



**FUJIFILM X-Pro2 / X-T1 / X-E2S / X-E2 / X-T10 / X70
AF HANDBOOK**
Auto Focus Handbook

For more information, please visit our website:

<http://fujifilm-x.com/af/>

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Auto Focus System

Refined autofocus performance
to capture moving subjects

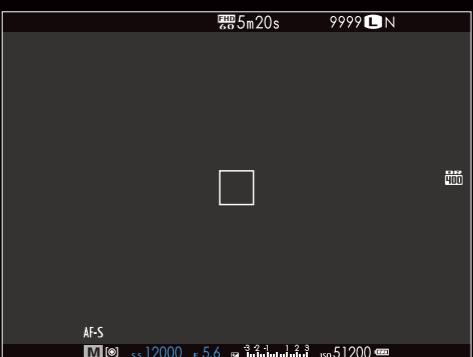


Enhanced AF system is even better
for capturing moving subjects

The new AF system which began from the X-T1* and X-T10 adds Zone and Wide/Tracking options to the existing Single Point mode. This improves focus performance when shooting moving subjects and helps you to capture perfect photos when the subject is moving across the 77-point AF area. Zone mode allows users to select one of three different size zones in the 77-point AF area. When combined with the AF-C continuous focusing mode, the camera tracks a subject in the center of the selected zone. In the Wide/Tracking mode, the camera displays the area in focus, identified automatically out of the 77-point AF area, and tracks the subject across the entire 77-point AF area. This makes it possible to maintain focus on a subject that moves up/down, left/right or closer/further from the camera. The new AF system makes it easier than ever to capture moving subjects, dramatically increasing your shooting options.

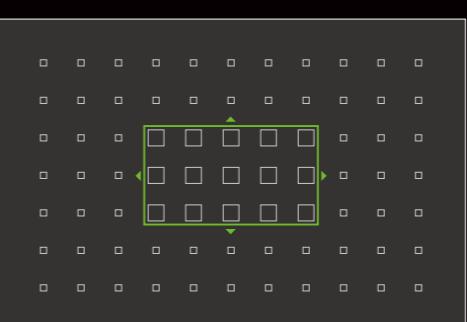
UI enables easy framing

The user interface has been carefully designed to make it comfortable to shoot while looking through the viewfinder. Most frequently-used shooting data, such as the remaining number of shots, shooting mode, shutter speed, aperture, exposure compensation and ISO sensitivity, is displayed outside live view. You can select the icons and information settings to display to ensure a clear live view image that allows you to concentrate on following the subject, selecting the AF frame and framing your shot.



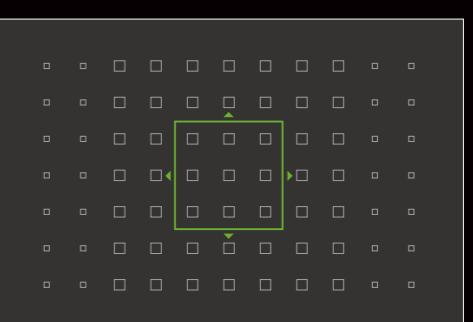
Easy-to-use Focus Area selection screen

The Focus Area selection screen displays all points in the Single Point mode or 77 points in the Zone and Wide/Tracking modes. In the 77-point view, Intelligent Hybrid AF using the high-speed phase detection AF system is activated for the zones at the center larger rectangles, where the phase detection pixels are embedded. The position of the focus area, the size of the AF frame and the starting point of focus tracking in AF-C can be adjusted in applicable AF modes.



X-T1* / X-E2S / X-E2* / X-T10 / X70

Single Point	49-point
Zone	77-point 3x3, 5x3, 5x5



X-Pro2

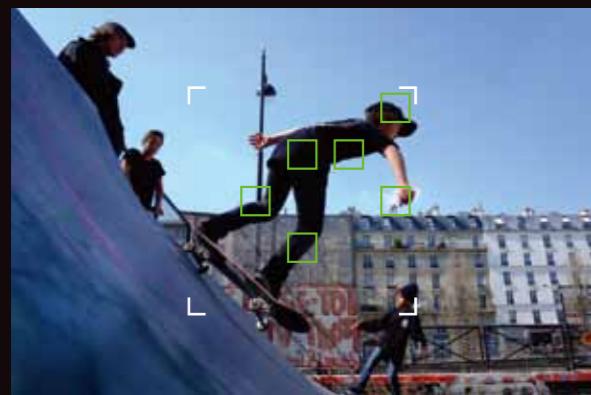
Single Point	77-point / 273-point
Zone	77-point 3x3, 5x5, 7x7

*After updating the Body Firmware Version 4.00 or later.

AF Technology

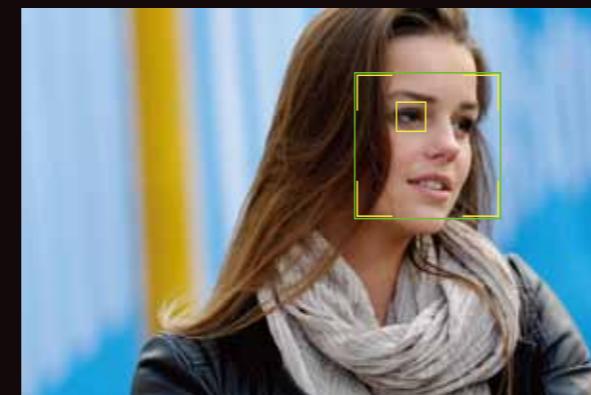
AF technology of FUJIFILM

The AF system incorporates a number of FUJIFILM's original technologies. These include Zone and Wide/Tracking modes with enhanced tracking performance on moving subjects, as well as innovative technologies such as Eye Detection AF for accurate portrait and Auto Macro that eliminates the need to manually switch to the Macro mode. The algorithm has also been optimized to improve AF in a number of areas including improved precision in Single Point AF and enhanced performance during movie shooting.



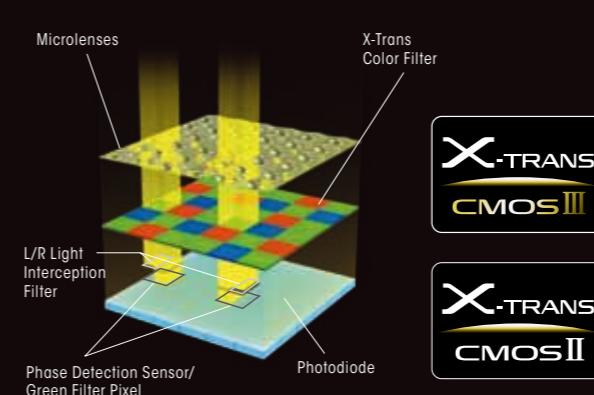
Six different AF modes

Choose from the fast and precise Single Point mode or the Zone and Wide/Tracking modes, which helps capture moving subjects travelling across the 77-point AF area. Each of them can be combined with AF-S and AF-C to offer a total of six AF modes.



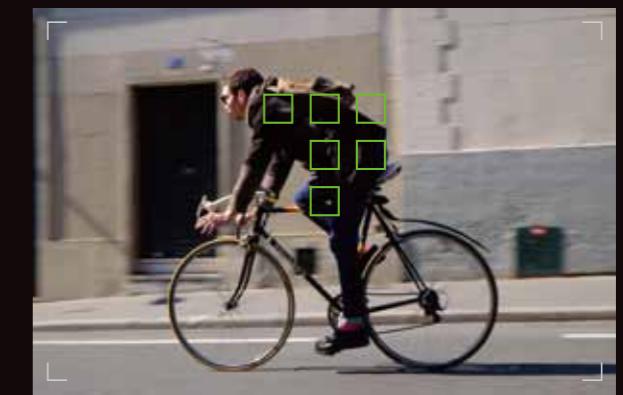
Face Detection + Eye Detection AF

Face Detection detects human faces, while Eye Detection AF automatically detects the location of human eyes allowing you to easily focus even when shooting with a wide aperture for shallow depth-of-field. You can specify either right or left eye to focus on.



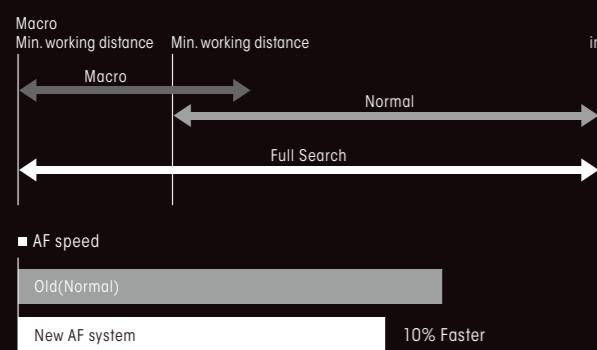
Highly precise Intelligent Hybrid AF

Intelligent Hybrid AF combines on-sensor phase detection AF with contrast AF. On-sensor phase detection AF uses phase detection pixels on the image sensor for fast and precise focus even in low light conditions or on low contrast subjects. Contrast AF is effective in even darker conditions, delivering precise focus on all types of scenes.



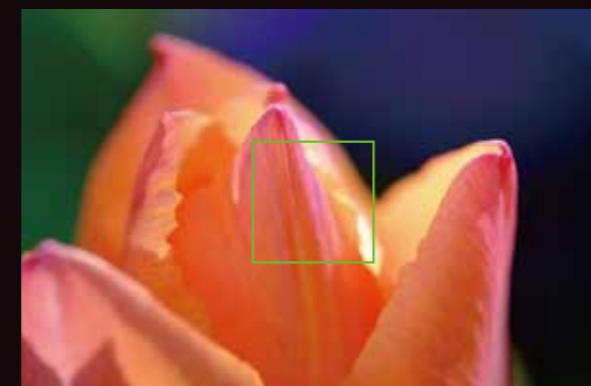
Fast and accurate Predictive Tracking AF (in AF-C mode)

The advanced Predictive Tracking AF technology, which uses data from the subject to predict its next move, enables highly precise AF-C shooting. Once captured in the AF frame, the camera continues to track the subject even if it makes unpredictable movements up/down, right/left or closer/further, which the conventional AF system had difficulty tracking.



High-speed AF from macro to infinity

The new AF system features an Auto Macro function that eliminates the need to press the Macro button before shooting close-ups. The Auto Macro function delivers optimized AF speed across the range to increase the focusing speed from macro to infinity by approx. 10%.



Accurate Single Point AF

The Single Point AF area is divided into smaller sections to accurately determine the distance to the subject for even greater focusing precision. When the selected section contains both subject and background, the AF system focuses on the subject nearer the camera, to prevent accidentally focusing on the background.



Fast and smooth AF during movie shooting

Intelligent Hybrid AF is even used during movie shooting, switching between the phase detection AF and contrast AF at the center of the screen. The algorithm has been optimized for fast, precise and smooth focusing. When the Face Detection function is activated, the system automatically maintains focus on people during movie shooting.



Fast linear motor-driven AF

Lenses (typically zooms) with an inner focusing mechanism are driven by a linear motor. It drives lens elements in the non-contact state to deliver silent and highly responsive AF. Lenses featuring a linear motor swiftly respond to the new AF system's high-speed focusing, further helping to track a moving subject.

Focus Mode

AF-S

Single Point Zone Wide/Tracking

Accurately capturing the subject

AF-S mode locks focus when the shutter button is pressed halfway. When focus is locked, the camera beeps and makes the Focus indicator icon and AF frame flash green. When shooting continuously, the camera locks focus on the first shot and maintains the focus position on subsequent shots. This basic AF mode is used for photographing subjects that don't move.



X-T10 / XF50-140mmF2.8 R LM OIS WR | F2.8 1/160s ISO800 ©Ben Cherry (UK)



X-T10 / XF50-140mmF2.8 R LM OIS WR | F8 1/2000s ISO800 ©Jára Sijka (Czech)

AF-S + Single Point

For capturing subjects using a specific AF point

A basic AF mode. Set focus using one of the focusing points^{*1} - ideal for focusing precisely on a subject in a fixed location. The focus area can be one of five different sizes and the location of the focus area can also be changed.



Perfect scenes:

AF-S + Zone

For capturing moving subjects across a large AF area

This mode is suitable for slower moving subjects and snapshots that are difficult to focus with the Single Point mode. You can select one of three different size zones in the 77-point focus area. The central larger rectangle area^{*3} offers extra-fast focusing with the use of the on-sensor phase detection AF system.



AF-S + Wide/Tracking

Automatically capturing a subject with unpredictable movements

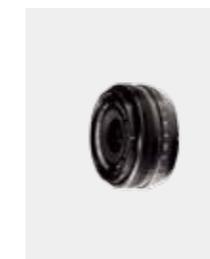
An upgrade on the previous Auto Area AF mode, the camera automatically assesses the entire 77-point focus area, selects multiple zones and focuses on the subject. Ideal when shooting a scene with numerous elements, the camera focuses on the subject even within the most complicated scene.



This mode is ideal for subjects with predictable movements or a subject that is about to move. It is also ideal for snapshots that include people walking or running.

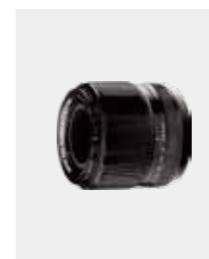
This mode is perfect for beginners shooting scenes that contain a number of moving subjects, including those that unpredictably come into the frame or subjects that randomly move across the entire frame.

Recommended lens:



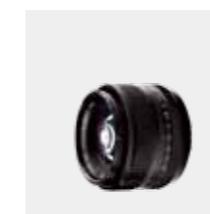
XF18mmF2 R

Semi-wide angle focal length equivalent to 27mm^{*2}. Ideal for snapshots, this lens is also perfect for capturing street scenes and natural landscapes.



XF60mmF2.4 R Macro

A mid-telephoto macro lens equivalent to 90mm^{*2}, with a maximum magnification of 0.5x. This lens delivers beautiful bokeh and is suited to close-ups of flowers and other small objects.



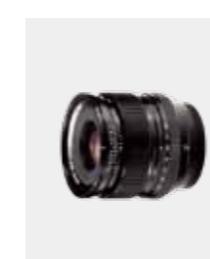
XF35mmF1.4 R

This lens has a standard angle of view. All of the lens groups are shifted for focusing, creating beautiful bokeh regardless of distance to the subject. Getting high quality images of slower-moving subjects is now possible.



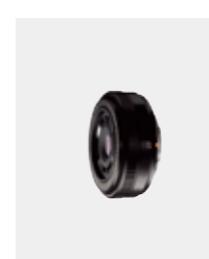
XF35mmF2 R WR

An another lens which has a standard angle of view features the smallest diameter of the line-up and achieves fast autofocus. The exterior of the lens is weather and dust-resistant.



XF14mmF2.8 R

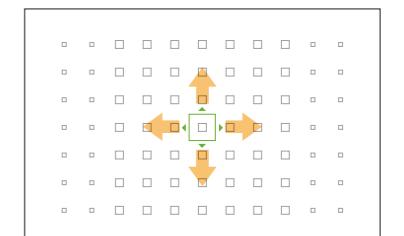
Ultra-wide angle lens equivalent to 21mm^{*2}, offering a dramatically wide angle of view. This lens is perfect for capturing subjects that are moving unpredictably across the frame.



XF27mmF2.8

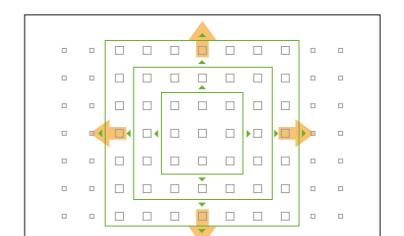
The thinnest and lightest XF lens equivalent to 41mm^{*2}. The compact design enables fast autofocus, accurately capturing subjects that are moving unpredictably.

TIPS for Auto Focus Setting



AF-S + Single Point (focus area selected)

Choose any one of focus areas^{*1}, and change to the best one for the subject's position. The focus area can be changed to one of five different sizes, according to the size of the subject.



AF-S + Zone (focus area selected)

Select one of three different size zones in the 77-point focus area, and determine the position of the zone within the 11x7 grid. Phase detection AF operates in the centrally-positioned larger rectangle area^{*3} to enable high-speed AF.

Focus Mode AF-C + Zone

For tracking a subject hand-held

The AF-C mode continuously focuses while the shutter button is half-pressed. Using the combination of AF-C and Zone modes, you can select one of three different size zones anywhere within the 77-point focus area. Once the subject is identified at the center of the zone, the camera continuously tracks the subject while it stays within the focus area. It is ideal for following a moving subject while hand-holding the camera.



In the AF-C + Zone mode the camera continuously focuses on subjects moving mainly at the center of this area. Phase detection AF works in the central larger rectangle area*¹.



X-T10 / XF50-140mmF2.8 R LM OIS WR | F2.8 1/1000s ISO3200 ©Jára Sijka (Czech)



X-T10 / XF50-140mmF2.8 R LM OIS WR | F10 1/294s ISO100 ©Jacek Bonecki (Poland)



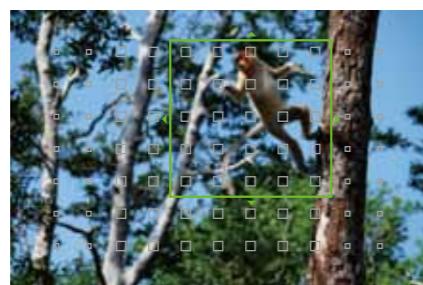
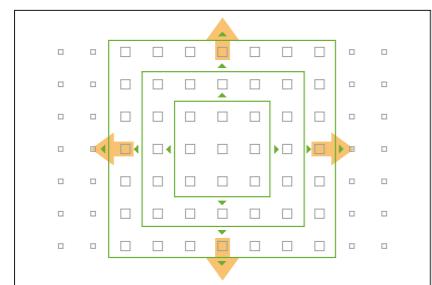
X-T10 / XF50-140mmF2.8 R LM OIS WR | F5.6 1/2500s ISO1600 ©Chris Weston (UK)

Perfect scenes:

For subjects with reasonably predictable movements that can be followed hand-held.

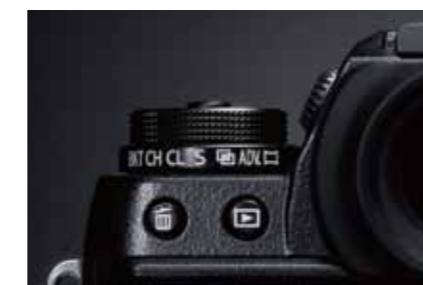
This mode is ideal for photographing subjects moving in a predictable way so you can keep them within the focus area while shooting hand held. People/animals or transport moving in a specific direction, for example. It works well with telephoto lenses. You can also use Continuous shooting while following the subject, and choose the best shot afterwards.

TIPS for Auto Focus Setting



Defining the position and size of the focus area

You can select one of three different size zones in the 77-point focus area, and determine the position of the zone within the 11x7 grid. Phase detection AF works in the central larger rectangle area*¹ for high speed AF.



Select the focus area nearest to where your subject will move

The camera continuously focuses on the subject as long as it stays within the focus area. Try and position the subject at the center of the zone and choose the focus zone that's nearest to where the subject will move.

Combining Continuous Shooting

Continuous shooting with predictive AF-C*² is available in High Speed Continuous shooting (CH) at approx. 8.0 fps*³ and Low Speed Continuous shooting (CL) at approx. 3.0fps. Using the Continuous shooting will help you get the perfect shot.

Recommended lens:



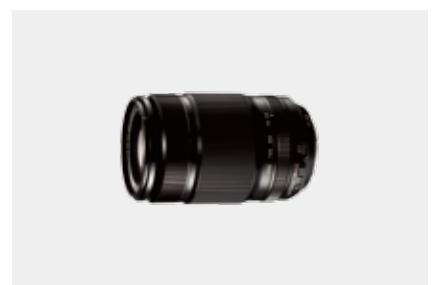
XF50-140mmF2.8 R LM OIS WR XF1.4X TC WR

Fast telephoto zoom equivalent to a 76-213mm*⁴ (107mm-299mm*⁴ with 1.4x teleconverter mounted), with an F2.8 maximum aperture across the zoom range. It offers superb definition and incorporates the latest technology to capture fast-moving subjects.



XF100-400mmF4.5-5.6 R LM OIS WR XF1.4X TC WR

Super telephoto zoom equivalent to a 152-609mm*⁴ (213mm-853mm*⁴ with 1.4x teleconverter mounted). Features include high speed and quiet AF, 5.0 stop*⁵ image stabilization and dust / weather-resistant design for outstanding results.



XF55-200mmF3.5-4.8 R LM OIS

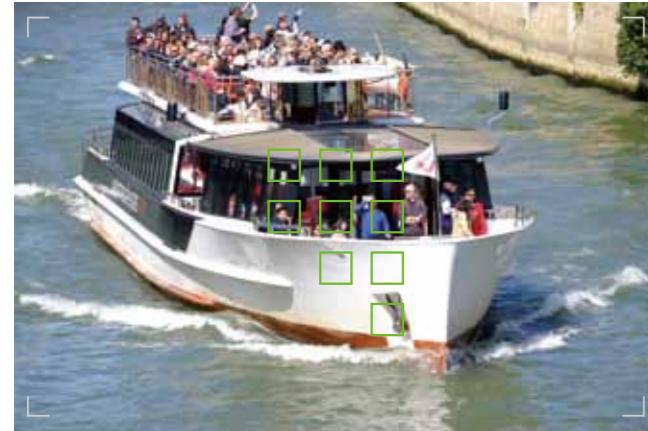
Featuring a highly-response linear motor and covering the equivalent to a 82.5-300mm*⁴, this is ideal for a wide range of subjects including landscape and sports.

Focus Mode

AF-C + Wide/Tracking

Tracking a subject that moves across the frame up/down, right/left and closer/further

This mode is suitable for a subject that moves unpredictably across the frame. After locating the subject the camera automatically follows its movement across the entire 77-point focus area. Wide angle and standard lenses are ideally suited to give a broad view of the subject.



During tracking, the camera automatically changes the focus zone. Predictive tracking AF technology is used to track a subject moving across the frame.



X-T1 / XF10-24mmF4 R OIS | F8 1/65s ISO400X-T10 / XF50-140mmF2.8 R LM OIS WR | F5.6 1/2500s ISO1600 ©Toshiya Ogawa (Japan)



X-T10 / XF10-24mmF4 R OIS | F5 1/250s ISO200 ©Jára Sijka (Czech)



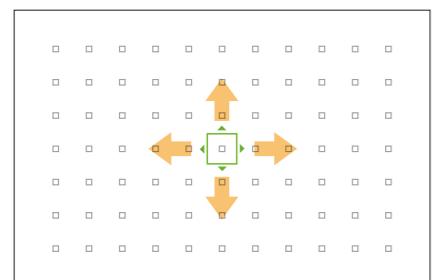
X-T10 / XF35mmF1.4 R | F11 1/1600s ISO2000 ©Jára Sijka (Czech)

Perfect scenes:

The perfect mode for shooting subjects popular with enthusiast photographers.

This mode is ideal for subjects that move across the frame, but it is also useful for subjects moving straight towards the camera. Pre-define the position where the subject is expected to appear as the starting point and the camera continuously tracks the subject across the entire 77-point focus area, allowing you to compose the shot first and then let the camera track the subject automatically.

TIPS for Auto Focus Setting



Defining the starting point of tracking

You can choose the starting point anywhere within the 77-point focus area. Press the shutter button halfway to lock on to the subject, and the camera will automatically track it thereafter.



Using a tripod to fix the angle of view

You may choose to fix the camera on a tripod to pre-determine framing. This is only available with AF-C + Wide/Tracking and allows you to track the subject across all 77 focus points.

During hand-held shooting

During hand-held shooting, position the subject at the center of the frame and press the shutter button halfway down to initiate automatic subject tracking while it stays within the frame.

Recommended lens:



XF10-24mmF4 R OIS

Zoom lens covering the equivalent to a 15-36mm*. It features image stabilization making it possible to shoot hand-held in low light.



XF16-55mmF2.8 R LM WR

XF series' flagship standard zoom with constant F2.8 maximum aperture and resistance to dust, moisture and low temperatures. Ideal for all types of outdoor photography.



XF16mmF1.4 R WR

Fast wide angle lens with a maximum aperture of F1.4 offering the equivalent to 24mm*. This latest addition to the XF series delivers sweeping landscapes with high image quality and sharpness.

Focus Mode AF-C + Single Point

Spot-focusing on subjects moving backwards and forwards in a straight line

This spot-focus AF-C mode is capable of focusing on a specific area, enabling you to choose both location and size of the point within the focus area^{*1}. The types of scenes where this mode may be used is limited, but it is ideal when pin-point focusing is required.



Perfect scenes:

Achieving pin-point focus on the selected subject.

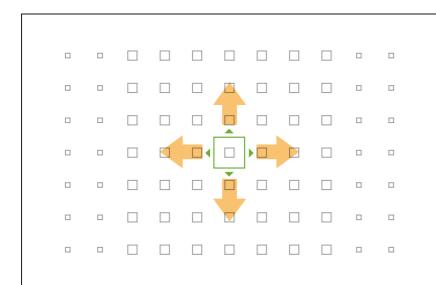
This mode is useful for a subject moving backwards and forwards in a straight line. It is ideal for a sports event, etc. This mode is not suitable for a subject that makes sideways movements.



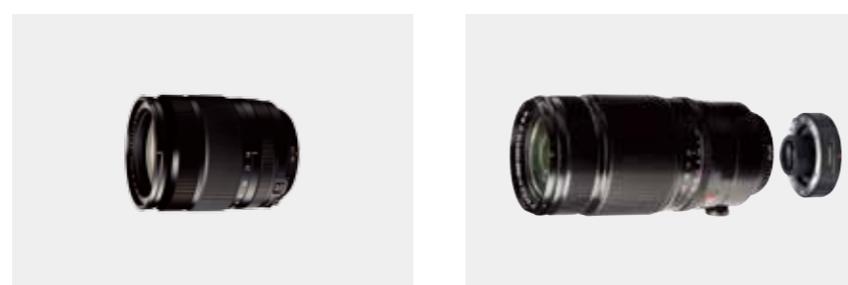
X-T1 / XF18-135mmF3.5-5.6 R LM OIS WR | F5.6 1/400s ISO1600 ©Chris Weston (UK)

X-T10 / XF50-140mmF2.8 R LM OIS WR | F2.8 1/500s ISO400 ©Jacky Ley (France)

TIPS for Auto Focus Setting



Recommended lens:



Determining the position and size of focus area

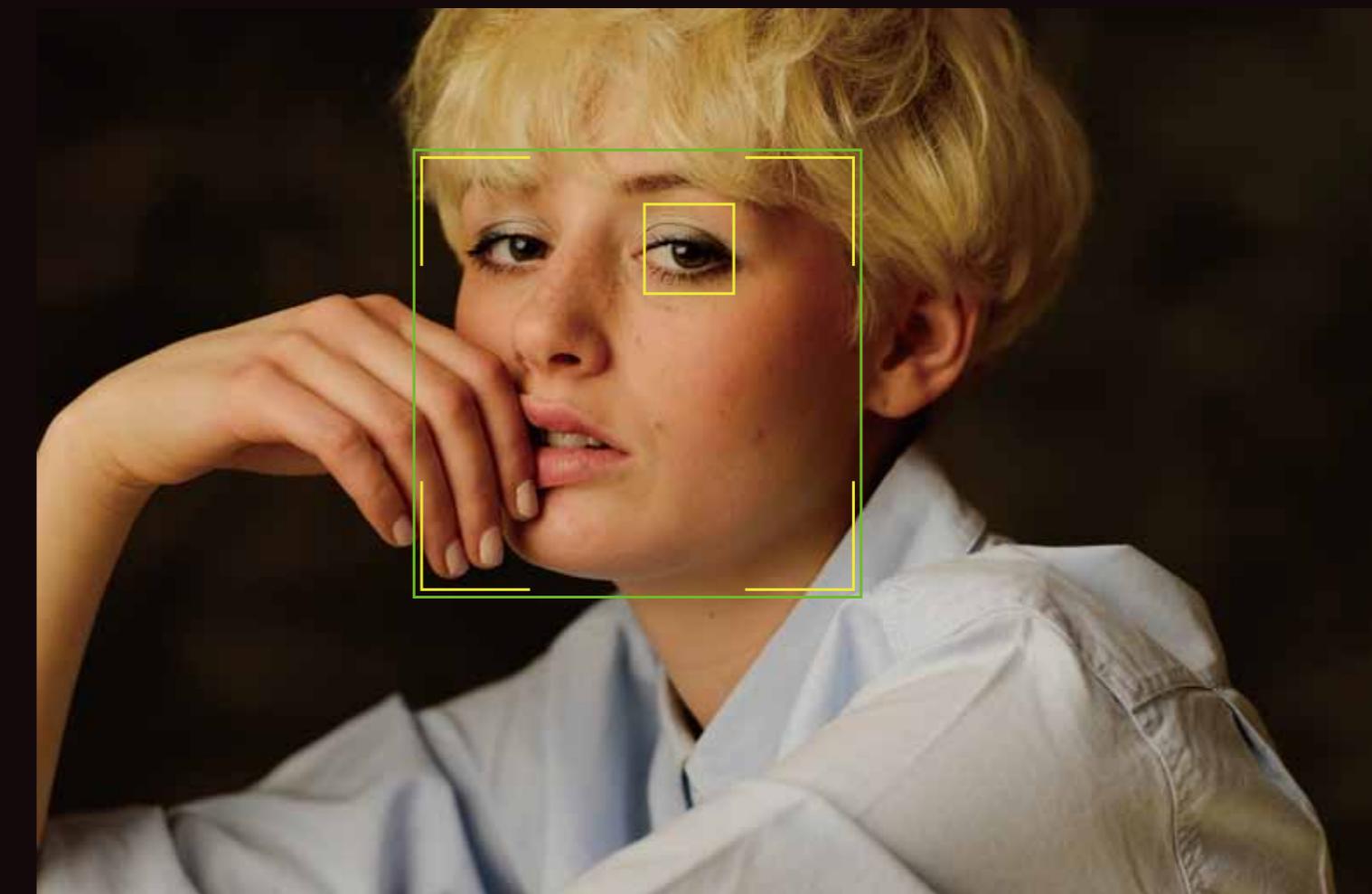
Choose the position and size of the focus area^{*1} in the same way as the AF-S + Single Point combination. Phase detection AF is used on the centrally-positioned larger rectangle area^{*2} to enable high speed AF.

XF18-135mmF3.5-5.6 R LM OIS WR

High magnification zoom equipped with powerful image stabilization and covering up to 206mm^{*3}. Very useful for subjects approaching the camera from distance.

XF50-140mmF2.8 R LM OIS WR XF1.4X TC WR

Fast telephoto zoom equivalent to a 76-213mm^{*3} (107mm-299mm^{*3} with 1.4x teleconverter mounted). The constant maximum aperture of F2.8 allows a fast shutter speed to freeze movement while creating beautiful bokeh.



X-T1 / XF90mmF2 R | F2.2 1/125s ISO200 ©Bert Stephani (Belgium)

Face Detection + Eye Detection AF

Combining Face Detection and Eye Detection AF to shoot a high quality portrait

Activate Face Detection to automatically detect human faces and focus with Eye Detection AF to ensure accurate focus on human eyes, even when using a shallow depth-of-field. Combine these two functions to take your portrait photography to a new level.

Recommended lens:



XF56mmF1.2 R APD

Fast portrait lens equivalent to 84mm^{*3}, producing bokeh effects that only an F1.2 lens can deliver. It also offers an APD filter for even more creamy bokeh.



XF90mmF2 R LM WR

Fast telephoto lens equivalent to 135mm^{*3}. The focal length means you can work at a greater distance and capture more natural facial expressions. Combined with the lens's sharpness and ability to produce rich bokeh, it provides extra depth to your portrait photography.

Activating the functions

Activating Face Detection and Eye Detection AF

Both features can be turned on in the Autofocus Setting menu and can be combined with other AF-S modes to shoot great portraits.



Select Right Eye, Left Eye or Auto for Eye Detection AF

Eye Detection AF has three options: Auto, Right Eye Priority and Left Eye Priority. Auto will automatically focus on the eye closer to the camera and is recommended when the subject is not looking straight at the camera or when shooting with a wide aperture for shallow depth-of-field.

Manual Focus

Get every image as sharp as you intended

The new AF system gives the X series a dramatic performance boost, while still offering a variety of functions that help you achieve a pin-point manual focus. Flick the Focus Mode switch to MF to use various focus-assisting functions for highly accurate manual focusing on both macro and portrait photography, where you need to get the background perfectly out of focus.



X-T1 / XF56mmF1.2 R | F1.6 1/500s ISO400 ©Bert Stephani (Belgium)

Using the functions for enhanced focus accuracy

Using the MF Assist functions

When MF is selected, you can choose between three MF Assist modes. Standard displays a normal view with no assist. In Digital Split Image^{*1,2}, you can align the split image to achieve accurate focus, while Focus Peak Highlight highlights focused outlines.



Enlarging the focus position

In MF mode, press the Focus Assist Button (X-T1) or Rear Command Dial (X-Pro2 / X-E2S / X-E2 / X-T10 / X70) to enlarge the view on the screen. You can specify the magnification rate by rotating the Rear Command Dial. The enlargement reflects the MF Assist settings.

Lenses with focusing distance and depth-of-field scales on the focus ring

With the XF14mmF2.8 R, XF23mmF1.4 R and XF16mmF1.4 lenses, pull the focus ring toward the camera body to instantaneously switch to the MF mode without having to adjust settings on the camera. Perfect for taking snapshots with a pre-set focusing distance.



XF60mmF2.4 R Macro

Mid-telephoto macro lens with the maximum magnification of 0.5x. Use the MF mode when you need to make fine focus adjustments on close-up shots of flowers etc.



XF23mmF1.4 R

This lens has a focusing distance and depth-of-field scales, which makes it ideal for shooting snapshots at a pre-determined distance. The fast F1.4 aperture is also perfect for portraits.



XF56mmF1.2 R

Portrait lens that offers a shallow depth-of-field and a mid-telephoto angle of view. Ideally suited to portrait photography with precise manual focusing.



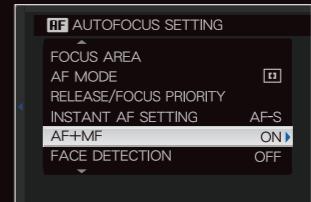
XF16mmF1.4 R

Wide-angle lens with a maximum magnification of 0.5x. Use the MF mode when you need to make fine focus adjustments on close-up shots of flowers etc.

Setting the AF mode

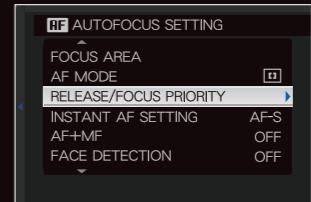
AF + MF to fine-tune focusing

In the Autofocus Setting menu, turn AF + MF on. You can then press the shutter button halfway to activate AF and use the manual focus ring to fine-tune your focus. This is useful when trying to focus on a complicated subject that is difficult to autofocus, or when you want to focus on a specific part of the frame.



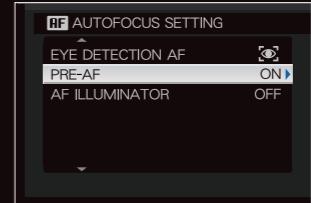
Release / Focus Priority

Occasionally, when a photograph is taken, the camera may not have achieved accurate focus. This option allows you to determine whether the camera should prioritize the shutter response or wait until a focus is achieved to take a picture. You can specify a setting for AF-S and AF-C separately in the Autofocus Setting menu.



Pre-AF for faster focusing

By tuning Pre-AF the camera will continuously focus even before you press the shutter button halfway down. This constant AF action speeds up focusing when you half-press the shutter button. This is an effective option when you don't want to miss a shot. Go to the Autofocus Setting menu to activate this option.



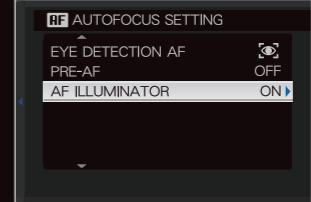
Making best use of the AF Lock

Fix focus while pressing down or pushing the AF-L button on the back of the camera. Pre-focus and wait until the right moment to take a picture. Exposure settings may be adjusted even after locking the focus.



Using the AF illuminator

Turn the AF Illuminator on when shooting a dark subject. The AF Illuminator will light up each time you press the shutter button halfway down to help the camera achieve focus. Go to the Autofocus Setting menu to activate this option. When the Sound & Flash Off menu is on, the AF Illuminator does not operate.



Instant AF in the MF mode

Press the AF-L button while shooting in the MF mode to autofocus on a subject within the focus frame. This eliminates the need to rotate the focus ring from near the shortest shooting distance position to infinity and achieve a quick transition back to MF. In the Autofocus Setting menu, you can specify to activate either AF-S or AF-C in Instant AF.

