Canon

EOS-1Dx

AF Setting Guidebook

Detailed explanations of how to use the various high precision AF features
By combining the ultimate in AF performance and easy of use, a wealth of new photographic possibilities are available.

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 cross-type AF points, including 20 high-precision points compatible with f/4 lens, and new AI Servo AF III with totally updated calculation and speed to improve accuracy for predictive AF, it's possible to focus precisely when shooting subjects with extremely fast movement, such as wildlife, athletes, and more.

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.
New AF Setting Operability

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AF frame indicated in this information may differ from those interior indication and color of actual finder.

EOS-1D X maximum continuous shooting speed is restricted to 10 fps when the battery charge is less than 50%, or when the ISO speed is above 32,000. If the camera’s internal temperature is low and ISO speed above 20,000, maximum continuous shooting speed is restricted to 10 fps.
All AF-related menu functions now in a separate menu

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.
Various settings for AF-related features can be made with AF menus [AF2] - [AF5]

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

The [AF2] tab includes settings related to cameras priority concerning shutter-release timing when using AI Servo AF. [AF Servo 1st image priority] and [AF 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 outer-most 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.
AF Configuration Tool [Presets]

Select from Case 1 - Case 6 to match subject scenarios
Presets consist of three different parameters combinations

When the [AF1] tab on the EOS-1D X is opened, [Case 1 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.

Important to note: the six Cases in the AF Configuration tool only affect focus tracking in AI Servo AF — there’s no impact in One-Shot AF.
The best parameters for different subjects and shooting scenes are combined into presets from Case 1 - 6

Case1
Versatile multi-purpose setting

Case2
Continue to track subjects, ignoring possible obstacles

Case3
Instantly focus on subjects suddenly entering AF points

Case4
For subjects that accelerate or decelerate quickly

Case5
For erratic subjects, moving in any direction

Case6
For subjects that change speed and move erratically

A combination of parameters to tailor the EOS-1D X’s focus-tracking with various types of moving subjects have been used to create the presets from Case 1 – Case 6. By selecting the appropriate icon and Case, photographers can change and fine-tune AI Servo AF for incredible continuous AF, even with the most challenging action subjects.

Hints & Tips

Pushing INFO button while any of [Case] is indicated in display, then text information of AF Setting Characteristics or Shooting Scene Example is indicated.

Moving the purple square over Case 1 – Case 6 will display the name of each case, for example [Case1 Versatile multi-purpose setting]. If you want more detailed information, 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
Versatile multi-purpose setting

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 starting point for tracking moving subjects, especially those moving at a steady speed. 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 continuously moving subjects, regardless of the speed of their movement.

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. Case 1 should be most users’ first option for action shooting. In particular, it’s ideally suited for subjects moving continuously toward or away from the camera.
Case 2 is an effective setting for shooting fast moving subjects which may 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). Or, if another subject or obstacle suddenly comes between you and the subject, AF may re-focus on the obstacle. By selecting Case 2 in situations like these, the AF system will attempt to continue to track the initial subject. When a
rily moves from the AF points
tarily appears in front of the subject

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.

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].
Focus instantly on subjects that move into the AF points
Effective when you want to continuously photograph targeted athletes one after the

Case 3 is the ideal setting when you want the AF system to focus instantly on any new subject within the active AF area. 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, an alpine skier bursting over a hill and suddenly appearing in your viewfinder). Case 3 can also be extremely effective when you want to instantly switch from one moving subject to another (for example, at the finish line of a bicycle road race, when you want to shoot continuously and switch from cyclist to cyclist while focusing).

With Case 3, unlike Case 2, if the subject moves away from the AF points, the camera may quickly refocus on a different subject or background. Therefore, Case 3 is recommended only when you truly want the AF to instantly refocus on new subjects.
Focus instantly on subjects that move into the AF points.

A scene with cyclists coming towards the camera. While focusing on the lead cyclist, you may wish to switch focus to the other cyclists while continuously shooting. In this situation, Case 3 would allow you to move the active AF point from one cyclist to another, and instantly begin to focus-track on the new subject.

1. Shoot the whole group while focusing on the cyclist in the center
2. Focus on the right side cyclist
3. Focus on the left side cyclist
4. Focus on the right side cyclist

3. Focus on the right side cyclist
4. Focus on the left side cyclist
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 quickly.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default Setting</th>
</tr>
</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>

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 subjects won’t be moving at steady, continuous speeds. Athletes suddenly going from static to moving or sudden stopping can occur in various sports and situations, and it can be challenging for traditional AF systems. In these situations, Case 4 may be 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 starts. This makes Case 4 an effective setting for shooting American football, 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), and for many types of wildlife shooting.
Focus on subjects with erratic movement
Suitable for sports and fast action where traditionally AF systems have difficulty tracking

Parameter default settings

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject tracking sensitivity</td>
<td>[0]</td>
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<tr>
<td>Accelerate / decelerate Tracking</td>
<td>[0]</td>
</tr>
<tr>
<td>AF point auto switching</td>
<td>[+1]</td>
</tr>
</tbody>
</table>

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

Using Case 5 when photographing a figure skater making a big jump (the AF area selection mode is set to [AF point expansion]). Case 5 allows even faster automatic switching from one AF point to another, when an enlarged AF Area is selected.

Inline skating on a half-pipe. Capturing the moments when the skater is jumping and twisting is easier with Case 5.

Case 5 is most effective for subjects that can move unpredictably from side to side — when more than one AF point is active. This setting works with 61-point automatic selection AF, Zone AF, and AF point expansion AF Area settings only. In Case 5, [AF pt auto switching] is set to [+1], speeding up the camera's ability to shift from one AF point to another. One of the key benefits of the 61-point AF system is its ability to enlarge the active AF area, and Case 5
Focus on subjects with erratic movement takes full advantage of this when erratic-moving subjects make it difficult to keep a single AF point on the subject. This setting is especially effective when shooting subjects with erratic movement such as figure skating, skateboarding, and inline skating. It can also be valuable in various types of wildlife and nature shooting, especially with birds in flight.
Focus on subjects with erratic movement and changes in speed
Effective when shooting sports that feature lots of quick movements

Case 6 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 side-to-side movement. Like Case 5, its faster AF Point Auto Switching works when the AF Area is set to Auto selection 61-point AF, Zone AF, and AF point expansion settings only.

Subjects that are most appropriate for Case 6 include rhythmic gymnastics, where there are often large movements with complete stops.
Focus on subjects with erratic movement and changes in speed.

Blue color of focus point is for explanation only, and actually there is no blue indication available.
This setting allows obstacles that pass in front of the subject [Locked on] can be effective when an obstacle crosses in front of the subject and when focus can shift to the foreground/background.

An example where [Locked on: -1/-2] 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 camera resists re-focusing on the new obstacle, and the AF system continues to track the original player.
ject to be ignored, as well as focusing on new subjects
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 further adjusted individually.

**[Tracking sensitivity]** addresses how quickly the AF system will try to re-focus on a new subject, when you’re focus-tracking an original subject and there’s a sudden change.

The **[Locked on: -1/-2]** setting delays AF from switching to a sudden new subject, and continues to focus-track the original subject. Selecting -2 results in the targeted subject being tracked for the longest time before focus changes to a new subject now in the AF point.

The **[Responsive: +1/+2]** setting speeds up the process of re-focusing on a new subject with AI Servo AF. It is also effective when you want to quickly focus on subjects that are hidden and will appear suddenly.

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An example where **[Responsive: +1/+2]** is effective

When you want to focus on an athlete who appears suddenly in the frame.

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.

Examples where the [0] setting is effective

Track and field events where constant speed is common.

A track and field example where an athlete is running directly towards the camera. [0] is most suitable for taking shots of subjects moving at a steady, continuous rate of speed — regardless of whether that speed is fast or slow.
[Accel./decel. tracking] is revolutionary: it allows you to set the AF system for either continuous, steady movement, or erratic, stop-and-start movement. The default setting is [0], which is suited for shooting subjects that move at steady speeds.

[+1/+2] are intended for 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 subject motion tends to have frequent changes in speed.

Examples where the [+]
setting more effective

Sports where athletes movement sudden stop or start

A long-jump landing is a perfect example of movement that suddenly comes to a stop. With this sudden change in subject speed, normal AI Servo AF may not be able to perfectly capture it. However, changing the [Accelerate / decelerate Tracking] set to [+1] or [+2] adjusts the EOS-1D X's AI Servo AF to expect and adjust for sudden speed changes.
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

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

Example of a golf bunker shot. The [0] setting is recommended when shooting subjects that do not move significantly.

Tip for AF setting

Change the level of “Accelerate / decelerate Tracking” and “AF point auto switching” as needed for the best possible results — depending on the type of motion.

“Accelerate / decelerate Tracking” and “AF point auto switching” are two fundamental aspects of the 61-point AF system, whenever you’ve got moving subjects and more than one AF point active. Start with the factory default settings, but if you need more focus consistency, understand you can adjust either or both to suit the subject at hand.
for moving subjects
easily move out of the selected AF point

[AF pt auto switching] adjusts the speed 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 smooth, predictable switching of AF points. The [+1/+2] settings are used when shooting subjects with faster, erratic movement which could happen in any direction. Whenever the initial or primary AF point (again, with more than one AF point active) leaves the subject, it will rapidly switch to surrounding AF points to continue to follow the subject.

Use the [+] setting when you want the camera to speed-up the process of switching AF points; the [0] setting provides more stable changing of AF points, and is ideal for subjects that don’t move radically from side-to-side.

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

A rhythmic gymnast showing lots of movements in all directions. Use the [+1] setting in order to capture the movement by taking advantage of rapid shifting AF points.

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

Change the AF point selection to match your the shooti
Choose whether only one AF point is used, or select from a vast array of AF selection

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 among multiple AF points to track the subject, even 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].

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.

Using only one AF point

Using multiple AF points (zone)

Press the \button

The mode is changed each time the M-Fn button is pressed

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

Four modes can switch automatically between multiple AF points to capture moving subjects: AF point expansion (4 points — up, down, left, and right); AF point expansion (surrounding 8 points); Zone AF; and Auto selection of 61 AF points (during Al Servo AF). AF Area features are explained from P. 27 – 35, so you can select the mode best suited to your subject’s characteristics and shooting scene.
There are six AF area selection modes to choose from

**Single-point Spot AF**
A single AF point is manually selected, and its size reduced for selective focus on small areas.

**Single-point AF**
The default setting. One single point is active, and can be manually moved within the 61-point array by the photographer.

**AF point expansion (four surrounding points)**
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 a larger cluster of surrounding AF points.

**Zone AF**
Nine pre-set AF zones are available; the camera focuses on nearest subject within active zone.

**61-point automatic selection AF**
All AF points are used with this mode, and the camera selects and focuses automatically.

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

Single-point AF: one manually selected AF point is used to focus. For experienced photographers or when it is easy to keep the single AF point on a moving subject, it can be combined with AI Servo AF to focus-track moving subjects. However, this AF Area setting is often 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

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

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

Spot AF mode reduces the size of a single, manually-selected AF point, making it even easier to carefully focus on small, precise areas of a scene. It’s often an ideal way to focus on the exact area, even when there is an obstacle near the area you want to focus on. One example when shooting sports is when you want to focus on the eyes of a rider wearing a helmet (see photos above). Even with normal Single-point AF, focus can easily get caught on
the edge of the helmet near the eye, resulting in sharpest focus at this edge. In situations like this, [Single-point Spot AF] makes it possible to focus more accurately on the rider’s eye.

However, since Spot AF reads such a small area of the scene, it’s not really suited to fast-moving subjects, and especially if there’s not a lot of detail at the subject where the Spot AF point is placed, it 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
This mode is ideal for sports photography

AF Point Expansion lets the shooter manually choose a single AF point for focus — but it adds a cluster of surrounding points, giving a larger area for following subjects and focusing. It’s especially well-suited for rapidly moving subjects, such as sports or wildlife. And, it works well with subjects that don’t have lots of detail or texture. The "principal" (central) AF point is primarily used for focus, but the outer points are instantly available if AF can’t be
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)].

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.

Two AF Point Expansion choices: the large [Surround] option, which adds eight AF points around a central primary point, or smaller 4-point option, which broadens coverage with a point up, down, left and right of the primary point. [Surround] is a good choice when you expect lots of lateral movement.

Completed with the principal AF point or if the subject moves slightly away from the central point. Of course, the central point and 4 or 8 surrounding points can be manually moved anywhere within the 61-point AF array.

Case 5 or Case 6 can be selected to allow even faster switching to outer AF points, if you anticipate really rapid side-to-side subject movement. AF Point Expansion is a setting any sports shooter should become familiar with.
AF area selection mode [Zone AF]

Effective for capturing subjects within a known area
For larger subjects or subjects that subjects moving over a larger area

A photo of a moment of action in fencing shot with [Zone AF]. In order to focus on the fencer’s facial area, this shot was taken by selecting the upper right zone.

The selected AF points display in [Zone AF].

Selection can be made from nine focusing zones
The 61 AF points are divided into three blocks, left, center, and right, and each has upper, central, and lower zones, and the desired location can be selected from these nine zones.

With the [Zone AF] mode, one of the nine focusing zones can be selected, and the EOS-1D X will focus on the nearest subject within that zone — whether in One-Shot AF or AI Servo AF mode. Zone AF differs from [AF point expansion] — with Expansion, one principal AF point is used, and outer points only called upon if the subject moves or AF isn’t possible. But with Zone AF, the entire zone of AF points is always active, and any can be used to focus on
the nearest subject. Zone AF is ideal in situations where you can reliably place the active zone over a face or other part of a subject that will be closest to the camera. The large areas of each zone lend Zone AF to subjects that will move side-to-side frequently, reducing the need to keep a single point upon a difficult-to-follow moving subject.

All focus points are superimposed on image because of explanation purpose only. Blue color of focus point is for explanation only, and actually there is no blue indication available.
AF area selection mode Auto selection of 61 AF points

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

When using **[One-Shot AF]**, EOS-1D X automatically chooses one or more AF points to focus on nearest subject. With **[AI Servo AF]**, user selects one starting AF point, and camera will automatically shift points from there if subject moves.

Capture the subject with an AF point near the center, and then by moving the camera to the left, you can compose a photo with space on the left side of the frame.

Shooting started by pinpointing focus on the leader of a cycling road race with a manually selected AF point. While taking continuous shots, the camera was moved to the left so the following cyclists on the left of the leader are rendered beautifully out of focus in the background.

**Hints and tips**

With “AI Servo AF” mode, the shooting starts from one AF frame that is user-selected. So select one AF point that will cover the position where focus-tracking starts. An interesting option is to manually pick the same AF point in Single Point AF, and in 61-point Auto AF select mode. Now, the same start position occurs if AF Area is switched from Manual to Automatic selection.

Combining AI Servo AF with Automatic AF point selection allows the user to select one starting AF point. Once tracking begins, the camera will automatically change AF points to keep the original subject in sharp focus. The AF points are arranged in a wide area and allow a lot of compositional freedom.

However, depending on 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).

All focus points are superimposed on image because of explanation purpose only.
The 61-point AF has numerous cross-type points for greater precision, cross-type focusing is possible even using lenses with a maximum

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

Newly developed 61-point AF sensor

Back up all the flexibility and control of the EOS-1D X’s new 61-point AF system is an amazing new AF sensor. Designed from the ground up with an emphasis on accuracy, precision and reliability, it’s the foundation of the EOS-1D X’s spectacular AF performance.

Its 61 AF points offer not only the widest coverage ever for a full-frame EOS camera, but the greatest level of AF precision Canon has yet achieved. Highlights include: Five central cross-type AF points, in a diagonal ”X” shape, with ultra-high precision (when used with lenses f/2.8 or faster); 20 outer cross-type AF points with extra-high-precision (with f/4 or faster lenses); and 21 central AF points that preserve cross-type coverage, even with lenses having f/5.6 (or faster) maximum apertures. 41 out of the 61 AF points offer cross-type coverage.

*The colored AF points are for illustrative purpose only. This does not represent the actual viewfinder display.
at tracking performance
aperture f-number of f/4

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

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

Pros often rely on fast lenses, and with lenses f/2.8 or faster (see the Group A lens list), full advantage of the five ultra-high-precision, cross-type central AF points is achieved. Additionally, full cross-type coverage is available at all 21 central AF points, and high-precision cross-type performance is achieved at 20 of the left/right outer AF points. High-precision AF at the sensor with f/2.8 or faster lenses means added focus accuracy when pros need it most.

Group A
41-point cross-type AF, with five f/2.8 diagonal-cross AF points at the center

AF focusing is possible with 61 points. All AF area selection modes can be chosen.

Major lenses

<table>
<thead>
<tr>
<th>Lens</th>
<th>Group A</th>
<th>Group B</th>
<th>Group D</th>
</tr>
</thead>
<tbody>
<tr>
<td>EF24mm f/1.4L USM</td>
<td>EF24mm f/1.4L II USM</td>
<td>EF24mm f/2.8</td>
<td>EF24mm f/2.8</td>
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<tr>
<td>EF28mm f/1.8 USM</td>
<td>EF35mm f/1.4L USM</td>
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<td>EF50mm f/1.4</td>
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<tr>
<td>EF85mm f/1.2L USM</td>
<td>EF85mm f/1.2L II USM</td>
<td>EF85mm f/1.8</td>
<td>EF85mm f/1.8</td>
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<tr>
<td>EF135mm f/2L USM</td>
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<td>EF135mm f/2L</td>
<td>EF135mm f/2L</td>
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<td>EF135mm f/2L</td>
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<tr>
<td>EF14mm f/2.8L USM</td>
<td>EF20mm f/2.8L USM</td>
<td>EF20mm f/2.8</td>
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<tr>
<td>EF24mm f/2.8</td>
<td>EF28mm f/2.8 IS USM</td>
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<td>EF24mm f/2.8 IS USM</td>
<td>EF24mm f/2.8 IS USM</td>
</tr>
</tbody>
</table>

Group B
41-point cross-type AF, with one ultra high-precision diagonal-cross AF point at center

AF focusing is possible with 61 points. All AF area selection modes are available. High-precision, cross-type AF at 20 outer AF points.

Group D
31-point cross-type AF, with one ultra high-precision, diagonal cross-type center point

AF focusing is possible with 61 points. All AF area selection modes are available. High-precision, cross-type AF at 10 outer AF points.

* Focus confirmation light works during manual focus (without any tilt or shift movements).
"Ext EF1.4x" is an abbreviation of various EF 1.4x Extenders.

* TS-E lenses are manual focus only. ** Sales start scheduled in July, 2012 *** Sales start scheduled in June, 2012
61-point AF (2) The number and placement of cross-type points used by the f/4 lenses

Pros also often work with f/4 lenses, or f/2.8 tele lenses with an EF 1.4x Extender. EOS-1D X provides all 61 AF points to these users, with 41 offering cross-type coverage. 20 of the outer AF points provide an added measure of high-precision, cross-type AF coverage, making them even more useful as an alternative to the center AF points. Note that the EF 100mm f/2.8L IS macro lens is part of this grouping, and AF with that lens conforms to these characteristics.

41-point cross-type AF points can be used

41-point cross-type AF points available, and they can be used with a high level of tracking performance. AF focusing is possible with all 61 points. All AF area selection modes are available.

Cross-type AF coverage at 41 points, with many f/2.8 tele lenses and Extender 1.4x

On the full-frame EOS-1D X, an extender is often used for sports, photojournalism, wildlife, and other situations where longer focal lengths are required. When many wide-aperture telephoto lenses (f/2.8 lenses, 200 thru 400mm) are used with the Extender EF 1.4x attached, the maximum aperture will effectively become f/4 and these combinations therefore are included in Group C. High performance AF can be utilized at all 61 AF points, with cross-type coverage at 41 of them — therefore, offering superb AF performance, centered or off-center.

### Group C

<table>
<thead>
<tr>
<th>Major lenses</th>
<th>f/2.8 and f/5.6 cross-type AF (dual-cross AF)</th>
<th>f/5.6 cross-type AF</th>
<th>f/4 (vertical-line focusing) + f/5.6 (horizontal-line focusing) cross-type AF</th>
<th>f/5.6 (horizontal-line focusing) AF</th>
</tr>
</thead>
<tbody>
<tr>
<td>EF50mm f/2.5 Compact Macro</td>
<td>EF100mm f/2.8L Macro IS USM</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>EF200mm f/2.8L USM + Ext EF1.4x</td>
<td>EF200mm f/2.8L II USM + Ext EF1.4x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EF300mm f/2.8L IS USM + Ext EF1.4x</td>
<td>EF300mm f/2.8L II USM + Ext EF1.4x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EF400mm f/2.8L II USM + Ext EF1.4x</td>
<td>EF400mm f/2.8L USM + Ext EF1.4x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EF135mm f/2L USM + Ext EF2x</td>
<td>EF200mm f/1.8L USM + Ext EF2x</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>EF8-15mm f/4L Fish eye USM</td>
<td>EF17-40mm f/4L USM</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>EF70-200mm f/4L USM</td>
<td>EF70-200mm f/4L IS USM</td>
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</tr>
<tr>
<td>EF70-200mm f/2.8L USM + Ext EF1.4x</td>
<td>EF70-200mm f/2.8L II USM + Ext EF1.4x</td>
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</tr>
<tr>
<td>EF500mm f/4L IS II USM</td>
<td>EF600mm f/4L IS USM</td>
<td></td>
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</tr>
</tbody>
</table>

**Major lenses**

- EF70-200mm f/4L IS USM
- EF 17-40mm f/4 L USM
- EF50mm f/2.5 Compact Macro
- EF200mm f/2.8L USM + Ext EF1.4x
- EF300mm f/2.8L IS USM + Ext EF1.4x
- EF400mm f/2.8L II USM + Ext EF1.4x
- EF135mm f/2L USM + Ext EF2x
- EF8-15mm f/4L Fish eye USM
- EF70-200mm f/4L USM
- EF70-200mm f/2.8L IS USM + Ext EF1.4x
- EF500mm f/4L IS II USM
- EF100mm f/2.8L Macro IS USM
- EF300mm f/2.8L II USM + Ext EF1.4x
- EF400mm f/2.8L USM + Ext EF1.4x
- EF17-40mm f/4L IS USM
- EF70-200mm f/2.8L USM + Ext EF1.4x
- EF500mm f/4L IS II USM
- EF600mm f/4L IS USM
61-point AF (3) The number and placement of cross-type points used by the f/5.6 lenses

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

Many lenses with EF 1.4x or 2x Extenders, and compact zooms fall into this category. With lenses having maximum apertures slower than f/4, high-precision AF is technically not possible, but 21 AF points in the central area still provide cross-type AF coverage, and the wide-area coverage from all 61 AF points remains available.

**Group E**
The central 21-point cross-type AF points can be used

AF focusing is possible with 61 points. All AF area selection modes are available.

<table>
<thead>
<tr>
<th>Major lenses</th>
<th>Lenses</th>
</tr>
</thead>
<tbody>
<tr>
<td>EF 50mm f/2.5 compact macro + life size converter EF</td>
<td>EF100mm f/2.8 Macro USM</td>
</tr>
<tr>
<td>EF400mm f/5.6 L USM</td>
<td>EF300mm f/4L USM + Ext EF1.4x</td>
</tr>
<tr>
<td>EF300mm f/4L IS USM + Ext EF1.4x</td>
<td>EF400mm f/4 DO IS USM + Ext EF1.4x</td>
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<td>EF600mm f/4L IS USM + Ext EF1.4x</td>
<td>EF600mm f/4L IS USM + Ext EF1.4x</td>
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<td>EF600mm f/4L IS II USM + Ext EF1.4x</td>
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<tr>
<td>EF70-300mm f/4.5-5.6 DO IS USM</td>
<td>EF70-300mm f/4.5-5.6 DO IS USM</td>
</tr>
</tbody>
</table>

**Group F**
21 central cross-type AF points available; total of 47 AF points available to select

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

**Group G**
15 central cross-type AF points available; total of 33 AF points available to select

Lenses

<table>
<thead>
<tr>
<th>Lenses</th>
</tr>
</thead>
<tbody>
<tr>
<td>EF180mm f/3.5L Macro USM</td>
</tr>
<tr>
<td>EF180mm f/3.5L Macro USM + Ext EF1.4x</td>
</tr>
<tr>
<td>EF1200mm f/5.6L IS USM</td>
</tr>
</tbody>
</table>

*“Ext EF1.4x” an abbreviation of various EF1.4x Extenders*
AF operation and Image/Focusing Priority settings
You can set whether focusing or shutter-release has priority

Image/Focusing parameters during AI Servo  
[Set in the AF 2 tab]

You can decide whether to put priority on focusing or shutter-release

1  Shutter timing — first shot in a sequence  [AI Servo 1st image priority]

   **Equal priority**
   This setting gives an equal timing priority to both focus and shutter-release

   **Release priority**
   This setting gives priority to releasing the shutter as quickly as possible, even if focus has not been fully confirmed by the AF system. When capturing the moment is the priority, consider using this setting.

   **Focus priority**
   This setting gives priority to focusing on a subject and won’t allow shooting until it is in focus. It is recommended when you want to ensure your images are in focus, even if the first shot is delayed.

2  Shutter timing/fps speed in continuous shooting  [AI Servo 2nd image priority]

   **Equal priority**
   This setting gives an equal priority to both focus and shooting speed during continuous shooting. The FPS rate may slow down if AF becomes difficult... low-contrast subjects, dark areas, etc.

   **Shooting speed priority**
   This setting gives priority to fastest continuous FPS speed, rather than priority on focus. Continuous shooting speed will not drop. Effective when FPS speed, or maintaining the same intervals, is priority.

   **Focus priority**
   This setting gives priority to sharp focus for each frame, rather than continuous shooting speed. FPS rates will slow down when needed to confirm sharp focus for every shot in a continuous sequence.
You can decide whether to put priority on focusing or shutter-release.

Shutter timing — One-Shot AF mode  [One-Shot AF release priority]

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 [AI Servo 1st image priority] and [AI Servo 2nd image priority] parameters for AI 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 focused 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 fastest response — but possible out of focus images. The default [Equal priority] balances 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 similar fashion to AI Servo AF. However there is no [Equal priority], and instead [Focus priority] is the default setting — as it has been on EOS SLRs for years.
Automatically switching of AF points for horizontal and vertical positions

Using Orientation Linked AF point, to instantly switch AF points when the camera is set up.

**Set up 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

A) Horizontal position

B) Vertical position with grip at the top

C) Vertical position with grip at the bottom

3. By changing the camera's orientation, the set AF points and modes will switch automatically

First, select [Select separate AF points] from [Orientation linked AF point]. Next, select the AF area selection mode and the manually selected AF point for each of the positions (orientation) of A) Horizontal position, B) Vertical position with grip at the top, and if required C) Vertical position with grip at the bottom. The settings will automatically be remembered.

Now, for each of these orientations the camera will automatically switch to the select mode and AF points.
vertical shooting
turned from horizontal to vertical

Orientation Linked AF in the EOS-1D X allows not only different AF point for horizontal and vertical shots, but different AF Area settings can be chosen as well. For instance, it's possible to select the center AF point with Spot AF for horizontal shots, and Zone AF in an upper area for verticals.

Many studio and location photographers frequently change from horizontal to vertical compositions. And, one of the big advantages of the 61-point AF system is the complete flexibility it allows to focus and shoot, without having to re-compose.

Orientation Linked AF point selection takes this to the next level. When [Select separate AF points] has been chosen in the AF menu, it's possible to have the camera instantly switch AF points — and even AF Area settings — when it's turned from horizontal to vertical, or vice-versa. For photographers who use off-center AF points, this can be a true game-changer for fast shooting in the field.

For vertical shots, separate AF points (and AF Area settings, if desired) can be set for both grip at top and grip at bottom orientations, thus allowing three separate points to be memorized.

This feature is one of the primary short-cuts that EOS-1D X owners should experiment with for rapidly switching from one AF point to another. It lends itself beautifully to many situations where the camera will be quickly moved from horizontal to vertical — anything from portraits to sports or news journalism. AF points remain fully adjustable, so even if Orientation Linked AF is active, users can still change AF point location or AF Area as desired.
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.Fn2 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 even more control, this 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 is possible to register and recall AF points separately for all three positions, vertical (grip top/bottom), and horizontal — and return to a separate memorized AF point as described here.

When the AF-ON button, or the * button are assigned the function [Metering - AF start], instant switching to a memorized AF point becomes possible. Press the INFO button in the [Customize Controls] assignment screen, and then select [Registered AF point]. Now when the button is held, AF will instantly switch to the memorized AF point.
Shooting the side to side movement of tennis strokes. After photographing the player positioned to the right side with a manually selected AF point at the upper right, it was switched to the AF point registered at the upper left with a single push of a button, then the player was photographed returning a backhand shot positioned to the right side.

Another way to instantly switch AF points is to memorize a point, and immediately return to by pressing a button. 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 button 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 cameras position. Further refinement in operation is possible with the <Depth-of-field preview> or 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 makes it easy and intuitive to quickly change AF points as you need, even if it’s during the middle of action at a sporting event.
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

On shooting with optional ‘AF area selection mode’

Switchable into set ‘AF area selection mode’

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 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 LENS button and ○ button can be assigned with [Switch to registered AF functions].

Set up steps

[Register/apply shooting functions]

Assign to the AF-ON button, or the ✗ button to [Register/apply shooting functions]

Press the INFO. button

Select the [AF area selection mode]

Assign [Register/apply shooting functions] to the AF-ON 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.

[Switch to registered AF functions]

Assign to the LENS or depth of field preview button

Press the INFO. button now

Select the [AF area selection mode]

Assign [Switch to registered AF functions] to the LENS 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.

Unique to the EOS-1D X is the ability to not simply memorize and instantly return to an AF point, but to register and immediately call-up either a different AF area selection, or an entire set of AF functions (different Accel/Decel tracking settings, Tracking Sensitivity, etc.)

The [Register/recall shooting functions] option, within the EOS-1D X's Custom Controls, provides access to this remarkable new feature. Think about the characteristics of the sports and subjects you want to shoot beforehand, and assign the AF area selection modes — or AF characteristics — you think you will use. By assigning different modes to each of the four buttons, you can instantly access up to four AF areas and/or AI Servo AF options at will.

The ability to instantly change fundamental AF settings, on-the-fly, by simply pressing a button brings a new level of flexibility, allowing you to handle conditions as they change.