

User Manual

This user manual includes detailed usage instructions for your camera.
Please read this manual thoroughly.

ENG

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- Camera specifications or contents of this manual may be changed without prior notice due to upgrade of camera functions.
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- Use this camera responsibly and adhere to all laws and regulations concerning its use.
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Health and safety information

Always comply with the following precautions and usage tips to avoid dangerous situations and ensure peak performance of your camera.



Warning—situations that could cause injury to yourself or others

Do not disassemble or attempt to repair your camera.

This may result in electric shock or damage to the camera.

Do not use your camera near flammable or explosive gases and liquids.

This may cause a fire or explosion.

Do not insert flammable materials into the camera or store these materials near the camera.

This may cause a fire or electric shock.

Do not handle your camera with wet hands.

This may result in electric shock.

Prevent damage to subjects' eyesight.

Do not use the flash in close proximity (closer than 1 m/3 ft) to people or animals. If you use the flash too close to your subject's eyes, this can cause temporary or permanent eyesight damage.

Keep your camera away from small children and pets.

Keep your camera and all accessories out of the reach of small children and animals. Small parts may cause choking or serious injury if swallowed. Moving parts and accessories may present physical dangers as well.

Do not expose the camera to direct sunlight or high temperatures for an extended period of time.

Prolonged exposure to sunlight or extreme temperatures can cause permanent damage to your camera's internal components.

Avoid covering the camera with blankets or clothes.

The camera may overheat, which may distort the camera or cause a fire.

Do not handle the power supply cord or go near the charger during a thunderstorm.

This may result in electric shock.

If liquid or foreign objects enter your camera, immediately disconnect all power sources, such as the battery, and then contact a Samsung service center.

Comply with any regulations that restrict the use of a camera in a certain area.

- Avoid interference with other electronic devices.
- Turn off the camera when in an aircraft. Your camera can cause interference with aircraft equipment. Follow all airline regulations and turn off your camera when directed by airline personnel.
- Turn off the camera near medical equipment. Your camera can interfere with medical equipment in hospitals or health care facilities. Follow all regulations, posted warnings, and directions from medical personnel.

Avoid interference with pacemakers.

Maintain a minimum of 15 cm between this camera and all pacemakers to avoid potential interference, as recommended by the manufacturer and the independent research group, Wireless Technology Research. If you have any reason to suspect that your camera is interfering with a pacemaker or other medical device, turn off the camera immediately and contact the manufacturer of the pacemaker or medical device for guidance.



Caution—situations that could cause damage to your camera or other equipment

Remove the batteries from your camera when storing it for an extended period of time.

Installed batteries may leak or corrode over time and cause serious damage to your camera.

Use only authentic, manufacturer-recommended, Lithium-ion replacement batteries. Do not damage or heat the battery.

Inauthentic, damaged, or heated batteries may cause a fire or personal injury.

Use only Samsung-approved batteries, chargers, cables and accessories.

- Using unauthorized batteries, chargers, cables or accessories can cause batteries to explode, damage your camera, or cause injury.
- Samsung is not responsible for damage or injuries caused by unapproved batteries, chargers, cables or accessories.

Use the battery only for its intended purpose.

Misusing the battery may cause a fire or electric shock.

Do not touch the flash while it fires.

The flash is very hot when fired and may burn your skin.

Do not use a damaged power supply cord, plug, or loose outlet when you charge batteries.

This may cause a fire or electric shock.

Do not force the camera's parts or apply pressure to the camera.

This may cause your camera to malfunction.

Exercise caution when you connect cables and install batteries and memory cards.

If you force the connectors, improperly connect cables, or improperly install batteries and memory cards, you can damage ports, connectors, and accessories.

Keep cards with magnetic strips away from the camera case.

Information stored on the card may be damaged or erased.

Never use a damaged battery, or memory card.

This may result in electric shock or camera malfunction or cause a fire.

Check that the camera is operating properly before use.

The manufacturer takes no responsibility for any loss of files or damage that may result from camera malfunction or improper use.

You must plug the small end of the USB cable into your camera.

If the cable is reversed, it may damage your files. The manufacturer is not responsible for any loss of data.

Protect your camera's lens.

Do not expose the lens to direct sunlight, as this may discolor the image sensor or cause it to malfunction.

If the camera overheats, remove the battery and allow it to cool down.

- Prolonged usage of the camera may overheat the battery and raise the internal temperature of the camera. If the camera stops operating, remove the battery and allow it to cool down.
- High internal temperatures may result in noise in your photos. This is normal and does not affect your camera's overall performance.

Avoid interference with other electronic devices.

Your camera emits radio frequency (RF) signals that may interfere with unshielded or improperly shielded electronic equipment, such as pacemakers, hearing aids, medical devices, and other electronic devices in homes or vehicles. Consult the manufacturers of your electronic devices to solve any interference problems you experience. To prevent unwanted interference, use only Samsung-approved devices or accessories.

Use your camera in the normal position.

Avoid contact with your camera's internal antenna.

Data transference and your responsibilities

- Data transferred via WLAN could be leaked, so avoid transferring sensitive data in public areas or on open networks.
- The camera manufacturer is not liable for any data transfers that infringe on copyrights, trademarks, intellectual property laws, or public decency ordinances.



Indications used in this manual

Icons used in this manual

Icon	Function
	Additional information
	Safety warnings and precautions
[]	Camera buttons. For example, [Shutter] represents the shutter button.
()	Page number of related information
→	The order of options or menus you must select to perform a step; for example: Select  → Quality (represents select  , and then Quality). The number next to the icon may vary depending on the shooting mode. That is, some options may be located under  or  . This manual is based on Program mode.
*	Annotation

Shooting mode indications

Shooting mode	Indication
Smart Auto	SMART
Program	P
Aperture Priority	A
Shutter Priority	S
Manual	M
Lens Priority	
Magic	
Scene	SCN
Movie	
Wi-Fi	Wi-Fi

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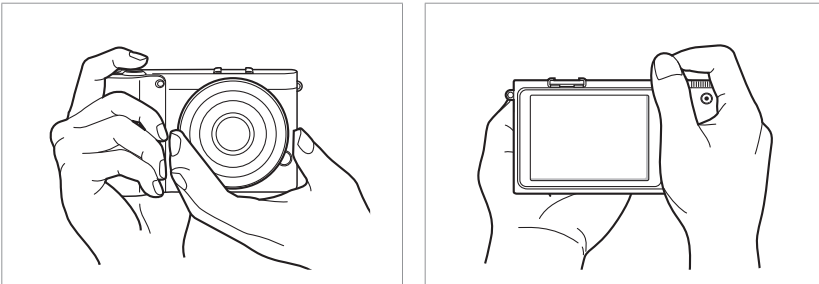
Concepts in Photography

Shooting postures

A correct posture for stabilizing the camera is necessary for taking a good photo. Even if you hold a camera correctly, the wrong posture can cause the camera to shake. Stand up straight and remain still to maintain a steady base for your camera. When shooting with a low shutter speed, hold your breath to minimize body movement.

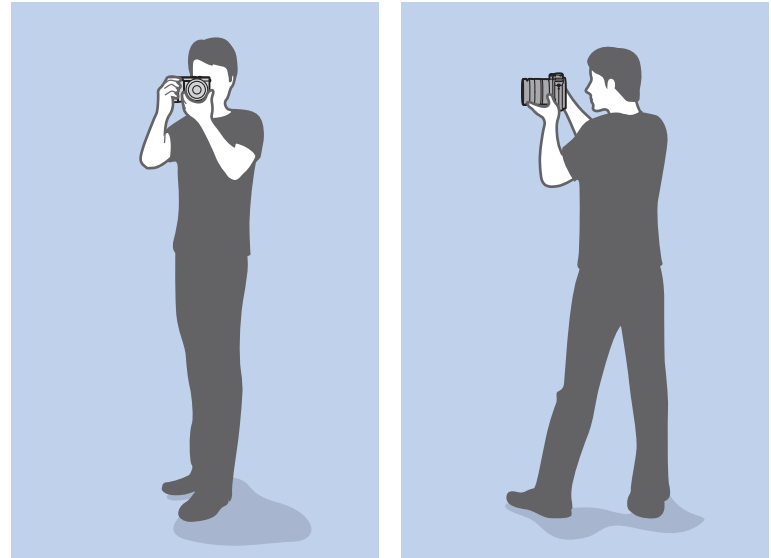
Holding the camera

Hold the camera with your right hand and place your right index finger on the shutter button. Place your left hand under the lens for support.



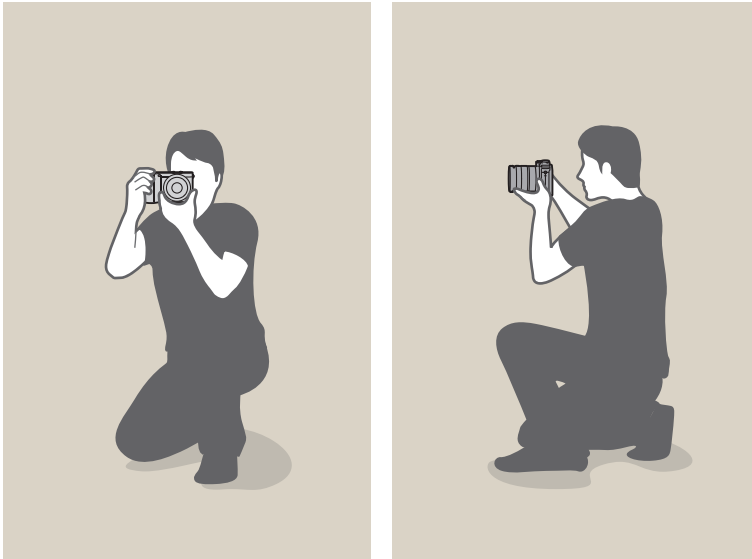
Standing photography

Compose your shot; stand up straight with your feet shoulder-length apart, and keep your elbows pointed down.



Crouching photography

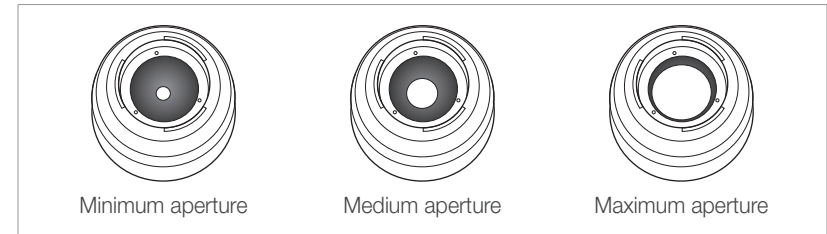
Compose your shot, crouch with one knee touching the ground, and keep a straight posture.



Aperture

The aperture, a hole that controls the amount of light that enters the camera, is one of the three factors that determine the exposure. The aperture housing contains thin, metal plates that open and close to let light through the aperture and into the camera. The size of the aperture is closely related to the brightness of a photo: the larger the aperture, the brighter the photo; the smaller the aperture, the darker the photo.

Aperture sizes



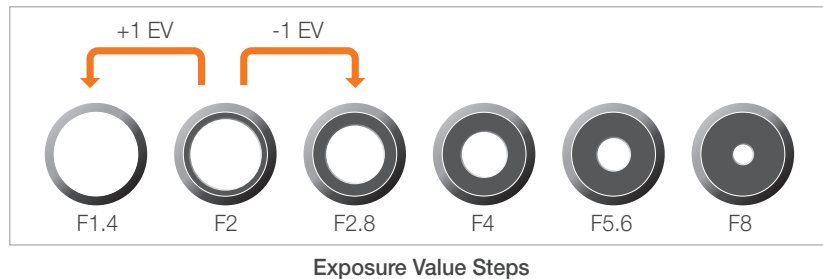
Darker photo
(aperture opened slightly)



Brighter photo
(aperture opened wide)

The size of the aperture is represented by a value known as an “F-number.” The f-number represents the focal length divided by the diameter of the lens. For example, if a lens with a 50 mm focal length has an f-number of F2, the diameter of the aperture is 25 mm. (50 mm/25 mm=F2) The smaller the f-number, the greater the size of the aperture.

The opening in the aperture is described as the Exposure Value (EV). Increasing the Exposure Value (+1 EV) means the amount of light doubles. Decreasing the Exposure Value (-1 EV) means the amount of light halves. You can also use the exposure compensation feature to fine-tune the amount of light by subdividing exposure values into 1/2, 1/3 EV, and so on.



Aperture value and the depth of field

You can blur or sharpen the background of a photo by controlling the aperture. It is closely related to the depth of field (DOF), which can be expressed as small or large.



A photo with a large DOF



A photo with a small DOF

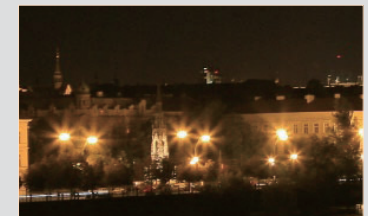


The aperture housing contains several blades. These blades move together and control the amount of light passing through the center of the aperture. The number of blades also affects the shape of light when shooting night scenes. If an aperture has an even number of blades, light divides into an equal number of sections. If the number of blades is odd, the number of sections is double the number of blades.

For example, an aperture with 8 blades divides light into 8 sections and an aperture with 7 blades into 14 sections.



7 blades

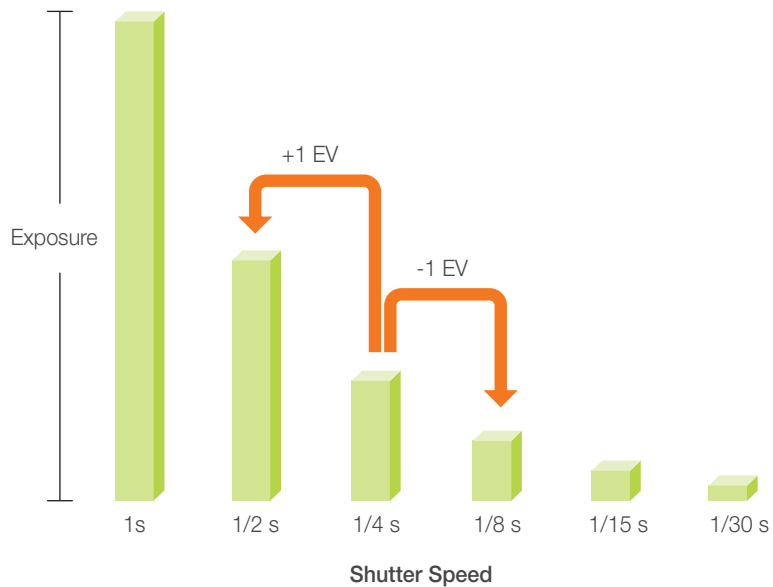


8 blades

Shutter speed

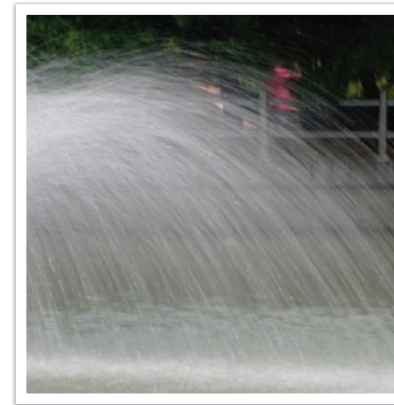
Shutter speed refers to the amount of time it takes to open and close the shutter, and it is an important factor in the brightness of a photo, as it controls the amount of light which passes through the aperture before it reaches the image sensor.

Usually, the shutter speed is manually adjustable. The measurement of the shutter speed is known as the “Exposure Value” (EV), which is marked in intervals of 1 s, 1/2 s, 1/4 s, 1/8 s, 1/15 s, 1/1000 s, 1/2000 s, and so on.

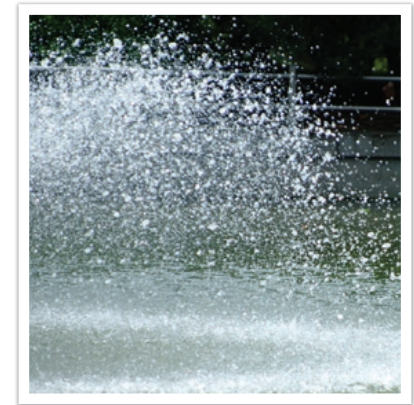


Therefore, the faster the shutter speed, the less light will be let in. Likewise, the slower the shutter speed, the more light will be let in.

As the photos below illustrate, a slow shutter speed allows more time to let light in, so the photo becomes brighter. On the other hand, a fast shutter speed allows less time to let light in and the photo becomes darker and more easily freezes subjects in motion.



0.8 s



0.004 s

ISO sensitivity

The exposure of an image is determined by the sensitivity of the camera. This sensitivity is based on international film standards, known as ISO standards. On digital cameras, this sensitivity rating is used to represent the sensitivity of the digital mechanism that captures the image.

ISO sensitivity doubles as the number doubles. For example, an ISO 200 setting is capable of capturing images at twice the speed of an ISO 100 setting. However, higher ISO settings can result in “noise” — small specks, spots, and other phenomena in a photo that give the shot a noisy or dirty appearance. As a general rule, it is best to use a low ISO setting to prevent noise in your photos, unless you are shooting in darkened environments or at night.



Changes in the quality and brightness according to ISO sensitivity

Because a low ISO sensitivity means the camera will be less sensitive to light, you need more light to have an optimal exposure. When using a low ISO sensitivity, open the aperture more or reduce the shutter speed to allow more light to enter the camera. For example, on a sunny day when light is abundant, a low ISO sensitivity does not require a low shutter speed. However, in a dark place or at night, a low ISO sensitivity and a fast shutter speed will result in a blurry photo.



A photo captured with a tripod and high sensitivity



A blurred photo with a low ISO sensitivity

How the aperture setting, shutter speed, and ISO sensitivity control exposure

The aperture setting, shutter speed, and ISO sensitivity are closely interconnected in photography. The aperture setting controls the opening that regulates the light that enters the camera, while the shutter speed determines the length of time that light is allowed to enter. ISO sensitivity determines the speed at which the film reacts to light. Together, these three aspects are described as the triangle of exposure.

A change in shutter speed, aperture value, or ISO sensitivity can be offset by adjustments to the others to maintain the amount of light. The results, however, change according to the settings. For example, shutter speed is useful in expressing movement, aperture can control the depth of field, and ISO sensitivity can control the graininess of a photo.

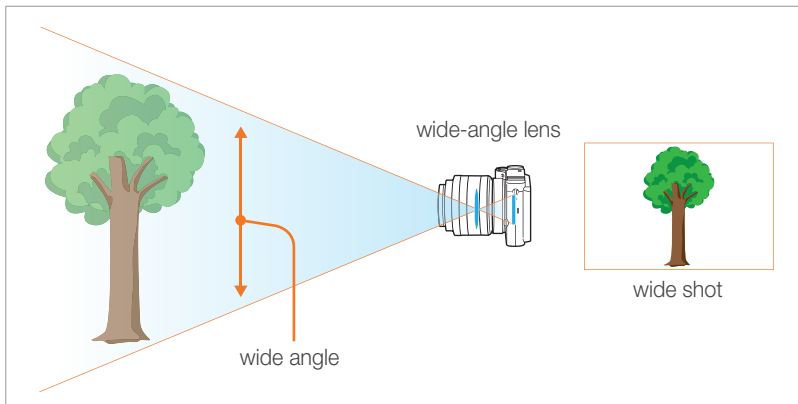
	Settings	Results
Aperture	Wide aperture = more light Narrow aperture = less light	 Wide = small depth of field Narrow = large depth of field

	Settings	Results
Shutter speed	Fast speed = less light Slow speed = more light	 Fast = still Slow = blurry
ISO sensitivity	High sensitivity = more sensitive to light Low sensitivity = less sensitive to light	 High = more grainy Low = less grainy

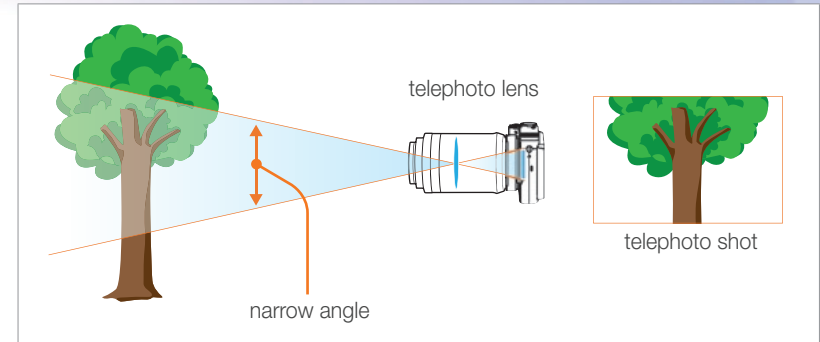
Correlation between focal length, angle, and perspective

Focal length, which is measured in millimeters, is the distance between the middle of the lens to its focal point. It affects the angle and perspective of captured images. A short focal length translates into a wide angle, which allows you to capture a wide shot. A long focal length translates into a narrow angle, which allows you to capture telephoto shots.

Short focal length



Long focal length



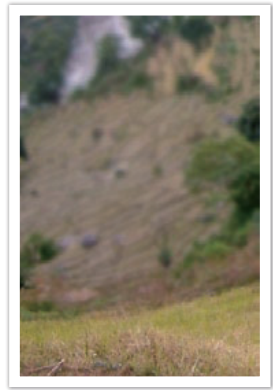
Look at these photos below and compare the changes.



20 mm angle



50 mm angle



200 mm angle



Normally, a lens with a wide angle is suitable for shooting landscapes and a lens with a narrow angle is recommended for shooting sports events or portraits.

Depth of field

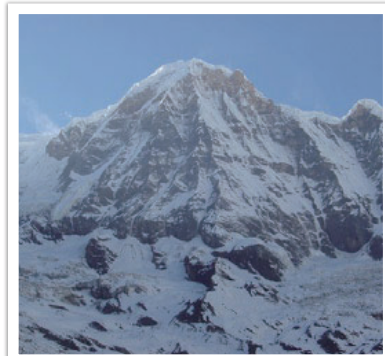
Portraits or still-life photos mostly acclaimed by people are the ones on which the background is out of focus so the subject looks pronounced. Depending on the focused areas, a photo can be blurred or sharpened. This is called 'a low DOF' or 'a high DOF'.

The depth of field is the focused area around the subject. Therefore, a small DOF signifies that the focused area is narrow and a large DOF means the focused area is wide.

A photo with a small DOF, which stresses the subject and makes the rest of it blurred, can be obtained by using a telescope lens or selecting a low aperture value. Conversely, a photo with a large DOF which shows all the elements on the photo sharply focused can be achieved by using a wide angle lens or selecting a high aperture value.



Small Depth of Field



Large Depth of Field

What controls out-of-focus effects?

DOF depends on aperture value

The wider the aperture is (namely the lower the aperture value), the lower the DOF becomes. Under the condition where the other values including shutter speed and ISO sensitivity are equal, a low aperture value leads to a photo with a low DOF.



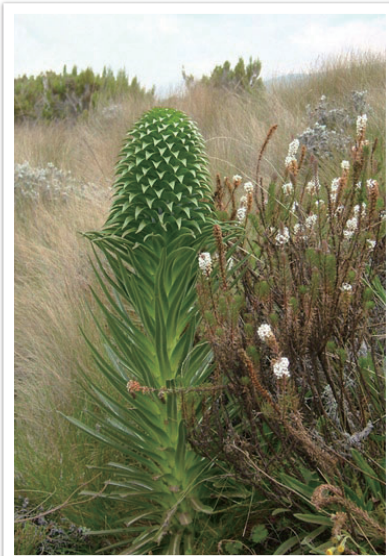
20 mm F5.7



50 mm F2.2

DOF depends on focal length

The longer the focal length is, the lower the DOF gets. A telescope lens with a longer focal length than a telescope lens with a short focal length is better to capture a photo of a low DOF.



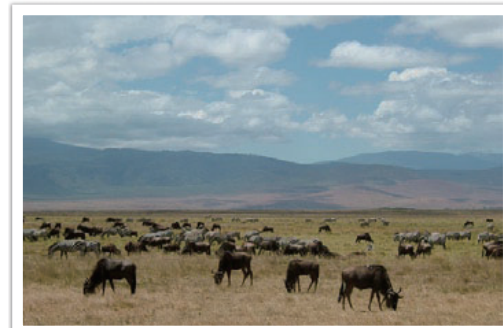
A photo captured with a 20 mm telescope lens



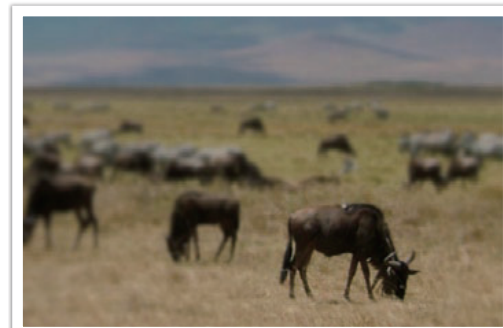
A photo captured with a 100 mm telescope lens

DOF depends on the distance between the subject and the camera

The shorter the distance between the subject and the camera is, the lower the DOF gets. Therefore, taking a photo close to a subject can result in a photo of low DOF.



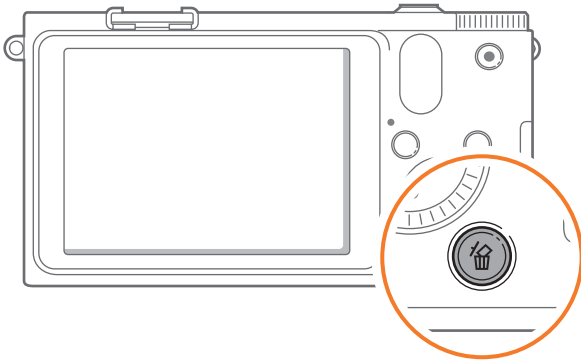
A photo captured with a 100 mm telescope lens



A photo captured close to the subject

DOF preview

You can use the Custom button to get an idea of what your shot will look like before shooting. When you press the button, the camera adjusts the aperture to the predefined settings and shows the results on the screen. Set the function of the Custom button to **Optical Preview**. (p. 127)



Composition

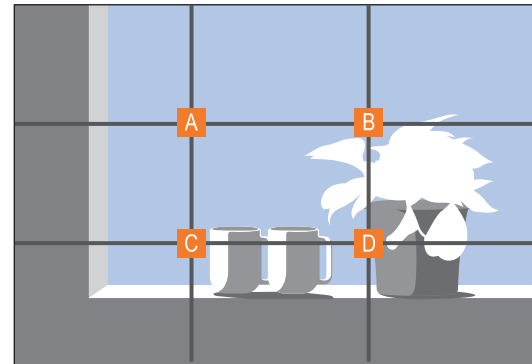
It is fun to capture a photo of the beauty of world with a camera. No matter how the world is beautiful, however, a poor composition cannot capture the beauty of it.

When it comes to composition, it is very important to prioritize subjects.

Composition in photography means arranging objects in a photo. Usually, abiding by the rule of thirds leads to a good composition.

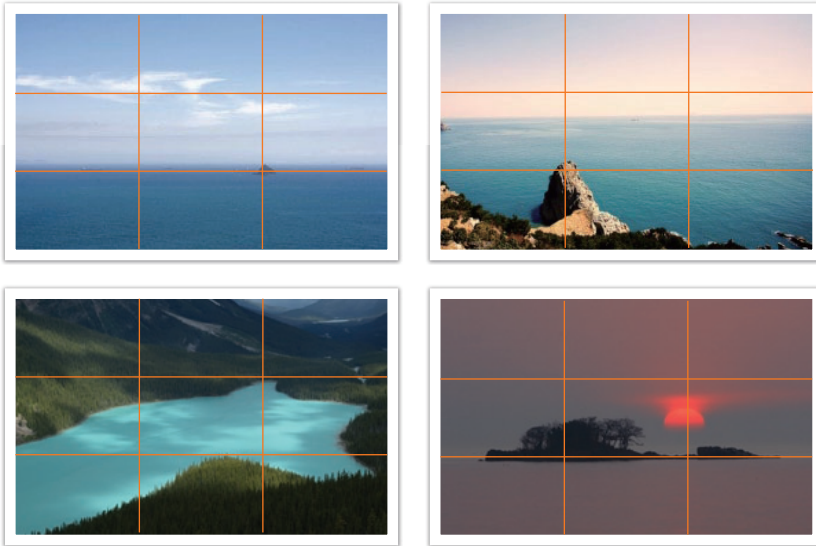
Rule of Thirds

To use the rule of thirds, divide the image into a 3x3 pattern of equal rectangles.



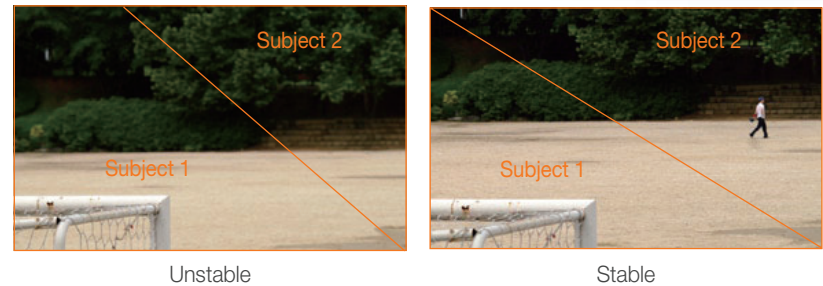
To compose photos that best emphasize the subject, make sure the subject is located at one of the corners of the center rectangle.

Using the rule of thirds will create photos with stable and compelling compositions. Below are a few examples.



Photos with two subjects

If your subject is in one corner of the photo, it creates an unbalanced composition. You can stabilize the photo by capturing a second subject in the opposite corner to balance the weight of the photo.



When taking landscape photos, centering the horizon will create an unbalanced effect. Give more weight to the photo by moving the horizon up or down.



Flash

Light is one of the most important components in photography. It's not easy, however, to have an enough amount of light anytime and anywhere. Making use of a flash allows you to optimize light settings and create a variety of effects.

Flash, also known as strobe or speed light, helps to create adequate exposure in low-light conditions. It is also useful in light-abundant situations. For example, flash can be used in compensating the exposure of a subject's shadow or capturing clearly both the subject and the background in backlit conditions.



Before correction



After correction

Flash guide number

The model number of a flash refers to the flash's power, and the maximum amount of light created is represented by a value known as a "guide number." The bigger the guide number, the more light is emitted from the flash. The guide number is achieved by multiplying the distance from the flash to the subject and the aperture value when the ISO sensitivity is set to 100.

Guide number = Flash to Subject Distance X Aperture value

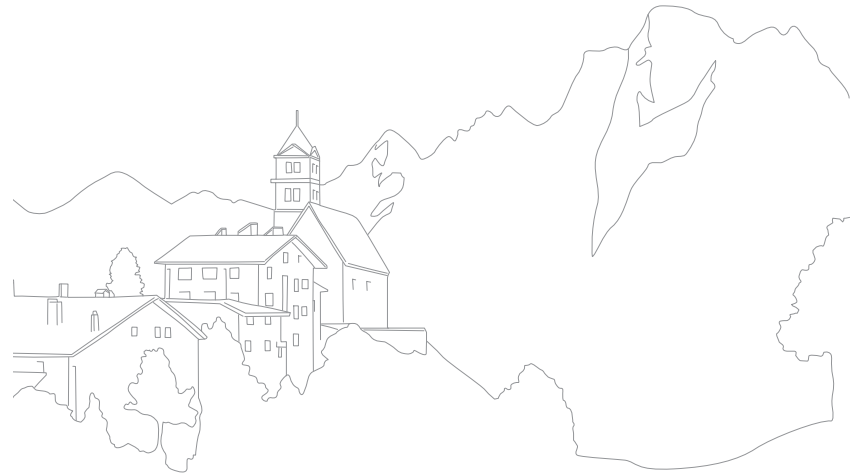
Aperture value = Guide number / Flash to Subject Distance

Flash to Subject Distance = Guide number / Aperture value

Therefore, if you know the guide number of a flash, you can estimate an optimum flash to subject distance when setting the flash manually. For example, if a flash has a guide number of GN 20 and is 4 meters away from the subject, the optimal aperture value is F5.0.

Bounce Photography

Bounce photography refers to the method of bouncing light off of the ceiling or walls so that the light spreads evenly over the subject. Normally, photos captured with flash may appear unnatural and cast shadows. Subjects in photos captured with bounce photography cast no shadows and look smooth due to evenly spread light.





Chapter 1

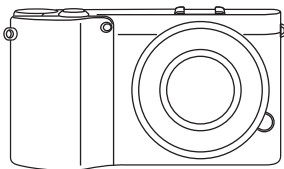
My Camera

Learn about your camera's layout, display icons, basic functions, supplied lens, and optional accessories.

Getting started

Unpacking

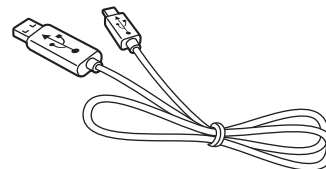
Check your product box for the following items.



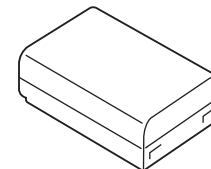
Camera
(including the body cap
and hot-shoe cover)



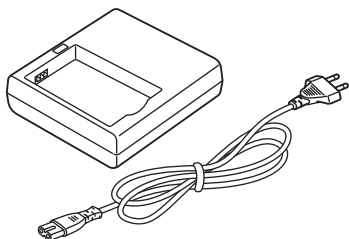
External flash



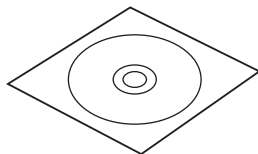
USB cable



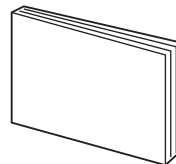
Rechargeable battery



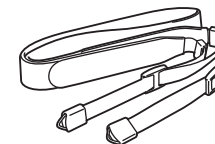
Battery cradle/AC power cable



Software CD-ROM
(User manual included)



User manual Basic Operation

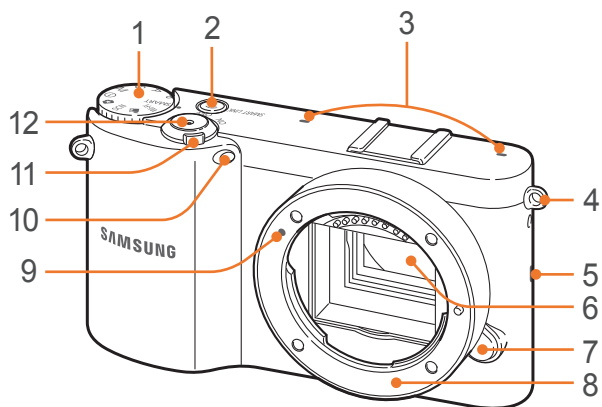


Strap



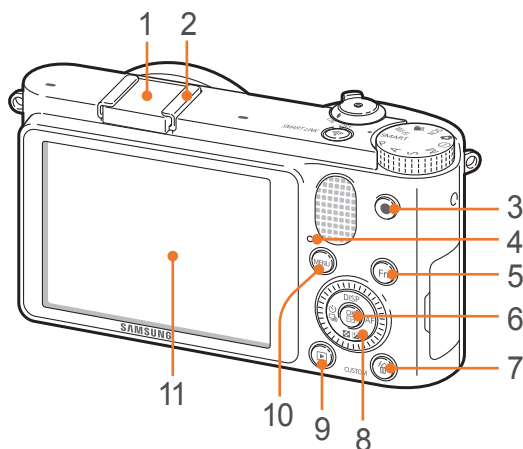
- The illustrations may differ from your actual items.
- You can purchase optional accessories at a retailer or a Samsung service center. Samsung is not responsible for any problems caused by using unauthorized accessories. For information about accessories, refer to page 172.

Camera layout



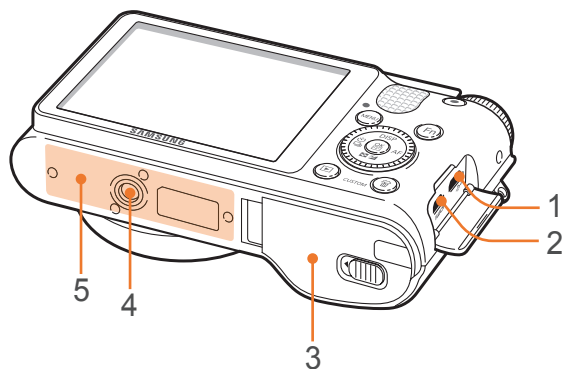
No.	Name
1	Mode dial • SMART: Smart Auto mode (p. 43) • P: Program mode (p. 44) • A: Aperture Priority mode (p. 45) • S: Shutter Priority mode (p. 45) • M: Manual mode (p. 46) • i: Lens Priority Mode (p. 47) • ★: Magic Mode (p. 50) • SCN: Scene mode (p. 51) • 🎥: Movie mode (p. 54) • Wi-Fi: Wi-Fi (p. 100)
2	Wi-Fi shortcut button Start a desired Wi-Fi function. (p. 127)
3	Microphone
4	Eyelet for camera strap
5	Speaker
6	Image sensor

No.	Name
7	Lens release button
8	Lens mount
9	Lens mount index
10	AF-assist light/Timer lamp
11	Power switch
12	Shutter button



No.	Name
1	Hot-shoe cover
2	Hot-shoe
3	Video recording button Start recording a video.
4	Status lamp Indicate the status of the camera. • Blinking: When saving a photo, shooting a video, sending data to a computer or printer, or connecting to WLAN or sending a photo. • Steady: When there is no data transfer or when data transfer to a computer or printer is complete.
5	Fn button Access major functions and fine-tune some settings.
6	OK button • In the Menu screen: Save the selected options. • In Shooting mode: Allow you to select a focus area manually in some shooting modes.

No.	Name
7	Delete/Custom button • In Shooting mode: Perform the assigned function. (p. 127) • In Playback mode: Delete files.
8	Navigation button (Smart dial) • In Shooting mode - DISP: View camera settings and change options - □/□: Adjust the exposure value/In M mode, select an aperture value or shutter speed - ⌚: Select a drive option - AF: Select an AF mode • In other situations Move up, down, left, right, respectively. (You can also rotate the navigation button.)
9	Playback button Enter Playback mode.
10	MENU button Access options or menus.
11	Display

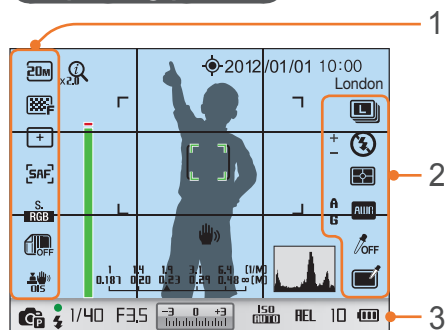


No.	Name
1	USB and shutter release port Connect the camera to a computer or shutter release. Use a shutter release cable with a tripod to minimize camera movement.
2	HDMI port
3	Battery chamber/Memory card cover Insert a memory card and battery.
4	Tripod mount
5	Internal antenna * Avoid contact with the internal antenna while using the wireless network.

Display icons

In Shooting mode

Capturing photos



1. Shooting options (left)

Icon	Description
	Photo size
	Photo quality
	Focus area
	Face detection
	AF mode (p. 65)
	Color space
	Smart range (p. 82)
	Optical Image Stabilization (OIS) (p. 71)

2. Shooting options (right)

Icon	Description
	Drive mode

Icon	Description
	Flash option
	Flash intensity
	Metering (p. 79)
	White Balance (p. 61)
	White Balance micro adjustment
	Face tone
	Face retouch
	Picture Wizard (p. 64)
	Smart filter (p. 50)
	Magic frame (p. 50)
	Selective color (p. 83)

3. Shooting information

Icon	Description
	① zoom on
	① zoom ratio
	GPS activated*
	Date
	Time
	Location information*
	Focus aid bar (p. 70)**
	Auto focus frame
	Spot metering area
	Distance Scale (p. 126)

Icon	Description
	Level gauge (p. 32)
	Camera shake
	Histogram (p. 126)
	Shooting mode
	Focus
	Flash indicator
	Shutter speed
	Aperture value
	Exposure value
	ISO sensitivity (p. 60)
	Auto Exposure Lock (p. 86)
	Memory card not inserted***
	Available number of photos
	: Fully charged : Partially charged (Red): Empty (recharge the battery)

* These icons appear when you attach an optional GPS module.

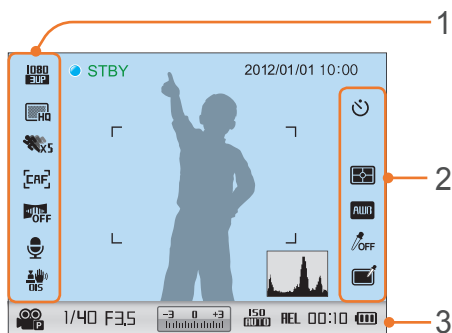
**This icon appears when you select the FA option of the MF Assist function.

*** Photos that were captured without inserting a memory card cannot be printed, or transferred to a memory card or a computer.



The icons displayed will change according to the mode you select or the options you set.

Recording videos



1. Shooting options (left)

Icon	Description
CAF	Auto focus activated
1080 60P	Video size
HQ	Video quality
5X	Multi Motion
CAF	AF mode (p. 65)
OFF	Fader (p. 88)
VOIC	Voice recording on (p. 88)
OIS	Optical Image Stabilization (OIS) (p. 71)

2. Shooting options (right)

Icon	Description
Timer	Timer
Metering	Metering (p. 79)
AWB	White Balance (p. 61)
OFF	Picture Wizard (p. 64)
Selective color	Selective color (p. 83)

3. Shooting information

Icon	Description
2012/01/01	Date
10:00	Time
Histogram	Histogram (p. 126)
Movie AE mode	Movie AE mode
1/40	Shutter speed
F3.5	Aperture value
Exposure value	Exposure value
ISO AUTO	ISO sensitivity
REL	Auto Exposure Lock (p. 86)
Memory card not inserted	Memory card not inserted

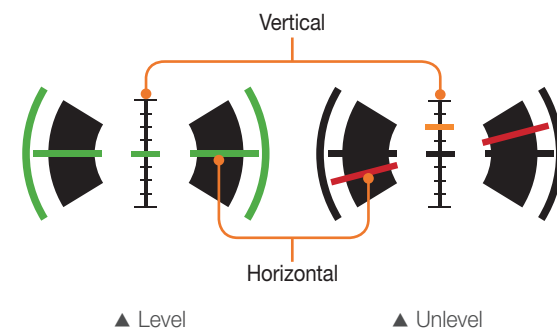
Icon	Description
00:10	Available recording time
Battery level	Full battery: Fully charged Partial battery: Partially charged Red battery: (Red): Empty (recharge the battery)



The icons displayed will change according to the mode you select or the options you set.

About the level gauge

The level gauge helps you align the camera with the horizontal and vertical lines on the display.

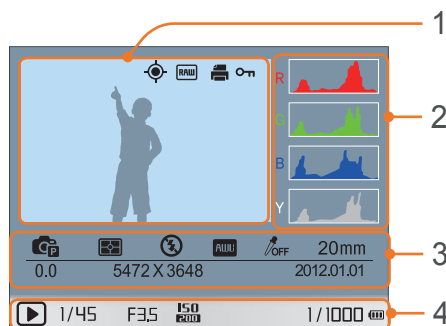


In Playback mode

Viewing photos

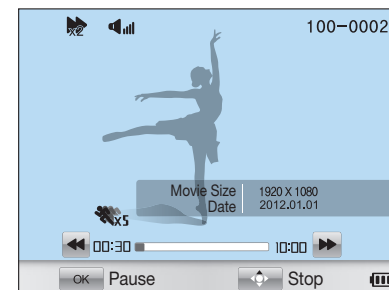


Icon	Description
	Volume
	Continuously captured file
	Location information
	RAW file
	3D file
	Print information added to file (p. 137)
	Protected file
100-0001	Folder number - File number
London	Location information
1/40	Shutter speed
F3.5	Aperture value
ISO 200	ISO value
1/1000	Current file/The total number of files



No.	Description
1	Captured photo
2	RGB histogram (p. 126)
3	Shooting mode, Metering, Flash, White Balance, Picture Wizard, Focus range, Exposure value, Photo size, Date
4	Shutter speed, Aperture value, ISO value, Current file/The total number of files

Playing videos



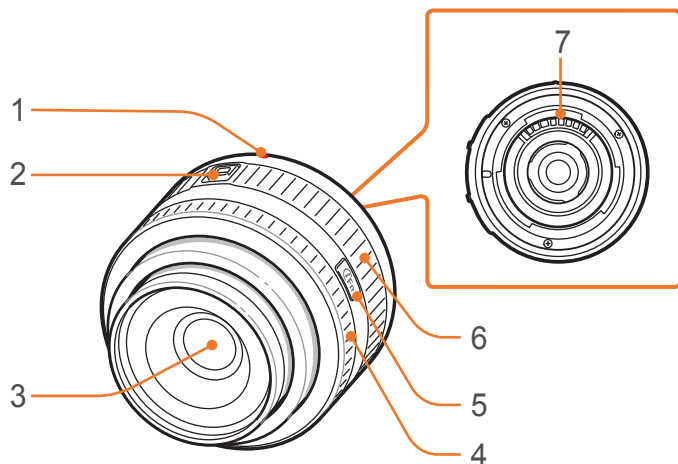
Icon	Description
	Playback speed
	Volume
100-0002	Folder number - File number
	Multi Motion
00:30	Current playback time
10:00	Video length

Lenses

You can purchase optional lenses made exclusively for your NX series camera. Learn about the functions of each lens and select one that suits your needs and preferences.

Lens layout

SAMSUNG 20-50 mm F3.5-5.6 ED II lens (example)



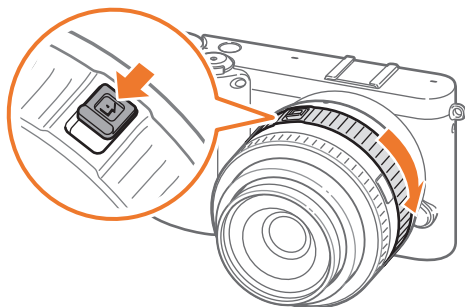
No.	Description
1	Lens mount index
2	Zoom lock switch
3	Lens
4	Focus ring (p. 70)
5	i-Function button (p. 48)
6	Zoom ring
7	Lens contacts



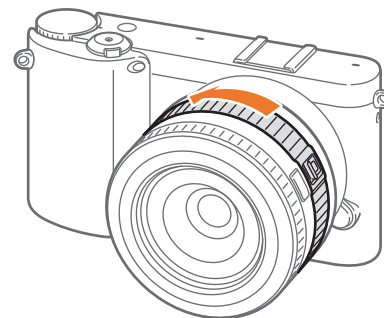
When not using the lens, attach the lens cap and lens mount cover to protect the lens from dust and scratches.

Locking or unlocking the lens

To lock the lens, pull and hold the zoom lock switch away from the camera body and rotate the zoom ring clockwise.

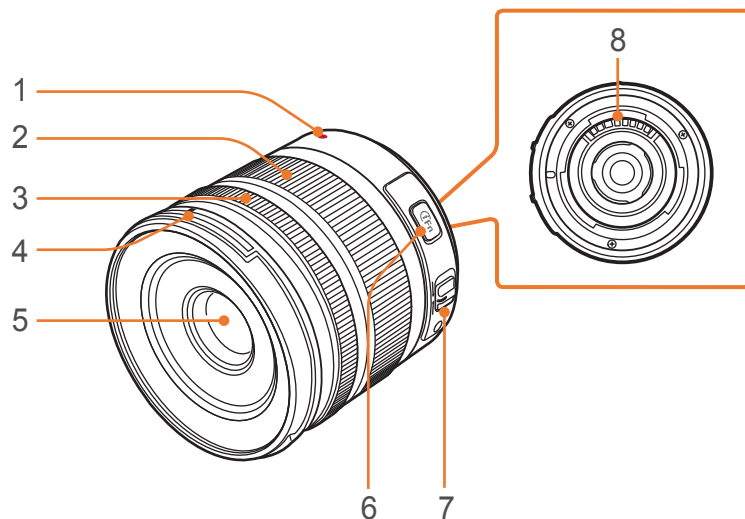


To unlock the lens, rotate the zoom ring counter-clockwise until you hear the click.



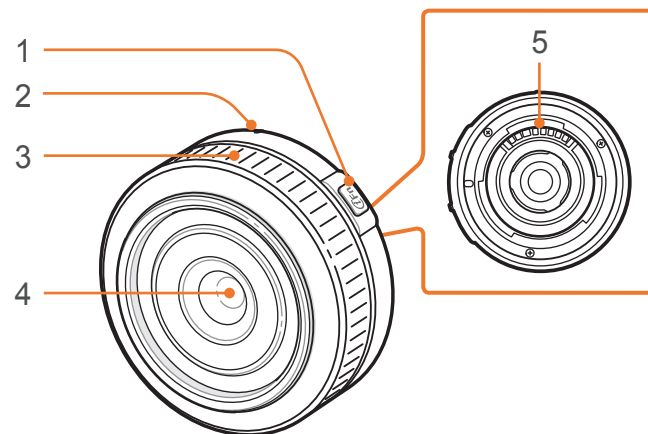
You cannot capture a photo when the lens is locked.

SAMSUNG 18-55 mm F3.5-5.6 OIS III lens (example)



No.	Description
1	Lens mount index
2	Zoom ring
3	Focus ring (p. 70)
4	Lens hood mount index
5	Lens
6	i-Function button (p. 48)
7	AF/MF switch (p. 65)
8	Lens contacts

SAMSUNG 16 mm F2.4 lens (example)

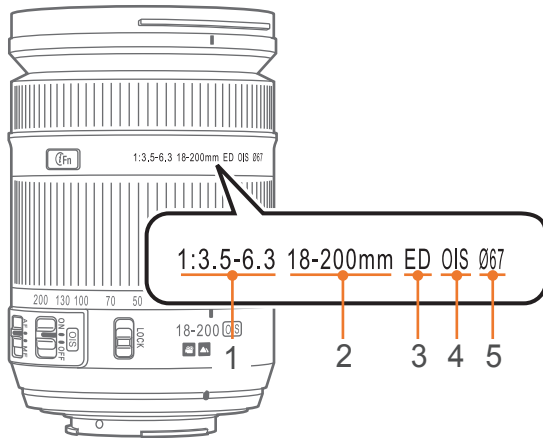


No.	Description
1	i-Function button (p. 48)
2	Lens mount index
3	Focus ring (p. 70)
4	Lens
5	Lens contacts

Lens markings

Find out what the numbers on the lens signify.

SAMSUNG 18-200 mm F3.5-6.3 ED OIS lens (example)



No.	Description
1	Aperture value A range of supported aperture values. For example, 1:3.5-6.3 means the maximum aperture value range from 3.5 to 6.3.
2	Focal length The distance from the middle of the lens to its focal point (in millimeters). This figure is expressed in a range: minimum focal length to maximum focal length of the lens. Longer focal lengths result in narrower angles of view and the subject is magnified. Shorter focal lengths result in wider angles of view.
3	ED ED stands for Extra-low Dispersion. Extra-low dispersion glass is effective in minimizing chromatic aberration (a distortion that occurs when a lens fails to focus all colors to the same convergence point).
4	OIS (p. 71) Optical Image Stabilization. Lenses with this feature can detect camera shake and effectively cancel out the movement inside the camera.
5	Ø The lens diameter. When you attach a filter to the lens, make sure that the diameters of the lens and the filter are the same.

Accessories

You can use accessories including external flash and GPS module that can help you capture better and more convenient photos.

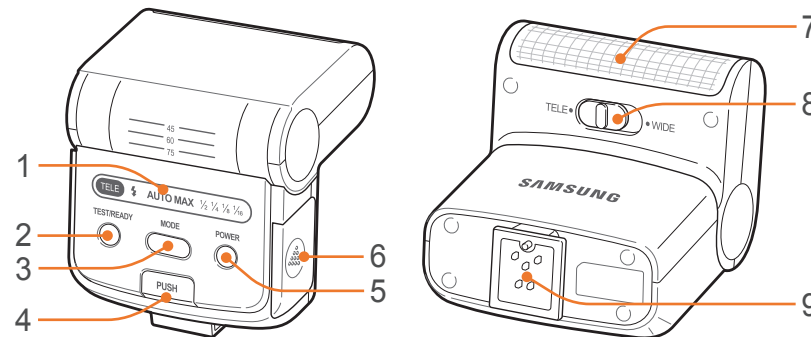
For more information about optional accessories, refer to the manual for each accessory.



- The illustrations may differ from the actual items.
- You can purchase Samsung-approved accessories at a retailer or a Samsung service center. Samsung is not responsible for damage caused by using another manufacturer's accessories.

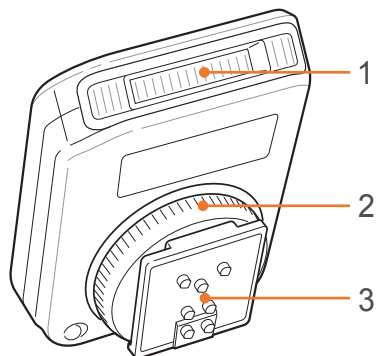
External flash layout

SEF220A (example) (optional)



No.	Description
1	Display icons
2	READY lamp/Test button
3	MODE button
4	Flash release button
5	POWER button
6	Battery cover
7	Bulb
8	TELE/WIDE mode switch
9	Hot-shoe connection

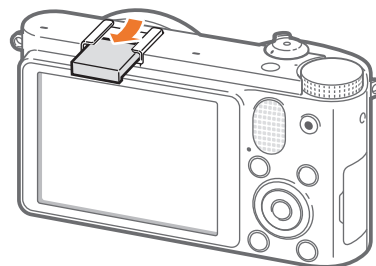
SEF8A (example)



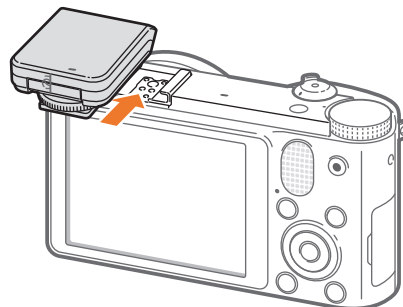
No.	Description
1	Bulb
2	Hot-shoe fastening dial
3	Hot-shoe connection

Connecting the flash

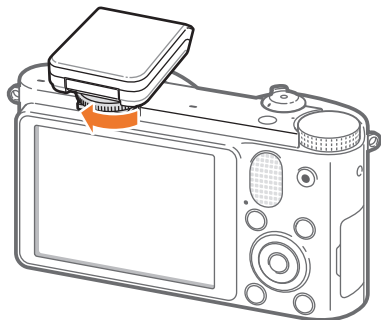
- 1 Remove the hot-shoe cover from the camera.



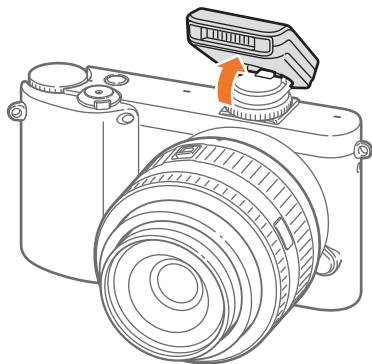
- 2 Connect the flash by sliding it into the hot-shoe.



- 3 Lock the flash into place by turning the hot-shoe fastening dial clockwise.



- 4 Lift up the flash for use.

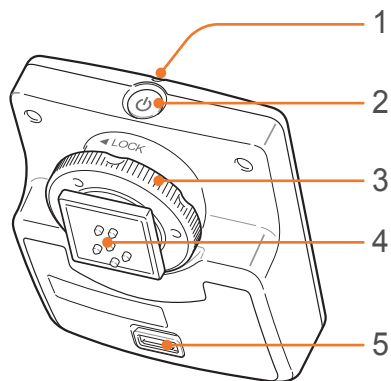


- You can capture a photo with a flash that is not fully charged, but it is recommended to use a fully charged flash.
- Refer to the optional accessories page for available external flashes. (p. 172)
- The available options may differ depending on the shooting mode.
- There is an interval between two bursts of the flash. Do not move until the flash fires a second time.
- SEF8A may not be compatible with other NX series cameras.
- For more details about optional flashes, refer to the user manual for the flash.



Use only Samsung-approved flashes. Using incompatible flashes may damage your camera.

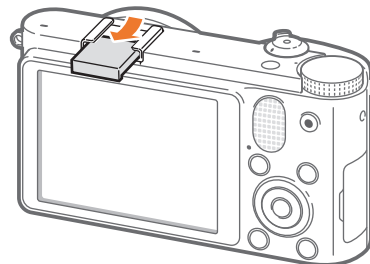
GPS module layout (optional)



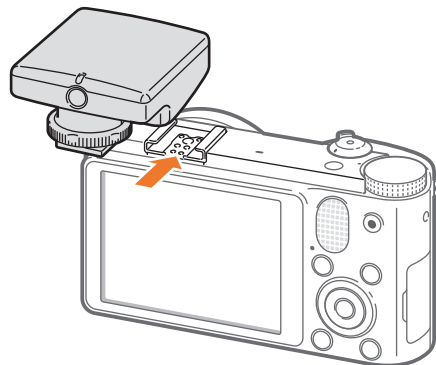
No.	Description
1	Status lamp
2	POWER button
3	Hot-shoe fastening dial
4	Hot-shoe connection
5	Battery cover

Attaching the GPS module

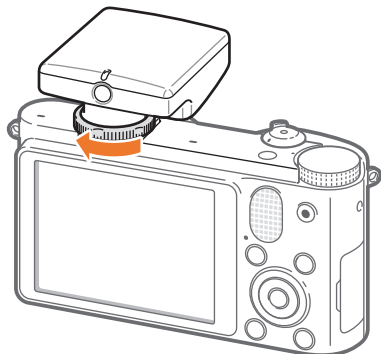
- 1 Remove the hot-shoe cover from the camera.



- 2 Mount the GPS module by sliding in into the hot-shoe.



- 3 Lock the GPS module into place by turning the hot-shoe fastening dial towards LOCK.



- 4 Press the power button of the GPS module.



Shooting modes

Two simple shooting modes—Smart Auto and Scene mode—help you capture photos with numerous automatic settings. Additional modes allow for greater customization of settings.



Icon	Description
SMART	Smart Auto mode (p. 43)
P	Program mode (p. 44)
A	Aperture Priority mode (p. 45)
S	Shutter Priority mode (p. 45)
M	Manual mode (p. 46)
	Lens Priority Mode (p. 47)
	Magic Mode (p. 50)
SCN	Scene mode (p. 51)
	Movie mode (p. 54)
Wi-Fi	Wi-Fi (p. 100)

SMART Smart Auto mode

In Smart Auto mode, the camera recognizes surrounding conditions and automatically adjusts factors that contribute to exposure, including shutter speed, aperture value, metering, White Balance, and exposure compensation. As the camera controls most of the functions, some shooting functions are limited. This mode is useful for capturing quick snapshots with the least amount of adjustment.



The camera may detect different scenes, even the same subjects, depending on external factors such as camera shake, lighting, and distance to the subject.

P Program mode

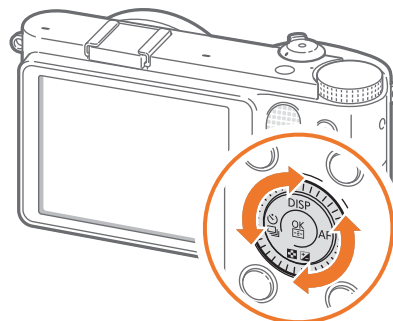
The camera automatically adjusts shutter speed and aperture value so that an optimal exposure value can be achieved.

This mode is useful when you want to capture shots of constant exposure while being able to adjust other settings.



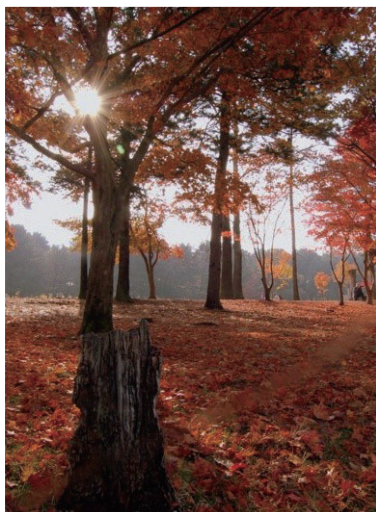
Program Shift

Program Shift function lets you adjust the shutter speed and aperture value while the camera maintains the same exposure. When you rotate the navigation button counter-clockwise, the shutter speed decreases and the aperture value increases. When you rotate the navigation button clockwise, the shutter speed increases and the aperture value decreases.

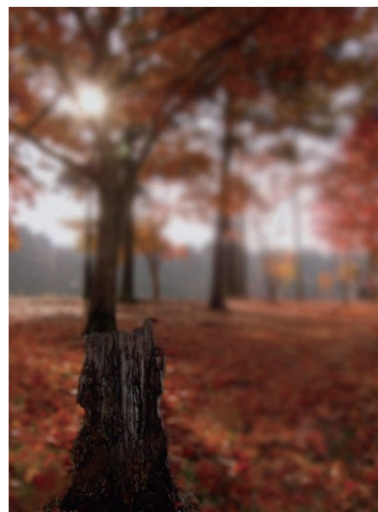


A Aperture Priority mode

In Aperture Priority mode, the camera automatically calculates shutter speed according to the aperture value you choose. You can adjust the depth of field (DOF) by changing the aperture value. This mode is useful for taking portraits and landscape shots.



Large Depth of Field



Small Depth of Field



In low-light settings, you may need to increase the ISO sensitivity to prevent blurred photos.

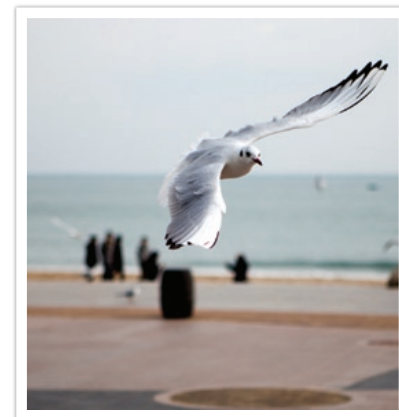
S Shutter Priority mode

In Shutter Priority mode, the camera automatically adjusts the aperture value according to the shutter speed you choose. This mode is useful for capturing photos of fast-moving subjects or for creating tracer effects in a photo.

For example, set the shutter speed to over 1/500 s to freeze the subject. To make the subject appear blurred set the shutter speed to below 1/30 s.



Slow shutter speed



Fast shutter speed



In order to compensate for the reduced amount of light allowed by fast shutter speeds, open the aperture and let in more light. If your photos are still too dark, increase the ISO value.

M Manual mode

Manual mode lets you adjust the shutter speed and aperture value manually. In this mode, you can fully control the exposure of your photos.

This mode is useful in controlled shooting environments, such as a studio, or when it is necessary to fine-tune camera settings. The Manual mode is also recommended for shooting night scenes or fireworks.

Framing mode

When you adjust the aperture value or shutter speed, the exposure changes according to the settings, so the display may darken. With this function on, the brightness of the display is constant regardless of the settings, so you can better frame your shot.

To use Framing Mode,

In Shooting mode, press **[MENU]** →  → **Framing Mode** → an option.

Using bulb

Use a bulb to shoot night scenes or the night sky. During the interval between the first **[Shutter]** press and the second **[Shutter]** press, the shutter is left open so you can create moving light effects.

To use a bulb,

Press  to select a shutter speed, and then rotate the navigation button counter-clockwise to **Bulb** → press **[Shutter]** to start shooting → press **[Shutter]** again to stop shooting.



- If you set a high ISO value or open the shutter for a long time, image noise may increase.
- The continuous shooting function cannot be used with the Bulb function.

Lens Priority mode

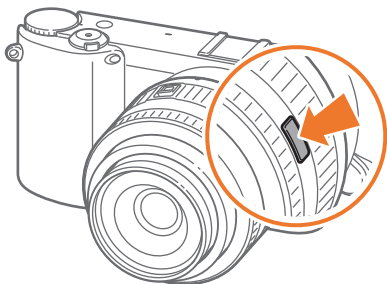
Using the effect mode

You can select an appropriate scene (i-Scene) or a filter effect to the lens you attached. Available scenes and filter effects may differ depending on the lens attached.

1 Rotate the mode dial to .

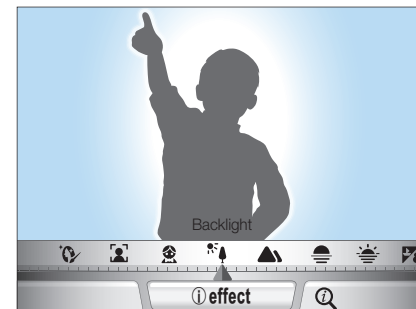
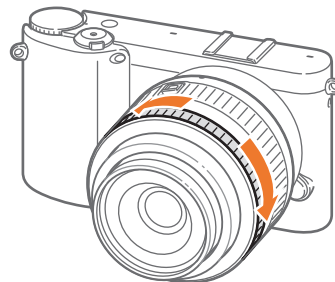
2 Press [**i-Function**] on the lens to select  **effect**.

- You can also use this function by pressing [**Fn**].



3 Adjust the focus ring to select a scene or filter effect.

- If you pressed [**Fn**] to select  **effect**, press [], and then rotate the navigation button or press [/**AF**] to select an option.



4 Fully press [**Shutter**] to capture the photo.



Available scene modes and filter effects (for SAMSUNG 20-50 mm F3.5-5.6 ED II lens): Beauty Shot, Portrait, Children, Backlight, Landscape, Sunset, Dawn, Beach & Snow, Night, Vignetting, Miniature, Fish Eye, Sketch, Defog, Halftone Dots

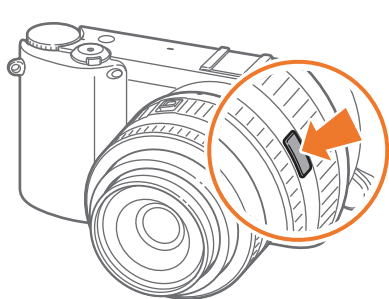
Using i-Function in PASM modes

When you use the i-Function button on an i-Function lens, you can manually select and adjust shutter speed, aperture value, exposure value, ISO sensitivity, and White Balance on the lens.

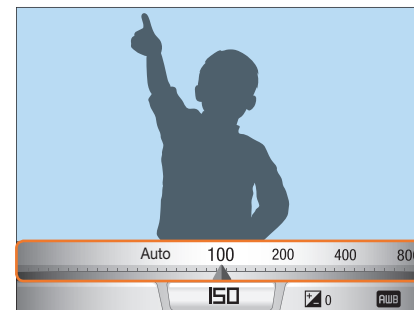
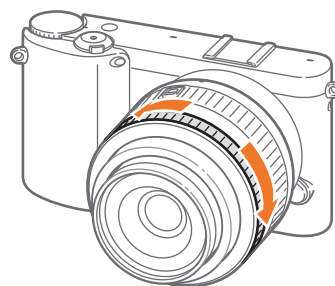
1 Rotate the mode dial to **P**, **A**, **S**, or **M**.

2 Press [**i-Function**] on the lens to select a setting.

- You can also rotate the navigation button or press [**AF**] to select a setting.



3 Adjust the focus ring to select an option.



4 Fully press [**Shutter**] to capture the photo.

Available options

Shooting mode	P	A	S	M
Aperture value	-	O	-	O
Shutter speed	-	-	O	O
Exposure value	O	O	O	-
ISO	O	O	O	O
White Balance	O	O	O	O
i zoom	O	O	O	O



To select items to appear when you press [i-Function] on the lens in Shooting mode, press [MENU] → → iFn Customizing → an option → [MENU].

Using **i zoom**

The **i zoom** allows you to zoom in on a subject with less degradation of photo quality than the Digital zoom. However, the photo resolution may change compared to when you zoom in by rotating the zoom ring.

1 Rotate the mode dial to **P**, **A**, **S**, **M**, or **i**.

2 Press [i-Function] on the lens to select **i zoom**.

- You can also rotate the navigation button or press [/AF] to select a setting.

3 Adjust the focus ring to select an option.

- Photo resolution varies according to the zoom rate if you use the **i zoom**.

	3:2	16:9	1:1
x1.2	4560X3040 (13.9M)	4560X2568 (11.7M)	3040X3040 (9.2M)
x1.4	3888X2592 (10.1M)	3888X2184 (8.5M)	2592X2592 (6.7M)
x1.7	3264X2176 (7.1M)	3264X1840 (6.0M)	2176X2176 (4.7M)
x2	2736X1824 (5.0M)	2736X1536 (4.2M)	1824X1824 (3.3M)

These figures are based on the maximum resolution at each image ratio.

4 Fully press [Shutter] to capture the photo.



- i zoom** is not available when you capture burst shots.
- i zoom** is not available when you capture photos in the RAW file format.
- i zoom** is deactivated when you record videos by pressing the video recording button.

Magic mode

You can apply various filter effects and frame effects to your photos or videos to create unique images. The shape and the feel of the photos or videos will change according to the effect you select.

To set an effect,

In Shooting mode, press **[Fn]** → **Magic Mode** → **Magic Frame** or **Smart Filter** → a desired effect.



- If you select **Sketch** among filter effects, the photo size will automatically change to 5.9M and below.
- If you set a frame effect, the photo size will be automatically set to 2M.
- You cannot record a video with a frame effect.
- If you set a filter effect, the size of the video will be 640X480 or below.



SCN Scene mode

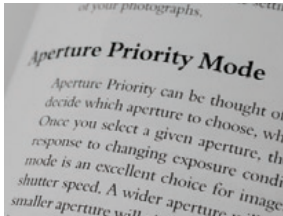
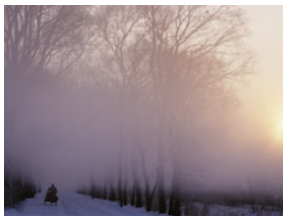
In Scene mode, the camera selects the best settings for each type of scene.

You can select a desired scene by pressing **[Fn]** in Shooting mode.

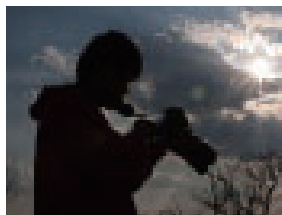
Icon	Description
	Panorama: Capture a 2D or 3D panoramic photo. Captured 3D panoramic photos can be viewed only on a 3D TV.  • The maximum size of a 2D panoramic photo is 8000 X 1152 (horizontal) and 1728 X 4752 (vertical). • The maximum size of a 3D panoramic photo is 3300 X 768 (horizontal). • In Panorama mode, some shooting options are not available. • The camera may stop shooting due to the shooting composition or the subject's movement. • In Panorama mode, your camera may not capture the entire last scene if you stop moving the camera to improve the photo quality. To capture the entire scene, move your camera slightly beyond the point where you want the scene to end.

Icon	Description
	• In 3D Panorama mode, your camera may not capture the very beginning or end of a scene due to the nature of the 3D effect. To capture the entire scene, move slightly beyond the beginning and end points you want to capture. • In 3D Panorama mode, photos are captured in both JPEG and MPO file formats. • You can view an MPO file that supports the 3D effect only on an MPO-compatible display, such as 3D TV or 3D monitor. On your camera's display, you can view only JPEG files. • Use proper 3D glasses when you view an MPO file on a 3D TV or 3D monitor.
	Beauty Shot: Hide facial imperfections. 
	Night: Capture scenes at night or in low lighting. Use a tripod to prevent your camera from shaking that is caused by low shutter speed. 

Icon	Description
	Landscape: Capture still-life scenes and landscapes. 
	Portrait: Automatically detect and focus on human faces so that you can achieve clear, soft portraits. 
	Children: Make children appear more noticeable by capturing their clothes and the background vividly. 
	Sports: Capture fast moving subjects. 

Icon	Description
	Close Up: Capture detailed parts of a subject or small subjects, such as flowers or insects. 
	Text: Clearly capture text from printed or electronic documents. 
	Sunset: Capture scenes at sunset, with natural-looking reds and yellows. 
	Dawn: Capture scenes at sunrise. 

Icon	Description
	Backlight: Capture backlit subjects.
	Fireworks: Capture colorful fireworks at night. Use a tripod to prevent your camera from shaking.
	Beach & Snow: Reduce underexposed photos due to sunlight reflected from sand or snow.
	3D: Capture 3D photos. (p. 135)



Movie mode

In Movie mode, you can shoot videos in Full High Definition (1920X1080) and capture sound via the camera's microphone.

In order to adjust the exposure level, you can select **Program** in the **Movie AE Mode** options menu so that the aperture value and shutter speed can be automatically set or select **Aperture Priority** to manually set the aperture value. You can also select **Shutter Priority** to manually set the shutter speed or select **Manual** to manually set both the aperture value and shutter speed. While shooting a video, press **[AF]** to activate or deactivate the AF function.

Select **Fader** to fade in or out a scene. You can also select **Voice** to mute or un-mute voice.

The camera lets you capture video files up to 25 minutes in length at 30 or 24 fps, and saves the files in MP4 (H.264) format. 24 fps is available only with 1920X810.



- H.264 (MPEG-4 part10/AVC) is the latest video coding format established in 2003 collaboratively by ISO-IEC and ITU-T. Since this format uses a high compression rate, more data can be saved in less memory space.
- If you have the image stabilizer option on when shooting a movie, the camera may record the image stabilizer sound.
- The zoom sound or other lens sounds may be recorded if you adjust the lens while recording a video.
- When using an optional video lens, the autofocus noise is not recorded.
- If you remove the camera lens while recording a movie, the recording will be interrupted. Do not change the lens while recording.
- If you remove an external zoom microphone while recording a movie, the recording will be interrupted. Do not remove it while recording.
- If you change the shooting angle of the camera suddenly while shooting a movie, the camera may not be able to record images accurately. Use a tripod to minimize camera shake.
- In Movie mode, the camera supports only the Multi AF function. You cannot use any other focus area setting functions, such as Face Detection AF.
- When the size of a movie file exceeds 4 GB, the camera automatically stops recording. If this occurs, continue shooting by starting a new movie file.
- If you use a slow writing memory card, the recording of your movie can be interrupted because the card cannot process data at the rate the video is being shot. If this occurs, replace the card with a faster memory card or reduce the image size (for example, from 1280X720 to 640X480).
- When formatting a memory card, always format using the camera. If you format on another camera or a PC, you can lose files on the card or cause a change in the capacity of the card.

Available functions by shooting mode

For details about shooting functions, see Chapter 2.

Function	Available in
Size (p. 57)	P/A/S/M //*/ SCN *// SMART
Quality (p. 59)	P/A/S/M //*/ SCN */
ISO (p. 60)	P/A/S/M */*
White Balance (p. 61)	P/A/S/M /
Picture Wizard (p. 64)	P/A/S/M /
Selective Color (p. 83)	P/A/S/M /
AF Mode (p. 65)	P/A/S/M /*/*/ SCN */*
AF Area (p. 67)	P/A/S/M /*/ SCN *
MF Assist (p. 70)	P/A/S/M //*/ SCN // SMART
OIS (p. 71)	P/A/S/M /// SCN // SMART
Drive (Continuous/Burst/Timer/Bracketing) (p. 72)	P/A/S/M /*/*/ SCN */*/ SMART *

Function	Available in
Metering (p. 79)	P/A/S/M /
Smart Range (p. 82)	P/A/S/M
Color Space (p. 84)	P/A/S/M /// SCN / SMART
Flash (p. 76)	P */ A */ S */ M */*/ SCN */ SMART *
Exposure compensation (p. 85)	P/A/S /// SCN /
Exposure lock (p. 86)	P/A/S /*
Noise Reduction (p. 124)	P/A/S/M

* Some functions are limited in these modes.



Chapter 2

Shooting Functions

Learn about the functions you can set in Shooting mode.
You can enjoy more customized photos and videos by using the shooting functions.

Size

As you increase the resolution, your photo or video will include more pixels, so it can be printed on larger paper or displayed on a larger screen. When you use a high resolution, the file size will also increase. Select a low resolution for photos that will be displayed in a digital picture frame or uploaded to the web.



To set the size,

In Shooting mode, press **[Fn]** → **Photo Size** or **Movie Size** → an option.

Photo size options

Icon	Size	Recommended for
	20.0M (5472X3648) (3:2)	Printing on A1 paper.
	10.1M (3888X2592) (3:2)	Printing on A2 paper.
	5.9M (2976X1984) (3:2)	Printing on A3 paper.
	2.0M (1728X1152) (3:2)	Printing on A5 paper.
	16.9M (5472X3080) (16:9)	Printing on A1 paper or viewing on an HDTV.
	7.8M (3712X2088) (16:9)	Printing on A3 paper or viewing on an HDTV.
	4.9M (2944X1656) (16:9)	Printing on A4 paper or viewing on an HDTV.
	2.1M (1920X1080) (16:9)	Printing on A5 paper or viewing on an HDTV.
	13.3M (3648X3648) (1:1)	Printing a square photo on A1 paper.
	7.0M (2640X2640) (1:1)	Printing a square photo on A3 paper.
	4.0M (2000X2000) (1:1)	Printing a square photo on A4 paper.
	1.1M (1024X1024) (1:1)	Attaching to an email.

Video size options

Icon	Size	Recommended for
	1920X1080 (30 FPS) (16:9)	Viewing on a Full HDTV.
	1920X810 (24 FPS) (Approx. 2.35:1)	Viewing on an HDTV.
	1280X720 (30 FPS) (16:9)	Viewing on an HDTV.
	640X480 (30 FPS) (4:3)	Viewing on a TV.
	320X240 (30 FPS) (4:3)	Post on a website using the wireless network (30 seconds maximum).



Quality

The camera saves photos in either the JPEG or RAW format.

Photos captured by a camera are often transformed to the JPEG format and stored in the memory according to the settings of the camera at the time of shooting. RAW files are not transformed to the JPEG format and are stored in the memory without any changes.

RAW files have the file extension “SRW”. To adjust and calibrate exposures, White Balances, tones, contrasts, and colors of the RAW files, or to convert them into JPEG or TIFF format, use the Samsung RAW Converter program found on the supplied CD-ROM. Ensure you have enough available memory to save photos in the RAW format.

To set the quality,

In Shooting mode, press **[Fn]** → **Quality** → an option.

Photo quality options

Icon	Format	Description
	JPEG	Super Fine: - Compressed for the best quality. - Recommended for printing in large size.
	JPEG	Fine: - Compressed for better quality. - Recommended for printing in normal size.

Icon	Format	Description
	JPEG	Normal: - Compressed for normal quality. - Recommended for printing in small size or uploading to the web.
	RAW	RAW: - Save a photo without data loss. - Recommended for editing after shooting.
	RAW+JPEG	RAW + S.Fine: Save a photo in both the JPEG (S.Fine quality) and RAW format.
	RAW+JPEG	RAW + Fine: Save a photo in both the JPEG (Fine quality) and RAW format.
	RAW+JPEG	RAW + Normal: Save a photo in both the JPEG (Normal quality) and RAW format.

Video quality options

Icon	Extension	Description
	MP4 (H.264)	Normal: Record videos in normal quality.
	MP4 (H.264)	HQ: Record videos in high quality.

ISO sensitivity

The ISO sensitivity value represents the sensitivity of camera to light.

The larger the ISO value, the more sensitive the camera is to light. Consequently, by selecting a higher ISO sensitivity value, you can capture photos in dim or dark places at faster shutter speeds. However, this may increase electronic noise and result in a grainy photo.

To set ISO sensitivity,

In Shooting mode, press **[Fn]** → **ISO** → an option.

Examples



ISO 100



ISO 400



ISO 800



ISO 3200



- Increase the ISO value in places where flash use is prohibited. You can capture a clear photo by setting a high ISO value without having to secure more light.
- Use the Noise Reduction function in order to reduce the visual noise that can appear on photos of a high ISO value. (p. 124)

White Balance (light source)

The color of a photo depends on the type and quality of the light source. If you want the color of your photo to be realistic, select an appropriate lighting condition to calibrate the White Balance, such as **Auto WB**, **Daylight**, **Cloudy**, **Tungsten**, or adjust color temperature manually. You can also adjust color for the preset light sources so that the colors of the photo match the actual scene under mixed lighting conditions.

To set the White Balance,

In Shooting mode, press **[Fn] → White Balance →** an option.

White Balance options

Icon	Description
	Auto WB *: Use automatic settings depending on the lighting conditions.
	Daylight *: Select when taking outdoor photos on a sunny day. This option results in photos closest to the natural colors of the scene.
	Cloudy *: Select when taking outdoor photos on a cloudy day or in shadows. Photos captured on cloudy days tend to be more bluish than on sunny days. This option offsets that effect.
	Fluorescent White *: Select when shooting under a daylight fluorescent lamp. Especially for white fluorescent light with a color temperature of about 4,200K.

Icon	Description
	Fluorescent NW *: Select when shooting under a daylight fluorescent lamp. Especially for white fluorescent light of very white hues with a temperature of about 5,000K.
	Fluorescent Daylight *: Select when shooting under a daylight fluorescent lamp. Especially for white fluorescent light of slightly bluish hue with a temperature of about 6,500K.
	Tungsten *: Select when taking indoor photos under incandescent bulbs or halogen lamps. Incandescent tungsten bulbs tend to have a reddish hue. This option offsets that effect.
	Flash WB *: Select when using a flash.
	Custom Set : Use your pre-defined settings. You can manually set the White Balance by shooting a white sheet of paper. Fill the spot metering circle with the paper and set the White Balance.

* These options can be customized.

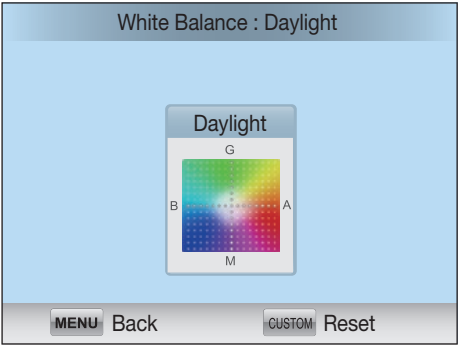
Option	Description
	Color Temperature: Manually adjust the color temperature of the light source. Color temperature is a measurement in degrees Kelvin that indicates the specific type of light source. As the color temperature increases, the color distribution becomes cooler. Alternatively, as the color temperature decreases, the color distribution becomes warmer.
K	 10,000 K — Clear sky 8,000 K — Fluorescent H 6,000 K — Cloudy 5,000 K — Daylight 4,000 K — Fluorescent L 3,000 K — Halogen lamp 2,000 K — Tungsten 2,000 K — Candle light

Customizing preset options

You can also customize preset White Balance options.

To customize preset options,

In Shooting mode, press [Fn] → White Balance → an option → [DISP] → rotate the navigation button or press [DISP/⌂/⌂/⌂/AF].



Examples



Auto WB



Daylight



Fluorescent Daylight



Tungsten



Picture Wizard (photo styles)

Picture Wizard lets you apply different photo styles to your photo to create various looks and emotional moods. You can also create and save your own photo styles by adjusting color, saturation, sharpness, and contrast for each style.

There is no rule for which style is suitable in which conditions. Experiment with different styles and find your own settings.

To set a photo style,

In Shooting mode, press **[Fn]** → **Picture Wizard** → an option.

Examples



Standard



Vivid



Portrait



Landscape



Forest



Retro



Cool



Calm



Classic



You can also adjust the value of the preset style settings. Select a Picture Wizard option, press **[DISP]**, and then adjust color, saturation, sharpness, or contrast.

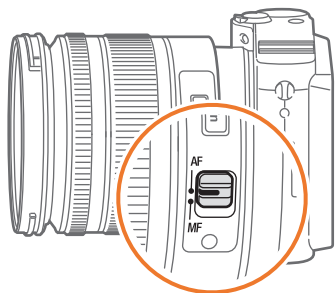
AF mode

Learn how to adjust the camera's focus according to the subjects.

You can select a focusing mode appropriate to the subject among Single Auto Focus, Continuous Auto Focus, and Manual Focus. The AF function is activated when you press **[Shutter]** halfway. In the MF mode, you have to rotate the focus ring on the lens to focus manually.

In most cases, you can have a focus by selecting **Single AF**. Fast moving subjects or subjects of a color similar to the background are difficult to focus. Select an appropriate focusing mode for such instances.

If your lens has an AF/MF switch, set the switch to MF to adjust the focus manually.



When your lens has no AF/MF switch, press **[AF]** to select a desired AF mode.

To set the auto focus mode,

In Shooting mode, press **[AF]** → an option.

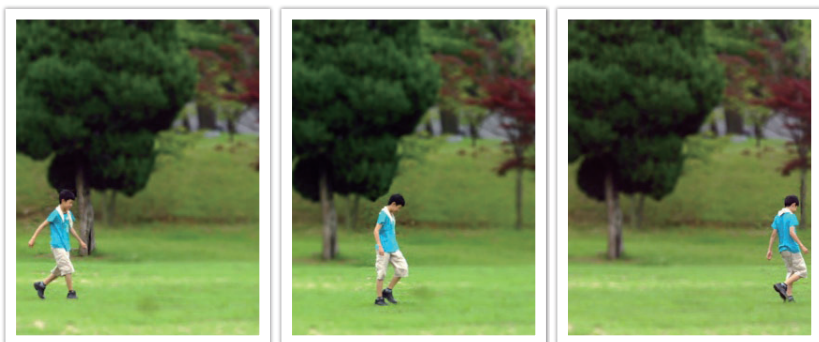
Single AF

Single AF is appropriate for shooting a still subject. When you press **[Shutter]** halfway, the focus fixes in the focus area. The area turns green when the focus is achieved.



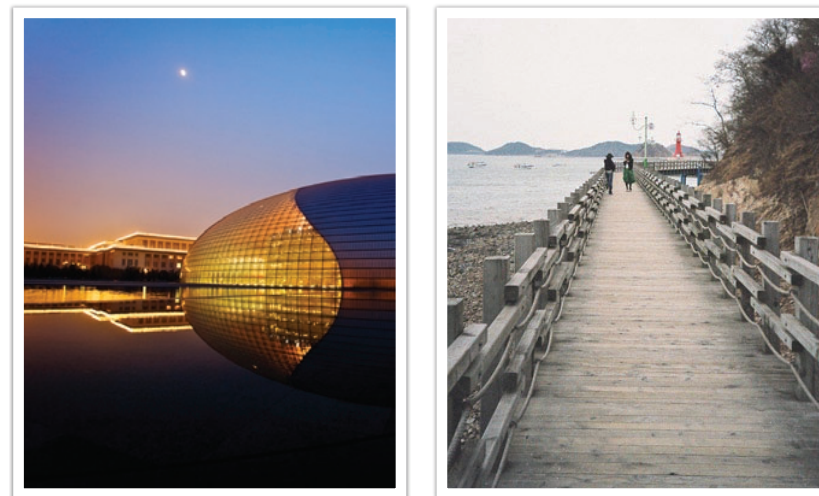
Continuous AF

While you are pressing [**Shutter**] halfway, the camera continues to automatic focusing. Once the focus area is fixed on the subject, the subject is always in focus even when moving. This mode is recommended for shooting a person on a bicycle, a running dog, or a car racing scene.



Manual focus

You can manually focus on a subject by rotating the focus ring on the lens. The MF Assist function lets you easily achieve a focus. While you are rotating the focus ring, the focus area is magnified or the focus aid bar appears to help you achieve a clear focus. This mode is recommended for shooting an object similar in color to the background, a night scene, or fireworks.



AF area

The AF area function changes the positions of the focus area.

Generally, cameras focus on the nearest subject. When there are a lot of subjects, however, unwanted subjects can be in focus. In order to prevent unwanted subjects from being in focus, change the focus area so that a desired subject is in focus. You can get a clearer and sharper photo by selecting an appropriate focus area.

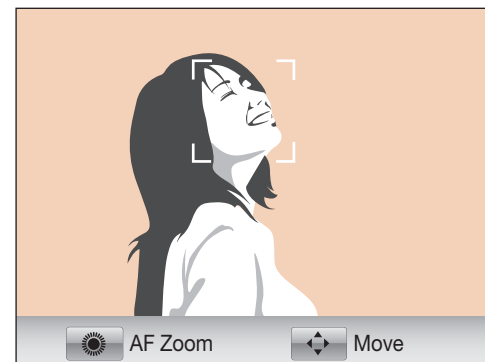
To set the auto focus area,

In Shooting mode, press **[Fn]** → **AF Area** → an option.

Selection AF

You can set the focus on an area you want. Apply an out-of-focus effect to make the subject more distinguishable.

The focus on the photo below was repositioned and resized so that it fits the subject's face.

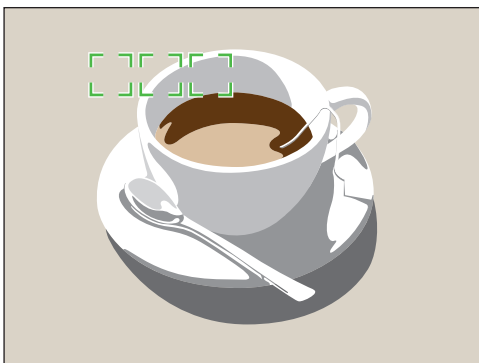


To resize or move the focus area, in Shooting mode, press **[OK]**. Press **[DISP/□/⌂/AF]** to adjust the location of the focus area. Rotate the navigation button to adjust the size of the focus area.

Multi AF

The camera displays a green rectangle in places where focus is set correctly. The photo is divided into two or more areas, and the camera obtains focus points of each area. It is recommended for scenery photos.

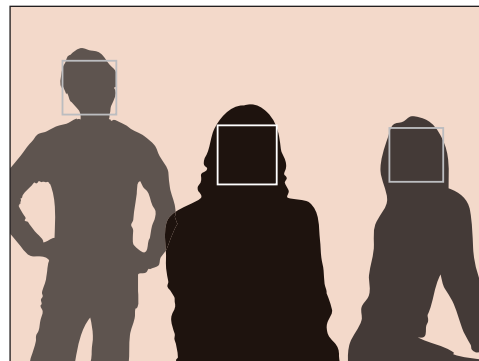
When you press **[Shutter]**, the camera displays the focus areas in green as shown in the photo below.



Face detection AF

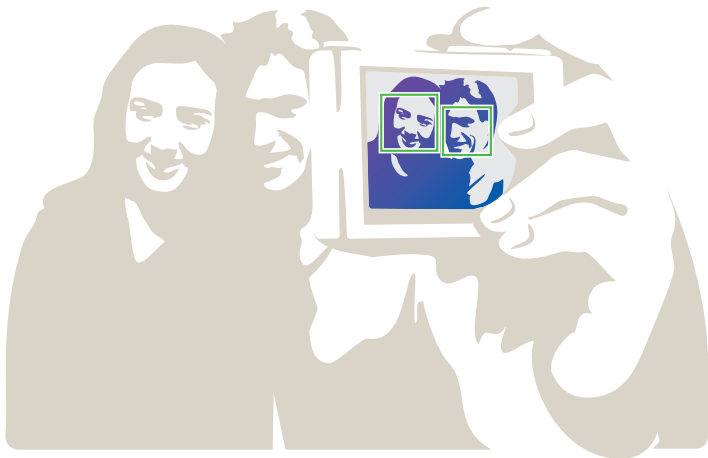
The camera focuses on human faces preferentially. Faces of up to 10 people can be detected. This setting is recommended for shooting a group of people.

When you press **[Shutter]** halfway, the camera focuses on faces as shown in the photo below. In cases of shooting a group of people, the camera displays the focus on the nearest person's face in white and the rest of the people's faces in gray.



Self-portrait AF

It can be difficult to check whether your face is in focus when you are taking a self-portrait. When this function is on, the beep from the camera gets faster when your face is located at the center of the composition.



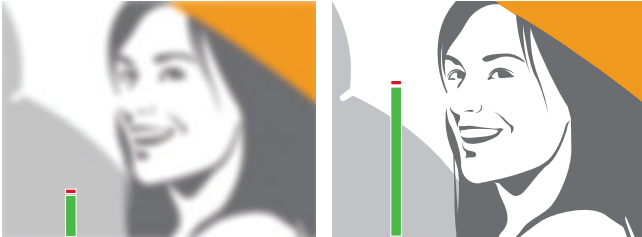
MF assist

In the manual focus (MF) mode, you have to rotate the focus ring on the lens to focus manually. When you set the MF Assist function, you can achieve a clearer focus. This function is only available on a lens that supports manual focus.

To set the manual focus assist,

In Shooting mode, press **[MENU]** → or → **MF Assist** → an option.

* Default	
Option	Description
Off	Do not use the MF Assist function.
Enlarge x5*	The focus area is magnified by 5 times when you rotate the focus ring. 

* Default	
Option	Description
Enlarge x8	The focus area is magnified by 8 times when you rotate the focus ring. 
FA (Focus aid bar)	The focus aid bar rises as the focus improves when you rotate the focus ring. 

Optical Image Stabilization (OIS)

Use the Optical Image Stabilization (OIS) function to minimize camera shake. OIS may not be available with some lenses.

Camera shake tends to occur in dark places or when shooting indoors. In such cases, the camera uses slower shutter speeds in order to increase the amount of light taken in, which can result in a blurry photo. You can prevent this situation by using the OIS function.

If your lens has an OIS switch, you have to turn the switch to use the OIS function.

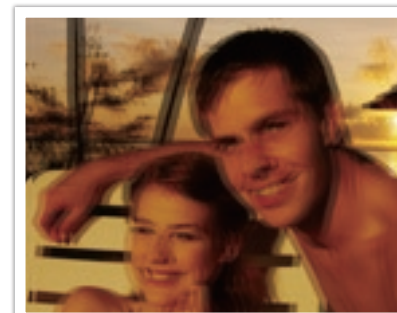
To set OIS options,

In Shooting mode, press [MENU] →  or  → OIS → an option.

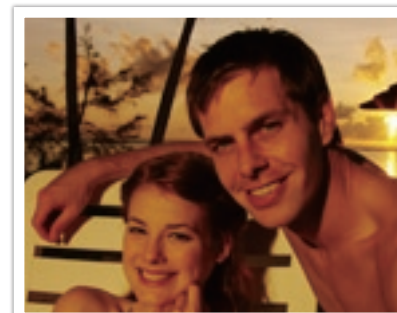
OIS options

* Default

Icon	Description
	Mode 1* : The OIS function is applied only when you press [Shutter] in full or half.
	Mode 2 : The OIS function is on.
	Off : The OIS function is off. (This option may not be available with some lenses.)



Without OIS correction



With OIS correction

Drive (shooting method)

You can set the shooting method such as Continuous, Burst, Timer and so on.

Select **Single** to capture one photo at a time. Select **Continuous** or **Burst** to shoot fast moving subjects. Select **AE Bracket**, **WB Bracket**, or **P Wiz Bracket** to adjust exposure, White Balance, or apply Picture Wizard effects. You can also select **Timer** to capture a photo of yourself.

To set the shooting method,

In Shooting mode, press [📷] → an option.

Single

Capture one photo whenever you press [**Shutter**]. Recommended for general conditions.

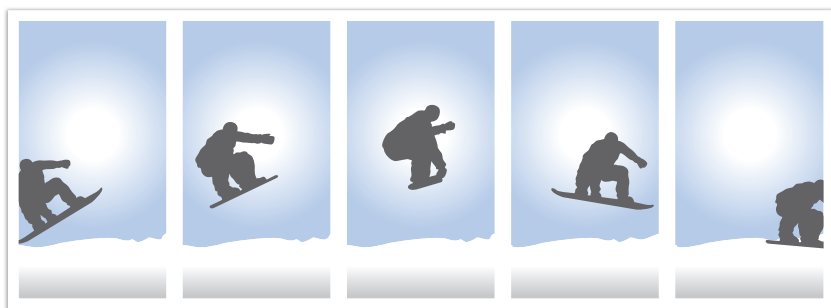
Continuous

Continuously capture photos while you are pressing [**Shutter**]. You can capture up to 3 photos (**Continuous Low (3fps)**) or 8 photos (**Continuous High (8fps)**) per second.



Burst

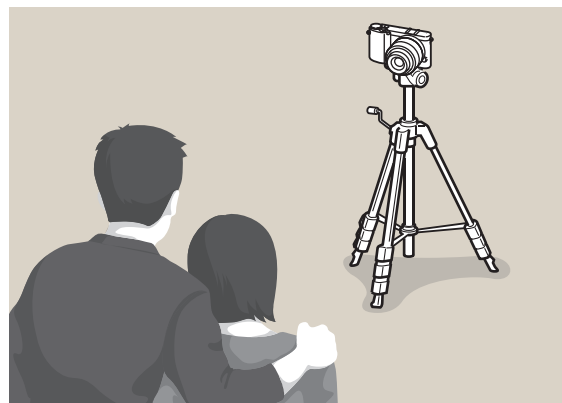
Consecutively capture up to 10 shots per second (3 seconds), 15 shots per second (2 seconds), or 30 shots per second (1 second) when you press [**Shutter**] once. Recommended for shooting the rapid motion of fast moving subjects such as racing cars.



To set the number of shots, in Shooting mode, press [] → **Burst**, and then press [**DISP**].

Timer

Capture a photo with a delay of 2 to 30 seconds. The delay is adjustable in increments of 1 second.



To set the delay, in Shooting mode, press [] → **Timer**, and then press [**DISP**].

Auto Exposure Bracketing (AE Bracket)

When you press [**Shutter**], the camera captures 3 consecutive photos: the original, one a step darker, and one a step lighter. Use a tripod to prevent blurry photos as the camera captures three photos continuously. You can adjust the settings in **Bracket Set** menu.



White Balance Bracketing (WB Bracket)

When you press [**Shutter**], the camera captures 3 consecutive photos: the original and two more with different White Balance settings. The original photo is captured when you press [**Shutter**]. The other two are automatically adjusted according to the White Balance you have set. You can adjust the settings in **Bracket Set** menu.



Picture Wizard Bracketing (P Wiz Bracket)

When you press [**Shutter**], the camera captures three consecutive photos, each with a different Picture Wizard setting. The camera captures a photo and applies the three Picture Wizard options you have set to the image captured. You can select three different settings in **Bracket Set** menu.



Bracketing setting

You can set up the options for AE Bracket, WB Bracket, and P Wiz Bracket.

To set a bracketing option,

In Shooting mode, press [**MENU**] → → **Bracket Set** → an option.

Option	Description
AE Bracket Set	Set the order and the area of bracket. • Bracket Order: Set the order in which the camera captures the original, lighter, and darker photo (represented by 0, +, and -). • Bracket Area: Set the exposure range of the 3 bracketed photos.
WB Bracket Set	Adjust the White Balance interval range of the 3 bracketed photos. For example, AB-/++3 adjusts the Amber value plus or minus three steps. MG-/++3 adjusts the Magenta value the same amount.
P Wiz Bracket Set	Select 3 Picture Wizard settings the camera uses to capture the 3 bracketed photos.

Flash

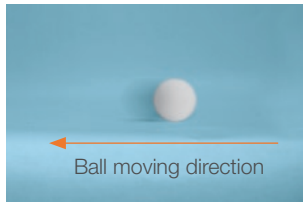
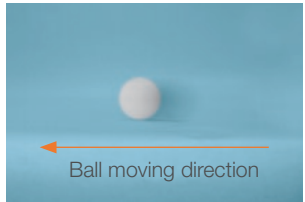
In order to capture a realistic photo of a subject, the amount of light should be constant. When the light source varies, you can use a flash and supply a constant amount of light. Select appropriate settings according to a light source and a subject.

To set flash options,

In Shooting mode, press **[Fn]** → **Flash** → an option.

Flash options

Icon	Description
	Off: Do not use the flash.
	Smart Flash: The camera automatically adjusts the brightness of the flash according to the amount of light in the surrounding environment.
	Auto: The flash automatically fires in dark places.
	Auto Red-eye: The flash automatically fires and prevents red-eyes.
	Fill in: The flash fires whenever you capture a photo.
	Fill-in Red: The flash fires whenever you capture a photo and prevents red-eyes.

Icon	Description
	1st Curtain: The flash fires immediately after the shutter opens. The camera captures a photo of a subject earlier in an action sequence clearly. 
	2nd Curtain: The flash fires just before the shutter closes. The camera captures a photo of a subject later in an action sequence clearly. 



- The available options may differ depending on the shooting mode.
- There is an interval between two bursts of the flash. Do not move until the flash fires a second time.
- Flash options and the flash intensity adjustment are available only when you use the NX exclusive external flash.
- You can capture a photo with a flash that is not fully charged, but it is recommended to use a fully charged flash.



Use only Samsung-approved flashes. Using incompatible flashes may damage your camera.

Correcting the red-eye effect

If the flash fires when you capture a photo of a person in the dark, a red glow may appear in the eyes. To correct the red-eye effect, select **Auto Red-eye** or **Fill-in Red**.



Without red-eye correction



With red-eye correction



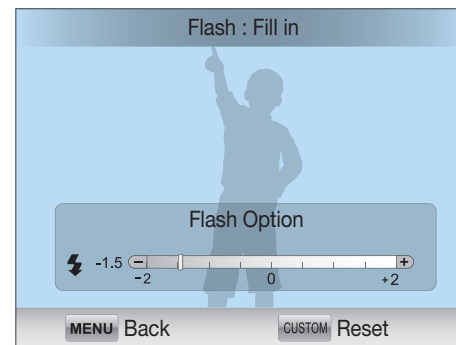
If the subject is too far from the camera or moves when the first flash fires, red-eyes may not be reduced.

Adjusting the flash intensity

Adjust the flash intensity to avoid overexposure or underexposure. You can adjust it ± 2 levels.

To set the flash intensity,

In Shooting mode, press **[Fn]** → **Flash** → an option → **[DISP]** → rotate the navigation button or press **[/AF]**.





- Adjusting the flash intensity may not be effective when:
 - the subject is too close to the camera
 - you set a high ISO sensitivity
 - the exposure value is too big or too small
- In some shooting modes, you cannot use this function.
- If you attach an intensity-adjustable external flash to the camera, the intensity settings of the flash will be applied.
- If the subject is too close when you use the flash, some light may be blocked, resulting in a dark photo. Ensure that the subject is within the recommended range, which varies by lens.
- When a lens hood is attached, the light from the flash can be blocked by the hood. Remove the hood to use the flash.



Metering

The metering mode refers to the way in which a camera measures the quantity of light.

The camera measures the amount of light in a scene, and in many of its modes, uses the measurement to adjust various settings. For example, if a subject looks darker than its actual color, the camera captures an overexposed photo of it. If a subject looks lighter than its actual color, the camera captures an underexposed photo of it.

The brightness and overall mood of the photo can also be affected by how the camera measures the amount of light. Select an appropriate setting for a shooting condition.

To set a metering option,

In Shooting mode, press **[Fn]** → **Metering** → an option.

Multi

The Multi mode calculates the amount of light in multiple areas. When light is sufficient or insufficient, the camera adjusts the exposure by averaging the overall brightness of the scene. This mode is suitable for general photos.



Center-weighted

The Center-weighted mode calculates a broader area than the Spot mode does. It sums up the amount of light in the center portion of the shot (60 ~ 80 %) and that of the rest of the shot (20 ~ 40 %). It is recommended for situations where there is a slight difference in brightness between a subject and a background or an area of the subject is large compared to the overall composition of the photo.



Spot

The Spot mode calculates the amount of light in the center. When you capture a photo in conditions where there is a strong backlight behind a subject, the camera adjusts the exposure so as to shoot a subject correctly. For example, when you select the Multi mode in a strong backlight condition, the camera calculates that the overall amount of light is abundant, which results in a darker photo. The Spot mode can prevent this situation as it calculates the amount of light in a designated area.



The subject is in bright color while the background is dark. The Spot mode is recommended for a situation like this where a huge difference in the exposure exists between a subject and a background.

Measuring the exposure value of the focus area

When this function is turned on, the camera automatically sets an optimal exposure by calculating the brightness of the focus area. This function is only available when you select **Spot** metering or **Multi** metering, and **Selection AF**.

To set this
function,

In Shooting mode, press [MENU] →  →
Link AE to AF Point → an option.



Smart Range

This function automatically corrects the loss of bright detail that can occur due to shading differences in the photo.

To set **Smart Range** options,

In Shooting mode, press **[Fn]** → **Smart Range** → an option.



Without Smart Range effect



With Smart Range effect



Selective Color

This function lets you select a color that you want to emphasize, and desaturates the others. You can select red, green, blue, or yellow from the menu.

To set Selective Color options,

In Shooting mode, press **[Fn]** → **Selective Color** → an option.

Examples



Original



When red is selected



Color space

Digital imaging devices such as digital cameras, monitors, and printers have their own methods for representing colors, which are called color spaces.

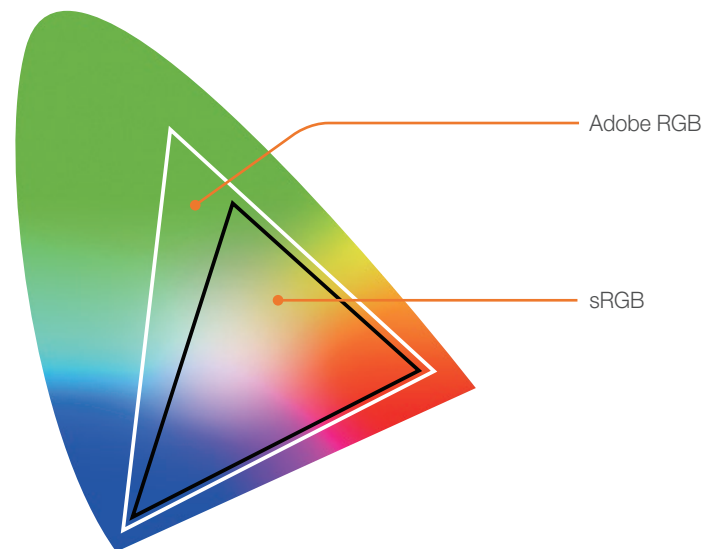
Your camera lets you select two color spaces: **sRGB** or **Adobe RGB**.

sRGB is widely used for creating colors on PC monitors and is also the standard color space for Exif. sRGB is recommended for regular images and images you intend to publish on the Internet.

Adobe RGB is used for commercial printing and has a larger color range than sRGB. Its wider range of colors helps you to easily edit photos on a computer. Note that individual programs are generally compatible with a limited number of color spaces. If you open an image in a program that is not compatible with the image's color space, the colors will appear lighter.

To set the color space,

In Shooting mode, press **[MENU]** →  → **Color Space** → an option.



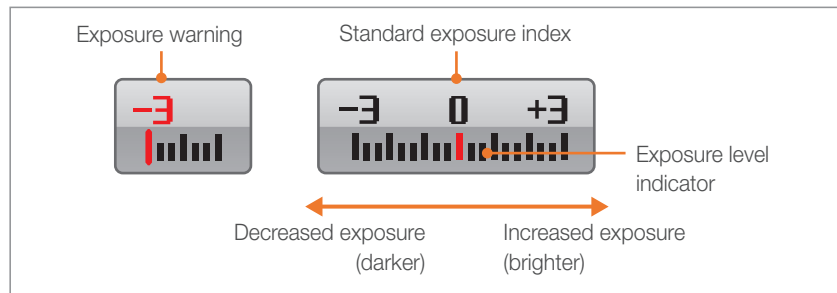
Exposure compensation/lock

Exposure compensation

The camera automatically sets the exposure by measuring the levels of light from the photo's composition and the position of a subject. If the exposure set by the camera is higher or lower than you expected, you can adjust the exposure value manually. The exposure value is adjustable in ± 3 increments. The camera displays the exposure warning in red for each step beyond ± 3 range.

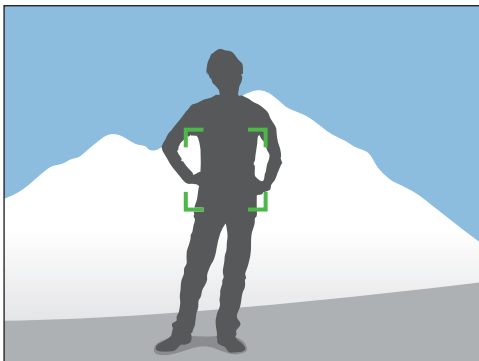
To adjust the exposure value, press **[$\square$ $\square$]**, and then rotate the navigation button. You can also adjust the exposure value by pressing **[Fn]**, and then selecting **EVC (Exposure Value Compensation)**.

You can check the exposure value by the position of the exposure level indicator.

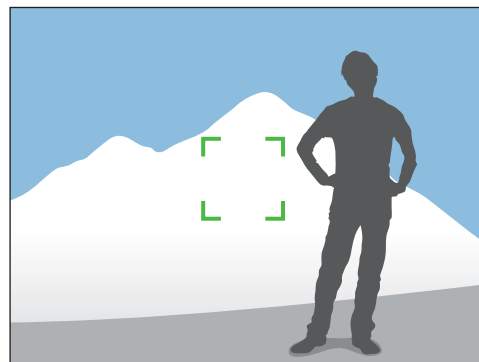


Exposure lock

When you cannot achieve an appropriate exposure because of a strong color contrast, lock the exposure and then capture a photo.



To lock the exposure, adjust the photo's composition on which you want to calculate the exposure, and then press the custom button.
(p. 127)



After locking the exposure, aim the lens where you desire, and press **[Shutter]**.

Video functions

The functions available for video are explained below.

Movie AE mode

Set the exposure mode for recording a video.

To set Movie AE options,

In Video Shooting mode, press [Fn] → **Movie AE Mode** → an option.

* Default

Icon	Description
	Program* : The aperture value and shutter speed are adjusted automatically.
	Aperture Priority : Set the aperture value manually before recording a video. Rotate the navigation button to adjust the aperture value.
	Shutter Priority : Set the shutter speed manually before recording a video. Rotate the navigation button to adjust the shutter speed.
	Manual : Set both the aperture value and shutter speed manually before recording a video. Press [M] to select an aperture value or shutter speed, and then rotate the navigation button to adjust the value.

Multi Motion

Set the playing speed of a video.

To set recording speed options,

In Video Shooting mode, press [MENU] →  → **Multi Motion** → an option.

Icon	Description
	x0.25 : Record a video and play it at 1/4 normal speed.
	x0.5 : Record a video and play it at 1/2 normal speed.
	x1 : Record a video and play it at normal speed.
	x5 : Record a video and play it at 5X normal speed.
	x10 : Record a video and play it at 10X normal speed.
	x20 : Record a video and play it at 20X normal speed.



- If you select an option other than **x1**, sound will not be recorded.
- The available options may differ according to the video size.

Fader

You can fade in or fade out a scene using the fader function on the camera without having to do it on a PC. Use the function appropriately and add dramatic effects on your videos.

To set fader options,

In Video Shooting mode, press **[Fn]** → **Fader** → an option.

Icon	Description
	Off: Fader function not used.
	In: Scene gradually fades in.
	Out: Scene gradually fades out.
	In-out: The fader function is applied at the start and end of the scene.

Voice

Sometimes, a muted video is more appealing than the one with sound. Turn the voice off to record a muted video.

To set voice options,

In Video Shooting mode, press **[Fn]** → **Voice** → an option.



Chapter 3

Playback/Editing

Learn about how to play back and edit photos and videos.
Refer to chapter 6 for editing files on a PC.

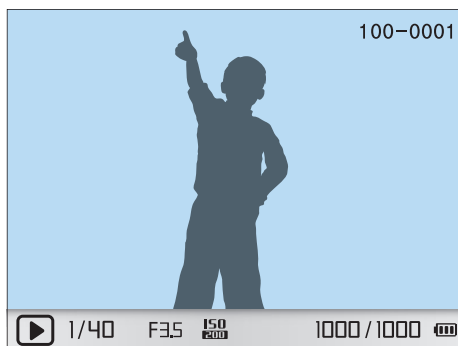
Searching and managing files

Learn how to search photos and videos quickly through the thumbnail view and to protect and delete files.

Viewing photos

1 Press [▶].

- The most recent file you captured will be displayed.



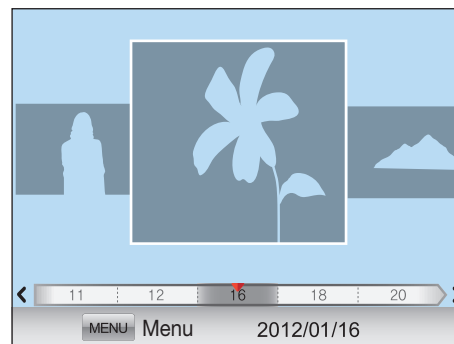
2 Rotate the navigation button or press [◀/AF] to scroll through files.



You may not be able to edit or play back files that were captured with other cameras, due to unsupported sizes or codecs. Use a computer or another device to edit or play back these files.

Viewing image thumbnails

In order to search for photos and videos you want, convert to the thumbnail view. The thumbnail view displays multiple images at a time so that you can easily look through items you wish to find. You can also classify and display files by their type, day recorded, and week recorded.



Press [📷] to view files as thumbnails.

- Press once to view 3 thumbnails.
- Press twice to view 15 or 40 thumbnails.
(In the single view, press [MENU] → [▶] → **Thumbnail mode** to select the number of files to view. (p. 95))



Alternatively, in the single view, press [MENU] → [▶] → **View** → an option.