AF Setting Guidebook

Detailed explanations of how to use the various high precision AF features
61-Point High-Density Reticular AF
Improved AF performance capturing fast moving subjects

The EOS-1D X is equipped with a newly developed 61-Point High-Density Reticular AF making it possible to capture fast moving subjects in situations where accurate focusing even with a high performance autofocus is difficult. By arranging the 61 AF points in a high concentration, the level of composition freedom, and tracking performance is greatly improved. Featuring 41 high precision cross-type AF points compatible with f/4 lens and new algorithms, are used together with AI Servo AF III to improve accuracy for predictive AF, making it possible to focus precisely when shooting subjects with extremely fast movement, such as agile players with unpredictable behavior.

AF Configuration Tool
Simple selection of the best combinations of AF settings for any subject or scene

The AF Configuration Tool makes it possible to set the AI Servo AF features by simply selecting the shooting scene from [Case 1] to [Case 6]. Should you need to, it is also possible to adjust the parameters separately. This AF Setting Guidebook will introduce a variety of features and most effective settings centered around the 61-point AF and AF Configuration Tool, in order to take advantage of the high performance AF functions of the EOS-1D X.

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AF frame indicated in this information may differ from those interior indication and color of actual finder.
All AF-related menu functions now in a separate menu

The Various AF-related functions are now incorporated into an AF menu tab

The AF1 tab is important when shooting moving subjects using the AI Servo AF of the EOS-1D X. It is possible to effectively set AI Servo AF characteristics by selecting the option that closely matches the scene with the AF Configuration Tool.

The AF1 tab includes the AF Configuration Tool

The various AF-related settings that were previously included in the custom functions (C.Fn) menu, have been incorporated into the new AF menu tab. This makes smooth access to AF-related settings possible. In particular, the AF Configuration Tool included in tab AF1 can be used to easily match settings with the AI Servo AF characteristics, making it an important feature that takes advantage of the advanced AF performance on the EOS-1D X. By selecting from six presets (Case 1 - Case 6), makes it possible to set the AI Servo AF characteristics to most accurately suit the subject’s movement, and scene conditions. It is also possible for fine control to adjust each parameters separately. (Refer to P. 7 – 25 for AF Configuration Tool details.) Tabs [AF 2] – [AF 5] include a variety of settings such as shutter-release timing settings, a setting for the number of AF points that can be selected and AF area selection method.

AF2 AI Servo
Settings related to the camera priorities when using AI Servo AF

The [AF/2] tab includes settings related to cameras priority concerning shutter-release timing when using AI Servo AF. [AI Servo 1st image priority] and [AI Servo 2nd image priority] make it possible to make focusing the priority slowing the shutter-release timing, or prioritize faster shutter-release.

AF3 One-Shot
Settings related to focusing and shutter-release timing when using One-Shot AF release priority

Within the [AF3] tab, the [One-Shot AF release priority] settings related to focusing and shutter-release timing when using One-Shot AF release priority. The other options [USM lens electronic MF] and [AF-assist beam firing], control the manual focus operation of some lenses and the operation of AF assist function of attached Speedlites.

AF4
Includes general settings related to AF point selection

Select which and how AF points are selected. This menu includes settings related to [AF area selection mode] ([Automatic AF point selection criteria], [Selectable AF points], [AF area selection mode], [AF area selection method], and [Orientation linked AF point]). In addition there is the [Lens drive when AF impossible] option in this menu.

AF5
Includes general settings related to display of AF points, etc.

Within [AF5] tab are settings that control how AF points are displayed in the viewfinder such as [AF point display during focusing], [VF display illumination], and [AF status in viewfinder]. With the (Manual AF pt. selec pattern) the AF point selection can stop at the peripheral AF point or instead loop back to the opposite side of the AF area. For those who need to make fine adjustments to the focus position [AF Microadjustment] is available.
Select from Case 1 - Case 6 to match subject scenarios

Presets consist of three different parameters combinations

The best parameters for different subjects and shooting scenes are combined into presets from Case 1 - 6

Case 1
Versatile multi-purpose setting

Case 2
Continue to track subjects, ignoring possible obstacles

Case 3
Instantly focus on subjects suddenly entering AF points

Case 4
For subjects that accelerate or decelerate quickly

Case 5
For erratic subjects, moving in any direction

Case 6
For subjects that change speed and move erratically

A combination of parameters to best suit the characteristics of subject movement have been used to create the presets from Case 1 – Case 6. By selecting the appropriate icon, the different AI Servo AF settings can be selected to suit the subject.

[AF1] tab screen. By selecting an appropriate preset from the Case 1 - Case 6 icons on the left side of the screen, the most effective AI Servo AF settings for different subjects can be made.

The AF Configuration Tool is a function for setting AI Servo AF characteristics. Therefore, its settings will have no function when using [One shot AF].

When the [AF1] tab on the EOS-1D X is opened, [Case1 Versatile multi-purpose setting] a running man icon will be displayed. This is the default option for the AF Configuration Tool. Different presets to match the characteristics of the type of subject and its movement, and the shooting conditions, can be selected from Case 1 - Case 6. By simply selecting one of these cases, settings for the AI Servo AF characteristics that match the scene will be used.

These six presets are combinations of the following three parameters, [Tracking sensitivity], [Accel./decel. tracking], and [AF pt auto switching] (P. 20 - 25). Using the presets sets the parameters in the most effective way. However, if you wish it is also possible to manually adjust the parameters individually.

When the [Case 1] is indicated in display, then text information of AF Setting Characteristics or Shooting Scene Example is indicated.

Pressing the INFO button while any of [Case] is indicated in display, you can press the INFO button. This will display the help screen containing information about shooting scene examples and which settings to alter and when.
Precise and accurate focusing is possible for a wide range of subjects

Versatile multi-purpose setting

The [AF Configuration Tool] (Case 1) is the basic AI Servo AF setting on the EOS-1D X. As its name indicates, it is versatile and achieves a high level of tracking performance in a wide variety of scenes. Equipped with AI Servo AF III, the EOS-1D X has improved flexibility in handling a variety of moving subjects, and superior prediction of movement for more accurate focusing. Even with a variety of difficult elements such as extremely fast movement, sudden changes in speed, and interruptions by obstacles, AI Servo AF III overcomes these and is able to capture the subject.

Case 1 is the recommend setting to start shooting with; Case 1 will provide great results when shooting a variety of sports and moving subjects. When more specific settings for individual cases are desired, please try Case 2 – Case 6 to match shooting conditions.

Case 1 can be used to great advantage when shooting moving subjects, making it possible to accurately capture fast subject.

AI Servo AF III makes it possible to carry out precise focus for subjects in a wide variety of conditions.

AF on the EOS-1D X is equipped with a new focus tracking algorithm, AI Servo AF III. It supports an even greater variety of subject movement than before, and by utilizing the high level tracking performance of the AI Servo AF III, and Case 1 configuration setting, it can handle many different shooting conditions.
Case 2 is an effective setting for shooting fast moving subjects when they move away from the selected AF point, or when obstacles may momentarily obscure the subject. Sometimes when the subject moves from the selected AF point, focus can shift to the background (resulting in an out of focus subject), similarly when an obstacle obscures the subject, focus can shift to the obstacle. By selecting Case 2 in situations like these, focus will attempt to continue to track the desired subject. When a subject moves away from the AF points for an extended period (such as swimmers doing the butterfly stroke, or sports where the subject is hidden for intervals), even better performance may be achieved by manually setting the [Tracking sensitivity] parameter to [-2].

Try selecting Case 2 when shooting a tennis player with fast side to side movement. The subject will be tracked even when they move away from the AF points.
Focus instantly on subjects that move into the AF points

Effective when you want to continuously photograph targeted athletes one after another.

Case 3 is the ideal setting for situations when you want to focus quickly between subjects in the AF points. In Case 3, the Tracking sensitivity parameter is set to +1. As a result, subjects that come into the AF points will be focused on more quickly. This setting is most effective when subjects appear suddenly in the frame (for example, photographing skiers in an alpine skiing downhill race). Other shooting situations, this setting can be extremely effective when switching between different subjects you want to shoot (for example, at the start of a bicycle road race, when you want to shoot continuously and switch from cyclist to cyclist while focusing).

When set to Case 3, if the subject moves away from the AF points, the camera may quickly refocus on a different subject or background, in contrast to Case 2. Therefore, it is recommended that you use this setting only when you have a particular objective as indicated above.

1. Shoot the whole group while focusing on the cyclist in the center
A scene with cyclists coming towards the camera. While focusing on the lead cyclist you may wish to switch focus to the other cyclists whilst continuously shooting. In this situation, by selecting Case 3, you can achieve the desired focus on each subject.

2. Focus on the lead cyclist
3. Focus on the right side cyclist
4. Focus on the left side cyclist

A scene with cyclists coming towards the camera. While focusing on the lead cyclist you may wish to switch focus to the other cyclists whilst continuously shooting. In this situation, by selecting Case 3, you can achieve the desired focus on each subject.

1. Shoot the whole group while focusing on the cyclist in the center
A scene with cyclists coming towards the camera. While focusing on the lead cyclist you may wish to switch focus to the other cyclists whilst continuously shooting. In this situation, by selecting Case 3, you can achieve the desired focus on each subject.
Focus track subjects that can accelerate or decelerate
Effective when a subject's speed changes rapidly, or in sports where subjects stop or change direction

For example in soccer. A player dribbling at high speed stops suddenly in front of a defender, changes direction and then begins to sprint again. By using Case 4 the AF system reacts to sudden changes in speed, allowing continuous and accurate focusing.

When shooting sports, there are many situations where it will be necessary to deal with fast moving subjects. Subjects suddenly going from static to moving or sudden stopping can occur in various sports and situations and it can be difficult for the AF system to judge accurately. In these situations, Case 4 is most effective. With the [Accelerate / decelerate Tracking] parameter set to [+1], the AI Servo AF will work to focus track any changes in speed, including sudden stops and acceleration. This makes Case 4 the most effective setting for shooting soccer, rugby, basketball or sports where there is a lot of running and stopping, as well as changes of direction. It is also effective for cornering during motor sports (sudden deceleration and acceleration).

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default Setting</th>
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</thead>
<tbody>
<tr>
<td>Subject tracking sensitivity</td>
<td>0</td>
</tr>
<tr>
<td>Accelerate / decelerate Tracking</td>
<td>+1</td>
</tr>
<tr>
<td>AF point auto switching</td>
<td>0</td>
</tr>
</tbody>
</table>
Focus on subjects with erratic movement
Suitable for sports and fast action where traditionally AF systems have difficulty tracking

Case 5 is most effective for subjects with large amount of movements which could occur in any direction. This setting works in 61-point automatic selection AF, Zone AF, and AF point expansion modes only. In Case 5, [AF pt auto switching] is set to [+1], when the subject moves away from the manually selected AF point (AF points focused on initially with Zone AF), focusing automatically switches to other AF points that contain the subject. As a result, even when the subject continuously leaves the selected AF point, it is possible to increase the ratio of photos that are in focus. This setting is most effective when shooting subjects with erratic movement such as figure skating, skateboarding, and inline skating.

Blue color of focus point is for explanation only, and actually there is no blue indication available.

Using Case 5 when photographing a figure skater making a big jump (the AF area selection mode is set to [AF point expansion]). It is possible to track the skater’s movements by letting the camera switch between AF points.

Parameter default settings

<table>
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<tr>
<td>Subject tracking sensitivity</td>
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<td>[+1]</td>
</tr>
</tbody>
</table>

It is possible to focus on subjects that move erratically and could move in any direction.

Inline skating on a half-pipe. Capturing the moments when the skater is jumping and twisting is easier with Case 5.
Case 6 is a setting that combines features of both Case 4 (support for sudden changes in speed), and Case 5 (support for erratic movement in any direction). [Accel./decel. tracking] and [AF pt auto switching] parameters are both [+1]. Therefore, Case 6 is an effective setting for subjects that stop and start suddenly, but also have erratic movement which could happen in any direction, it works during Auto selection 61-point AF, Zone AF, and AF point expansion only.

Shooting subjects that are most appropriate for this setting include rhythmic gymnastics which includes large movements with complete stops.

A rhythmic gymnast making sudden big jumps can be captured when shooting with Case 6 which can focus on subjects with sudden movement, and erratic movement. Continuous focusing is possible for large movements and changes in speed.
This setting allows obstacles that pass in front of the subject to be ignored, as well as focusing on new subjects.

[Locked on] can be effective when an obstacle crosses in front of the subject and when focus jumps to the background.

With the AF Configuration Tool on the EOS-1D X, not only can you select from Case 1 - Case 6, but three parameters for each can be adjusted individually.

[Tracking sensitivity] is the parameter that can be set to track a subject that the AF point had been following until a different subject (or background) got in the way.

The [Locked on: -2/-1] setting excludes subjects that come into the AF point as obstacles, and continues to focus on the original subject. Selecting -2 results in the targeted subject being tracked for a longer time before focus changes to subject now in the AF point.

The [Responsive: +1/+2] setting determines that subjects that come into the AF point are new subjects to be focused, and quickly focuses. It is also effective when you want to quickly focus on subjects that are hidden and appear suddenly.

Choose any of [Case] and push button for Tracking sensitivity, then adjust level with button.

Choose any of [Case] and push button for Tracking sensitivity, then adjust level with button.

An example where [Locked on: -2/-1] is more effective

When another player, or a referee crosses in front of the subject and focus can shift to the foreground/background.

Example where the referee momentarily appears in front of the player being tracked, then the player appears again. With the [Locked on: -1] setting, the referee in the foreground is not focused on, and the AF system continuously tracks the player.

Example where a skateboarder appeared suddenly from the far wall. In a situation like this, setting to [Responsive: +1/+2] makes it possible to focus even quicker on the skater that just appeared. (Photo top left, shown to illustrate scene prior to the skateboarder appearing.)

Example where a skateboarder appeared suddenly from the far wall. In a situation like this, setting to [Responsive: +1/+2] makes it possible to focus even quicker on the skater that just appeared. (Photo top left, shown to illustrate scene prior to the skateboarder appearing.)

Example where a skateboarder appeared suddenly from the far wall. In a situation like this, setting to [Responsive: +1/+2] makes it possible to focus even quicker on the skater that just appeared. (Photo top left, shown to illustrate scene prior to the skateboarder appearing.)
Set tracking for subjects that move or stop suddenly

[+1/+2] is effective for fast sports which may include sudden stop-start motion

**[Accel./decel. tracking]** is a tracking setting for subjects that experience significant changes in speed, move or stop suddenly. The default setting is [0], which is suited for shooting subjects that move at steady speeds. [+1/+2] is suited to shooting subjects that stop/change direction suddenly or accelerate/decelerate suddenly, enabling it to continue to focus on the subject. +2 can handle greater changes in speed than +1, however, it can also be more prone to be affected by slight movements of the subject causing temporarily unstable focus accuracy. Other parameters are the same, so first try shooting with default settings, then increase the setting to [+1] and then [+2] settings when more effective settings are desired.

- **Examples where the [0] setting is effective**
  - Track and field events where constant speed is common

- **Examples where the [+1] setting is effective**
  - Track and field events where an athlete is running directly towards the camera, [0] is most suitable for taking shots of subjects in this situation.

- **Examples where the [+2] setting is effective**
  - A track and field example where an athlete is running directly towards the camera. [0] is most suitable for taking shots of subjects in this situation.

  - Example of a long-jump landing. As a result of the athlete suddenly decelerating as they land, a normal setting may not be able to capture it, however, it is possible to continue focusing on the athlete with [Accelerate / decelerate Tracking] set to [+1].

  - Sports where athletes movement sudden stop or start
Set how rapidly the AF point switches to a new AF point

[+1/+2] setting is most effective for sports with lots of movement where the subject can easily move out of the selected AF point.

The [AF pt auto switching] parameter is used for setting characteristics of AF point switching when the subject has a lot of movements. This parameter is only for switching between multiple AF points, so it is unavailable when using AF area selection modes [Single-point Spot AF] and [Single-point AF]. The [0] setting is a standard setting for moderate switching of AF points. The [+1/+2] settings are used when shooting subjects with erratic movement which could happen in any directions. When a manually selected AF point (AF point being focused during Zone AF) leaves the subject, it will rapidly switch to surrounding AF points to capture the subject. Use the [+1] setting when you want the camera to automatically decide (switch) to use a new AF point, and the [0] setting is used when you want to place emphasis on manually selected AF points to track the subject.

Examples where [0] is most effective, Sports with comparatively big movements, and are not very fast

Examples where [+1] is effective, fast moving sports with big movements, where the AF points can lose the subject easily

Tip for AF setting

Change the level of “Accelerate / decelerate Tracking” and “AF point auto switching” to appropriate for shooting result.

“Accelerate / decelerate Tracking” and “AF point auto switching” are absolutely some part of Camera’s automatic functions. Therefore it is not always possible that these automatic functions reflect 100% of your intended idea. If you feel uncomfortable with shooting result, try to change the effect level of their functions.
Change the AF point selection to match your the shooting style

Choose whether only one AF point is used, or select from a vast array of AF selection options

The EOS-1D X is equipped with 61-point AF. Not only can all these AF points each be selected individually, but by also automatic switching between multiple AF points to track the subject, using all 61 AF points. The [AF area selection mode] setting allows the selection of these AF point modes.

The two types of modes that you can manually select a single AF point to focus with are [Single-point Spot AF] and [Single-point AF].

The four modes that can switch automatically between multiple AF points to capture moving subjects are AF point expansion (Manual selection, 4 points [up, down, left, and right]), AF point expansion (Manual selection, surrounding 8 points), Zone AF, and Auto selection of 61 AF points (during AI Servo AF). Mode features are explained from P. 27 - 35, so you can select the mode best suited to your subject’s characteristics and shooting scene.

AF modes can be selected to match the subject and conditions

The AF area selection modes make it possible to set how many of the 61-point AF are available to be used. Set the selection method of AF points that best matches the subject and shooting conditions.

AF modes can be set to use only one AF point, or select from a vast array of AF selection options.

After pressing the S button, each time the button is pressed, the [AF area selection mode] changes. By setting the menu [AF4] tab’s [AF area selection method] to [Main Dial], after pressing the S button, you can switch the mode with the Main Dial if you prefer.

There are six AF area selection modes to choose from

Single-point AF

The default setting. With this mode it is possible to focus with a single manually selected point.

Single-point AF

Focus using one manually selected point assisted by 4 other AF points (up, down, left, and right).

AF point expansion (eight surrounding points)

Focus using one manually selected point assisted by the surrounding points.

Zone AF

All AF points are used with this mode, and the camera selects and focuses automatically.

61-point automatic selection AF

Single-point AF is an easy to use mode for still life photos etc. in One-shot AF

Single-point AF is a mode where one manually selected AF point is used to focus. For experienced photographers or when it is easy to track the subject with a single AF point, AI Servo AF can be utilized when continuously shooting moving subjects, however, this mode is more effective for shooting still life and landscapes with One-shot AF mode.
AF area selection mode [Spot AF]

Focusing on a small or narrow area
It is possible to focus on pinpoints such as the eye when a helmet is being worn

Snapshot of a BMX rider wearing a helmet. Focus was pinpointed on the eye using [Single-point spot AF].

When set to [Single-point spot AF], a small rectangle is displayed inside the manually selected AF point.

[SINGLE-POINT SPOT AF] is effective when there is something like the edge of the helmet, or visor near the eye you want to focus on. With standard AF systems this can result in the AF system focusing on these edges rather than the eye of the subject.

[SINGLE-POINT SPOT AF] mode can be used to focus on a small area of the subject. This option makes it possible to focus on the exact area even when there is an obstacle near the area you want to focus on. A common example when shooting sports is when you want to focus on the eyes of a rider wearing a helmet (see photos above). With normal settings, the AF point can easily get caught on the edge of the helmet near the eye, resulting in the camera focusing this edge. In situations like this, [SINGLE-POINT SPOT AF] makes it possible to focus more accurately on the rider’s eye. As [SINGLE-POINT SPOT AF] only focuses on one very small area, it is not really suited to capturing fast moving subjects when set to AI Servo AF and may take longer to focus than other AF area selection modes.
AF area selection mode AF point expansion

For fast moving subjects that are difficult to track with a single AF point

This mode is ideal for sports photography

Viewfinder display of [AF point expansion]. The manually selected AF point lights up red.

Shooting with AF point expansion (up, down, left, and right)

[Hints and tips] [Up, down, left, and right] and [surrounding] can be selected according to the difficulty of reading the movement, and the relative importance to the central AF point

When shooting subjects which might be difficult to determine movement, select [surrounding] mode, and when you want to focus on the area the covered by central (manually selected) AF point best to select the [Up, down, left, and right] mode.

[AF point expansion] mode can be used for a wide range of sporting events with erratic movement. [AF point expansion] (Up, down, left, and right) was able to accurately track the dribbling soccer player.

As switching of the AF point takes place centered on the selected AF point with [AF point expansion], this mode makes it easy to obtain the desired composition. This high jump athlete was captured with [AF point expansion (surrounding)].

[AF point expansion] is an [AF area selection mode] that is best selected when shooting sports. Using this setting shifts the focus point used from a manually selected AF point, to an adjacent (up, down, left, and right, or surrounding) AF point, to aid focus tracking. When using this setting it is easier to obtain the desired composition as the subject is captured centering around the manually selected AF point. Based on the subject’s movement characteristics, (i.e. likelihood of subject moving from the selected AF point) and the size of the subject within the frame, select either [AF point expansion] or [AF area selection mode]. In addition, when the subject has a lot of movement, setting Case 5 or Case 6 from the AF Configuration Tool is also recommended.
Effective for capturing subjects within a known area
For larger subjects or subjects that subjects moving over a larger area

With the [Zone AF] mode, one of the nine focusing zones can be selected, and the AF point is automatically selected from within that zone. Zone AF differs from [AF point expansion] with its manually selected AF point, which AF tracking is based around. With Zone AF, the camera decides where to focus on the subject within the zone, rather than targeting the subject (area) that you want to follow closely. This is more suited for situations where pinpoint focusing is required (the subject has no obstacles that may block the AF points). This mode is easy to use when you want to focus on areas of the subject that are a larger size, making it possible to easily capture the appropriate area.
AF area selection mode Auto selection of 61 AF points

Al Servo AF with all 61 points used for automatic tracking
Ideal for moving subjects that the old AF systems struggle with

One-Shot AF
Al Servo AF

When using [One-Shot AF], a single AF point is selected automatically from the 61 points. When using [Al Servo AF], AF starts from the manually selected AF point and then selects the most appropriate from all 61 points.

Hints and tips
With “Al Servo AF” mode, the shooting starts from one AF frame that is optionally selected. So select one of any frames covering the position where object capturing starts. In addition, it will be easy to continue tracking thence very convenient, if the same start position is selected for Single Point AF and then AF area is switched to 61 Point Automatic Selection AF.

When using [Auto selection of 61 AF points] during [Al Servo AF], focusing will start from the manually selected AF point; the camera will automatically change the AF point selecting from all 61 points as the subject moves. The AF points are arranged in a wide area so it is useful for capturing and tracking of subjects, however, depending on the shooting conditions or if the subject is small, tracking may not be possible so caution is necessary. [Auto selection of 61 AF points] is effective when shooting subjects with movements that cannot be captured with [AF point expansion] or [Zone AF] (figure skating jump scenes for example).

Another effective use is when you want to take action images for publication/articles with lots of space in the composition for text etc. In the examples above shooting began by capturing the targeted cyclist first with a manually selected AF point (in the center etc.). From there, while continuous shooting and moving the camera (lens) to the left or right, it is possible to position the lead cyclist off to one side and include a lot of background (focusing continues to track the cyclist by automatically switching AF points).
The 61-point AF has numerous cross-type points for greater tracking performance.
Multi-point cross focusing is possible even using lenses with a maximum aperture.

Up to 41-point cross-type AF with f/4 lenses, enabling superior tracking performance with most lenses.

This diagram shows the distribution of the 61-point cross-type AF points in the EOS-1D X. The five AF points at the center operate as dual cross-type AF points at f/2.8, 41 cross-type AF points are available for f/2.8-4 f/4 lenses and the center 21 AF points serve as cross type with f/5.6. This makes it possible to focus with high precision and high tracking performance with the many AF points.

Newly developed 61-point AF sensor
By increasing number of AF points greater freedom of composition is possible. The large number of cross-type AF points improves tracking performance. And as a result of two-line AF sensors in a zigzag pattern, tracking performance is improved for low contrast subjects as well.

The AF system of the EOS-1D X has many attractive features such as the high level of composition freedom with 61 different AF points, AF area selection modes that utilize the merits of the multi-point AF system, and implementation of the AF Configuration Tool which takes advantage of the improved AI Servo AF. In addition to these, is the high precision and improved tracking performance of each AF point to capture the subject. With the EOS-1D X AFocusing system, most f/2.8 - f/4 lenses can utilize the high-performance 41-point cross-type AF points. As Canon produce a large number of high performance f/2.8 and f/4 AF points, this makes it possible for larger aperture lenses to achieve an even higher level of focusing precision with these AF points than ever before.

61-point AF (1) The number and placement of cross-type points used by the f/2.8 lenses

Most large-aperture lenses with a maximum aperture of f/2.8, (or lower f-number values) are in Group A. With this group, the five f/2.8 dual-cross AF points, and the left and right f/4 and f/5.6 cross-type AF points (20 points) can be used. There are a total of 41 cross-type points including the f/5.6 cross-type points. Lenses with a maximum aperture of f/2.8 in Group B, will only have a single f/2.8 dual-cross AF point in the center.

41-point cross-type AF points and 5 Dual Cross - f/2.8 AF points can be used with many lenses

41-point cross-type AF points are available even with some lenses with a maximum aperture of f/4.

Up to 41-point cross-type AF with f/4 lenses, enabling superior tracking performance with most lenses.

This diagram shows the distribution of the 61-point cross-type AF points in the EOS-1D X. The five AF points at the center operate as dual cross-type AF points at f/2.8, 41 cross-type AF points are available for f/2.8-4 f/4 lenses and the center 21 AF points serve as cross type with f/5.6. This makes it possible to focus with high precision and high tracking performance with the many AF points.

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By increasing number of AF points greater freedom of composition is possible. The large number of cross-type AF points improves tracking performance. And as a result of two-line AF sensors in a zigzag pattern, tracking performance is improved for low contrast subjects as well.

The AF system of the EOS-1D X has many attractive features such as the high level of composition freedom with 61 different AF points, AF area selection modes that utilize the merits of the multi-point AF system, and implementation of the AF Configuration Tool which takes advantage of the improved AI Servo AF. In addition to these, is the high precision and improved tracking performance of each AF point to capture the subject. With the EOS-1D X AFocusing system, most f/2.8 - f/4 lenses can utilize the high-performance 41-point cross-type AF points. As Canon produce a large number of high performance f/2.8 and f/4 AF points, this makes it possible for larger aperture lenses to achieve an even higher level of focusing precision with these AF points than ever before.

61-point AF (1) The number and placement of cross-type points used by the f/2.8 lenses

Most large-aperture lenses with a maximum aperture of f/2.8, (or lower f-number values) are in Group A. With this group, the five f/2.8 dual-cross AF points, and the left and right f/4 and f/5.6 cross-type AF points (20 points) can be used. There are a total of 41 cross-type points including the f/5.6 cross-type points. Lenses with a maximum aperture of f/2.8 in Group B, will only have a single f/2.8 dual-cross AF point in the center.

41-point cross-type AF points and 5 Dual Cross - f/2.8 AF points can be used with many lenses

41-point cross-type AF points are available even with some lenses with a maximum aperture of f/4.

Up to 41-point cross-type AF with f/4 lenses, enabling superior tracking performance with most lenses.

This diagram shows the distribution of the 61-point cross-type AF points in the EOS-1D X. The five AF points at the center operate as dual cross-type AF points at f/2.8, 41 cross-type AF points are available for f/2.8-4 f/4 lenses and the center 21 AF points serve as cross type with f/5.6. This makes it possible to focus with high precision and high tracking performance with the many AF points.

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61-point AF (2) The number and placement of cross-type points used by the f/4 lenses

<table>
<thead>
<tr>
<th>Major lenses</th>
<th>EF70-200mm f/4L IS USM</th>
<th>EF17-40mm f/4 L USM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group C 41-point cross-type AF points available, and they can be used with a high level of tracking performance</td>
<td>AF focusing is possible with all 61 points. All AF area selection modes are available.</td>
<td></td>
</tr>
</tbody>
</table>

41-point cross-type AF points can be used

In Group C, 41-point cross-type AF points can be used with lenses having an f/4 maximum aperture (or f/2.8 maximum aperture lenses using the EF 1.4x Extenders). Of these, the 20 points on the left and right are f/4 and f/5.6 cross-type AF providing even higher precision focus in these areas than with previous cameras. Some macro lenses with a maximum aperture of f/2.8 are also included.

Many f/2.8 maximum aperture lenses using a 1.4x extender can utilize 41-point AF

On the EOS-1D X equipped with a full size sensor, an extender is often used for sports photography etc. where longer focal lengths are required. When many large aperture telephoto lenses (200 - 400 mm f/2.8 class) are used with the Extender EF 1.4x attached, the maximum aperture will become f/4 and these combinations therefore are included in Group C. High performance AF can be utilized with the 41-point cross-point AF Therefore, offering new possibilities to use an extender.

61-point AF (3) The number and placement of cross-type points used by the f/5.6 lenses

<table>
<thead>
<tr>
<th>Major lenses</th>
<th>EF100-400mm f/4.5-5.6 L IS USM</th>
<th>EF70-300mm f/4.5-5.6 L IS USM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group E The central 21-point cross-type AF can be used</td>
<td>AF focusing is possible with 61 points. All AF area selection modes are available.</td>
<td></td>
</tr>
</tbody>
</table>

Majority of lenses can make use of the central 21-point cross-type AF

With the exception of a small group of lenses (groups F and G), almost all lenses that have a maximum aperture of f/4 or greater are included in Group E, and can use the 21-point cross-type AF (f/5.6 cross-type) in the central area. Many f/2.8 maximum aperture large aperture telephoto lenses when used with the various EF 2x Extenders will fit into this group.

Group F 21-points cross-type available, total of 47 AF points available to select

<table>
<thead>
<tr>
<th>Major lenses</th>
<th>EF800mm f/5.6L IS USM</th>
<th>EF85-300mm f/3.5-5.6L IS USM</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

AF focusing is possible with 47 points (61-point AF is not possible). All AF area selection modes can be available.

Group G 15-points cross-type available, total of 33 AF points available to select

<table>
<thead>
<tr>
<th>Major lenses</th>
<th>EF85mm f/1.8L USM</th>
<th>EF100mm f/2.8L IS USM</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

AF focusing is possible with 33 points (61-point AF is not possible). All AF area selection modes can be available.

"Ext EF1.4x" an abbreviation of various EF1.4x Extenders

EOS-1D X 61-Point High-Density Reticular AF Cross-type Points
AF shutter-release parameter settings

(AF2 tab/AF3 tab)

AF operation and Image/Focusing Priority settings
You can set whether focusing or shutter-release has priority

Image/Focusing parameters during Al Servo [Set in the AF 2 tab]
You can decide whether to put priority on focusing or shutter-release

1 1st image parameter [Al Servo 1st image priority]

Equal priority
This setting gives an equal priority to both focus and shutter-release
Release priority
This setting gives priority to shutter-release and will capture an image even if it is out of focus. It is effective when you want to minimize any delay when shooting, sacrificing AF performance
Focus priority
This setting gives priority to focusing on a subject and it cannot capture an image unless it is in focus. It is recommended when you want to ensure your images are in focus sacrificing response speed.

Parameters during continuous shooting [Al Servo 2nd image priority]

Equal priority
This setting gives an equal priority to both focus and shooting speed during continuous shooting. The speed of continuous shooting may also slow down when it is dark, or low contrast.

Shooting speed priority
This setting gives priority to a continuous shooting speed rather than priority on focus. Continuous shooting speed will not drop. Effective when you want to shoot with a fixed interval between photos.

Focus priority
This setting gives priority to focusing rather than continuous shooting speed. It cannot shoot a picture unless it is in focus, greatly reducing continuous shooting speed. It is recommended when you want to shoot only after focusing on the subject.

Image/Focusing parameter for One-Shot AF [Set in the AF 3 tab]
You can decide whether to put priority on focusing or shutter-release

[One-Shot AF release priority]

Focus priority
You cannot shoot a picture unless it is in focus. It is effective when you want to shoot only after focusing on the subject.
Release priority
Priority is on the shooting timing rather than focus. It is recommended only when you want to put priority on capturing brief photo opportunities rather than focus.

The [AF2] and [AF3] tabs include settings related to AF operation parameters and shutter-release timing. With these items it is possible to set which has priority (or a balance) between focusing with AF, and the shutter-release.

The [AF2] tab contains the [Al Servo 1st image priority] and [Al Servo 2nd image priority] parameters for Al Servo AF. The priority on focus and shutter-release can be set for both the 1st image and subsequent images during continuous shooting. With [Focus priority], shooting is delayed until after the camera has focus on a subject (this could be just a few milliseconds). With [Release priority/Shooting speed priority] shooting takes place instantly without waiting to focus, resulting in possible out of focus images. The default [Balance priority] sets equal priority on both (attempting to focus without major delays to shutter release timings), ideal for most shooting situations.

When using One Shot AF the shooting priority can also be altered via the [One-Shot AF release priority] option in the [AF3] tab. The priority of focusing and shutter-release can be altered in the same way as about during Al serv AF. However there is no [Balance priority], and instead [Focus priority] is the default setting.
Automatically switching of AF points for horizontal and vertical shooting

Presetting the AF points makes it easier to capture the desired composition for horizontal and vertical shooting. Utilizing the AF point setting and registration, you can preset the AF points for each orientation. This allows you to change the camera’s orientation and have the set AF points and modes switch automatically.

**Steps:**
1. Select the [Select separate AF points] option from [Orientation linked AF point].
2. Change the camera position and select the desired AF point or AF mode.
3. By changing the camera’s orientation, the set AF points and modes will switch automatically.

**Note:**
- Be careful you do not forget that this setting has been set.
- During sporting events or concerts, it is common to shoot while changing the camera orientation between horizontal and vertical positions. The EOS-1D X has 61 AF points, allowing for high composition freedom.
- If you select the top left AF point in the horizontal position for example, and change the orientation so the grip is at the top in the vertical position, the AF point will end up at the bottom left. If you want to capture the athlete’s entire body and focus on their face when shooting, you will have to quickly select another AF point. In situations like this, AF point settings for each orientation are extremely useful.

**Examples:**
- **Horizontal position:**
  - Select separate AF points
  - Set the desired AF point or AF mode

- **Vertical position with grip at the top:**
  - Select separate AF points
  - Set the desired AF point or AF mode

- **Vertical position with grip at the bottom:**
  - Select separate AF points
  - Set the desired AF point or AF mode

**Warning:**
- When shooting with different orientations, the camera will change between the AF area selection mode, and manually selected AF point settings, and the last setting will be remembered. Therefore, you should check the mode and AF point position before beginning a shot.

**Tip:**
- By selecting [Select separate AF points] from [Orientation linked AF point], individual settings for each of the AF area selection modes and the manually selected AF points can be memorized. In the previous case for example, if you set the center upper edge AF point beforehand when in the vertical position with the grip at the top, when switching from the horizontal to vertical position, it is possible to have the AF point line up with the position of the face instantly. By envisioning the composition you want to capture and setting the appropriate AF point or AF mode beforehand, you will be able to carry on shooting as you change orientations.
Utilizing the AF point setting and registration

Instantly recalled AF points using [Switch to registered AF point]

Store your preferred AF point for instant access at the touch of a button

Use [Custom Controls] from [C.Fn5: operation]

Using the [Custom Controls] option from the custom function [C.Fn5: operation] menu allows an AF point to be registered and recalled instantly. This function can also be used to assign various functions to the different camera controls.

**Set up steps**

1. There are two options to customize the controls to register and AF point
   - A: Assign [Metering - AF start] to the AF-ON button, or the button then press info and select [Registered AF point]
   - B: Assign [Switch to registered AF point] to the button, LENS, or M lens button. Press info to select if the option is applied only when the button is held or not

2. Manually select AF points you will want to recall. (This is possible with all AF area selection modes except Zone AF)

3. Press the button while pressing the ISO button until you hear a beep.

AF point registration and usage is described above. Also, for more advanced usage this setting can be combined with [Orientation linked AF point] setting (described on pages 42-43). Selecting the option [Select separate AF points], from the [Orientation linked AF point] option makes it possible to register and recall AF points separately for all three positions, vertical (grip top/bottom), and horizontal as well as the remembered AF point for orientation.

When the AF-ON button, or the button are assigned the function [Metering - AF start], instant switching of registered AF points becomes possible. Press the ISO button(157,578),(410,909) in the [Customize Controls] assignment screen, and then select [Registered AF point]. Now when the button is held the AF will use the registered AF point.

Another function that is effective for quickly switching AF points while shooting is AF point registration and recall feature possible using [Custom Controls]. There are several methods to achieve this; one is to assign registered AF points to a button via [Custom Controls] function. The second method is AF point or [AF area selection mode] registration. By carrying out either of the two options, you can press a buttons and instantly switch between registered AF points.

By registering frequently used AF points, or a strategically placed AF point, enables instant response without the need to reframe or alter the camera’s position. Further refinement in operation is possible, with the [Depth-of-field preview], and the [Lens AF stop] buttons when set to [Switch to registered AF point] setting. These buttons provide the possibility to [Switch only while pressed] or [Maintain switching until pressed again] settings, making detailed customization possible. Using these settings enables the camera suit the way you shoot.
Utilizing the Switching AF area selection modes

Instantly switching AF area selection modes with a single button
Assigning the AF modes you want to switch is convenient using [Custom Controls]

Assigning functions

By assigning an [AF area selection mode] to a specific button in the [Custom Control] screen, you can continue shooting and switch AF areas instantly with the press of a single button without having to move your eye from the viewfinder.

Examples of instantly switching AF area selection modes

From [Single-point AF] to [Spot AF]

Shooting the pit stop in motor sports, for example. After shooting wide shots at the wide angle end of a zoom lens with [Single-point AF], quickly zoom in, and when targeting the driver’s eye avoiding the helmet using [Spot AF].

From [Single-point AF] to [AF point expansion]

An example is soccer etc. where the player appears quite small in the viewfinder, then comes closer to fill the screen. In this case, by switching to [AF point expansion], it is possible to steadily track low contrast portions of the uniform even as it gets larger.

From [AF point expansion] to [61-point automatic selection AF]

Switching to [61-point automatic selection AF] is effective with figure skating where the skater comes from far away to fill up the screen as they approach. You can leave AF point selection up to the camera, and concentrate on framing as you shoot.

Buttons that can be assigned to switching AF area selection modes

There are the four buttons that can be assign to switch AF functions. The AF-ON button and button can be assigned with [Custom Controls] to [Register/apply shooting functions], and the button and button can be assigned with [Switch to registered AF functions].

Buttons that can be assigned to switching AF area selection modes

- AF-ON button
- AE lock button
- Lens AF stop button
- Multi function/depth of field preview button

Assign [Register/apply shooting functions] to the button or the button with the custom function’s [Custom Controls]. Press the INFO button on the assign function’s selection screen, (various functions can be set) and select the [AF area selection mode] that you want to use.

Assign [Switch to registered AF functions] to the button or button with [Custom Controls]. Press the INFO button on the assign function’s selection screen, and from various AF functions, select the [AF area selection mode], and select the mode that you want to use.

AF area selection modes such as [Single-point AF] and [AF point expansion] are effective for switching according to the size and type of subjects. While looking through the viewfinder it can be difficult to change the mode while tracking the subject. However, by assigning the AF area selection modes you want to use, to specific buttons, you can switch instantly while continuing shooting. There four buttons that can be assigned. Think about the characteristics of the sports and subjects you want to shoot beforehand, and assign the AF area selection modes you think you will use. By assigning different modes to each of the four buttons, you can control up to four modes at will. In addition, aside from the AF area selection modes, various functions can be registered and applied, so by making settings as needed, you have the flexibility to handle conditions as they change.