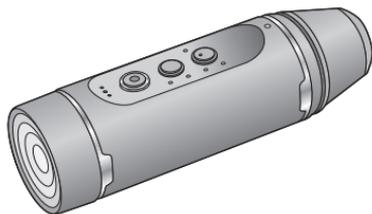


# Panasonic<sup>®</sup>

## Basic Owner's Manual Wearable Camera

Model No. **HX-A1M**



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

More detailed operating instructions are available in "Owner's Manual (PDF format)". To read it, download it from the website.

<https://www.pavc.panasonic.co.jp/hdw/oi/A1/>

- Click the desired language.

- \* You will need Adobe Reader to browse or print the Owner's Manual (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 March 2015)

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



Register online at [www.panasonic.com/register](http://www.panasonic.com/register) (U.S. customers only)

If you have any questions, visit :

U.S.A. : [www.panasonic.com/support](http://www.panasonic.com/support)

Canada : [www.panasonic.ca/english/support](http://www.panasonic.ca/english/support)

SQT0885-1

## Dear Customer,

### Thank you for choosing Panasonic!

You have purchased one of the most sophisticated and reliable products on the market today. Used properly, we're sure it will bring you and your family years of enjoyment. Please take time to fill in the information on the right.

The serial number is on the tag located on the side of the terminal section of your camera. Be sure to **retain this manual** as your convenient camera information source.

Date of Purchase \_\_\_\_\_

Dealer Purchased From \_\_\_\_\_

Dealer Address \_\_\_\_\_

Dealer Phone No. \_\_\_\_\_

Model No. \_\_\_\_\_

Serial No. \_\_\_\_\_

## Safety Precautions

### WARNING:

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

- Do not let water or other liquids drip or splash inside the unit.
- Do not expose accessories (battery pack, battery charger, AC adaptor, SD memory card and etc.) to rain, moisture, dripping or splashing.
- Do not place objects filled with liquids, such as vases, on accessories.
- Use only the recommended accessories.
- Do not remove covers.
- Do not repair this unit by yourself. Refer servicing to qualified service personnel.

### 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.
- Do not obstruct this unit's ventilation openings with newspapers, tablecloths, curtains, and similar items.
- Do not place sources of naked flames, such as lighted candles, on this unit.

Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

**THE FOLLOWING APPLIES ONLY IN THE U.S.A.**

**FCC Note:**

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

**FCC Caution:** To assure continued compliance, follow the attached installation instructions and use only shielded interface cables with ferrite core when connecting to computer or peripheral devices.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

**Declaration of Conformity**

Trade Name:	Panasonic
Model No.:	HX-A1M
Responsible Party:	Panasonic Corporation of North America Two Riverfront Plaza, Newark, NJ 07102-5490
Support Contact:	<a href="http://www.panasonic.com/contactinfo">http://www.panasonic.com/contactinfo</a>

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.



**THE FOLLOWING APPLIES ONLY IN CANADA.**

CAN ICES-3(B)/NMB-3(B)

## U.S.A./CANADA CONSUMERS: ATTENTION:



A lithium ion battery that is recyclable powers the product you have purchased. Please call 1-800-8-BATTERY for information on how to recycle this battery.

### THE FOLLOWING APPLIES ONLY IN THE U.S.A.

**FCC ID : ACJ-HX-A1M**

#### FCC CAUTION

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This transmitter must not be co-located or operated in conjunction with any other antenna or transmitter.

The available scientific evidence does not show that any health problems are associated with using low power wireless devices. There is no proof, however, that these low power wireless devices are absolutely safe. Low power Wireless devices emit low levels of radio frequency energy (RF) in the microwave range while being used. Whereas high levels of RF can produce health effects (by heating tissue), exposure of low-level RF that does not produce heating effects causes no known adverse health effects. Many studies of low-level RF exposures have not found any biological effects. Some studies have suggested that some biological effects might occur, but such findings have not been confirmed by additional research. HX-A1M has been tested and found to comply with FCC radiation exposure limits set forth for an uncontrolled environment and meets the FCC radio frequency (RF) Exposure Guidelines.

### THE FOLLOWING APPLIES ONLY IN CANADA.

**IC : 216A-HXA1M**

This device complies with RSS-210 of the IC Rules.

Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference,
- (2) This device must accept any interference received, including interference that may cause undesired operation of the device.

The available scientific evidence does not show that any health problems are associated with using low power wireless devices. There is no proof, however, that these low power wireless devices are absolutely safe. Low power Wireless devices emit low levels of radio frequency energy (RF) in the microwave range while being used. Whereas high levels of RF can produce health effects (by heating tissue), exposure of low-level RF that does not produce heating effects causes no known adverse health effects. Many studies of low-level RF exposures have not found any biological effects. Some studies have suggested that some biological effects might occur, but such findings have not been confirmed by additional research. HX-A1M has been tested and found to comply with IC radiation exposure limits set forth for an uncontrolled environment and meets RSS-102 of the IC radio frequency (RF) Exposure rules.

## ■ Cautions for use

**This unit and the microSD card become warm during use. This is not a malfunction.**

**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 generated by microprocessors may adversely affect this unit, disturbing the pictures and/or sound.
- If this unit is adversely affected by electromagnetic equipment and stops functioning properly, press the reset button.

**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.

**About connecting to a PC**

- Do not use any other USB cables except the supplied one.

**Make sure to use the supplied cable. Do not extend the cable.**

**Do not spray insecticides or volatile chemicals onto this unit.**

- If this unit is sprayed with such chemicals, its body may be marred and the surface finish may peel off.
- Do not leave rubber or plastic products in contact with this unit for a long time.

**Cleaning**

- Before cleaning, pull the USB cable from the PC, and then wipe this unit with a soft, dry cloth.
- If this unit is very dirty, dip a cloth in water and squeeze firmly, and then wipe this unit with the damp cloth. Next, dry this unit with a dry cloth.

- Use of benzine, paint thinner, alcohol, or dishwashing liquid may alter the camera body or peel the surface finish. Do not use these solvents.
- When using a chemical dust cloth, follow the instructions that came with the cloth.

**When you are not going to use this unit for an extended time**

- Store this unit in a cool place with minimal humidity, and with a constant temperature where possible (recommended temperature: 15 °C to 25 °C (59 °F to 77 °F), recommended humidity: 40%RH to 60%RH).
- Always remove the card from this unit.
- When storing this unit for an extended time, it is recommended that you charge it once every year.
- The battery discharges slowly even if this unit is not used. The remaining battery level will decrease when this unit is not used for an extended time.
- When storing this unit in a cupboard or cabinet, it is recommended that you place a desiccant (silica gel) in with it.

**About the battery**

**The battery used in this unit is a rechargeable lithium-ion battery. It is susceptible to humidity and temperature and the effect increases the more the temperature rises or falls.**

**Due to the waterproof, dustproof, and anti-shock design of this product, it is not possible to replace the built-in battery. If the operating time is very short even after the battery has been recharged, the battery has worn out.**

**About the microSD card**

**When the microSD card is being accessed (when the access lamp is lit or flashing), do not perform the following:**

- Remove the microSD card
  - Turn the unit off
  - Insert and remove the USB cable
  - Expose the unit to vibrations or shock
- Keep the glasscover (night mode), glasscover (normal shooting), terminal cover (waterproof) and terminal cover (USB connection) out of reach of children to prevent swallowing.

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## (Important) About the Waterproof/ Dustproof and Anti-shock Performance of this unit

### Waterproof/Dustproof Performance

This unit's waterproof/dustproof rating complies with the "IP68" rating. Provided the care and maintenance guidelines described in this document are strictly followed, this unit can operate underwater, to a depth not exceeding 1.5 m (5.0 feet) for a time not exceeding 30 minutes. \*1

### Anti-shock Performance

This unit has cleared a test conducted by Panasonic, which complies with MIL-STD 810F Method 516.5-Shock (a drop test performed from a height of 1.5 m (5.0 feet) onto 3 cm (0.10 feet) thick plywood). \*2

**This does not guarantee no destruction, no malfunction, or waterproofing in all conditions.**

- \*1 This means that this unit can be used underwater for specified time in specified pressure in accordance with the handling method established by Panasonic.
- \*2 "MIL-STD 810F Method 516.5-Shock" is the test method standard of the U.S. Defense Department, which specifies performing drop tests from a height of 122 cm (4.0 feet), at 26 orientations (8 corners, 12 ridges, 6 faces) using 5 sets of devices, and passing the 26 orientation drops within 5 devices. (If failure occurs during the test, a new set is used to pass the drop orientation test within a total of 5 devices.)  
Panasonic's test method is based on the above "MIL-STD 810F Method 516.5-Shock".  
However, the drop height was changed from 122 cm (4.0 feet) to 150 cm (5.0 feet) dropping onto 3 cm (0.10 feet) thick plywood. This drop test was passed.  
(Disregarding appearance change such as loss of paint or distortion of the part where drop impact is applied.)

## ■ Handling of this unit

**Waterproofing is not guaranteed if the unit is subject to an impact as a result of being hit or dropped etc. If an impact to this unit occurs, it should be inspected (subject to a fee) by a Panasonic's Service center to verify that the waterproofing is still effective.**

- The waterproof performance may be degraded due to the strong water pressure when this unit is used deeper than 1.5 m (5.0 feet) underwater.
- When this unit is splashed with detergent, soap, hot spring, bath additive, sun oil, sun screen, chemical, etc., wipe it off immediately.
- Do not rinse with running water, such as tap water.
- Waterproof function of this unit is for sea water and fresh water only.
- Any malfunction caused by customer misuse, or mishandling will not be covered by the warranty.
- Cards are not waterproof. Do not handle with a wet hand. Also, do not insert wet card into this unit.
- Do not attach/remove the terminal cover (waterproof) or glasscover when your hands are wet or water droplets are present on this unit. If water droplets get inside this unit, the terminals may rust and cause malfunctions. Other types of damage may also result.
- If you attach/remove the terminal cover (waterproof) or glasscover in a sandy or dusty place, sand or other foreign objects may adhere to the internal components, threaded portions (portions of this unit, terminal cover (waterproof) and glasscover with helical threads), rubber seals or other parts of this unit. Be extra careful when attaching parts to this unit. If foreign objects are caught in it, water may leak in and cause malfunctions and other problems.

- Do not leave this unit for a long period of time in places where temperature is very low (at high altitude etc.) or very high (inside a car under strong sunlight, close to a heater, on the beach, etc.) waterproof performance may be degraded.
- The inside of this unit is not waterproof. Water leakage will cause malfunction.
- **If any foreign objects are found on the internal components, threaded portions, rubber seals or other parts of this unit, remove them with a soft dry cloth.**
- **If any liquid such as water droplets are found on the internal components, threaded portions, rubber seals or other parts of this unit, wipe it off with a soft dry cloth. Do not attach/remove the terminal cover (waterproof) or glasscover near water, underwater, with wet hands or when this unit is wet. Doing so may cause water to leak in.**
- The alert sound and shutter sound may be lowered when using this unit. This is for ensuring the waterproof performance of this unit, and not a malfunction. Attaching/removing the terminal cover (waterproof) or glasscover will restore the original volume.
- This unit is not waterproof when the terminal cover (USB connection) is in use. In this case, do not use this unit underwater or touch it with wet hands.

## ■ About Condensation (When the lens is fogged up)

Condensation occurs when there is a change in temperature or humidity, such as when the unit is taken from outside or a cold room to a warm room. Please be careful, as it may cause the lens to become soiled, moldy, or damaged.

When taking the unit to a place which has a different temperature, if the unit is accustomed to the room temperature of the destination for about one hour, condensation can be prevented. (When the difference in temperature is severe, place the unit in a plastic bag or the like, remove air from the bag, and seal the bag.)

When condensation occurs, turn off this unit, remove the terminal cover (waterproof) and glasscover, and leave this unit for approximately 2 hours. Once this unit adjusts to the ambient temperature, the condensation will disappear naturally.

## Check before using underwater

**Do not attach/remove the terminal cover (waterproof) or glasscover in sandy or dusty locations, near water or with wet hands. If sand or dust adheres to this unit, water may leak in.**

- 1 Rotate the terminal cover (waterproof) and glasscover in the directions of the arrows to remove them.**



- 2 Check that no foreign objects are found on the internal components, threaded portions and rubber seals of this unit.**
  - If there are any foreign objects, such as lint, hair, sand, etc., water will leak within a few seconds causing malfunction.
- 3 If there is foreign objects adhering to the unit, remove it with a soft dry cloth.**
  - Check to see if any foreign objects such as lint is adhering to this unit.
  - Wipe it off with a dry soft cloth if there is any liquid. It may cause water leaks and malfunction if you use this unit with liquid adhered.
  - Use a blower (commercially available) to remove foreign objects that cannot be removed with a dry soft cloth.

**4 Check that the terminal cover (waterproof), glasscover and rubber seals are neither cracked nor deformed.**

- Be sure to read the supplied leaflet about the rubber seals.

**5 Rotate the terminal cover (waterproof) and glasscover until they are attached firmly.**

- Rotate them in the opposite directions of Step 1.
- Tighten them firmly to ensure that they are not loose.
- To prevent water seeping into this unit, be careful not to trap foreign objects such as liquids, sand, hair or dust etc.

### Using this unit underwater

- Use this unit underwater at a depth of down to 1.5 m (5.0 feet) with the water temperature between 0 °C and 35 °C (32 °F and 95 °F).
- Do not use this unit at a depth of over 1.5 m (5.0 feet).
- Do not use it in hot water over 35 °C (95 °F) (in a bath or hot spring).
- Do not use this unit underwater not longer than 30 minutes continuously.
- Do not attach/remove the terminal cover (waterproof) or glasscover.
- Do not apply shock to this unit underwater. (Waterproof performance may not be maintained, and there is a chance of water leak.)
- Do not dive into the water holding this unit. Do not use this unit in a location where the water will splash strongly, such as rapid flow or waterfall. (Strong water pressure may be applied, and it may cause malfunction.)
- This unit will sink in the water. Take care not to drop this unit.

### Caring for this unit after using it underwater

**Do not attach/remove the terminal cover (waterproof) or glasscover until you remove the sand and dust by rinsing this unit.**

**Make sure to clean the camera after using it.**

- Thoroughly wipe off any water droplets, sand, and saline matter on your hands, body, hair, etc.
- It is recommended to clean the camera indoors, avoiding places where water spray or sand may fall.

**Do not leave this unit uncared for longer than 60 minutes after using it underwater.**

- Leaving this unit with foreign objects or saline matter on it may cause damage, discoloration, corrosion, unusual odour, or deterioration of the waterproof performance.

**1 Rinse this unit without removing the terminal cover (waterproof) and glasscover.**

- After use at the seaside or underwater, soak the unit in fresh water pooled in a shallow container for about 10 minutes.

**2 Drain water by holding this unit and shaking it lightly a few times.**

- After using this unit at the seaside or underwater, or after washing it, water will remain at the mic site of this unit for a while and it may cause lower sound or sound distortion.
- Pay careful attention to prevent this unit from dropping.

**3 Wipe off water drops on this unit with a soft dry cloth and dry this unit in a shaded area that is well ventilated.**

- Dry this unit 1 hour or more.
- Dry this unit on a dry cloth.
- Do not dry this unit with hot air from dryer or similar. It will deteriorate the waterproof performance or cause failure due to deformation.
- Do not use chemicals such as benzene, thinner, alcohol or cleanser, soap or detergents.

**4 After checking that there are no water droplets, remove the terminal cover (waterproof) and glasscover, and wipe off any water droplets or sand left inside with a soft, dry cloth.**

- If you remove the terminal cover (waterproof) or glasscover without thoroughly drying this unit, water droplets may form on the card or other parts. Also, water may accumulate in the gap around the card slot or the terminal connector. Be sure to wipe any water off with a soft, dry cloth.
- If you attach the terminal cover (waterproof) or glasscover while still wet, water droplets may seep into this unit and cause condensation or malfunctions.

In case water enters this unit, stop the use and consult your dealer.

Malfunctions resulting from water leakage due to wrong handling by customers are not subject to compensation.

- If the Multi Mount or Tripod Mount are exposed to seawater, rinse off the salt water with fresh water. When the Multi Mount or Tripod Mount are exposed to water, wipe them off with a dry towel or something similar, and dry them thoroughly in the shade.

#### Preparation

## When using in a cold climate or at low temperatures

- **It may cause injury to the skin if you directly touch the metal parts of the unit in places where temperature is very low (environments under 0 °C (32 °F), such as ski resorts or places at high altitude) for a long period of time.**  
**Keep this point in mind when using this unit for a long period of time.**
- The performance of the battery (recording time/operating time) may decrease temporarily when using in a temperature between -10 °C and 0 °C (14 °F and 32 °F) (cold places such as ski resorts or places at high altitude). (Charge the battery sufficiently before use.)
- The battery cannot be recharged at temperatures lower than 0 °C (32 °F). (The power lamp flashes fast when the battery cannot be recharged.) Charge the battery sufficiently in a place where the ambient temperature is between 10 °C and 30 °C (50 °F and 86 °F).
- If the unit is used in cold places such as ski resorts or places at high altitude with snow or water droplets adhered to the unit, some parts of the unit may become hard to move or the sound may become dim with snow or water droplets freezing in the gap of the buttons and microphone. This is not a malfunction.
- If the Wi-Fi® function is used in cold places such as ski resorts or places at high altitude, playback may not be performed correctly.

# Read this first

## ■ About recording formats and compatibility of this unit

- This unit is an MP4 format (MPEG-4 AVC file standard) Wearable Camera for recording high-definition motion pictures.
- AVCHD and MPEG2 motion pictures are different formats, and are not therefore supported by this unit.

## ■ About the portrait rights

Be sure to pay special attention to the privacy, the portrait rights, etc. of the subject when you use this unit. Use it at your own risk.

## ■ Indemnity about recorded content

Panasonic does not accept any responsibility for damages directly or indirectly due to any type of problems that result in loss of recording or edited content, and does not guarantee any content if recording or editing does not work properly. Likewise, the above also applies in a case where any type of repair is made to this unit.

## ■ About the “Image App”

Install the smartphone application “Image App” on your smartphone.

You can change this unit’s settings and record and play back images by setting up a Wi-Fi connection between this unit and a smartphone.

- For information about the installation of the “Image App”, refer to page 18.

## ■ About the clock setting

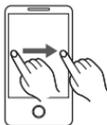
Make sure to set date and time before recording. (→ 20)

## ■ For the purposes of this owner’s manual

- Pictures may be slightly different from the original.
- Depending on the firmware version you are using, captured screens described in this owner’s manual may differ from the actual screens.
- Names, icons, contents and services of applications may be changed with no prior notice. Please note that they may differ from the descriptions of this owner’s manual.
- microSD card, microSDHC card and microSDXC card are referred to as the “microSD card”.
- Smartphone and tablet computer are referred to as the “smartphone”.
- Pages for reference are indicated by an arrow, for example: → 00
- Smartphone operations are described as follows:



**Tap**  
Touch the screen lightly and release your finger.



**Drag**  
Move your finger while still touching the screen.



**Drag and Drop**  
Move your finger while still touching the screen, and release the finger.

# Accessories

Check the accessories before using this unit.

Keep the accessories out of reach of children to prevent swallowing.

Product numbers correct as of March 2015. These may be subject to change.

## Glasscover (night mode)

SFC0315 (Orange)

SFC0316 (Black)



- The glasscover (night mode) allows you to perform Night mode recording. For details, refer to the operating instructions (PDF format).

## Glasscover (normal shooting) \*1

SFC0313 (Orange)

SFC0314 (Black)



## Terminal cover (waterproof) \*1, 2

SFC0317 (Orange)

SFC0318 (Black)



## Terminal cover (USB connection) \*2

SFC0320 (Orange)

SFC0321 (Black)



## USB cable

SJA0003



## Tripod Mount \*3



## Multi Mount \*3



## Hook and Loop Fastener (1 set) \*4, 5



## Band \*4, 5



## Double Sided Tape \*4



## Rubber seal (4 pieces)

SMG0075



\*1 This is attached to this unit at the time of purchase.

\*2 This unit is not waterproof when the terminal cover (USB connection) is in use. When using this unit in wet locations or underwater, use the terminal cover (waterproof).

\*3 For information on how to use the Multi Mount and Tripod Mount, refer to page 21.

\*4 These accessories come standard with the Multi Mount.

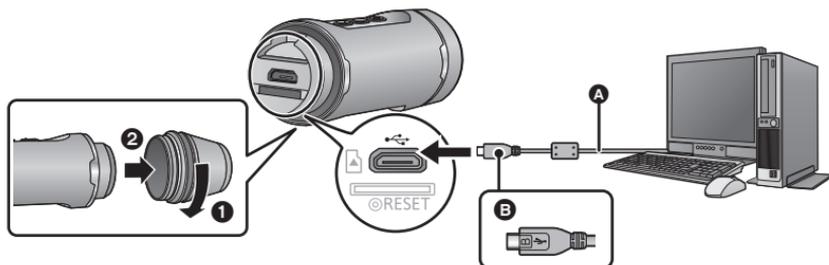
\*5 This is attached to the Multi Mount at the time of purchase.

# Power supply

## Charging the battery

When this unit is purchased, the battery is not charged. Charge the battery fully before using this unit for the first time.

- This unit has a built-in rechargeable lithium-ion battery. Do not remove except when disposing of this unit. (→ 30)
- It is recommended to charge the battery in a temperature between 10 °C and 30 °C (50 °F and 86 °F).
- When this unit is turned on, it takes longer than usual to charge the battery.



- A** USB cable (supplied)  
**B** Turn the side with the symbol up to connect the micro B end of the USB cable to the USB terminal of this unit.

### 1 Rotate the terminal cover (waterproof) in the direction of the arrow to remove it.

- It is not necessary to remove the terminal cover when using the terminal cover (USB connection) (supplied).

### 2 Connect the USB terminal of this unit to a PC with the USB cable (supplied).

- Insert the connector all the way in until it touches the end.
- \* When the connector is inserted to the end, even though the metal portion of the connector will be slightly visible, the USB cable is connected correctly. Do not apply too much force as doing so may cause malfunctions.
- The Power lamp will flash red at an interval of 2 seconds (approximately 1 second on, 1 second off), indicating that charging has begun.  
It will turn off when the charging is completed.
- When the charging is complete, disconnect the USB cable from this unit and rotate the terminal cover (waterproof) in the opposite direction of Step 1 to attach it. Tighten it firmly to ensure that it is not loose.

- Do not use any other USB cables except the supplied one. (Operation is not guaranteed with any other USB cables.)
- 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.
- If the operating time is very short even after the battery has been recharged, the battery has worn out.
- When the PC is in a power saving mode such as a standby state, the battery may not be charged. Cancel the power saving mode, and connect this unit again.
- Operation is not guaranteed when devices are connected through USB hubs or by using extension cables.
- Operation cannot be guaranteed on all devices having a USB terminal.

# Charging and recording time

## ■ Charging/Recording time

- Temperature: 25 °C (77 °F)/humidity: 60%RH

Charging time	Picture size/Frame rate	Maximum continuous recordable time	Actual recordable time
3 h	[1920×1080/30p]	1 h 15 min	35 min
	[1280×720/60p]	1 h 5 min	
	[1280×720/30p]	1 h 20 min	40 min
	[848×480/30p]	1 h 25 min	
	[1280×720/60fps]	1 h 10 min	35 min
	[848×480/120fps]		

- “h” is an abbreviation for hour, “min” for minute and “s” for second.
- These times are approximations.
- **The indicated charging time is for when the battery has been discharged completely. Charging time and recordable time vary depending on the usage conditions such as high/low temperature.**

- The actual recordable time refers to the recordable time when repeatedly starting/stopping recording, turning this unit on/off, etc.
- The power lamp flashes (Flashing with approx. 0.5 second period (off for approx. 0.25 second, on for approx. 0.25 second)) when the remaining battery time becomes low. You can check the battery level by looking at the “Image App” screen (→ 26) or the recording mode lamps (→ 16).
- This unit heats up after use or charging. This is not a malfunction.
- For information about charging with a mobile USB charger or an AC adaptor, check the support site.  
[http://panasonic.jp/support/global/cs/e\\_cam/index.html](http://panasonic.jp/support/global/cs/e_cam/index.html)  
(This site is English only.)

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

## When the Power lamp is flashing during charging

### Flashing with approx. 0.5 second period (off for approx. 0.25 second, on for approx. 0.25 second):

- Check that the USB terminals of this unit or the connecting device, such as PC are not dirty or covered with a foreign object, and reconnect correctly. If a foreign object or dirt is present, turn off this unit before removing.
- The environment is at an extremely high or low temperature. Wait until the temperature has returned to an appropriate level and try charging again. If you are still unable to charge, there may be a fault in this unit or the connecting device.

### Flashing with approx. 4 second period (off for approx. 2 seconds, on for approx. 2 seconds):

- When the battery is over discharged or the temperature of the battery is too high or low. It can be charged, but it may take a few hours to complete the charging normally.
- It will flash in approx. 2 second intervals when normal charging resumes. Even in such cases, it may start flashing in approx. 4 second intervals until charging is completed depending on the conditions of use.

#### Off:

- Charging has finished.

## Recording to a card

This unit can record motion pictures or still pictures to a microSD card.

### Cards that you can use with this unit

- To record motion pictures, use a microSD card conforming to an SD Speed Class Rating of Class 4 or higher.

If you use a microSD card with an SD Speed Class Rating that does not support the current recording setting, recording may stop suddenly.

- For the latest information on the cards that have been confirmed to operate with this unit, check the support website below.

[http://panasonic.jp/support/global/cs/e\\_cam/index.html](http://panasonic.jp/support/global/cs/e_cam/index.html)

(This website is in English only.)

- Operation is not guaranteed for all microSD cards.
- Keep the Memory Card out of reach of children to prevent swallowing.

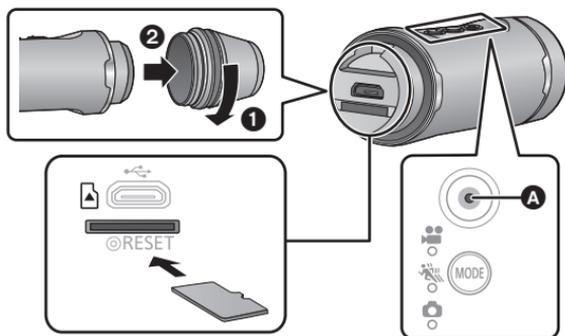
### Inserting/removing a microSD card

When using a microSD card not from Panasonic, or one previously used on other equipment, for the first time on this unit, format the microSD card. When the microSD card is formatted, all of the recorded data is deleted. Once the data is deleted, it cannot be restored.

- Do not format a microSD card using any other equipment such as a PC. The card may not be used on this unit.

#### Caution:

Check that the access lamp has gone off.



#### A Access lamp

- When this unit is accessing the microSD card (e.g., detecting the card or recording, playing back or deleting files on it), the access lamp will light/flash red.

- 1 Rotate the terminal cover in the direction of the arrow to remove it.

## 2 Insert (remove) the microSD card into (from) the card slot.

- Insert the microSD card with its terminal side facing down. Push it straight in until it clicks into place as shown in the figure.
- Press the center of the microSD card and then pull it straight out.

## 3 Rotate the terminal cover in the opposite direction of Step 1 to attach it.

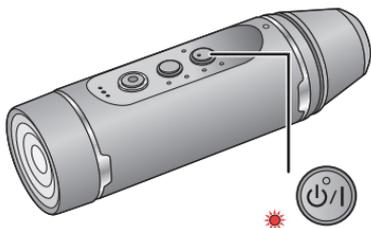
- Tighten it firmly to ensure that it is not loose.

Preparation

# Turning this unit on/off

Press the power button to turn on this unit.

The power lamp is turned on.



### To turn off this unit

Press and hold the power button for approximately 1 second.

- The power lamp goes off after a while.

## About overheat detection

If the internal temperature of this unit rises during use, warning beeps will be heard and the power lamp will flash fast. This unit will then turn off automatically. To use this unit again, wait until it cools down.

- This unit cannot be used until it cools down.

## About battery level indications

You can check the battery level by looking at the recording mode lamps when you have turned on this unit.

Battery level	100% to 76%	75% to 41%	40% to 21%	20% or less
Recording mode lamps				

- The battery level can be checked for a few seconds after this unit has been turned on.

## Wi-Fi<sup>®</sup> function

### ■ Use this unit as a wireless LAN device

When using equipment or computer systems that require more reliable security than wireless LAN devices, ensure that the appropriate measures are taken for safety designs and defects for the systems used. Panasonic will not take any responsibility for any damage that arises when using this unit for any purpose other than as a wireless LAN device.

### ■ Use of the Wi-Fi function of this unit is presumed to be in countries where this unit is sold

There is the risk that this unit violates the radiowave regulations if used in countries other than those where this unit is sold, and Panasonic takes no responsibility for any violations.

### ■ There is the risk that data sent and received via radio waves may be intercepted

Please note that there is the risk that data sent and received via radio waves may be intercepted by a third party.

### ■ Do not use this unit in areas with magnetic fields, static electricity or interference

- Do not use this unit in areas with magnetic fields, static electricity or interference, such as near microwave ovens. Radio waves may not reach this unit.
- Using this unit near devices such as cordless telephones or any other wireless LAN device that use the 2.4 GHz radio wave band may cause a decrease in performance in both devices.

### ■ Before use

To use a Wi-Fi function with this unit, you need a device equipped with a wireless LAN function.

- For the operations and settings of your device such as the smartphone, please read the operating instructions of the device.

# Install the “Image App”

The “Image App” allows you to change this unit’s settings and record and play back images.

## About the “Image App”

The “Image App” is an application provided by Panasonic.

	For Android apps	For iOS apps
OS	Android 4.0 or later*	iOS 6.0 or later* (iPhone 3GS is not supported.)
Installation procedure	<ol style="list-style-type: none"><li>1 Connect your Android device to a network.</li><li>2 Select “Google Play™ Store”.</li><li>3 Enter “Panasonic Image App” into the search box.</li><li>4 Select “Panasonic Image App” and install it.</li></ol> <ul style="list-style-type: none"><li>• The icon will be added to the menu.</li></ul> 	<ol style="list-style-type: none"><li>1 Connect your iOS device to a network.</li><li>2 Select “App Store<sup>SM</sup>”.</li><li>3 Enter “Panasonic Image App” into the search box.</li><li>4 Select “Panasonic Image App” and install it.</li></ol> <ul style="list-style-type: none"><li>• The icon will be added to the menu.</li></ul> 

\* The supported OS versions are current as of March 2015 and subject to change.

- Use the latest version.
- Refer to [Help] in the “Image App” menu about how to operate.
- The service may not be able to be used properly depending on the type of smartphone being used. For information on the “Image App”, check the support website below.  
[http://panasonic.jp/support/global/cs/fe\\_cam/index.html](http://panasonic.jp/support/global/cs/fe_cam/index.html)  
(This Site is English only.)
- When downloading the app on a mobile network, high packet communication fees may be incurred depending on the details of your contract.

## Connecting to a smartphone

### ■ Preparations before connection

- 1 Install the smartphone application "Image App" on your smartphone. (→ 18)
- 2 Turn on the Wi-Fi function of your smartphone.
  - For further details, please read the operating instructions for the smartphone.

## Setting up a Wi-Fi connection to a smartphone

- Check that the Wi-Fi lamp is off.

**1** Press and hold the recording mode/Wi-Fi button for at least 1 second (approx.), and remove your finger.



- The Wi-Fi lamp will flash red.

**2** Tap the SSID of this unit (below) on the Wi-Fi network screen of the smartphone.



- Password entry screen is displayed.

**3** Enter password (below).

- When the connection is complete, the Wi-Fi lamp of this unit will light red.

#### Default setting

SSID:	A1-wearable
Password:	a12345678

## Setting up this unit

Use your smartphone to set up this unit.

#### Preparation:

- 1 Set up a Wi-Fi connection between this unit and the smartphone.
- 2 Start up the smartphone application "Image App".

- When you start "Image App" connecting with this unit for the first time, a message asking you to set the date and time will appear. (This message will also be displayed if this unit remains unused for a long period of time.)  
Follow the message to set the date and time.
- When you turn on this unit for the first time, a message asking you to change the SSID/Password will appear. Be sure to change them. Otherwise, third parties may intercept your information or use it for malicious purposes.

- If a connection attempt to this unit fails, turn off and on the Wi-Fi function using the setup menu of the smartphone, and then retry the connection.
- For more information, refer to the [Help] in the "Image App" menu.

## Setting date and time

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The date and time setting of this unit is synchronized with that of the smartphone. synchronize to adjust the clock, etc.

**1** Tap  → [Camera setup].

**2** Tap [Date & time].

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- When you want to adjust the clock, change the time of the smartphone first, and then synchronize the time with this unit.
- It may take approximately 60 seconds to synchronize the time of the smartphone with that of this unit.
- When the built-in battery of this unit runs down, the date and time setting returns to the default state. Leave the built-in battery of this unit in a charged state for approximately 24 hours and the date and time setting will be stored for approximately 4 months.
- The setting range from 1 January 2000 through 31 December 2039 is available for time synchronisation with the smartphone.

## Initializing the network settings

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To reset the network settings to the default, after turning off this unit, press the power button (→ 16) and recording start/stop button (→ 27) simultaneously to turn it on again and continue to hold them down for approximately 3 seconds. When the Wi-Fi lamp flashes alternately in red and green, the network settings are initialized.

- After initializing the settings, turn off and on this unit.
- The following settings will be reset to the default:
  - An SSID/Password for this unit set after the purchase  
([Camera Wi-Fi settings] → [Camera SSID settings] in the “Image App”)
  - SSID/Password of Main Camera that was connected to this unit

# Attaching this unit to a Multi Mount or Tripod Mount

You can attach this unit to a Multi Mount or Tripod Mount and perform recording.

- When the Tripod Mount is attached to a tripod or similar item, do not hold this unit or adjustment belt to carry the assembled items.
- It may not be possible to attach a Multi Mount to a helmet or other object, depending on its shape.
- When the adjustment belt becomes too loose to hold this unit in position, stop the use of the Multi Mount or Tripod Mount.
- Do not touch the lens while attaching or removing parts.
- Do not hold this unit or adjustment belt to carry the assembled items.

## Using a Multi Mount

### Attaching to a helmet, etc.

Attach the Multi Mount to a smooth surface, such as a helmet.

**Note the following points so that the Multi Mount will achieve an optimal adhesion strength:**

- Avoid high or low temperatures and high humidity, and do the attachment work indoors.
- Attach the Multi Mount at least 24 hours before use. (Adhesion is optimized after a period of at least 24 hours in the environment above.)

- Before attaching the Multi Mount, remove the hook and loop fastener and the band from the Multi Mount.

**1 Peel off one side of the double sided tape, and attach it to the smoother side of the fastener that has a harder texture (hook fastener).**

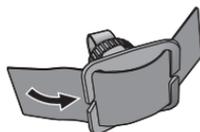


**2 Peel off the other side of the double sided tape, and attach the hook fastener to a location where the Multi Mount will be attached to.**



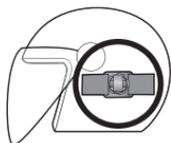
- Dust, etc. adhering to the contact surface will weaken the adhesion. Before attaching the double sided tape, remove the dust, etc., and wipe with a dry cloth.
- The double sided tape is not peelable. Taking account of the height, width, etc. of the Multi Mount attached to this unit, attach the tape to a location where it will not come in contact with a helmet shield, etc.

**3 Pass the fastener that has a softer texture (loop fastener) through the Multi Mount so that the soft fabric side will face down.**

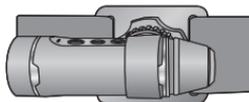


#### 4 Fasten the Multi Mount securely by aligning the two fasteners to one another.

- Fasten securely to prevent the Multi Mount from falling off.
- Dust, etc. adhering to the hook and loop fastener will weaken the adhesion. Before attaching it, check if dust, lint, etc. is adhering.



#### 5 Attach this unit to the Multi Mount as shown in the figure. (→ 23)



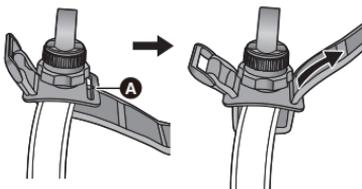
- When removing the Multi Mount, do not pull the Multi Mount. Remove it by peeling off the hook and loop fastener from the edge.
- Do not peel off the double sided tape attached to the hook and loop fastener. Once the tape is peeled off, the adhesion weakens, making the tape unusable.
- When attaching the Multi Mount, check if the hook and loop fastener is fastened securely and the adhesion of the double sided tape has weakened.

#### Attaching to the shoulder strap of a backpack, etc.

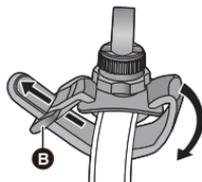
- Before attaching the Multi Mount, remove the hook and loop fastener from the Multi Mount.

#### 1 Tuck a shoulder strap of a backpack or similar item between the Multi Mount and the band, and pass the band through the portion **A** to hold the Multi Mount in position.

- Before attaching the Multi Mount, check that the hook and loop fastener side of the band is facing up.
- Move the Multi Mount to the position where you want to attach it.



#### 2 Pass the band through the ring **B** as shown in the figure.



#### 3 Fold the band inwards as shown in the figure, and fasten it with the hook and loop fastener **C** of the band.



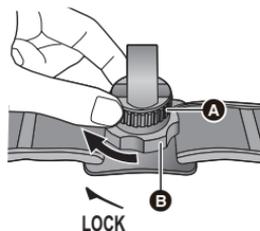
- 4** Attach this unit to the Multi Mount as shown in the figure.



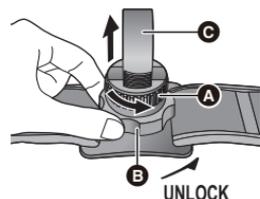
### Attaching this unit to the Multi Mount

- Before attaching this unit, fasten the Multi Mount securely with the band and the hook and loop fastener.

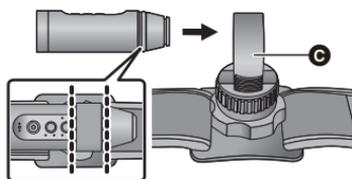
- 1** While holding the tightening nut **A**, tighten the adjustment knob **B** by rotating it towards **LOCK**.



- 2** While holding the adjustment knob **B**, loosen the the adjustment belt **C** until this unit can be passed through it by rotating the tightening nut **A** towards **UNLOCK**.

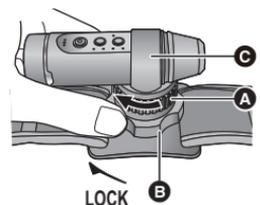


- 3** Pass this unit through the adjustment belt **C** so that this unit is in the position shown in the figure.

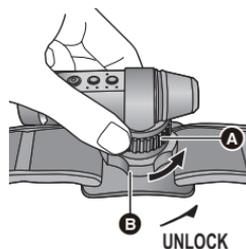


- 4** While holding the adjustment knob **B**, tighten the adjustment belt **C** by rotating the tightening nut **A** towards **LOCK** until this unit is fastened securely.

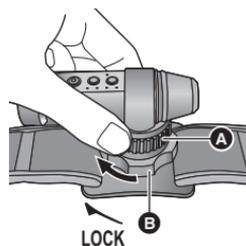
- Adjust the adjustment belt with hands. Do not apply too much force.
- Do not rotate the tightening nut more than necessary after fastening this unit.
- Check the left/right tilt of this unit after fastening it.
- To correct the left/right tilt of this unit, loosen the adjustment belt.



- 5** While holding the tightening nut **A**, loosen the adjustment knob **B** by rotating it towards **UNLOCK** to adjust the direction of this unit.

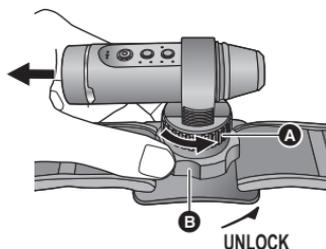


- 6** While holding the tightening nut **A**, rotate the adjustment knob **B** by rotating it towards **LOCK** until this unit is fastened securely.



### Removing this unit from the Multi Mount

While holding the adjustment knob **B**, loosen the tightening nut **A** by rotating it towards **UNLOCK**, and pull out this unit.

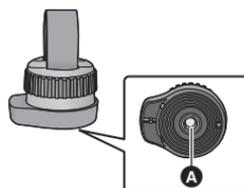


## Using a Tripod Mount

### Attaching the tripod mount to a tripod, etc.

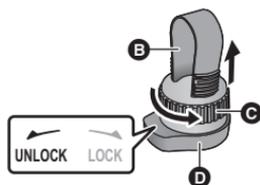
The tripod mounting hole **A** of the tripod mount is compatible with the screw (1/4-20 UNC) of a tripod, etc.

- If you attach a screw with a length of 6 mm (0.24 ") or more to a Tripod Mount, it may wobble.

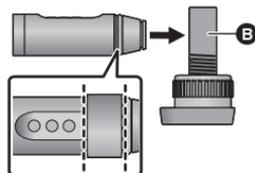


## Attaching this unit to the Tripod Mount

- 1 While holding **D**, loosen the adjustment belt **B** until this unit can be passed through it by rotating the tightening nut **C** towards UNLOCK.

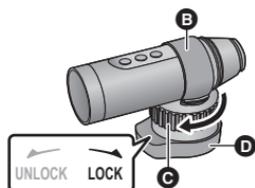


- 2 Pass this unit through the adjustment belt **B** so that this unit is in the position shown in the figure.



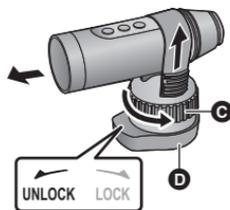
- 3 While holding **D**, tighten the adjustment belt **B** by rotating the tightening nut **C** towards LOCK until this unit is fastened securely.

- Adjust the adjustment belt with hands. Do not apply too much force.
- Do not rotate the tightening nut more than necessary after fastening this unit.
- Check the direction of this unit after attaching it.
- To correct the left/right tilt of this unit, loosen the adjustment belt.



## Removing this unit from the Tripod Mount

While holding **D**, loosen the tightening nut **C** by rotating it towards UNLOCK, and remove this unit.



- This unit is not waterproof when the terminal cover (USB connection) is in use. In this case, do not use this unit underwater or touch it with wet hands.

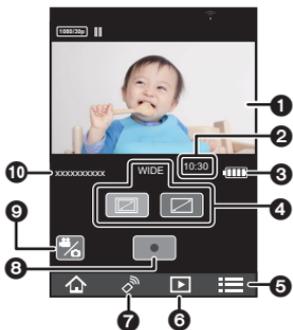
# Recording

## Check before recording

When you connect this unit and a smartphone and start up the "Image App", you can check the image from this unit on the live view screen.

- We recommend that you make a test recording to check the angle of view mode, [White Balance] setting and other settings before recording.
- Attach this unit to the Multi Mount or Tripod Mount (→ 21) and check the image on the live view screen.
- You can use [Shooting guidelines] as a guide for checking the balance of a composition.

Example of the screen display:



- 1 Live view
  - Displays an image from this unit.
- 2 Remaining number of recordable pictures/remaining recordable time of the microSD card in this unit
- 3 Remaining battery power of this unit
  - As the battery level decreases, the display changes as follows: → → → → . If the battery discharges, then will flash red.
- 4 Angle of view mode
  - It can be switched between standard and wide views.
- 5 Menu display
- 6 Playback mode selector
- 7 Recording mode selector (Remote view)
- 8 Recording start/stop
- 9 Motion Picture/Still Picture toggle button
- 10 Name of the connected device

- Depending on your OS or the version of the smartphone application "Image App", the screen may differ from the one above.

- The live view screen disappears approximately 30 seconds after you start recording a motion picture. If you tap the screen while recording, the screen will be displayed again for approximately 30 seconds.
- Also outputs sound from the microphone of this unit.
- Still pictures will be recorded with a picture size of 2.1 M (standard) or 2.7 M (wide).
- Refer to [Help] in the "Image App" menu about how to operate.

# Recording with this unit

Record images with this unit.

- You can record images even when this unit is not connected to a smartphone.

## 1 Press the recording mode/Wi-Fi button to switch to the desired recording mode.

- The recording mode changes each time you press the button. The recording mode lamps will light (or flash).  
Motion Picture Recording Mode → Slow Motion Recording Mode → Still Picture Recording Mode



Recording Mode	Recording mode lamp		Recording method
Motion Picture Recording Mode		Lit	<b>[Normal Shooting]:</b> Recording motion pictures.
		Flashing	<b>[Loop Recording]<sup>*1</sup>:</b> No matter how long you record, you can only record motion pictures for the last 1 hour to microSD card.
Slow Motion Recording Mode		Lit	<b>[Slow Motion]:</b> This records motion pictures in slow motion by setting a high frame rate (increasing the number of frames).
Still Picture Recording Mode		Lit	<b>Normal still picture recording:</b> Recording a still picture.
		Flashing	<b>[Interval rec mode]<sup>*2</sup>:</b> This is for recording still pictures at a set interval.

\*1 You need to set [Recording Mode] of the "Image App" to [Loop Recording].

\*2 You need to select a setting other than [OFF] for [Interval rec mode] of the "Image App".

## 2 Press the recording start/stop button.

### In Motion Picture Recording Mode/Slow Motion Recording Mode:

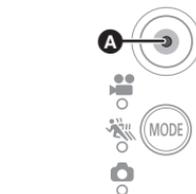
The access lamp will light red and recording will start.

- If you press the recording start/stop button again, the recording will stop. While data is being recorded, the access lamp will flash. Do not remove the microSD card until the access lamp goes off.

### In Still Picture Recording Mode:

Recording still pictures.

- In [Interval rec mode], the access lamp will light red and recording will start. If you press the recording start/stop button again, the recording will stop.



**A Access lamp**

Please refer to the operating instructions (PDF format) for details.

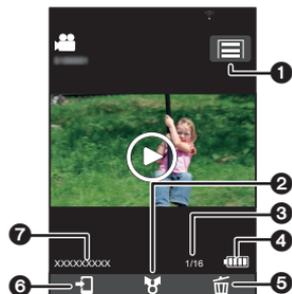
# Playback

Motion pictures or still pictures stored in this unit are played back with the smartphone.

- For more information, refer to the [Help] in the “Image App” menu.

**Preparation:**      **Connect this unit with the smartphone and start Image App. (→ 19)**

Example of the motion picture playback screen display:



- 1 Camera function
- 2 Upload
- 3 Number of motion picture/still picture scenes
- 4 Remaining battery power of this unit
- 5 Delete
- 6 Copy
- 7 Name of the connected device

- Depending on your OS or the version of the smartphone application “Image App”, the screen may differ from the one above.

## 1 Tap .

- The thumbnails of motion pictures or still pictures recorded on this unit will be displayed.

## 2 Tap (.

- To play back a motion picture, tap [SD-MP4]; to play back a still picture, tap [SD-JPEG].

## 3 Tap the thumbnail of motion picture or still picture you want to play back.

- The playback screen will be displayed.
- If you have tapped a still picture, you can play back the previous or next picture by dragging (swiping) the screen left or right.

## 4 (For playing back motion pictures)

**Tap the playback icon on the screen to play back motion pictures.**

- Tapping or dragging the slide bar will start playback from the desired position of a motion picture file.



- A** Slide bar

# Troubleshooting

## ■ It is not a malfunction in following cases

The lens fogs up.	<ul style="list-style-type: none"> <li>• This is due to condensation. It is not a malfunction. Please refer to page 8.</li> </ul>
Problem	Check points
<p>This unit cannot be turned on.</p> <p>This unit does not stay on long enough.</p> <p>Battery runs down quickly.</p>	<ul style="list-style-type: none"> <li>• Charge the battery again to ensure it is sufficiently charged. (→ 13)</li> <li>• In cold places, the battery using time becomes shorter.</li> <li>• If the operating time is very short even after the battery has been recharged sufficiently, the battery has worn out.</li> </ul>
Color balance of images is strange when recording in a place such as a gymnasium.	<ul style="list-style-type: none"> <li>• In a place with multiple light sources, such as a gymnasium or a hall, set the [White Balance] setting to [Indoor 2]. If you cannot record clearly with the [Indoor 2], set it with [Custom].</li> </ul>
Recorded motion pictures flicker. Horizontal lines appear in recorded images.	<ul style="list-style-type: none"> <li>• If you record an image with [1280×720/60fps] or [848×480/120fps] in [Slow Motion], flickering or horizontal lines may appear under fluorescent lighting.</li> </ul>
The Wi-Fi connection is not possible between this unit and a smartphone.	<ul style="list-style-type: none"> <li>• Make sure the smartphone is properly connected to this unit by checking the Wi-Fi settings of the smartphone.</li> <li>• Make sure the SSID and Password have been correctly input.</li> <li>• Make sure the smartphone is not connected to the wireless access point. If it is connected to the wireless access point, change the Wi-Fi access point using the smartphone's Wi-Fi set up.</li> </ul>
The Wi-Fi connection is disconnected immediately.	<ul style="list-style-type: none"> <li>• If there is a setting for avoiding unnecessary connections in the Wi-Fi setting menu of the Android device, turn it off.</li> </ul>

Please refer to the operating instructions (PDF format) for details.

## Requests when disposing of this unit

**When disposing of the used product, initialize the network settings (→ 20) first and remove the built-in battery from this unit. Please refer to page 31 about how to remove the battery. Thank you for supporting our battery recycling efforts.**

- 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 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 charge, use or leave in hot places such as next to fires or in extremely hot weather.
- 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.

**Battery used for this unit**

Name: Lithium ion (Li-ion)  
rechargeable battery

Nominal voltage: DC 3.7 V

## How to remove the battery

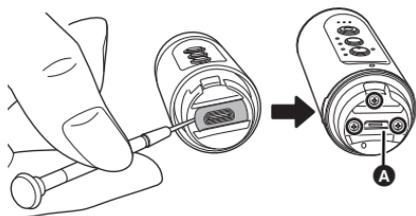
When disposing of the used product, initialize the network settings and erase all data on this unit.

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

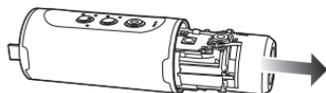
- Disassemble after the battery runs out.
- If it cannot be removed smoothly, contact Panasonic's Service center.
- Keep disassembled parts out of reach of children.

- 1 Remove the terminal cover and glasscover. (→ 8)
- 2 Remove the three screws shown in the figure below, and remove the cover **A**.

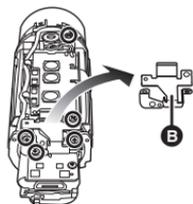
- Before removing the screws, peel off the label on the terminal with a sharp object.
- Use a cross-slot screwdriver (commercially available).



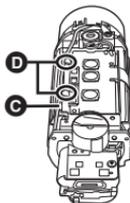
- 3 Pull out the inner unit.



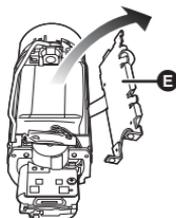
- 4 Remove the five screws shown in the figure below, and remove the frame **B**.



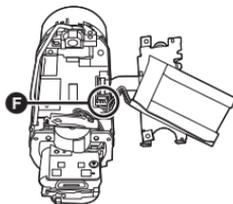
- 5 Remove the lead **C** from the holders **D**.



- 6 Open the control board **E**, and lift up the battery.



- 7 Pull out the battery connector **F** upwards, and remove the battery.



### Regarding the handling of used batteries

- Insulate the terminals with cellophane tape or similar.
- Do not disassemble.

# Specifications

## Wearable Camera

Information for your safety

<b>Power source:</b>	INPUT: DC 5.0 V, 1 A Rechargeable Li-ion Battery Pack: DC 3.7 V, 480 mAh (1.78 Wh)
<b>Power consumption:</b>	Recording; 2.1 W (Built-in battery) 2.9 W (Extended Battery) Charging; 2.4 W (When using PC) 2.4 W (When using Extended Battery)

### Motion picture recording format:

MPEG-4 AVC file format compliant (.MP4)

- For picture size, recordable time and transfer rate of a motion picture, refer to the operating instructions (PDF format).

### Motion picture compression:

MPEG-4 AVC/H.264

### Audio compression:

AAC

### Still picture recording format:

JPEG (Design rule for Camera File system, based on Exif 2.2 standard)

- For picture size of a still picture and number of recordable pictures, refer to the operating instructions (PDF format).

### Recording media:

microSD card (1 GB/2 GB), microSDHC card

(4 GB/8 GB/16 GB/32 GB)

microSDXC card (48 GB/64 GB/128 GB)

### Image sensor:

1/3" 1MOS image sensor

Total; Approx. 3540 K

Effective pixels;

Motion picture; Approx. 2870 K (16:9)\*

Still picture; Approx. 2660 K (16:9)\*

### Lens:

F2.8

Focal length; 2.6 mm

Angle of view; Approx. 150 ° (Wide)

Approx. 120 ° (Standard)

Minimum focus distance; Approx. 30 cm

- \* When the angle of view mode is set to wide

### Shutter speed:

Motion picture; 1/30 to 1/12000

Still picture; 1/15 to 1/12000

### Microphone:

Monaural

### Minimum required illumination:

Approx. 6 lx (When [Pixels / Frame rate] is set to [1920×1080/30p])

### USB:

Hi-Speed USB (USB 2.0), USB terminal Type micro-B

Reader function

microSD card; Read only (No copyright protection support)

Web camera function

Battery charging function

### Dimensions:

26.0 mm (W)×26.0 mm (H)×83.1 mm (D)

[1.02" (W)×1.02" (H)×3.27" (D)]

### Mass (Weight):

Approx. 45 g (Approx. 0.099 lb)

### Mass (Weight) in operation:

Approx. 45 g (Approx. 0.099 lb)

[with a microSD card (optional)]

### Operating temperature:

-10 °C to 40 °C (14 °F to 104 °F)

### Operating humidity:

10%RH to 80%RH

### Waterproof/Dustproof/Anti-shock performance:

See page 7

See page 7

### Battery operation time:

See page 14

**Wireless transmitter:**

Compliance standard; IEEE802.11b/g/n

Frequency range used;

Central frequency 2412 MHz to 2462 MHz [11ch]

Encryption method; Wi-Fi compliant WPA™ / WPA2™/WEP

Access method; Infrastructure mode

Others

## About copyright

### ■ Carefully observe copyright laws

**Whatever you have recorded and created can be used for your personal entertainment only. Under copyright laws, other materials cannot be used without obtaining permission from the holders of the copyrights.**

### ■ Licenses

- microSDXC Logo is a trademark of SD-3C, LLC.
- iPhone is a trademark of Apple Inc., registered in the U.S. and other countries.
- App Store is a service mark of Apple Inc.
- Android and Google Play are trademarks or registered trademarks of Google Inc.
- The Wi-Fi CERTIFIED™ Logo is a certification mark of the Wi-Fi Alliance®.
- "Wi-Fi®" is a registered trademark of Wi-Fi Alliance®.
- "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 licensed under the AVC patent portfolio license for the personal and non-commercial use of a consumer to (i) encode video in compliance with the AVC Standard ("AVC Video") and/or (ii) decode AVC Video that was encoded by a consumer engaged in a personal and non-commercial activity and/or was obtained from a video provider licensed to provide AVC Video. No license is granted or shall be implied for any other use. Additional information may be obtained from MPEG LA, LLC. See <http://www.mpegla.com>.

This product incorporates the following software:

- (1) the software developed independently by or for Panasonic Corporation,
- (2) the software owned by third party and licensed to Panasonic Corporation,
- (3) open source software

The software categorized as (3) is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY, without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. Refer to the detailed terms and conditions thereof, which appear when this product is connected to a computer within the applicable operating procedures for this product.

For at least three (3) years from delivery of this product, Panasonic 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 conditions that impose an obligation to disclose the source code, as well as the respective copyright notice thereof.

Contact Information: [oss-cd-request@gg.jp.panasonic.com](mailto:oss-cd-request@gg.jp.panasonic.com)

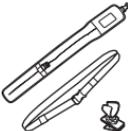
The source code and the copyright notice are also available for free in our website below.  
<http://panasonic.net/avc/oss/index.html>

# Optional accessories

Some optional accessories may not be available in some countries.

Accessory No.	Figure	Description
VW-MKA1		Multi Mount
VW-MKA100		
VW-TMA1		Twin Mount
VW-CTA1		Tripod Mount*
VW-CTA100		
VW-SCA100		Suction Cup Mount*
VW-WJA100		Wind Jammer
RP-CMC10		Video Camera Mount (For Handlebar)*

\* To use the Suction Cup Mount/VW-SCA100 and Video Camera Mount (For Handlebar)/RP-CMC10, the Tripod Mount/VW-CTA1 or VW-CTA100 is required.

Accessory No.	Figure	Description
VW-CLA100		Clip Mount
VW-HMA1		Head Mount
VW-BTA1		Extended Battery
VW-SAA1		Strap Adaptor
VW-MBA100		Multi Belt

**NOTE:**

Accessories and/or model numbers may vary by country. Please consult your local dealer. Product numbers correct as of March, 2015. These may be subject to change.

# Accessory Order Form (For USA Customers)

Please photocopy this form when placing an order.

1. Model # \_\_\_\_\_
2. Items Ordered

Accessory #	Description	Price Each	Quantity	Total Price
Shipping & Handling				\$6.95
Subtotal				
Your State & Local Sales Tax				
Total				

3. Method of payment (check one)

- American Express
- VISA                      Credit Card # \_\_\_\_\_
- MasterCard              Expiration Date \_\_\_\_\_
- Discover                      Customer Signature \_\_\_\_\_

(Please do not send cash)

4. Shipping information (UPS delivery requires complete street address)

Ship To:

Mr.

Mrs.

Ms.

First \_\_\_\_\_ Last \_\_\_\_\_

Phone#:

Day ( ) \_\_\_\_\_

Street Address \_\_\_\_\_

Night ( ) \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

TO OBTAIN ANY OF OUR ACCESSORIES YOU CAN DO ANY OF  
THE FOLLOWING:  
VISIT YOUR LOCAL PANASONIC DEALER  
OR  
YOU MAY CONTACT US DIRECTLY AT: 1-800-237-9080 (FAX ONLY)  
OR  
MAIL THIS ORDER TO: PANASONIC NATIONAL PARTS CENTER  
20421 84th Avenue South, Kent, WA 98032

In CANADA, please contact your local Panasonic dealer for more information on Accessories.

# Limited Warranty (ONLY FOR U.S.A.)

## Panasonic Products Limited Warranty

### Limited Warranty Coverage (For USA Only)

If your product does not work properly because of a defect in materials or workmanship, Panasonic Corporation of North America (referred to as "the warrantor") will, for the length of the period indicated on the chart below, which starts with the date of original purchase ("warranty period"), at its option either (a) repair your product with new or refurbished parts, (b) replace it with a new or a refurbished equivalent value product, or (c) refund your purchase price. The decision to repair, replace or refund will be made by the warrantor.

Product or Part Name	Parts	Labor
Wearable Camera	1 Year	1 Year
All included Accessories (Except Non-Rechargeable Batteries)	90 Days	Not Applicable
Only Non-Rechargeable Batteries	10 Days	Not Applicable

During the "Labor" warranty period there will be no charge for labor. During the "Parts" warranty period, there will be no charge for parts. This Limited Warranty excludes both parts and labor for non-rechargeable batteries, antennas, and cosmetic parts (cabinet). This warranty only applies to products purchased and serviced in the United States. This warranty is extended only to the original purchaser of a new product which was not sold "as is".

### Mail-In Service--Online Repair Request

#### Online Repair Request

To submit a new repair request and for quick repair status visit our Web Site at [www.panasonic.com/support](http://www.panasonic.com/support).

When shipping the unit, carefully pack, include all supplied accessories listed in the Owner's Manual, and send it prepaid, adequately insured and packed well in a carton box. When shipping Lithium Ion batteries please visit our Web Site at [www.panasonic.com/BatteryHandling](http://www.panasonic.com/BatteryHandling) as Panasonic is committed to providing the most up to date information. Include a letter detailing the complaint, a return address and provide a daytime phone number where you can be reached. A valid registered receipt is required under the Limited Warranty.

**IF REPAIR IS NEEDED DURING THE WARRANTY PERIOD, THE PURCHASER WILL BE REQUIRED TO FURNISH A SALES RECEIPT/PROOF OF PURCHASE INDICATING DATE OF PURCHASE, AMOUNT PAID AND PLACE OF PURCHASE. CUSTOMER WILL BE CHARGED FOR THE REPAIR OF ANY UNIT RECEIVED WITHOUT SUCH PROOF OF PURCHASE.**

### Limited Warranty Limits And Exclusions

This warranty ONLY COVERS failures due to defects in materials or workmanship, and DOES NOT COVER normal wear and tear or cosmetic damage. The warranty ALSO DOES NOT COVER damages which occurred in shipment, or failures which are caused by products not supplied by the warrantor, or failures which result from accidents, misuse, abuse, neglect, mishandling, misapplication, alteration, faulty installation, set-up adjustments, misadjustment of consumer controls, improper maintenance, power line surge, lightning damage, modification, introduction of sand, humidity or liquids, commercial use such as hotel, office, restaurant, or other business or rental use of the product, or service by anyone other than a Factory Service Center or other Authorized Servicer, or damage that is attributable to acts of God.

**THERE ARE NO EXPRESS WARRANTIES EXCEPT AS LISTED UNDER "LIMITED WARRANTY COVERAGE".**

**THE WARRANTOR IS NOT LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM THE USE OF THIS PRODUCT, OR ARISING OUT OF ANY BREACH OF THIS WARRANTY.**

(As examples, this excludes damages for lost time, travel to and from the servicer, loss of or damage to media or images, data or other memory or recorded content. The items listed are not exclusive, but for illustration only.)

**ALL EXPRESS AND IMPLIED WARRANTIES, INCLUDING THE WARRANTY OF MERCHANTABILITY, ARE LIMITED TO THE PERIOD OF THE LIMITED WARRANTY.**

Some states do not allow the exclusion or limitation of incidental or consequential damages, or limitations on how long an implied warranty lasts, so the exclusions may not apply to you.

This warranty gives you specific legal rights and you may also have other rights which vary from state to state. If a problem with this product develops during or after the warranty period, you may contact your dealer or Service Center. If the problem is not handled to your satisfaction, then write to:

Consumer Affairs Department  
Panasonic Corporation of North America  
661 Independence Pkwy  
Chesapeake, VA 23320

**PARTS AND SERVICE, WHICH ARE NOT COVERED BY THIS LIMITED WARRANTY, ARE YOUR RESPONSIBILITY.**

## **Shop Accessories!**

for all your Panasonic gear

Go to

[www.panasonic.com/accessories](http://www.panasonic.com/accessories)

Get everything you need to get the most out of  
your Panasonic products

Accessories & Parts for your Camera, Phone, A/V  
products, TV, Computers & Networking, Personal  
Care, Home Appliances, Headphones, Batteries,  
Backup Chargers & more...

## **Customer Services Directory**

For Product Information, Operating Assistance,  
Parts, Owner's Manuals, Dealer and Service info  
go to [www.panasonic.com/support](http://www.panasonic.com/support)

For the hearing or speech impaired TTY: 1- 877-833-8855

As of October 2014

# Warranty (For Canadian Customers)

## Panasonic Canada Inc.

5770 Ambler Drive, Mississauga, Ontario L4W 2T3

### PANASONIC PRODUCT – LIMITED WARRANTY

Panasonic Canada Inc. warrants this product to be free from defects in material and workmanship under normal use and for a period as stated below from the date of original purchase agrees to, at its option either (a) repair your product with new or refurbished parts, (b) replace it with a new or a refurbished equivalent value product, or (c) refund your purchase price. The decision to repair, replace or refund will be made by Panasonic Canada Inc.

#### Camcorder Products - One (1) year, parts and labour

This warranty is given only to the original purchaser, or the person for whom it was purchased as a gift, of a Panasonic brand product mentioned above sold by an authorized Panasonic dealer in Canada and purchased and used in Canada, which product was not sold "as is", and which product was delivered to you in new condition in the original packaging.

**IN ORDER TO BE ELIGIBLE TO RECEIVE WARRANTY SERVICE HEREUNDER, A PURCHASE RECEIPT OR OTHER PROOF OF DATE OF ORIGINAL PURCHASE, SHOWING AMOUNT PAID AND PLACE OF PURCHASE IS REQUIRED**

#### **LIMITATIONS AND EXCLUSIONS**

This warranty ONLY COVERS failures due to defects in materials or workmanship, and DOES NOT COVER normal wear and tear or cosmetic damage. The warranty ALSO DOES NOT COVER damages which occurred in shipment, or failures which are caused by products not supplied by Panasonic Canada Inc., or failures which result from accidents, misuse, abuse, neglect, mishandling, misapplication, alteration, faulty installation, set-up adjustments, misadjustment of consumer controls, improper maintenance, improper batteries, power line surge, lightning damage, modification, introduction of sand, humidity or liquids, commercial use such as hotel, office, restaurant, or other business or rental use of the product, or service by anyone other than an Authorized Servicer, or damage that is attributable to acts of God.

Dry cell batteries are also excluded from coverage under this warranty. Rechargeable batteries are warranted for ninety (90) days from date of original purchase.

THIS EXPRESS, LIMITED WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT WILL PANASONIC CANADA INC. BE LIABLE FOR ANY SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES RESULTING FROM THE USE OF THIS PRODUCT OR ARISING OUT OF ANY BREACH OF ANY EXPRESS OR IMPLIED WARRANTY. (As examples, this warranty excludes damages for lost time, travel to and from the Authorized Servicer, loss of or damage to media or images, data or other memory or recorded content. This list of items is not exhaustive, but for illustration only.)

In certain instances, some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, or the exclusion of implied warranties, so the above limitations and exclusions may not be applicable. This warranty gives you specific legal rights and you may have other rights which vary depending on your province or territory.

#### **WARRANTY SERVICE**

For product operation, repairs and information assistance, please visit our Support page:

[www.panasonic.ca/english/support](http://www.panasonic.ca/english/support)

#### **IF YOU SHIP THE PRODUCT TO A SERVICENTRE**

Carefully pack and send prepaid, adequately insured and preferably in the original carton.  
Include details of the defect claimed, and proof of date of original purchase.

## Useful Information (Only For Latin American Countries)

### Customer Service

#### Customer Service Directory

Obtain product information and operative assistant; localize the closer distributor or Service Center; buy spare parts and accessories by our web site to Latin American:

**<http://www.lar.panasonic.com>**

Also you may contact us directly by our Contact Center:

Panama	800-PANA (800-7262)
Colombia	01-8000-94PANA (01-8000-947262)
Ecuador	1800-PANASONIC (1800-726276)
Costa Rica	800-PANA737 (800-7262737)
El Salvador	800-PANA (800-7262)
Guatemala	1-801-811-PANA (1-801-811-7262)
Chile	800-390-602 From a cell phone: 797-5000
Venezuela	800-PANA-800 (800-7262-800)
Uruguay	0-800-PANA (0-800-7262)
Peru	0-800-00-PAN(0-800-00726)
Argentina	0800-333-PANA (0800-333-7262) 0810-321-PANA (0810-321-7262)
Paraguay	0800-11-PANA (0800-11-7262)
Dominican Republic	809-200-8000

#### Mexico Service

To obtain information in the Republic of Mexico contact us at:

**[email: atencion.clientes@mx.panasonic.com](mailto:atencion.clientes@mx.panasonic.com)**

Or you may contact us in the next following phones numbers:

**01800-VIP-PANA (01800-847-7262) - Interior**  
**(55) 5000-1200 - Mexico D.F. and Metropolitan Area**

## Panasonic Corporation

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

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### Panasonic Corporation of North America

Two Riverfront Plaza, Newark, NJ 07102-5490

<http://www.panasonic.com>

### Panasonic Canada Inc.

5770 Ambler Drive, Mississauga, Ontario, L4W 2T3

[www.panasonic.com](http://www.panasonic.com)

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