Panasonic

LUMIX

S1R I S1 I S5

# AF Guidebook

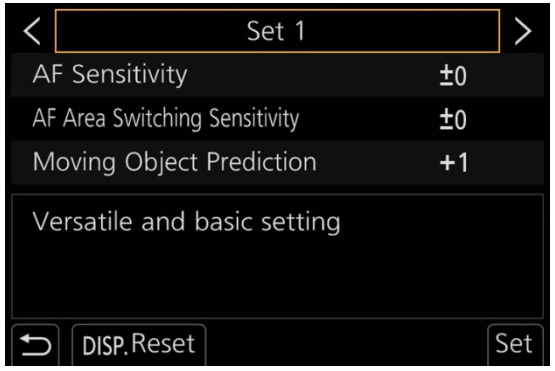
LUMIX

# INDEX

# AF Custom Setting

# AF Custom Setting

## Customizing AF directivity to match the situation




### Set 1

Highly versatile basic settings.

AF Sensitivity [ 0 ]
AF Area Switching Sensitivity [ 0 ]
Moving Object Prediction [ +1 ]

- Children
- Ballet
- Horseback riding
- Bicycle and etc.

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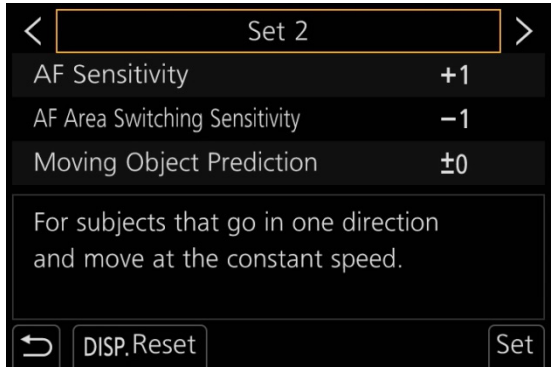


### Set 2

For subjects that go in one direction and move at a constant speed.

AF Sensitivity [ +1 ]
AF Area Switching Sensitivity [ -1 ]
Moving Object Prediction [ 0 ]

- Airplane / Train
- Motorcycle racing (from the front)
- Athletics (Sprint)
- Hawk / Eagle
- Dog / Cheetah and etc.

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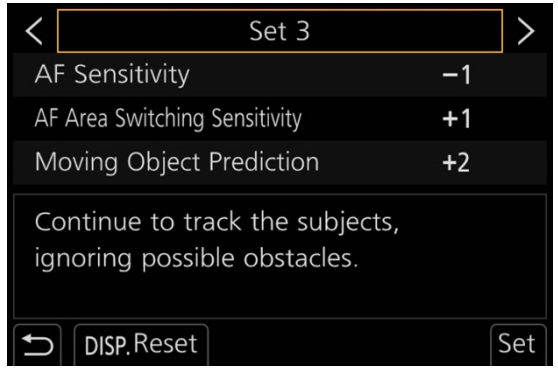


### Set 3

Continues to track the main subjects even when obstacles appear.

AF Sensitivity [ -1 ]
AF Area Switching Sensitivity [ +1 ]
Moving Object Prediction [ +2 ]

- Football / Rugby / Basketball
- Breaststroke / Butterfly
- Tennis / Badminton
- Surfing
- Dance and etc.

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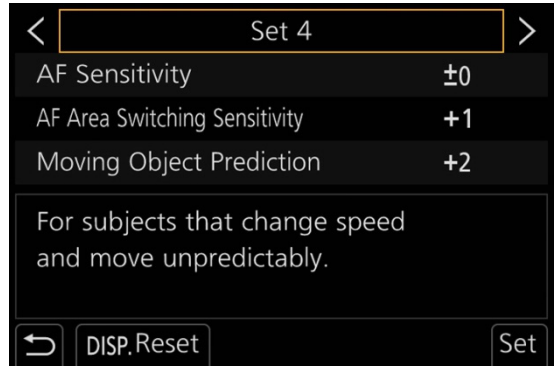


### Set 4

For subjects that change speed and move unpredictably.

AF Sensitivity [ 0 ]
AF Area Switching Sensitivity [ +1 ]
Moving Object Prediction [ +2 ]

- Motorcycle racing / Motocross
- Skateboard / Rollerblade
- Boat racing / Canoeing
- Athletics (Cornering)
- Horse racing and etc.

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# Set 1

| Set 1 | AF Sensitivity [ 0 ]<br>AF Area Switching Sensitivity [ 0 ]<br>Moving Object Prediction [ +1 ] |
|---|---|

This is the basic setting with high versatility.

It is applicable to a variety of movements and makes it possible to take get stable results under various conditions.

This setting is recommended for most scenes when taking photos of moving subjects.

This is the camera's default setting.


| Typical Subjects | | |
|---|---|---|
| | ■ Children | : Whole body. Playing or running. |
| | ■ Ballet | : Whole body. Gentle movements. |
| | ■ Horseback riding | : Whole body. Trotting. |
| | ■ Bicycle | : Whole body. From the front. |

# Set 2

| Set 2 | AF Sensitivity [ +1 ]<br>AF Area Switching Sensitivity [ -1 ]<br>Moving Object Prediction [ 0 ] |
|---|---|

This setting is for subjects that go in one direction and move at a constant speed. It is effective in situations where no obstacles will appear between the subject and the camera, the subject fits into the AF area, and framing is relatively easy.

■ **AF Sensitivity [ +1 ]**
This makes it easy to capture subjects. When it is difficult to keep the main subject in the center of the AF area, for example with handheld shooting, set the AF area to be wider, or reset the AF Sensitivity to [ 0 ] to match the situation.

■ **Moving Object Prediction [ 0 ]**
Setting the Moving Object Prediction to [ 0 ] makes it easy to capture subjects moving in one direction.

| Typical Subjects | | |
|---|---|---|
| | ■ Airplane | : Takeoff and landing. From the front. |
| | ■ Train | : From the front. |
| | ■ Motorcycle racing | : From the front. |
| | ■ Athletics | : Sprint. From the front. |
| | ■ Hawk / Eagle | : Enlarged in center. From the front. |
| | ■ Dog / Cheetah | : Enlarged in center. From the front. |

# Set 3

| Set 3 | AF Sensitivity [ -1 ]<br>AF Area Switching Sensitivity [ +1 ]<br>Moving Object Prediction [ +2 ] |
|---|---|

The main subjects continue to be tracked even when obstacles appear or the subjects move out of the AF area.
This setting is recommended, for example, when shooting sports action where the subjects move quickly, the subjects move out of the AF area during handheld shooting, other players cross in front of the subjects, or obstacles enter the frame.

■ **AF Sensitivity [ -1 ]**
With this setting, the focus strongly persists.
In situations such as doing the butterfly stroke when swimming, where the subject's face is often hidden from view, the focus remains in the initial position, preventing it from moving to the background, to continue shooting the main subjects.

■ **AF Area Switching Sensitivity [ +1 ]**
This is effective for movements that greatly change the position within the frame.

■ **Moving Object Prediction [ +2 ]**
This copes with situations where the subject suddenly stops moving or changes direction. It is effective, for example, in a soccer match to keep surrounding players inside the frame while clearly capturing the player who has the ball.


| Typical Subjects | | |
|---|---|---|
| | ■ Football / Rugby / Basketball | : The ball and one player. |
| | ■ Breaststroke / Butterfly | : Competition where swimmers go temporarily under the water. |
| | ■ Dance | : One dancer in a group. One couple in a dance competition. |
| | ■ Equestrian | : Show jumping. |
| | ■ Tennis / Badminton | |
| | ■ Surfing | |

# Set 4

| Set 4 | AF Sensitivity [ 0 ]<br>AF Area Switching Sensitivity [ +1 ]<br>Moving Object Prediction [ +2 ] |
|---|---|

This setting quickly focuses on subjects that move unpredictably while changing speed.

This is recommended for shooting cornering action in motor sports. It is helpful, for example, to clearly capture subjects whose movements are difficult to predict due to sudden starts, stops, and speed changes.

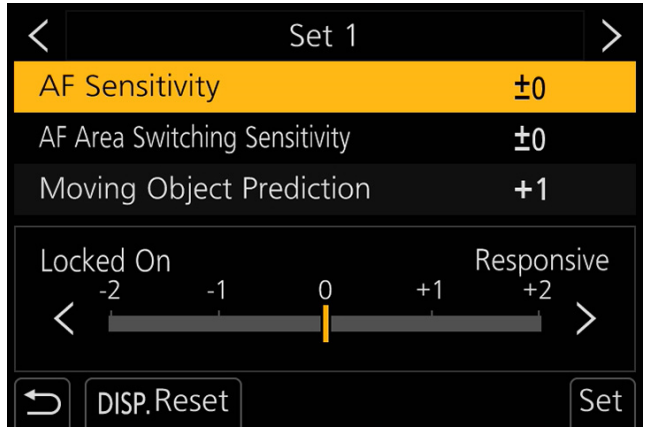
■ **AF Area Switching Sensitivity [ +1 ]**
This is effective for movements where the position changes greatly within the frame.

■ **Moving Object Prediction [ +2 ]**
This copes with situations where the subject suddenly stops moving or changes direction. It can be used for scenes where the subject jumps on a skateboard or rollerblade, or corners in a motor sport.

| Typical Subjects | | |
|---|---|---|
| | ■ Motorcycle racing / Motocross | : Cornering. |
| | ■ Skateboard / Rollerblade | |
| | ■ Boat racing | : Cornering. |
| | ■ Canoeing | |
| | ■ Athletics | : Cornering. |
| | ■ Horse racing | : Cornering. |

# What Is “AF Sensitivity” ?

This sets the "AF tracking sensitivity" for AF subject tracking in scenes where an obstacle enters or the subject is temporarily hidden from view.




## - Locked On

Refocusing is not done immediately when the main subjects leave the AF area.

The focus does not shift when an obstacle crosses in front of the subject. For example, once a swimmer is focused on, the focus will not shift to the water's surface or the background if the swimmer dives into the water. This setting lets you wait for the swimmer to reappear.

Using about 0.5 seconds as a guideline, if the subject does not reappear by then, try a minus setting.

## 0

Set to an appropriate time for refocusing.

Even if the subject leaves the AF area due to slight hand shake or reframing, focusing waits for an appropriate amount of time so it does not shift to the background. The same subject can be tracked while slightly revising the framing.

In many situations, an ample AF result can be achieved by setting the AF Sensitivity to [ 0 ].

## + Responsive

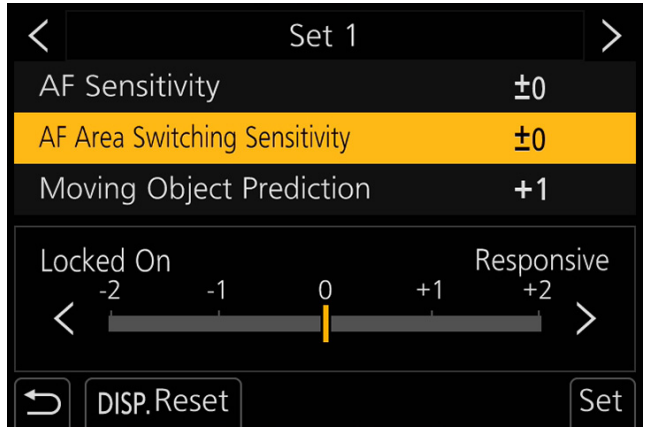
When the main subject leaves the AF area, another subject in that position is immediately brought into focus.

Subjects can be captured one after the other at a good tempo. This is convenient, for example, when you want to focus on each of the riders in a motorcycle race.

You can keep capturing the subjects in the AF area, and if you want to change from subject to subject while burst shooting, you can try setting AF Sensitivity to plus.

# What Is “AF Area Switching Sensitivity” ?

This enables you to set the AF area switching characteristics for subjects moving around the frame.




## - Locked On

If a subject that you want to capture leaves the AF area, you can wait until the subject returns.

This prioritizes the set area position over the subject. While trying not to switch the AF area as much as possible, the camera focuses on the subject in the AF area position that was initially focused on.

## 0

This setting uses the camera’s AF calculations for the main subject and the depth of field in the vicinity to focus and shoot.

In many situations, an ample AF result can be achieved by setting the AF Area Switching Sensitivity to [ 0 ].

## + Responsive

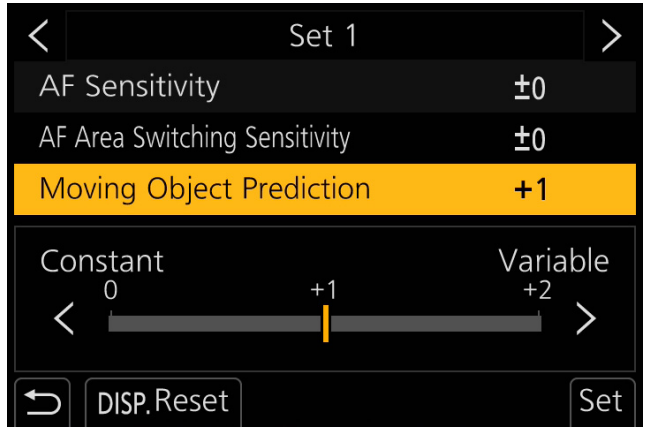
If the subject that you want to capture has left the AF area, try actively switching to a surrounding AF area to track a subject even if it is outside the current AF frame.

The subject is recognized and AF tracking is matched to its movement.

By setting the AF Area Switching Sensitivity to [ +2 ], subjects moving at a high-speed from the center of the frame to the edge are also subject to AF tracking.

# What Is “Moving Object Prediction” ?

When the subject's movement changes, you can set whether to match the AF operation to that movement.




## 0 Constant

Suited to capturing subjects moving at a constant velocity.

Subjects that move at an extremely high velocity shift considerably even in the small amount of time from focusing to actually shooting. In this difficult situation, movement is predicted in order to accurately capture the subject at the instant that the shutter is released.

Subjects that move in one direction, regardless of how quickly they move, can be brought into focus by this setting.

## +1

AF tracking is possible even for subjects that move extremely quickly.

In most cases, AF tracking is possible at this setting.

## +2 Variable

AF tracking is possible for subjects that move unpredictably. This is recommended for cases with sudden acceleration and sudden stops.

If the quick change of movement cannot be handled when the Moving Object Prediction is set to [ +1 ], set it to [ +2 ]. If changes in movement, such as sudden starts, sudden stops, and sudden acceleration, are severe, [ +2 ] is recommended.

# AF Settings for Each Type of Scene

# Scene Type 1 Basic Situations

| | |
|---|---|
| Focus Mode | **AFC** |
| AF Mode | **Face/Eye/Body Detection** |
| Burst Mode | **H** : High Speed Burst |
| AF Custom Setting | **Set 1** ➢ Page 05 |
| AF Sensitivity [ 0 ] | |
| AF Area Switching Sensitivity [ 0 ] | |
| Moving Object Prediction [ +1 ] | |

Use "Set 1" to capture children running in a park.

Because the Moving Object Prediction is set to [ +1 ] by default, accurate AF tracking is possible for a variety of moving subjects.

AF tracking is possible for the running, jumping, and other natural movements of children.

# Scene Type 2 Airplane / Train

| | |
|---|---|
| Focus Mode | AFC |
| AF Mode | 1 Area / Small |
| Burst Mode | H : High Speed Burst |
| AF Custom Setting | Set 2 ➢ Page 06 |
| AF Sensitivity [ +1 ] | |
| AF Area Switching Sensitivity [ -1 ] | |
| Moving Object Prediction [ 0 ] | |

Use "Set 2" to capture airplanes and trains.

Because the Moving Object Prediction is set to [ 0 ] by default, the camera predicts moving objects, making it easy to capture subjects that move in one direction, such as airplanes and trains.

Also, by setting AF Sensitivity to [ +1 ], the targeted subjects can be accurately captured. Even with handheld shooting, if it is difficult to keep the subject within the AF area, the AF area can be widened or AF Sensitivity can be reset to [ 0 ], to adjust the scene.

# Scene Type 3 Group Sports

| | |
|---|---|
| Focus Mode | AFC |
| AF Mode | 1 Area+ / Small |
| Burst Mode | H : High Speed Burst |
| AF Custom Setting | Set 3 ➢ Page 07 |
| | AF Sensitivity [ -1 ] |
| | AF Area Switching Sensitivity [ +1 ] |
| | Moving Object Prediction [ +2 ] |

Use "Set 3" when you want to capture a specific player or the ball from a group of mingling players and referees.

This sets the AF Sensitivity to [ -1 ], to prevent the camera from immediately refocusing if the subject is hidden by another player, so the shooting can begin after the subject reappears.

Since you cannot predict the next movement, the Moving Object Prediction is set to [ +2 ] to capture the position instant-by-instant.

# Scene Type 4 Car Race / Bike Race

| | |
|---|---|
| Focus Mode | AFC |
| AF Mode | 1 Area+ / Small |
| Burst Mode | H : High Speed Burst |
| AF Custom Setting | Set 4 ➢ Page 08 |
| | AF Sensitivity [ 0 ] |
| | AF Area Switching Sensitivity [ +1 ] |
| | Moving Object Prediction [ +2 ] |

Use "Set 4" for bike races where the subject moves randomly and the speed changes dramatically in sudden curves.

The AF Area Switching Sensitivity is set to [ +1 ] to match the AF tracking to the subject's movement.

Because the next move is difficult to predict in scenes where the speed changes, the Moving Object Prediction is set to [ +2 ] in order to accurately capture the position instant-by-instant.

# Scene Type 5 Wildlife

| | |
|---|---|
| Focus Mode | **AFC** |
| AF Mode | **1 Area / Middle** |
| Burst Mode | **H : High Speed Burst** |
| AF Custom Setting | - |
| AF Sensitivity [ +2 ] | |
| AF Area Switching Sensitivity [ +1 ] | |
| Moving Object Prediction [ +2 ] | |

Wildlife often enters the frame suddenly, with unpredictable movement.

With the AF Sensitivity set to [ +2 ], the subject can be brought into instant focus even when it suddenly enters the AF area.

With the AF Area Switching Sensitivity set to [ +1 ], AF tracking is possible for subjects that move at high-speed inside the frame.

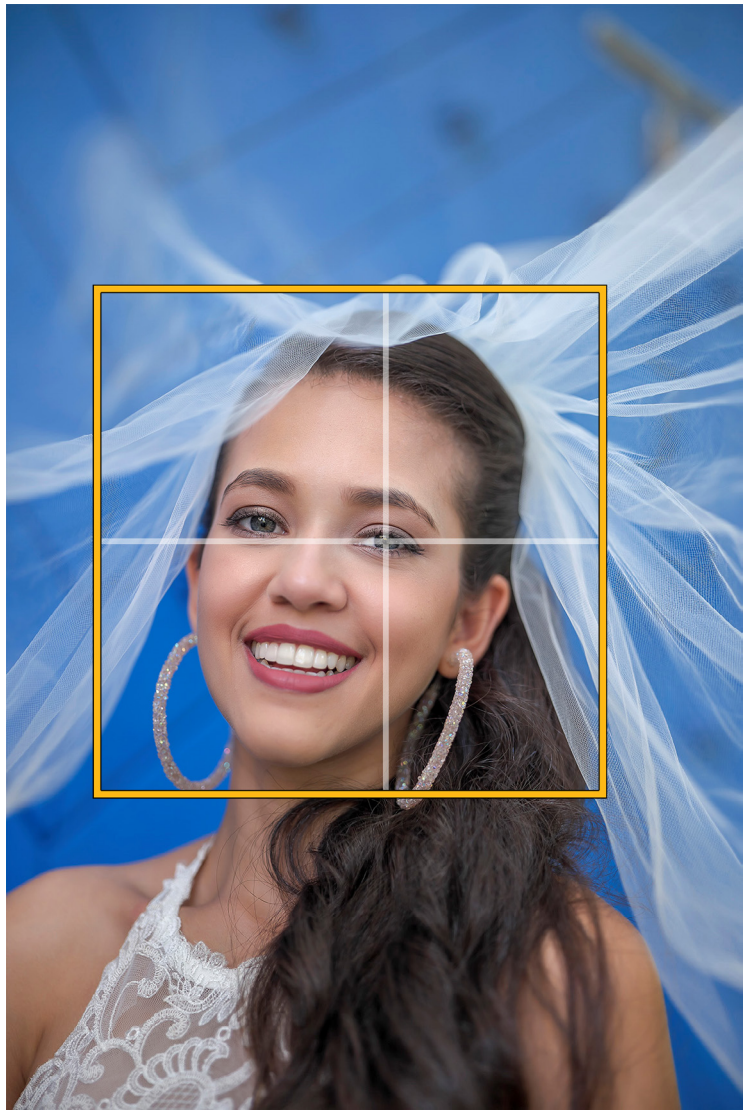
Since it is extremely difficult for the camera to predict the next movement for subjects that suddenly enter the frame, set the Moving Object Prediction to [ +2 ] in order to accurately capture positions instant-by-instant.

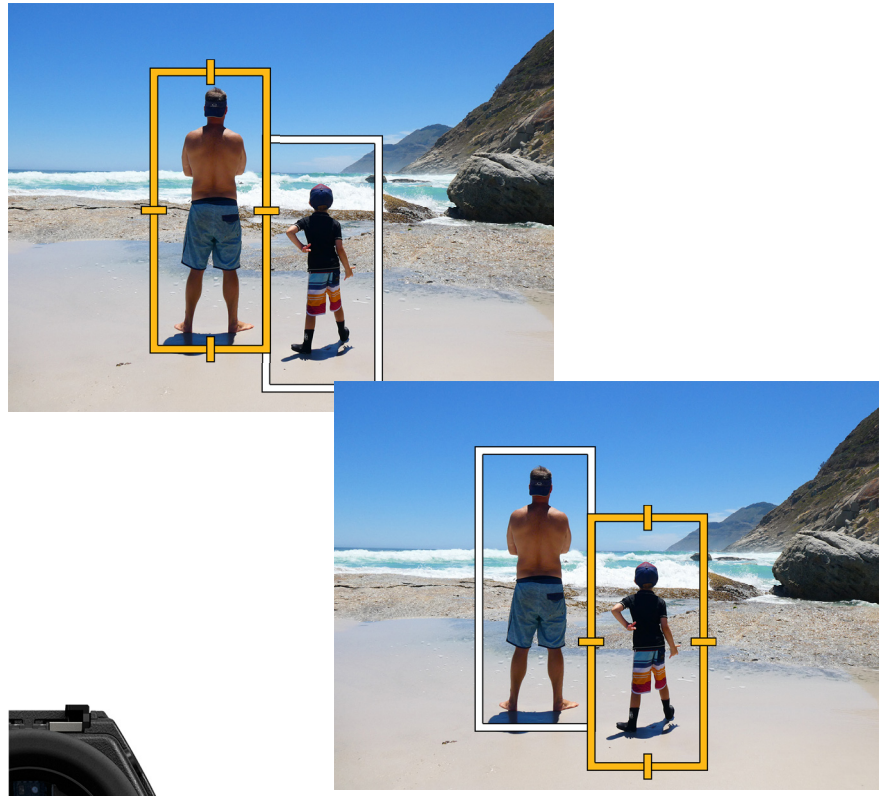
# Scene Type 6 Portraits

| | |
|---|---|
| Focus Mode | **AFS** |
| AF Mode | **Face/Eye/Body Detection** |
| Burst Mode | **Single** |
| AF Custom Setting | - |
| AF Sensitivity [ 0 ] | |
| AF Area Switching Sensitivity [ 0 ] | |
| Moving Object Prediction [ +1 ] | |

Naturally, LUMIX can take portraits using accurate Face/Eye Detection AF, but it can also focus when the face is hidden or the subject is facing backwards.

Deep Learning technology has greatly improved the accuracy of recognizing person. By recognizing the position or size of a person's body, focusing is possible in situations that were previously very difficult.






Pressing the joystick moves the main AF area toward the right.

# Scene Type 7 Low Light Situations

| | |
|---|---|
| Focus Mode | **AFS** |
| AF Mode | **1 Area / Middle** |
| Burst Mode | **Single** |
| AF Custom Setting | - |
| AF Sensitivity [ 0 ] | |
| AF Area Switching Sensitivity [ 0 ] | |
| Moving Object Prediction [ +1 ] | |

LUMIX can focus with accuracy even in dark places, such as a starlit sky.

A unique algorithm focuses in low lighting all the way down to -6EV, allowing it to focus almost down to nighttime darkness.

# Wide Range of Possibilities

# Wide Range of Possibilities

## Versatile focus functions possible only with Contrast AF

You can freely customize the AF setting to match the situation.

| | |
|---|---|
| 1 | Focus Mode |
| 2 | Auto Focus Mode |
| 3 | Focus Assist Functions |
| 4 | Intuitive Button Control |
| 5 | Logical, Speedy Menu System |
| 6 | Custom Settings |
| 7 | Touch Functions |

# [ 1 ] Focus Mode

## AFS Auto Focus Single

### Still Subjects

For scenery, food, etc.

The focus is fixed when the shutter button is pressed halfway.

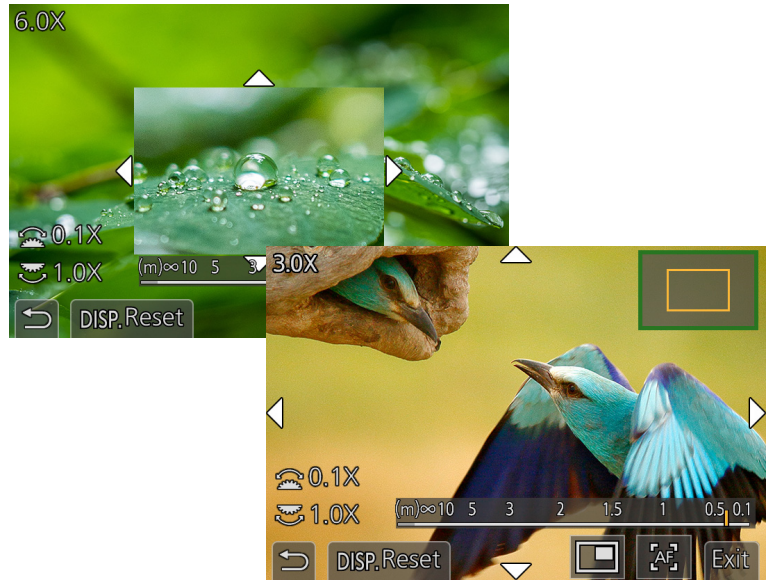
## AFC Auto Focus Continuous

### Predictable Movements

For sports, trains, etc.

Constantly performed when the shutter button is half-pressed. The camera predicts the subject position at the time of recording.

## MF Manual Focus



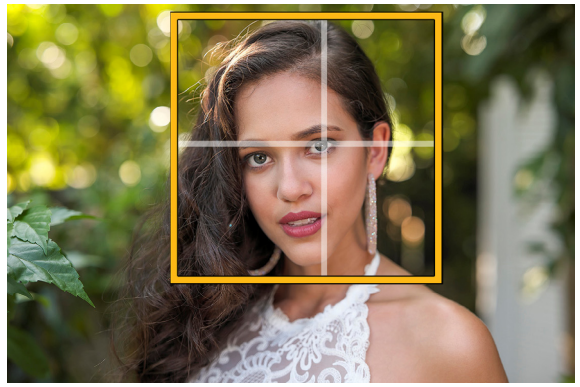

### Predictable Movements

When you want to fix the focus, etc.

When you want to fix the focus on a certain focal plane decided by yourself.

# [ 2 ] Auto Focus Mode 1

## Face/Eye/Body/Animal Detection AF



### Face/Eye Detection

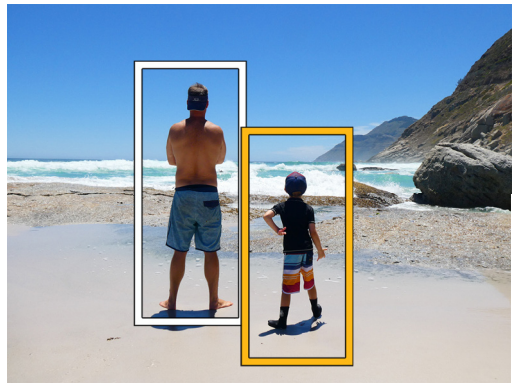
The camera recognizes the person's face and eyes, and chooses the optimal focus and exposure.

Applicable Situations :

The camera automatically focuses on the pupil to provide sharp and clear portraits. It automatically adjusts the focus on the eye closer to the camera.

The person to focus on and whether to focus on the right or left pupil can be selected using the joystick or by touch.

The LUMIX S5 recognizes human heads, even if the subject's face is turned sideways.



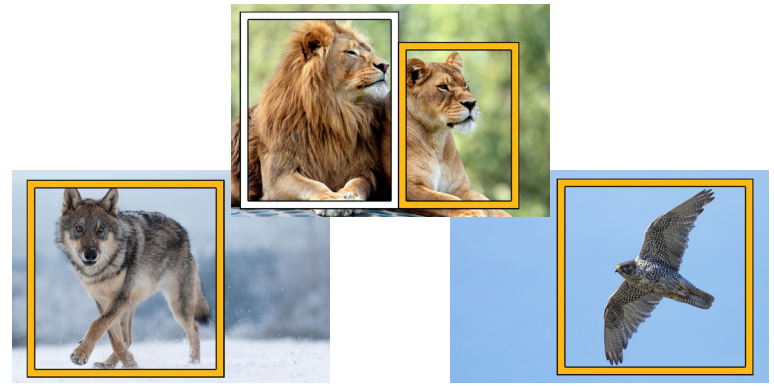
### Human Body Detection

The camera recognizes the person's whole body or upper torso and selects the optimal focus.

Applicable Situations :

The human body recognition network incorporating deep learning technology enables the detection of a subject even if the person's back is facing toward the camera.

It offers high recognition performance even when shooting football games, fencing and other sports scenes where players or athletes wear protective gear on their faces as well as wedding scenes with the bride wearing a veil.



### Animal Detection (Canidae, Felidae, Birds)

The camera can recognize birds and animals, such as Canidae (including wolves and others) and Felidae (including lions and others), and selects the optimal focus.

Applicable Situations :

The animal recognition network incorporating deep learning technology enables the detection of animals regardless of their positions. The camera offers stable tracking performance and accurate focusing even when shooting difficult-to-photograph wild animals.

# [ 2 ] Auto Focus Mode 2

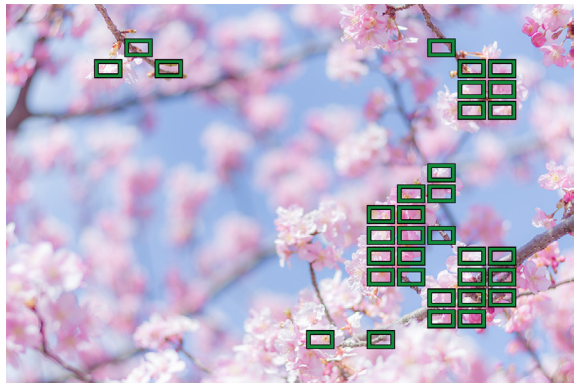
## Tracking AF

The camera locks on and "tracks" the subject as it moves, continuously adjusting the focus.

Applicable Situations :

- Tracking AF is activated by selecting AFC and half-pressing the shutter button.
- In addition to Tracking AF using live view images, Panasonic's original DFD and Motion Vector technologies enable tracking of even fast-moving subjects.

## 225-Area

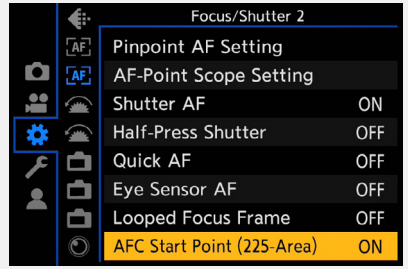


Up to 225 areas for each AF area can be focused.

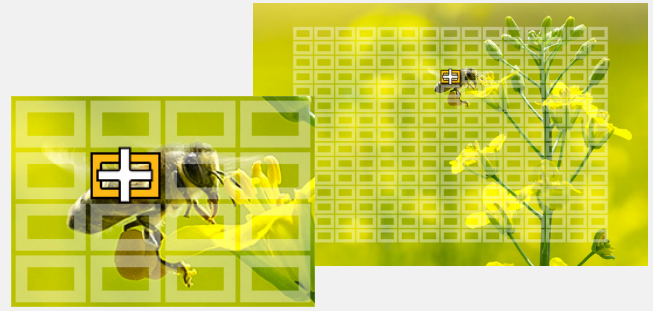
Applicable Situations :

The camera's analytical technology makes it possible to flexibly focus on the main subject. Even when it is difficult to predict the subject's motion and maintain framing, the main subject can be found in the frame and brought into focus.

The subject tracking start point can be selected in the AFC mode.




1. Turn ON [AFC Start Point (225-Area).]
2. Press the AF mode button on the back of the camera and select [225-Area] from the menu, then select [AF Area.]



3. Select and set the start position.

# [ 2 ] Auto Focus Mode 3

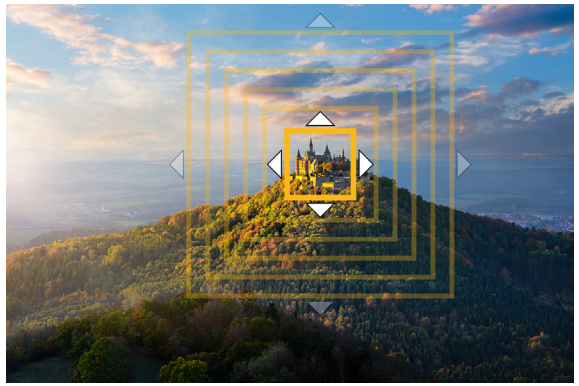
## Zone AF

You can freely select the AF-area group for the subject among 225 AF-areas.

Applicable Situations :

- Three default settings:
  Vertical/Horizontal, Square, Oval
- Up to 3 settings can be registered by custom.
  Areas can be intuitively selected by touch and joystick.

## 1-Area AF



Focusing is possible in any part of the screen.

Applicable Situations :

- This mode is recommended when the situation allows you to frame your shots as you desire. A single target can be accurately selected from subtle differences in depth of field for accurate focusing.
- The size of the AF area can be freely set to match the subject's size and motion.

## 1-Area+ AF

The camera adjusts the focus using the 1-Area AF and an auxiliary AF area with twice the size of the 1-Area AF area.

Applicable Situations :

- This is recommended when you focus on a moving subject. You can first focus using the 1-Area AF, and if the subject moves out of that AF area, the focus is readjusted using the auxiliary AF area.
- The size of the AF area can be freely set to match the subject's size and motion.

# [ 2 ] Auto Focus Mode 4

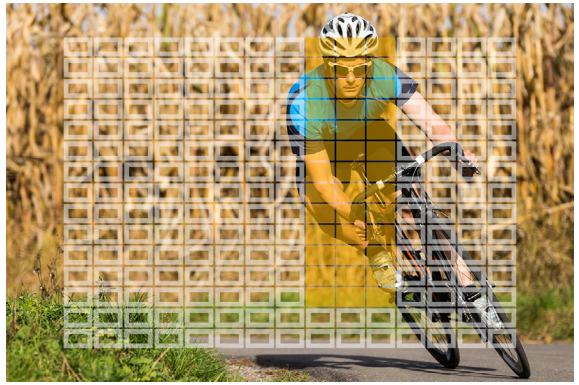
## Pinpoint AF

This allows more accurate focusing by further enlarging the focusing area.

Applicable Situations :

Using area smaller than 1-Area AF, the view can be enlarged up to 6 times for fine focusing.

## Custom1-3



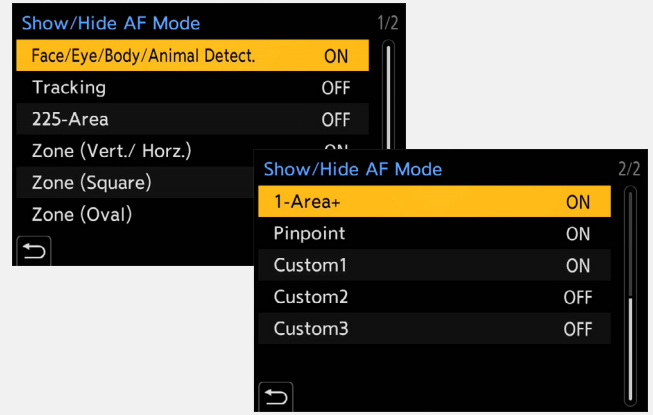
You can select desired areas from the 225-Area and register them.

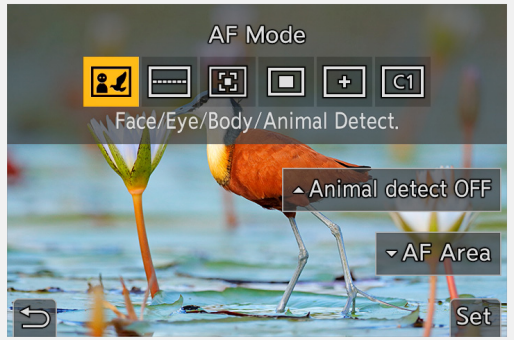
Applicable Situations :

Up to 3 settings can be registered by custom.
Areas can be intuitively selected by touch and joystick.

## Show/Hide AF Mode

You can select modes you want to use
from a maximum of 11 AF modes and display only those.



# [ 3 ] Focus Assist Functions 1

## MF Guide

The distance indicator enables you to check the area that can be focused and the present focusing position.

## MF Assist

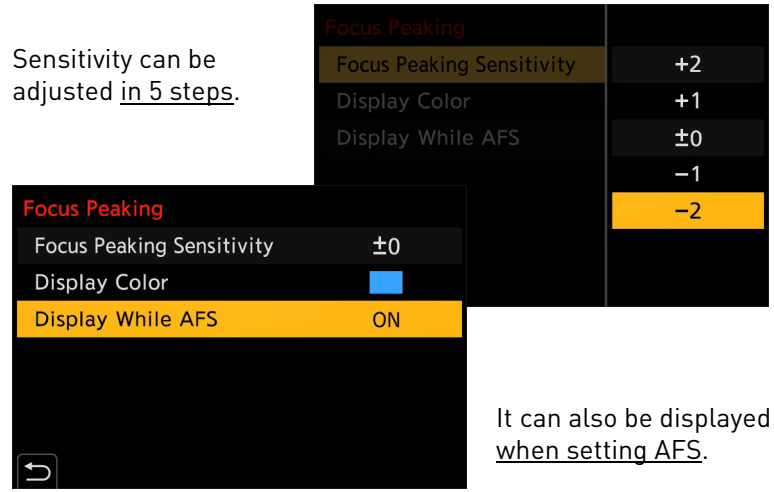

A part of the image can be enlarged up to 6 times in a windowed screen display mode (PIP (Picture-In-Picture)).


A part of the image can be enlarged up to 20 times in a full screen display mode (FULL).

## Peaking


This shows the peak of the focus .

Sensitivity can be adjusted in 5 steps.




It can also be displayed when setting AFS.

# [ 3 ] Focus Assist Functions 2

## AF-ON One-shot AF

MF

AF

Focus with AF before fine tuning with MF.

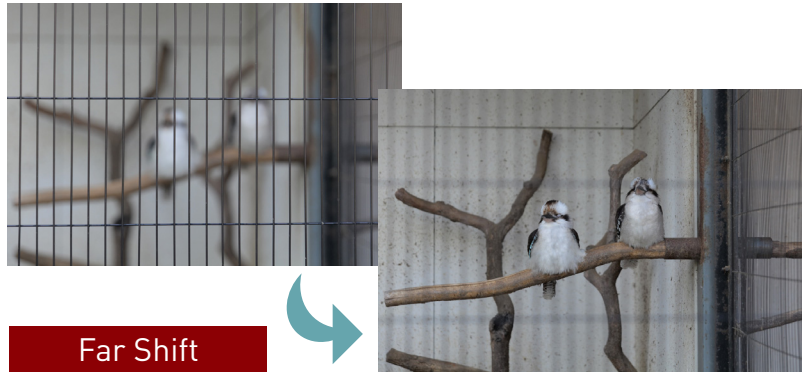
### Near Shift / Far Shift

For subjects or shooting conditions that are difficult to bring into focus, the auto focus direction can be adjusted.

* LUMIX S1R and S1 must be updated to firmware version 1.2 or later. LUMIX S5 comes equipped with this feature at the time of purchase.

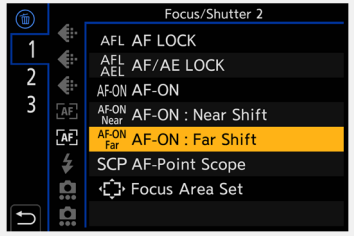
Near Shift

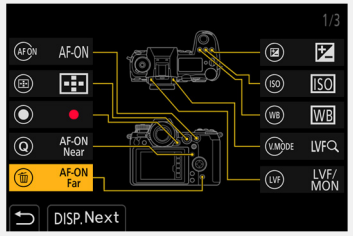
Put the priority on a near subject.
Nearby subjects can be focused on.



Far Shift

Put the priority on a far subject.
Convenient for shooting through fences or nets.



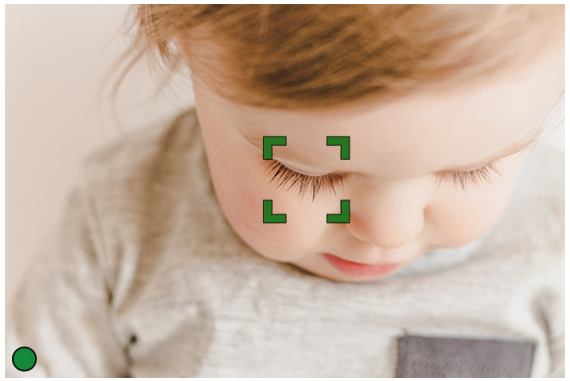




By assigning this function to an Fn button, you can use it to re-apply AF
to a subject that is nearer to or farther from the camera's present AF position.

# [ 3 ] Focus Assist Functions 3

## AF+MF

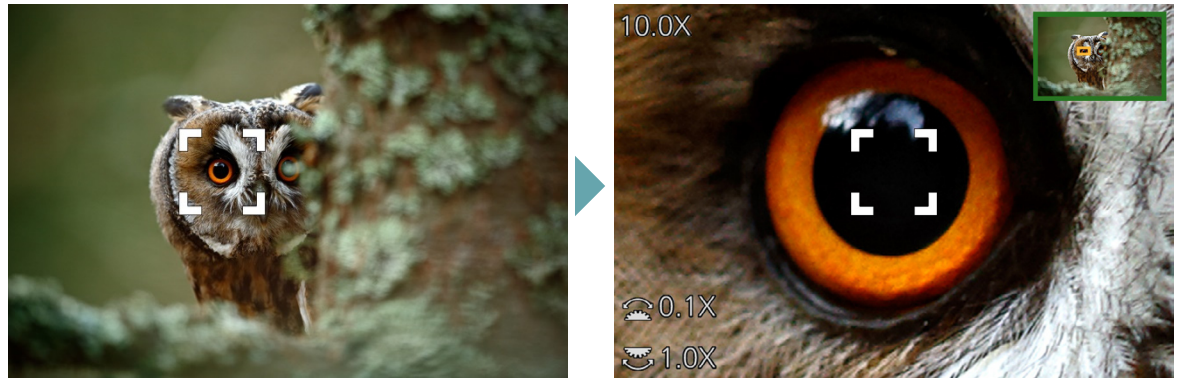
AF



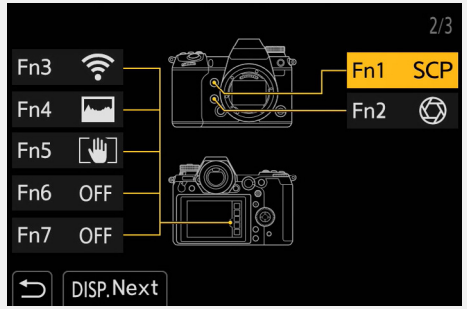
MF


Focus with AF, then fine tune with MF after AF locking.
Confirmation is possible while enlarging with MF Assist.

## AF-Point Scope




You can temporarily enlarge the view by 3-10 times to check the focus.
Refocus inside the enlarged area.

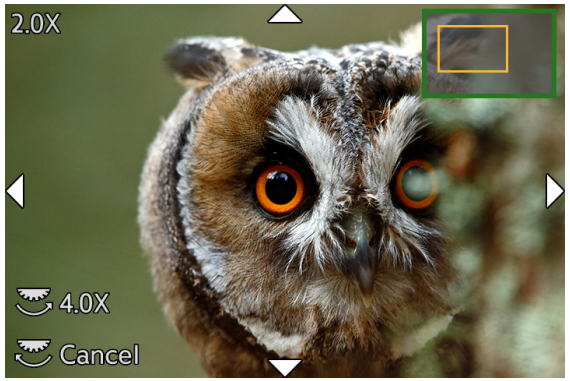



### Setting Method

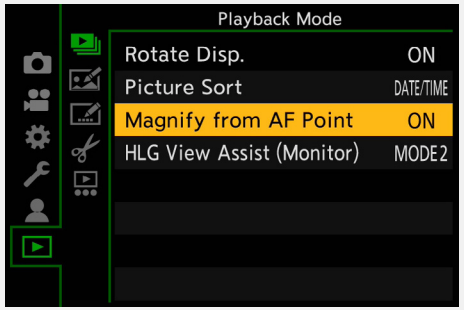
1. Allocate the function to an Fn button.
2. Press and hold the Fn button when shooting to enlarge the AF area.
3. Half-press the shutter button to refocus inside the enlarged area.

# [ 3 ] Focus Assist Functions 4

## Magnify from AF Point in Playback Mode



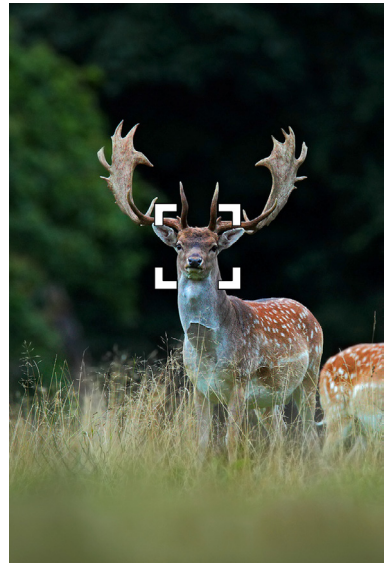

A frame is displayed at the position where the image is put into focus by AF,
and when enlarging the image, the magnification is centered at that position.




### Setting Method

1. Turn ON [Magnify from AF Point] in Playback Mode.

## Focus Switching for Vertical / Horizontal



Specifying the AF area position on the setting screen.
Framing is possible with vertical/horizontal efficiency.

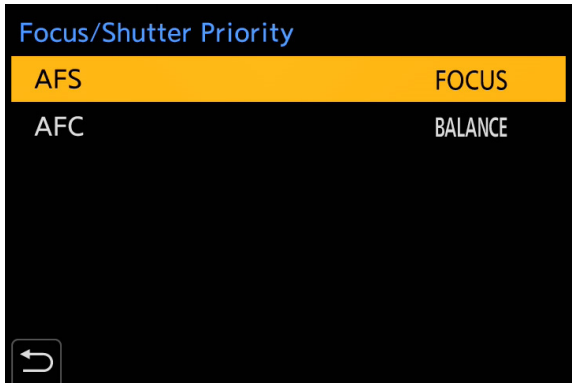

### Setting Method

1. Turn ON [Focus Switching for Vert / Hor].

2. You can set the AF area size and position
for each of the horizontal and vertical positions.

# [ 3 ] Focus Assist Functions 5

## Focus/Release Priority




Set whether to place priority on the focus, or on the shutter release, during autofocus.

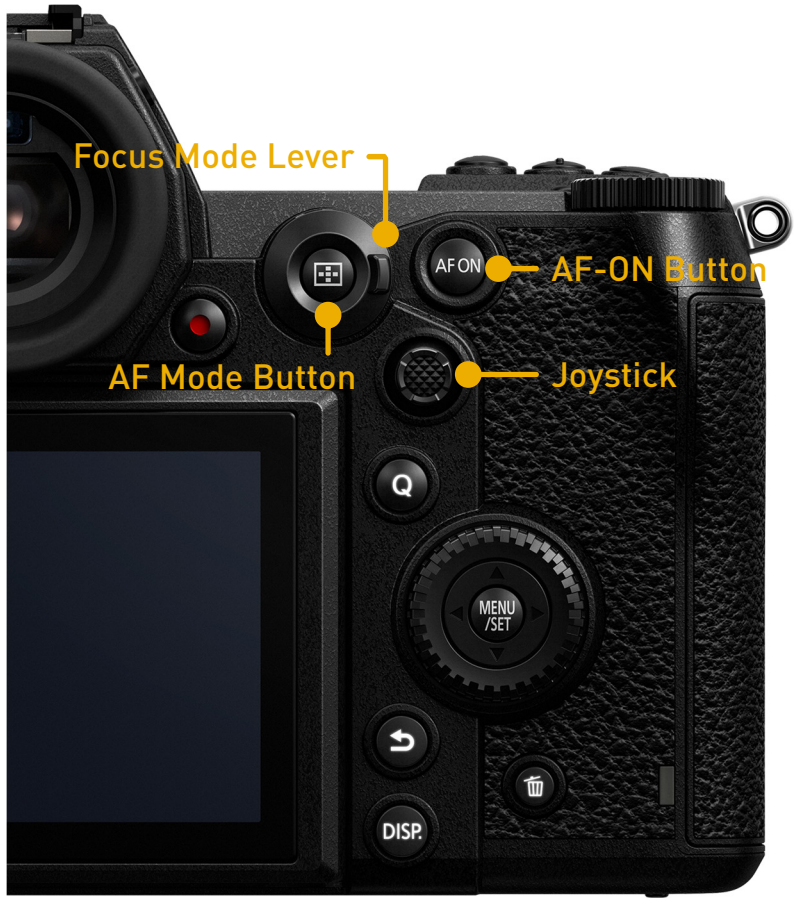
You can set [AFS] and [AFC] individually.

| | | |
|---|---|---|
| FOCUS | Disables recording when focus is not achieved. | This setting is recommended for shooting only when focusing is proper.<br>It is suitable for macro shooting, landscapes, etc.<br><br>This is the default setting for [AFS]. |
| RELEASE | Enables recording even when focus is not achieved. | For placing the priority on the shutter opportunity.<br><br>It is suitable for burst shooting wild animals or sports scenes instant by instant. |
| BALANCE | Performs recording while controlling the balance between focusing and shutter release timing. | Select this when you want to prioritize the shutter opportunity, but also want to raise the possibility of proper focusing.<br><br>This is the default setting for [AFC]. |

# [ 4 ] Intuitive Button Control 1

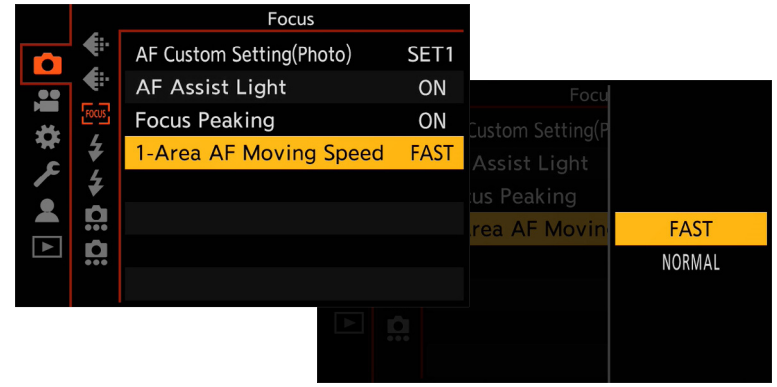
## External Buttons

The external levers, buttons, and joystick controller can be used to intuitively control the focus while watching the viewfinder.




## Joystick Controller

The joystick allows 8-direction control and push operation.
It lets you set the focus area quickly with your thumb.


The moving speed of the 1-Area AF frame can be selected.

8-direction joystick control + 1-Area AF Moving Speed selection
⇒ The frame can be moved quickly even in a diagonal direction.

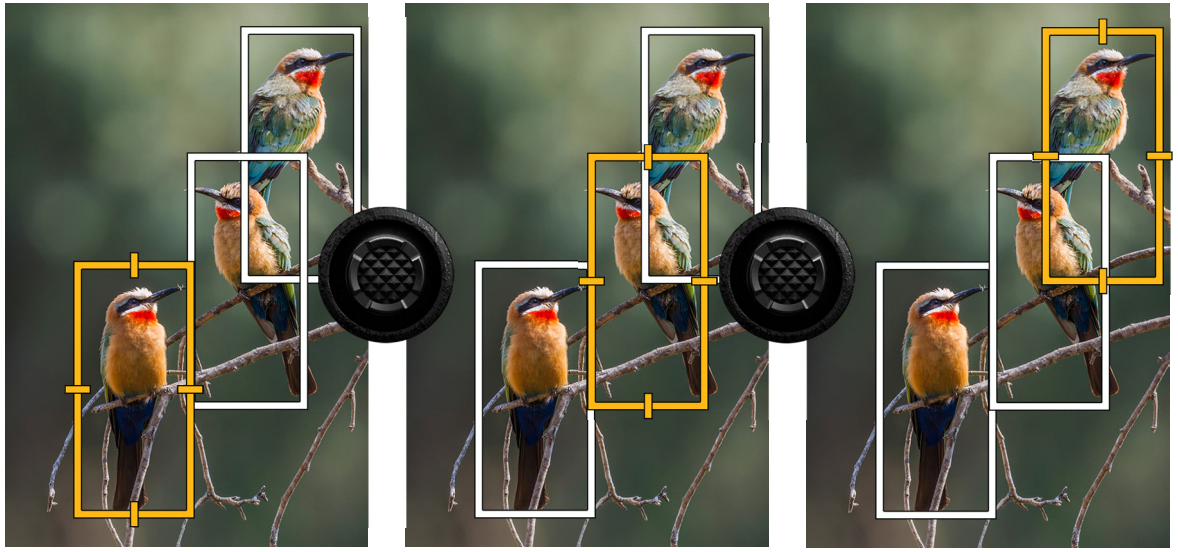
# [ 4 ] Intuitive Button Control 2

## Joystick Controller

The joystick allows easy camera operation. It lets you quickly shift the focus from one subject to another without taking your eyes off the viewfinder.

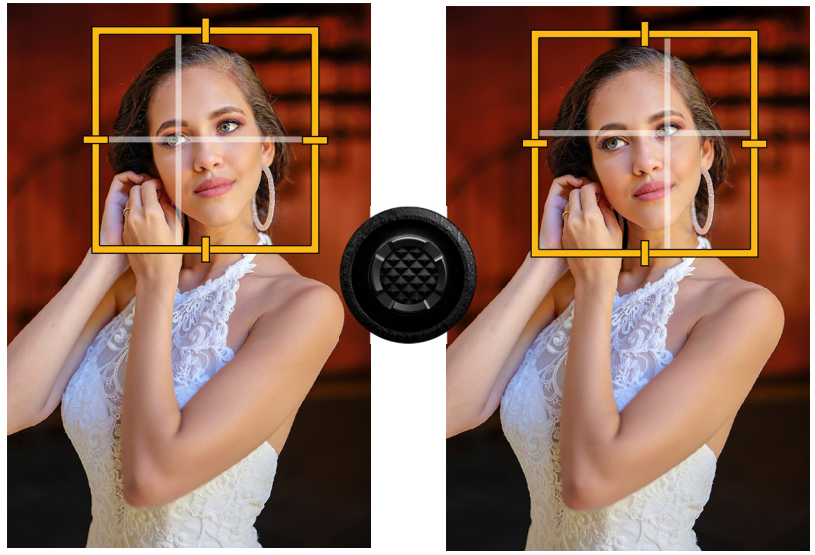
### Face Detection / Human Body Detection / Animal Detection

Pressing the joystick moves the main AF area toward the right.



### Face/Eye Detection

Pressing the joystick switches the focus point between the left eye and right eye.



# [ 4 ] Intuitive Button Control 3

## AF-ON


| How to Use AF-ON | |
|---|---|
| MF | Activates the AF temporarily. Press the button and focus inside the frame. |
| AFS<br>AFC | You can set focus and release independently. This is convenient when you want to activate and fix the AF to match the subject's movement.<br>Using Near Shift / Far Shift, the auto focus direction can be adjusted.* |

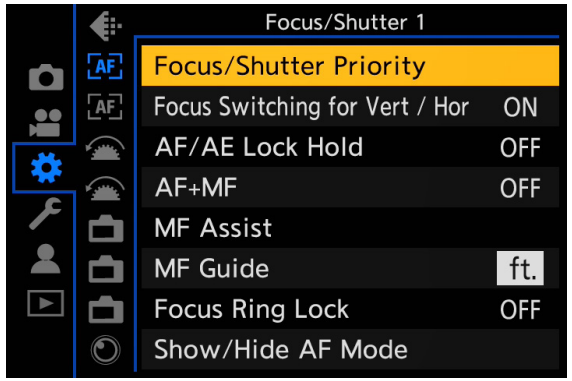
## Eye Sensor AF

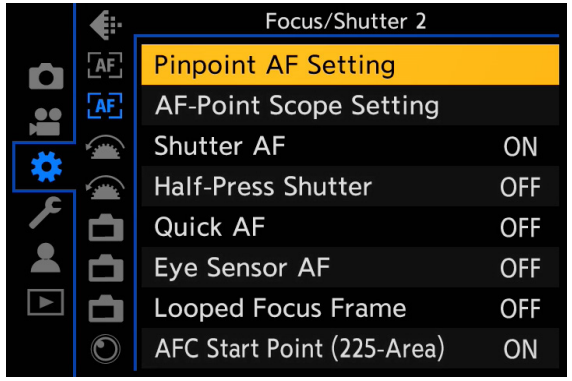

Eye Sensor AF automatically starts focusing when the user looks into the LVF to capture spur-of-the-moment shots.

* LUMIX S1R and S1 must be updated to firmware version 1.2 or later. LUMIX S5 comes equipped with this feature at the time of purchase.

# [ 5 ] Logical, Speedy Menu System

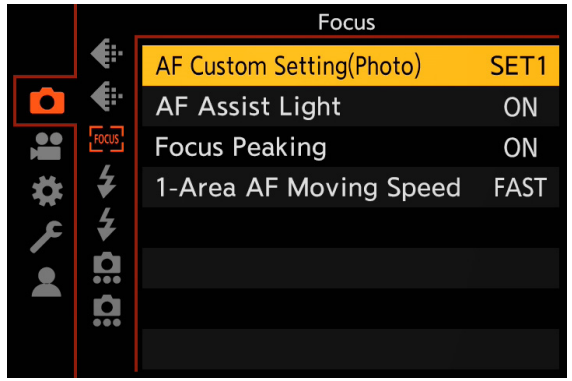
## Custom Menu

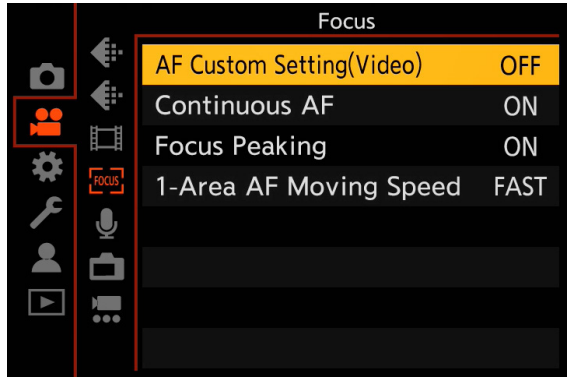



Custom Menu can be used to preset the functions suitable for a specific project in advance.

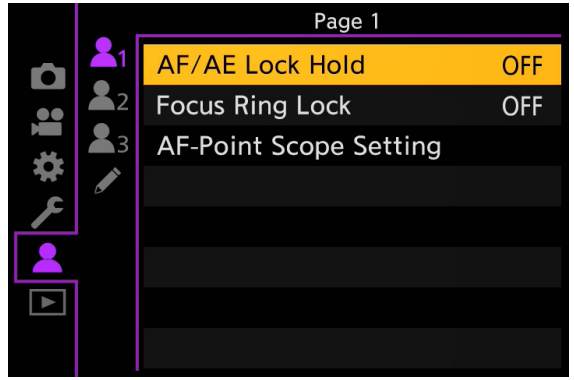
## Photo/Video Menu




Settings that may be frequently changed during shooting are included in Photo/Video Menu.

## My Menu



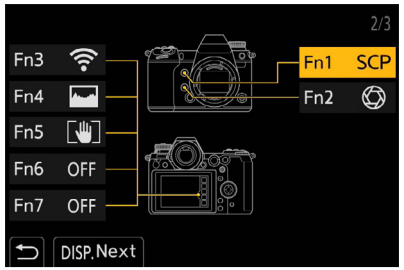

The functions you frequently use and want to access immediately can be registered in My Menu.

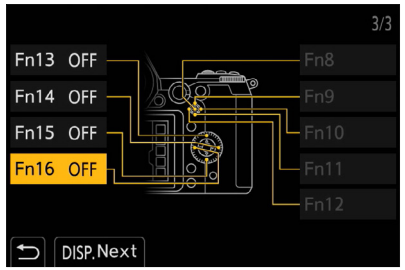
# [ 6 ] Custom Settings 1

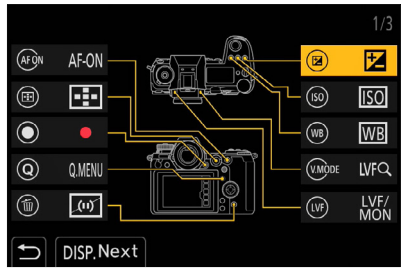
## Camera Fn Buttons

You can allocate various functions to the Fn buttons for quick recall. This enables you to customize your camera.

■ 16 Fn Buttons + Other 10 Buttons + 1 Fn Button of Battery Grip (sold separately)





**Max. 27 Buttons* × Max. 85 Rec Setting***

**There's almost no limit to customizing!**

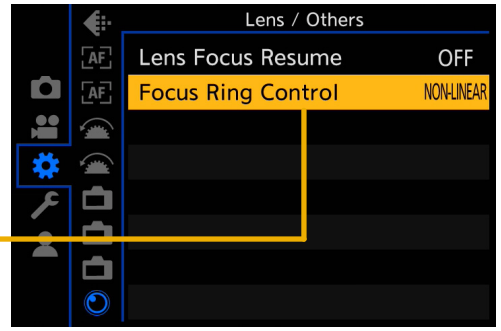
■ Shooting functions that you can allocate.

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Exposure Comp. | 15 | i.Dynamic Range | 29 | AF/AE LOCK | 43 | Shutter Type | 57 | Video Record | 71 | Photo/Video Preview |
| 2 | Sensitivity | 16 | Filter Effect | 30 | AF-ON | 44 | Ex. Tele Conv. | 58 | LVF/Monitor Switch | 72 | Zebra Pattern |
| 3 | White Balance | 17 | One Push AE | 31 | AF-ON: Near Shift ** | 45 | Flicker Decrease (Photo) | 59 | LVF Magnification | 73 | LUT View Assist (Monitor) ** |
| 4 | Photo Style | 18 | Touch AE | 32 | AF-ON: Far Shift ** | 46 | Post-Focus | 60 | Dial Operation Switch | 74 | LUT View Assist (HDMI) ** |
| 5 | Metering Mode | 19 | Exposure Mode | 33 | AF-Point Scope | 47 | Motion Pic. Rec Format | 61 | Preview | 75 | HLG View Assist (Monitor) |
| 6 | Aspect Ratio | 20 | AF Mode/MF | 34 | Focus Area Set | 48 | Motion Pic. Rec Quality | 62 | Preview Aperture Effect ** | 76 | HLG View Assist (HDMI) |
| 7 | Picture Quality | 21 | AF Custom Setting(Photo) | 35 | Flash Mode | 49 | Sound Rec Level Disp. | 63 | Constant Preview | 77 | Sheer Overlay |
| 8 | Picture Size | 22 | AF Custom Setting(Video) | 36 | Flash Adjust. | 50 | Sound Rec Level Adj. | 64 | Level Gauge | 78 | I.S. Status Scope |
| 9 | HLG Photo | 23 | Focus Peaking | 37 | Wireless Flash Setup | 51 | Mic. Directivity Adjust | 65 | Histogram | 79 | WFM ** |
| 10 | High Resolution Mode | 24 | Focus Peaking Sensitivity | 38 | Drive Mode | 52 | Image Stabilizer | 66 | Photo Grid Line | 80 | Focus Ring Control |
| 11 | 1 Shot Spot Metering | 25 | 1-Area AF Moving Speed | 39 | 1 Shot "6K/4K PHOTO" | 53 | E-Stabilization (Video) | 67 | Live View Boost | 81 | Zoom Control |
| 12 | Long Exposure NR | 26 | Focus Ring Lock | 40 | Bracketing | 54 | Boost I.S. (Video) | 68 | Monochrome Live View | 82 | Destination Card Slot |
| 13 | Min. Shutter Speed | 27 | AE LOCK | 41 | Silent Mode | 55 | Q.MENU | 69 | Night Mode | 83 | Wi-Fi |
| 14 | 1 Shot RAW+JPG | 28 | AF LOCK | 42 | Image Stabilizer | 56 | Rec/Playback Switch | 70 | LVF/Monitor Disp. Style | 84 | No Setting |
| | | | | | | | | | | 85 | Off (Disable Press and Hold) ** |

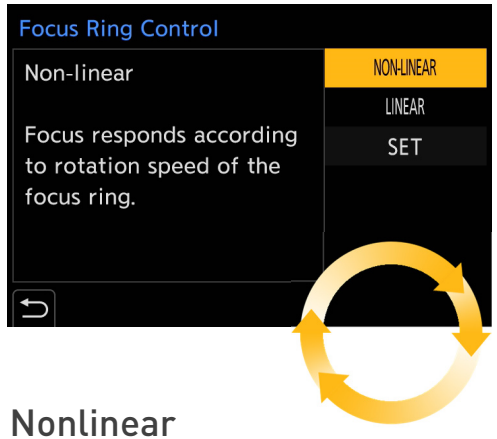
* For the LUMIX S1. The number of buttons and functions may vary depending on the product. ** Firmware must be updated to the latest version.

# [ 6 ] Custom Settings 2

## Focus Ring Control for LUMIX S Series Lenses

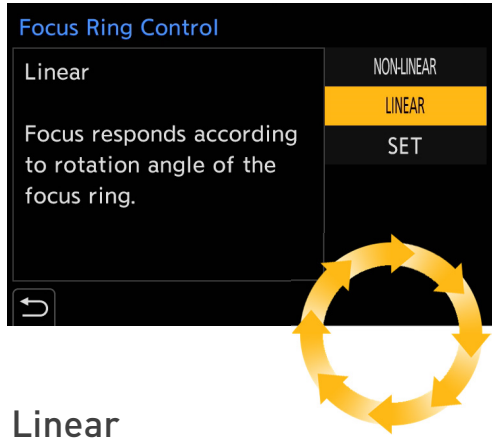




You can set the coordination between the focus ring operation and the amount of focus movement when using supported lenses.



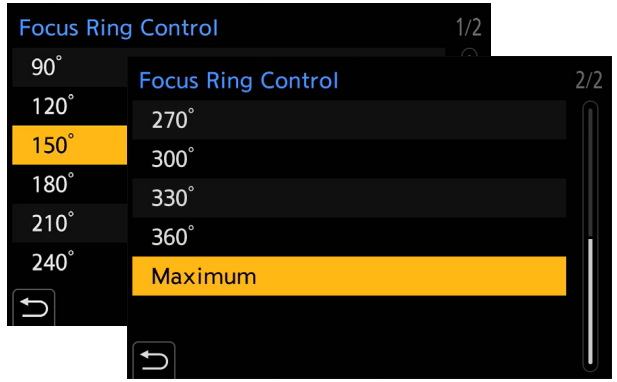

### Nonlinear

This setting accelerates the focus movement in accordance with the speed of the focus ring rotation.




### Linear

This setting moves the focus at a constant speed in accordance with the rotating angle of the focus ring.




### Set

You can set the focus ring rotating angle when [Linear] is selected.

# [ 7 ] Touch Functions

## Intuitive Control with Touch Monitor

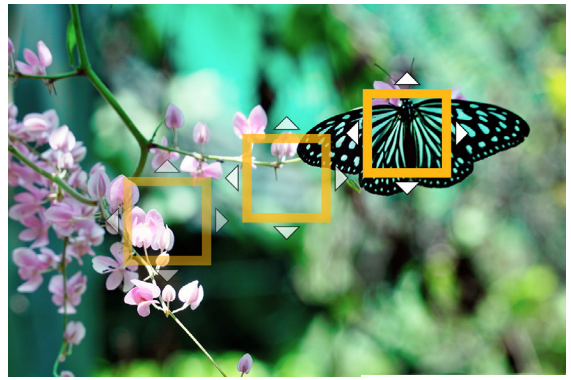
### Touch AF

Use intuitive touch operation (Pinch In/Out) just like you do with a smartphone. You can seamlessly change the size of the AF area, and focus over the entire screen.


### Touch Shutter

Simply touch the subject you want to shoot. The image is automatically focused, and you can also release the shutter with a touch.

## Touch Pad AF



The Touch Pad function enables you to use both the LVF and monitor simultaneously for more flexible focusing.

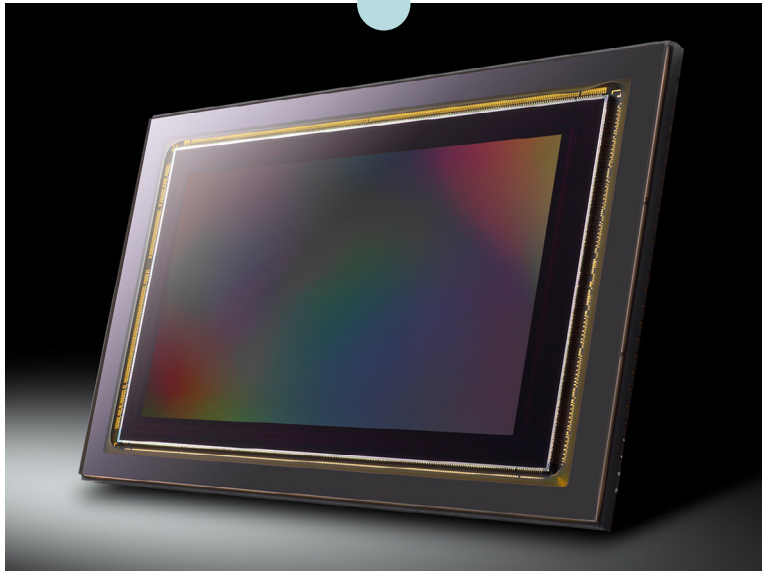
# Introduction to LUMIX AF Technologies

# Overall LUMIX System Advantages

## The AF technology accumulated by LUMIX provides optimal control of the three main devices

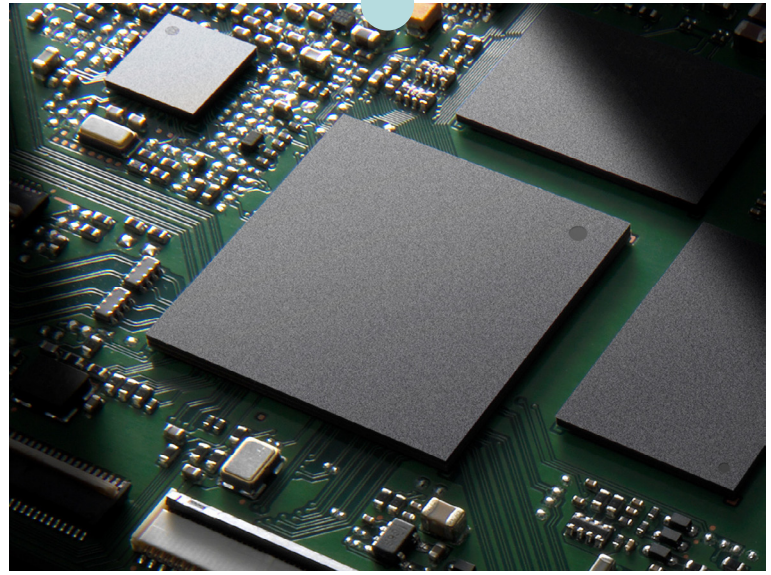
### LENS

- 480 fps
- Linear motor
- Double Focus System
- Ultrasonic Assist System



### SENSOR

- 480 fps
- High sensitivity and low noise



### ENGINE

- Optimized lens control system
- Contrast AF optimized for full frame sensor
- DFD technology
- Human / Animal recognizing technology

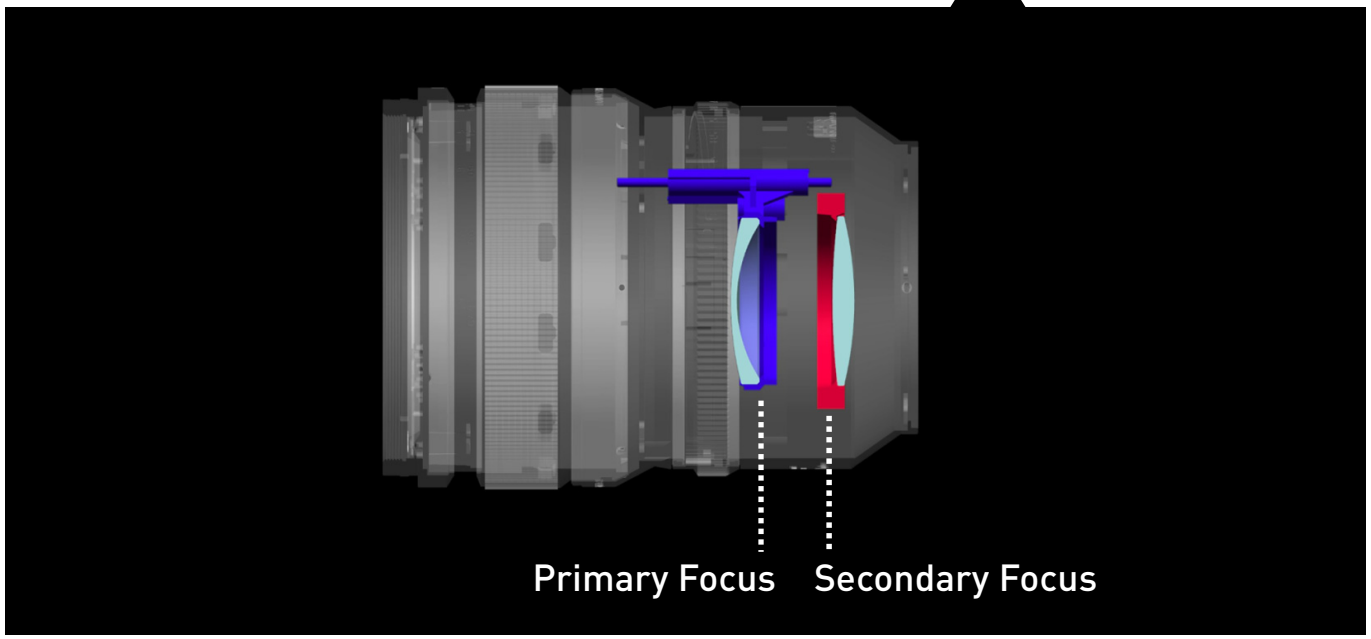
# Lens : Double Focus System

## High-speed, high precision AF

480 fps AF Control

**Double Focus System** / Ultrasonic Assist System

DFD Technology




S-E2470 | S-E70200 | S-X50

- Two independently moving focus lens groups realize high picture quality at all focal lengths (all depths of field).
- Division of the focus lens into two groups has reduced the weight of each lens group and enables high-speed, high-precision focusing.

**Higher accuracy of stopping position keeping the image quality as high as possible from center to corner.**

# Lens : Ultrasonic Assist System

## High-speed, high precision AF

480 fps AF Control

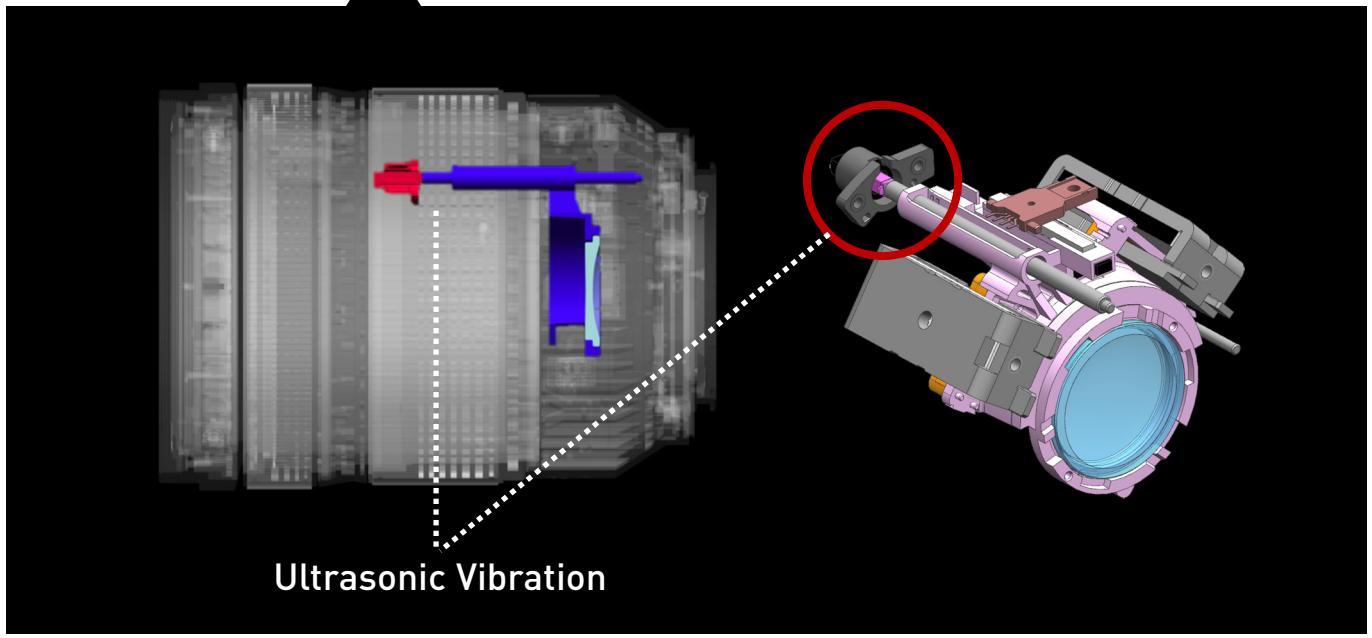
Double Focus System / **Ultrasonic Assist System**

DFD Technology

S-R1635 | S-R24105 | S-R70200

With the conventional system, an attempt to improve the precision of auto focusing to an unprecedented level will be hindered by the slight friction caused at the guide shaft surface, and the focus lens stopping accuracy can possibly degrade.

Panasonic has employed an ultrasonic vibrator to produce nano-order ultrasonic vibration in the guide shaft and successfully reduced the friction against the frame. This has eliminated the problem caused by friction and achieved high focusing precision.




**Higher accuracy of stopping position keeping the image quality as high as possible from center to corner.**

# Recognition Technology

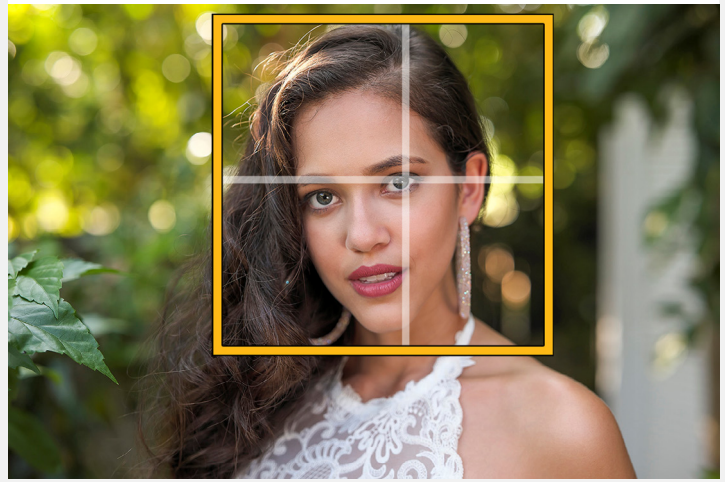
## Cutting-edge recognition technology that only Panasonic can achieve

Instantaneous Calculation of Spatial Information

### Depth from Defocus

Recognition of People's Faces and Pupils

### Face/Eye Detection



Recognition of Human and Animals

### Deep Learning

**Cutting-edge recognition technology makes it possible to accurately capture subjects.**

# How the DFD AF Works

## Combination of Contrast AF & DFD technology realizes quick and accurate AF

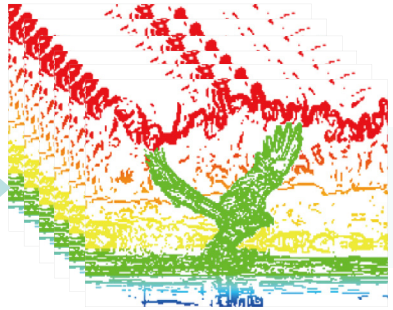
Focus Lens
Sensor

480 fps
High-Speed Communication

Image Acquisition

Contributing to HIGH SPEED

DFD Calculation




Information is constantly retrieved while monitoring,
and spatial information is continuously updated.
This determines the distance to the subject at the instant that the shot is taken.
Based on this information, quick and accurate AF is achieved.

Contributing to HIGH ACCURACY

Contrast Calculation

Detecting the edge strength with high accuracy.

HYBRID CONTROL

Quick & Accurate Lens Control

Total system including
a sensor and a lens works fully in 480 fps

Accurate Contrast AF and quick DFD AF realize the 0.08 sec* accurate AF

* 11EV, at wide-end with S-R24105 (CIPA) in LVF120 fps setting.

# Recognition Function with Deep Learning Technology

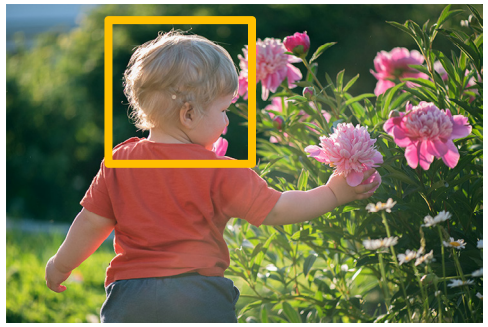
## Human Recognition and Animal Recognition

Deep Learning technology creates a human recognition / animal recognition AI to accurately recognize a person and animal. A human recognition / animal recognition AI acquired from a huge number of images is processed by the camera's Venus Engine.

Panasonic's advanced technology will continue to expand the range of application for deep learning.

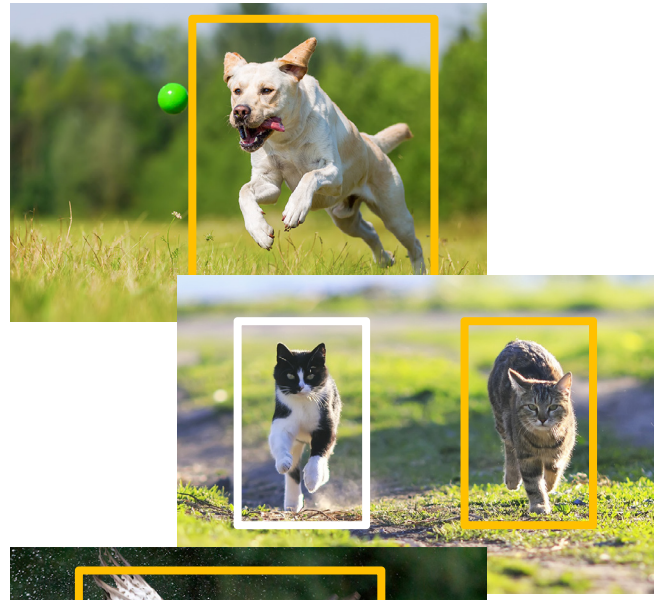
### Human (Bodies and Heads)

Focuses on human bodies, even if the subject faces the other way.



Focuses on human heads, even if the subject's face is turned sideways.

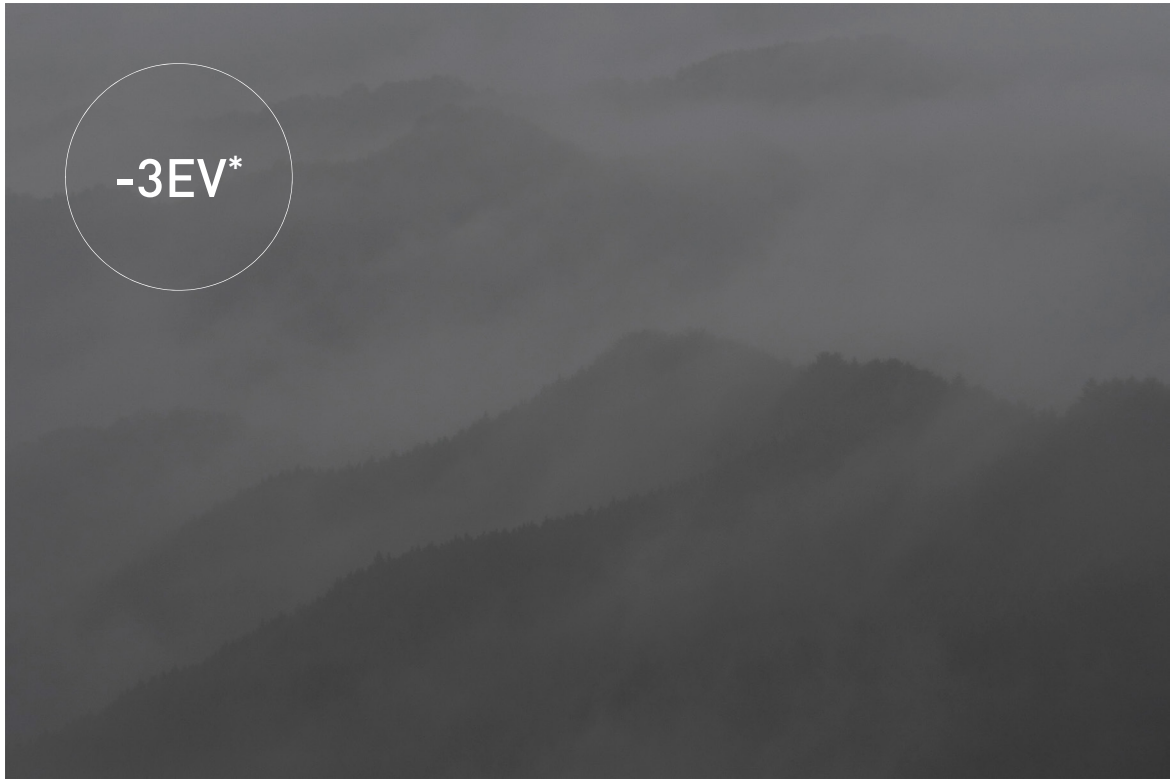
### Animal (Canidae, Felidae, Birds)



Allows the photographer to concentrate on the picture composition in difficult animal photography.

# Low Light AF

## LUMIX is overwhelmingly superior for shooting in low-contrast, low-light




### Low Contrast Situations

Accurate focusing even when shooting low-contrast scenes with fog or mist.

* At ISO100, F1.4, AFS. 10% contrast target.


### Low Light Situations

Low Light AF supporting -6EV.
Accurate focusing is possible even in low lighting conditions with no light sources except starlight.
No need to use flash or AF assist lamp.

** At ISO100, F1.4, AFS. 100% contrast target.

# Summary : This is what's great about the LUMIX AF!

## Lens Side

- ✓ 480 fps Drive
- ✓ Linear Motor Actuator
- ✓ Double Focus System
- ✓ Ultrasonic Assist System

## Sensor Side

- ✓ 480 fps Drive
- ✓ Low-contrast Capacity
  Low-light Capacity

## Engine Side

- ✓ Contrast AF Optimized
  for Full Frame Sensor
- ✓ DFD Technology Optimized
  for Full Frame Sensor
- ✓ Human / Animal
  Recognizing Technology

LUMIX

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