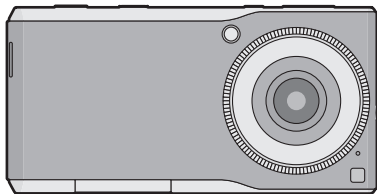


Panasonic®

Basic Operating Instructions Digital Camera

Model No. **DMC-CM1**



LUMIX

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

More detailed operating instructions are available in "Operating Instructions for advanced features (PDF format)". To read it, download it from the website.

<http://panasonic.jp/support/dsc/oi/index.html?model=DMC-CM1&dest=EB>

- Click the desired language.
- You will need Adobe Reader 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. (As of September 2014)

<http://www.adobe.com/products/acrobat/readstep2.html>



Web Site: <http://www.panasonic.com>

Model number suffix "EB" denotes UK model.

EB

SQT0437
F1014MR0

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	In the card slot cover
AC Adaptor	Bottom

CE0168!

Declaration of Conformity (DoC)

Hereby, "*Panasonic Corporation*" declares that this product is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.

Customers can download a copy of the original DoC to our R&TTE products from our DoC server:

<http://www.ptc.panasonic.eu>

Contact to Authorized Representative:

Panasonic Marketing Europe GmbH, Panasonic Testing Centre, Winsbergring 15, 22525 Hamburg, Germany

This product is designed for use in the following countries.

AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR

This product is intended for general consumer. (Category 3)

This product on purpose to connect to access point of 2.4 GHz or 5 GHz WLAN.

Wi-Fi Use in European Economic Area and Switzerland and Turkey:

Operation of the device in the 5 GHz frequency band is restricted to indoor use only.

The usage of wireless LAN may be restricted depending on the country of use. Check any relevant laws and regulations in the country or the region before use.

For power consumption information and for guidance on the requirements of Commission Regulation (EC) No.1275/2008 amended by (EU) No.801/2013, refer to "Operating Instructions for advanced features (PDF format)".

■ About the AC adaptor

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 unit is in the standby condition when the AC adaptor is connected. The primary circuit is always "live" as long as the AC adaptor is connected to an electrical outlet.

■ About the battery

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

Regulatory information

■ This product and your health

This product, like other radio devices, emits radio frequency electromagnetic energy. Because this product operates within the guidelines found in radio frequency safety standards and recommendations, we believe this product is safe for use by consumers. These standards and recommendations reflect the consensus of the scientific community and result from deliberations of panels and committees of scientists who continually review and interpret the extensive research literature.

In some situations or environments, the use of this product may be restricted by the proprietor of the building or responsible representatives of the organization.

These situations may for example include:

- Using this product on board of airplanes, or
- In any other environment where the risk of interference to other devices or services is perceived or identified as harmful.

If you are uncertain of the policy that applies on the use of wireless devices in a specific organization or environment (e.g. airports), you are encouraged to ask for authorisation to use this product prior to turning on the product.

■ Information to the user

We are not responsible for any radio or television interference caused by unauthorised modification of this product.

The correction of interference caused by such unauthorised modification will be the responsibility of the user.

We and our authorised resellers or distributors are not liable for damage or violation of government regulations that may arise from failing to comply with these guidelines.



These symbols indicate separate collection of waste electrical and electronic equipment or waste batteries. More detailed information is contained in "Operating Instructions for advanced features (PDF format)".



Additional safety precautions

■ Posted facilities

Turn off the product when in hospitals, health care facilities, or any facility where posted notices require you to do so.

Hospitals and health care facilities may be using equipment that could be sensitive to external RF energy.

■ Pacemakers

- Medical device manufacturers recommend a minimum separation of 15 cm (0.49 feet) between a wireless device and an implanted medical device, such as a pacemaker or implanted cardioverter defibrillator, to avoid potential interference with the medical device.
- Persons with pacemakers:
 - Should ALWAYS keep this product more than 15 cm (0.49 feet) from their pacemaker when this product is turned ON;
 - Should use the ear opposite the pacemaker to minimise the potential for interference;
 - Should not carry this product in a breast pocket;
 - Should turn off the product immediately if there is any reason to suspect that interference is taking place.

■ Hearing aids

Some digital wireless products may interfere with some hearing aids.

In the event of such interference, consult the manufacturer of your hearing aid to discuss alternatives.

■ Other medical devices

If you use any other personal medical device, consult the manufacturer of your device to determine if it is adequately shielded from external RF energy.

Your physician may be able to assist you in obtaining this information.

■ Aircraft

Turn off the product after boarding an aircraft, when instructed by flight staff.

Obey instructions from flight staff regarding the use of the product in flight.

Using this product in an aircraft may be hazardous to the aircraft's operation and disrupt wireless communication, and may also be illegal.

■ **Potentially explosive atmosphere**

- Turn off the product in areas where a potentially explosive atmosphere exists and obey all signs and instructions.
Sparks in such areas could cause an explosion or fire resulting in injury or even death.
- Areas with potentially explosive atmosphere may include fueling areas, chemical plants, below deck on boats, fuel or chemical transfer or storage facilities, vehicles using petroleum or natural gas, or areas where the atmosphere contains particles such as grain, dust, or metallic powders, and any other area where you would normally be advised to turn off your vehicle engine.

■ **Electronic devices**

This product receives and transmits radio frequency signals while switched on. Most electronic equipment is shielded from RF signals. However, certain electronic equipment may not be shielded against the RF signals from this product. Therefore, the use must be restricted in certain situations to avoid interference.

■ **Driving**

- Give full attention to driving.
Driving safely is your first responsibility.
- Pull off the road and park before placing or answering a call.
It is unsafe to operate the product while driving.
- Check the laws and regulations in the areas where you drive, and always obey them.
- Only qualified personnel should install the product in a vehicle.
Check regularly that the product is securely mounted in your vehicle and operating properly.
- Do not place or install the product in the area over the air bag or in the air bag deployment area.
If the air bag inflates, serious injury and/or damage could result.
- RF signals may affect improperly installed or inadequately shielded electronic systems in motor vehicles.
Consult the manufacturer (or its representative) of the vehicle and any equipment that has been added to the vehicle regarding the use of mobile products.
- Use hands-free operation, if available and legally permitted.

■ **Emergency communications**

Never rely solely on a mobile product for essential or emergency communications. Network connections can be affected by remaining battery level, radio signals, service networks, and other conditions, and as a result, emergency communications cannot be guaranteed in all conditions.

■ Antenna

- Do not replace the antenna.
Unauthorised antennas, modifications, or attachments could damage the product.
- Do not touch or cover the antenna area while the product is on.
Call quality, power levels, and the overall performance of the product may be affected.

■ Intended use

- This product is not intended for use as, or as part of, nuclear equipment/systems, air traffic control equipment/systems, aircraft cockpit equipment/systems, medical devices or accessories^{*1}, lifesupport systems or other equipment/devices/systems that are involved with ensuring human life or safety.

Panasonic will not be responsible for any liability resulting from the use of this product arising out of the foregoing uses.

*1 As defined by the European Medical Device Directive (MDD) 93/42/EEC.

- Panasonic cannot guarantee any specifications, technologies, reliability, safety (e.g., Flammability/Smoke/Toxicity/Radio Frequency Emission, etc.) requirements related to aviation standards and medical equipment standards that differ from the specifications of our COTS (Commercial-Off-The-Shelf) products.
- This product is not intended for use in medical equipment including life-support systems, air traffic control systems, or other equipment, devices or systems that are involved with ensuring human life or safety.

Panasonic cannot be held responsible in any way for any damages or loss resulting from the use of this unit in these types of equipment, devices or systems, etc.

Contents

Information for Your Safety	2
Regulatory information	5
Additional safety precautions	6

Preparation

Standard Accessories	10
Names and Functions of	
Main Parts	11
Inserting/Removing the microSIM	
card (optional)	13
About the Built-in Memory/	
the microSD Card (optional)	15
Charging	17

Basic

Turning the unit on/off	18
Using the touch screen	19
Home screen	20
Status bar	21
Using apps	22
Entering Text	24
Android™ default settings	25

Connecting to networks

Connecting to mobile networks	26
Connecting to Wi-Fi® networks	27

Camera

Launching the camera	28
Viewing Recording screens	28
Selecting the Recording Mode	30
Taking a Still picture	31
Recording Motion Picture	35
Viewing pictures and	
motion pictures	36

Email/Web browser/Phone

People	37
Email/Gmail™	38
Launching the web browser	40
Phone	41

Others

Troubleshooting	43
System updates	45
Cautions for Use	46
SAR (Specific Absorption Rates)	52
Specifications	53



About the symbols in the text



: Indicates a general notification.

In these operating instructions, steps for setting a menu item are described as follows.

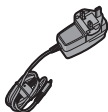
From the Home screen →

[] → [].

Standard Accessories

Check that all the accessories are supplied before using this unit.

Product numbers correct as of September 2014. These may be subject to change.



AC Adaptor
VSK0827

- microSD Memory Card, microSDHC Memory Card and microSDXC Memory Card are indicated as **microSD card** in the text.
- **microSIM card and microSD card are optional.**
- Consult the dealer or Panasonic if you lose the supplied accessories. (You can purchase the accessories separately.)

Sales and Support Information

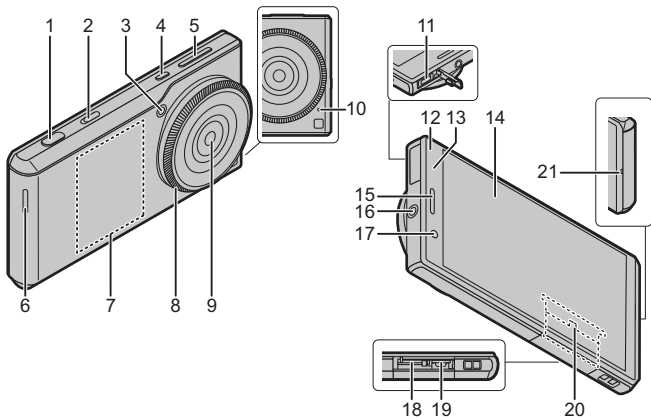
Customer Communications Centre

- For customers within the UK: 0844 844 3899
- For customers within Ireland: 01 289 8333
- Monday – Friday 9:00 am – 5:00 pm (Excluding public holidays).
- For further support on your product, please visit our website: www.panasonic.co.uk

Direct Sales at Panasonic UK

- Order accessory and consumable items for your product with ease and confidence by phoning our Customer Communications Centre Monday – Friday 9:00 am – 5:00 pm (Excluding public holidays).
- Or go on line through our Internet Accessory ordering application at www.pas-europe.com.
- Most major credit and debit cards accepted.
- All enquiries transactions and distribution facilities are provided directly by Panasonic UK.
- It couldn't be simpler!
- Also available through our Internet is direct shopping for a wide range of finished products. Take a browse on our website for further details.

Names and Functions of Main Parts

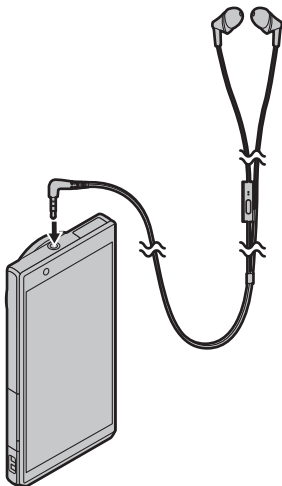



1	Shutter button (P31)
2	Camera selector switch (P28)
3	Flash/AF Assist Lamp
4	[P] button (P18)
5	[▲]/[▼] (Volume adjustment) buttons
6	Speaker
7	NFC antenna
8	Control ring (P32)
9	Outward facing camera (P28)
10	Microphone
11	microUSB terminal (P17)
12	Ringtone lamp/Charging lamp (P17)

	Light sensor/Proximity sensor Do not cover the sensor area with your hand or paste stickers over it in order to prevent incorrect operation of the sensor.
13	
14	Display (P19)
15	Earpiece
16	Earphone terminal (P12)
17	Inward facing camera
18	microSIM card slot (P13)
19	microSD card slot (P16)
	Nameplate Stowable nameplate. Contains information such as the mobile identification number.
20	
21	Mouthpiece/Microphone

Stereo headset (optional)

You can use a headset (optional) to listen to music or watch videos. If the headset (optional) has a microphone, you can also use it to talk on the phone.



- Check that the headset (optional) plug is completely inserted into the earphone terminal.
- Excessive sound pressure from earphones and headphones can cause hearing loss.
-  To prevent possible hearing damage, do not listen at high volume levels for long periods.
- Being unable to hear sounds in your environment may lead to accidents.

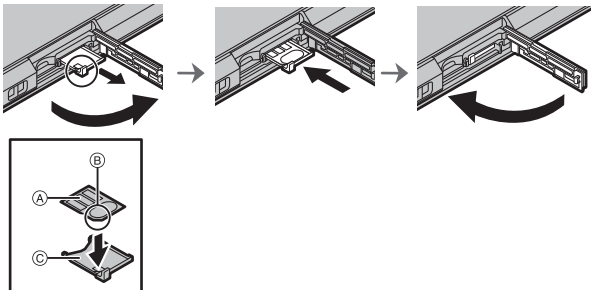
Inserting/Removing the microSIM card (optional)

A microSIM card is an integrated circuit that stores the customer's phone number and other information.

Calls and messages (SMS) cannot be sent or received unless the microSIM card is inserted.

If you have inserted/removed the microSIM card, do not deliberately touch or damage the IC terminals.

- 1** Open the card slot cover with the control ring face of this unit facing upwards.
- 2** Hold the hooks of the tray with your fingertips and pull it out horizontally.
- 3** Mount the microSIM card on the tray ③ with the IC face ① on top.
 - Take note of the notch ② on the microSIM card and mount it in the correct direction.
- 4** Check the orientation of this unit and insert the tray horizontally into the slot of the microSIM card.
- 5** Close the card slot cover.





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

About the mobile identification number

This unit has a specific mobile identification number (A).

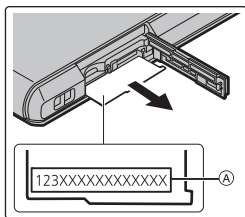
The mobile identification number is verified as follows.

To verify the number on-screen:

- 1 From the Home screen → [App Drawer] → [Settings].
- 2 [About phone] → [Status] → check the [IMEI] item.

To verify the number by checking the nameplate:

- 1 Open the card slot cover.
- 2 Remove the microSIM card tray.
- 3 Pull the nameplate towards you.
 - Be careful as the nameplate may be damaged if it is pulled too hard.



About the Built-in Memory/the microSD Card (optional)

About Built-in Memory

- **Memory size: Approx. 10 GB**
- The access time for the built-in memory may be longer than the access time for a microSD card.
- You can copy the recorded pictures to a microSD card. (P36)

About microSD cards that can be used with this unit

The following microSD cards which conform to the SD standard can be used with this unit.

(These cards are indicated as **microSD card** in the text.)

- **microSD Memory Card (64 MB to 2 GB)**
- **microSDHC Memory Card (4 GB to 32 GB)**
- **microSDXC Memory Card (64 GB to 128 GB)**

- Check the corresponding manufacturer, capacity and other latest compatibility information from the following support site.

<http://panasonic.jp/support/global/cs/dsc/>

(This Site is English only.)

Note that this does not guarantee compatibility with all operations.

- microSDHC Memory Cards and microSDXC Memory Cards can be used only with their compatible devices.
- A message prompting to format the microSD card may be displayed when connecting the microSD card to other devices, but do not format.

■ About the motion picture recording and SD speed class

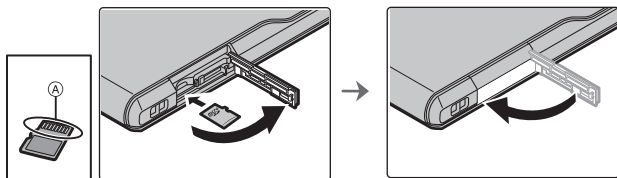
According to the [Rec Quality] (P35) of a motion picture, the required microSD card differs. Use a microSD card that meets the following rating of the SD Speed Class.

- SD Speed Class is the speed standard regarding continuous writing. Check via the label on the microSD card, etc.
- The SD speed class represents the level of performance of microSD cards. The SD speed class does not serve as a guarantee of performance for all operations.

[Rec Quality]	SD Speed class	Label example
FHD/HD/VGA/1:1	Class 4 or higher	CLASS 4 4
4K	Class 10	CLASS 10 10

■ Inserting/Removing the microSD card

- 1 **Open the card slot cover, ensure that the connection terminal of the microSD card is facing down, and insert it firmly in the correct direction until it makes a “click” sound.**
 - (A) Do not touch the connection terminals of the microSD card.
 - To remove, push in the card until it makes a “click” sound and then pull it out straight.
- 2 **Close the card slot cover.**

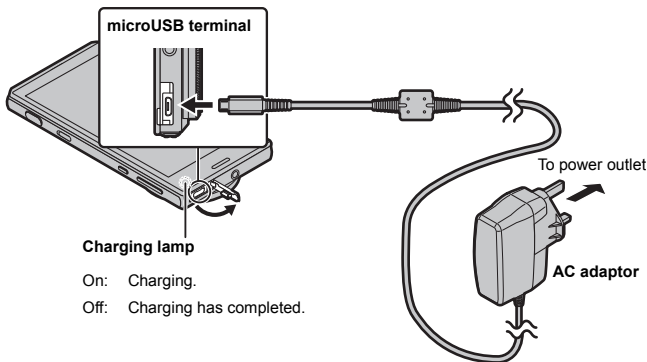


- The data on the built-in memory or the microSD card may be damaged or lost due to electromagnetic waves, static electricity or breakdown of this unit or the microSD card. We recommend storing important data on a PC etc.
- Keep the microSD Card out of reach of children to prevent swallowing.

Charging

Connect the unit and AC adaptor to charge.

- **The battery is not charged when this unit is shipped. Charge the battery before use.**
- For details on charging time, refer to **P53**.



- 1 Open the microUSB terminal cover, check the direction of the AC adaptor cable terminal, and insert it into the microUSB terminal.
- 2 Insert the AC adaptor power plug into the power outlet.

■ When charging is complete

- 1 Remove the AC adaptor power plug from the power outlet.
- 2 Remove the AC adaptor cable terminal from the unit.

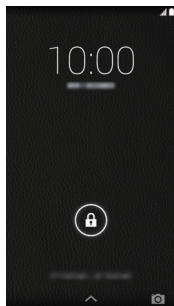


- The unit and AC adaptor may become warm while charging, however this is not a malfunction.
- Remove the AC adaptor from the power outlet after completely charging the battery in order to save power and maintain battery performance.
- The shape of the AC adaptor power plug and power outlet may differ depending on each country/region.
- Do not use any other AC adaptors except the supplied one.
- Do not leave any metal items (such as clips) near the contact areas of the power plug.
- When you start charging an empty battery, the charging lamp may flash. This is not a malfunction. The charging lamp stops flashing and lights up after the battery is charged for a while.

Turning the unit on/off

Turn on the unit by pressing [⏻] for 2 seconds or more.

- The lock screen will be displayed after a short time.
- The default settings screen will be displayed when you turn the unit on for the first time. **(P25)**
- Press [⏻] to enter/release sleep mode, when the unit is turned on.



■ To turn the unit off

Press [⏻] for 1 second or more → [Power off] → [OK].

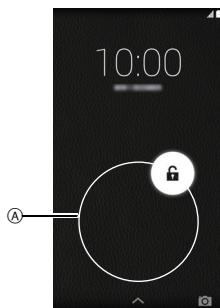
■ To restart

Press [⏻] for 1 second or more → [Reboot] → [OK].

Release the lock screen

Slide [🔒] until the guide (white line on the outer circumference) ①.

- If the [Screen lock] settings have been changed, use the method configured to release the lock.



Using the touch screen

The unit features a touch screen, which you can operate by touching directly with your fingers.

- Peel off the sheet pasted to the touch screen when first bought before use.
- The touch screen is designed to be lightly touched with a finger.
Do not press the touch screen strongly with your finger or press objects with sharp tips (claws/ ball point pens/pins etc.) against it.
- The touch screen may not work even when touched in the following cases. Please note that they may also result in incorrect operations.
 - Operating with gloves on your hand
 - Operating with your fingertips
 - Operating with foreign objects on top of the operating surface
 - Operating with a protective sheet, seal, etc. pasted on top
 - Operating with the touch screen wet
 - Operating with your fingers wet with sweat or water

Tapping

Tap an item or icon to select it.



Double-tapping

Tap the touch screen quickly two times when you want to zoom in and out of webpages, etc.



Tapping and holding

Tap an item or icon without releasing your finger. Use this to display a context menu.



Flicking

Moving your finger quickly across the touch screen will move back and forth through numerous pictures.



Dragging

Tap an item or icon without releasing your finger and slide it.



Scrolling

Flick/drag your finger around the screen to display a hidden area.



Pinching

When displaying a webpage or picture, use two fingers to push the screen apart and zoom in (pinch out), or bring them together to zoom out (pinch in).




Switching between vertical and horizontal viewing modes

The unit switches the screen between vertical and horizontal viewing modes depending on its motion sensor that can detect the unit's direction and movement.

Home screen

The Home screen is the main screen for launching apps.

Tapping [

Control icons

Control icons are displayed at the bottom of the screen.






- ❶ Return to the previous screen.
- ❷ Display the Home screen.
- ❸ Display a thumbnail of recently used apps. Tapping a thumbnail launches that app.

Home screen operations

- ❶ Google Search™
- ❷ Area for adding shortcuts, widgets or folders.
- ❸ Displays the current page if there are numerous home screen pages.
The page can be switched by flicking in a horizontal direction.
- ❹ Frequently used shortcuts or folders
Drag frequently used shortcuts to store them here.
- ❺ Displays the app list. (P22)



Moving an item	<ol style="list-style-type: none"> ❶ Tap and hold an item. ❷ Drag the item to the desired location.
Adding a widget	<ol style="list-style-type: none"> ❶ Tap and hold the background → []. ❷ Tap and hold the widget you want to add. ❸ Drag the item to the desired location.
Adding a shortcut	<ol style="list-style-type: none"> ❶ Tap []. ❷ Tap and hold the app you want to add. ❸ Drag the item to the desired location.
Deleting an item	<ol style="list-style-type: none"> ❶ Tap and hold an item. ❷ Drag the item and drop it on [Remove].
Changing the wallpaper	<ol style="list-style-type: none"> ❶ Tap and hold the background → []. ❷ Select the desired wallpaper. ❸ Tap [Set wallpaper].

Status bar

The status bar displays icons that let you know the status of the unit, and other indicators.



List of main status icons

	Network strength
	Battery level
	Battery is charging
	Airplane mode is on
	Vibrate mode is on
	Silent mode is on
	Microphone is muted

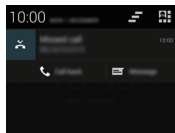
List of main notification icons

	New Gmail™ received
	New email received
	New SMS message received
	New voicemail received
	Open (unsecured) wireless network is available
	Missed call
	Call in progress
	Call is on hold

■ Open the notifications panel

The notifications panel allows you to check notifications such as missed calls and incoming email messages.

Drag the status bar down.



■ Set to vibration mode

Press [🔊] for 1 second or more →

■ Set to silent mode


Press [🔊] for 1 second or more →

■ Configure airplane mode

This turns off all wireless features of the unit to prevent interference with aircraft equipment.

Press [🔊] for 1 second or more → [Aeroplane mode].

Using apps

- 1 From the Home screen → [.
- 2 Tap the app that you want to launch.



■ List of main app

	[Camera]		[Settings]
	Google Calendar™		[Phone]
	[Gallery]		[People]
	Google Maps™		Google Chrome™
	[Email]		Google Search™
	Google Voice Search™		Google Play™ Store
	[Clock]		



- The app list spans multiple pages.
The page can be switched by flicking in a horizontal direction.
- The control method or screen displays of apps installed on the unit are subject to change without notice due to updates.

Google Play Store

Search for fun games or useful apps in the [Play Store], and install them on the unit.

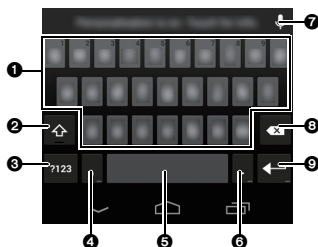
- 1 From the Home screen → [] → [].
- 2 Searching and installing apps.

Deleting installed apps

- 1 From the Home screen → [] → [] → [Apps].
- 2 [DOWNLOADED] tab → tap the app to delete.
- 3 [Uninstall] → [OK].

Entering Text


The keyboard is displayed automatically when you tap a text entry field.



- 1 Tap to enter text.
- 2 Tap to change the character case.
Double-tap to turn on the caps lock.
- 3 Tap to switch the type of text entered.
- 4 Tap to enter text.
Tap and hold to configure the input options.
- 5 Tap to enter a space.
- 6 Tap to enter text.
Tap and hold to enter symbols.
- 7 Tap and use voice input.
- 8 Delete the character before the cursor.
- 9 Tap to enter a line break.
Tap and hold to enter pictograms.

Android™ default settings



The first time you turn the unit on after purchase, follow the on-screen instructions and configure the language and Wi-Fi settings.

- 1 **Select language** → [].
- 2 **Follow the on-screen instructions to configure various settings.**
- 3 **After configuring various settings, read through description on diagnosis information** → **[Disallow]/[Allow]**.
 - Information concerning the condition of the terminal and information required for resolution is sent to the manufacturing source e.g. during system update or when an error occurs. This information is used for quality and service improvement purposes only.
Data communication charges may be incurred when sending data.
 - The tutorial screen is displayed when the default settings are completed.
Confirm the details on the screen, and tap [OK].

Account settings

Adding an account allows you to synchronise data with services such as Google™.

- Setting up a Google account will allow apps to be downloaded from the Google Play Store, and backup various types of data.
Setting up a Google account is recommended.

- 1 **From the Home screen** → [] → [].
- 2 **[Add account]** → **tap the services to add.**
 - Follow the on-screen instructions and enter account information.





Connecting to mobile networks

2G/3G/LTE networks can be used to access email, messages and the internet. For most mobile network operators, the connection is configured automatically when a microSIM card is inserted.



If the connection is not configured automatically, an access point must be configured manually.

Check with the mobile network operator with whom you signed the network contract for the information required when setting the access points.

Configure access point

- 1 From the Home screen → [] → [].
- 2 [More...] → [Mobile networks] → [Access Point Names] → [].
- 3 [Name] → enter the name for the new settings → [OK].
- 4 [APN] → enter the access point name → [OK].
- 5 Enter other information as required.
 - The details to enter differ depending on your mobile network operator.
- 6 [] → [Save].

Check the current access point

- 1 From the Home screen → [] → [].
- 2 [More...] → [Mobile networks] → [Access Point Names].
 - If multiple access points are configured, the currently connected access point will be indicated.

Connecting to Wi-Fi® networks

This unit is compatible with Wi-Fi networks.

You can use email and the internet with wireless LAN services.

Turning on the Wi-Fi function

1 From the Home screen → [App Drawer] → [Settings].

2 Turn on [Wi-Fi].

- [Wi-Fi] is displayed in the status bar if connection settings have already completed.



- When Wi-Fi is turned on, the Wi-Fi connection will take priority even if a mobile network connection is enabled.
- When Wi-Fi is turned off, the unit will automatically switch to the mobile network connection.

Connecting to a Wi-Fi network

1 From the Home screen → [App Drawer] → [Settings].

2 Tap [Wi-Fi].

- A list of detected Wi-Fi networks is displayed.

3 Select a Wi-Fi network.

- If a Wi-Fi network that is protected with security is selected, enter the password and tap [Connect].
- If the desired Wi-Fi network is not displayed, add the Wi-Fi network manually.



- After you connect to a Wi-Fi network, the unit will automatically switch to that Wi-Fi network the next time it is within range.
- Some Wi-Fi networks require you to enter a user name and password when accessing a webpage.
For details, contact the network administrator.

■ Adding a Wi-Fi network manually

1 From the Home screen → [App Drawer] → [Settings].

2 [Wi-Fi] → [Add].

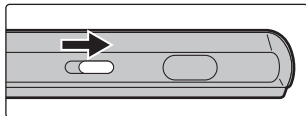
3 Enter the network SSID.

4 Select the network's security type and enter its password → [Save].

Launching the camera


Slide and release the camera selector switch.

- Home screen → [] also starts the camera.



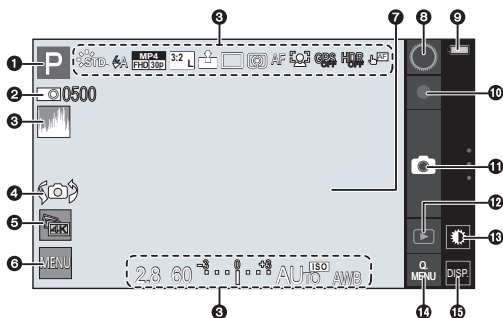
To end the camera














Releasing the camera selector switch after sliding it, or using the steps below returns to the Home screen.

- 1 Flick the right edge of the screen to the left.
- 2 Tap [].



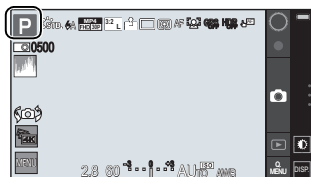
Viewing Recording screens



①	Recording Mode (P30)		
②	Storage location/Number of recordable pictures/Available recording time • m: minute, s: second		
③	Indicates the setting status. • An explanation of the main icons is given here as an example. Refer to the “Operating Instructions for advanced features (PDF format)” for details.		
		Photo Style	 HDR
		Flash Mode	 Touch Settings
		Recording quality	 Histogram
		Aspect Ratio/Picture size	 Programme Shift
		Quality (P34)	2.8 Aperture value (P31)
		Drive Mode	60 Shutter speed (P31)
		Metering Mode (P34)	1...1...1 Exposure compensation value/ Brightness/ Manual Exposure Assistance
	AF	Focus Mode	AUTO ^{ISO} ISO sensitivity
		AF Mode (P34)	AWB White Balance/ White Balance Fine Adjustment/ Colour (Fine adjustment of the White Balance)
		Location Logging	
④	Camera Mode (outward facing camera/inward facing camera) switch		
⑤	4K Pre-Burst		
⑥	Menu		
⑦	AF area (P31)		
⑧	Control ring menu (P32)		
⑨	Battery indication		
⑩	Start/End recording motion picture (P35)		
⑪	Picture taking		
⑫	Image playback		
⑬	Switch to High Brightness Mode		
⑭	Quick menu		
⑮	Switching display		

Selecting the Recording Mode

- 1** From the Recording screen
→ **Recording Mode icon.**



- 2** Select the Recording Mode.

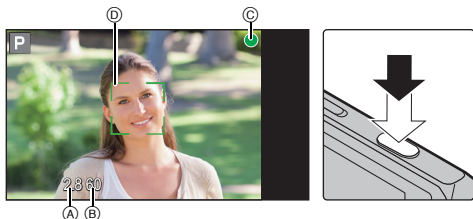
	Intelligent Auto Mode The subjects are recorded using settings automatically selected by this unit.
	Intelligent Auto Plus Mode Allows you to adjust the brightness and colour hue when in Intelligent Auto Mode.
P	Programme AE Mode Records at the aperture value and shutter speed set by this unit.
A	Aperture-Priority AE Mode The shutter speed is automatically determined by the aperture value you set.
S	Shutter-Priority AE Mode The aperture value is automatically determined by the shutter speed you set.
M	Manual Exposure Mode The exposure is adjusted by the aperture value and the shutter speed which are manually adjusted.
C1 C2	Custom Mode Use this mode to take pictures with previously registered settings.
	Scene Guide Mode This mode allows you to take pictures that match the scene being recorded. This mode allows you to select any of the 22 scenes including [Clear Portrait], [Distinct Scenery], and [Clear Nightscape].
	Creative Control Mode Record while checking the image effect. This mode allows you to select any of the 18 image effects including [Old Days], [High Key], and [Dynamic Monochrome].
	Panorama Shot Mode This mode allows you to take panorama pictures. This mode allows you to select any of the 13 image effects including [Old Days], [High Key], and [Dynamic Monochrome].

Taking a Still picture

- Make sure that your fingers or hair do not cover the lens when taking pictures.
- Be careful not to move the unit when you press the shutter button.
If the unit moves, it may cause blurry images.
Dim areas become blur easily in particular.

1 Select the Recording Mode. (P30)

2 Press the shutter button halfway to focus.

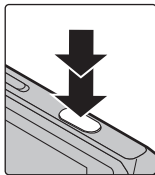


- Aperture value and shutter speed are displayed.
(Flashes in red if the correct exposure is not achieved.)

- (A) Aperture value
(B) Shutter speed

Focus	When the subject is focused	When the subject is not focused
Focus indication (C)	On	Blinks
AF area (D)	Green	Red
Sound	Beeps 2 times	—

3 Press the shutter button fully (push it in further), and take the picture.

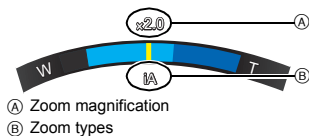
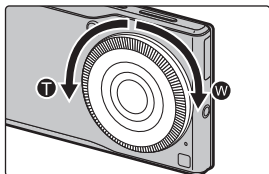


Taking Pictures with the Zoom


You can zoom-out to record landscapes etc. in wide angle (Wide) or zoom-in to make people and objects appear closer (Tele).
(Maximum magnification: 4×)

1 [○] → [Q]. (P29)

2 Operate the control ring.







Menus convenient for taking pictures

From the Recording screen → [MENU] →  [Rec] → menu item.

[Drive Mode]

You can change what this unit will do when you press the shutter button.

 ([Single])	When the shutter button is pressed, only one picture is recorded.
 ([Burst])	Recordings are made in succession while the shutter button is pressed.
 ([Auto Bracket])	Press the shutter button to take 3 pictures continuously in accordance with the exposure compensation range.
 ([Self Timer])	When the shutter button is pressed, recording takes place after the set time has elapsed.

[Aspect Ratio]

This allows you to select the aspect ratio of the pictures to suit printing or the playback method.

[4:3]	[Aspect Ratio] of a 4:3 TV
[3:2]	[Aspect Ratio] of a 35 mm film camera
[16:9]	[Aspect Ratio] of a high-definition TV, etc.
[1:1]	Square aspect ratio

[Picture Size]

A picture taken with this unit is saved as picture data of up to approximately 20,1 million pixels.

We recommend to decrease the number of pixels for recordings that will be printed to smaller paper or when uploading to a Website or other Internet service.






Picture size and number of recordable pictures

● Aspect ratio [3:2], Quality [SIF]

	L (20M)	M (10M)	S (5M)	XS (2.5M)
microSD Card (8 GB)	720	1310	2290	6010
microSD Card (32 GB)	2910	5310	9250	24300





■ [Quality]

Set the compression rate at which the pictures are to be stored.

	[[Fine]]	A JPEG image in which image quality was given priority.
	[[Standard]]	A standard image quality JPEG image.
	[[RAW+Fine]]	You can record a RAW image and a JPEG image () simultaneously.
	[[RAW]]	You can only record RAW images.




■ [AF Mode]

This allows the focusing method that suits the positions and number of the subjects to be selected.

	[[Face Detection]]	The unit automatically detects the person's face. (max. 15 areas)
	[[AF Tracking]]	Focus can be adjusted to a specified subject.
	[[23-Area]]	Up to 23 points for each AF area can be focused.
	[[1-Area]]	The unit focuses on the subject in the AF area on the centre of the screen.

■ [Metering Mode]

Type of optical measurement to measure brightness can be changed.

	[[Multi Metering]]	This is the method in which the unit measures the most suitable exposure by judging the allocation of brightness on the whole screen automatically. Usually, we recommend using this method.
	[[Center Weighted]]	This is the method used to focus on the subject on the centre of the screen and measure the whole screen evenly.
	[[Spot]]	This is the method to measure the subject in the spot metering target.

Recording Motion Picture

Motion pictures can be recorded in the MP4 format.

Audio will be recorded in stereo.

- When recording a motion picture, do not cover the microphone with your fingers or other objects.
- You can operate the zoom even when recording motion pictures.
- If zoom is used before recording a motion picture, the settings are cancelled and the angle of view will change drastically.
- The focus is fixed at the position where the recording of the motion picture starts.
To adjust the focus while recording, tap [AF] to refocus.
- Still picture recording is also possible during the motion picture recording by fully pressing the shutter button.
- When recording motion pictures, the sounds of camera operations such as the control ring or button operations may also be recorded.
- If the temperature of the unit increases when taking pictures under high temperature conditions or taking pictures continuously, stop recording and end the camera app.

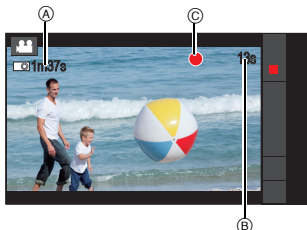
1 From the Recording screen

→ [●].

(A) Available recording time

(B) Elapsed recording time

- Recording of motion picture appropriate for each mode is possible.
- The recording state indicator (red) (C) will flash while recording motion pictures.



2 Tap [■].

■ Configuring the recording quality

From the Recording screen → [MENU] → [Motion Picture] → [Rec Quality] → select the item.

Item	Size	Frame rate	Bit rate
[MP4 4K 15p]	3840×2160	15p	50 Mbps
[MP4 FHD 30p]	1920×1080	30p	20 Mbps
[MP4 HD 30p]	1280×720	30p	10 Mbps
[MP4 VGA 30p]	640×480	30p	4 Mbps
[MP4 1:1 30p]	640×640	30p	4 Mbps

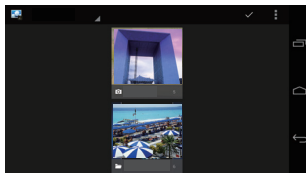
- The maximum continuous recordable time of a motion picture is 29 minutes and 59 seconds, which is equivalent to a file size of approximately 4 GB.
You can check the recordable time on the screen. (With [4K 15p]/[FHD 30p], the file size becomes larger, causing the recordable time to become shorter than 29 minutes and 59 seconds)

Viewing pictures and motion pictures

1 From the Recording screen

→ [].

- The Album list screen is displayed.
- Can also be displayed by selecting Home screen → [] → [].
- During initial start-up, a screen to confirm whether to turn on the automatic backup to the Google drive is displayed.



2 Select album.

- The File list screen is displayed.

3 Tap picture or motion picture.

- The picture or motion picture is displayed in full screen.
- Flick in a horizontal direction to display the next/previous picture or motion picture.
- Pinch out/pinch in or double tap to zoom in/zoom out of a picture.
- Tap [] to set the screen brightness to the highest level.
- Tap [] to display the picture information.
- Tap [] to playback a motion picture.

■ Deleting pictures and motion pictures

From the Full screen display → [] → [OK].

- Tapping [] from the Album list screen or File list screen → [Select album] or [Select item] can delete multiple items.

■ Copying, moving

Copy or move pictures or motion pictures to the unit or microSD card, or create folders.

1 From the Full screen display → [] → [Move]/[Copy].

- Tapping [] from the Album list screen or File list screen → [Select album] or [Select item] can move/copy multiple items.

2 Select move or copy destination.

- Create a new folder to move or copy items to.

People

Importing contacts from storage

- Data can be synchronised using your Google account.

- 1 From the Home screen → [App Drawer] → [Contacts].
- 2 [Menu] → [Import/export] → [Import from storage] → [OK].
 - Select the account and file if there are several accounts and files.

Displaying contacts

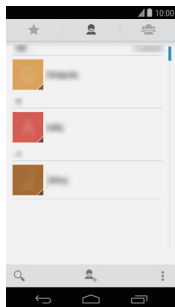
From the Home screen → [App Drawer] → [Contacts].

- The Contact list screen is displayed.

■ Making calls/sending emails

From the Contact list screen → tap contact → tap telephone number or email address.

- Tap the image icon of the contact, and tap the phone or email icons to make a call or send an email.





Backing up contacts







- 1 From the Contact list screen → [Menu] → [Import/export].
- 2 Tap [Export to storage]/[Share visible contacts].
- 3 Follow the guidance on the screen.

Email/Gmail™



Configuring an email account


- 1 From the Home screen → [] → [].
- 2 Enter the email address and password → [Next].
- 3 Follow the guidance on the screen.

Creating an email and sending

- 1 From the Home screen → [] → [].
- 2 Tap [].
- 3 Tap [To] and enter the email address of the recipient.
 - Tap [] → [Add Cc/Bcc] to enter Cc or Bcc.
- 4 Tap [Subject] and enter a subject.
- 5 Tap [Compose email] and enter a message.
 - To send an email with attachments, tap [] → [Attach picture]/[Attach video], and select the file to attach.
- 6 Tap [].

Reading received email

1 From the Home screen → [] → [].


- The Email inbox list screen is displayed.
- To update the email inbox, tap [] → [Refresh].

2 Tap the email to display.

■ Replying to emails

1 From the Email inbox list screen → **tap the email to reply to.**

2 Tap [].

- To reply to all, tap [] → [Reply all].



3 Enter message → [].

Gmail

Gmail can be sent and received using a Google account.

- Each Gmail operation is similar to email.

See “Creating an email and sending” on **P38** and the above-mentioned “Reading received email” for the details on how to send and receive email.

From the Home screen → [] → [].

Launching the web browser

The unit can be used to browse web pages, manage bookmarks and download images and other files.

Viewing a web page

1 From the Home screen → [App Drawer] → [Chrome].

2 Enter the web address in the address bar → [Go].

■ Returning to the previous page

[Menu] → [Back].

- Tapping [Back] will also return to the previous page.

■ Jumping to the previous page

[Menu] → [Forward].

- Tapping after using the [Back] or [Forward] to return to the previous page jumps to the page that was being viewed immediately before.

Searching for a web page

1 From the Home screen → [App Drawer] → [Chrome].

2 Enter the search text in the address bar → [Go].






Viewing a web page from the history

1 From the Home screen → [App Drawer] → [Chrome].







2 [Menu] → [History] → tap the web page.

Phone

Making a call

- 1 From the Home screen → [] → [].
- 2 Enter the telephone number → [].
 - If the incorrect telephone number has been entered, tap [] to clear the entered number.
- 3 Tap [] after the call has ended.

Operations while on a call

- **Adjusting the call volume**
When during a call → Press []/[].
- **Displaying the screen during a call**
The screen will fade out when pressing the unit against your ear during a call due to the proximity sensor. This not only helps to limit battery consumption, but also prevents unintended operations during a call.
The screen is displayed when moving the unit away from your ear.
Press [] if the unit is during sleep.
- **Putting a call on hold**
When during a call → [].
- **Muting a call**
The other person will not be able to hear your voice during the call.
When during a call → [].
- **Using speakerphone**
The other person's voice will audible over the speakerphone.
When during a call → [].

■ Entering numbers during a call

Operation required if numbers need to be entered during a call, such as when sending a key signal to navigate through voice guidance menus or other purposes.


When during a call →  → enter the number.

Making a call from the call log

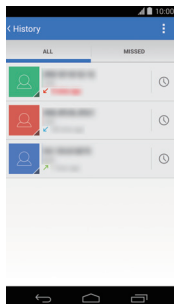
1 From the Home screen → → .

- The Call log screen is displayed.
- The following icons are used in the call log to indicate different types of calls.

: Outgoing calls

: Answered calls



: Missed calls



2 Tap the phone number or name of the person to call.

Answering a call

1 When a call is being received, drag to .

- To reject the call, drag  to .

2 Tap after the call has ended.

Troubleshooting

- Please also refer to the “Operating Instructions for advanced features (PDF format)”, which describes more detailed information.

Cannot turn the unit on.

- Check that the battery is adequately charged.

Touch screen does not operate even when tapping it.

- Check that the unit is not in sleep mode.
 - If the unit is in sleep mode, press the [⏻] to release sleep mode.

The unit does not operate as expected.

- Check the following methods.
 - Turn the unit on/off.
 - Turn the unit off, remove the microSIM card and reinsert it.
 - Run an update. (P45)
 - With the microUSB terminal disconnected from an AC adaptor or other devices, press and hold the [⏻] for approximately 10 seconds until the unit restarts. The unit vibrates as it restarts.
 - Reset the unit.

Cannot charge the battery.

- Check the connection of the AC adaptor. (P17)
- Check the surrounding temperature.

The battery usage time is short.

- The usage time becomes shorter due to various factors, including how often the unit is used, the configuration settings in the unit and the network status.

The unit becomes warm.

- The unit may become warm during use or while charging. This is not a problem from an operational perspective, and should be left as is.

Cannot receive calls.

- The reception may be weak in the area.
→ Move to another area.
- Check that you are connected properly to the mobile network.

Calls are being dropped.


- The reception may be weak in the area.
→ Move to another area.
-

System updates

If the software needs to be updated, update files can be obtained to update the unit.

- Perform system update in an area with good reception without moving around.
- Perform system update with sufficient battery strength remaining.
- During system update, telephone calls, messages, various communication functions and other functions cannot be used.
- Update files cannot be obtained during international roaming, or when outside the sphere of communications.
- System update may take a while.
- Do not turn off the unit during system update. System update may fail.
- During system update, information specific to this unit (e.g. model, manufacturing number etc.) will be sent to the system update server of Panasonic.
Panasonic will not use the information sent for purposes other than system update.
- The unit will restart after a system update.
If a PIN code has been set, this has to be entered in the PIN code input screen displayed during start-up.
- Some of the settings may be initialised when a system update is performed. In this case, configure the settings one more time.
- You cannot return to the previous version if a system update is performed.
- System update can be carried out with data such as the contact list, pictures, mails, download data, etc. that is registered in the unit remaining intact. However, data protection may not be possible depending on the condition of the customer's terminal (malfunctions, damages, water ingress, etc.). We recommend that you take a backup copy of necessary data. However, please note that there is some data such as download data etc. for which backup copies cannot be taken.
- If system update fails, the unit may not start up and all functions indicated as [Software update failed.] may be disabled. Contact the dealer or Panasonic in this case.

When an update is required

[]] is displayed on the notification panel if system update is required.

- 1** Open the notifications panel → tap the notification.
- 2** Follow the guidance on the screen.

Cautions for Use

■ About the operating environment

Do not leave the unit in the following areas, as there is the risk of damage.

- Near electronic products. The image may become distorted, and static may be introduced.
- Extremely hot or cold areas.

■ Optimal use of this unit

- **Do not drop or subject the unit to shock when carrying it around.**

- **Do not place the unit in the back pocket of your trousers.**

Doing so may cause damage to the unit when sitting down.

- **This unit is not dust/splash/water proof.**

Avoid using this unit in places with a lot of dust, water, sand, etc.

Liquid, sand and other foreign material may get into the space around the lens, buttons, etc. Be particularly careful since it may not just cause malfunctions, but it may also become irreparable.

– Places with a lot of sand or dust.

– Places where water can come into contact with this unit, such as when using it on a rainy day or at the beach.

- **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 smartphones or other 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 affected and does not operate correctly, disconnect the AC adaptor, reconnect it and turn on the unit.

- **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.

- **Do not connect the unit to products or parts that it is not compatible with.**

- **Do not paint the unit, or cover it with thick stickers.**
Doing so may interfere with correct operation.
- **Do not spray this unit with insecticides or volatile chemicals.**
 - If the unit is sprayed with such chemicals, the body of the unit may be damaged and the surface finish may peel off.
- **Do not keep rubber or plastic products in contact with this unit for a long period of time.**
- **This unit is equipped with GPS functionality, however must not be used as aircraft, vehicle or personal navigation device, or precision surveying device.**
Panasonic shall not be liable for all damages suffered as a result of inaccurate measurements and information that are caused by external factors (including running out of battery power) e.g. use of this unit outside of its intended purpose, or malfunctions and wrong operations of this unit etc.
- **When the unit OS is updated, the functions or operation procedures of the unit may change, or certain apps may cease operating.**
- **Check the safety and security of software before downloading or installing software.**
There is the risk of damage or information leakage due to malware or viruses, and the volume of the unit may increase significantly.

■ **About the lens, screen**

- **Do not press the lens with excessive force.**
- **Do not leave the unit with the lens facing the sun as rays of light from the sun may cause it to malfunction. Also, be careful when placing the unit outside or near a window.**
- **Do not place objects on top of the screen, or press sharp objects against it.**
Doing so may scratch the surface of the screen.

■ **When using peripheral devices**

To prevent damage to peripheral devices, adhere to the following points.
Also refer to the operating instructions of peripheral device for details.

- **Use peripheral devices that comply with the specifications of the unit.**
- **Check the shape and direction of the connector and connect it correctly.**
- **If a device has difficulty connecting, do not force the terminal, but instead check the shape, orientation, pin layout or other features of the terminal.**

■ Cleaning

When cleaning the unit, remove the AC adaptor cable terminal from the unit and wipe the unit with a dry, soft cloth.

- When the unit is soiled badly, it can be cleaned by wiping the dirt off with a wrung wet cloth, and then with a dry cloth.
- Do not use solvents such as benzine, thinner, alcohol, kitchen detergents, etc., to clean the unit, since it may deteriorate the external case or the coating may peel off.
- When using a chemical cloth, be sure to follow the accompanying instructions.

■ About the personal information

- Always check the recipient before sending messages or attachments, in order to prevent leakage of personal information.

■ Battery



- The battery is a consumable item.
While performance depends on the usage status of the unit, if the amount of time that the unit can be used becomes drastically shorter even after charging it, the battery may require replacement.
Contact the dealer or Panasonic for replacement of the battery.
- When the battery is replaced, your personal information will be deleted and settings will return to their default settings. We recommend that you take a backup copy of important information.
- The charging and usage time of the battery differs with the usage environment.
- Charge the battery in an area where the temperature is between 5 °C and 35 °C (41 °F and 95 °F).
- If the unit is not used for an extended period of time (1 month or more), discharge the battery (by using the unit) until the battery level is 30% to 40%, and store in a cool, dry place.
- The unit's battery is a rechargeable lithium ion battery.

Battery used for this unit

Name: Lithium ion (Li-ion) rechargeable battery

Nominal voltage: DC 3.8 V

■ Returning the unit for repair

- Contact the dealer or Panasonic for repair.
- When the unit is repaired, your personal information will be deleted and settings will return to their default settings. We recommend that you take a backup copy of important information.
- To protect your personal information, before returning the unit for repair, reset it from the Home screen → [] → [] → [Backup & reset] → [Factory data reset].

■ Disposing of this unit

- **When disposing of the used product, perform [Factory data reset] to completely erase all data, remove the built-in battery and recycle it.**
For details on how to remove the battery, see P50.
- Please make sure that the battery is disposed of at an officially assigned location, if there is one in your country.

Do not disassemble this unit other than when disposing of this unit.

This is the rechargeable battery for this unit.

Do not use other than with this unit.

Do not charge the rechargeable battery when it has been removed.

- **Do not place in fire or heat it.**
- **Do not puncture with nails, subject it to impact, disassemble or modify it.**
- **Do not charge, use or leave in hot places such as next to fires or in extremely hot weather.**

This may cause leaking, overheating, fire or rupture.

- **Do not touch metal to the + and – terminals.**
- **Do not store or carry together with necklaces or hairpins, etc.**
- **Do not heat in microwaves or ovens, etc.**
- **Do not put into water.**

This may cause leaking, overheating, fire or rupture.

If a leak should occur, by no means touch the liquid with bare hands.

If the liquid gets on the body or clothes, wash well with water. If the liquid gets into your eyes, there is a danger of blindness. Do not rub the eyes; after washing immediately with clean water, consult your physician.

Keep removed screws etc. out of the reach of small children.

If accidentally ingested there will be adverse physical effects.

- Should you suspect that such an object has been ingested, consult your physician immediately.

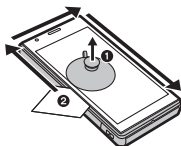
How to remove the battery

When disposing of the used product, perform [Factory data reset] to completely erase all data.

This figure describes the disposal of this unit, it is not instruction for repair. If disassembled, repair is not possible.

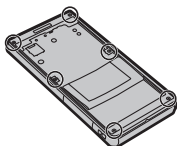
- Disassemble after the battery runs out.
- **Wearing gloves is recommended during disassembly to prevent injury.**
- If it cannot be removed smoothly, contact the dealer or Panasonic.
- Keep disassembled parts out of reach of children.

- 1 Use a suction cap (commercially available) to lift up the LCD panel, and insert a thin object such as a card between the panel and the unit to remove the LCD panel.**

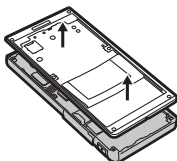


- 2 Remove all screws (6) in the image below.**

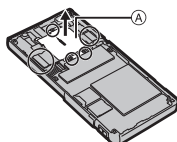
- Use a cross-slot screwdriver (commercially available).



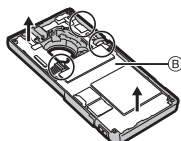
- 3 Remove the case.**



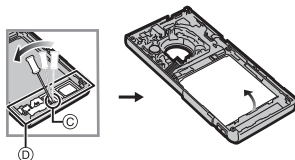
- 4 Remove the screws (3), cover and flexible board connectors (2), and remove the lens tube module (A).**



- 5 Remove the flexible board connectors (3), and remove the board (B).**



- 6 Insert a flathead screwdriver (commercially available) into the slot antenna holder (C), lift up the antenna holder (D) and remove it, and then remove the battery.**



- **Regarding the handling of used batteries**
 - Insulate the terminals with cellophane tape or similar.
 - Do not disassemble.

■ **When used during overseas travel etc.**

- The usage of GPS etc., may be restricted depending on the country or the region.

This unit has a GPS function, so check with the embassies or travel agencies etc. prior to your overseas travel regarding any restrictions on cameras with a built-in GPS function.

■ **About the microSIM card, microSD card**

- Turn the unit off when removing the microSIM card or microSD card.
Failure to do so may cause data loss, or damage to the microSIM card, microSD card or the unit.
- Making backups of the data stored on the microSIM card or microSD card is recommended to prevent data loss.

SAR (Specific Absorption Rates)

This product is a radio transmitter and receiver.

When it is on, it receives and transmits RF energy.

When you are on a phone call, the system handling your call controls the power level at which the product transmits.

This product is designed not to exceed the limits for exposure to radio waves recommended by international guidelines.

These guidelines were developed by the independent scientific organization ICNIRP and include safety margins designed to assure the protection of all persons, regardless of age and health.

The guidelines use a unit of measurement known as the Specific Absorption Rate, or SAR.

The SAR limit for mobile devices is 2 W/kg and the highest SAR value for this product when tested at the ear was 0.223 W/kg^{*1}.

For body-worn operation, this product has been tested and meets RF exposure guidelines when used with a Panasonic accessory designated for this product and when used with an accessory that contains no metal and that positions the mobile device a minimum of 10 mm (0.033 feet) from the body.

In this case, the highest tested SAR value is 0.302 W/kg.

Use of other accessories may not ensure compliance with RF exposure guidelines.

As SAR is measured utilising the product's highest transmitting power the actual SAR of this product while operating is typically below that indicated above.

This is due to automatic changes to the power level of the product to ensure it only uses the minimum level required to reach the network.

The World Health Organization has stated that present scientific information does not indicate the need for any special precautions for the use of mobile devices.

They note that if you want to reduce your exposure then you can do so by limiting the length of calls or using a hands-free device to keep the mobile device away from the head and body.

*1 The tests are carried out in accordance with international guidelines for testing.

Specifications

Specifications are subject to change without notice.

Digital Camera: Information for your safety

Power Source:	3.8 V (when using the battery) 5.0 V/9.0 V (when using the supplied AC adaptor)
Power Consumption:	3.1 W (When recording) 2.4 W (When playing back)

Dimensions (excluding the projecting parts)		Approx. 135.4 mm (W)×68.0 mm (H)× 21.1 mm (Body: 15.2 mm) (D) [Approx. 5.33" (W)×2.68" (H)×0.83" (Body: 0.60") (D)]
Mass		Approx. 203 g/0.45 lb Approx. 204 g/0.45 lb (with microSIM card and microSD card)
Memory	ROM	16 GB
	RAM	2 GB
	External memory	microSD/microSDHC/microSDXC (Up to 128 GB)
SIM card slot		microSIM card slot×1
Continuous standby time^{*1}	3G (WCDMA)/ 4G (LTE)	Approx. 630 hours
	2G (GSM)	Approx. 560 hours
Continuous talk time^{*2}	3G (WCDMA)	Approx. 12 hours
	2G (GSM)	Approx. 11 hours
Charging time^{*3}		Approx. 150 min
Screen	Method	TFT
	Size	4.7"
	Number of dots (pixels)	Approx. 6,220,000 dots (Full HD: 1920×1080 RGB)
Touch screen		Capacitive (10-point multi-touch)

*1 Approximate time when radio reception is normal.

The continuous standby time may be shortened by the charging condition, functional settings, operating environment such as atmospheric temperature etc., reception status in the area of use and so on.

*2 Approximate talk time when radio reception is normal.

*3 Approximate charging time when the battery is drained and the unit is turned off.
The charging time is longer if the unit is turned on during charging.

Outward facing camera	Effective pixels	Approx. 20,100,000 pixels	
	Picture size (Max.)	Approx. 20,000,000 pixels	
	Zoom	Still picture	Max. 4×
		Motion pictures	Max. 4×
	Image sensor	1" MOS sensor, total pixel number 20,900,000 pixels, Primary colour filter	
	Lens	f=10.2 mm (35 mm film camera equivalent: 28 mm) F2.8 to F11	
	Focus range	10 cm (0.33 feet) to ∞	
	Shutter system	Electronic shutter+Mechanical shutter	
	Minimum Illumination	Approx. 9 lx (when i-low light is used, the shutter speed is 1/30th of a second)	
	Shutter speed	Still picture	60 to 1/16000th (with the [Shutter Type] set to [Auto]) 60 to 1/2000th (with the [Shutter Type] set to [Mechanical Shutter])
		Motion pictures	1/30th seconds to 1/16000th of a second
	Exposure (AE)	Programme AE (P)/Aperture-Priority AE (A)/ Shutter-Priority AE (S)/Manual Exposure (M)	
	Metering mode	Multiple/Centre weighted/Spot	
	Recording file format	Still picture	RAW/JPEG (based on "Design rule for Camera File system", based on "Exif 2.3" standard) ^{*4}
		Motion pictures	MP4 [Audio compression format: AAC (2 ch)]

*4 Based on "Exif 2.2" standard when taking pictures in Panorama Shot Mode or when recording motion picture.

Inward facing camera	Effective pixels	Approx. 1,070,000 pixels	
	Picture size (Max.)	Approx. 920,000 pixels	
	Recording file format	Still picture	JPEG (based on “Exif 2.2” standard)
		Motion pictures	MP4 [Audio compression format: AAC (2 ch)]
Microphone		Stereo	
Speaker		Monaural	
Operating temperature		5 °C to 35 °C (41 °F and 95 °F)	
Operating humidity		10%RH to 80%RH	
Earphone mic terminal		Ø 3.5, 3-pole/4-pole	
Interface		microUSB (USB 2.0 High Speed)	
Sensors		Electronic compass/Accelerometer/Angular velocity/ Illumination/Proximity/Atmospheric pressure	
Display languages		German/English (UK)/English (US)/Spanish/French/ Japanese	
Input method	Entering text	Google keyboard/Japanese IME (Japanese)	
	Audio input	Using the Google Voice Search function	
Music playback		AAC/AAC+/enhanced AAC+/AMR-NB/WB/MP3/FLAC/ MIDI/Vorbis/WAVE	
Motion picture playback		H.263/MPEG4/H.264	

Wireless LAN	Compliance standard	IEEE 802.11a/b/g/n/ac (standard wireless LAN protocol)	
	Frequency range used (central frequency)	2.4 GHz	2412 MHz to 2472 MHz (1 to 13ch)
		5.2 GHz/ 5.3 GHz	5180 MHz to 5320 MHz W52: 36, 40, 44, 48ch W53: 52, 56, 60, 64ch
		5.6 GHz	5500 MHz to 5700 MHz 100, 104, 108, 112, 116, 120, 124, 128, 132, 136, 140ch
	Security	Client	Wi-Fi compliant WEP, WPA™/WPA2™ (encryption method: TKIP/AES, authentication method: PSK)
		Tethering	Wi-Fi compliant WPA/WPA2 (encryption method: TKIP/AES, authentication method: PSK)
	Access method	Infrastructure mode	
Bluetooth® function	Compatible version	Conforms to Bluetooth standards Ver. 4.0	
	Compatible profile	HFP/HSP/OPP/A2DP/AVRCP/SPP/PBAP/HID/MAP/HOGP	
	Frequency range used	2402 MHz to 2480 MHz	

Cellular functions

Compliance standard	4G (LTE)	3GPP TS 36.521-1 clause 6 and 7
	3G (WCDMA)	3GPP TS 34.121-1 clause 5 and 6
	2G (GSM)	3GPP TS 51.010 clause 12, 13 and 14
Communication method	4G (LTE)	Supported Band: 1, 3, 4, 5, 7, 8, 20
	3G (WCDMA)	Supported Band: I, IV, V, VIII HSDPA Category: 24 HSUPA Category: 6
	2G (GSM)	Supported Band: 850, 900, 1800, 1900 GPRS Class: 10 EGPRS Class: 10

NFC

Compliance standard	RW operations: ISO 14443 Peer to Peer operations: ISO 18092
----------------------------	--

GPS

Compliance standard	GPS, GLONASS
----------------------------	--------------

AC Adaptor (Model No. VSK0827):

Information for your safety



Compliance standard:	Quick Charge 2.0 Class A
Input:	110 V to 240 V ~, 50/60 Hz, 0.5 A
Output*5:	5.0 V === 1.8 A, 9.0 V === 1.8 A, 12.0 V === 0.9 A (for Panasonic system)

*5 When connected to the unit, the AC adaptor supports 5.0 V === 1.8 A and 9.0 V === 1.8 A.

- microSDXC Logo is a trademark of SD-3C, LLC.
- Adobe is a trademark or registered trademark of Adobe Systems Incorporated in the United States and/or other countries.
- Google, Android, Google Play and other marks are trademarks of Google Inc.
- The Bluetooth® word mark and logos are registered trademarks owned by Bluetooth SIG, Inc. and any use of such marks by Panasonic Corporation is under licence. Other trademarks and trade names are those of their respective owners.
- The Wi-Fi CERTIFIED™ Logo is a certification mark of Wi-Fi Alliance®.
- The Wi-Fi Protected Setup™ Identifier mark is a certification mark of Wi-Fi Alliance®.
- "Wi-Fi" is a registered trademark of Wi-Fi Alliance®.
- "Wi-Fi Protected Setup™", "WPA™", and "WPA2™" are trademarks of Wi-Fi Alliance®.
- Other names of systems and products mentioned in these instructions are usually the registered trademarks or trademarks of the manufacturers who developed the system or product concerned.



- This product is licenced under the MPEG-4 patent portfolio licence and AVC patent portfolio licence for the personal use of a consumer or other uses in which it does not receive remuneration to (i) encode video in compliance with the MPEG-4 Visual Standard and AVC Standard ("MPEG-4/AVC Video") and/or (ii) decode MPEG-4/AVC Video that was encoded by a consumer engaged in a personal activity and/or was obtained from a video provider licenced to provide MPEG-4/AVC Video. No licence is granted or shall be implied for any other use. Additional information may be obtained from MPEG LA, L.L.C. See <http://www.mpegla.com>.
- This product is manufactured or sold under licence from InterDigital Technology Corporation.

- This product contains open source software licenced in compliance with GNU General Public Licence, Version 2 (GPL v2), GNU Lesser General Public Licence (LGPL), and other licences.

The programme is free software; you can copy it, redistribute it, and modify it under the terms of the GPL v2 or LGPL as published by the Free Software Foundation.

At least three (3) years from delivery of products, Panasonic Corporation will give to any third party who contacts us at the contact information provided below, for a charge no more than our cost of physically performing source code distribution, a complete machine-readable copy of the corresponding source code covered under GPL v2 and LGPL.

Contact Information

oss-cd-request@gg.jp.panasonic.com

Source code is also freely available to the public via the web site listed below.

<http://panasonic.net/avc/oss/index.html>

Please note that we cannot respond to any inquiries regarding the source code. You cannot download the source code from a mobile phone. Use your PC to download the source code.

For more details on the relevant software (including licence information of GPL v2 and LGPL), refer to the information included in your product on the following screen:

From the Home screen → [⋮] → [⚙️] → [About phone] → [Legal information] → [Open-source licences].

- Furthermore, this product contains the following software:
 - the software developed by Apache Software Foundation and licenced under Apache Licence (v.2.0)
 - the software licenced under the Free Type Project Licence
 - ICU Licence-ICU 1.8.1 and later Copyright © 1995–2011 International Business Machines Corporation and others
 - the software licenced under the MIT-Licence
 - the software developed by the Independent JPEG Group

For more details on the relevant software (including licence information), follow these steps:

From the Home screen → [⋮] → [⚙️] → [About phone] → [Legal information] → [Open-source licences].

EU



Manufactured by: Panasonic Corporation
Kadoma, Osaka, Japan
Importer for Europe: Panasonic Marketing Europe GmbH
Panasonic Testing Centre
Winsbergring 15, 22525 Hamburg, Germany

Panasonic Corporation

Web Site: <http://panasonic.net>

© Panasonic Corporation 2014