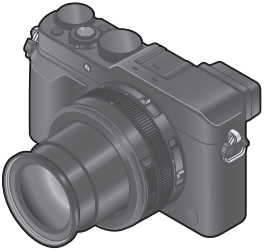
Panasonic®

Basic Operating Instructions

Digital Camera

Model No. DMC-LX100



LUMIX

Please read these instructions carefully before using this product, and save this manual for future use.

More detailed instructions on the operation of this camera are contained in “Operating Instructions for advanced features (PDF format)” in the supplied disc. Install it on your PC to read it.

GN

SQT0382
M1014KZ0

Dear Customer,

We would like to take this opportunity to thank you for purchasing this Panasonic Digital Camera. Please read these Operating Instructions carefully and keep them handy for future reference. Please note that the actual controls and components, menu items, etc. of your Digital Camera may look somewhat different from those shown in the illustrations in these Operating Instructions.

Carefully observe copyright laws.

- Recording of pre-recorded tapes or discs or other published or broadcast material for purposes other than your own private use may infringe copyright laws. Even for the purpose of private use, recording of certain material may be restricted.

Information for Your Safety

WARNING:

To reduce the risk of fire, electric shock or product damage,

- **Do not expose this unit to rain, moisture, dripping or splashing.**
- **Use only the recommended accessories.**
- **Do not remove covers.**
- **Do not repair this unit by yourself. Refer servicing to qualified service personnel.**

The socket outlet shall be installed near the equipment and shall be easily accessible.

■ Product identification marking

Product	Location
Digital camera	Bottom
Battery charger	Bottom

■ About the battery charger

CAUTION!
To reduce the risk of fire, electric shock or product damage,
- **Do not install or place this unit in a bookcase, built-in cabinet or in another confined space. Ensure this unit is well ventilated.**

- The battery charger is in the standby condition when the AC power supply cord is connected. The primary circuit is always “live” as long as the power cord is connected to an electrical outlet.

■ About the battery pack

CAUTION
- Danger of explosion if battery is incorrectly replaced. Replace only with the type recommended by the manufacturer.
- When disposing of the batteries, please contact your local authorities or dealer and ask for the correct method of disposal.

- Do not heat or expose to flame.
- Do not leave the battery(ies) in a car exposed to direct sunlight for a long period of time with doors and windows closed.

Warning
Risk of fire, explosion and burns. Do not disassemble, heat above 60 °C or incinerate.

■ Cautions for Use

- Do not use any other USB connection cables except the supplied one or a genuine Panasonic USB connection cable (DMW-USBC1: optional).
- Always use a genuine Panasonic AV cable (DMW-AVC1: optional).
- Use a “High Speed HDMI micro cable” with the HDMI logo. Cables that do not comply with the HDMI standards will not work.
  “High Speed HDMI micro cable” (Type D-Type A plug, up to 2 m long)

Keep this unit as far away as possible from electromagnetic equipment (such as microwave ovens, TVs, video games etc.).

- If you use this unit on top of or near a TV, the pictures and/or sound on this unit may be disrupted by electromagnetic wave radiation.
- Do not use this unit near cell phones because doing so may result in noise adversely affecting the pictures and/or sound.
- Recorded data may be damaged, or pictures may be distorted, by strong magnetic fields created by speakers or large motors.
- Electromagnetic wave radiation may adversely affect this unit, disturbing the pictures and/or sound.
- If this unit is adversely affected by electromagnetic equipment and stops functioning properly, turn this unit off and remove the battery or disconnect AC adaptor (DMW-AC10G: optional). Then reinsert the battery or reconnect AC adaptor and turn this unit on.

Do not use this unit near radio transmitters or high-voltage lines.

- If you record near radio transmitters or high-voltage lines, the recorded pictures and/or sound may be adversely affected.

-If you see this symbol-

Information on Disposal in other Countries outside the European Union

This symbol is only valid in the European Union.
If you wish to discard this product, please contact your local authorities or dealer and ask for the correct method of disposal.

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About the symbols in the text

MENU Indicates that the menu can be set by pressing [MENU/SET] button.

Wi-Fi Indicates that the Wi-Fi setting can be made by pressing [Wi-Fi] button.

Configurations that can be performed in the [Custom] menu.

Tips for skilful use and points for recording.

Conditions in which a particular function cannot be used.

In this Operating Instructions, steps for setting a menu item are described as follows:

MENU → [Rec] → **[Quality]** → [ ]

Before use

■ Camera handling

- Keep the camera away from excessive vibration, force, or pressure.
- The camera is not dust resistant, splash resistant, or waterproof. Avoid using the camera in places with excessive dust or sand, or where water can come into contact with the camera.
- Do not allow camera to come into contact with pesticides or volatile substances (can cause surface damage or coating to peel).

■ Condensation (When the lens, the monitor or the viewfinder is fogged up)

- Condensation may occur when the camera is exposed to sudden changes of temperature or humidity. Avoid these conditions, which may make the lens, the monitor or the viewfinder dirty, cause mould, or damage the camera.
- If condensation does occur, turn off the camera and wait about two hours before using it. Once the camera adjusts to the surrounding temperature, the fogging will clear naturally.

■ Caring for your camera

- Before cleaning the camera, remove the battery or the DC coupler (DMW-DCC11: optional), or disconnect the power plug from the outlet.
- Do not press the monitor with excessive force.
- Do not press the lens with excessive force.
- Do not keep rubber or plastic products in contact with the camera for a long period of time.
- Do not use solvents such as benzine, thinner, alcohol, kitchen detergents, etc., to clean the camera, since it may deteriorate the external case or the coating may peel off.
- Do not leave the camera with the lens facing the sun, as rays of light from the sun may cause it to malfunction.
- Do not extend the supplied cord or cable.
- While the camera is accessing the card (for an operation such as picture writing, reading, deletion, or formatting), do not turn off the camera or remove the battery, card, AC adaptor (DMW-AC10G: optional) or DC coupler (DMW-DCC11: optional).
- The data on the card may be damaged or lost due to electromagnetic waves, static electricity or breakdown of the camera or the card. We recommend storing important data on a PC etc.
- Do not format the card on your PC or other equipment. Format it on the camera only to ensure proper operation.

Standard accessories

Check that all the accessories are supplied before using the camera. Part numbers are as of September 2014. These may be subject to change.

- ☐ **Battery pack**
  DMW-BLG10E
  - Charge the battery before use.

  Battery pack is indicated as battery pack or battery in the text.

- ☐ **Battery charger**
  DE-A98A

  Battery charger is indicated as battery charger or charger in the text.

- ☐ **AC cable**
  K2CJ2YY00052

- ☐ **Shoulder strap**
  VFC5137

- ☐ **USB connection cable**
  K1HY08YY0031

- ☐ **DVD**
  SFM0040
  - Software:
    Use it to install the software on your PC.
  - Operating Instructions for advanced features

- ☐ **Hot shoe cover***
  VKF5259

- ☐ **Flash**
  VEK0V37Z1-A

- ☐ **Soft case**
  VFC5140

  Keep the flash in the soft case when not in use.

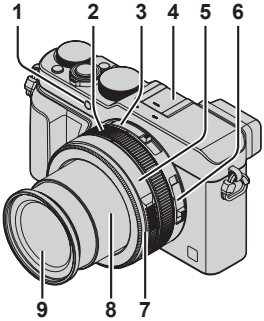
- ☐ **Lens cap***
  SXQ0155

- ☐ **Lens cap string**
  VFC4366

* Already attached to the camera at the time of purchase.

- **Cards are optional.**
- SD Memory Card, SDHC Memory Card and SDXC Memory Card are indicated as card in the text.
- Consult the dealer or your nearest Service Centre if you lose the supplied accessories. (You can purchase the accessories separately.)
- Please dispose of all packaging appropriately.
- Keep small parts in a safe place out of the reach of children.
- The illustrations and screens in this manual may differ from the actual product.

Names and Functions of Main Parts



1 **Self-timer indicator (→53) / AF Assist Lamp**

2 **Control ring (→21)**

3 **Aspect ratio selector switch (→42)**

4 **Hot shoe (Hot shoe cover) (→57)**
- The hot shoe cover is already attached to the hot shoe at the time of purchase.
- Keep the hot shoe cover out of reach of children to prevent swallowing.

5 **Aperture ring (→27)**

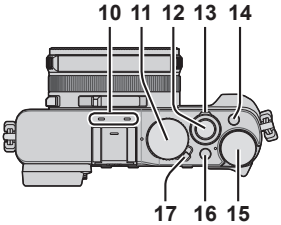
6 **Focus selector switch (→44, 45)**

7 **Lens front ring**
To attach the auto lens cap (optional) (→92), remove the lens front ring.

8 **Lens barrel**

9 **Lens (Filter diameter Φ43 mm)**

(Top)



10 **Stereo microphone**
Be careful not to cover the microphone with your finger. Doing so may make sound difficult to record.

11 **Shutter speed dial (→27)**

12 **Shutter button**

13 **Zoom lever (→55)**

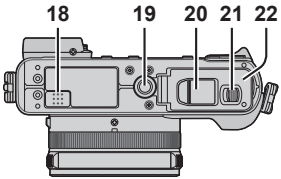
14 **[FILTER] button (→41)**

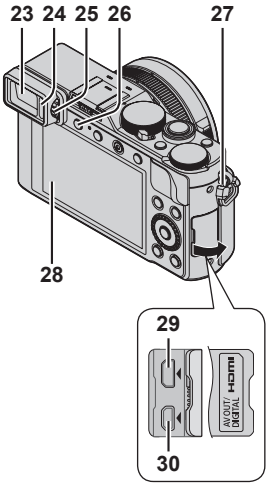
15 **Exposure compensation dial (→47)**

16 **[iA] button (→25)**

17 **Camera [ON/OFF] switch**

(Bottom)





18 Speaker
Be careful not to cover the speaker with your finger. Doing so may make sound difficult to hear.

19 Tripod mount
Do not attach to a tripod with a 5.5 mm or longer screw. Doing so may damage this unit.
It may not be possible to attach certain types of tripods properly.

20 DC coupler cover
- Open this cover to use an AC adaptor (optional) and DC coupler (optional) in place of the battery.
- Always use a genuine Panasonic AC adaptor (DMW-AC10G: optional).
- When using an AC adaptor, use the AC cable supplied with the AC adaptor.
- When using an AC adaptor (DMW-AC10G: optional), ensure that the Panasonic DC coupler (DMW-DCC11: optional) and AC adaptor are used.

21 Release lever (→15)

22 Card/Battery door (→15)

23 Viewfinder (LVF) (→23)
In this manual, “viewfinder” is used to indicate the LVF.

24 Eye Sensor (→23)

25 Diopter adjustment dial (→23)

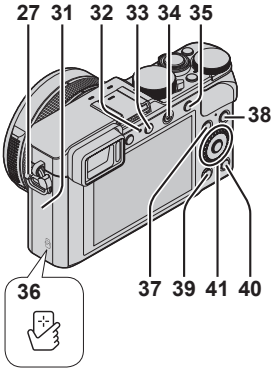
26 [LVF] button (→23) / [Fn3] button (→20)

27 Strap eyelet (→12)

28 Monitor

29 [HDMI] socket (→70)

30 [AV OUT/DIGITAL] socket (→70, 73)



27 **Strap eyelet (→12)**

31 **Wi-Fi® antenna**

32 **Wi-Fi connection lamp (→59)**

33 **[Wi-Fi] button (→59) / [Fn2] button (→20)**

34 **Motion picture button (→36)**

35 **[AF/AE LOCK] button (→46)**

36 **NFC antenna (→62)**

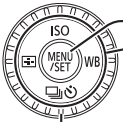
37 **[Q.MENU] button (→20)**

38 **Playback button**

39 **[Fn1] button (→20) / [🗑/↩] (Delete/Cancel) button (→35)**

40 **[DISP.] button (→34)**
Each time this is pressed, the display on the screen is switched.

41 **[MENU/SET] button / Cursor button / Control dial**



[MENU/SET] button (→19)

Cursor button

[ISO] button (▲) (→47)

[WB] (White Balance) button (▶) (→41)

[⧉/⏱] (Drive Mode) button (▼) (→50)
Single, Burst, Auto Bracket, Aspect Bracket, Self-timer, Panorama

[⊞] (AF Mode) button (◀) (→44)

Control dial (→19)

- In this manual, the button that is to be used is indicated by ▲▼◀▶.

Disabling the button and dial operation (while recording)

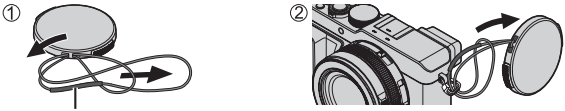
When the [Cursor Button Lock] is assigned to the function button, operation of the [MENU/SET] button, cursor button, and control dial is disabled. For details, refer to “Operating Instructions for advanced features (PDF format)”.

Preparations

Attaching the lens cap and shoulder strap

Cover the lens with the lens cap to protect it when you are not taking pictures. We recommend attaching the lens cap to the camera using the lens cap string to prevent loss of the lens cap. We also recommend attaching the shoulder strap to prevent the camera from being dropped.

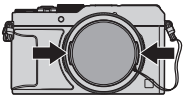
1 Use the lens cap string (supplied) to attach the lens cap to the camera



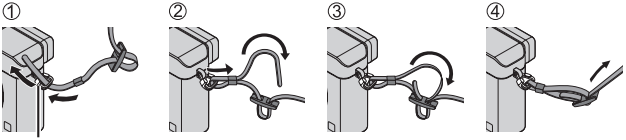
Make sure that the thicker portion of the string is not hanging over the lens cap or the shoulder strap eyelet.

2 Attach the lens cap

- To attach and remove the lens cap, press the areas shown by arrows in the illustration.



3 Attach the shoulder strap



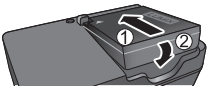
- Attach the other end of the shoulder strap.

Charging the battery

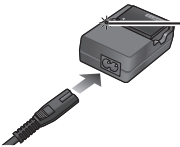
The battery that can be used with this unit is DMW-BLG10E.
The battery is not charged when the camera is shipped. Charge the battery before use.

- **Use the dedicated charger and battery.**

1 Attach the battery paying attention to the direction of the battery



2 Connect the charger to the electrical outlet



- The AC cable does not fit entirely into the AC input terminal. A gap will remain.

Charging light ([CHARGE])

On: Charging in progress
Off: Charging complete

If light is flashing:

- Battery temperature is too high or too low. We recommend charging in a location where the ambient temperature is between 10 °C and 30 °C.
- Battery/charger connector is dirty. Clean with a dry cloth.

- Charge the battery with the charger indoors.

3 Detach the battery after charging is completed

Charging time	Approx. 190 min

- The charging time indicated above is the time required for charging in case when the battery is completely used up. The time required for charging differs depending on conditions of battery usage. Charging takes longer in cases when temperatures are either high or low and when the battery has not been used for a long period of time.

■ Guidelines for number of recordable pictures and operating time

Recording still pictures (When using monitor)

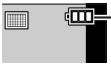
Number of recordable pictures	Approx. 350 pictures (Approx. 300 pictures)
Recording time	Approx. 175 min (Approx. 150 min)

- The values when the flash (supplied) is used are provided in parentheses.

Recording motion pictures (When using monitor)

[Rec Format]	[AVCHD]	[MP4]	[MP4]
[Rec Quality]	[FHD/17M/50i]	[FHD/20M/25p]	[4K/100M/25p]
Available recording time	Approx. 125 min	Approx. 135 min	Approx. 90 min
Actual available recording time*	Approx. 60 min	Approx. 65 min	Approx. 45 min

*The time you can actually record when repeatedly turning the camera on and off, starting and stopping recording and using zoom.



Remaining battery (only when using battery)

(flashes red)

If the battery mark flashes red, recharge or replace a fully charged battery.

- The battery is a rechargeable lithium ion battery. If the temperature is too high or too low, the operating time of the battery will become shorter.
- The battery becomes warm after using and during and after charging. The camera also becomes warm during use. This is not a malfunction.
- **Do not leave any metal items (such as clips) near the contact areas of the power plug or near the batteries.**
- Store the battery in a cool and dry place with a relatively stable temperature. (Recommended temperature: 15 °C to 25 °C, Recommended humidity: 40%RH to 60%RH)
- **Do not store the battery for a long time while fully charged.** When storing the battery for a long period of time, we recommend charging it once a year. Remove the battery from the camera and store it again after it has completely discharged.

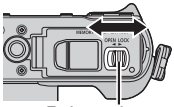
Inserting and removing the battery/the card (optional)

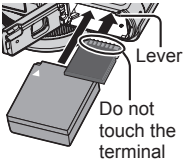
- Always use genuine Panasonic batteries (DMW-BLG10E).
- If you use other batteries, we cannot guarantee the quality of this product.

1 **Slide the release lever to the [OPEN] position and open the card/battery door**

2 **(Battery)**
Insert the battery all the way firmly until a locking sound is heard, and check that the lever is hooked over the battery.
(Card)
Insert the card all the way firmly until it clicks.

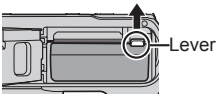
3 **Close the card/battery door and slide the release lever to the [LOCK] position**



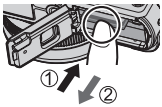


■ To remove

- **To remove battery:**
  Move lever in direction of arrow.



- **To remove card:**
  Press the centre of the card.



■ About the Card

The following SD standard-based cards (Panasonic brand recommended) can be used.

Type of Card	Capacity
SD Memory Cards	8 MB – 2 GB
SDHC Memory Cards	4 GB – 32 GB
SDXC Memory Cards	48 GB, 64 GB

- Keep the Memory Card out of reach of children to prevent swallowing.

■ **About the motion picture recording and speed class**

According to the [Rec Format] (→37) and [Rec Quality] (→37) of a motion picture, the required card differs. Use a card that meets the following ratings of the SD Speed Class or UHS Speed Class. Confirm the SD speed by checking the card label or other card related materials.

[Rec Format]	[Rec Quality]	Speed class	Label example
[AVCHD]	All	Class 4 or higher	CLASS 4 4
[MP4]	FHD/HD/VGA		
[MP4]	4K	UHS Speed Class 3	3

- Latest information:
  http://panasonic.jp/support/global/cs/dsc/
  (This site is available in English only.)

Formatting the card (initialisation)

Format the card before recording a picture with this unit. **Since data cannot be recovered after formatting, make sure to back up necessary data in advance.**

1 **Set the menu (→19)**

MENU → **[Setup] → [Format]**

- A confirmation screen is displayed. If you select [Yes], the operation is executed.

Recording capacity guidelines (pictures/recording time)

■ **Recording picture capacity (still pictures)**

When aspect ratio is set to [4:3] and [Quality] is set to [ ]

[Picture Size]	16 GB	64 GB
L (12.5M)	2200	8820

■ **Recording time capacity (motion pictures)**
([h], [m] and [s] indicate “hour”, “minute” and “second”.)

- The recordable time is the total time of all the motion pictures which have been recorded.

When [Rec Format] is [AVCHD]

[Rec Quality]	16 GB	64 GB
[FHD/28M/50p]	1h15m00s	5h00m00s
[FHD/17M/50i]	2h00m00s	8h15m00s

When [Rec Format] is [MP4]

[Rec Quality]	16 GB	64 GB
[4K/100M/25p]	20m00s	1h20m00s
[FHD/28M/50p]	1h15m00s	5h00m00s

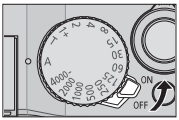
- If the surrounding temperature is high, or a motion picture is recorded continuously, [ ] is displayed and recording may be stopped halfway through to protect the camera.
- [AVCHD] motion pictures:
  Recording stops when the continuous recording time exceeds 29 minutes and 59 seconds.
- Motion pictures with their file size set to [FHD], [HD] or [VGA] in [MP4]:
  Recording stops when the continuous recording time exceeds 29 minutes and 59 seconds or the file size exceeds 4 GB.
  - Since the file size becomes larger with [FHD], recording with [FHD] will stop before 29 minutes 59 seconds.
- Motion pictures with their file size set to [4K] in [MP4]:
  Recording stops when the continuous recording time exceeds 15 minutes. (You can continue recording without interruption even if the file exceeds 4 GB, but the motion picture file will be recorded and played back in separate files.)
- **The maximum available continuous recording time is displayed on the screen.**

Setting the clock

The clock is not set when the camera is shipped.

1 Turn the camera on

2 Press [MENU/SET]



3 Press ◀ ▶ to select the items (year, month, day, hour, minute), and press ▲ ▼ to set

- To cancel → Press [🗑/↩] button.

To set the display order or time display format

- Select [Style] and press [MENU/SET] to display the setting screen for display order and time display format.

: Home time
: Destination time

4 Press [MENU/SET]

- A confirmation screen is displayed.
  Press [MENU/SET].

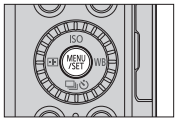
5 When [Please set the home area] is displayed, press [MENU/SET]

6 Press ◀ ▶ to set your home area and press [MENU/SET]

Setting the menu

Example: To change the [Quality] setting from [ ] to [ ] in the [Rec] menu

1 Press [MENU/SET] to bring up the menu



[Rec] (→79)	You can perform settings for picture size and the flash.
[Motion Picture] (→81)	You can select the recording format and picture quality and other settings.
[Custom] (→81)	Operation of the unit, such as displaying of the screen and button operations, can be set up according to your preferences. Also, it is possible to register the modified settings.
[Setup] (→84)	You can perform settings that make usage more convenient, such as the changing the clock settings and beep volume. You can also perform Wi-Fi function-related settings.
[Playback] (→85)	You can specify picture protection, cropping, print settings, and other settings for pictures you have taken.

2 Press ▲▼ to select the menu item and press [MENU/SET]

- Items can also be selected by turning the control dial.

3 Press ▲▼ to select the setting and press [MENU/SET]

- Items can also be selected by turning the control dial.

Selected setting

Settings

4 Press the [/] button repeatedly until the recording or playback screen reappears

- During recording, the menu screen can also be exited by pressing the shutter button halfway.

■ **Switching menu type**

Example: Switching to the [Setup] menu from [Rec] menu

1 Press ◀

2 Press ▲ ▼ to select a menu switch icon [🔧]

- Items can also be selected by turning the control dial.

3 Press [MENU/SET]

- Select the menu item and perform the setting.

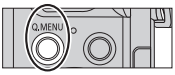
● The menu types and items that are displayed vary according to the mode.
● The setting methods vary depending on the menu item.

Calling frequently-used menus instantly (Quick Menu)

You can easily call some of the menu items and set them.

- The menu items and setting items that are displayed differ depending on the recording mode and settings during recording.

1 Press [Q.MENU] button to display the Quick menu



2 Turn the control dial to select the menu item, and press ▼ or ▲

- The menu item can also be selected by pressing ◀ ▶.

3 Turn the control dial to select the setting

- The setting can also be selected with ◀ ▶.

4 Press [Q.MENU] button to close the Quick menu

Assigning frequently used functions to the buttons (Function buttons)

You can assign frequently-used functions to particular buttons.

1 Set the menu

MENU → **[Custom] → [Fn Button Set]**

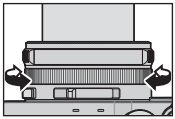
2 Press ▲ ▼ to select the function button you want to assign a function to and press [MENU/SET]

3 Press ▲ ▼ to select the function you want to assign and press [MENU/SET]

Changing settings using the control ring

You can use the control ring to change the settings of the unit.

Items that can be set by the control ring vary depending on recording modes.
Following are the pre-assigned settings.



Recording mode	Setting
iA [Intelligent Auto] Mode	Q Step Zoom (→56)
P [Program AE] Mode	Q Step Zoom (→56)
A [Aperture-Priority] Mode	Q Step Zoom (→56)
S [Shutter-Priority] Mode	SS+ Shutter speed adjustment* (→30, 31)
M [Manual Exposure] Mode	SS+ Shutter speed adjustment* (→31)

* You can use the control ring to change the following settings values, which cannot be set using the shutter speed dial.
- Higher speed than 1/4000 seconds (electronic shutter (→49))
- Slower speed than 1 second (mechanical shutter (→49))
- Setting in 1/3 EV steps

- The control ring is assigned to selecting the picture effect (Filter) when you are recording a panorama picture. (→54)
- When Manual Focus is set, focus adjustment is assigned to the control ring. (→45)

Changing the settings assigned to the control ring

Changes the settings assigned to the control ring.

1 Set the menu

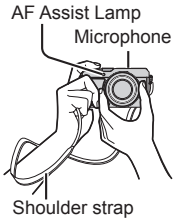
MENU → **[Custom]** → **[Control Ring]**

2 Use ▲ ▼ to select the setting and press [MENU/SET]

- [DEFLT] [Normal]
- [Step Zoom] (→56)
- [White Balance] (→41)
- [OFF] [Not Set]
- [Zoom] (→55)
- [Sensitivity] (→47)
- [Filter Select] (→41)

- To return to the default setting, select [Normal].
- If you do not use the control ring, select [OFF] ([Not Set]).
- The assigned function setting applies to all the Recording Modes.
  The function assigned to the control ring may not work in some combinations of Recording Mode or settings used for recording (panorama picture recording, Filter setting, etc.).
- When Manual Focus is set, the control ring is fixed to the function for adjusting the focus. You cannot use the settings assigned using the [Control Ring]. (→45)

Holding the camera



- To avoid camera shake, hold it with both hands keeping your arms close to your body while standing with your feet slightly apart.
- Do not touch the lens.
- Do not block the microphone when recording motion pictures.
- Do not block the AF Assist Lamp, or the flash when you take a picture using it. Do not look at it from close range.
- Make sure that the camera does not move at the moment the shutter button is pressed.

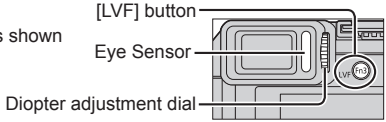
● We recommend using the supplied shoulder strap to avoid dropping the camera.

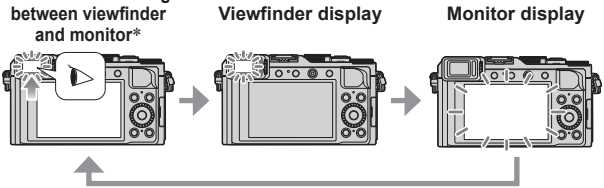
Recording pictures using the viewfinder

■ **Switching between the monitor and viewfinder**

1 **Press [LVF] button**

- The display is switched as shown below.





* For automatic switching between the viewfinder and monitor, the eye sensor automatically switches the display to viewfinder when your eye or an object moves close to the viewfinder.

■ **About diopter adjustment**

Turn the diopter adjustment dial to adjust until you are able to clearly see the characters displayed in the viewfinder.

Taking pictures

- Press the [ ] button (▼) to set the drive mode to [ ] ([Single]).

1 Select the recording mode

- Each time you press the [iA] button, the recording mode will switch between iA and P / A / S / M.

iA	**[Intelligent Auto] Mode (→25)** Take pictures with automatic settings.
P	**[Program AE] Mode (→28)** Record pictures with the aperture value and shutter speed settings automatically adjusted.
A	**[Aperture-Priority] Mode (→29)** Determine aperture, then record pictures.
S	**[Shutter-Priority] Mode (→30)** Determine shutter speed, then record pictures.
M	**[Manual Exposure] Mode (→31)** Determine the aperture value and shutter speed respectively, and then record pictures.

2 Adjust focus according to subject

- The aperture value and shutter speed are displayed. (If the aperture value and shutter speed are shown in red and flashing, you do not have the appropriate exposure, unless you are using the flash.)

Press halfway

AF area
(When focus is aligned: green)

Focus display
(When focus is aligned: illuminated
When focus is not aligned: flashing)

Aperture value
Shutter speed

3 Take a picture

Press fully

- The focus display flashes and beep sounds when focus is not aligned.
  Use the focus range displayed in red as a reference.

Focus range

Taking pictures with automatic settings

[Intelligent Auto] Mode

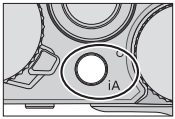
Recording mode: iA P A S M

This mode is recommended for those who want to point and shoot as the camera optimises settings to match the subject and recording environment.

The camera optimises the settings and the following functions are activated automatically.

- Automatic Scene Detection / Backlight Compensation / [Face/Eye Detection] / Auto White Balance / Intelligent ISO sensitivity control / [Red-Eye Removal] / [i.Zoom] / [i.Resolution] / [Stabilizer] / [i.Dynamic] / [Long Shtr NR] / [Quick AF] / [AF Assist Lamp]

1 Press [iA] button



The camera switches to [Intelligent Auto] Mode.

- When you press the [iA] button again, the recording mode is switched to one that is set using the aperture ring and shutter speed dial.

2 Point the camera at the subject

- When the camera identifies the optimal scene, the icon for each scene turns blue for 2 seconds and then changes to the normal red indication.
- When you press ◀ and press the shutter button halfway, AF Tracking is activated. (→44)

■ Automatic Scene Detection

When taking pictures

[i-Portrait]	[i-Scenery]	[i-Macro]	[i-Night Portrait]*1
[i-Night Scenery]	[i-Handheld Night Shot]*2	[i-Food]	[i-Baby]*3
[i-Sunset]	When scene does not correspond to any of the above		

*1 When the flash (supplied/optional) is used.
*2 When [iHandheld Night Shot] is [ON]. (→26)
*3 When children (that are registered in the camera with Face Recognition) under 3 years old are recognised.

When recording motion pictures

[i-Portrait]	[i-Scenery]	[i-Low Light]	[i-Macro]
When scene does not correspond to any of the above			

■ **Flash**

When the [ON/OFF] switch for the flash (supplied/optional) is set to [OFF], the flash is set to [⊘] (Forced Flash Off). When the [ON/OFF] switch is set to [ON], the flash is set to [iA] (AUTO).
When the flash is turned on, the camera automatically sets [iA], [iA] (Auto/Red-Eye Reduction), [iS], or [iS] based on the type of subject and brightness.

■ **Available menus**

You can set only the following menus.

Menu	Item
[Rec]	[Picture Size] / [Quality] / [AFS/AFF/AFC] / [Burst Rate] / [Self Timer] / [iHandheld Night Shot] / [iHDR] / [Time Lapse Shot] / [Stop Motion Animation] / [Face Recog.]
[Motion Picture]	[Rec Format] / [Rec Quality] / [AFS/AFF/AFC]
[Custom]	[Silent Mode] / [Guide Line] / [Remaining Disp.]
[Setup]	All menu items can be set.

Taking pictures using a handheld camera ([iHandheld Night Shot])

If a night scene is detected automatically while the unit is being handheld, [iHandheld Night Shot] can record a still picture with less jitter and less noise without using a tripod by combining a burst of pictures.

MENU → 📷 **[Rec] → [iHandheld Night Shot] → [ON] / [OFF]**

- The flash is fixed to the [⊘] (Forced Flash Off) setting.

Combining pictures into a single still picture with rich gradation ([iHDR])

When there is, for example, strong contrast between the background and the subject, [iHDR] records multiple still pictures with differing exposures and combines them to create a single still picture rich in gradation.
[iHDR] is activated when required. When activated, [HDR] will be displayed on the screen.

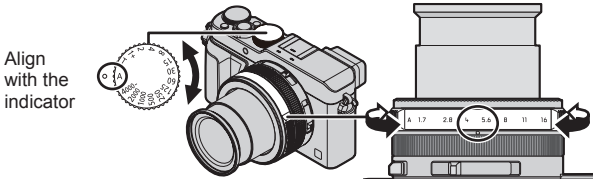
MENU → 📷 **[Rec] → [iHDR] → [ON] / [OFF]**

Taking pictures after setting the aperture value and shutter speed

Recording mode: iA P A S M

You can set the exposure using the aperture ring and shutter speed dial settings.
Using the [Rec] menu to change settings and set up your own recording environment.
You can also record pictures by applying picture effects. (→41)

1 Turn the aperture ring and shutter speed dial to set your preferred recording mode



Recording mode	Aperture ring	Shutter speed dial
P [Program AE] Mode (→28)	[A] (AUTO)	[A] (AUTO)
A [Aperture-Priority] Mode (→29)	Your preferred settings	[A] (AUTO)
S [Shutter-Priority] Mode (→30)	[A] (AUTO)	Your preferred settings
M [Manual Exposure] Mode (→31)	Your preferred settings	Your preferred settings

- In [Aperture-Priority] Mode, [Shutter-Priority] Mode, and [Manual Exposure] Mode, the effect of the aperture value and shutter speed you have set is not applied to the recording screen. To check the effect on the recording screen, use [Preview] Mode. (→32)
  The brightness of the screen may vary from the actual pictures recorded. Check the brightness of pictures using the playback screen.
  A faster shutter speed than the set shutter speed may be used when you record a motion picture.

Taking pictures after automatically setting the aperture value and shutter speed ([Program AE] Mode)

Take pictures using automatic aperture values and shutter speed settings in accordance with the brightness of a subject.

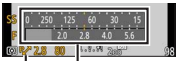
1 Turn the aperture ring to select [A] (AUTO)

2 Turn the shutter speed dial to select [A] (AUTO)

[Program AE] Mode is set and the recording mode icon changes to [P].

3 Press the shutter button halfway

- If the aperture value and shutter speed flash red, you do not have the correct exposure.



4 While the numeric values are displayed in yellow (approximately 10 seconds), turn the control dial to change the values using Programme Shift

- To cancel Programme Shift, either turn off the camera or turn the control dial until the Programme Shift indication turns off.
- To correct the exposure, use the exposure compensation dial to adjust the compensation value. (→47)

Enabling/disabling the exposure meter display

MENU → **[Custom] → [Expo.Meter] → [ON] / [OFF]**

- When you set this function to [ON], an exposure meter is displayed during Programme Shift, aperture setting, and shutter speed operation.
- Proper exposure is not possible in the range indicated in red.
- If the exposure meter is not displayed, press the [DISP.] button to switch the display of the monitor.
- The exposure meter will turn off if no operation is performed for approximately 4 seconds.

Taking pictures by setting the aperture value ([Aperture-Priority] Mode)

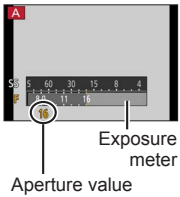
When the aperture value is increased, the range of depth in focus expands, and the picture shows up clearly from the position of the camera to the background. When the aperture value is reduced, the range of depth in focus shrinks, and the background can get blurry.

1 Turn the shutter speed dial to select [A] (AUTO)

2 Turn the aperture ring to select the aperture value

[Aperture-Priority] Mode is set and the recording mode icon changes to [A].

- To correct the exposure, use the exposure compensation dial to adjust the compensation value. (→47)



Aperture values that can be set*	Shutter speed set (seconds)
F1.7 - F16	60 - 1/4000 (When the mechanical shutter is used) 1 - 1/16000 (When the electronic shutter is used)

* You may not be able to select some values depending on zoom position.

Taking pictures by setting the shutter speed ([Shutter-Priority] Mode)

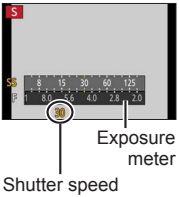
When you increase the shutter speed, you can reduce jitter when recording a subject. When you decrease the shutter speed, the subject's movement is shown.

1 Turn the aperture ring to select [A] (AUTO)

2 Turn the shutter speed dial to select the shutter speed

[Shutter-Priority] Mode is set and the recording mode icon changes to [S].

- To correct the exposure, use the exposure compensation dial to adjust the compensation value. (→47)



Shutter speeds that can be set* (seconds)	Aperture value set
60 - 1/4000 (When the mechanical shutter is used) 1 - 1/16000 (When the electronic shutter is used)	F1.7 - F16

* Setting the shutter speed to values not provided on the shutter speed dial (→30)

■ **Setting the shutter speed to values not provided on the shutter speed dial**

- Higher speed than 1/4000 seconds or slower shutter speed than 1 second
  ① Turn the shutter speed dial to select [4000-] or [1+]
  ② Turn the control ring or control dial to select the shutter speed
- Shutter speed setting in 1/3 EV steps
  You can set the shutter speed from the setting value of the shutter speed dial in the range of ± 2/3 steps.
  Example: To set the shutter speed to 1/400 seconds
  ① Turn the shutter speed dial to select [500]
  ② Turn the control ring or control dial to select [400]

● Check the shutter speed on the screen.
● For details on setting the shutter method, refer to (→49).

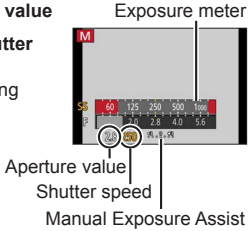
Taking pictures by setting the aperture value and shutter speed ([Manual Exposure] Mode)

Determine the exposure by manually setting the aperture value and the shutter speed.
The Manual Exposure Assist appears on the lower portion of the screen to indicate the exposure.

1 Turn the aperture ring to select the aperture value

2 Turn the shutter speed dial to select the shutter speed

[Manual Exposure] Mode is set and the recording mode icon changes to [M].



Aperture values that can be set*1	Shutter speeds that can be set*2 (seconds)
F1.7 - F16	T (Time), 60 - 1/4000 (When the mechanical shutter is used) 1 - 1/16000 (When the electronic shutter is used)

*1 You may not be able to select some values depending on zoom position.
*2 You may not be able to select some shutter speeds depending on the aperture value.
Setting the shutter speed to values not provided on the shutter speed dial (→30)

About T (time)

When you set the shutter speed to T (time) and fully press the shutter button, the shutter opens. (Approximately up to 120 seconds)
When you press the shutter button again, the shutter closes. Use this function when you want to keep the shutter open for an extended period, for example, to record pictures of fireworks or night scenes.

- You cannot use this function when the electronic shutter is used.
- You can use this function only in [Manual Exposure] Mode.

- When you take pictures with the shutter speed set to T (time), we recommend using remote recording with a tripod or smartphone as a remote shutter release (→63), in order to prevent jitter.
- When you take still pictures with the shutter speed set to T (time), the pictures may have higher noise levels. If you want to suppress noise, we recommend taking pictures by setting [Long Shtr NR] to [ON] in the [Rec] menu.

Checking the effects of the aperture value and shutter speed ([Preview] Mode)

Recording mode: iA P A S M

1 Assign [Preview] to the function button (→20)

- The following step is an example of assigning [Preview] to the [Fn1] button.

2 Press the [Fn1] button to switch the confirmation screen

- Every time you press the [Fn1] button, the screen switches.

Normal recording screen → **Effect of aperture value** → **Effect of shutter speed** → **Normal recording screen**

Registering a combination of settings to be used during recording (Custom Set)

Recording mode: iA P A S M

You can register up to three combinations of your preferred menu settings.

■ Registering the custom set

①Set your preferred menu settings such as [Rec] menu, [Motion Picture] menu, and [Custom] menu

②Set the menu

MENU → **[Custom] → [Cust.Set Mem.]**

③Use ▲▼ to select custom set (C1-C3) for registration and press [MENU/SET]

- A confirmation screen is displayed. If you select [Yes], the operation is executed.

■ Using the custom set

①Set the menu

MENU → **[Custom] → [Utilize Custom Set feature]**

②Use ▲▼ to select custom set

③Press [MENU/SET]

- The settings are switched to those settings you selected for the custom set.

Using the function button to call up the custom settings

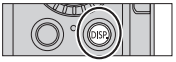
Setting the function button to [Utilize Custom Set feature] allows you to switch quickly to your preferred settings by pressing the function button.

① Assign [Utilize Custom Set feature] to your preferred function button using [Fn Button Set] in the [Custom] menu (→20)

② Press the function button to which [Utilize Custom Set feature] is assigned. Use ◀▶ to select custom set and press [MENU/SET]

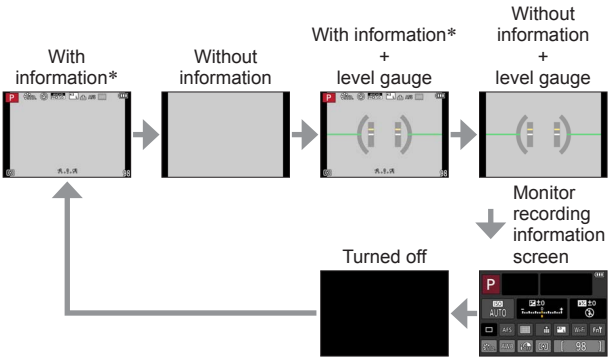
Switching the display information on the recording screen

1 Press [DISP.] button to switch the display



- You can use [Monitor Disp. Style] and [LVF Disp.Style] in the [Custom] menu to select either [ ] (Monitor style display layout) or [ ] (Live View Finder style display layout) for the display screen of the monitor and viewfinder.

■ [ ] Monitor style display layout (Example of monitor style display)



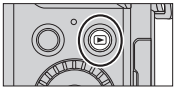
* When [Histogram] in the [Custom] menu is set to [ON], a histogram is displayed.

● If you do not perform any operation for approximately 1 minute or longer, some of the information on the screen is turned off. To display the information again, press the [DISP.] button.

Viewing your pictures

1 Press the Playback button

2 Press ◀ ▶ or turn the control dial to select the picture to be displayed



■ **Ending Playback**

Press the Playback button again or press the Motion picture button.
The Playback can also be ended by pressing the shutter button halfway.

■ **Zooming in and viewing "Playback Zoom"**

- Each time you move the zoom lever toward the T side, the magnification increases through four levels: 2x, 4x, 8x, and 16x.

■ **Viewing a list of pictures "Multi Playback"**

- Move the zoom lever toward the W side and you can switch the display methods in the following order: 1-picture screen (full-screen) → 12-picture screen → 30-picture screen → Calendar screen. (Move the lever to the T side to return.)

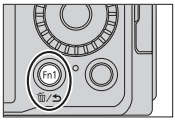
Sending pictures to the WEB services

If you press ▼ while a single picture is being displayed, you can send the picture to the WEB service quickly. (→66)

Deleting pictures

Deleted pictures cannot be recovered.

1 Press [🗑/↩] button to delete displayed picture



2 Use ▲ to select [Delete Single] and press [MENU/SET]

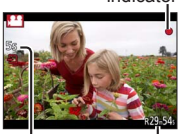
- A confirmation screen is displayed. Select [Yes] and press [MENU/SET].

Recording motion pictures

You can record full high-definition quality images that comply with the AVCHD standard, as well as motion pictures recorded in MP4. You can also record a 4K motion picture in MP4. (→39)
Audio is recorded in stereo.

You can record motion pictures by manually setting the aperture value and shutter speed. (→27)
The camera automatically sets the aperture value and shutter speed and identifies the optimal scene to record motion pictures in [Intelligent Auto] Mode. (→25)

1 Press the motion picture button to start recording



- Immediately release the motion picture button after pressing it.
- While you are recording motion pictures, the recording status indicator (red) will flash.
- Do not block the microphones when recording motion pictures.
- You can also use zoom while recording motion pictures.
  – The operating sounds of the zoom lever or control ring may be recorded in some cases.
- If you press the shutter button down fully, you can take still pictures while recording motion pictures.

2 Press the motion picture button again to end recording

- If Extra optical zoom is used before pressing the motion picture button, these settings will be cleared, and the recordable area will be changed significantly.

Setting the format, picture size and recording frame rate

Recording mode: iA P A S M

1 Set the menu

MENU → **[Motion Picture] → [Rec Format]**

2 Use ▲▼ to select the item and press [MENU/SET]

[AVCHD]	This is a data format suitable for playback on high-definition TVs.
[MP4]	This data format is suited for playing back motion pictures on a computer and other such devices.

3 Use ▲▼ to select [Rec Quality] and press [MENU/SET]

4 Use ▲▼ to select the item and press [MENU/SET]

- Exit the menu after it is executed.

When [AVCHD] is selected

Item	Picture size	Recording frame rate	Bit rate (approx.)
[FHD/28M/50p]*1	1920×1080	50p	28 Mbps
[FHD/17M/50i]	1920×1080	50i	17 Mbps
[FHD/24M/25p]	1920×1080	50i*2	24 Mbps
[FHD/24M/24p]	1920×1080	24p	24 Mbps

*1 AVCHD Progressive
*2 25 fps for the sensor output

When [MP4] is selected

Item	Picture size	Recording frame rate	Bit rate (approx.)
[4K/100M/25p]	3840×2160	25p	100 Mbps
[4K/100M/24p]	3840×2160	24p	100 Mbps
[FHD/28M/50p]	1920×1080	50p	28 Mbps
[FHD/20M/25p]	1920×1080	25p	20 Mbps
[HD/10M/25p]	1280×720	25p	10 Mbps
[VGA/4M/25p]	640×480	25p	4 Mbps

Viewing motion pictures

This unit was designed to play motion pictures using the AVCHD and MP4 formats.

1 Select a picture with the motion picture icon ([🎥]) in playback mode, and press ▲ to start playback

- After playback starts, the elapsed playback time is displayed on the screen.
- Some information will not be displayed for motion pictures recorded in [AVCHD].

Motion picture recording time
Example: 29 minutes and 30 seconds: [29m30s]

Operations during motion picture playback

▲ : Pause/play
▼ : Stop
◀ : Fast rewind (2 steps)/Single-frame rewind* (while paused)
▶ : Fast forward (2 steps)/Single-frame forward (while paused)
Control dial (counterclockwise): Volume down
Control dial (clockwise): Volume up
[MENU/SET]: Capturing still pictures from motion pictures (while paused)
* Motion pictures recorded in [AVCHD] are rewound frame by frame approximately every 0.5 seconds.

Recording 4K motion pictures

Recording mode: iA P A S M

You can record high-resolution 4K motion pictures by setting [Rec Quality] to [4K].

- To record 4K motion pictures, use a UHS Speed Class 3 card. (→16)
- When you record 4K motion pictures, the angle of view will be narrower than motion pictures of other sizes.

■ **To record 4K motion pictures**

①Select the recording mode (→24)
②Set the [Rec Format] in the [Motion Picture] menu to [MP4] (→37)
③Set [Rec Quality] in the [Motion Picture] menu to [4K/100M/25p] or [4K/100M/24p] (→37)
④Press the motion picture button to start recording
⑤Press the motion picture button again to end recording

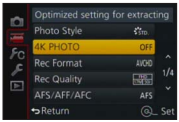
Creating a high-resolution still picture from a 4K motion picture [4K PHOTO]

You can create a still picture with approximately 8 megapixel resolution from a 4K motion picture recorded by setting [4K PHOTO]. You can create a still picture that captures a moment, similar to high-speed burst recording. This setting is not available in [Intelligent Auto] Mode.

Recording 4K motion pictures

1 **Set the menu**

MENU → **[Motion Picture] → [4K PHOTO]**



2 **Press ▲▼ to select [ON] and press [MENU/SET]**

A confirmation screen is displayed. Select [Yes] and press [MENU/SET].

- The appropriate motion picture mode for capturing a still picture from a 4K motion picture is selected and the motion picture can be recorded using still picture quality.
- Since the camera puts higher priority on the focus of a still picture captured from a 4K motion picture, focusing movement during motion picture recording may be noticeable.

The camera will automatically perform the following setting items.

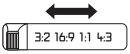
Menu	Item
[Rec Format]	[MP4]
[Rec Quality]	[4K/100M/25p]

3 **Press [🗑/↩] button to display the recording screen**

4 Turn the aperture ring and shutter speed dial to set the recording mode

- We recommend setting [Shutter-Priority] Mode and setting the shutter speed to 1/1000 seconds or higher to minimise subject blur. To record a subject that is moving quickly, set the shutter speed to 1/2000 seconds or higher.

5 Operate the aspect ratio selector switch to set the aspect ratio for a motion picture



- The aspect ratio of a still picture captured from a 4K motion picture is the same as the aspect ratio of the motion picture.

6 Press the motion picture button to start recording

- When you record 4K motion pictures, the angle of view will be narrower than motion pictures of other sizes.

Setting a marker

- When you press the [Fn2] button while recording, you can add a marker to the motion picture.
- When you create still pictures from a motion picture, you can quickly move to a marker position you want to capture as a still picture.
- You can add up to 40 markers in a single motion picture.

7 Press the motion picture button again to end recording

- Motion picture recording can also be started or finished by pressing the shutter button.

Creating still pictures from a motion picture

1 Display the picture that you want to capture as a still picture by pressing ▲ to pause a motion picture being played back on the camera

- You can press ◀ ▶ to perform single-frame forward/rewind operations.
- When you press the [Fn2] button and press ◀ ▶, you can quickly move to the marker position you set while recording the motion picture. (You can perform the same operation even during motion picture playback.)
  If you press the [Fn2] button again, you can perform single-frame forward/rewind operations by pressing ◀ ▶.

2 Press [MENU/SET]

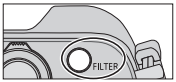
- A confirmation screen is displayed. Select [Yes] and press [MENU/SET].

Taking pictures using picture effects (Filter)

Recording mode: iA P A S M

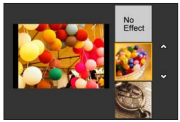
You can select your own settings from various effects and take pictures while confirming these effects on the screen.

1 Press [FILTER] button



2 Press ▲▼ or turn the control dial to select the picture effect (Filter)

3 Press [MENU/SET]



- The flash is set to [⊛] (Forced Flash Off).

Switching the display of a selection screen for applying picture effects (Filter)

1 Press the [DISP.] button to switch the display

- Every time you press the [DISP.] button, the screen for which picture effects are selected changes.
- When you switch the screen to the guide display, a description of the picture effects appears.

Adjusting the White Balance

Recording mode: iA P A S M

In sunlight, under incandescent lights or in other such conditions where the colour of white takes on a reddish or bluish tinge, this item adjusts to the colour of white which is closest to what is seen by the eye in accordance with the light source.

1 Press [WB] button (▶)

2 Turn the control dial to select the White Balance and press [MENU/SET]

[AWB] / [☼] / [☁] / [⌂]*1 / [-☼-]*2 / [⚡WB]*3 / [1] [2] [3] [4]*4 / [K]*5

*1 Adjust to the colour in the shade.
*2 Adjust to the colour under incandescent lights.
*3 Adjust to the colour that is optimal for taking pictures using the flash. The [AWB] setting is applied when recording motion pictures.
*4 Use the White Balance value that was set manually.
*5 Use the preset colour temperature setting.

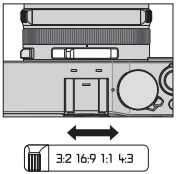
Setting the picture quality and size

Changing the aspect ratio of the still pictures

Recording mode: iA P A S M

1 **Switching the aspect ratio selector switch**

[4:3]	Aspect ratio of a 4:3 TV
[1:1]	Aspect ratio of a square image
[16:9]	Aspect ratio of high-definition TV, etc.
[3:2]	Aspect ratio of standard film cameras



Setting the picture size

Recording mode: iA P A S M

The higher the numbers of pixels, the finer the detail of the pictures will appear even when they are printed onto large sheets.

MENU → **[Rec] → [Picture Size]**

Aspect ratio	4:3	1:1	16:9	3:2
[Picture Size]	**[L] 12.5M** 4112×3088	**[L] 10M** 3088×3088	**[L] 11M** 4480×2520	**[L] 12M** 4272×2856
	[EX M] 6.5M 2976×2232	**[EX M] 5M** 2240×2240	**[EX M] 8M** 3840×2160	**[EX M] 6.5M** 3120×2080
	[EX S] 3M 2048×1536	**[EX S] 2.5M** 1536×1536	**[EX S] 2M** 1920×1080	**[EX S] 3M** 2112×1408

Setting the compression rate of pictures ([Quality])

Recording mode: iA P A S M

Set the compression rate used for storing pictures.

MENU → **[Rec]** → **[Quality]**

[▲▲▲]	Gives priority to picture quality and saves pictures in JPEG file format.
[▲]	Saves pictures in JPEG file format using standard picture quality. This setting is useful when you want to increase the number of recordable pictures without changing the number of pixels.
[RAW▲▲▲]	Saves pictures in JPEG file format in addition to the RAW file format.*1
[RAW▲]	
[RAW]	Saves pictures in the RAW file format.*2

*1 If you delete a RAW file from the camera, the corresponding JPEG file is also deleted.

*2 The picture size is fixed to the maximum recordable pixels for each image aspect ratio ([L]).

About RAW file

In RAW file format the data is saved without any picture processing by the camera. This format delivers a higher picture quality than the JPEG format, but the amount of data is greater. To play back and edit RAW file pictures, you must use this unit or dedicated software. You can perform advanced editing of RAW file pictures, such as correcting the White Balance of pictures recorded previously, and save the pictures in file formats that can be displayed on a PC.

- You can develop the RAW file pictures using [RAW Processing] in the [Playback] menu. For details, refer to “Operating Instructions for advanced features (PDF format)”.
- To develop and edit RAW file pictures on a PC, use the supplied DVD software (Ichikawa Soft Laboratory’s “SILKYPIX Developer Studio”).

Taking pictures with Auto Focus

Recording mode: iA P A S M
This allows the focusing method that suits the positions and number of the subjects to be selected.

1 Switch the focus selector switch to [AF] or [AF]

Align with the indicator.

Switching [AF Mode]

1 Press [] button (◀)

2 Press ◀▶ to select Auto Focus mode and press [MENU/SET]

(Face/Eye Detection)	The camera automatically detects the faces and eyes of subjects.
(AF Tracking)	You can adjust the focus and exposure of a specific subject. The camera will continue to adjust focus and exposure even if the subject moves.
(49-area-focusing)	Focuses on the subject in the wide range area (up to 49-area-focusing) on the recording screen.
, etc. (Custom Multi)	You can set the preferred shape of an AF area by selecting 49 points in the AF area, based on the subject.
(1-area-focusing)	Focuses on AF area in centre of picture. (Recommended when focus is difficult to align)
(Pinpoint-focusing)	Enables more precise focusing on a smaller point than [] (1-area-focusing).

- If you press ▼ when [], [], [], or [] is selected, the AF area setting screen appears. For details on operation of the AF area setting screen, refer to “Operating Instructions for advanced features (PDF format)”.

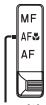
Taking close-up pictures (Macro recording)

Recording mode: iA P A S M

When you want to enlarge the subject, setting to [AF🌷] (AF Macro) enables you to take pictures at an even closer distance than the normal focus range (up to 3 cm for max. Wide).

1 Switch the focus selector switch to [AF🌷]

- Focus range is displayed when operating the zoom, etc. (→55)



Align with the indicator.

Taking pictures with Manual Focus

Recording mode: iA P A S M

Manual Focus is convenient when you want to lock the focus to take pictures or when it is difficult to adjust focus using Auto Focus.

1 Switch the focus selector switch to [MF]

2 Press [⊞] button (◀)

3 Press ▲▼◀▶ to determine the area to be enlarged, and press [MENU/SET]

Align with the indicator.

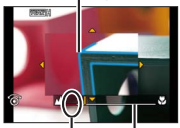
- The screen changes to the assist screen and an enlarged display appears. (MF Assist)
- If you press [DISP.] button, the area to be enlarged will be reset to the centre.

4 Turn the control ring to adjust focus

Turning the control ring to the right:
Focusing on a nearby subject
Turning the control ring to the left:
Focusing on a distant subject

- Colour is added to the portions of the image that are in focus. (Peaking)
- You can confirm the direction of focus adjustment toward the close distance side or far distance side. (MF Guide)

MF Assist (Enlarged screen)



■ **Displaying the MF Assist**

- Turn the control ring to display MF Assist.
- You can also display MF Assist by pressing ◀ to display the setting screen, pressing the cursor button to set the position to be enlarged, and then pressing [MENU/SET].

■ **Closing the MF Assist**

- To exit MF Assist, press the shutter button halfway.
- You can also exit MF Assist by pressing [MENU/SET].
- When you display MF Assist by turning the control ring, MF Assist is automatically ended approximately 10 seconds after you finish the operation.

Taking pictures by locking the focus and/or exposure [AF/AE Lock]

Recording mode: iA P A S M

The AF/AE Lock function is convenient, for example, when there is too much contrast with the subject and you cannot get appropriate exposure (AE Lock) or when you want to take a still picture composed with the subject outside the AF area (AF Lock).

1 Point the camera at the subject

2 Lock the focus and/or exposure while you press and hold the [AF/AE LOCK] button

- When you release the [AF/AE LOCK] button, the focus and/or exposure lock is cancelled.
- Only the exposure is locked at the time of purchase.

3 While you press and hold the [AF/AE LOCK] button, move the camera to compose the picture you want to take and fully press the shutter button

- When [AE LOCK] is set, press the shutter button halfway to focus, then press it fully.

Setting the function of the [AF/AE LOCK] button

MENU → [Custom] → **[AF/AE Lock]**

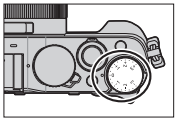
[AE LOCK]	Locks exposure only.
[AF LOCK]	Locks focus only.
[AF/AE LOCK]	Locks focus and exposure.
[AF-ON]	Auto Focus is activated.

Taking pictures with Exposure Compensation

Recording mode: iA P A S M

Corrects the exposure when there is a backlight or when the subject is too dark or too bright.

1 Turn the exposure compensation dial to select the compensation value



Adjust the exposure to the [+] direction

Adjust the exposure to the [-] direction

Setting the ISO Sensitivity

Recording mode: iA P A S M

Set ISO Sensitivity (sensitivity to lighting) manually.
We recommend higher settings to take clear pictures in darker locations.

1 Press [ISO] button (▲)

2 Turn the control dial to select ISO Sensitivity and press [MENU/SET]

AUTO	ISO Sensitivity is automatically set in a range up to 3200*1 depending on the brightness of a subject.
iISO (Intelligent ISO)	ISO Sensitivity is automatically set in a range up to 3200*1 depending on the movement and brightness of a subject.
100*2/200/400/800/1600/3200/6400/12800/25600	ISO Sensitivity is fixed at the selected setting. • When [ISO Increments] is set to [1/3EV], more ISO Sensitivity settings can be selected.

*1 When [ISO Limit Set] in the [Rec] menu is set to other than [OFF], the ISO Sensitivity is automatically set in the range up to the [ISO Limit Set] setting value.

*2 Only when [Extended ISO] is [ON].

Setting the metering mode

Recording mode: iA P A S M

MENU → [Rec] → [Metering Mode]

[Metering Mode]	Brightness measurement position	Conditions
(Multiple)	Whole screen	Normal usage (produces balanced pictures)
(Centre weighted)	Centre and surrounding area	Subject in centre
(Spot)	Centre of [+] (spot metering target)	Great difference between brightness of subject and background (e.g. person in spotlight on stage, backlighting)

Setting the Shutter Type

Recording mode: iA P A S M

	Mechanical shutter	Electronic shutter
Description	Starts the exposure electronically and ends the exposure using the mechanical shutter.	Starts and ends the exposure electronically.
Flash	○	–
Shutter Speed (seconds)	60 - 1/4000	1*1 - 1/16000
Shutter sound	Mechanical shutter sound*2 + Electronic shutter sound	Electronic shutter sound

*1 You can set ISO Sensitivity up to [ISO 3200]. When ISO Sensitivity is higher than [ISO 3200], the shutter speed will be faster than 1 second.
*2 You cannot turn off the mechanical shutter sound.

1 Set the menu

MENU → [Rec] → **[Shutter Type]**

[AUTO] / [MSHTR] / [ESHTR]

- **When you take a picture under a fluorescent or LED lighting fixture using the electronic shutter, the recorded picture may have horizontal stripes. If you use a slower shutter speed, the horizontal stripes may be reduced.**

Selecting a Drive Mode

You can switch the operation to be performed when you press the shutter button.

1 Press [ ] button (▼)

2 Press ◀▶ to select the drive mode and press [MENU/SET]

[Single]	When the shutter button is pressed, only one picture is recorded.
[Burst] (→51)	The pictures are recorded in succession while the shutter button is pressed.
3•1/3 **[Auto Bracket]* (→52)**	Each time the shutter button is pressed, the pictures are recorded with different exposure settings based on the Exposure Compensation range.
[Aspect Bracket]* (→52)	When the shutter button is pressed, 4 pictures with 4 different aspect ratios are automatically recorded.
10 **[Self Timer] (→53)**	When the shutter button is pressed, recording takes place after the set time has elapsed.
[Panorama Shot]* (→53)	The pictures are recorded in succession while you press the shutter button and move the camera horizontally or vertically, and then the camera combines the pictures into a single panorama picture.

* Cannot be set when using [Intelligent Auto] Mode.

- The icons in the above table are just examples.
- To cancel drive mode, select [ ] ([Single]) or [OFF]. The recording is switched to “Single”.
- When you press ▲, you can change the settings of each drive mode. Note, however, that you cannot change the settings of [Single] and [Aspect Bracket].

Burst function

Recording mode: iA P A S M

The pictures are recorded in succession while the shutter button is pressed.

- Pictures that are taken while the [Burst Rate] is set to [SH] are recorded together as a single burst group.

1 Press [⧉ ⏱] button (▼)

2 Press ◀ ▶ to select the burst icon ([⧉H], etc.) and press ▲

3 Press ◀ ▶ to select the burst speed and press [MENU/SET]

		[SH] (Super high speed)*	[H] (High speed)	[M] (Middle speed)	[L] (Low speed)
Speed (pictures/ sec.)	[AFS]	40	11	7	2
	[AFF]/[AFC]	—	6.5	6.5	2
Live View during burst recording		None	None	Available	Available
No. of pictures	With RAW files	—	20	20	20
	Without RAW files	60	Depends on the capacity of the card		

* The electronic shutter will be activated.

4 Focus on the subject and take a picture

- Hold down the shutter button fully to activate the Burst Mode.

Recording while exposure is changed automatically [Auto Bracket]

Recording mode: iA P A S M

Each time the shutter button is pressed, recordings are made of up to 7 pictures with different exposure settings based on the Exposure Compensation range.

Example of Auto Bracket recording when [Step] is set to [3·1/3] and [Sequence] is set to [0/–/+]

1st picture

±0 EV

2nd picture

–1/3 EV

3rd picture

+1/3 EV

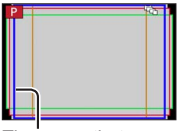
1. **Press [⧉/⏱] button (▼)**
2. **Press ◀▶ to select the Auto Bracket icon ([3·1/3], etc.) and press ▲**
3. **Press ◀▶ to select the compensation range and press [MENU/SET]**
4. **Focus on the subject and take a picture**
   - If you press and hold the shutter button, a burst of pictures can be recorded.

Automatically changing the aspect ratio while taking pictures [Aspect Bracket]

Recording mode: iA P A S M

When you press the shutter button once, the camera automatically takes four pictures with four types of aspect ratios (4:3, 3:2, 16:9, and 1:1). (The shutter sounds only once.)

1. **Press [⧉/⏱] button (▼)**
2. **Press ◀▶ to select the aspect bracket icon ([▚]) and press [MENU/SET]**
3. **Focus on the subject and take a picture**



The range that can be recorded for each aspect ratio is displayed.

Taking pictures with self-timer

Recording mode: iA P A S M

We recommend using a tripod. This is also effective for preventing jitter when pressing the shutter button, by setting the self-timer to 2 seconds.

1 Press [ ] button (▼)

2 Press ◀ ▶ to select the self-timer icon ([10], etc.) and press ▲

3 Press ◀ ▶ to select the self-timer operation setting and press [MENU/SET]

10	The shutter is activated after 10 seconds.
10	The shutter is activated after 10 seconds and three pictures are taken at intervals of approximately 2 seconds.
2	The shutter is activated after 2 seconds.

4 Press the shutter button halfway to focus, then press it fully to start recording

- The focus and exposure are fixed when the shutter button is pressed halfway.
- After the self-timer indicator flashes, recording will start.

Recording panorama pictures

Recording mode: iA P A S M

You can easily record a panorama picture by panning the camera towards the direction you want to record, and automatically combining the burst of pictures taken during that time.

1 Press [ ] button (▼)

2 Press ◀ ▶ to select the panorama icon ([ ], etc.) and press ▲

3 Press ◀ ▶ to select the recording direction and then press [MENU/SET]

[ ] (Left → Right) / [ ] (Right → Left) / [ ] (Down → Up) / [ ] (Up → Down)

- You can also select the recording direction using [Panorama Direction] in the [Rec] menu.

Applying a picture effect (Filter)

① Press the [FILTER] button to select a picture effect (→41)

Ⓐ Recording direction Ⓑ Picture effects

- [Toy Effect], [Toy Pop], [Miniature Effect], and [Sunshine] are not available.

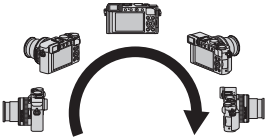
② Press [MENU/SET]

4 Press the shutter button halfway to focus

5 Press the shutter button fully and pan the camera in a small circular motion to the recording direction to start recording

Taking pictures from left to right

Recording direction and progress status (approximate)



6 Press the shutter button fully again to end recording

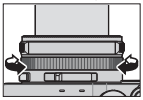
- You can also end recording if you stop panning the camera while taking pictures.
- Recording can also be ended by moving the camera to the end of the guide.

● Since the aperture value and shutter speed are automatically controlled during panorama picture recording, settings made by the aperture ring or shutter speed dial are disabled.

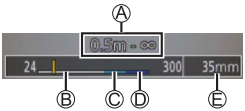
Using Zoom

Recording mode: iA P A S M

You can adjust the area of a picture to be taken using zoom.

Zoom lever	Control ring
① Move the zoom lever	① Turn the control ring* 
T side: Telephoto, Enlarge the subject W side: Wide-angle, Capture a wider area	Clockwise: Telephoto, Enlarge the subject Counterclockwise: Wide-angle, Capture a wider area

* You can perform zoom operation by assigning the [Zoom] setting to the control ring. (→22)



The illustration is an example of when using Optical Zoom, [i.Zoom], and [Digital Zoom] in [Program AE] Mode.

Ⓐ Focus range
Ⓑ Optical Zoom range
Ⓒ i.Zoom range
Ⓓ Digital Zoom range
Ⓔ Current zoom position (Focal lengths the same as those of a 35 mm film camera)

Optical Zoom

You can zoom in without degrading the picture quality.
Maximum magnification: 3.1x

Extra optical zoom

This function works when picture sizes with [EX] have been selected in [Picture Size] (→42). Extra optical zoom allows you to zoom in using a higher zoom ratio than Optical Zoom, without degrading the picture quality.
Maximum magnification: 6.2x (Including the optical zoom ratio. This maximum zoom ratio varies depending on the picture size.)

[i.Zoom]

Recording mode: iA P A S M
You can use the camera's Intelligent Resolution technology to increase the zoom ratio up to 2x higher than the original zoom ratio with limited deterioration of picture quality.
MENU → **[Rec] / [Motion Picture] → [i.Zoom] → [ON] / [OFF]**

[Digital Zoom]

Recording mode: iA P A S M
Zoom 4x further than Optical/Extra optical zoom. Note that, with Digital Zoom, enlarging will decrease picture quality.
MENU → **[Rec] / [Motion Picture] → [Digital Zoom] → [ON] / [OFF]**

- When [Digital Zoom] is used simultaneously with [i.Zoom], you can only increase the zoom ratio up to 2x.

[Step Zoom]

Recording mode: iA P A S M
You can set the zoom operation to allow easy visualisation of the angle of view (picture angle) for the focal length of a regular fixed focal length lens (as with a 35 mm film camera). When using the [Step Zoom], you can operate the zoom ratio as easily as changing the camera lens.

■ Using the zoom lever for [Step Zoom]

You can use the zoom lever for [Step Zoom] by setting [Zoom lever] to [Step Zoom] in the [Custom] menu.

Taking pictures using the flash (supplied)

Recording mode: iA P A S M
This section describes how to take a picture using the flash (supplied).

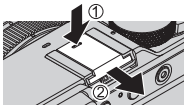
Attaching the flash

The hot shoe cover is already attached to the hot shoe at the time of purchase. Attach the flash to the hot shoe after removing the hot shoe cover.

Removing the hot shoe cover

- Make sure that the Camera [ON/OFF] switch is set to [OFF].

1 Remove the hot shoe cover by pulling it in the direction indicated by arrow ② while pressing it in the direction indicated by arrow ①
- **Be sure to attach the hot shoe cover when the hot shoe is not in use.**
- **Keep the hot shoe cover safely after removing it so that you do not lose it. (→8)**

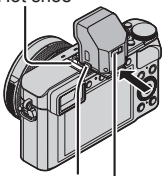


Attaching the flash

1 Turn off the flash

2 Firmly insert the flash into the hot shoe of this unit until it clicks
- Set the Camera [ON/OFF] switch to [ON] and turn on the flash when you take a picture.

● Do not carry the camera holding by the flash when the flash is mounted on the camera.



■ **Removing the flash**

①Turn off the camera and the flash
②Press and hold the lock release button and pull the flash in the direction indicated by the arrow to detach the flash
- When detaching the flash, do so slowly and carefully.
- Attach the hot shoe cover to the hot shoe of the camera.
- Store the detached flash in its soft case.

About [Forced Flash Off] ([⊛])

[⊛] (Forced Flash Off) will appear on the recording screen and the flash will not fire in the following cases.
Communication light emission with a wireless flash is also disabled.

- When the flash is not attached to the camera
- When the flash [ON/OFF] switch is set to [OFF] even if the flash is attached
- When the flash cannot be used to take pictures, for example, when recording motion pictures

Changing Flash Mode

Recording mode: iA P A S M

1 Set the menu

MENU → [Rec] → [Flash] → [Flash Mode]

2 Press ▲▼ to select the item and press [MENU/SET]

: [Forced Flash On] **: [Forced On/Red-Eye]***	Always takes pictures using the flash. • **Ideal for taking pictures with a backlight or when a subject is located under bright lighting such as a fluorescent light.**
: [Slow Sync.] **: [Slow Sync./Red-Eye]***	Takes brighter pictures such as pictures of subjects against a nightscape by decreasing the shutter speed when firing a flash. • **Ideal for taking pictures of people against a nightscape.**
: [Forced Flash Off]	Always takes pictures without flash under all recording conditions. • **Ideal for taking pictures where the use of flash is prohibited.**

* This is available only when [Wireless] in the [Flash] is set to [OFF] and [Firing Mode] is set to [TTL].

Two flashes will be emitted. Do not move until after the second flash. Interval between flashes varies according to brightness of subject.

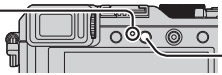
- The red-eye reduction effect varies depending on the subject and is affected by factors such as distance from the subject and whether the subject is looking at the camera during the preliminary flash. In some cases, red-eye reduction may be negligible.

● [Flash] settings cannot be performed unless flash is attached properly. (→57)

Wi-Fi® Function and NFC Function

■ About the Wi-Fi connection lamp

Wi-Fi connection lamp
Lit blue: When the Wi-Fi function is ON
Blinking blue: When sending data



■ About the [Wi-Fi] button

You can operate the [Wi-Fi]/[Fn2] button in two ways, using it either as the [Wi-Fi] button or as a function button [Fn2].
It is set to [Wi-Fi] at the time of purchase. (→20)

- Before a Wi-Fi connection is established, press and hold the [Wi-Fi] button to display the information (QR Code, SSID, password) you will need to connect the smartphone/tablet directly to the camera.
  – After the second time, the screen for the previously used connection method will appear.
  – The same screen can be displayed by selecting items from the menu as follows.

  Wi-Fi → **[New Connection] → [Remote Shooting & View]**

- Before a Wi-Fi connection is established, press the [Wi-Fi] button to perform the following operations.

[New Connection]
[Select a destination from History]
[Select a destination from Favorite]

(This manual provides information on the process when [New Connection] is selected.)

- Pressing the [Wi-Fi] button during a Wi-Fi connection enables the following operation.

[Terminate the Connection]
[Change the Destination]*1
[Change Settings for Sending Images]*2
[Register the Current Destination to Favorite]*1
[Network Address]

*1 This item will not be displayed if you press ▼ to send pictures to WEB services while the pictures are displayed (→66).
*2 This item will not be displayed if the destination for [Remote Shooting & View], [Playback on TV] or [Send Images Stored in the Camera] is set to [Printer].

● We strongly recommend that you enable encryption in the settings of your wireless access point to ensure information security.

- When downloading the app or sending images on a mobile network, high packet communication fees may be incurred depending on the details of your contract.
- Hereafter, this manual uses the term “smartphone” for both smartphones and tablets unless it is necessary to distinguish between them.

Operating the camera by connecting it to a smartphone

Installing the smartphone/tablet app “Panasonic Image App”

The “Image App” is an application provided by Panasonic that allows your smartphone to perform the following operations of a Wi-Fi-compatible LUMIX.

- **Supported OS**
  Android™: Android 2.3.3 or later*1
  iOS: iOS 6.0 or later*2

*1 To connect this unit with [Wi-Fi Direct], Android OS 4.0 or above is required and the device must be compatible with Wi-Fi Direct™.
*2 iPhone 3GS is not supported.

1 Connect the smartphone to a network

2 (Android) Select “Google Play™ Store”
(iOS) Select “App Store℠”

3 Enter “Panasonic Image App” or “LUMIX” to search for the app

4 Select “Panasonic Image App” and install it

- **Use the latest version.**
- **Supported OS versions as of September 2014. Supported OS versions may be changed without prior notice.**
- **Some of the screens and information provided in this document may be different depending on the supported operating system and “Image App” version.**
- **The service may not be able to be used properly depending on the type of smartphone being used.**
- **For details about the operating procedure, etc., refer to [Help] in the “Image App” menu.**
- **For the latest information on the “Image App”, refer to the support site below.**
  http://panasonic.jp/support/global/cs/dsc/
  (This site is available in English only.)

Connecting to a smartphone

If you are using an iOS device (iPhone, iPod touch, iPad)

↓

Use a QR code to make settings easily (→61)

If you are using an Android device

↓

Is your device equipped with an NFC function?

Yes → **Use the NFC function to connect (→62)**

No → **Read a QR code to connect (→62)**

- You can also connect by manually entering the password. (→62, 63)

If you are using an iOS device (iPhone, iPod touch, iPad)

■ **When reading a QR Code to connect**

(Steps ② to ⑥ are not necessary when reconnecting.)

(On the camera)

①Press and hold the [Wi-Fi] button

(On your smartphone)

②Start “Image App”

③Select [QR Code] → [OK]

④Read the QR Code displayed on this unit with “Image App”
(When you press [MENU/SET] on the camera, the QR code is displayed in an enlarged size.)

⑤Install the IMAGE APP profile

Select [Install]*, then select [Install Now]* → [Done]*.

- The message is displayed in the Web browser.
- If a passcode is required to unlock the smartphone, you will have to input the passcode.

⑥Press the home button to close the Web browser

⑦Select [Wi-Fi]* under [Settings]* on the smartphone

⑧Turn on [Wi-Fi]* and select the SSID displayed on this unit

⑨Return to the home screen and start “Image App”

*The display may differ depending on the system language setting.

■ **When connecting with SSID and password**

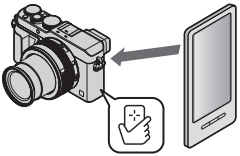
(On the camera)
①Press and hold the [Wi-Fi] button
(On your smartphone)
②Select [Wi-Fi]* under [Settings]* on the smartphone
③Turn on [Wi-Fi]* and select the SSID displayed on this unit
④Enter the password displayed on this unit (First time connecting only)
⑤Return to the home screen and start “Image App”

*The display may differ depending on the system language setting.

If you are using an Android device

■ **Connecting to a smartphone using NFC function**

- This function can be used with NFC compatible devices with Android (2.3.3 or above). (Not available in certain models)



① Start “Image App” on your smartphone
② While the [ ] is displayed on the connection screen of the “Image App”, hold the smartphone close to the camera
③ Use ◀ to select [Yes] and press [MENU/SET]
④ Hold the smartphone close to this area of the unit again
- From the next time and on, you can connect by performing steps ① and ②.
- See the operating instructions of your NFC-compatible smartphone for more information about smartphone operation and settings.

■ **When reading a QR Code to connect**

(On the camera)
①Press and hold the [Wi-Fi] button
(On your smartphone)
②Start “Image App”
③Select [QR Code]
④Read the QR Code displayed on this unit with “Image App”
(When you press [MENU/SET] on the camera, the QR code is displayed in an enlarged size.)

■ **When connecting with SSID and password**

(On the camera)

①Press and hold the [Wi-Fi] button

(On your smartphone)

②Start “Image App”

③Select [Wi-Fi]

④Select the SSID displayed on this unit

⑤Enter the password displayed on this unit (First time connecting only)

- If you check the item to display the password, you can confirm the password as you enter it.

Closing the connection

(On the camera)

① Press [Wi-Fi] button

(On the recording standby screen, you can also close the connection by pressing MENU → [Setup] → [Wi-Fi] → [Wi-Fi Function] → [Yes].)

② Select [Terminate the Connection]

- A confirmation screen is displayed. Select [Yes] and press [MENU/SET].

(On your smartphone)

③ Close “Image App”

<Using an iOS device>

From the “Image App” screen, press the home button on the smartphone to close the app

<Using an Android device>

From the “Image App” screen, press the back button on the smartphone twice to close the app

Taking pictures via a smartphone (remote recording)

1 Connect to a smartphone (→61)

2 Select [ ] from “Image App”

3 Take pictures

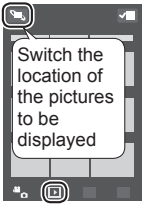
- The recorded images are saved in the camera.
- When using zoom, the camera could tilt when the lens barrel extends. Make sure to secure the camera in place with a tripod or by other means.
- Some settings are not available.

Playing back pictures in the camera on a smartphone

1 Connect to a smartphone (→61)

2 Select [▶] from "Image App"

- The images captured by the camera are displayed on the smartphone.
- You can switch a picture to be displayed using the icon at the top left on the screen. Select [LUMIX] to display a picture saved in the camera.
- When the picture is touched, it is played back at a larger size.



Saving pictures in the camera to the smartphone

1 Connect to a smartphone (→61)

2 Select [▶] from "Image App"

3 Press and hold the picture and drag it to save it on the smartphone

- The picture is saved on the smartphone.
- Functions can be assigned to the top, bottom, left and right as you wish.

Not available in the following case:

- You cannot save still pictures in RAW format, AVCHD motion pictures, or MP4 motion pictures with [Rec Quality] of [4K].

■ Easily transferring pictures in the camera using the NFC function

This function can be used with NFC compatible devices with Android (2.3.3 or above). (Not available in certain models)

You can establish a Wi-Fi connection using the NFC function and easily transfer over Wi-Fi the picture on display simply by holding the smartphone close to the camera.

①Set [Touch Sharing] to [ON]

MENU → [Setup] → [Wi-Fi] → [Wi-Fi Function] → [Touch Sharing] → [ON]

②On the camera, play back the picture you wish to transfer to a smartphone

③Start “Image App” on the smartphone you are transferring the picture to

④While the [ ] is displayed on the connection screen of the “Image App”, hold the smartphone close to the camera

- It will be transferred to the smartphone.
- If you are transferring multiple pictures, repeat steps ② and ④. (Multiple pictures cannot be transferred in one batch.)

Sending pictures in the camera to social networking services

1 Connect to a smartphone (→61)

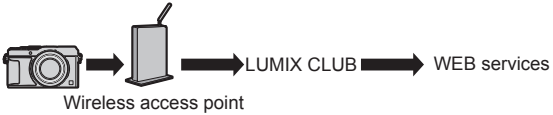
2 Select [ ] from “Image App”

3 Press and hold the picture and drag it to send it to the social networking service, etc.

- The picture will be sent to the social networking service or other WEB services.
- Functions can be assigned to the top, bottom, left and right as you wish.

When sending images to WEB service

Through “LUMIX CLUB”, you can send still pictures and motion pictures to social networking services, etc.



When sending images to WEB services, the WEB service being used must be registered on the WEB service link settings with the “LUMIX CLUB”.

■ **Refer to the “LUMIX CLUB” site for details**

http://lumixclub.panasonic.net/eng/c/
Login by entering the login ID and password already registered with your device.

MENU → **[Setup] → [Wi-Fi] → [Wi-Fi Setup] → [LUMIX CLUB] → [Set/Add Account] → [New account]**

Quickly sending pictures in the camera to WEB services

1 Display the picture (→35)

2 Use ◀ ▶ to select [Yes] after pressing ▼ (When a group picture is being displayed, select [Upload(Wi-Fi)] → [Yes])

- The camera is connected to the previously used wireless access point and the pictures are sent to the WEB service.*

* When no connection history is available for the wireless access point, proceed to the connection method selection screen. Select the connection method and connect the camera to a wireless access point.

Performing the operation for the first time

After you select [Yes] in step **2** (→66), the WEB service selection screen appears.

1 Use ▲▼◀▶ to select WEB services and press [MENU/SET]

2 Check the setting on the confirmation screen for the transmission setting and press [MENU/SET]

- To change the transmission setting for the picture, press the [DISP.] button.
- After the second time, the pictures are sent using the same WEB service and the same picture transmission settings as before.

● For details, refer to “Operating Instructions for advanced features (PDF format)”.

Sending pictures to a PC with the Wi-Fi function

Still pictures and motion pictures recorded by the camera can be sent to a PC.

■ **Sending method, and pictures that can be sent**

	JPEG	RAW	MP4	AVCHD*
[Send Images While Recording] (→68)	○	○	×	×
[Send Images Stored in the Camera] (→68)	○	○	○	○

*Motion pictures recorded in [AVCHD] can be sent in file sizes of up to 4 GB. Files larger than 4 GB cannot be sent.

Preparations

- Turn the computer on.
- Prepare folders for receiving images on the PC before sending a picture to the PC.
- If the standard settings are changed for the workgroup on the connected PC, you must change settings in [PC Connection] on this unit.

To create a folder that receives images

- Create a PC user account (account name (up to 254 characters) and password (up to 32 characters)) consisting of alphanumeric characters. An attempt to create a receive folder may fail if the account includes non-alphanumeric characters.

■ **When using "PHOTOfunSTUDIO"**

①Install "PHOTOfunSTUDIO" on the PC (→72)
- "PHOTOfunSTUDIO" is not compatible with Mac.

②Create a folder that receives images with "PHOTOfunSTUDIO"
- To create the folder automatically, select [Auto-create]. To specify a folder, create a new folder, or set a password to the folder, select [Create manually].
- For details, refer to the operating instructions of "PHOTOfunSTUDIO" (PDF).

■ **When not using "PHOTOfunSTUDIO"**

(For Windows) Supported OS:
Windows 8.1 / Windows 8 / Windows 7 / Windows Vista
Example: Windows 7
①Select a folder you intend to use for receiving, then right-click
②Select [Properties], then enable sharing of the folder
- For details, refer to the operating instructions of your PC or Help on the operating system.

(For Mac) Supported OS: OS X v10.5 to v10.9
Example: OS X v10.8
①Select a folder you intend to use for receiving, then click on the items in the following order ([File] → [Get Info])
②Enable sharing of the folder
- For details, refer to the operating instructions of your PC or Help on the operating system.

Sending pictures to a PC

1 Set the menu

Wi-Fi → **[New Connection] → [Send Images While Recording] / [Send Images Stored in the Camera] → [PC]**

2 Select [Via Network] or [Direct] to connect

[Via Network]: Connects through a wireless access point.
[Direct]: Your equipment connects directly to the camera.

(Example) Connecting this unit to a wireless access point using [WPS (Push-Button)] in the [Via Network] menu
① Connect your PC to a wireless access point
② Connect this unit to a wireless access point
Use ▲▼ on this unit to select [Via Network] → [WPS (Push-Button)]
③ Hold down the wireless access point WPS button until it switches to WPS Mode
- For details, refer to "Operating Instructions for advanced features (PDF format)".

3 Select the PC you want to connect to

- If the PC you want to connect to is not displayed, select [Manual Input], then enter the computer name (for Mac, enter the NetBIOS name).

4 Select the folder you want to send to

- When the connection is established, the confirmation screen for the transmission setting is displayed. Check the setting and press [MENU/SET]. To change the send setting, press [DISP.] button.

5 Perform the camera operation (specific to your purpose)

■ **[Send Images While Recording]**

Take still pictures

- To change the setting or disconnect, press [Wi-Fi] button. (→59)
  You cannot change the settings while sending still pictures. Wait until sending is complete.
  (You can also close the connection by pressing MENU → [Setup] → [Wi-Fi] → [Wi-Fi Function] → [Yes].)

■ **[Send Images Stored in the Camera]**

Select [Single Select] or [Multi Select] to select the picture that you want to send

- A confirmation screen is displayed. If you select [Yes], the operation is executed.
- To change the send setting, press [DISP.] button.
- To close the connection, select [Exit].

- Folders sorted by the sent date are created in the specified folder, and pictures are saved in those folders.
- If the screen for a user account and password entry appears, enter the one you set on your PC.
- If the computer name (for Mac, the NetBIOS name) contains spaces, etc., the name may not be properly recognised. If you cannot connect, we recommend changing the computer name (for Mac, the NetBIOS name) to a combination of 15 or less alphanumeric characters only.

Viewing on TV screen

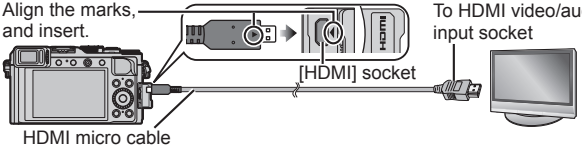
You can view pictures on a TV screen by connecting your camera to your TV with the HDMI micro cable or AV cable (DMW-AVC1: optional).

Preparation
Turn off both camera and TV.

1 Connect camera to TV

Check the plug direction and insert it straight in. (If the cable is inserted in the wrong direction, the plug could become deformed and cause faulty operation) Also, do not insert into the wrong socket. Doing so may cause damage to this unit.

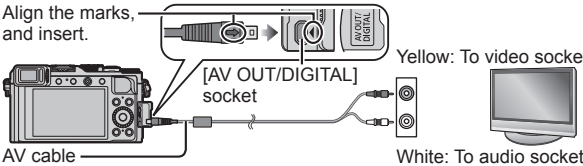
■ **To connect with an HDMI micro cable**



- Use a “High Speed HDMI micro cable” with the HDMI logo. Cables that do not comply with the HDMI standards will not work.
  “High Speed HDMI micro cable” (Type D-Type A plug, up to 2 m long)

- To play back 24p motion pictures, set [HDMI Mode] to [AUTO]. Otherwise, the picture is not output at 24 frames per second.
- Audio output is stereo.

■ **To connect with an AV cable (optional)**



- Always use a genuine Panasonic AV cable (DMW-AVC1: optional).

2 Turn on the TV and switch the TV input source to match the connection socket

3 Turn on the camera and press the playback button

● Read the operating instructions for the TV.

Storing recorded still pictures and motion pictures on your PC

About supplied software

The supplied DVD contains the following software.
Install the software on your computer before using.
For details about operating environment and usage, please read “Operating Instructions for advanced features” (PDF format) or the manuals for each software.

PHOTOfunSTUDIO 9.6 PE

You can capture still pictures or motion pictures to your PC, or organise captured pictures by categorising by recording date, model name of the digital camera used to record, etc. You can also correct still pictures, edit motion pictures, or write to DVD. You can read the Operating Instructions (PDF format) after launching the software.

- Supported OS: Windows 8.1 / 8 / 7 / Vista

(To edit 4K motion pictures, you need the 64-bit versions of Windows 8.1, Windows 8, or Windows 7.)

SILKYPIX Developer Studio 4.2 SE

This software develops and edits RAW file pictures. Edited pictures can be saved in a file format such as JPEG or TIFF that can be displayed on a PC, etc.

- Supported OS: Windows 8.1 / 8 / 7 / Vista
  Mac OS X v10.5 / v10.6 / v10.7 / v10.8 / v10.9
- For details on how to use the SILKYPIX Developer Studio, refer to the “Help” or the Ichikawa Soft Laboratory’s support website:
  http://www.isl.co.jp/SILKYPIX/english/p/support/

LoiLoScope 30 day full trial version

LoiLoScope is a video editing software that draws out the full power of your PC. Creating videos is as easy as organising cards on top of a desk. Use your music, picture and video files to create videos to share with your friends and family by burning it to a DVD, uploading it to websites, or simply share your videos with your friends via e-mail.

- This will only install a shortcut to the trial version download site.
- Supported OS: Windows 8.1 / 8 / 7 / Vista
- **For more information on how to use LoiLoScope, read the LoiLoScope manual available for download at the link below.**
  Manual URL: http://loilo.tv/product/20

Installing supplied software

The software compatible with your PC will be installed.

Preparations
- Check your PC's specifications and operating environment for each software.
- Before inserting the DVD (supplied), close all running applications.

1 Insert the DVD with the supplied software
- If the automatic playback screen is displayed, you can display the menu by selecting and executing [Launcher.exe].
- In Windows 8.1/Windows 8, you can display the menu by clicking a message that is displayed after inserting the DVD and then selecting and executing [Launcher.exe].
- You can also display the menu by double-clicking [SFMXXXX] in [Computer]. (The "XXXX" portion differs depending on the model.)

2 Click [Applications]

3 Click [Recommended Installation]
- Continue the installation procedure following the instructions displayed on the screen.

● If you are using a Mac, you can manually install SILKYPIX.
①Insert the DVD with the supplied software
②Double-click the application folder on the DVD
③Double-click the folder that automatically appears
④Double-click the icon in the folder

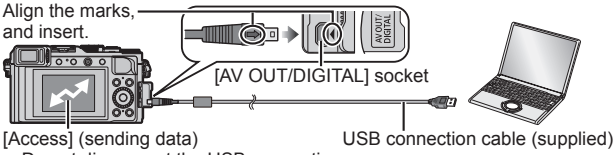
Not available in the following case:

● PHOTOfunSTUDIO / LoiLoScope are not compatible with Mac.

Copying still pictures and motion pictures

Preparations
- Install “PHOTOfunSTUDIO” on your computer before starting the copying procedure. (→72)
- Turn on the camera and computer.

1 Connect camera to computer
- Check the plug direction and insert it straight in. (If the cable is inserted in the wrong direction, the plug could become deformed and cause faulty operation) Also, do not insert into the wrong socket. Doing so may cause damage to this unit.
- Do not use any other USB connection cables except the supplied one or a genuine Panasonic USB connection cable (DMW-USBC1: optional). Using cables other than the above may cause a malfunction.



- Do not disconnect the USB connection cable (supplied) while [Access] is displayed.

2 Use ▲▼ to select [PC] and press [MENU/SET]
- Setting the [USB Mode] to [PC] removes the need to make the setting each time the camera is connected to the computer.

3 Use “PHOTOfunSTUDIO” to copy pictures to your computer

● Do not delete or move copied files and folders using Windows Explorer or other browsers. Otherwise, you will not be able to play back or edit the files using “PHOTOfunSTUDIO”.

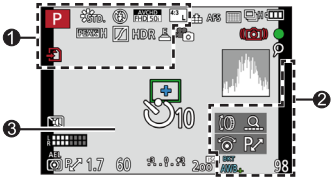
■ Copying to your computer without using “PHOTOfunSTUDIO”

You can save pictures to use on your computer by dragging and dropping folders and files into separate folders on your computer.

List of monitor/viewfinder displays

- The following images are examples of when the display screen is set to [ ] (monitor style) in the monitor.

In recording



❶

iA P A S M	Recording Mode (→24)
	Motion picture recording mode (→36)
	Motion picture recording mode when [4K PHOTO] is set to [ON] (→39)
C1	Custom Set (→33)
	Panorama picture recording mode (→53)
STD. VIVD NAT MONO SCNY PORT CUST	[Photo Style]
S	Flash Mode (→58)
2nd WL	Flash
AVCHD FHD 50i	[Rec Format]/ [Rec Quality] (→37)
4:3 L	Aspect Ratio/ [Picture Size] (→42)
	Card (displayed only during recording)
→ ← ↑ ↓	Panorama Direction (→53)

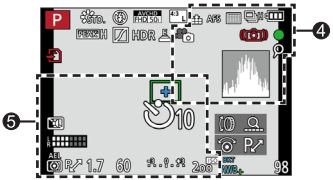
EXPS	Types of picture effects (Filter) (→41)
	Picture effect (Filter) adjustment display (→41)
XXmXXs	Elapsed recording time*1 (→36)
	Simultaneous recording indicator
LVF/ MON AUTO	Automatic switching between viewfinder and monitor (→23)
PEAK H PEAK L	[Peaking] (→45)
	[Highlight Shadow]
HDR	[HDR]
	[Multi Exp.]
E	Electronic shutter (→49)

❷

	[Dial Guide]
BKT AWB	White Balance Bracket
	White Balance Fine Adjustment
	White Balance (→41)
98	Number of recordable pictures*2 (→16)
R8m30s	Available recording time*1*2 (→16)

❸

Exposure meter (→28)
Zoom



❹

RAW	[Quality] (→43)
AFS AFF AFC MF	Focus Mode
	AF Mode (→44)
	[Face Recog.]
AFL	AF Lock (→46)
SH H M L	Burst (→51)
B	[Auto Bracket] (→52)
	[Aspect Bracket] (→52)
10 2	Self-timer (→53)
	Panorama Direction (→53)
	Remaining battery (→14)
	Picture Mode (Still picture priorities)
AF	Macro recording (→45)
OFF	Stabiliser
	Jitter alert
●	Recording state (Flashes red.)/Focus (Lights green.) (→24)

LOW	Focus (Under low illumination)
	Wi-Fi connection status
	[4K PHOTO] marker (→40)
	[Time Lapse Shot]
	[Stop Motion Animation]
	Histogram

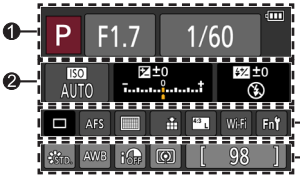
❺

Destination settings*3 Travel elapsed days*3
Name*3 Age in years/months*3
Current date/time*3 World time*3:

	AF area
+	Spot metering target (→48)
10 2	Self-timer*4 (→53)
	[Silent Mode]
	[Mic Level Disp.]
AEL	AE Lock (→46)
	[Metering Mode] (→48)
P↗	Programme Shift (→28)
1.7	Aperture value (→27)
60	Shutter speed (→27)
−3 . 0 . +3	Exposure compensation value (→47)
	Manual Exposure Assist
200 ISO	ISO Sensitivity (→47)

*1 [m] and [s] indicate “minute” and “second”.
*2 It is possible to switch the display between the number of recordable pictures and available recording time with the [Remaining Disp.] setting in the [Custom] menu.
*3 This is displayed for about 5 seconds when the camera is turned on, after setting the clock and after switching from Playback Mode to Recording Mode.
*4 This is displayed during countdown.

■ On-monitor recording information



❶

iA P A S M	Recording Mode (→24)
P	Programme Shift (→28)
	Motion picture recording mode (→36)
	Motion picture recording mode when [4K PHOTO] is set to [ON] (→39)
C1	Custom Set (→33)
	Panorama picture recording mode (→53)
F1.7	Aperture value (→27)
1/60	Shutter speed (→27)
TIME	T (time) recording (→32)
	Remaining battery (→14)
	Card (displayed only during motion picture recording)

❷

ISO AUTO	ISO Sensitivity (→47)
±0	Exposure compensation value (→47)
	Manual Exposure Assist
	Flash Mode (→58)
±0 2nd WL	Flash

❸

	Single (→50)
SH H M IM L	Burst (→51)
BKT 3·1/3	[Auto Bracket] (→52)
	[Aspect Bracket] (→52)
10 10 2	Self-timer (→53)
	Panorama Direction (→53)
AFS AFF AFC MF	Focus Mode
	AF Mode (→44)
RAW	[Quality] (→43)
AVCHD FHD 50i	[Rec Format]/ [Rec Quality] (→37)
4:3 L	Aspect Ratio/ [Picture Size] (→42)
Wi-Fi	Wi-Fi (→59)
Fn	Function button setting (→20)

❹

STD. VIVD NAT MONO SCNY PORT CUST	[Photo Style]
AWB WB 1 K	White Balance (→41)
iOFF	[i.Dynamic]
	[Metering Mode] (→48)
98	Number of recordable pictures (→16)
R8m30s	Available recording time* (→16)

* [m] and [s] indicate “minute” and “second”.

Message displays

The following explains the meaning of major messages displayed on the monitor or viewfinder, and how to respond to them.

- Further information is provided in the “Operating Instructions for advanced features (PDF format)”. Check it together with the information in this section.

[Some pictures cannot be deleted] [This picture cannot be deleted]

- Non-DCF pictures cannot be deleted.
  → Save needed data on a computer or other device, and then use [Format] on the camera. (→16)

[Memory Card Error] [This memory card cannot be used]

- Not compatible with the camera. Use a compatible card.

[Insert SD card again] [Try another card]

- Access to card has failed.
  → Insert card again.
- Try with a different card.

[Read Error] / [Write Error] [Please check the card]

- Data read has failed.
  → Check whether card has been inserted correctly.
- Data write has failed.
  → Turn off the camera and remove the card. Reinsert the card and turn the camera on again.
- Card may possibly be damaged.
  → Try with a different card.

[This battery cannot be used]

- Use a genuine Panasonic battery. (DMW-BLG10E)
- Battery cannot be recognised as terminal is dirty.
  → Wipe any dirt away from the battery terminal.

[Failed to connect wireless access point] / [Connection failed] / [No destination found]

- Check following regarding the wireless access point.
  → The wireless access point information set on this unit is wrong. Check the authentication type, encryption type, and encryption key.
  → Power of the wireless access point is not turned on.
  → Setting of the wireless access point is not supported by this unit.
- Check the network setting of the destination.
- Radio waves from other devices may block the connection to a wireless access point.
  → Check other devices that are connected to the wireless access point and devices that use the 2.4 GHz band.

[No picture to send]

- This is displayed when there is no image to transmit due to the restriction of the destination. Check the file type of the image to transmit.

Menu list

- The [Photo Style], [AFS/AFF/AFC], [Metering Mode], [Highlight Shadow], [i.Dynamic], [i.Resolution], [i.Zoom], and [Digital Zoom] menu items are common for both [Rec] and [Motion Picture] menus. If a setting in one menu is changed, the setting with the same name in other menu will also be changed automatically.

[Rec]

[Photo Style]	You can select the effects according to the concept of the picture that you want to create. Adjusts the colours of effects and picture quality.
[Picture Size]	Set the number of pixels. (→42)
[Quality]	Set the compression rate used for storing pictures. (→43)
[AFS/AFF/AFC]	Select how the focus is adjusted.
[Metering Mode]	Type of optical measurement to measure brightness can be changed. (→48)
[Burst Rate]	Sets the burst speed to be used for burst recording. (→51)
[Auto Bracket]	Sets the Single/Burst setting, compensation range, and recording sequence of Auto Bracket. (→52)
[Self Timer]	Sets the time before recording starts when you take a picture using the self-timer. (→53)
[Highlight Shadow]	You can adjust the highlights and shadows in a picture while confirming the brightness of these areas on the screen.
[i.Dynamic]	Correcting contrast and exposure.
[i.Resolution]	Records still pictures with sharper outlines and the impression of high-resolution.
[Simultaneous record w/o filter]	Sets whether to record pictures with Filter and those without Filter at the same time.
[iHandheld Night Shot]	Combines nightscape pictures recorded using high-speed burst recording into a single picture. (→26)
[iHDR]	When there is, for example, strong contrast between the background and the subject, [iHDR] records multiple still pictures with differing exposures and combines them to create a single still picture rich in gradation. (→26)

[HDR]	The camera can combine 3 still pictures taken with different exposures into a single properly exposed picture with rich gradation.
[Multi Exp.]	You can create an effect similar to the operation of up to four times of exposure on a single picture.
[Time Lapse Shot]	You can preset the recording start time, recording interval, and the number of pictures to be taken when automatically recording time lapse motion pictures of subjects such as animals and plants.
[Stop Motion Animation]	You can stitch still pictures to create stop motion animation.
[Panorama Direction]	You can set the recording direction to be used for recording panorama pictures. (→53)
[Shutter Type]	You can take pictures using two types of shutter modes: the mechanical shutter and electronic shutter. (→49)
[Flash]	Performs flash settings in accordance with the recording conditions. (→58)
[Red-Eye Removal]	Automatically detects red-eye and corrects still picture data when recording with flash.
[ISO Limit Set]	Sets the optimal ISO Sensitivity using the selected value as the upper limit of ISO Sensitivity when [Sensitivity] is set to [AUTO] or [ISO].
[ISO Increments]	Changes the ISO Sensitivity settings every 1/3 EV or 1 EV steps.
[Extended ISO]	You can extend the numeric values that can be set for ISO Sensitivity.
[Long Shtr NR]	Eliminates the noise made when taking pictures at a slower shutter speed.
[i.Zoom]	Allows increasing the zoom ratio while suppressing the deterioration of picture quality. (→56)
[Digital Zoom]	Improves the telephoto effect of your pictures. Note that enlarging will decrease picture quality. (→56)
[Color Space]	You can set the method for reproducing the colours to correctly display the recorded pictures on the screens of a PC or printer, etc.
[Stabilizer]	Automatically detects jitter during recording and makes corrections.
[Face Recog.]	Recognises a registered face and automatically adjusts the focus and exposure for this face with higher priority.

[Profile Setup]	You can set a name or birthday of a baby or pet before taking a picture to record the name or age in months/ years in the picture.

[Motion Picture]

[4K PHOTO]	You can set the motion picture mode used for creating a high-resolution still picture by capturing a single frame from a 4K motion picture. (→39)
[Rec Format]	Sets the file format (AVCHD, MP4) of the motion picture to be recorded. (→37)
[Rec Quality]	Sets the picture quality of the motion picture (size, frame rate, etc.) to be recorded. (→37)
[Picture Mode]	Sets the recording method of still pictures to be taken while recording motion pictures.
[Continuous AF]	Constantly adjusts the focus on a subject that is in focus.
[Mic Level Disp.]	You can set whether or not to display the microphone level on the recording screen.
[Mic Level Adj.]	You can adjust the audio input level in 4 steps.
[Wind Cut]	If you hear wind noise during an audio recording, you can use [Wind Cut] to effectively reduce the wind noise.

C [Custom]

[Utilize Custom Set feature]	Calls up the setting registered using [Cust.Set Mem.].
[Cust.Set Mem.]	Registers the current camera settings as a custom setting. (→33)
[Silent Mode]	Disabling the beeps and flash at the same time.
[AF/AE Lock]	Performs the lock setting of the focus and/or exposure used for executing AF/AE lock.
[AF/AE Lock Hold]	Sets the [AF/AE LOCK] button operation used for recording by fixing the focus and/or exposure.
[Shutter AF]	Enables focus adjustment automatically when the shutter button is pressed halfway.
[Half Press Release]	Enables shutter release when the shutter button is pressed halfway.

[Quick AF]	Enables faster focusing when the shutter button is pressed.
[Eye Sensor AF]	Automatically adjusts the focus when the eye sensor is activated.
[Pinpoint AF Time]	Sets the time for displaying the enlarged screen if the shutter button is pressed halfway when Auto Focus mode is set to [+].
[Pinpoint AF Display]	Sets whether the assist screen is to be enlarged on a part of the screen or the entire screen when Auto Focus mode is set to [+].
[AF Assist Lamp]	Illuminates the AF Assist Lamp when the shutter button is pressed halfway when it is too dark to facilitate focusing.
[Direct Focus Area]	Moves the AF area or MF assist using the cursor button while recording.
[Focus/Release Priority]	Disables recording when a subject is out of focus.
[AF+MF]	Allows manual adjustment of the focus after AF is performed.
[MF Assist]	Sets the display method for MF Assist (enlarged screen). (→45)
[MF Assist Display]	Sets whether the Assist screen (enlarged screen) is to be enlarged on part of the screen or over the entire screen.
[MF Guide]	Displays the MF guide used to check the direction of focus on the screen when the focus is manually adjusted. (→45)
[Peaking]	When you perform Manual Focus operation, this function automatically adds colour to the portions of the image that are in focus. (→45)
[Histogram]	Sets whether to display the histogram.
[Guide Line]	Sets the pattern of the guidelines to be displayed while recording.
[Highlight]	Flashes the overexposed areas in black and white during [Auto Review] or playback.
[Zebra Pattern]	Displays the area, where overexposure may occur, using a zebra pattern.
[Monochrome Live View]	You can display the recording screen in black and white.

[Constant Preview] (M Mode)	Allows the effects of the aperture value and shutter speed on the recording screen to be checked when [Manual Exposure] Mode is set.
[Expo.Meter]	Sets whether to display the exposure meter. (→28)
[Dial Guide]	Sets whether to display the operation guide.
[LVF Disp.Style]	Sets the viewfinder display method. (→34)
[Monitor Disp. Style]	Switching the monitor display method. (→34)
[Monitor Info. Disp.]	Switches the recording information screen of the monitor.
[Rec Area]	Switching the angle of view setting used for recording still pictures and motion pictures.
[Remaining Disp.]	Switching the display between the number of recordable pictures that you can take and the available recording time.
[Auto Review]	Set the time to display the pictures you have taken after taking still pictures.
[Fn Button Set]	You can assign frequently-used functions to particular buttons. (→20)
[Zoom lever]	Switches the zoom lever operation setting.
[Control Ring]	You can assign frequently-used functions to control ring. (→22)
[Zoom Resume]	Retaining the zoom position when the camera is turned off.
[Q.MENU]	Switches the method for setting Quick Menu items.
[iA Button Switch]	Changes the operation method of the [iA] button used for switching to [Intelligent Auto] Mode.
[Video Button]	Enabling/disabling the motion picture button.
[Eye Sensor]	Setting the sensitivity of the eye sensor or setting to switch the display between the viewfinder and monitor.

[Setup]

[Clock Set]	Set time, date, and display format. (→18)
[World Time]	Set the local time at travel destination.
[Travel Date]	If you set your travel schedule and record pictures, the day of your trip on which the picture was taken will be recorded.
[Wi-Fi]	Configure the settings required for the Wi-Fi function.
[Beep]	Sets the beep sounds or shutter sounds.
[Live View Mode]	Sets the display speed and picture quality of the screen (Live View screen) when recording pictures.
[Monitor Display]/ [Viewfinder]	Adjust brightness and colour of the monitor or viewfinder.
[Monitor Luminance]	You can adjust the brightness of the monitor depending on how bright it is around the camera.
[Sleep Mode]	The camera automatically turns off if no operation is performed for a preset period of time.
[USB Mode]	Select communication method for when connecting camera to a computer or printer with USB connection cable (supplied).
[TV Connection]	Change the settings to be used when the camera is connected to a TV or other device.
[Menu Resume]	Save the last operated menu position.
[Menu Background]	Set the background colour for the menu screen.
[Menu Information]	Explanations of the menu items and settings are displayed on the menu screen.
[Language]	Set the language displayed on the screen.
[Version Disp.]	Check the firmware version of the camera or supplied flash (when the flash is attached).
[Self Timer Auto Off]	The self-timer is cancelled if the unit is turned off.
[No.Reset]	Reset picture file numbers.
[Reset]	Reset to the default settings.
[Reset Wi-Fi Settings]	Return [Wi-Fi] settings to default settings.
[Format]	Format (initialise) a memory card. (→16)

▶ [Playback]

[Slide Show]	Automatically play pictures in order.
[Playback Mode]	You can narrow down the pictures to be displayed with set filters, such as categories or favourite pictures.
[Location Logging]	You can write location information (longitude/latitude) sent from the smartphone to the pictures.
[RAW Processing]	You can use the camera to develop still pictures that were recorded in RAW format. The created still pictures are saved in JPEG format.
[Title Edit]	Allows characters (comments) to be entered on a recorded picture.
[Text Stamp]	You can stamp the recording date and time, names, travel destination, travel dates, etc. on the recorded still pictures.
[Video Divide]	A single motion picture can be split into 2 parts.
[Time Lapse Video]	You can create a motion picture from the pictures in a group that was recorded using [Time Lapse Shot].
[Stop Motion Video]	You can create a motion picture from the pictures in a group that was recorded using [Stop Motion Animation].
[Resize]	Picture size can be reduced.
[Cropping]	Enlarge your still pictures and crop unwanted areas.
[Rotate]	Manually rotate pictures by 90°.
[Rotate Disp.]	Automatically rotate portrait pictures.
[Favorite]	Allows a label to be assigned to a picture with a mark to set it as your favourite picture.
[Print Set]	Sets the pictures and the number of pictures to be printed.
[Protect]	Set protection to prevent deletion of pictures by mistake.
[Face Rec Edit]	Edit or delete the recognition information for pictures with mistaken Face Recognition.
[Picture Sort]	You can set the display sequence used for playing back pictures on this unit.
[Delete Confirmation]	You can set the Yes/No options that you want to select first on the confirmation screen when you delete a picture from either [Yes] or [No].

Q&A Troubleshooting

- Performing [Reset] in the [Setup] menu may resolve the issue.
- Further information is provided in the “Operating Instructions for advanced features (PDF format)”. Check it together with the information in this section.

Focus not aligned correctly.

- Subject outside of focus range.
- Caused by jitter or subject movement.
- [Focus/Release Priority] is set to [RELEASE].
- [Shutter AF] is set to [OFF].
- AF Lock (→46) is set inappropriately.

Recorded pictures are blurred. The stabiliser function ineffective.

- Shutter speed is slower in dark locations and the stabiliser function is less effective.
  → Hold camera firmly with both hands, keeping arms close to body.
- Use a tripod and the self-timer when using a slower shutter speed (→53).

Striping or flicker may appear under lighting such as fluorescent lighting and LED lighting fixture. The subject appears distorted.

- This is characteristic of MOS sensors which serve as the camera’s pickup sensors. This is not a malfunction. If the subject passes quickly in front of the lens, it will appear slightly distorted.
- If you are taking still pictures using [ESHTR], the striping may be reduced by setting a slower shutter speed. (→30)

No flash emitted.

The flash becomes unavailable in the following cases.

- When the picture effect (Filter) is set
- When camera is set to use [Auto Bracket], White Balance Bracket, or [Aspect Bracket]
- When using [Burst]
- During panorama picture recording
- When [HDR] is set to [ON]
- When the electronic shutter is used (→49)
  → Set [Shutter Type] to [AUTO] or [MSHTR].
- When [Silent Mode] is set to [ON]
  → Set [Silent Mode] to [OFF].

Cannot view pictures. There are no recorded pictures.

- A card is not inserted in the camera.
- There is no picture on the card to play back.
- Has the file name of the picture been changed on a computer? If so, it cannot be played back on the camera.
- [Playback Mode] is set to other than [Normal Play].
  → Set [Playback Mode] to [Normal Play].

Folder/file number displayed as [-]. Picture is black.

- Picture edited on computer or taken with different device.

Motion pictures taken with this camera cannot be played in other cameras.

- Even if a device is compatible with AVCHD and MP4, the motion pictures that were recorded on this unit may have bad picture quality or sound quality upon playback, or may be unable to be played back. Also, the recording information may not be displayed correctly.

It cannot connect to the wireless LAN. Radio waves get disconnected.

- Use within the communication range of the wireless LAN network.
- When the battery indicator is flashing red, the connection with other equipment may not start or the connection may be disrupted. (A message such as [Communication error] is displayed.)

Wireless access point is not displayed. Or it cannot be connected.

- The camera may not display or connect to a wireless access point depending on the radio wave condition.
  → Perform the connection closer to the wireless access point.
  → Remove the obstacles between this unit and the wireless access point.
  → Change the direction of this unit.
- Check if the wireless access point to connect is in operating state.
- Connection methods differ depending on the wireless access point.
  → Refer to the operating instructions of the wireless access point.

I am having a problem connecting to my Windows 8 PC. The user name and password are not recognised.

- Depending on the OS version, on Windows 8, for example, there are two types of user account (local account/Microsoft account).
  → Be sure to set the local account and use the user name and password for the local account.

The Wi-Fi connection is not recognising my PC.

- By default, the Wi-Fi connection uses the default workgroup name of “WORKGROUP”. If the name of the workgroup has been changed, it will not be recognised.
  → Select [PC Connection] then [Change Workgroup Name] in the [Wi-Fi Setup] to change the workgroup name to match that of your PC.

Transmission of the image fails midway. There is an image that could not be transmitted.

- Image cannot be transmitted when the battery indicator is flashing red.
- Is the size of the image too large?
  → Divide the motion picture using [Video Divide].
  → Reduce the image size at [Size], and then send.
- File format of the picture that can be sent differs depending on the destination.

Sometimes focus adjustment with Auto Focus mode is difficult while recording 4K motion pictures.

- This may occur when taking a picture by reducing the Auto Focus speed in order to adjust the focus at high precision. This is not a malfunction.

Specifications

Digital Camera: Information for your safety

Power Source	DC 8.4 V
Power Consumption	2.1 W (When recording with monitor) 2.3 W (When recording with viewfinder) 1.5 W (When playing back with monitor) 1.6 W (When playing back with viewfinder)

Camera effective pixels	12,800,000 pixels
Image sensor	4/3″ MOS sensor, total pixel number 16,840,000 pixels Primary colour filter
Lens	Optical 3.1x zoom f=10.9 mm to 34 mm (35 mm film camera equivalent: 24 mm to 75 mm) / Max. Wide: F1.7 to F16.0 Max. Tele: F2.8 to F16.0 Filter diameter Φ43 mm
Image Stabiliser	Optical method
Focus range	AF: 50 cm (Max. Wide) / 50 cm (Max. Tele) to ∞ AF Macro / MF / Intelligent Auto / Motion picture: 3 cm (Max. Wide) / 30 cm (Max. Tele) to ∞
Shutter system	Electronic shutter + Mechanical shutter
Minimum Illumination	Approx. 5 lx (when i-Low light is used, the shutter speed is 1/25th of a second)
Shutter speed	Still picture: 60 seconds to 1/4000th of a second (When the mechanical shutter is used) 1 second to 1/16000th of a second (When the electronic shutter is used) T (Time) (Max. approx. 120 seconds)
Exposure	Programme AE (P) / Aperture-priority AE (A) / Shutter-priority AE (S) / Manual exposure (M) Exposure Compensation (1/3 EV steps, -3 EV to +3 EV)

Monitor	3.0″ TFT LCD (3:2) (Approx. 921,600 dots) (field of view ratio about 100%)
Viewfinder	0.38″ Colour LCD (16:9) (Approx. 2,760,000 dots equivalent) (field of view ratio about 100%) (with diopter adjustment -4.0 to +3.0 diopter)
Flash mode	Auto, Auto/Red-Eye Reduction, Forced ON, Forced ON/Red-Eye Reduction, Slow Sync., Slow Sync./Red-Eye Reduction, Forced OFF
Microphones	Stereo
Speaker	Monaural
Recording media	SD Memory Card / SDHC Memory Card* / SDXC Memory Card* * UHS-I UHS Speed Class 3
Recording file format	
Still picture	RAW/JPEG (based on Design rule for Camera File system, based on Exif 2.3 standard / DPOF corresponding)
Motion pictures	AVCHD Progressive / AVCHD / MP4
Audio compression format	AVCHD: Dolby® Digital (2 ch) MP4: AAC (2 ch)
Interface	
Digital	USB 2.0 (High Speed)
Analogue video	NTSC / PAL Composite (Switched by menu)
Audio	Audio line output (Monaural)
Terminal	
AV OUT/DIGITAL	Dedicated jack (8 pin)
HDMI	MicroHDMI Type D
Dimensions	Approx. 114.8 mm (W) x 66.2 mm (H) x 55.0 mm (D) (excluding the projection part)
Mass	With card and battery: Approx. 393 g Excluding card and battery: Approx. 351 g
Operating temperature	0 °C to 40 °C
Operating humidity	10%RH to 80%RH

■ **Wi-Fi**

Compliance standard	IEEE 802.11b/g/n (standard wireless LAN protocol)
Frequency range used (central frequency)	2412 MHz to 2462 MHz (1 ch to 11 ch)
Encryption method	Wi-Fi compliant WPA™/WPA2™
Access method	Infrastructure mode

■ **NFC**

Compliance standard	ISO / IEC 18092 NFC-F (Passive Mode)

■ **Battery Charger (Panasonic DE-A98A):** Information for your safety

Input:	AC~110 V to 240 V, 50/60 Hz, 0.15 A
Output:	DC ⎓ 8.4 V, 0.43 A

■ **Battery Pack (lithium-ion) (Panasonic DMW-BLG10E):**
Information for your safety

Voltage/ capacity:	7.2 V/1025 mAh

■ **Flash (supplied)**

Guide number	10 equivalent (ISO 200• m), 7 equivalent (ISO 100• m)
Lighting angle	24 mm (35 mm film camera equivalent)

Specifications are subject to change without notice.

Digital Camera Accessory System

Description	Accessory#
Battery pack	DMW-BLG10
AC adaptor*1	DMW-AC10
DC coupler*1	DMW-DCC11
Flash*2	DMW-FL220 / DMW-FL360L / DMW-FL580L
LED video light	VW-LED1
Auto lens cap	DMW-LFAC1
External viewfinder	DMW-VF1
USB connection cable	DMW-USBC1
AV cable	DMW-AVC1

*1 The AC adaptor (optional) can only be used with the designated Panasonic DC Coupler (optional). The AC adaptor (optional) cannot be used by itself.
*2 For details about the flash, refer to (→57) in this manual and the corresponding operating instructions for the flash.

- Part numbers are as of September 2014. These may be subject to change.
- Some optional accessories may not be available in some countries.

Reading the Operating Instructions
(PDF format)

More detailed instructions on the operation of this camera are contained in “Operating Instructions for advanced features (PDF format)” in the supplied disc. Install it on your PC to read it.

■ For Windows

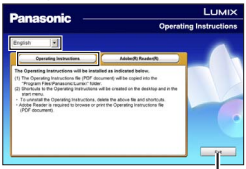
① Turn the PC on and insert the disc containing the Operating Instructions (supplied)
- If the automatic playback screen is displayed, you can display the menu by selecting and executing [Launcher.exe].
- In Windows 8.1/Windows 8, you can display the menu by clicking a message that is displayed after inserting the DVD and then selecting and executing [Launcher.exe].
- You can also display the menu by double-clicking [SFMXXXX] in [Computer]. (The “XXXX” portion differs depending on the model.)

② Click the [Operating Instructions]

③ Select the desired language and then click [Operating Instructions] to install

Ⓐ To return to the install menu.

④ Double-click the “Operating Instructions” shortcut icon on the desktop



Ⓐ

■ When the Operating Instructions (PDF format) will not open

You will need Adobe Acrobat Reader 5.0 or later, or Adobe Reader 7.0 or later to browse or print the Operating Instructions (PDF format).

- You can download and install a version of Adobe Reader that you can use with your OS from the following website.
  http://get.adobe.com/reader/otherversions/

■ Uninstalling the “Operating Instructions for advanced features (PDF format)”

Delete the PDF file in the following folder.
Program Files\Panasonic\Lumix\

■ For Mac

① Turn the PC on and insert the disc containing the Operating Instructions (supplied)

② Open the “Manual” folder in the DVD (supplied)
- The “Manual” folder is displayed again.

③ Open the “Manual” folder in the DVD (supplied) and copy the PDF file in the language folder

④ Double click the PDF file to open it

Limited Warranty (ONLY FOR AUSTRALIA)

Panasonic Warranty

1. The product is warranted for 12 months from the date of purchase. Subject to the conditions of this warranty Panasonic or its Authorised Service Centre will perform necessary service on the product without charge for parts or labour, if in the opinion of Panasonic, the product is found to be faulty within the warranty period.
2. This warranty only applies to Panasonic products purchased in Australia and sold by Panasonic Australia or its Authorised Distributors or Dealers and only where the products are used and serviced within Australia or it's territories. Warranty cover only applies to service carried out by a Panasonic Authorised Service Centre and only if valid proof of purchase is presented when warranty service is requested.
3. This warranty only applies if the product has been installed and used in accordance with the manufacturer's recommendations (as noted in the operating instructions) under normal use and reasonable care (in the opinion of Panasonic). The warranty covers normal domestic use only and does not cover damage, malfunction or failure resulting from use of incorrect voltages, incorrect installation, accident, misuse, neglect, build-up of dirt or dust, abuse, maladjustment of customer controls, mains supply problems, thunderstorm activity, infestation by insects or vermin, tampering or repair by unauthorised persons (including unauthorised alterations), introduction of sand, humidity or liquids, commercial use such as hotel, office, restaurant, or other business or rental use of the product, exposure to abnormally corrosive conditions or any foreign object or matter having entered the product.
4. This warranty does not cover the following items unless the fault or defect existed at the time of purchase:
   (a) Cabinet Part(s)
   (b) Video or Audio Tapes
   (c) SD cards or USB devices
   (d) User replaceable Batteries
   (e) DVD, Blu-ray or Recordable Discs
   (f) Video / Audio Heads from wear and tear in normal use
   (g) Information stored on Hard Disk Drive, USB stick or SD card
   (h) DTV reception issues caused by TV Aerial / Cabling / Wall socket(s) etc
5. Some products may be supplied with Ethernet connection hardware. The warranty is limited on such products and will not cover
   (a) Internet and or DLNA connection / setup related problems
   (b) Access fees and or charges incurred for internet connection
   (c) The use of incompatible software or software not specifically stipulated in the product operations manual; and
   (d) Any indirect or consequential costs associated with the incorrect use or misuse of the hardware, its connection to the internet or any other device.
6. To claim warranty service, when required, you should:
   - Telephone Panasonic's Customer Care Centre on 132600 or visit our website referred to below and use the Service Centre Locator for the name/address of the nearest Authorised Service Centre.
   - Send or take the product to a Panasonic Authorised Service Centre together with your proof of purchase receipt as a proof of purchase date. Please note that freight and insurance to and / or from your nearest Authorised Service Centre must be arranged by you.
   - Note that home or pick-up/delivery service is available for the following products in the major metropolitan areas of Australia or the normal operating areas of the nearest Authorised Service Centres:
     - Plasma/LCD televisions / displays (screen size greater than 103 cm)
7. The warranties hereby conferred do not extend to, and exclude, any costs associated with the installation, de-installation or re-installation of a product, including costs related to the mounting, de-mounting or remounting of any screen, (and any other ancillary activities), delivery, handling, freighting, transportation or insurance of the product or any part thereof or replacement of and do not extend to, and exclude, any damage or loss occurring by reason of, during, associated with, or related to such installation, de-installation, re-installation or transit.

Panasonic Authorised Service Centres are located in major metropolitan areas and most regional centres of Australia, however, coverage will vary dependant on product. For advice on exact Authorised Service Centre locations for your product, please telephone our Customer Care Centre on 132600 or visit our website and use the Service Centre Locator.

In addition to your rights under this warranty, Panasonic products come with consumer guarantees that cannot be excluded under the Australian Consumer Law. If there is a major failure with the product, you can reject the product and elect to have a refund or to have the product replaced or if you wish you may elect to keep the goods and be compensated for the drop in value of the goods. You are also entitled to have the product repaired or replaced if the product fails to be of acceptable quality and the failure does not amount to a major failure.

If there is a major failure in regard to the product which cannot be remedied then you must notify us within a reasonable period by contacting the Panasonic Customer Care Centre. If the failure in the product is not a major failure then Panasonic may choose to repair or replace the product and will do so in a reasonable period of time from receiving notice from you.

THIS WARRANTY CARD AND THE PURCHASE DOCKET (OR SIMILAR PROOF OF PURCHASE) SHOULD BE RETAINED BY THE CUSTOMER AT ALL TIMES

If you require assistance regarding warranty conditions or any other enquiries, please visit the **Panasonic Australia** website **www.panasonic.com.au** or contact by phone on **132 600**

If phoning in, please ensure you have your operating instructions available.

Panasonic Australia Pty. Limited
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1 Innovation Road, Macquarie Park NSW 2113

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