/mm				
30 line pairs/mm				

R: Radial values T: Tangential values

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 SAL100M28. 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 SAL100M28 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.

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



G Lenses

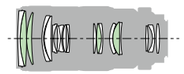
Sony G Lenses are an exceptional breed. They inherit a distinguished pedigree from the original Minolta® lens line, with industry-leading Sony design and quality assurance technology added to push their performance to the forefront of twenty-first century photography. G Lenses impart a visual elegance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

A mode, 1/60 sec., F11, ISO 100, Daylight white balance

Telephoto zoom

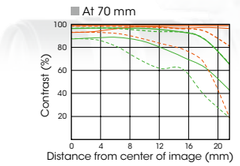
70–200mm F2.8 G SAL70200G

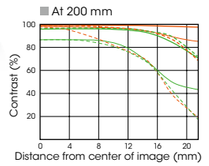
35mm full frame | Teleconverter compatible | ED | IF | FHB (3 buttons) | FRL (Electronic) | SSM



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				
30 line pairs/mm				

R: Radial values T: Tangential values

The range from 70 to 200 millimeters 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 SAL70200G 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 SAL70200G 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

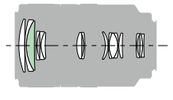
A mode, 1/400 sec., F13, ISO 400, Auto white balance; Photo: Mark Tiller

Continuous Priority AE, 1/1250 sec., F5.6, -0.7 EV, ISO 100, Daylight white balance (+1); Photo: Goh Fujimaki

Telephoto zoom

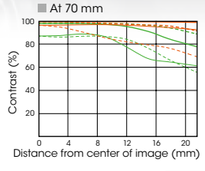
70–300mm F4.5–5.6 G SSM SAL70300G

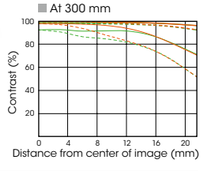
35mm full frame | ED | RF | FHB | FRL (Electronic) | SSM



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	——	·····	——	·····
30 line pairs/mm	——	·····	——	·····

R: Radial values T: Tangential values

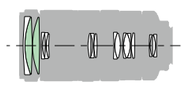
The SAL70300G is the smallest and lightest zoom in the current G Lens series, offering an appealing combination of extended zoom range and handling, plus image quality that will satisfy the most demanding photo enthusiast or pro. An ED lens element collaborates with an advanced optical path design to achieve exceptionally low aberration right out to the maximum 300mm focal length, so that your telephoto images benefit from impressive clarity and depth. 300mm is generally considered to be the 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 wide 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
- Tripod mount supplied

Super telephoto zoom

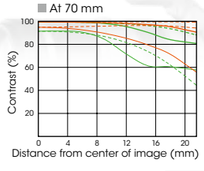
70–400mm F4–5.6 G SSM SAL70400G

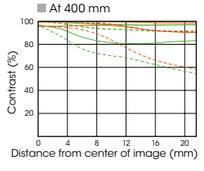
35mm full frame | Teleconverter compatible (Manual focus only) | ED | IF | FHB | FRL (3 buttons, Electronic) | SSM



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	——	·····	——	·····
30 line pairs/mm	——	·····	——	·····

R: Radial values T: Tangential values

Covering an extremely wide telephoto range with ample brightness, this award-winning* lens can, for example, take you from an elegant 70mm portrait to a stunning 400mm wildlife shot in an instant without having to change lenses and potentially miss a great shot. This is an extraordinarily wide zoom range for a lens in this class, but range isn't its only feature. Being a high-end G Lens with a precision optical path that includes two ED glass elements, you can be sure that it will deliver excellent sharpness and contrast right out to the edges of the image at all focal lengths. And although long telephoto shots usually require a very steady hand or even a tripod to achieve optimum quality, SteadyShot INSIDE image stabilization featured in α series bodies will vastly improve your chances of capturing stunning handheld telephoto images.

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

* The SAL70400G received the 2009 TIPA Best Expert Lens award and the 2009-2010 EISA Zoom Lens award.

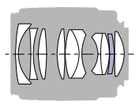
A mode, 1/250 sec., F1.4, ISO 200, Vivid Creative Style; Photo: Yuji Nukui

S mode, 1/80 sec., F14, ISO 100, Flash; Photo: Nick Webster

Wide-angle prime

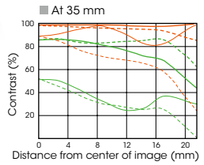
35mm F1.4 G SAL35F14G

35mm full frame | Auto Clutch | RF | FHB



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	———	·····	———	·····
30 line pairs/mm	———	·····	———	·····

R: Radial values T: Tangential values

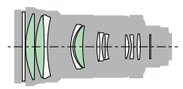
35mm prime lenses are a staple for many photographers. The angle of view provided by this focal length is one of the most comfortable and versatile on both 35mm full frame format and APS-C format cameras, and with that, this lens can be used for anything from close-ups to landscapes. The SAL35F14G, with 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

Telephoto prime

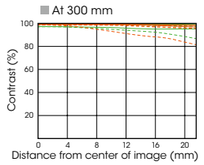
300mm F2.8 G SAL300F28G

35mm full frame | Teleconverter compatible | ED | IF | FHB (4 buttons) | FRL (Electronic) | SSM



ED glass

- Three ED glass elements effectively suppress aberration
- Exceptional sharpness and contrast throughout the image area
- 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	———	·····	———	·····
30 line pairs/mm	———	·····	———	·····

R: Radial values T: Tangential values

If you're serious about shooting sports, nature, or wildlife, or just about any subject that moves and needs to be shot from a distance, this is a lens that you'll want to have in your kit. 300mm is the sweet spot for a wide range of telephoto applications, and its large F2.8 maximum aperture makes it possible to use motion-stopping shutter speeds when shooting fast action, as well as to control depth-of-field for creative defocusing. Chromatic aberration can be a problem in telephoto lenses, but the SAL300F28G uses three ED elements in a top-class optical design that reduces aberration to a minimum, ensuring high resolution, high contrast image quality at all aperture settings. A minimum focusing distance of just 2 meters is another advantage that is rare in a lens of this type, letting you take advantage of telephoto characteristics at close range.

- Weight (approx): 2310 g
- Dimensions (Dia. x L): 122 x 242.5 mm
- Max. magnification ratio: 0.18x
- Tripod mount supplied

SAL70300G with SAL20TC, A mode, 1/500 sec., F6.3, -0.3 EV, ISO 200, Daylight white balance; Photo: Kazu Kobayashi

Teleconverters

1.4x Teleconverter
SAL14TC

- Optics designed to deliver uncompromised image quality
- Increase focal length without degrading resolution or contrast
- Compatible with: SAL70200G (AF and MF modes), SAL300F28G (AF and MF modes), SAL70400G (MF mode only) and SAL135F28 (MF mode only).

The SAL14TC and SAL20TC teleconverters are a great way to extend your telephoto range without having to carry more large lenses. The SAL14TC provides a 1.4x increase in focal length with a 1-stop light loss, so when used with the SAL300F28G, for example, you have the equivalent of a 420mm lens with a maximum aperture of F4. The SAL20TC doubles focal length with a 2-stop light loss, so the same SAL300F28G lens becomes a 600mm super-telephoto with a maximum aperture of F5.6. For sports, wildlife and landscapes, the SAL14TC and SAL20TC teleconverters can give you maximum reach with minimum gear to carry.

2.0x Teleconverter
SAL20TC

1.0x

1.4x

2.0x

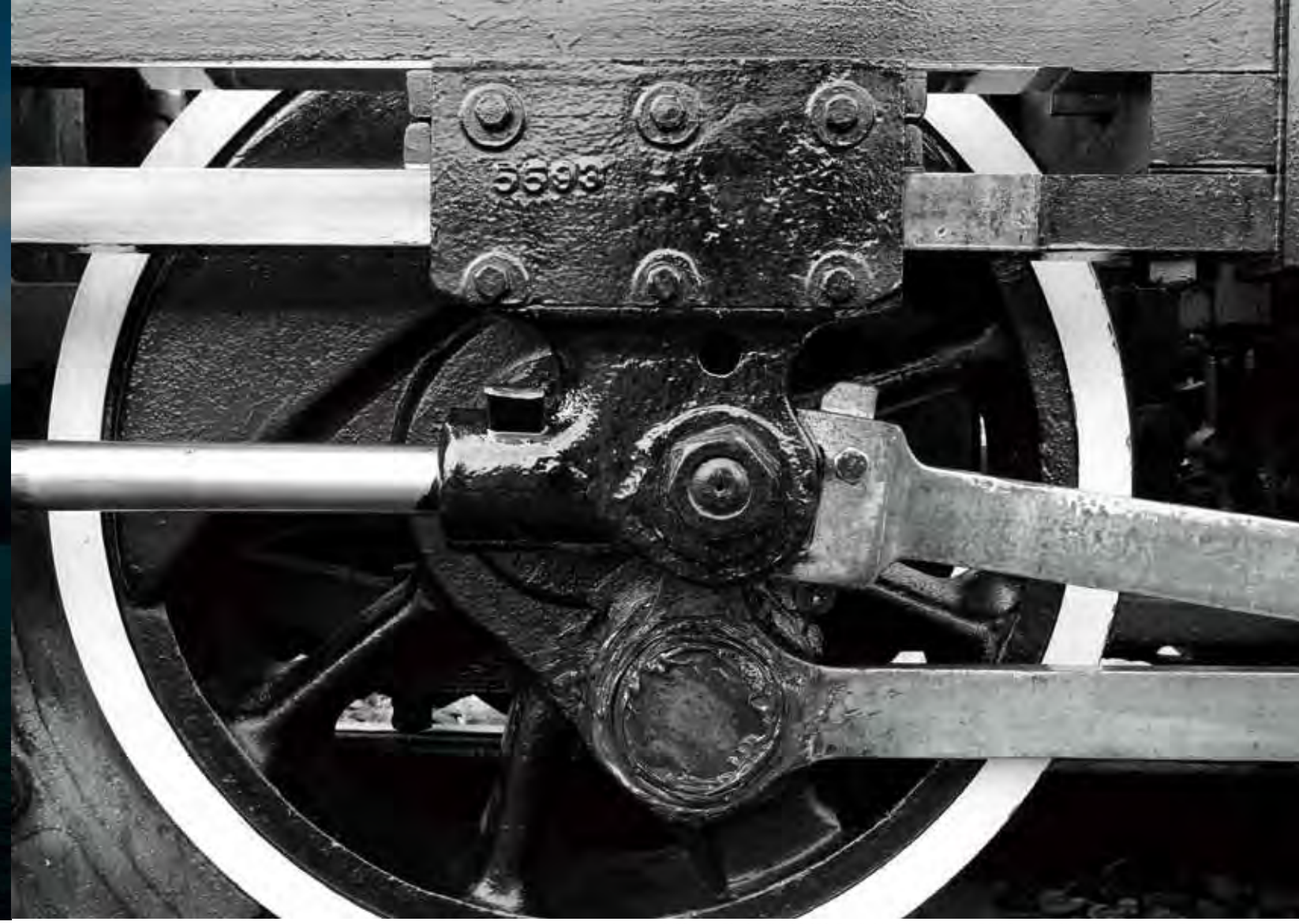
- Images manipulated to simulate teleconverter magnification.

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.

A mode, 1/800 sec., F8, +0.7EV, ISO 200, Manual white balance

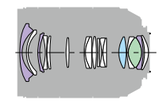


A mode, 1/50 sec., F8, -0.3 EV, ISO 200, Daylight white balance, B/W Creative Style; Photo: Kentaro Fukuda

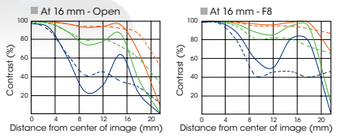
Wide-angle zoom

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

35mm full frame | Super ED | ED | IF | FHB | SSM



- 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

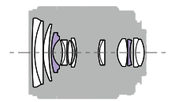
Although it is a wide-angle zoom, and an ideal supplement to a high-performance mid-range zoom, the 16–35mm range of this lens will satisfy the core focal length requirements of many photographers who shoot primarily indoors or in the city. At the other end of the spectrum it can be a great choice for spacious landscapes as well. Regardless of where or how the SAL1635Z 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

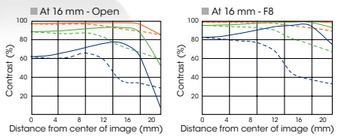
Mid-range zoom

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

APS-C format | Auto Clutch | ED | IF



- 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
- 35mm equivalent focal length: 24–120mm



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 SAL1680Z 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 35mm equivalent focal length range of 24–120mm 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 35mm full-frame format lenses in this series, circular aperture design makes it possible to get creative with beautifully smooth defocusing effects. The SAL1680Z 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

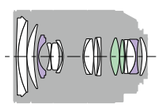
A mode, 1/30 sec., F11, +0.7 EV, ISO 100, Auto white balance; Photo: Mike Jones

M mode, 1/500 sec., F8, -1.7 EV, ISO 200, Sunset Creative Style, D-Range Optimizer Lv2; Photo: Kentaro Fukuda

Mid-range zoom

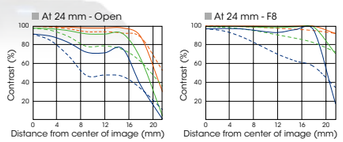
Vario-Sonnar T* 24–70mm F2.8 ZA SSM SAL2470Z

35mm full frame | ED | IF | FHB | SSM



- 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

● Aspherical lens ● ED glass



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

R: Radial values T: Tangential values

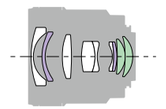
If you insist on prime-lens image quality but envy the convenience of variable focal length, here's a lens that brings the best of both worlds together. For many discriminating photographers it is a lens that will stay on the camera most of the time. Its versatile 24mm to 70mm zoom range covers a wide 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 24mm, a portrait at 70mm, 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

Wide-angle prime

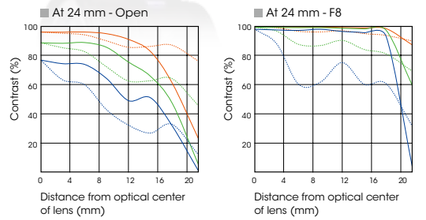
Distagon T* 24mm F2 ZA SSM SAL24F20Z

35mm full frame | ED | RF | FHB | SSM



- 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

● Aspherical lens ● ED glass



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 24mm focal length of this model provides a wide perspective on 35mm full-frame format cameras, and a closer-to-normal equivalent focal length of 36mm 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 centimeters that lets you explore your subjects at close range.

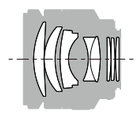
- Weight (approx): 555 g
- Dimensions (Dia. x L): 78 x 76 mm
- Max. magnification ratio: 0.29x

A mode, 1/320 sec., F2, ISO 200, 5300K color temperature; Photo: Chukyo Ozawa

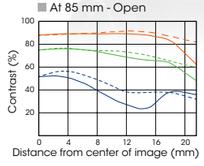
Mid-range telephoto prime

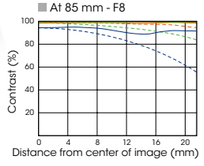
Planar T* 85mm F1.4 ZA SAL85F14Z

35mm full frame | Auto Clutch | FHB



- 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		
20 line pairs/mm		
40 line pairs/mm		

R: Radial values T: Tangential values

85mm 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.

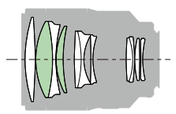
- Weight (approx): 640 g
- Dimensions (Dia. x L): 81 x 75 mm
- Max. magnification ratio: 0.13x

M mode, 1/160 sec., F4.0, -0.3 EV, ISO 200, Custom white balance; Photo: Chukyo Ozawa

Telephoto prime

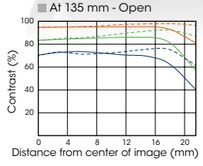
Sonnar T* 135mm F1.8 ZA SAL135F18Z

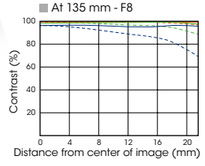
35mm full frame | Auto Clutch | ED | IF | FHB



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





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

R: Radial values T: Tangential values

F1.8 is a relatively large maximum aperture for a 135mm 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 SAL135F18Z will reward you with stunning resolution and contrast where it counts. In addition to portraits and landscapes with natural proportions and perspective, the 135mm focal length of this lens is often a good choice for indoor sports. 135mm 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.

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

E-mount Lenses

These compact, high-performance lenses are the cornerstone of a new category of still and video cameras that attest to the paradigm-shifting power of Sony innovation. They have been designed from the ground up to be used with the newest generation of ultra-compact APS-C format Sony camera and camcorder bodies, delivering big-camera image quality and features in astonishingly small but capable packages.

In addition to advanced optics and sophisticated handling, the E-mount zooms incorporate proven Optical SteadyShot™ image-stabilization technology from Sony camcorders that can significantly reduce blur due to camera movement in both stills and movies. Sony E-mount lenses are windows to a new world of imaging freedom and quality.

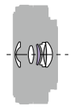
Auto mode, .6 sec., F2.8, +0.25 EV, ISO 800, Auto white balance; Photo: David McClain

SEL16F28 with VCL-ECF1, E 16mm F2.8 with Ultra Wide Converter, 1/3200 sec, F/6.3, ISO 200, Auto white balance

Wide-angle prime

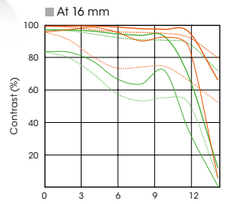
E 16mm F2.8 SEL16F28

APS-C format



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
- 35mm equivalent focal length: 24mm



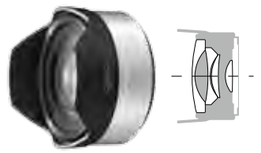
Spatial frequency	Max. aperture		F8 aperture	
	R	T	R	T
10 line pairs/mm				
30 line pairs/mm				

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 24mm lens on a full-frame 35mm camera) for comfortable shooting in situations ranging from cramped indoor settings to sweeping landscapes, and the large F2.8 maximum aperture is ideal for handheld shooting in low light. The SEL16F28 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

Fisheye Converter VCL-ECF1



Ultra Wide Converter VCL-ECU1

Without converter

With Fisheye Converter

With Ultra Wide Converter

Fisheye and Ultra Wide Converters

Although the 16mm SEL16F28 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 15mm lens on a 35mm 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 18mm lens on a 35mm 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.

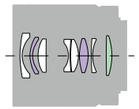
S mode, 1/125 sec., F4, ISO 1600, Auto white balance

M mode, 1/320 sec., F4.5, ISO 200, Auto white balance, Vivid Creative Style; Photo: Yayoi Sawada

Wide-angle prime

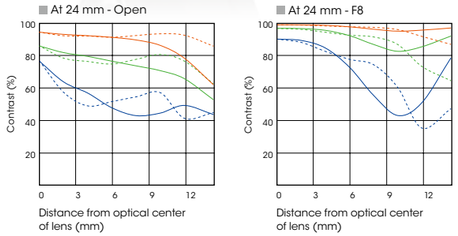
Sonnar T* E 24mm F1.8 ZA SEL24F18Z

ED (IF



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



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

R: Radial values T: Tangential values

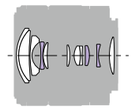
Carl Zeiss quality really shows off the capabilities of the E-mount system, with outstanding resolution and contrast that can add legendary Zeiss depth and dimensionality to your images. This wide-angle prime lens delivers superior corner-to-corner sharpness even at the maximum F1.8 maximum aperture, with minimum distortion and coma. It also focuses as close as 16 centimeters, providing an unusual combination of close focus and wide-angle perspective for 1:4 macro photography. The 24mm focal length, equivalent to 36mm on a 35mm 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 handheld 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

Mid-range zoom

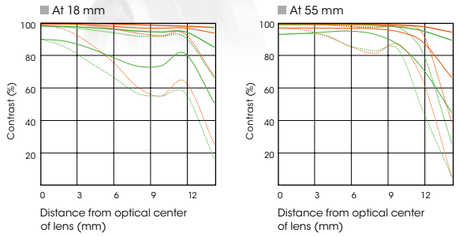
E 18–55mm F3.5–5.6 OSS SEL1855

APS-C format (OSS



Aspherical lens ED glass

- 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
- 35mm equivalent focal length: 27–82.5mm



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 grams yet is remarkably comfortable to hold and operate. The 18–55mm zoom range, corresponding to 27–82.5mm on a 35mm 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 handheld 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

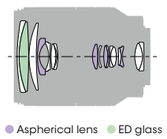
A mode, 1/3200 sec., F5.6, -0.7 EV, ISO 200, Auto white balance; Photo: Chukyo Ozawa

A mode, 1/20 sec., F5, -0.3EV, ISO 800, Auto white balance

High magnification zoom

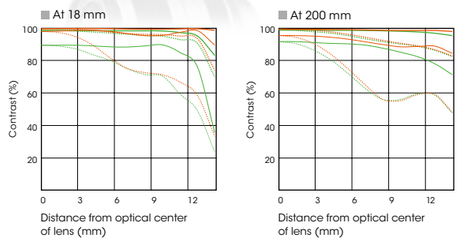
E 18–200mm F3.5–6.3 OSS SEL18200

APS-C format | Active Mode OSS



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
- 35mm equivalent focal length: 27–300mm



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

R: Radial values T: Tangential values

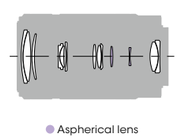
If you're a photographer/videographer who needs maximum speed, versatility and mobility to rapidly respond to a wide range of shooting situations, from portraits and snapshots to sports, this is a lens you should consider. It features an extensive 11x zoom range, from wide 18mm to 200mm telephoto with 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

Telephoto zoom

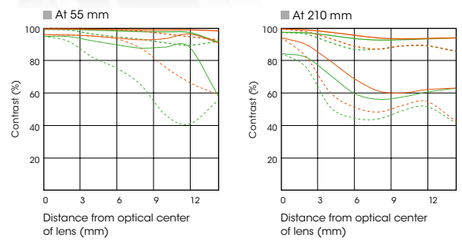
E 55–210mm F 4.5–6.3 OSS SEL55210

ED | IF | OSS



Aspherical lens

- 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
- 35mm equivalent focal length: 82.5mm–315mm



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 complement to the 18-55mm zoom range of the SEL1855, this 3.8x zoom lens takes you from 55mm out to 210mm with consistently outstanding optical performance all the way. In 35mm full-frame equivalent terms that's a wide zoom range of 82.5mm to 315mm, 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 keep your movie soundtrack free from mechanical noise.

- Weight (approx): 330 g
- Dimensions (Dia. X L): 63.8 x 108 mm
- Max. magnification ratio: 0.225x

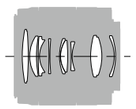
A mode, 1/800 sec., F2.0, ISO 100. Auto white balance

Auto mode, 1/1000 sec., F3.5, ISO 200. Auto white balance

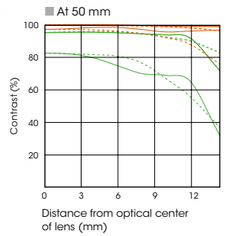
Mid-range telephoto

E 50mm F1.8 OSS SEL50F18

IF OSS



- 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
- 35mm equivalent focal length: 75mm



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

R: Radial values T: Tangential values

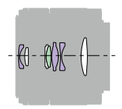
A focal length that is perfect for portraiture and a range of other subjects, a bright F1.8 maximum aperture, Optical SteadyShot (OSS) image stabilization and impressive image quality. Put it all together in a lens that is surprisingly compact and lightweight and you have a winning combination: the SEL50F18. 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. The F1.8 maximum 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

Macro

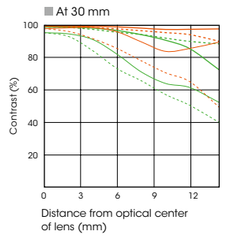
E 30mm F3.5 Macro SEL30M35

ED (IF



Aspherical lens ED glass

- Compact, lightweight 1:1 macro lens with high-quality metal exterior
- One ED glass element and two 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
- 35mm equivalent focal length: 45mm



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

R: Radial values T: Tangential values

Macro photography can be a creative, educational and thoroughly enjoyable pursuit. The SEL30M35 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 SEL30M35 is, in fact, the lightest interchangeable 1:1 macro lens available anywhere! It is a true 1:1 macro lens with a 2.4 centimeter 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-say shooting, and a smooth, quiet internal lens drive system makes it suitable for shooting movies as well. The SEL30M35 is a great choice for a second lens that will let you explore the world in creative new ways. A dedicated 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: 1x

Main specifications of α lenses

Mount	Category	Page	Description	Model name	Lens configuration (group/element)	35mm equivalent focal length (APS-C)[1] (mm)	Angle of view (APS-C)[1]	Angle of view (35mm full-frame)	No. of aperture blades		Min. aperture (F-Stop)	Max. magnification ratio (x)	Min. focus (m)	Distance encoder	Filter dia. (mm)	Hood shape/mount	Dimensions: Dia. x L (mm)	Dimensions: Dia. x L (in.)	Weight: (approx.) (g)	Weight: (approx.) (oz.)	Provided accessories
A-mount	Zoom Lens	19	DT 11–18mm F4.5–5.6[2]	SAL1118	12/15	16.5–27	104°–76°	—	7 (circular aperture)		22–29	0.125	0.25	●	77	petal/bayonet	83 x 80.5	3-3/8 x 3-1/4	360	12-3/4	hood (ALC-SH0009)
		20	DT 16–50mm F2.8 SSM	SAL1650	13/16	24-75	83°-32°	—	7 (circular aperture)		22	0.2	0.3	●	72	petal	81 x 88	3-1/4 x 3-1/2	577	20	hood (ALC-SH117)
		21	DT 16–105mm F3.5–5.6[2]	SAL16105	11/15	24–157.5	83°–15°	—	7 (circular aperture)		22–36	0.23	0.4	●	62	petal/bayonet	72 x 83	2-7/8 x 3-3/8	470	16-9/16	hood (ALC-SH105)
		22	DT 18–55mm F3.5–5.6 SAM	SAL1855	7/8	27–82.5	76°–29°	—	7 (circular aperture)		22–36	0.34	0.25	●	55	round/bayonet	69.5 x 69	2-3/4 x 2-3/4	210	7-1/2	(optional) hood (ALC-SH108)
		23	DT 18–200 F3.5–6.3[2]	SAL18200	13/15	27–300	76°–8°	—	7 (circular aperture)		22–40	0.27	0.45	●	62	petal/bayonet	73 x 85.5	2-7/8 x 3-3/8	405	14-5/16	hood (ALC-SH0008)
		24	DT 18–250 F3.5–6.3[2]	SAL18250	13/16	27–375	76°–6° 30'	—	7 (circular aperture)		22–40	0.29	0.45	●	62	petal/bayonet	75 x 86	3 x 3-3/8	440	15-1/2	hood (ALC-SH104)
		25	28–75mm F2.8 SAM	SAL2875	14/16	42–112.5	54°–21°	75°–32°	7 (circular aperture)		32	0.22	0.38	●	67	petal/bayonet	77.5 x 94	3-1/8 x 3-3/4	565	20	hood (ALC-SH109)
		26	DT 55–200mm F4–5.6 SAM[2]	SAL55200-2	9/13	82.5–300	29°–8°	—	9 (circular aperture)		32–45	0.29	0.95	●	55	petal/bayonet	71.5 x 85	2-7/8 x 3-3/8	305	10-3/4	hood (ALC-SH102
		27	75–300mm F4.5–5.6	SAL75300	10/13	112.5–450	21°–5°20'	32°–8°10'	7 (circular aperture)		32–28	0.25	1.5	●	55	round/bayonet	71 x 122	2-13/16 x 4-13/16	460	16-1/4	hood (ALC-SH0007)
	Fixed Focal Length Lens	29	16mm F2.8 Fisheye	SAL16F28	8/11 (incl. 1x filter)	24	110°	180°	7		22	0.15	0.2	—	4x kind (integrated)	petal/fixed	75 x 66.5	2-15/16 x 2-5/8	400	14-1/8	—
		30	20mm F2.8	SAL20F28	9/10	30	70°	94°	7 (circular aperture)		22	0.13	0.25	—	72	petal/bayonet	78 x 53.5	3-1/16 x 2-1/8	285	10-1/16	hood (ALC-SH0013)
		31	28mm F.28	SAL28F28	5/5	42	54°	75°	7		22	0.13	0.3	—	49	round/ integrated	65.5 x 42.5	2-9/16 x 1-11/16	185	6-1/2	—
		32	DT 35mm F1.8 SAM[2]	SAL35F18	5/6	52.5	44°	—	7 (circular aperture)		22	0.25	0.23	●	55	round/bayonet	70 x 52	2-7/8 x 2-1/8	170	6	hood (ALC-SH111)
		33	50mm F1.4	SAL50F14	6/7	75	32°	47°	7 (circular aperture)		22	0.15	0.45	●	55	round/bayonet	65.5 x 43	2-9/16 x 1-11/16	220	7-3/4	hood (ALC-SH0011)
		34	DT 50mm F1.8 SAM[2]	SAL50F18	5/6	75	32°	—	7 (circular aperture)		22	0.2	0.34	●	49	petal/bayonet	70 x 45	2-7/8 x 1-13/16	170	6	—
		35	85mm F2.8 SAM[2]	SAL85F28	4/5	127.5	19°	29°	7 (circular aperture)		22	0.2	0.6	●	55	round/bayonet	70 x 52	2-7/8 x 2-1/8	175	6-1/8	hood (ALC-SH111)
		36	135mm F.28 [T4.5] STF (MF operation only)	SAL135F28	6/8 (incl. APD element 1/2)	202.5	12°	18°	9 (auto) 10 (manual)		31 (T32)	0.25	0.87	—	72	round/bayonet	80 x 99	3-1/8 x 3-7/8	730	25-3/4	hood (ALC-SH0014), case
		37	DT 30mm F2.8 Macro SAM[2]	SAL30M28	5/6	45	50°	—	7 (circular aperture)		22	1.0	0.129	●	49	—	70 x 45	2-7/8 x 1-13/16	150	5-1/4	—
		38	50mm F2.8 Macro	SAL50M28	6/7	75	32°	47°	7 (circular aperture)		32	1.0	0.2	●	55	—	71.5 x 60	2-13/16 x 2-3/8	295	10-3/8	—
		39	100mm F2.8 Macro	SAL100M28	8/8	150	16°	24°	9 (circular aperture)		32	1.0	0.35	●	55	round/bayonet	75 x 98.5	3 x 4	505	18	hood (ALC-SH0007)
	G Lens	41	70–200mm F2.8 G	SAL70200G	16/19	105–300	23°–8°	34°–12°30'	9 (circular aperture)		32	0.21	1.2	●	77	petal/bayonet	87 x 196.5	3-1/2 x 7-3/4	1,340[4]	47-1/4	hood (ALC-SH0010), case
		42	70–300mm F4.5–5.6 G SSM	SAL70300G	11/16	105–450	23°–5°20'	34°–8°10'	9 (circular aperture)		22–29	0.25	1.2	●	62	petal/bayonet	82.5 x 135.5	3-3/8 x 5-3/8	760	26-3/4	hood (ALC-SH103), case
		43	70–400mm F4–5.6 G SSM	SAL70400G	12/18	105–600	23°–4°10'	34°6°10'	9 (circular aperture)		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-SH107), case
		44	35mm F1.4 G	SAL35F14G	8/10	52.5	44°	63°	9 (circular aperture)		22	0.2	0.3	●	55	petal/bayonet	69 x 76	2-3/4 x 3	510	18	hood (ALC-SH0001), case
		45	300mm F2.8 G (Built to order)	SAL300F28G	12/13 (incl. 1x filter)	450	5°20'	8°10'	9 (circular aperture)		32	0.18	2.0	●	42 (exclusive)	round/clip-on	122 x 242.5	5-1/16 x 9-3/8	2,310[4]	81-1/2	hood, slot-in circular polarizing filter, lens strap, hard case
	Teleconverter	46	1.4x Teleconverter[3]	SAL14TC	4/5	—	—	—	—		—	—	—	●	—	—	64 x 20	2-1/2 x 13/16	170	6	case
		46	2x Teleconverter[3]	SAL20TC	5/6	—	—	—	—		—	—	—	●	—	—	64 x 43.5	2-1/2 x 1-11/16	200	7-1/16	case
	Carl Zeiss Lens	48	Vario-Sonnar T* 16–35mm F2.8 ZA SSM	SAL1635Z	13/17	24–52.5	83°–44°	107°–63°	9 (circular aperture)		22	0.24	0.28	●	77	petal/bayonet	83 x 114	3-3/8 x 4-1/2	860	30-3/8	hood (ALC-SH106), case
		49	Vario-Sonnar T* DT 16–80mm F3.5–4.5 ZA[2]	SAL1680Z	10/14	24–120	83°–20°	—	7 (circular aperture)		22–29	0.24	0.35	●	62	petal/bayonet	72 x 83	2-7/8 x 3-3/8	445	15-3/4	hood (ALC-SH0005), case
		50	Vario-Sonnar T* 24–70mm F2.8 ZA SSM	SAL2470Z	13/17	36–105	61°–23°	84°–34°	9 (circular aperture)		22	0.25	0.34	●	77	petal/bayonet	83 x 111	3-3/8 x 4-3/8	955	33-1/4	hood (ALC-SH101), case
		51	Distagon T* 24mm F2 ZA SSM	SAL24F20Z	7/9	36	61°	84°	9 (circular aperture)		22	0.29	0.19	●	72	petal/bayonet	78 x 76	3-1/8 x 3	555	19-5/8	hood (ALC-SH110), case
		52	Planar T* 85mm F1.4 ZA	SAL85F14Z	7/8	127.5	19°	29°	9 (circular aperture)		22	0.13	0.85	●	72	round/bayonet	87 x 75	3-1/4 x 2-7/8	640	22-5/8	hood (ALC-SH0002), case
		53	Sonnar T* 135mm F1.8 ZA	SAL135F18Z	8/11	202.5	12°	18°	9 (circular aperture)		22	0.25	0.72	●	77	round/bayonet	88 x 114.5	3-1/2 x 4-5/8	995	35-1/8	hood (ALC-SH0003), case
E-mount	E-Mount Lens	56	E 16mm F2.8	SEL16F28	5/5	24	83°	—	7 (circular aperture)		22	0.078	0.24	●	49	—	62 x 22.5	2-1/2 x 29/32	67	2-3/8	—
		57	Fisheye Converter[5]	VCL-ECF1	4/4	15	—	—	—		—	0.62	0.13	—	—	—	66 x 44	2-5/8 x 1-3/4	150	5-1/4	case
		57	Ultra Wide Converter[5]	VCL-ECU1	3/3	18	—	—	—		—	0.75	0.18	—	—	—	66 x 44	2-5/8 x 1-3/4	125	4-3/8	case
		58	Sonnar T* E 24mm F1.8 ZA	SEL24F18Z	7/8	36	61°	—	7 (circular aperture)		22	0.25	0.016	—	49	—	63 x 65.5	2-3/8 x 2-1/2	225	8	front & rear caps
		59	E 18–55mm F3.5–5.6 OSS	SEL1855	9/11	27–82.5	76°–29°	—	7 (circular aperture)		22–32	0.3	0.25	●	49	petal/bayonet	62 x 60	2-1/2 x 2-3/8	194	6-7/8	hood (ALC-SH112)
		60	E 18–200mm F3.5–6.3 OSS	SEL18200	12/17	27–300	76°–8°	—	7 (circular aperture)		22–40	0.35	0.3 (wide)– 0.5 (tele)	●	67	petal/bayonet	75.5 x 99	3 x 4	524	18-1/2	hood (ALC-SH109)
		61	E 55–210mm F 4.5–6.3 OSS	SEL55210	9/13	82.5–315	29°–7°30'	—	7 (circular aperture)		22–32	0.225	1	—	49	round/bayonet	63.8 x 108	2-1/2 x 4-1.4	330	12	front & rear caps, lens hood
		62	E 50mm F1.8 OSS	SEL50F18	8/9	75	32°	—	7 (circular aperture)		22	0.16	0.39	—	49	—	62 x 62	2-1/2 x 2-1/2	202	7	front & rear caps
		63	E 30mm F3.5 Macro	SEL30M35	6/7	45	50°	—	7 (circular aperture)		22	1.0	0.095	—	49	cap type	62 x 55.5	2-1/2 x 2-1/4	138	5	front & rear caps, lens hood (ALC-SH113)

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. Use with 35mm full-frame digital cameras (α900/α850) not guaranteed. 3: Lens compatibility: operation in AF and MF modes with SAL70200G/SAL300F28G, MF only with SAL135F28/SAL70400G. 4: Without tripod mount.
5: Exclusive to SEL16F28.

- When mounted on a series cameras with APS-C type sensors, the actual angle of view will be equal to the one obtained at the focal length approx. 1.5 times longer than stated.
- In principle, amount of light coming into a lens will decrease at image periphery. If it becomes too dark, adjust the aperture setting by 1 or 2 stops down.

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

α lens accessories

Carl Zeiss® filter

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

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

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

ND Filter

Neutral density filers attenuate light to allow a longer exposure or larger aperture than required, without affecting colors (type: ND8).

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

MC Protector

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

VF-49MPAM (49mm)
VF-55MPAM (55mm)
VF-62MPAM (62mm)
VF-67MPAM (67mm)
VF-72MPAM (72mm)
VF-77MPAM (77mm)

(Diameter size)

Lens Cap

Front Lens Cap

With α logo.
Filter dia. 49/55/62/67/72/77mm

ALC-F49A **ALC-F62A** **ALC-F72A**
ALC-F55A **ALC-F67A** **ALC-F77A**

G Front Lens Cap

Filter dia. 55/62/77mm

ALC-F55G **ALC-F77G**
ALC-F62G

Carl Zeiss Front Lens Cap

Filter dia. 62/72/77mm

ALC-F62Z **ALC-F77Z**
ALC-F72Z

Rear Lens Cap ALC-R55

A-mount

Rear Lens Cap ALC-R1EM

E-mount

Lens Hood

Petal shape

(Photo: ALC-SH0001)

Round shape

(Photo: ALC-SH0003)

• For model numbers, see pg. 65

Lens Case

LCL-60AM

Fits all lenses
up to (L) 80mm*,
(Dia.) 80mm

LCL-90AM

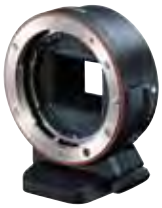
Fits all lenses
up to (L) 110mm*,
(Dia.)90 mm

LCL-140AM

Fits all lenses
up to (L) 160mm*,
(Dia.) 110mm

* With hood and cap attached

Mount Adaptor



Mount Adaptor LA-EA1

E-mount

Both the LA-EA1 and EA2 adaptors allow you to attach A-mount lenses to your E-mount camera. The LA-EA2 is the world's first adaptor to leverage Sony's exclusive Translucent Mirror Technology to provide super fast and accurate Phase Detection AF as well. The LA-EA2 adaptor has a translucent mirror built-in between the two mounts that directs a small portion of the light to the phase detection AF sensor in the bottom of the unit.

* NEX-3, NEX-5, NEX-C3 and NEX-VG10 require firmware update to use LA-EA2 adaptor. www.esupport.sony.com

Mount Adaptor LA-EA2

NEW

E-mount

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